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REVISION OF THE EUPTYCHIINI (SATYRIDAE)

2. Cyllopsis R. Felder

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INTRODUCTION

The revision of *Cyllopsis* has taken much longer than I had anticipated, due partly to the confusion in the literature as to the identity of certain of the taxa and partly to the necessity of gathering specimens from a variety of sources not included in the search for *Paramacera* (Miller, 1972).

I have been able to examine more than 1500 specimens of *Cyllopsis* from a variety of sources. Following the precedent set in the revision of *Paramacera* (Miller, 1972:2), I am abbreviating the collections from whence I have received material. There is no need to repeat the list from that paper, but the additional collections are as follows, and I thank those responsible for curating these collections for their cooperation and forbearance in allowing me to examine the specimens over a protracted period of time:

British Museum (Natural History), London, England -- (**BM**).

Museum of Comparative Zoology, Harvard University, Cambridge, Mass. -- (**MCZ**).

University of Colorado Museum, Boulder, Colo. -- (**UCB**).

Private collection of Gordon B. Small, Balboa, Canal Zone (**GBS**).

Private collection of J. Bolling Sullivan, Beaufort, N. Car. -- (**JBS**).

All other citations are as in Miller (1972: 2).

Literature citations are in abbreviated style in the body of the paper and refer to papers cited in the "Literature Cited" section of this paper *or* the *Paramacera* one. Many references will be cited time and again throught the series, but they will be fully cited in the bibliographic section only in that paper in which the reference is first used. To do otherwise, while slightly more convenient for the user of only a single paper, conceivably could add dozens of pages unnecessarily to the final total of the revision.

In keeping with my original intention, I am covering another of the wholly

North and Central American groups within the Euptychiini in this part of the revision. The genus *Cyllopsis* contains more than one-third of the known United States euptychiines and is a significant part of the fauna of this tribe from Mexico and Central America. As was the case with *Paramacera* (Miller, 1972: 2-3) the nomenclature is greatly confused with regard to most of the species, and a large number of undescribed species have masqueraded in collections as other, described species. It is in the hope that some of this confusion can be unravelled that this paper is presented.

Cyllopsis R. Felder, 1869

Cyllopsis R. Felder, 1869: 474. Type-species: *Cyllopsis hedemanni* R. Felder, 1869: 474, by monotypy.

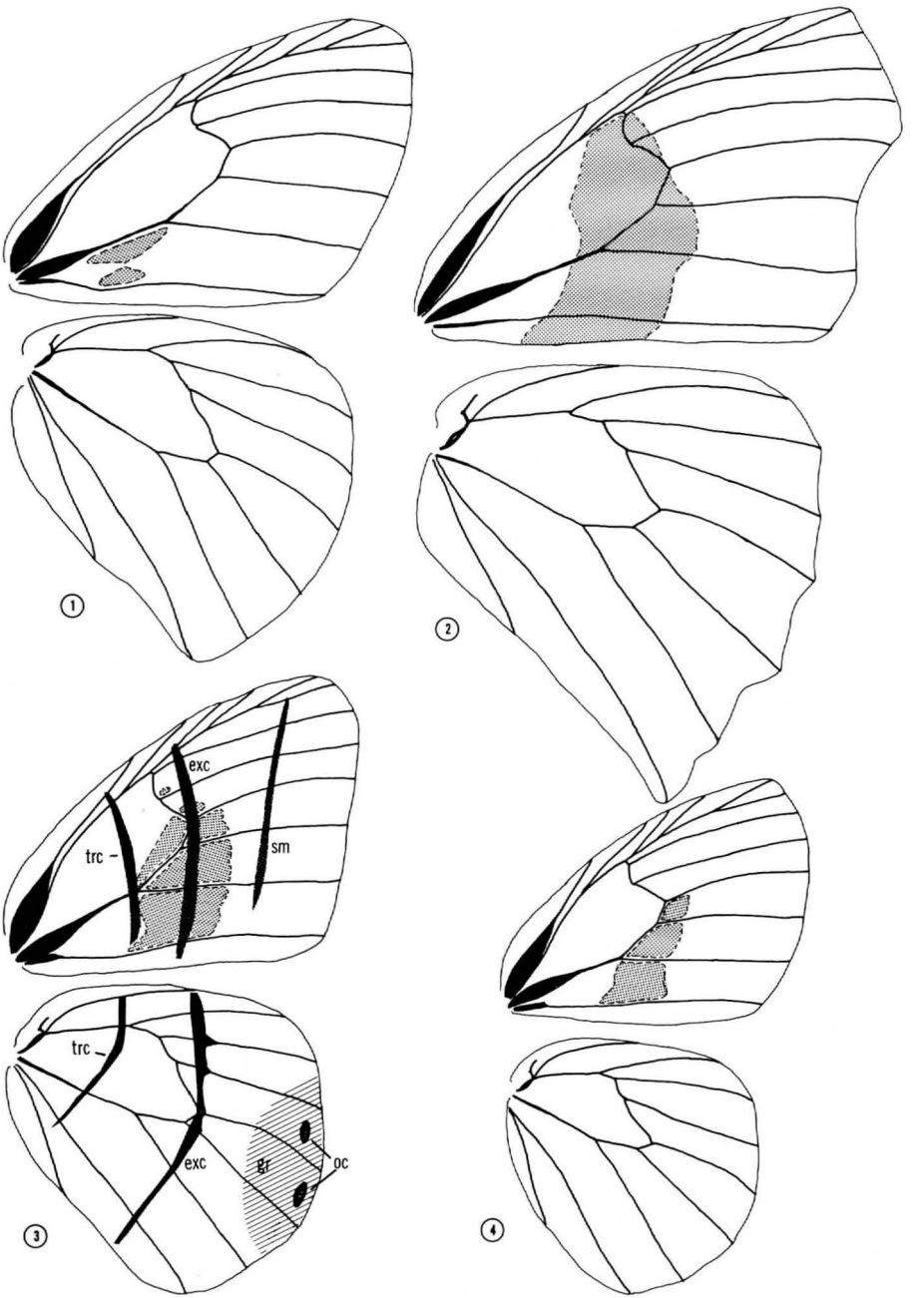
Many authors have lumped members of *Cyllopsis* into *Neonympha* Hübner, 1818 (1818-1825), but the type species of *Neonympha, areolatus* (Smith and Abbot), is not congeneric with *Cyllopsis* as presently defined, differing in particulars of venation, male genitalia, *etc. Neonympha* will be covered at a later date along with the basically North American *Megisto* and the chiefly Mexican *Pindis.*

Superficially members of *Cyllopsis* resemble no other group within the Euptychiini, but the hindwing maculation bears a vague suggestion of the pattern shown by members of *Splendeuptychia* Forster. Within the genus *Cyllopsis,* however, certain pattern elements are usually present. Most of the characteristics of the pattern are to be seen on the under surface, and it is usually the under side pattern that serves to characterize many of the species.

These pattern elements are superimposed on the venation figure of *C. pyracmon* (Fig. 3) and the terms are used throughout the revision in discussing the markings. Both fore- and hindwings have a band across the cell, the *transcellular band,* passing through about the middle of the cells of both wings: rarely this band may be missing or obsolescent. Both primaries and secondaries also have an *extradiscal band* passing around the cell of each wing; this is generally the best developed band on both the fore- and the hindwing and may be variously ornamented in some groups. The forewing usually has what is called here a *submarginal band,* but this element is generally placed a bit too far toward the cell to be "submarginal": this band is frequently broken into spots and may be absent altogether. The forewing has no submarginal ocelli, a characteristic that is shared by few other groups within the euptychiines. The hindwing, however, does have well-developed *submarginal ocelli* in M_2-M_3 and M_3-Cu_1 (though in a few species one of these may be missing). The submarginal ocelli are silver-pupilled in all species, the pupil often being doubled. These ocelli are indicated above by fuscous submarginal spots (a third one of these may be present in Cu_1-Cu_2). The submarginal ocelli are placed in the so-called *gray patch* in many of the species, including all of those occurring in the United States. This patch may be rather restricted or it may be extensive, almost reaching the extradiscal band in some species. The submarginal band of the forewing is represented on the hindwing by a true *submarginal band,* and this is basically silver, though it may be broken into spots toward the apex.

There seem to be no especially close relatives of *Cyllopsis,* though there are many structures in common with *Paramacera* and *Pindis,* suggesting possible common ancestry. All three genera seem to be part of an old Central American and Mexican fauna. *Cyllopsis* may be characterized as follows:

Eyes variably hairy: naked in *hedemanni, rogersi,* most of *pyracmon* group and *gemma;* moderately hairy in *clinas, jacquelineae* and some of *argentella* group; densely hairy in most of *argentella* group. Antennae from about one-third to two-fifths length of forewing costa; club occupying distal quarter of antenna and thickened three or more times width of shaft. Palpi long and semi-porrect with third segment about one-third length of second; hairs of second segment three to four



Figures 1-4: venation of *Cyllopsis* species. 1, *C. jacquelineae,* new species, Paratype ♂. 2, *C. clinas* (Godman & Salvin), ♂. 3, *C. pyracmon pyracmon* (Butler), ♂. 4, *C. gemma gemma* (Hübner), ♂. The lightly stippled areas represent the androconial patches. Abbreviations: trc = transcellular band; exc = extracellular band; sm = submarginal band; gr = "gray patch"; oc = ocelli.

times as long as width of second segment.

Thorax clothed with long hairs above and below. ♂ foreleg rather thin with a monomerous, unspined tarsus. ♀ foreleg rather like that of *Paramacera xicaque,* slender with a pentamerous tarsus spined on second through fourth subsegments. Mid- and hindlegs slender, somewhat longer than in some euptychiine genera, with tibial spurs present on both legs.

Wing venation (Figs. **1-4**) of the basic euptychiine pattern (Miller, 1968: 91-92). Forewing radius arising from cell in two branches in all species; veins Rs and M_1 slightly more approximate than usual. Hindwing cell slightly over half length of wing and vein Cu_1 almost midway between M_3 and Cu_2 in *clinas,* but considerably nearer M_3 in the remaining species.

Androconial patch variable, from a very extensive one in *clinas* (Fig. **2**) to apparent absence in most members of the *argentella* group and scattered representatives of other groups, as well as *hedemanni* (Miller, 1968: 91; fig. 204). If androconial elements are present, they will be found inevitably in Cu_2-2A, often in M_3-Cu_1 and Cu_1-Cu_2; occasionally within cell and from M_1-M_2 posteriad. The scales themselves are remarkably similar (see figures for individual species). differing in only minor respects.

♂ genitalia with shield-like tegumen, a long, often curved, undivided uncus and paired, tapered gnathoi which are not freely articulated. Saccus of moderate length and often curved dorsad. Valvae slender and bowed laterad (not to same extent as in *Paramacera*); tip gently tapered and not strongly toothed. Penis rather straight and distally fluted in some species. The genitalia are remarkably similar even for species as distinctly different as *clinas, hedemanni* and *gemma* (Figs. **7, 19** and **228**, respectively).

♀ genitalia even more similar between the species. All may be characterized by the figure of those of *pyracmon* (Fig. **119**), differing only in that the ductus bursae of the *argentella* group is slightly longer than that of the remaining species.

Twenty-six species are represented, ten of them new, and several subspecies of these are also recognized. These insects occur from the southern half of the United States to Panama, but most are known from Mexico and Guatemala. They are woodland butterflies and are not restricted to pine woods, as are *Paramacera.* Most of the species are montane or submontane, but a few are found in lowland habitats.

Edwards (1868-1897) has summarized most of what we know about the early stages of *Cyllopsis.* The various stages of *gemma* are well-known, and the egg and early instar larva of what Edwards called *"henshawi"* (this may have been either that species or *pertepida*) were illustrated in the *Butterflies of North America.* All of the species for which life history studies have been done, and almost certainly all species within the genus, feed as larvae on various grasses.

A key to the species of *Cyllopsis* follows, and those species which have subspecies recognized have subsidiary keys to these intraspecific taxa included in the discussion of them.

KEY TO THE SPECIES OF *Cyllopsis* R. FELDER

(Note: Those species followed by an asterisk [*] have more than one recognized subspecies. These subspecies are keyed at the beginning of the species discussion)

1. Under surface of hindwing with no submarginal gray patch ..... 2.
1'. Under surface of hindwing with a submarginal gray patch ..... 16.
2. Vein Cu_1 of hindwing produced into a short tail; Mexico to Panama ..... *C. hedemanni* R. Felder*
2'. Cu_1 of hindwing not so produced ..... 3.
3. Hindwing below with only a single submarginal ocellus (*rogersi*

group) ..... 4.
3'. Hindwing below with two ocelli ..... 5.
4. Transcellular and extradiscal bands of under surface very broad and reddish-brown; Oaxaca, Mexico ..... *C. jacquelineae,* n. sp.
4'. Transcellular and extradiscal bands of under surface of normal width and brownish; Costa Rica ..... *C. rogersi* (Godman & Salvin)
5. Forewing margin strongly produced from apex to end of M_3; hindwing margin strongly crenulate; Guerrero, Mexico ... *C. clinas* (Godman & Salvin)
5'. Forewing not so produced and hindwing margin smoother *(argentella* group) ..... 6.
6. Hindwing below in ♂ with a well-defined yellow patch outside extradiscal band; ♀ with extradiscal area of hindwing above suffused with yellowish ..... 7.
6'. Yellow, if present, on under surface restricted to a diffuse patch outside extradiscal band of hindwing ..... 9.
7. ♂ with bright yellow hindwing patch on upper surface; ♀ with diffuse yellow patch and heavy forewing bands below; Costa Rica and Panama ..... *C. philodice* (Godman & Salvin
7'. ♂ with no extensive yellow hindwing patch above; ♀ with no diffuse yellow patch above ..... 8.
8. ♂ below with a distinct, straight yellow median hindwing band; ♀ transverse bands of forewing below narrow; Guatemala ..... *C. nelsoni* (Godman & Salvin)
8'. ♂ hindwing below with yellow patch outside anterior part of extradiscal band; ♀ with markings of forewing below broad; Costa Rica and Panama ..... *C. argentella* (Butler & Druce)
9. Hindwing below pale with submarginal ocelli very small and obscure; state of Mexico, Mexico ..... *C. parvimaculata,* n. sp.
9'. Hindwing submarginal ocelli below prominent ..... 10.
10. Extradiscal band of hindwing below bright orange along its distal margin and diverted marginad along M_1; central Mexico ..... *C. suivalens* (Dyar)*
10'. Hindwing extradiscal band not as above ..... 11.
11. Upper surface with no reddish-brown coloration ..... 12.
11'. Upper surface at least shaded reddish-brown ..... 13.
12. Under surface markings narrow; hindwing submarginal ocelli small, but not obsolescent; Guatemala ..... *C. pallens,* n. sp.
12'. Under surface markings bold; hindwing submarginal ocelli large; Mexico to Nicaragua ..... *C. suivalenoides,* n. sp.
13. Area outside extradiscal band of hindwing below strongly overscaled with yellow or ochreous; band itself distally clear yellow; El Salvador ..... *C. steinhauserorum,* n. sp.
13'. Area of hindwing below outside extradiscal band may be buff or of ground color, not yellow ..... 14.
14. Hindwing extradiscal band of under surface distally narrowly yellow; Guatemala ..... *C. schausi,* n. sp.
14'. Hindwing extradiscal band of under surface distally ochreous ..... 15.
15. Upper surface strongly reddened; uncus almost straight, valva gently tapered to tip (Fig. **62**); Guatemala ..... *C. guatemalena,* n. sp.
15'. Upper surface only tinged with red; uncus thin and curved, valva with a narrow terminal "neck" (Fig. **67**); western Mexico ..... *C. diazi,* n. sp.
16. Extradiscal band of hindwing below with raylike marginad projections along anterior veins, especially M_1 (as in Fig. **107**) ..... 17.
16'. Extradiscal band of hindwing below without such raylike projections along veins ..... 20.
17. Forewing with no androconial patch; Distrito Federal, Mexico ..... *C. pseudopephredo* R. Chermock
17'. ♂ with forewing androconial patch ..... 18.

18. Wing outline rounder; hindwing raylike projections yellow to orange-yellow; tip of valva incurved, tending to appear "drooped" in preparations (Fig. **134**); Mexico ..... *C. nayarit* R. Chermock
18'. Forewing somewhat produced; valva not as above ..... 19.
19. Upper surface reddened in both sexes; under hindwing extradiscal band reddish-brown; under forewing not so heavily scrawled; Arizona to Guatemala ..... *C. pyracmon* (Butler)*
19'. Upper surface not reddened; under hindwing extradiscal band outwardly yellowed; under forewing strongly scrawled (less so in southern specimens ..... *C. pephredo* (Godman)
20. Extradiscal band of hindwing below quite straight, tending to meet forewing extradiscal band in spread specimens; southwestern United States to central Mexico ..... *C. henshawi* (Edwards)*
20'. Not such insects ..... 21.
21. Under surface with transcellular and extradiscal bands broad and diffuse, appearing smeared ..... 22.
21'. These bands not so broad and more definite ..... 24.
22. Upper and under surface with olivaceous appearance; Tamaulipas, Mexico ..... *C. dospassosi* L. Miller
22'. Upper and under surfaces not appearing olivaceous ..... 23.
23. Androconial patch with portion within cell and extending outside cell to origin of forewing vein M_2; valva short with incurved tips (Fig. **203**); Colima to Oaxaca, Mexico ..... *C. windi*, n. sp.
23'. Androconial patch entirely outside forewing cell; valva longer and straighter (Fig. **192**); Veracruz, Mexico to Panama ..... *C. hilaria* (Godman)
24. Under surface light reddish-brown with extradiscal bands narrowly yellow; central Mexico ..... *C. perplexa*, n. sp.
24'. Under surface not so marked ..... 25.
25. Larger insects (length of forewing usually over 18 mm.); gray patch of hindwing below not extending as far as extradiscal band; upper surface usually with some red suffusion; southwestern United States and Mexico ..... *C. pertepida* (Dyar)*
25'. Smaller insects (length of forewing less than 18 mm.); gray patch of hindwing below extending to extradiscal band; upper surface with no red suffusion; eastern United States to Guatemala and British Honduras ..... *C. gemma* (Hubner)*

the **clinas** group

Superficially the single species in this group appears to connect *Cyllopsis* and *Pindis* R. Felder. Structurally, however, *C. clinas* is a perfectly good, though aberrant, member of *Cyllopsis*, but the terminalia differ from those of other members of the genus in the heavier uncus and slightly different configuration of the valvae. The forewing androconial patch is much more extensive than that of other *Cyllopsis* (in this regard more closely resembling *Pindis*), and the truncated forewing is further characteristic.

Cyllopsis clinas (Godman and Salvin), 1889

Figures 5, 6 (♂), 7 (♂ genitalia), 8-10 (androconial scales)

Euptychia clinas Godman and Salvin, 1889: 352 (Omilteme, Guerrero, Mexico). Type BM.

I have seen only one specimen of this rare and local butterfly, plus a photograph of the type specimen, and it is on these that the following redescription

is based:

Male: Head, thorax and abdomen clothed with olive-brown scales above and dark grayish-brown ones below. Palpus clothed with olive-brown scales above, long dark brown ones ventrad and some tan lateral ones. Antenna brown above narrowly ringed with fulvous on shaft, fulvous below narrowly ringed with black on shaft; tip of club black. Legs clothed with light brown scales.

Upper surface of forewing olive-brown, darker marginad and apically and with sprinkled fulvous overscaling along costa, with large androconial mass (see below) of darker brown. Hindwing above olive-brown, darker marginad, with five submarginal blackish-brown ocelli from Rs-M_1 to Cu_1-Cu_2 (middle three the most prominent), pink shaded along proximal edge of spots, dentate extradiscal line of under surface faintly indicated toward costa and with two marginal brown lines following crenulate wing margin from M_3-Cu_1 to anal angle. Fringes grayish-tan, slightly cut by brown at ends of veins and both wings somewhat darker costad.

Under surface of forewing warm brown with transverse brown bands across cell, around cell and submarginally and two brown marginal lines; ground color paler between extradiscal and submarginal bands. Hindwing below dark brown with russet dentate transverse bands across cell and just beyond cell (transcellular band yellowed distad and extracellular band proximad); distad of extracellular band ground color paler and containing silver submarginal ocelli in Rs-M_1 and M_1-M_2, double silver-pupilled black ones in M_2-M_3 and M_3-Cu_1 and wavy silver submarginal lines from Cu_1-Cu_2 through Cu_2-2A; margin brown anteriad, broken into two rusty lines from Cu_1 to tornus following the contour of the margin. Fringes tan cut by brown at veins and darker toward forewing costa.

Length of forewing of the single specimen at hand 22.5 mm.

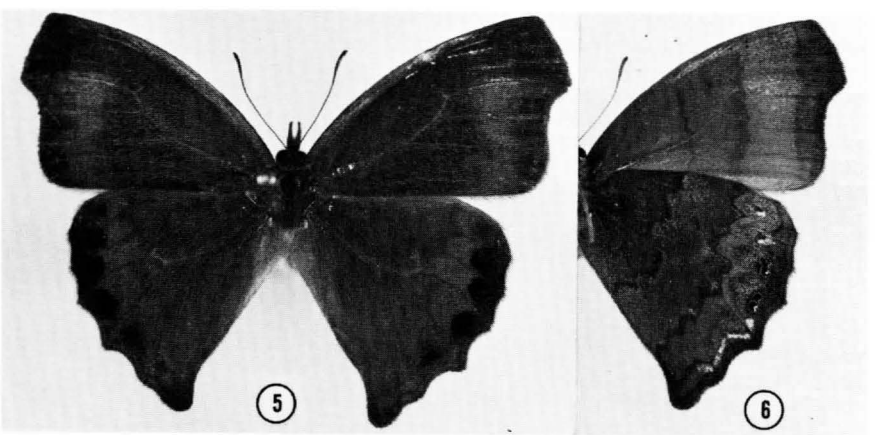
The ♂ genitalia are as figured and characterized by the heavier uncus and by the general configuration of the valvae.

A broad dark androconial mass occupies approximately the middle third of the forewing, proximad of the origin of Cu_2 and extending to one-third way from the cell to the outer margin, excluding the area anteriad of the cell. The scale is rather broader at the base than in most species, tapering gradually to the tip, which has a sparse collection of terminal organelles. The ribbing is typical.

Female: Unknown.

I have seen but a single specimen of this butterfly:

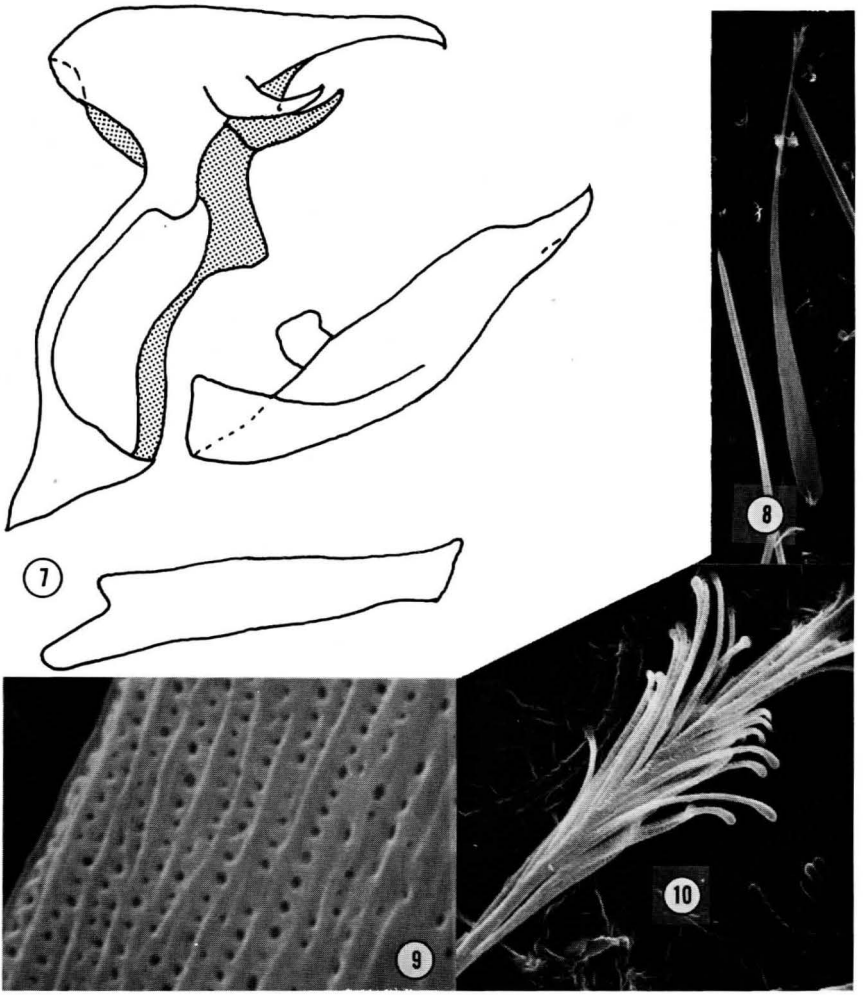
MEXICO: GUERRERO: Omilteme, xi, 1♂ (A).



Figures 5-6: *Cyllopsis clinas,* ♂ upper (5, photo no. 110773-7) and under (6, photo no. 110773-8) surfaces: MEXICO: GUERRERO: Omilteme (A).

Additionally the British Museum has four males that comprised the type-series collected by H. H. Smith at Omilteme and the nearby Xucumanatlan at elevations between seven and eight thousand feet. From these four specimens Riley and Gabriel (1924: 15) selected one specimen as Lectotype (B. M. Type No. Rh. 3281), and I see no reason to dispute this selection.

It is difficult to make any far-reaching generalizations from so few specimens, but *C. clinas* appears to be part of the Guerrero endemic fauna which has produced such oddities as *Phanus rilma* Evans (Hesperiidae): such things have usually been found in the mountains of Oaxaca in later years, though such is not the case with *clinas* to date. The present species further seems to be an upland species, but



Figures 7-10: *Cyllopsis clinas*. 7, ♂ genitalia (slide M-2422). 8, androconial scale, approx 200× (SEM photo 0387). 9, tip of same scale, approx. 2000× (SEM photo 0386). 10, interrib structure, approx. 6650× (SEM photo 0388).

several other *Cyllopsis* are found at similar elevations in southern Mexico, such as *C. pyracmon* and *pertepida*. Hoffmann (1940: 667) lists this species from "Sierra Madre del Sur" and further characterizes this species alone among the *Cyllopsis* as being a denizen of the *"tierra fria"*. The known locality is plotted on the map (Fig. **35**).

the **hedemanni** group

The single species contained in the *hedemanni* group is the most aberrant *Cyllopsis*, characterized by the pronounced forewing apex and the tail at the end of hindwing vein Cu_1. *C. hedemanni* R. Felder, the type of the genus, is the most easily recognizable species of *Cyllopsis*.

Cyllopsis hedemanni R. Felder, 1869

This species is usually uncommon and very local, but in parts of Guatemala and El Salvador the insect is fairly common, though apparently still local. *C. hedemanni* is characterized by the short, but definite "tail" at the end of hindwing vein Cu_1.

Two subspecies are recognized in the present species characterized as follows;

KEY TO THE SUBSPECIES OF *Cyllopsis hedemanni* R. FELDER

1. Darker; forewing transcellular band obsolete
   ..... *C. hedemanni tamaulipensis*, n. ssp.
1'. Not so dark forewing transcellular band prominent
   ..... *C. hedemanni hedemanni* R. Felder

Cyllopsis hedemanni tamaulipensis, new subspecies

Figures 11, 12 (♂), 13, 14 (♀)

Male: Head, thorax and abdomen dark brown clothed with brown hairs above and lighter ones below. Palpus dark brown above, ochreous with long brown hairs below. Antenna brown above, yellow below. Legs clothed with light brown hairs.

Upper surface of wings brown sparsely powdered with darker scales, the appearance being somewhat darker than that of the nominate subspecies. Costa of forewing powdered with yellow scales, as is marginal area of hindwing from M_3 to anal angle. Under side spot in hindwing space M_3-Cu_1 showing up more prominently than in nominate subspecies.

Under surface of forewing dark brown from base to cell end with yellow-green overscaling resulting in a somewhat olivaceous appearance, then a faint, straight reddish-brown band from anterior end of cell to vein 1A, passing basad of origin of Cu_2; apex and marginal band brown overscaled with yellowish; light extradiscal band paler brown with yellow overscaling, with sinuous margins basally and distally and with a narrow reddish band delimiting both edges; basal part of hindwing also dark brown with yellow-green overscaling and an enclosed yellow-green band from costa to vein 2A crossing cell from origin of Rs to basad of orgin of Cu_2; outside the cell from costa to inner margin is a more or less straight, narrow yellow band; distal third of hindwing dark brown more heavily overscaled with yellow-green than basal two-thirds with a small black spot in M_3-Cu_1 placed inside a silver spotband from M_1-M_2 to Cu_2-2A and surrounded with a faint brown ring, stronger basad.

Length of forewing of Holotype 20.5 mm.; those of the two ♂ Paratypes 20.5 and 22.0 mm.

♂genitalia as in the nominate subspecies.

Female: Head, thorax, abdomen and appendages as in ♂. Upper surface of wings a warmer brown than in ♂ and with bands delimiting the basal edge of the light band below showing through on upper surface as pinkish-brown lines outside cells of both wings.

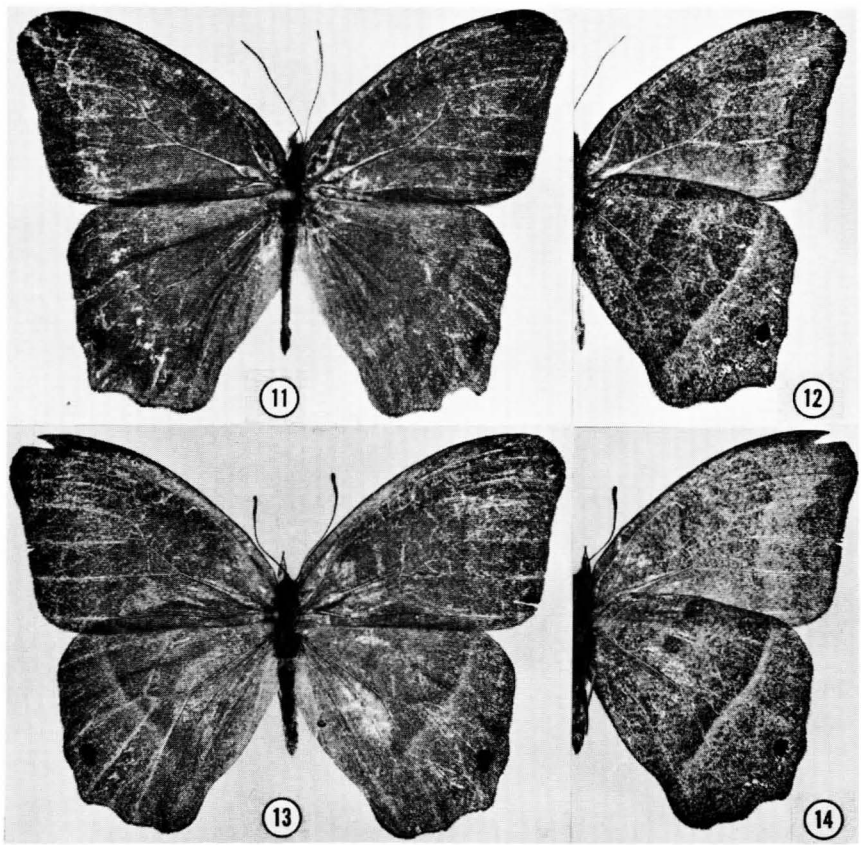
Ground color of under surface also paler than in ♂, differing from that of ♂ in that the pale band across forewing cell much more evident and all pale bands more pinkish-yellow.

Length of forewing of the single ♀ Paratype 22.5 mm.

Described from four specimens, three males and one female, from near Gomez Farias, Tamaulipas, Mexico:

HOLOTYPE ♂: MEXICO: TAMAULIPAS: 0-3 mi. NW Gomez Farias, 280-700 m., moist forest; 18.i.1969 (L. D. and J. Y. Miller); Lee D. Miller specimen no. 1969-16.

PARATYPES: Same locality and date as Holotype, 1♂ (♂ genitalia slide no. M-2097) 1♀, same locality as Holotype, 20.ii.1969, 1♂ (♂ genitalia slide no. M-2083).



Figures 11-14: *Cyllopsis hedemanni tamaulipensis,* new subspecies. 11-12, Holotype ♂ upper (11, photo no. 101272-A-5) and under (12, photo no. 101272-A-6) surfaces; MEXICO: TAMAULIPAS: vic. Gomez Farias (A). 13-14, Paratype ♀ upper (13, photo no. 101271-A-7) and under (14, photo no. 101272-A-8) surfaces; same data (A).

Disposition of type material: Type-series (A).

The name, of course, refers to the Mexican state from which this species is only known to date.

The Gomez Farias area is a very isolated one of tropical evergreen forest at low elevations and higher cloud forest. It is, by about a distance of one hundred miles, the furthest north extension of this formation, and as such is completely isolated, though this isolation is probably not very old. The butterflies of the area seem to show some endemism, virtually all noted to date being at the subspecific level, as one would expect in an area of definite, but rather brief, isolation.

C. hedemanni tamaulipensis may be distinguished from the nominate southern population chiefly by its darker coloration on both surfaces of both wings in both sexes. The obsolete discal forewing bar on the under surface of the ♂ is also characteristic.

Cyllopsis hedemanni hedemanni R. Felder, 1869

Figures 15, 16 (♂), 17, 18 (♀), 19 (♂ genitalia)

Cyllopsis hedemanni R. Felder, 1869: 474 (Potrero, Mexico). Type BM.
= *Euptychia ithama* Butler, 1869 (1869-1874): 9; pl. 4, fig. 4 (Polochic Valley, Guatemala). Type BM.
= *Euptychia vetones* Godman and Salvin, 1878: 265 (Volcan de Irazú, Costa Rica). Type BM.

The types of *hedemanni* and *ithama* are identical as stated by Godman and Salvin (1879-1901: 94). The more distinct under surface maculation that those authors used to separate *vetones* are to be found in occasional specimens from Mexico and Guatemala, as well as those from Costa Rica. There is no reason for the retention of either *ithama* or *vetones:* neither is as consistent or as different from "typical" *hedemanni* as is *tamaulipensis.*

A rediscription of nominate *C. hedemanni* follows:

Male: Head, thorax, abdomen and appendages as in *C. h. tamaulipensis*

Upper surface plainer, warmer brown than in *tamaulipensis* with forewing costal, apical and marginal areas somewhat darkened and in only a few specimens an indication of the hindwing spot in M_3-Cu_1; forewing costa not scaled with yellow.

Under surface not so powdered with yellow-green scales as in *tamaulipensis* and with markings differing as follows: forewing discal band more clearly defined and orange-brown, line between basal patch and extradiscal pale band more broadly red-brown and the submarginal spot in hindwing space M_3Cu_1 more definitely ringed with clear brown.

Lengths of forewings of ♂ specimens examined are between 19.0 and 22.5 mm.

♂ genitalia as figured, typical for the genus, with a relatively straight uncus and upturned valve tip.

Androconial patch not present.

Female: Head, thorax, abdomen and appendages as in ♂.

Upper surface of both wings paler and warmer brown than in *tamaulipensis* with extradiscal bands of both wings more definite and redder than in that subspecies and submarginal spot in hindwing space M_3-Cu_1 perhaps more prominent.

Under surface much like that of previous subspecies, but light extradiscal band more contrasted to ground color and more heavily edged with reddish-brown; general aspect paler than in *tamaulipensis.*

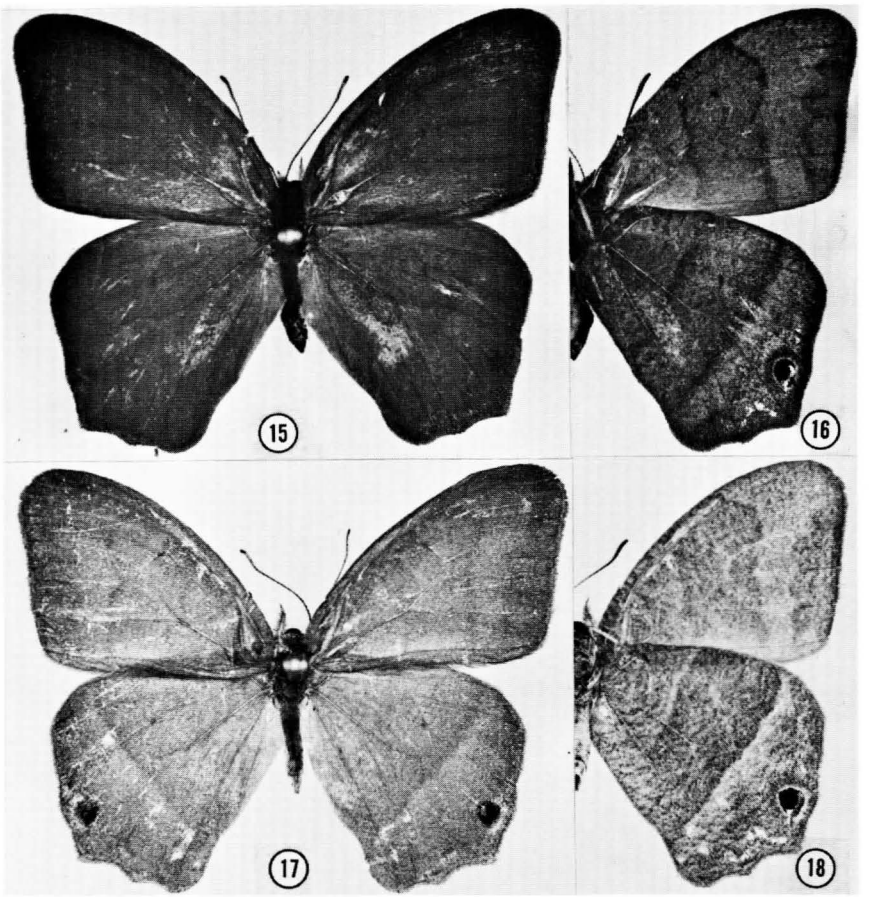
Lengths of forewings of ♀ specimens examined range from 22.5 to 25.0 mm.

The nominate subspecies is known from various localities from southern Mexico to northern Panama. I have examined 84 specimens or photographs of specimens from the following localities:

MEXICO: VERACRUZ: Presidio, vi-viii, 2♂ 1♀ (A, AMNH); Jalapa, 2♂ (AMNH, USNM); Potrero, 1♀ (type of *hedemanni*, BM). OAXACA: Vista Hermosa, vii, ix, 2♂ (A); Portillo del Rayo, Candelaria Loxicha, 1550 m., x, 1♂ (A); Cerro Pelón (Muo Cuóu), Mpio. Yolox, ix, 1♀ (A). CHIAPAS: Santa Rosa Comitán, iv, vii, ix, 2♂ 5♀ (A); Rancho Santa Ana, 27 km. SE Santa Rosa, 1200 m., vi, 3♂ (AMNH); Lagos de Montebello, 4000', v, 1♀ (A).

GUATEMALA: ALTA VERAPAZ: Baleu, Mpio. San Cristobal Verapaz, 1350 m., v, viii, x, 1♂ 3♀ (A, AMNH); Tamahu, 1100 m., xi, 1♂ 1♀ (AMNH); Polochic Valley, 1♀ (type of *ithama*, BM). CHIMALTENANGO: Quisache, Mpio. Acatenango, 1750 m., vii-xi, 7♂ 4♀ (A, AMNH); Panajabal, Mpio. San Pedro Yepocapa, viii, 1♀ (AMNH). "Guatemala", 2♂ 2♀ (CM, USNM).

EL SALVADOR: San Salvador, i, viii, 7♂ 5♀ (A); Santa Tecla, x, xi, 2♂ (A); Los Chorros, Sta. Tecla, viii, x, 3♂ 5♀ (A); Majaditas, 1100 m., x, 1♂ (A); Qda.



Figures 15-18: *Cyllopsis hedemanni hedemanni* R. Felder. 15-16, ♂ upper (15, photo no. 101272-A-1) and under (16, photo no. 101272-A-2) surfaces; EL SALVADOR: Cerro las Pavas, Cojutepeque (A). 17-18, ♀ upper (17, photo no. 101272-A-3) and under (18, photo no. 101272-A-4) surfaces; EL SALVADOR: San Salvador (A).

El Injerto, 1200 m., x, 1♂ 1♀ (A); Cerro las Pavas, Cojutepeque, vi, vii, 3♂ (A); Cojutepeque, x, 1♂ (A).

NICARAGUA: 10 mi. N. Matagalpa, viii, 1♂ 1♀ (A).

COSTA RICA: CARTAGO: Volcán de Irazú, 1♀ (type of *vetones*, BM); Cachi, x, 1♂ 2♀ (CM, USNM). LIMON: Juan Viñas, iii, 1♂ (CM). PUNTARENAS: Monteverde, 4000', i, 1♀ (AMNH).

PANAMA: CHIRIQUI: Potrerillos, iv, 1♂ (A), Volcán Chiriquí, 5000', ii, 1♀ (A).

The distributions of the subspecies of *C. hedemanni* are plotted on the map in Fig. **35**. Certainly the butterfly will be found in Honduras, but collecting for this species, as well as for virtually all others, has been so spotty that it has not yet been found there. I would further expect material of nominate *hedemanni* to occur in some Pacific coast localities northwest of Oaxaca; what might occur in San Luis Potosí, Mexico, would be very interesting: it could be either subspecies, especially along the flanks of the Sierra Madre Oriental from Tamazunchale to Cd. Mante.

Our limited field experience with *hedemanni* indicates that it is more of a forest-loving butterfly than is usual for the genus. The flight is typically slow and erratic, in common with other *Cyllopsis*, but it is less likely to be found in sunny clearings.

the **rogersi** group

Members of this group have only a single hindwing ocellus, but this ocellus is in space M_2-M_3, not M_3-Cu_1 as in *hedemanni*. This ocellus, unlike the blind one in *hedemanni*, has a silvered crescent and is rather similar to the doubled ocelli in the *argentella* group. The males of the *rogersi* group have a compact androconial mass along the forewing cell above and below the origin of Cu_2. Two species are

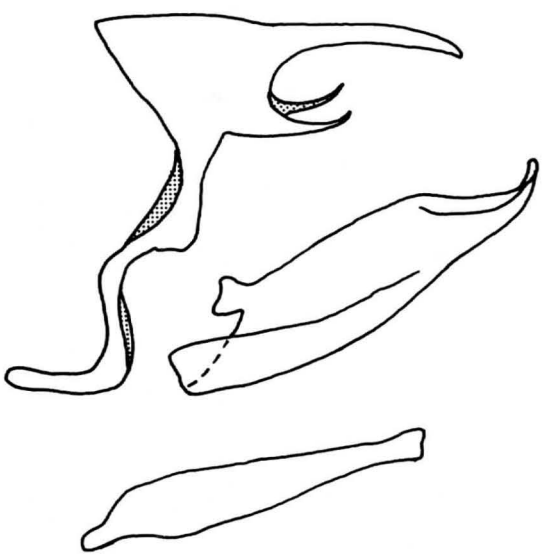
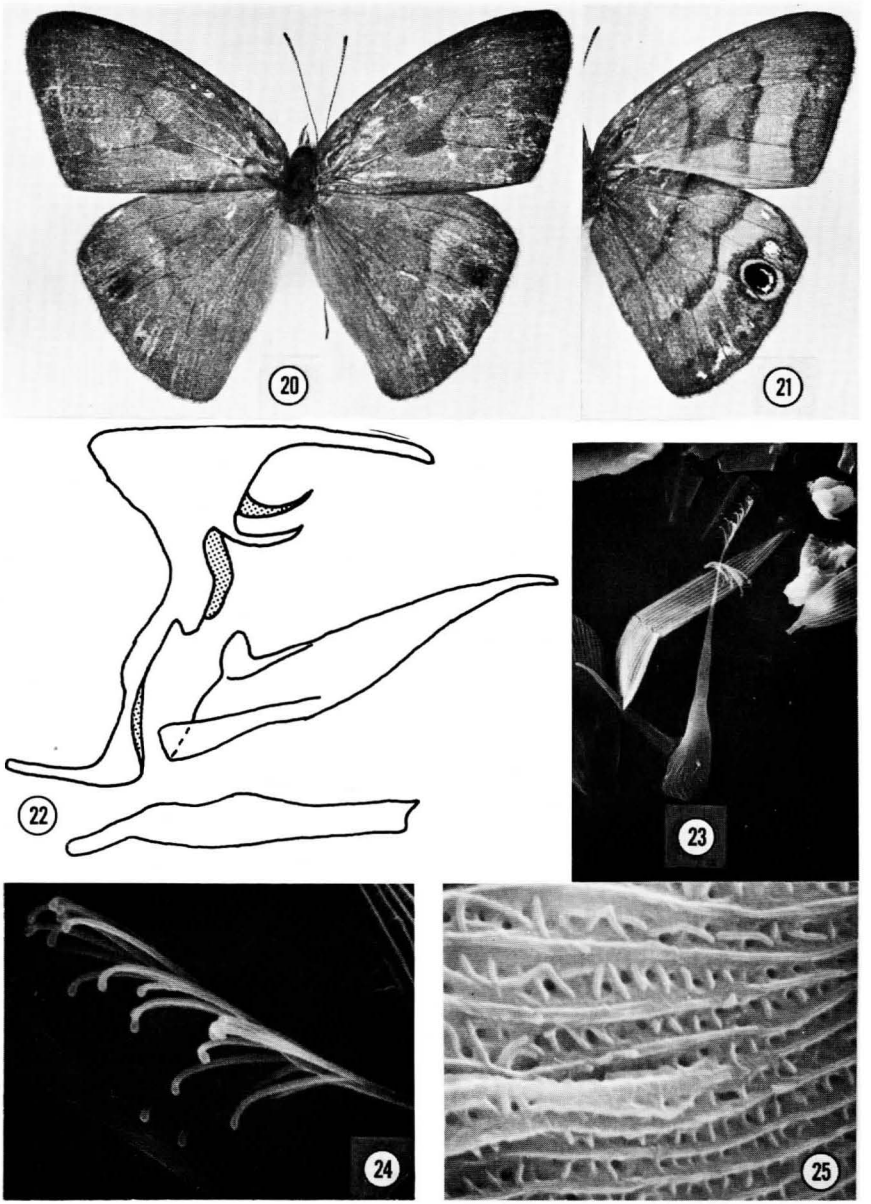


Figure 19. *Cyllopsis hedemanni hedemanni* (R. Felder), ♂ genitalia (slide M-1547); COSTA RICA: Juan Viñas (CM).



Figures 20-25: *Cyllopsis rogersi* (Godman & Salvin). 20-21, ♂ upper (20, photo no. 011674-A-7) and under (21, photo no. 011674-A-8) surfaces; COSTA RICA: San Vito (A). 22, ♂ genitalia (slide M-2420) of same specimen. 23, androconial scale, approx. 330× (SEM photo no. 0383). 24, tip of same scale, approx. 2000× (SEM photo no. 0384). 25, interrib structure, approx. 6650× (SEM photo 0385).

recognized.

Cyllopsis rogersi (Godman and Salvin), 1878

Figures 20, 21 (♂), 22 (♂ genitalia), 23-25 (androconial scales)

Euptychia rogersi Godman and Salvin, 1878: 265 (Volcán de Irazú, Costa Rica). Type BM.

This species is most closely allied to the next, but the group in general shows affinities to the *argentella* group in addition.

Male: Head and thorax black-brown with brown hairs both above and below; abdomen clothed with brown hairs above and tan ones below. Palpus clothed with dark brown hairs, except for tan median ones. Antenna and club ringed with black and brown; tip black. Legs clothed with brown hairs. Forewing and hindwing above dull brown, darker costad and marginad on forewing, with under surface markings showing through faintly and a single submarginal fuscous spot in hindwing space M_2-M_3. Fringes brown.

Under surface of forewing light, dull brown with three transverse brown lines, one gently curved from costa to 1A across cell, one more or less straight from costa around cell end to 1A and a dentate one from apex to near anal angle, bowed slightly basad in middle; ground color paler between first and second bands. Hindwing below dull, light brown, paler extradiscally, with a brown band across cell to 2A, a brown band, orange distad, across cell end, indented basad along M_2, and two thin dark brown marginal lines; submarginal ocellus in M_2-M_3 with a complete yellow ring and a silver crescent within black spot; silver submarginal spots in Rs-M_1 and M_1-M_2 and silver submarginal crescents from M_3-Cu_1 through Cu_2-2A. Fringes brown.

Lengths of forewings of the specimens before me range from 18.5 to 20.0 mm.

The ♂ genitalia are as figured and are characterized by the sharply pointed valvae and rather straight uncus.

Androconial patch restricted to a small forewing area along cubital stem on either side of Cu_2. The scales are basally very broad, tapering distally rapidly, with brush-like organelles rather sparsely distributed. The ribbing (Fig. **25**) is characteristic with additional crossmembers between the main ribs.

Female: I have not seen a ♀ of this species, but Godman and Salvin (1879-1901: 92) mention that it is paler than the ♂ and the transverse markings of the under surface show through more clearly than in the ♂.

I have seen only three specimens of this butterfly, all from Costa Rica: **COSTA RICA:** Los Bajos, iv, 2♂ (USNM); San Vito, 4000' v, 1♂ (A).

The original type-series from Volcán Irazú contained four specimens, including both sexes. I know of no other representatives of the species.

The presence of this butterfly at San Vito, very near the Panama border, suggests that *rogersi* may turn up in the province of Chiriquí, though it has not been found to date. The few present records for *rogersi* are shown on the map, Fig. **35.**

Cyllopsis jacquelineae, new species

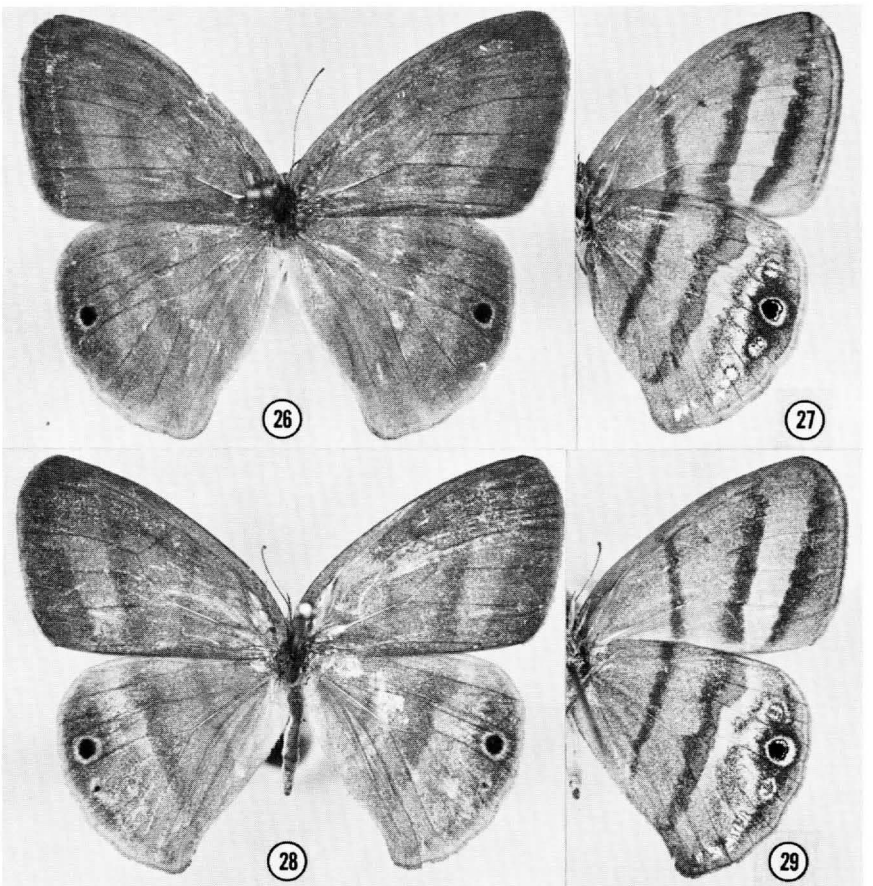
Figures 26, 27 (♂), 28, 29 (♀), 30 (♂ genitalia), 31-34 (androconial scales)

Male: Head, thorax and abdomen clothed with dull, light brown scales above, grayish-yellow ones below. Palpus clothed with intermixed yellow and grayish-brown scales. Antenna brown and yellow ringed above, yellow below; tip black. Legs clothed with yellowish hairs, darker laterad.

Upper surface of wings dull, rather light brown with an olivaceous cast, darker marginad and costad on forewing, marginad on hindwing, with prominent

pale-ringed submarginal ocellus in hindwing space M_2-M_3 and slight indication of transverse lines of under side on this surface. Fringes tan, palest toward anal angles of both wings.

Under surface of primaries dull grayish-tan with area between extracellular and submarginal bands light tan and apex and costa strongly yellowed and with three distinct russet bands, one straight and across cell and origin of Cu_2 to 2A, an extracellular one passing around cell and posteriad to inner margin and a slightly dentate one beginning along M_1 and passing posteriad and somewhat basad to inner margin; a fine straight marginal dark brown line. Hindwing under surface tan, slightly darker basad, with russet transcellular band to 3A, an ochreous extracellular band, russet inwardly, from costa to 2A and a brown submarginal patch from Rs-M_1 to M_3-Cu_1 enclosing a large yellow-ringed black ocellus in M_1-M_2 with silver internal crescent; silver eyespots in Rs-M_1 and M_2-M_3 and silver submarginal crescents from M_3-Cu_1 to Cu_2-2A; smooth narrow brown marginal



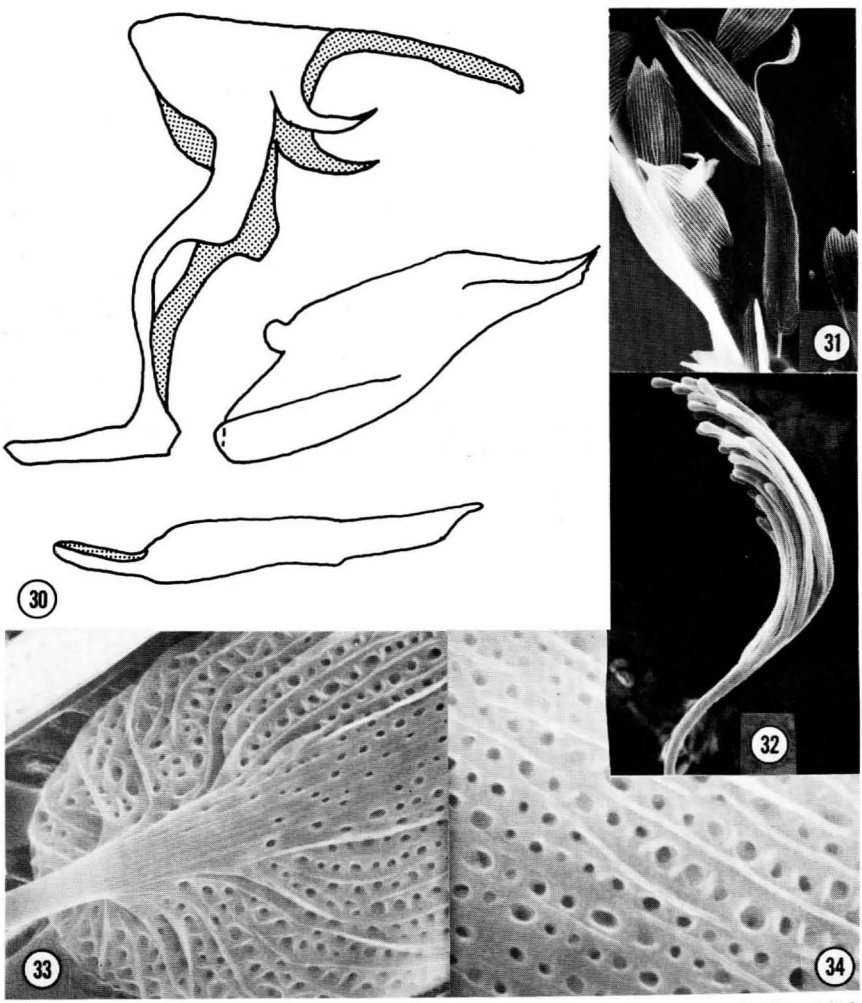
Figures 26-29, *Cyllopsis jacquelineae,* new species. 26-27, Holotype ♂ upper (26, photo no. 011674-A-5) and under (27, photo no. 011674-A-6) surfaces; MEXICO: OAXACA: Candelaria Loxicha (A). 28-29, Paratype ♀ upper (28, photo no. 011674-A-9) and under (29, photo no. 011674-A-10) surfaces; same data (A).

line. Fringes grayish-tan.

Length of forewing of Holotype ♂ 20.0 mm., that of the single ♂ Paratype 20.5 mm.

♂ genitalia as figured, rather similar to those of *C. rogersi* but with uncus slightly more bent and valvae curved upward.

Androconial patch better seen in worn than in fresh specimens: hourglass-shaped with anterior portion lying just basad of origin of Cu_2 of forewing, constricted in middle of Cu_2-2A and expanded again along anterior margin of vein 2A. Scale rather like that of *rogersi,* but with distal part gently curved like a swan's



Figures 30-34: *Cyllopsis jacquelineae,* new species. 30, ♂ genitalia (slide M-2339) of Holotype. 31, androconial scale, approx. 300× (SEM photo 0389). 32, tip of same scale, approx. 2000× (SEM photo 0391). 33, base of same scale, approx. 3300× (SEM photo 0392). 34, interrib structure, approx. 6650× (SEM photo 0393).

neck. Brush-like distal organelles tightly packed. Interrib structures not as in *rogersi,* interstices irregularly placed.

Female: Head, thorax, abdomen and appendages as in ♂. Upper surface similar to that of ♂, but browner, with under side markings showing through more clearly; hindwing submarginal ocellus in M_1-M_2 with clear tan ring. Under surface as in ♂.

Lengths of forewings of the eight ♀ Paratypes range from 17.0 to 23.5 mm., averaging 20.5 mm.

Described from ten specimens, two males and eight females, from the state of Oaxaca, Mexico.

HOLOTYPE ♂: MEXICO: OAXACA: Candelaria Loxicha, 500 m., 13.viii. 1968 (E. C. Welling); ♂ genitalia slide n. M-2339 (Lee D. Miller).

PARATYPES: Same locality as Holotype: 1♀ 16.xi.1967, 1♀ 16.x.1968, 1♀ 27.vii.1970; OAXACA: El Portillo del Rayo, nr. Candelaria Loxicha, 1550 m., 1♂ 3♀ 25.vi.1967 (all E. C. Welling); 192 km. from Oaxaca, 1♀ vii.1967; San Gabriel de Mixtepec, 1♀ vii.1967 (both Peter Hubbell).

Disposition of type material: Holotype ♂, one ♂ and six ♀ Paratypes (A); two ♀ Paratypes (AMNH).

It is with great pleasure that I name this lovely and distinctive species for my wife and co-worker, Jacqueline.

This species, one of the few easily-recognized ones in the genus, may be distinguished from all others by the single hindwing submarginal ocellus and the very broad transverse markings of the under surface, as well as by the ♂ genitalia and many other superficial and structural characters. *C. jacquelineae* replaces *C. rogersi* in Mexico, but the species are by no means close enough to be considered conspecific. The limited range of the present butterfly (I must assume that the "192 km. from Oaxaca" record also refers to south of that city is interesting: it is another of the Guerrero-Oaxaca endemics that seem so prevalent in the Mexican fauna (Miller, 1972: 16). The distribution of *jacquelineae* is shown in Fig. **35.**

the **argentella** group

This group is characterized by the lack of the gray patch in the submarginal part of the hindwing below and by the presence of submarginal silver-pupilled ocelli in M_2-M_3 and M_3-Cu_1 of the under hindwing. There are eleven species presently recognized in this group, the majority of which are centered in southern Mexico, Guatemala and El Salvador.

Figure 35, distribution of the *clinas, hedemanni* and *rogersi* groups of *Cyllopsis.*

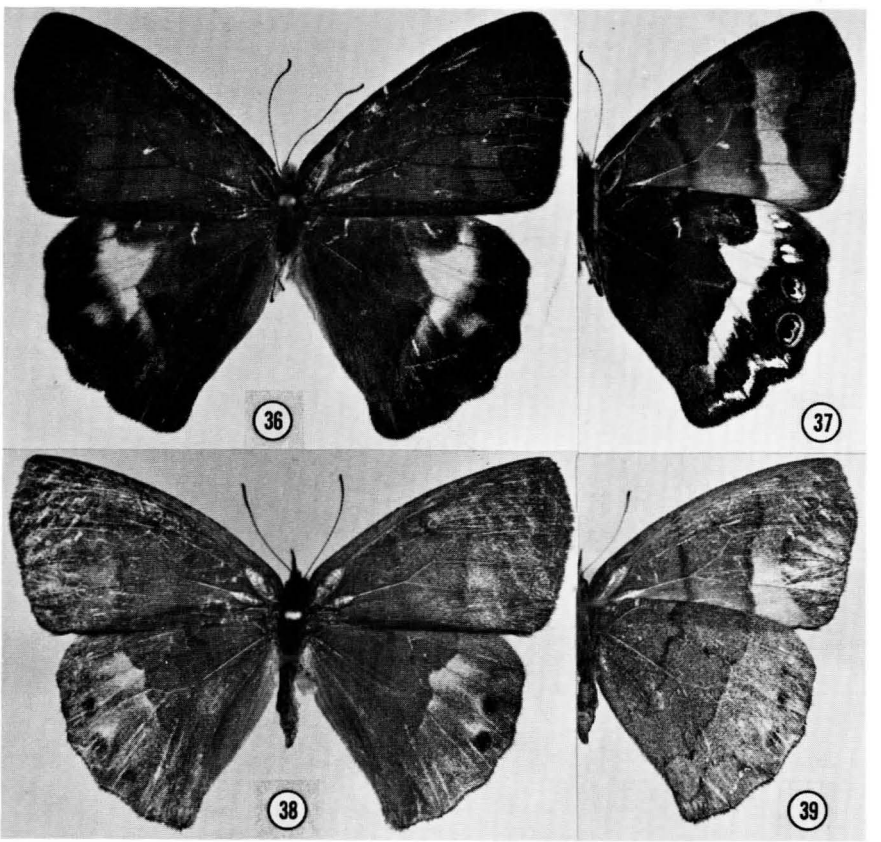
Two major subgroups appear, but the name-bearer of the group subtends them. *C. philodice* and *nelsoni* have pronounced yellow bands on the hindwing below, and *argentella* has a patch of the same color in the anterior part of that wing. The terminalia suggest that *nelsoni* and *philodice* form one subgroup and *argentella* and the remaining species the other.

Cyllopsis philodice (Godman and Salvin), 1878

Figures 36, 37 (♂), 38, 39 (♀), 40 (♂ genitalia)

Euptychia philodice Godman and Salvin, 1878: 264 (Volcán de Irazú, Costa Rica). Type BM.

The male of this species may be distinguished readily by the yellow median patch on the hindwing upper surface, a feature only hinted at in *rogersi* and



Figures 36-39: *Cyllopsis philodice* (Godman & Salvin). 36-37, ♂ upper (36, photo no. 101272-A-9) and under (photo no. 101272-A-10) surfaces; COSTA RICA: SAN JOSE: Cerro de la Muerte (CM). 38-39, ♀ upper (38, photo no. 101272-A-11) and under (39, photo no. 101272-A-12) surfaces; COSTA RICA: SAN JOSE: Mt. Poas (USNM).

especially *argentella*.

Male: Head, thorax and abdomen clothed with dark brown hairs above and somewhat paler ones below. Palpus dark brown above, lighter below. Antenna warm brown above and ringed in warm and dark brown below; club dark brown above, warm brown below. Legs warm brown clothed.

Upper surface of forewing fuscous, slightly paler basad, with the markings of the under surface faintly indicated on this side. Hindwing above dark brown, paler basad, with one or two indistinct submarginal ocelli in M_2-M_3 and M_3-Cu_1 and a yellow to orange-yellow extradiscal patch from near costa to Cu_1-Cu_2, often broadened basad between M_1 and M_3.

Under surface of forewing warm brown with extensive costal and apical reddish shading and with reddish-brown bands as follows: one across middle of cell, (plus a cell-end spot), an extradiscal band just outside cell and a dentate submarginal one somewhat bowed basad at Cu_1; between extradiscal and submarginal bands ground color is pale yellowish at inner margin shading to brownish in M_1M_2. Hindwing below brown tinged with red marginad with a red-brown band across cell, then a yellowish patch bordered proximally and distally with reddish-brown from costa to Cu_2 and diverted basad at M_2; two black, yellow-ringed submarginal ocelli with enclosed silver scaling in M_2-M_3 and M_3-Cu_1, silver submarginal spots in Rs-M_1 and M_1-M_2 and a wavy silver submarginal line from Cu_1 to near anal angle, Fringes above and below gray-brown.

The lengths of the forewings of the males at hand range from 21.0 to 22.5 mm.

The ♂ genitalia as figured, displaying affinities with those of the next several species, but differing in minor, but consistent respects.

There is no distinct androconial patch in *philodice*.

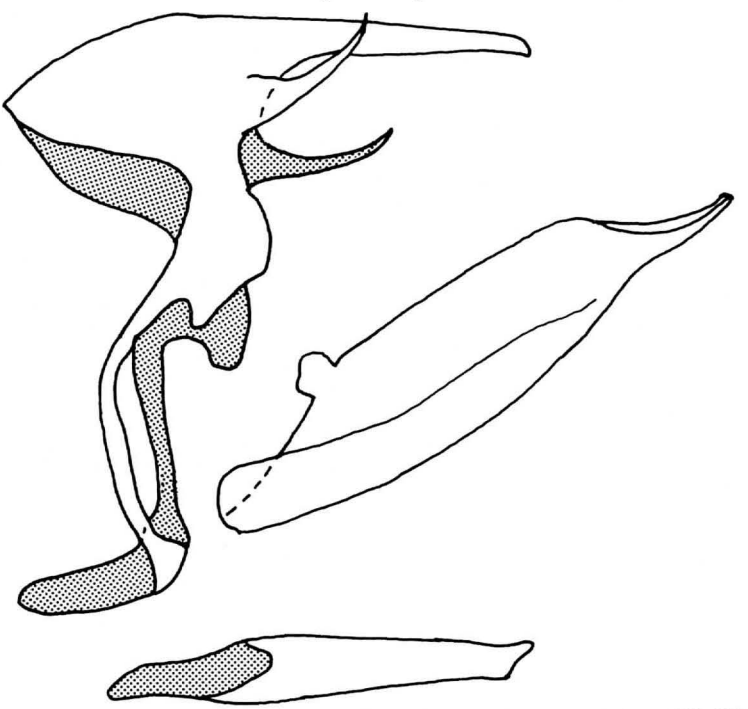


Figure 40: *Cyllopsis philodice* (Godman & Salvin), ♂ genitalia (slide M-1533); COSTA RICA: SAN JOSE: Mt. Poas (CM).

Female: Head, thorax, abdomen and appendages as in ♂. Upper surface of both wings warm brown with under surface markings showing through more clearly; yellow hindwing extradiscal patch more restricted and diffuse than in ♂. Under surface light brown marked as in ♂, but in specimen examined yellow extradiscal band of hindwing only vaguely indicated (apparently more prominent in some specimens in BM).

The length of the forewing of the single ♀ at hand is 22.0 mm.

I have seen only a dozen specimens of this species, all from montane Costa Rica:

COSTA RICA: SAN JOSE: Cerro de la Muerte, 15 mi. SE Cartago, vii, 2♂ (CM); Mt. Poas, iv, vi, vii, 6♂ 1♀ (CM, USNM); Turrialba, vi, 3♂ (USNM).

The type series in the British Museum came from the Volcán Irazú which lies in the middle of the three localities listed above. Later Godman (1901, *in* Godman and Salvin, 1879-1901: 656) listed the capture by Champion of this species at 8000' on the Volcán de Chiriquí. This locality lies at the opposite end of the Sierra de Talamanca and indicates that the species probably occurs in suitable habitats throughout that range.

As indicated above, *C. philodice* is a montane species: I took the two males listed from the Cerro de la Muerte in a cloud forest at an elevation of 2300 m. These specimens were intimately associated with cane (*Chusquea*), and perhaps this butterfly utilizes that plant as a larval food source. The flight of the specimens was rather weak, and the butterflies were not addicted to sunny areas, but rather stayed in the undergrowth.

The known distribution is shown in Fig. **105.**

Cyllopsis nelsoni (Godman and Salvin), 1880

Figures 41, 42 (♂), 43, 44 (♀), 45 (♂ genitalia)

Euptychia nelsoni Godman and Salvin, 1880 [1879-1901]: 91 (Cerro de Zunil, Guatemala). Lectotype BM (see below).

Only the type series of this species seems to be known. The Cerro Zunil locality has turned up a number of things, however, that have been found in montane moist to cloud forests elsewhere in Mexico, Guatemala and El Salvador. In many instances these similar populations have, on closer examination, been shown to be not conspecific, but rather closely related groups of organisms.

Through the courtesy of the British Museum I have been allowed to examine, dissect and describe the specimen referred to by Riley and Gabriel (1924: 38) as the male type, and it is from this specimen and the original description that the following redescription is presented.

Male: Head, thorax and abdomen with olive-brown hairs above and dark grayish-brown ones below. Palpus clothed with olive-brown hairs. Antenna brown above and at tip, checkered brown and tan below. Legs clothed with gray hairs.

Upper surface of forewing dark brown with ochreous overscaling in and posteriad of cell, otherwise unmarked. Hindwing above dark brown, overscaled in proximal three-quarters with ochreous hairs, and bearing four poorly indicated submarginal spots from M_1-M_2 to Cu_1-Cu_2. Fringes grayish-brown.

Under surface of forewing rich dark brown, slightly paler toward inner margin, with dark brown, barely contrasting narrow transcellular and extradiscal bands, one of the same color from apex to inner margin near extradiscal band and a very dark brown marginal line. Under surface of hindwing dark rich brown overscaled in proximal half with ochreous and with a complete straight pale yellow extradiscal band; inner transcellular band and marginal line quite dark brown and narrow; double, yellow-ringed and silver-pupilled black submarginal ocelli in M_2-M_3 and M_3-Cu_1, as well as silver submarginal spots and dentate lines from apex to M_2 and from Cu_1 to 2A. Fringes grayish-brown.

Length of forewing of the single ♂ at hand 20.0 mm.

♂ genitalia as figured, differing from those of the rather closely related *philodice* by the narrower valvae which are more gently tapered to a distal point. There is no discrete androconial mass in this species.

Female: Head, thorax, abdomen and appendages as in ♂. Forewing above as in ♂, but somewhat paler and duller. Hindwing upper surface dull olive-brown in basal half and along inner margin, darker apically with a pale median shade from costa to Cu_1, and bearing fuscous submarginal spots from M_1-M_2 (a hint of such a spot in Rs-M_1) to Cu_1-Cu_2.

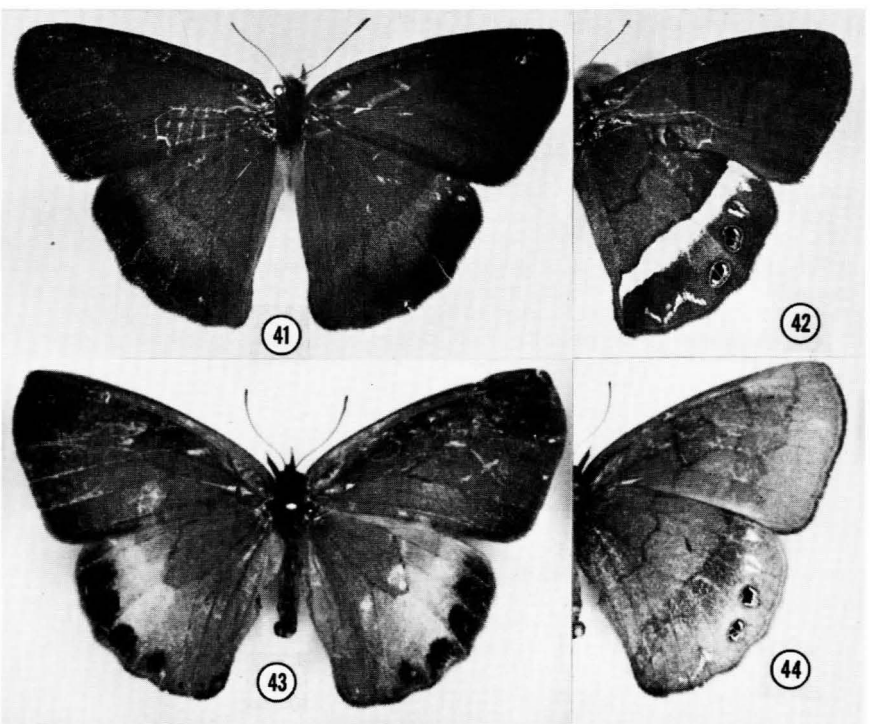
Under surface as in ♂, but much paler, and with the yellow median band completely replaced by a fuscous area; all markings reduced and indistinct.

Godman and Salvin (1879-1901: 91) indicate that the ♀ is about 10% larger than is the ♂.

I am grateful to Mr. Vane-Wright of the BM for sending a photograph of the single ♀ known: this is the basis of the above description and the photographic representation here is from the color print.

I have, as stated before, seen only the one male of this species and photographs of the female. The male is the specimen that Riley and Gabriel (1924: 38) listed as the ♂ type, but this designation by itself does not constitute a lectotype selection. It bears a number of pin labels, as follows:

1. A printed label: "Cerro Zunil/ 4-5000 ft./ Champion".



Figured 41-44: *Cyllopsis nelsoni* (Godman & Salvin). 41-42, Lectotype ♂ upper (41, photo no. 011674-A-11) and under (42, photo no. 011674-A-12) surfaces; GUATEMALA: Cerro de Zunil (BM). 43-44, Syntype ♀ upper (43, BM photo) and under (44, BM photo) surfaces; same locality (BM).

2. A round, red-edged label: "Type/ H. T.".
3. A printed label: "Sp. figured".
4. A printed label: "♂".
5. A printed label: "Godman-Salvin/ Coll. 1904.-1./ B. C. A. Lep. Rhop./ *Euptychia*/ nelsoni,/ G. & S.".
6. A partially printed, partially handwritten (*italics*) label: "B. M. TYPE/ No. Rh. *3287/ Euptychia/ nelsoni/* ♂ *G. & S.*".
7. A partially printed, partially handwritten (*italics*) label: "*SYNTYPE/ Euptychia nelsoni/ Godman & Salvin/* det. P. R. Ackery 1973".
8. A partially printed, partially handwritten (*italics*) label: "Allyn Museum photo/ No. *011674-A-11/12*".
9. A partially printed, partially handwritten (*italics*) label: "Slide No. *1166/* ♂ *genitalia/* + *abdomen/* Lee D. Miller".

This specimen, being the one figured by Godman and Salvin (1879-1901: pl. 107, figs. 7, 8) is certainly the one that they would have considered the type of *nelsoni*. Riley and Gabriel (1924: 38) further tended to validate this particular insect as the Holotype of the species and so labelled it in the BM collection, but their designation is not valid. The Ackery determination label gives the true status of the specimen at this time, one of a series of 10 male and one female Syntypes. Article 74 and its attendant Recommendations in the "Code" (I. C. Z. N., 1964) is quite specific with regard to the designation of one of a series of Syntypes as the Lectotype. Preference in such a matter should be given a figured specimen, and the one figured herein is the same one figured by the original authors. Accordingly, I hereby designate the specimen figured here and in the *Biologia* as the Lectotype of *Euptychia nelsoni* Godman and Salvin and have affixed the following red handwritten label to the specimen: "LECTOTYPE ♂/ Euptychia nelsoni/ Godman'& Salvin/ designated by/ Lee D. Miller, 1974". This action has been done with the encouragement and agreement of the Rhopalocera section personnel of

Figure 45, *Cyllopsis nelsoni* (Godman & Salvin), ♂ genitalia (slide M-1161) of Lectotype.

the British Museum (Natural History), without whose cooperation the task would have been impossible.

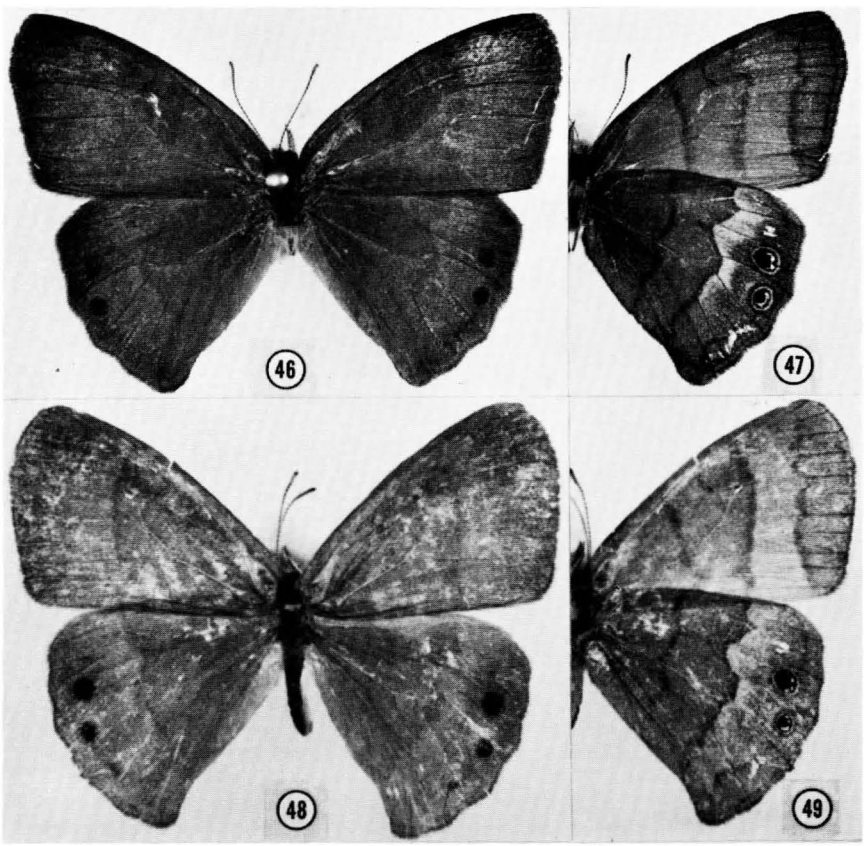
While there are close affinities between this species and *C. philodice,* the two are not conspecific as stated by Chermock (1947: 201, 202, 204). The genitalia are sufficiently distinct to rule out conspecificity, especially in a genus characterized by slight, though consistent, genitalic differences. The species must be extremely local, and evidently no specimens have been taken since the type series.

Cyllopsis argentella (Butler and Druce), 1872

Figures 46, 47 (♂), 48, 49 (♀), 50 (♂ genitalia)

Euptychia argentella Butler and Druce, 1872: 98 ("Costa Rica"). Type BM.

This species is rather closely allied to *C. philodice,* but can be readily distinguished by its lack of the hindwing median yellow patch that defines *philodice,*



Figures 46-49: *Cyllopsis argentella* (Butler & Druce). 46-47, ♂ upper (46, photo no. 101272-A-13) and under (47, photo no. 101272-A-14) surfaces; COSTA RICA: SAN JOSE: Mt. Poas (CM). 48-49, ♀ upper (48, photo no. 101272-B-13) and under (49, photo no. 101272-B-14) surfaces; same data (USNM).

though some females have a trace of this patch, but not to the extent of most female *philodice.*

Male: Head, thorax and abdomen clothed with brown hairs above, tan ones below. Palpus clothed with lateral dark brown hairs, inwardly with tan ones. Antenna ringed with brown and black, club ringed with brown and black proximally; tip dark brown. Legs clothed with tan scales.

Upper surface of forewing warm dark brown, darker costally and marginally; markings of under surface not apparent on this surface. Hindwing above also warm dark brown, slightly darker apically, with markings of under surface at most only faintly indicated except two (or three) fuscous submarginal spots in M_2-M_3 and M_3-Cu_1 (occasionally Cu_1-Cu_2). Fringes warm brown.

Under surface of forewing warm brown, slightly reddened and darkened costad and paler at inner margin, with brown bands from near costa to inner margin across cell, just outside cell and submarginally, a brown cell-end bar and a thin marginal line. Hindwing below warm brown with a reddish tinge bearing brown bands as follows: an undulating one across middle of cell, one just outside cell (with a yellow patch outside it from costa to Cu_1-Cu_2) and a thin marginal line; two black yellow-ringed submarginal ocelli with some silver scaling in M_2-M_3 and M_3-Cu_1, two submarginal silver dots in Rs-M_1 and M_1-M_2 and a wavy silver submarginal line from Cu_1-Cu_2 to 2A-3A. Fringes grayish-brown.

The lengths of the forewings of the ♂ specimens at hand range from 17.0 to 19.5 mm.

The ♂ genitalia are as figured and near those of *philodice,* but differ in the configuration of the valva.

There is no discrete androconial patch, and any androconial scales that may be present are scattered.

Female: Head, thorax, abdomen and appendages as in ♂. Upper surface of

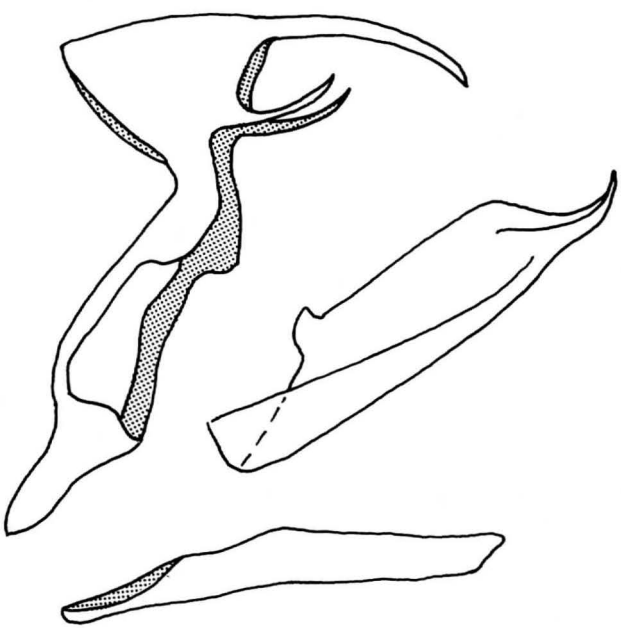


Figure 50, *Cyllopsis argentella* (Butler & Druce), ♂ genitalia (slide M-1536); no locality (CM).

forewing paler than that of ♂ with the markings of the under surface showing through faintly above. Hindwing above also paler than in ♂ with submarginal spots more prominent and with extradiscal band of hindwing showing through as a yellow, irregular band from costa to Cu_1-Cu_2 (this feature very faint to almost absent in some specimens).

Under surface of forewing paler than in ♂. Under surface of hindwing also paler than in ♂, but yellow shade outside extradiscal band, prominent in ♂, is much reduced in ♀.

The lengths of the ♀ forewings range from 18.5 to 20.0 mm. in the specimens at hand.

I have examined 49 specimens of *C. argentella* from the following localities in Costa Rica and Panama:

COSTA RICA: SAN JOSE: Mt. Poas, ii-iv, vi, xii, 7♂ 2♀ (CM, USNM); Tres Rios, 5000', xii, 1♂ (USNM); Cachi, x, 1♀ (USNM). ALAJUELA: Alajuela, xii, 1♂ (USNM).

PANAMA: CHIRIQUI: Volcán Chiriquí, 4900', iii, vi, 8♂ 2♀ (A, AMNH); Boquete, v, 1♀ (A); Cerro Punta, ii, iii, 17♂ 4♀ (AMNH, GBS, JBS).

No data: 1♂ (CM).

Godman and Salvin (1879-1901: 92) record undoubted *argentella* from Volcán Irazú, Costa Rica, and Volcán Chiriquí, Panama, and mention additional material from various Guatemalan localities. Modern material from northern Central and Mexico seems to apply to one or another of the next several species, rather transitional between *argentella* and *suivalens,* instead of to the present one.

This species is found in montane habitats throughout the Sierra de Talamanca throughout central Costa Rica and thence to the Chiriqui. There is no reason to assume that it will occur outside these mountains. It is not an uncommon insect, but seems to be strongly localized. The distribution records for *argentella* are shown in Fig. **105.**

Cyllopsis steinhauserorum, new species

Figures 51, 52 (♂), 53, 54 (♀), 55 (♂ genitalia)

Male: Head and thorax clothed with gray-brown hairs above, grayish ones below; abdomen with gray-brown dorsal scales and grayish-tan ones ventrad. Palpus with intermixed gray-brown and golden scales. Antenna brown above and at tip of club, fulvous ringed with dark brown below. Legs clothed with gray-brown hairs.

Upper surface of forewing warm brown, darker marginad and narrowly overscaled with ochreous costad. Hindwing warm brown above, slightly darker marginad, with three submarginal fuscous spots in M_2-M_3 through Cu_1-Cu_2; extradiscal band of under surface showing through weakly, occasionally area distad of band tinged with russet. Fringes grayish-tan.

Under surface of forewing warm brown, in some specimens overscaled apically with ochreous, paler toward inner margin, and with brown to red-brown transverse markings as follows: a transcellular band, a cell-end bar, and extradiscal band, an anteriorly dentate submarginal band and a single straight marginal line. Hindwing beneath warm brown, occasionally overscaled lightly with ochreous, with a dentate red-brown transcellular band, a dentate extracellular red-brown band with yellow to ochreous distal edging and a yellow shade outside band from costa to Cu_2, two silver-pupilled, yellow-ringed submarginal ocelli in M_2-M_3 and M_3Cu_1, a silver submarginal spot in M_1-M_2, a silver, wavy submarginal line from Cu_1 to 2A and a single marginal line. Fringes grayish-brown.

Length of forewing of Holotype ♂ 19.5 mm., those of the 12 ♂ Paratypes range from 17.5 to 22.5 mm., averaging 19.8 mm.

♂ genitalia as figured, differing chiefly in the shape of the valva from other members of the *argentella-suivalens* complex.

There is no distinct androconial patch in this species.

Female: Head, thorax, abdomen and appendages as in ♂. Upper surface of forewing dark brown with ruddy suffusion in disc and dark markings of under surface represented clearly on this side. Hindwing above dark brown with red suffusion especially heavy in outer third and with extracellular band of under surface represented by an undulating yellow line; submarginal spots as in ♂, but inwardly edged with ochreous.

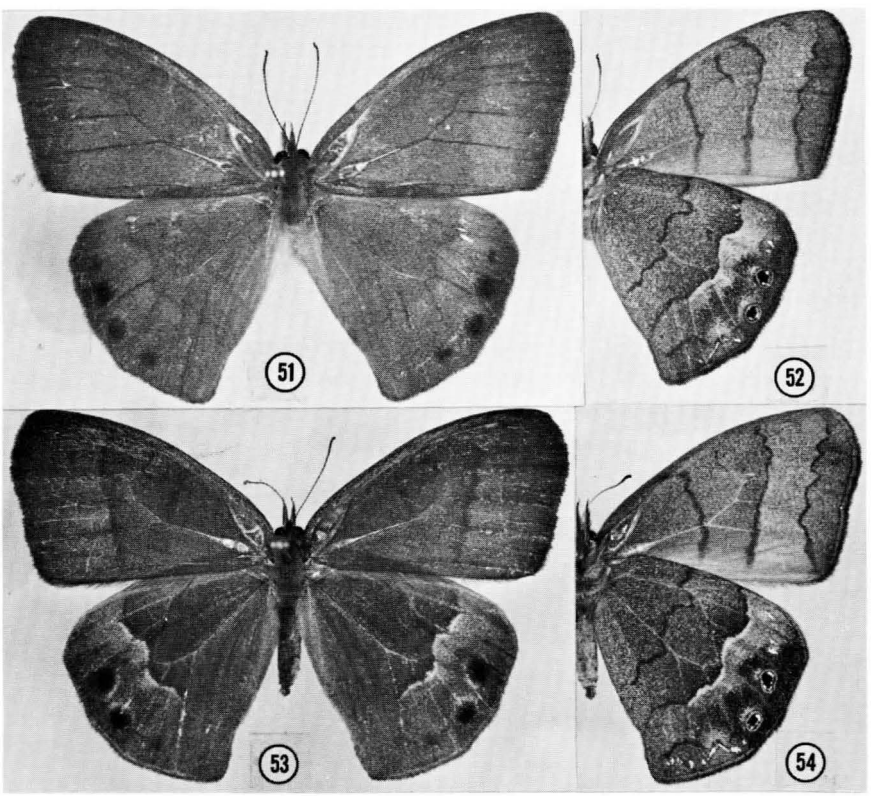
Under surface as in ♂, but ochreous overscaling on both wings more prominent.

Lengths of forewings of the two ♀ Paratypes 21.5 and 22.5 mm.

Descried from 15 specimens, 13 males and two females, from the cloud forest of the Cerro Miramundo near the common boundary of El Salvador, Guatemala and Honduras.

HOLOTYPE ♂: EL SALVADOR: METAPAN: Hda. Montecristo, Cerro Miramundo, 2300 m. in cloud forest, 11.i.1964 (S. & L. Steinhauser); ♂ genitalia slide no. M-2421 (Lee D. Miller).

PARATYPES: 12♂ 2♀, all same locality and collectors as Holotype, iii, v, xi, xii.



Figures 51-54: *Cyllopsis steinhauserorum,* new species. 51-52, Holotype ♂ upper (51, photo no. 110773-9) and under (52, photo no. 110773-10) surfaces; EL SALVADOR: METAPAN: Hda. Montecristo, Cerro Miramundo (A). 53-54, Paratype ♀ upper (53, photo no. 011674-A-13) and under (54, photo no. 011674-A-14) surfaces; same data (A).

Disposition of type material: The entire type series in collection (A), but some specimens will be distributed to other museums later.

This species is named for Stephen and Levona Steinhauser in recognition of their great contribution in adding to our knowledge of the El Salvadorian butterfly fauna. The material they have gathered, especially at Cerro Miramundo, will contain many new species and unusual records once it is fully worked.

The present species is the second new taxon described from the Cerro Miramundo: the first was the hesperiid *Zestusa levona* Steinhauser. This fascinating area has yielded many other things not even suspected by previous collectors in El Salvador, such as the riodinid *Hermathena oweni* Schaus and the exceedingly rare *Nymphalis cyanomelas* (Doubleday). Such captures of these only serve to

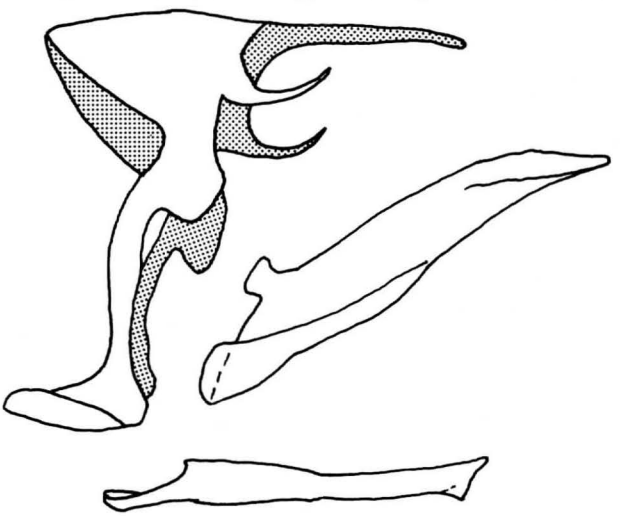
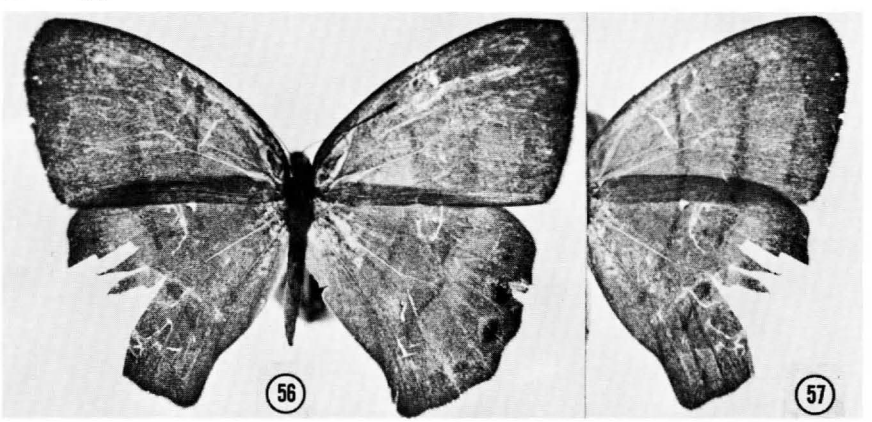


Figure 55, *Cyllopsis steinhauserorum,* new species, ♂ genitalia (slide M-2421) of Holotype.



Figures 56-57, *Cyllopsis* sp. near *steinhauserorum,* ♀ upper (56, photo no. 043074-5) and under (57, photo no. 043074-6) surfaces; GUATEMALA: CHIMALTENANGO: Quisache, Mpio. Acatenango (AMNH). For discussion of this specimen see text.

emphasize the imperative need to collect the Central American cloud forest before they are cut down by the native farmers.

C. stenhauserorum is another species like *schausi, guatemalena, suivalenoides,* etc. that are transitional between the previously described *argentella* and *suivalens.* This complex of montane satyrids seems to occur in small, isolated populations, each of which has gone its own evolutionary direction. The present species is the only one so far definitely known to be a cloud forest dweller, but I suspect others will come to light as collecting in such localities proceeds.

The distribution is shown in Fig. **105.**

There is a single female in the collection AMNH which may refer to either this species or to *pallens.* The upper surface pattern is darker than that of *pallens,* but not so suffused with red as in El Salvadorian *steinhauserorum.* The specimen also could represent another species altogether in this group that has so actively speciated in the southern Mexico-Guatemala-El Salvador area. It is certainly not *suivalenoides* which also flies in the area. The data for this specimen are as follows: GUATEMALA: CHIMALTENANGO: Quisache, Mpio. Acatenango, xi, 1♀ (AMNH). This specimen is figured in Figs. **56** and **57**.

Cyllopsis guatemalena, new species

Figures 58, 59 (♂), 60, 61 (♀), 62 (♂ genitalia)

Male: Head and thorax with brown hairs above and below; abdomen with brown hairs above, tan ones below. Palpus clothed with outer brown and inner tan hairs. Antenna ringed with brown and black on shaft; club black above and at tip and brown below in proximal part. Legs clothed with brown outer and tan inner hairs.

Upper surface of forewing warm, slightly reddish, brown, darker marginad and narrowly costad, with bands of under surface showing through weakly. Hindwing above warm, slightly reddish, brown, darker apically and marginally, with extradiscal band showing through vaguely and two (rarely three) submarginal fuscous spots in M_2-M_3 and M_3-Cu_1 (rarely in Cu_1-Cu_2). Fringes grayish-brown.

Under surface of forewing dull brown, paler posteriad and between second and third (from base) transverse bands; slightly reddish brown bands from costa to 2A, one across cell, one just outside cell and one submarginally, diverted posteriad toward margin, and a thin line at margin; brown bar at end of cell. Hindwing below dull brown with a somewhat dentate band across cell, another just outside cell (with a fulvous to orange outer portion from Rs to Cu_1 or Cu_2), two small narrowly yellow-ringed black ocelli with double pupils in M_2-M_3 and M_3-Cu_1, two silver submarginal spots in Rs-M_1 and M_1-M_2 which may be obsolete and a partly silvered, wavy submarginal line from Cu_1-Cu_2 to the anal angle. Fringes brownish-tan.

Length of forewing of Holotype ♂ 20.0 mm., those of six ♂ Paratypes range from 18.5 to 21.5 mm., averaging 20.4 mm.

♂ genitalia as figured and characterized by the configuration of the valva taken in combination with the relative shape and size of other elements.

There is no definite androconial patch in this species.

Female: Head, thorax, abdomen and appendages as in ♂. Upper surface of both wings duller brown than in ♂ with the markings of the under side showing through more clearly. Under surface as in ♂, but lighter and duller.

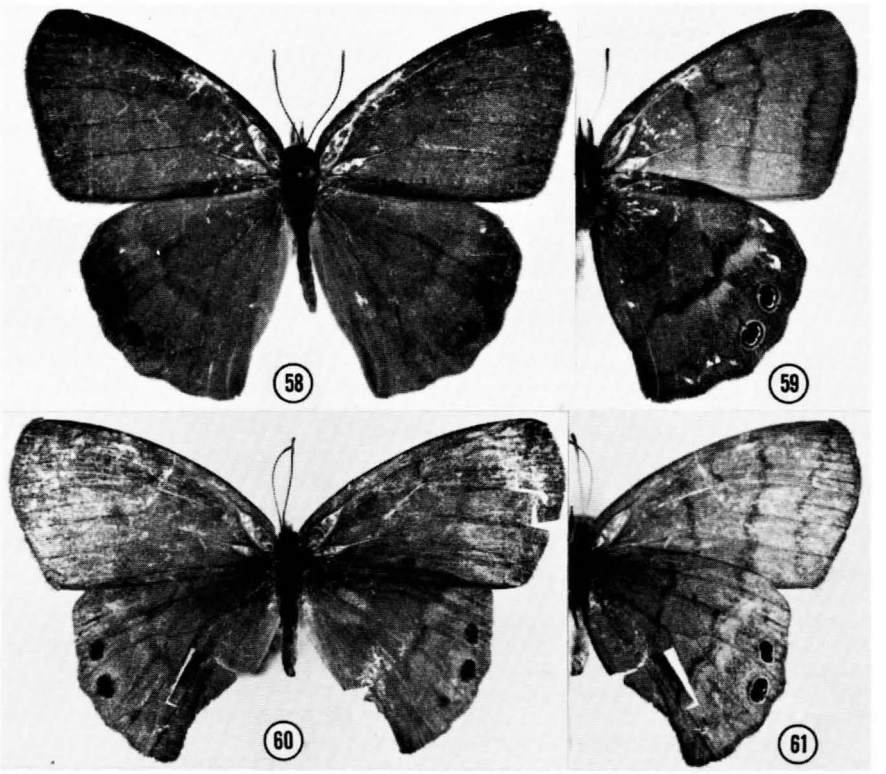
Length of forewing of the single ♀ Paratype 22.0 mm.

Described from eight specimens, seven males and one female, from northern Guatemala.

HOLOTYPE ♂: GUATEMALA: [QUETZALTENANGO]: Volcán Santa Maria, July, Schaus and Barnes collection.

PARATYPES: GUATEMALA: same locality and collectors as Holotype, vi, vii, x, 3♂ 1♀; "Guatemala", 2♂. No data, 1♂.

Disposition of type material: Holotype ♂, four ♂ and the single ♀ Paratypes (USNM); two ♂ Paratypes (CM). These series may be distributed later.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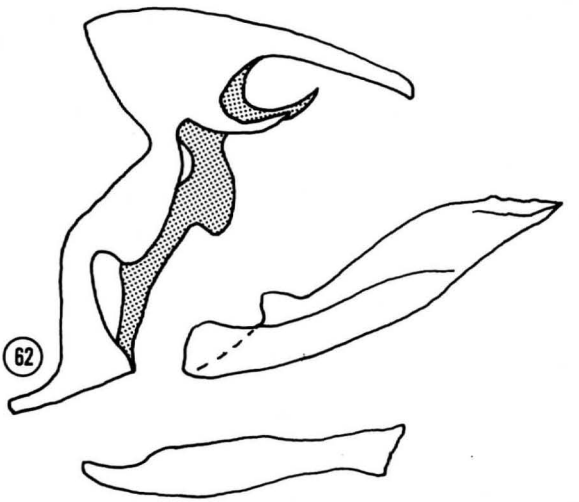
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The type-series of this species was included in the series of *C. argentella* in both CM and USNM, and I suspect that other specimens will be found in other collections masquerading as *argentella*. This species or *schausi* may be the insect referred to by Godman and Salvin (1879-1901: 92) as Guatemalan *argentella* of larger size and with reduced yellow on the hindwing below, but genitalically and superficially these butterflies are nearer *C. suivalens, steinhauserorum* and *suivalenoides*.

The known distribution of this species is shown on the map (Fig. **105**).

Cyllopsis diazi, new species

Figures 63, 64 (♂), 65, 66 (♀), 67 (♂ genitalia)

Male: Head, thorax and abdomen clothed above with brownish-gray hairs, below with brownish-tan ones. Palpus clothed with a mixture of brown, gray and a few golden hairs. Antenna brown above narrowly ringed with yellow, fulvous below narrowly ringed with brown; tip of club dark blackish-brown. Legs clothed with brownish-gray hairs.

Forewing upper surface golden brown shading to fuscous at apex and along margin with transcellular and extracellular bands showing through on this surface; androconial area (see below) somewhat darker than ground color. Hindwing above also golden brown, slightly darker than forewing, but not noticeably darkened marginad, with extradiscal band of under surface well delimited; three submarginal fuscous spots in M_2-M_3, M_3-Cu_1 and Cu_1-Cu_2, the last being least well indicated. Fringes gray-brown.

Under surface of forewing somewhat reddish brown with well-developed and straight transcellular, extradiscal and submarginal reddish-brown bands, a reddish-brown spot at end of cell and a narrow marginal line of the same color. Hindwing below also somewhat reddish-brown, tan just beyond extradiscal band; transcellular band reddish-brown and straight, extracellular band fairly straight and reddish-brown proximad and ochreous distad; two black submarginal ocelli well developed and having ochreous rings and C-shaped silver pupils in M_2-M_3 and M_3-Cu_1; silver submarginal markings well developed. Fringes reddish-brown in anterior half of forewing, grayish-red on remainder of wing.

Length of forewing of Holotype ♂ 18.5 mm., those of the ♂ Paratypes range from 18.0 to 20.0 mm., averaging 18.9 mm.

♂ genitalia as figured and distinguished from others in the group by the pronounced curve of the uncus. The valva rather closely resembles that of *schausi*

Androconial patch consisting of a few scales along the cubital stem and in the proximal parts of Cu_1 and Cu_2 on the forewing. The scales were not examined, but probably resemble those of *C. suivalens* (Figs. **102-104**) and *suivalenoides* (Figs. **90-92**).

Female: Head, thorax, abdomen and appendages as in ♂. Upper surface as in ♂, but under surface markings more prominent than in ♂; area outside extradiscal bands of both wings shaded with pinkish-tan (the specimens from Tepoztlán is more extensively shaded with fulvous on both wings).

Under surface differing from that of ♂ by being paler, not so rusty colored and by submarginal ocelli being smaller.

Lengths of forewings of the two ♀ Paratypes 19.5 and 20.5 mm.

Described from seven specimens, five males and two females, from the western

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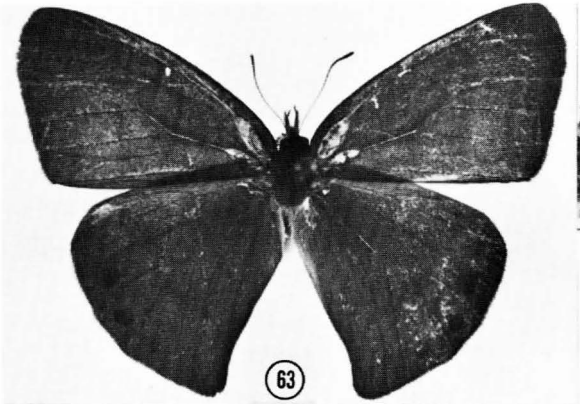
Figures 58-62: *Cyllopsis guatemalena,* new species. 58-59, Holotype ♂ upper (58, photo no. 101272-B-3) and under (59, photo no. 101272-B-4) surfaces; GUATEMALA: QUETZALTENANGO: Volcán Santa Maria (USNM). 60-61, Paratype ♀ upper (60, photo no. 101272-B-5) and under (61, photo no. 101272-B-6) surfaces; same data (USNM). 62, ♂ genitalia of Paratype: (slide M-1535); "Guatemala" (CM).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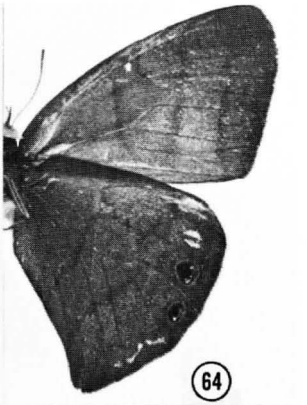
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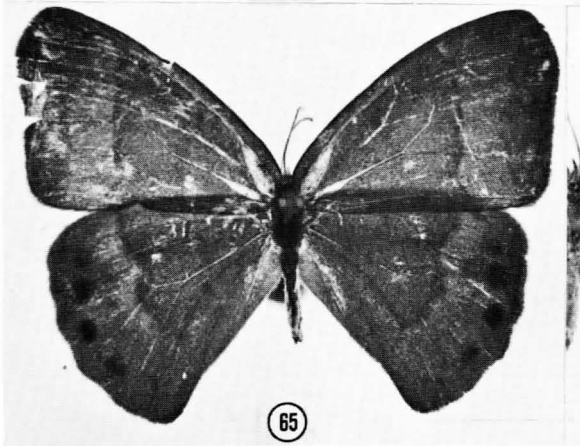
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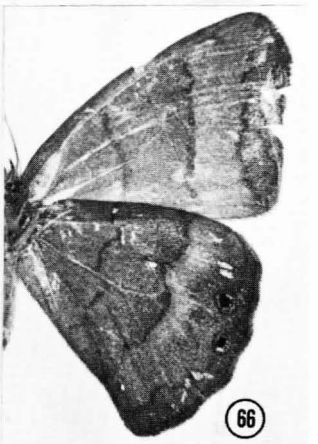
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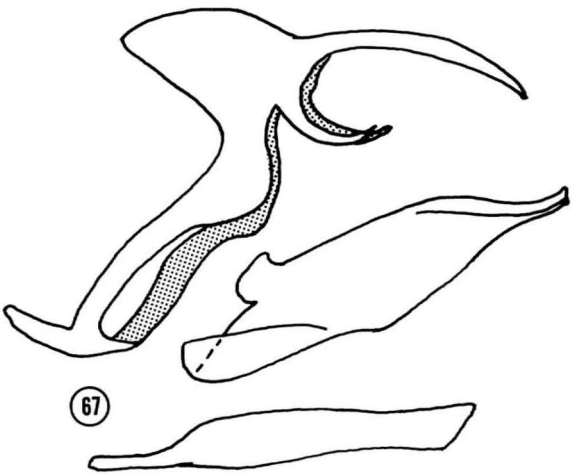
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Figures 63-67, *Cyllopsis diazi,* new species. 63-64, Holotype ♂ upper (63, photo no. 043074-A-15) and under (64, photo no. 043074-A-16) surfaces; MEXICO: GUERRERO: Omilteme (A). 65-66, Paratype ♀ upper (65, photo no. 043074-A-17) and under (66, photo no. 043074-A-18) surfaces; MEXICO: MORELOS: Tepoztlán (A). 67, ♂ genitalia (slide M-2566) of Paratype; MEXICO: GUERRERO: Omilteme (A).

mountains of Mexico.

HOLOTYPE ♂: MEXICO: GUERRERO: Omilteme, xi.1960 (T. Escalanate); ♂ genitalia slide No. M-2565 (Lee D. Miller).

PARATYPES: Same locality as Holotype, 4♂. MEXICO: MORELOS: Tepoztlán, vii, 1♀. MEXICO: Malinalco, viii, 1♀.

Disposition of type material: Entire type-series is in collection (A).

This species is named for Sr. Alberto Diaz Frances of Mexico, D. F., who has aided our search for Mexican butterfly records immensely. He collected the illustrated female of this species.

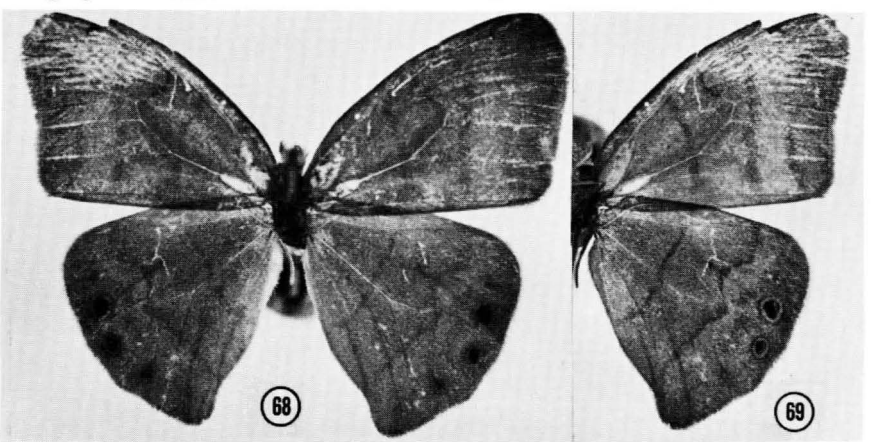
C. diazi is the western Mexican representative of the Guatemalan *C. guatemalena* and *schausi,* but it is distinct from either. The present insect most closely resembles *guatemalena* superficially, but its genitalia are closer to those of *schausi.* The strongly curved uncus will separate *diazi* from either.

A specimen possibly representing this species is in the collection AMNH. It is a male, but lacks the abdomen, so it cannot be checked genitalically. The upper surface is paler than that of *diazi* from Guerrero, and the under surface reddish suffusion is weaker. The markings of the under surface are a bit better developed than are those of typical *diazi.* The specimen is geographically far removed from other *diazi* (if this is what the specimen is), and bears the following data: MEXICO: SINALOA: Sinaloa, March-April, 1♂ (AMNH). It is shown in Figs. **68** and **69**.

Cyllopsis schausi, new species

Figures 70, 71 (♂), 72, 73, (♀), 74 (♂ genitalia)

Male: Head and thorax clothed with brown hairs above and gray-brown ones below; abdomen with brown hairs above, tan ones below. Palpus with brown outer and gray inner hairs. Antenna and proximal part of club ringed with brown and

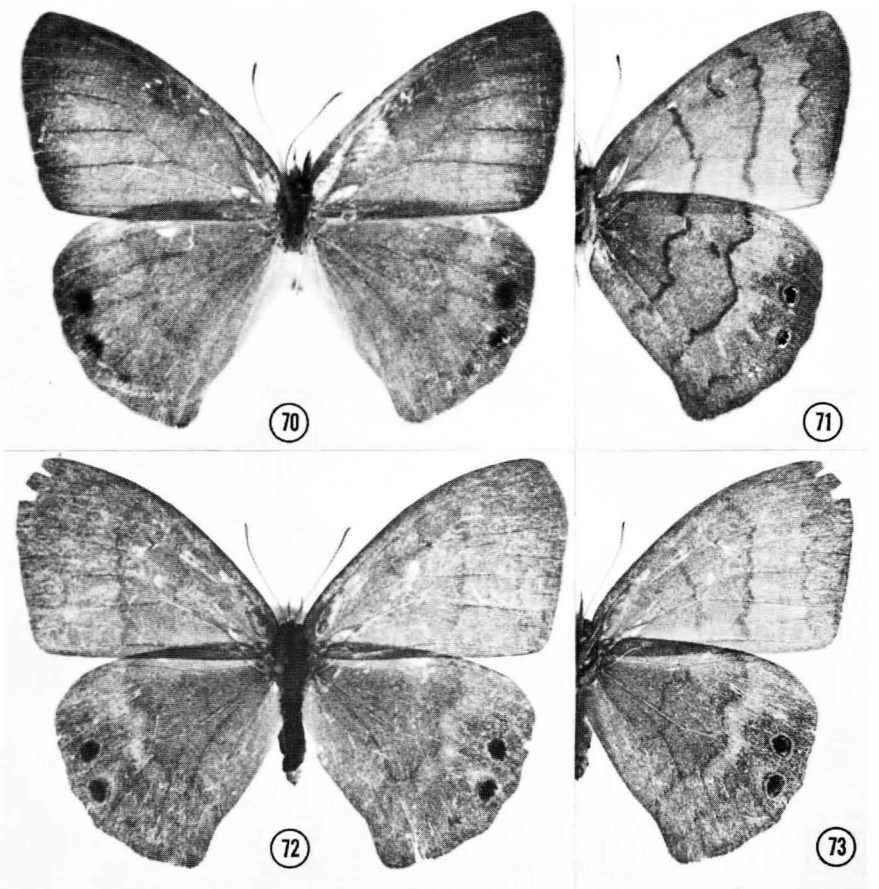


Figures 68-69, *Cyllopsis* sp. near *diazi,* ♂ upper (68, photo no. 043074-3) and under (69, photo no. 043074-4) surfaces; MEXICO: SINALOA: Sinaloa (AMNH). For discussion of this specimen see text.

black; tip of club black. Legs clothed with grayish-tan scales.

Upper surface of forewing warm brown, only slightly darker marginad; markings of under surface not visible above. Hindwing above warm brown, slightly darker marginad, the markings of under side not showing through except fuscous submarginal spots in M_2-M_3 and M_3-Cu_1 (rarely a third in Cu_1-Cu_2). Fringes brownish-gray.

Forewing below warm light brown, paler at inner margin, with a slightly reddish-brown band across cell, thence diverted basad to inner margin, one around end of cell, a slightly dentate submarginal band and a straight brown marginal line. Hindwing below warm brown, paler and occasionally tinged with yellow between the extradiscal band and the submarginal markings, with two strongly dentate bands, one across cell and one extradiscal, both reddish-brown, two small, yellow-ringed submarginal ocelli in M_2-M_3 and M_3Cu_1, both with double silver



Figures 70-73: *Cyllopsis schausi*, new species. 70-71, Holotype ♂ upper (70, photo no. 101272-B-7) and under (71, photo no. 101272-B-8) surfaces: GUATEMALA: QUETZALTENANGO: Volcán Santa Maria (USNM). 72-73, Paratype ♀ upper (72, photo no. 043074-1) and under (73, photo no. 043074-2) surfaces; GUATEMALA: SACATEPEQUEZ: Antigua (A).

pupils, and in some specimens silver submarginal dots in Rs-M_1 and M_1-M_2 and a brown marginal line with small silver flecks from Cu_1-Cu_2 to tornus. Fringes grayish-tan.

Length of forewing of Holotype ♂ 21.0 mm., those of the seven ♂ Paratypes range from 19.5 to 21.0 mm., averaging 20.2 mm.

♂ genitalia as figured, similar to those of *guatemalena,* but differing in the more blunted, upturned tip of the valva.

There is no definite androconial patch.

Female: Head, thorax, abdomen and appendages as in ♂. Upper surfaces of both wings dull fuscous flushed with rusty coloration in the discs of both wings; extradiscal bands of both wings showing through prominently on this surface and edged with rusty; submarginal black spots in M_2-M_3 and M_3-Cu_1 of hindwing prominent and ringed inwardly with fulvous.

Under surface of wings as in ♂, but paler.

Length of forewing of the single ♀ Paratype 21.0 mm.

Described from nine specimens, eight males and one female, from montane Guatemala.

HOLOTYPE ♂: GUATEMALA: [QUETZALTENANGO]: Volcán Santa Maria, Oct. (Schaus and Barnes colln.); ♂ genitalia preparation No. M-1719 (Lee D. Miller).

PARATYPES: all GUATEMALA: same locality as Holotype, vii, xi, 6♂. SACATEPEQUEZ: Antigua, 5000', vii, 1♀. "Guatemala", 1♂.

Disposition of type material: Holotype ♂ and six ♂ Paratypes (USNM); one ♀ Paratype (A); one ♂ Paratype (CM).

The species is named for the late Dr. William Schaus, of the National Museum of Natural History, who was responsible for collecting much of the type-series.

This species is another in the *argentella* complex which has speciated rather wildly throughout southern Mexico, Guatemala and El Salvador. They seem to be systematically nearer *suivalens* than *argentella,* but are distinct from either. One of the male Paratypes of the present species was tentatively identified as *hilaria* in the USNM collection, but *hilaria* is a different insect altogether. C

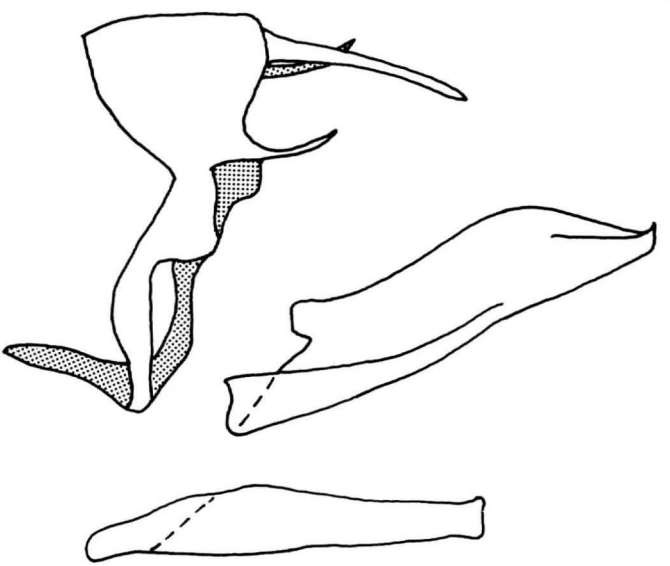


Figure 74, *Cyllopsis schausi,* new species, ♂ genitalia (slide M-1973) of Paratype: "Guatemala" (CM).

schausi and *guatemalena* are apparently the insects referred to as aberrant *argentella* by Godman and Salvin (1879-1901: 92). The immediate superficial characters that separate *guatemalena* and *schausi* are found in the bands of the hindwing below: in the former these bands are straight or undulating, and in *schausi* they are definitely dentate.

Both *schausi* and *guatemalena* are montane insects, as is typical for the group. The distributions of both species are shown on the map (Fig. **105**).

Cyllopsis pallens, new species

Figures 75, 76 (♂), 77, 78 (♀), 79 (♂ genitalia)

Male: Head, thorax and abdomen clothed with brownish-gray hairs above, tan ones below. Palpus brownish-gray outwardly, buff internally. Antenna ochreous narrowly ringed with brown above and below; tip of club blackish-brown. Legs clothed with grayish-tan hairs.

Forewing above dull warm brown shaded fuscous apically and marginad with transverse bands of under surface showing through on this side weakly. Hindwing above dull warm brown with transverse bands showing through weakly; fuscous shading at apex and narrowly along margin, with fuscous submarginal spots prominent in M_2-M_3 and M_3-Cu_1 (a hint of such a spot in Cu_1-Cu_2 in some). Fringes grayish-brown.

Under surface of forewing tan, darker along costa, at apex and narrowly along margin, with brown, straight transverse bands in cell, just outside it and submarginally; brown bar at end of cell and two thin brown marginal lines. Hindwing below also dull brown, buff between extradiscal band and submarginal area; submarginal black ocelli with buff rings and silver pupils in M_2-M_3 and M_3-Cu_1; brown transcellular and extracellular bands rather straight for group; silver submarginal markings much reduced. Fringes grayish-tan.

Length of forewing of Holotype ♂ 18.0 mm., those of the two ♂ Paratypes 17.5 and 18.0 mm.

♂ genitalia as figured: rather closely resembling the genitalia of *suivalens,* but valva drawn to a more gentle, slightly upturned point.

Female: Agrees well with ♂, except paler and hindwing extradiscal band more prominently indicated on upper surface.

Length of forewing of the single ♀ Paratype 19.5 mm.

Described from four specimens, three males and one female, from Guatemala.

HOLOTYPE ♂: GUATEMALA: AMATITLAN: Palin, Dec. (Schaus and Barnes colln.).

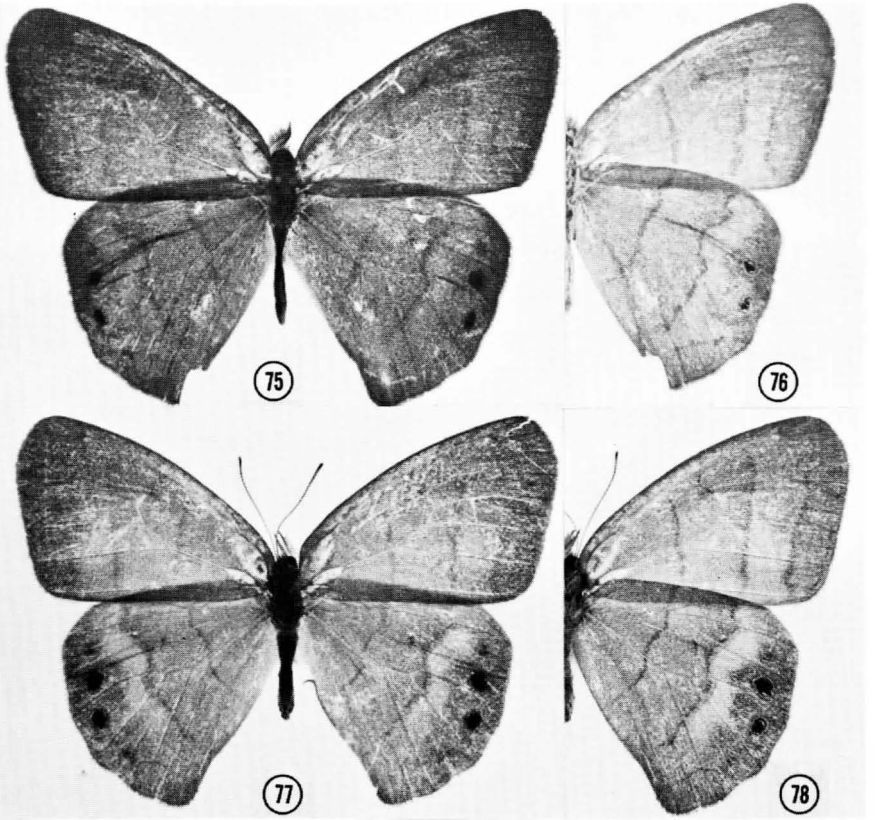
PARATYPES: Same locality as Holotype, xi, 1♀; "Guatemala", 2♂.

Disposition of type material: Holotype ♂ and one ♀ Paratype (USNM); two ♂ Paratypes (CM).

I should have preferred to have made either of the two Carnegie Museum males the Holotype of this species, since they were in better condition, but neither had data beyond a vague "Guatemala" designation. I am fairly sure that all of these specimens were collected by Schaus and Barnes at the Palin location, but I cannot be certain at this late date.

The rather uniform pale coloration serves to separate this species from its relatives, and the straight uncus separates this species from the other relatively unmarked species that are found in Mexico.

Figures 75-79: *Cyllopsis pallens,* new species. 75-76, Holotype ♂ upper (75, photo no. 043074-B-7) and under (76, photo no. 043074-B-8); GUATEMALA: AMATITLAN: Palin (USNM). 77-78, Paratype ♀ upper (77, photo no. 043074-B-10) and under (78, photo no. 043074-B-9) surfaces; same data (USNM). 79, ♂ genitalia (slide M-1540) of Paratype; "Guatemala" (CM).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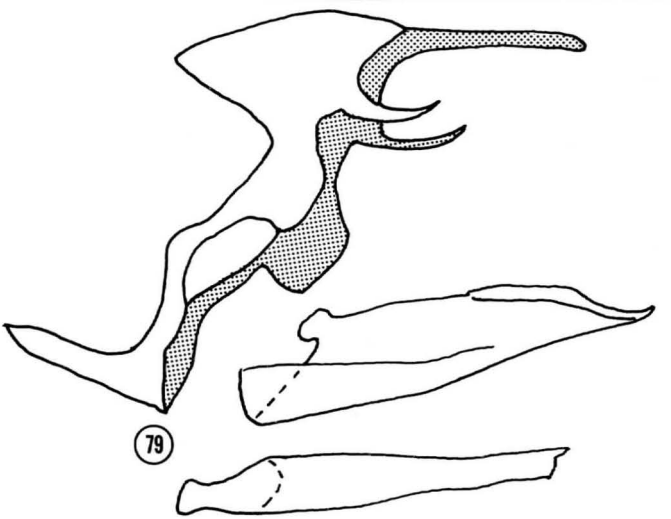
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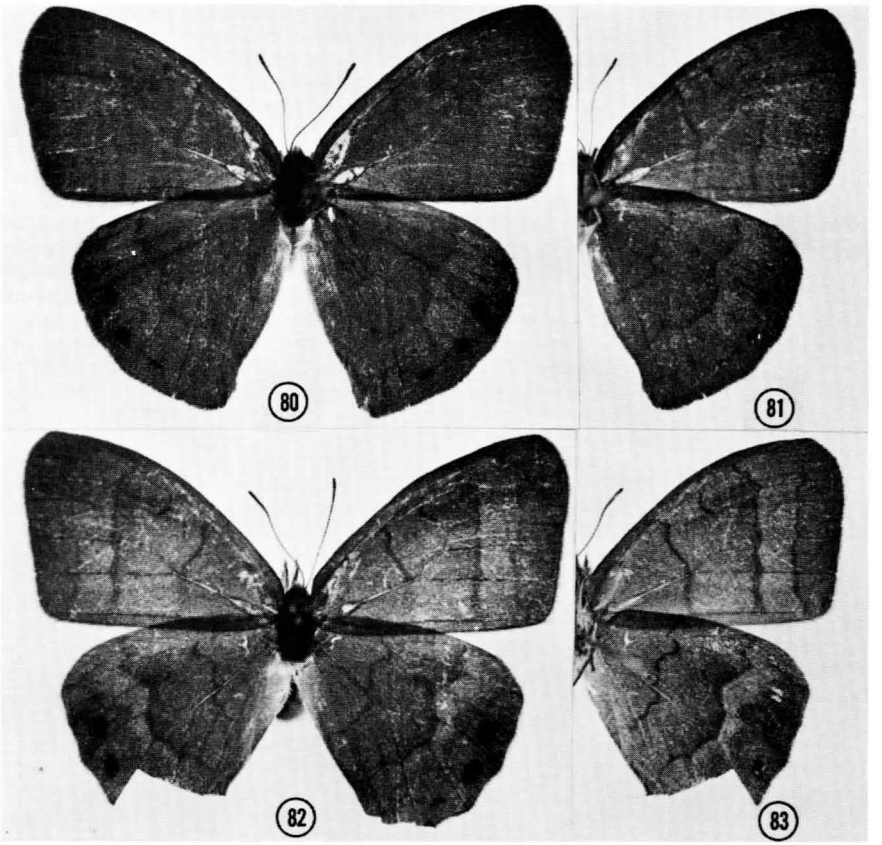
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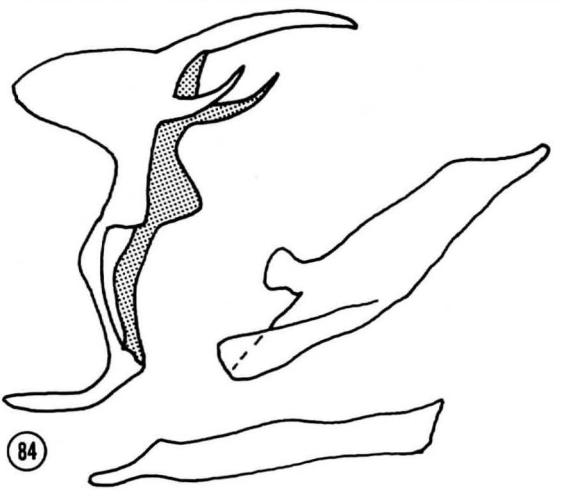
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Cyllopsis parvimaculata, new species

Figures 80, 81 (♂), 82, 83 (♀), 84 (♂ genitalia)

Male: Head and thorax clothed with warm brown hairs above, grayish-brown ones below; abdomen with warm brown upper and tan under hairs. Palpus clothed with brown upper and tan lower hairs. Antennal shaft brown above, fulvous and brown ringed below; shaft brown above, fulvous below and tip dark brownish-black. Legs clothed with brown scales.

Forewing upper surface warm brown, slightly darker marginad, otherwise unmarked. Hindwing above warm brown, somewhat darker apically, with well developed submarginal fuscous spots in M_2-M_3 and M_3-Cu_1 and a trace of another in Cu_1-Cu_2; extradiscal band of under surface indicated above, occasionally by a weak reddish shade.

Forewing below pale warm brown with reddish-brown markings as follows: a straight transcellular band, a cell end bar, an even extracellular band, a slightly undulate submarginal band and a single marginal line; ground color slightly paler between extradiscal and submarginal bands. Hindwing below warm light brown with a serrate transcellular reddish-brown band, an undulate extradiscal band that is inwardly reddish-brown and outwardly ochreous to yellowish, two very small yellow-ringed and silver-pupilled black submarginal ocelli in M_2-M_3 and M_3-Cu_1, some silver submarginal markings from apex to Cu_2-2A and a double marginal line. Fringes above and below grayish-brown.

Length of forewing of Holotype ♂ 18.5 mm., those of the five ♂ Paratypes range from 18.0 to 20.0 mm., averaging 19.1 mm.

♂ genitalia as figured, characterized by narrow, tapered valvae.

There is no androconial patch on the forewing in this species, as is true of most other species in the group.

Female: Head, thorax, abdomen and appendages as in ♂. Upper surface with discal area laved with fulvous and markings of under surface showing through as rusty bands on both wings. Under surface as in ♂, but costal and apical portions of forewing overscaled with yellow.

Length of forewing of the single ♀ Paratype 20.0 mm.

Described from seven specimens, six males and a single female, from the Mexican highlands.

HOLOTYPE ♂: MEXICO: MEXICO: Tenancingo, vi.1968 (T. Escalante); ♂ genitalia slide No. M-2564 (Lee D. Miller).

PARATYPES: all same locality as Holotype: 1♂, iii.1964; 1♂, iii.1968; 3♂ 1♀, same date as Holotype (all T. Escalante).

Disposition of type material: The entire type series is in collection (A), but some ♂ Paratypes may be distributed later.

The name refers to the rather inconspicuous markings on the under side of this insect.

This species represents *C. guatemalena* and *schausi* in central Mexico. The specimens stood in Dr. Escalante's collection as undetermined insects near *argentella,* and the butterfly is indeed one of the furthest north representatives of that complex. The diminution of the ocelli on the hindwing below indicates that this species stands rather near the junction of the large-ocellated species and the more conventional "gray-patch" portion of the genus.

Thus far I have seen no similar specimens from elsewhere in Mexico, and the Tenancingo population appears to be an outlying isolate of its group. This

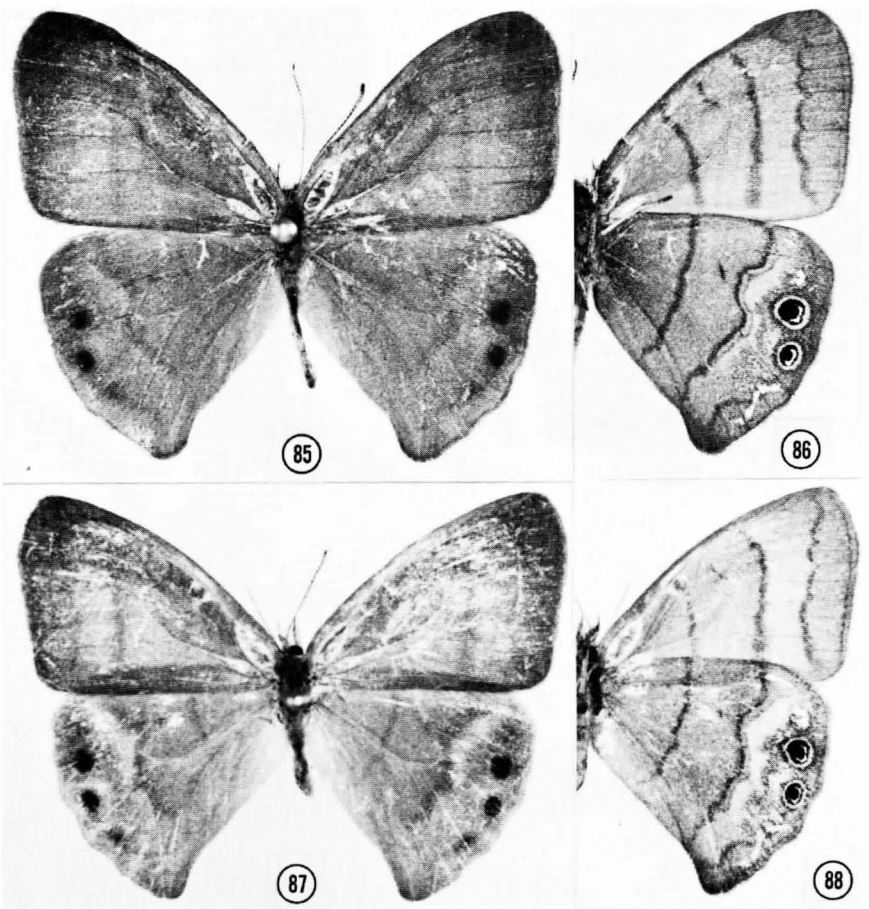
Figures 80-84: *Cyllopsis parvimaculata,* new species. 80-81, Holotype ♂ upper (80, photo no. 043074-B-1) and under (82, photo no. 043074-B-2) surfaces; MEXICO: MEXICO: Tenancingo (A). 82-83, Paratype ♀ upper (82, photo no. 043074-B-3) and under (83, photo no. 043074-B-4) surfaces; same data (A). 84, ♂ genitalia (slide M-2564) of Holotype.

situation is not particularly surprising in view of the several other members of the complex from isolated montane areas throughout southern Mexico and northern Central America.

Cyllopsis suivalenoides, new species

Figures 85, 86 (♂), 87, 88 (♀), 89 (♂ genitalia), 90-92 (androconial scales)

This species masquerades as *suivalens* in all of the collections in which I have found it. In Oaxaca it is by far the commonest and widely spread species within the group, although some examples of *suivalens* (subspecies *escalantei*) are also found there.



Figures 85-88: *Cyllopsis suivalenoides,* new species. 85-86, Holotype ♂ upper (85, photo no. 101272-A-193 and under (86, photo no. 101272-A-20) surfaces; MEXICO: OAXACA: El Portillo del Rayo, Candelaria (A). 87-88, Paratype ♀ upper (87, photo no. 101272-B-1) and under (88, photo no. 101272-B-2) surfaces; same data (A).

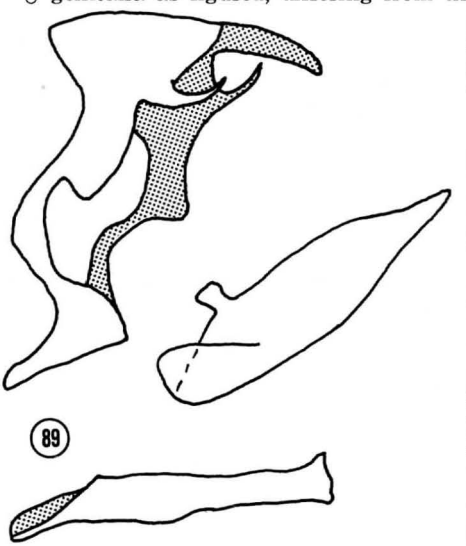
Male: Head and thorax clothed with olive-brown hairs above and below; abdomen clothed with olive-brown hairs above, olive-tan ones below. Palpus clothed above with olive-brown hairs, below with outer brown and inner tan hairs. Antenna ringed with brown and black above, black and yellow below; club black above, yellow below, with tip reddish-brown. Legs clothed with outer brown and inner tan hairs.

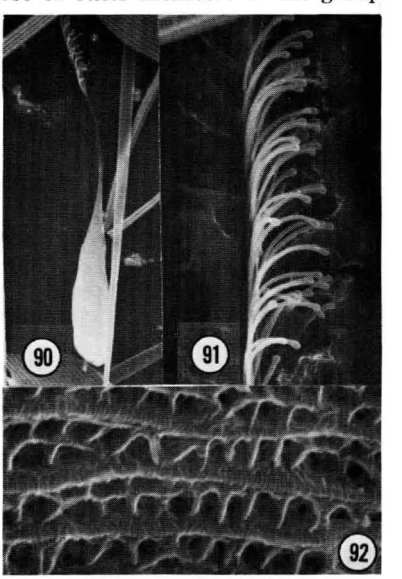
Upper surface of forewing brown with olive overtones, fuscous apically and marginad, with markings of under surface showing through weakly above; androconial scaling prominent along cubital stem and basal halves of Cu_1 and Cu_2 (see below). Hindwing above brown with an olive cast, darker at apex and narrowly marginad, with extradiscal band of under surface indicated faintly and two fuscous blind submarginal ocelli in M_2-M_3 and M_3-Cu_1 (a third in Cu_1-Cu_2 faintly indicated in more than half of the specimens before me, including the Holotype). The submarginal ocelli may be, but usually are not, edged basally with fulvous. Fringes dark brown, grayish at the tips.

Under surface of forewing warm reddish-tan, shading to grayish-tan at inner margin and darker marginad, with reddish-brown bars across middle of cell, extradiscally and submarginally, all bands terminating at Cu_2, two narrow reddish-brown marginal lines and a short brown dash at end of cell. Hindwing below warm reddish-tan, darker marginad, with a reddish-brown wavy band from costa to inner margin across cell, an undulating band just outside cell that is reddish-brown proximad and widened to include a pale fulvous outer component from Rs-M_1 to Cu_2, a faint reddish-brown submarginal band, two black submarginal ocelli with yellow rings and C-shaped silver outer crescents in M_2-M_3 and M_3-Cu_1, two silver submarginal spots in Rs-M_1 and M_1-M_2 and a wavy silver submarginal line from Cu_1-Cu_2 through Cu_2-2A. Fringes of both wings gray.

Length of forewing of Holotype ♂ 19.0 mm., those of the ♂ Paratypes range from 17.5 to 19.5 mm., averaging 18.5 mm.

♂ genitalia as figured, differing from those of other members of the group





Figures 89-92: *Cyllopsis suivalenoides,* new species. 89, ♂ genitalia (slide M-2456) of Holotype. 90, androconial scale, approx. 300× (SEM photo 0452). 91, tip of same scale, approx. 1650× (SEM photo 0453). 92, interrib structure, approx. 6650× (SEM photo 0454).

in the shorter gnathos and from *suivalens* by the more gradually produced tip of the valva.

Androconia restricted to narrow areas along cubital stem and basal parts of the associated veins. The scales are small and very similar to those of *suivalens* (Fig. **102-104**).

Female: Head, thorax, abdomen and appendages as in ♂. Upper surface of forewing dull brown with a slight olive cast shading to fuscous apically and marginally, reddish shading prevalent in discal area and bands of under surface showing through in more detail than in ♂. Hindwing above also brown with a faint olive tinge and with extradiscal band of under side sharply delineated; area just outside this band paler, often strongly tinged with pinkish-tan; two or three fuscous submarginal spots as in ♂.

Under surface of both wings in in ♂, but paler, and area between extradiscal band and submarginal markings conspicuously paler. Fringes as in ♂.

Lenths of forewings of the ♀ Paratypes range from 19.5 to 21.0 mm., averaging 20.2 mm.

Described from 63 specimens, 42 males and 21 females, from Mexico, Guatemala, El Salvador and Nicaragua.

HOLOTYPE ♂: MEXICO: OAXACA El Portillo del Rayo, Candelaria, 1550 m., 29.x.1967 (E. C. Welling); ♂ genitalia slide No. M-2456 (Lee D. Miller).

PARATYPES: MEXICO: JALISCO: La Cumbre de Autan, 4200', 1966, 1♂. Same locality and collector as Holotype, x, xi, 26♂ 12♀. CHIAPAS: Toquian, Vol. Tacaná, iii, 1♂; Rizo de Oro, viii, 1♂.

GUATEMALA: CHIMALTENANGO: Quisache, Mpio. Acatenango, 1750m., viii, x, 4♂ 1♀. ALTA VERAPAZ: Baleu, Mpio. San Cristobal Verapaz, viii, 2♂. QUETZALTENANGO: Volcán Santa Maria, 1♂. AMATITLAN: Palin, x, xi, 4♂ 1♀. "Guatemala": 2♂ 1♀.

EL SALVADOR: San Salvador, iv, 1♂ 1♀; Santa Tecla, ix, 1♀.

NICARAGUA: 10 mi. N of Matagalpa, 4500', viii, 1♀.

Disposition of type material: Holotype ♂, 23♂ and 15♀ Paratypes (A); 11♂ and four ♀ Paratypes (AMNH); one ♂ and one ♀ Paratypes (CM); six ♂ and one ♀ Paratypes (USNM).

The name refers to the confusion of this insect with *suivalens*.

The present species may be distinguished from other members of the group by its smaller size, olive shaded upper surface and the paler under surface. The genitalia are characterized by a rather straight uncus, short gnathos and rather straight valva.

I have tentatively included the female from Nicaragua in this species and have placed it in the type series. This specimen agrees well with Mexican and Guatemalan specimens, but the rather extensive gap between the Nicaragua record and the others is disturbing in a group which is usually geographically quite sensitive.

A side-by-side comparison of series of *suivalens* and *suivalenoides* will readily demonstrate the characters separating them. Unfortunately, the former has remained rather uncommon in collections until recently, so the confusion from the literature is very understandable.

Specimens from parts of Guatemala and from El Salvador and Nicaragua tend to be paler on the under surface with a definite gray cast, but such specimens appear in series from Mexico and the tendency toward paler coloration southward is not considered racial in nature. Perhaps additional material from these areas will enable a more positive decision to be reached on the possible differentiation within *suivalenoides*.

The distribution of the known specimens of this species is shown on the map (Fig. **105**).

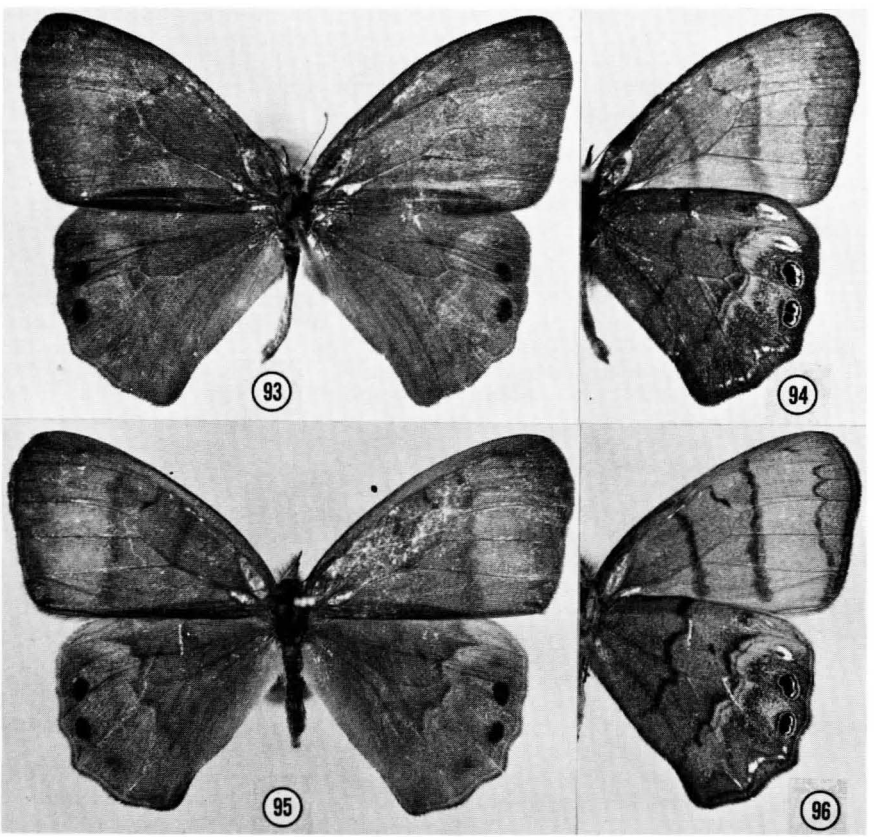
Cyllopsis suivalens (Dyar), 1914

Dyar described this species on the basis of a specimen from Puebla and a

short series from near Jalapa, Veracruz. Subsequent authors have attempted to equate material from elsewhere with *suivalens,* but often such material represented other species. There are two populations of authentic *suivalens* in Mexico, the nominate eastern highland race and another deme from the western highlands of Oaxaca and Chiapas. Other so-called *"suivalens"* belong to another species. The subspecies of the present insect may be distinguished by the following key:

KEY TO THE SUBSPECIES OF *Cyllopsis suivalens* (DYAR)

1. Upper surface lighter; under surface transverse bands narrower, distal edging on extradiscal band of hindwing dull ochreous; states of Veracruz and Puebla, Mexico ..... *C. suivalens suivalens* (Dyar)
1'. Upper surface dark brown; under surface transverse bands heavier, distal edging of exradiscal band on hindwing fulvous; states of Oaxaca and Chiapas, Mexico ..... *C. suivalens escalantei,* n. ssp.



Figures 93-96: *Cyllopsis suivalens suivalens* (Dyar). 93-94, ♂ upper (93, photo no. 101272-A-15) and under (94, photo no. 101272-A-16) surfaces; MEXICO: VERACRUZ: Jalapa (USNM). 95-96, ♀ upper (95, photo no. 101272-A-17) and under (96, photo no. 101272-A-18) surfaces; same data (USNM)

Cyllopsis suivalens suivalens (Dyar), 1914

Figures 93, 94 (♂), 95, 96 (♀)

Euptychia suivalens Dyar, 1914: 365 (San Buenaventura, Puebla, Mexico). Type USNM.

The nominate subspecies of this characteristic *Cyllopsis* is apparently the rarer of the two and may be recognized from the key. A redescription of the butterfly follows:

Male: Head and thorax with brown hairs above and gray-brown ones below; abdomen with brown dorsal hairs and tan ventral ones. Palpus clothed with gray brown-hairs, except a few tan lateral scales. Antennal shaft ringed brown and yellow; club brown. Legs clothed with dark brown scales.

Upper surface of forewing brown with a golden tinge, darker marginad and apically, with transverse bands of under surface vaguely indicated; androconial mass small (see below) and only slightly darker than ground color. Ground color of hindwing above as that of forewing, darker at base and at margin, with prominent fuscous submarginal spots in M_2-M_3 and M_3-Cu_1 and under surface extradiscal line showing through on this surface more or less well. Fringes brown.

Under surface of forewing warm brown, darkest at margin, palest between extradiscal and submarginal bands, with distinct brown bands across cell and just outside it, a duller and dentate submarginal one, a cell end bar and a brown marginal line. Hindwing below warm brown, darker than forewing, with a dark brown dentate band across cell, an extradiscal band, brown proximally and ochreous distally, dentate and produced marginad along M_1, two yellow-ringed and silver centered double black ocelli located submarginally in M_2-M_3 and M_3-Cu_1 and a silver submarginal line following the contours of the wing margin from Rs-M_1 to the ocelli and from the ocelli to 2A-3A; some slight graying just proximad of ocelli. Fringes grayish-tan.

Lengths of forewings of the ♂ specimens at hand range from 20.0 to 22.0 mm.

♂ genitalia as figured and characterized by the straight uncus with a small tip and the broad, but distally upturned, valva.

Androconial mass similar to that in the Oaxaca-Chiapas subspecies, extending along the cell from the origin of forewing vein M_3 to the origin of Cu_2.

Female: Upper surface lighter than the corresponding ♂ ground color, much lighter outside line of extradiscal band of under surface on both wings. A third submarginal spot present in the single ♀ at hand in hindwing space Cu_1-Cu_2. Under surface much paler than that of ♂ and having a golden appearance, especially costally and apically on forewing; dark markings well developed and contrasting with ground color; gray patch submarginally on hindwing quite evident.

Length of forewing of the single ♀ at hand 22.0 mm.

I have examined only eight specimens of this subspecies, all from Puebla and Veracruz, Mexico:

MEXICO: PUEBLA: San Buenaventura, v, 1♂ (type of *suivalens,* USNM). VERACRUZ: Jalapa, 6♂ 1♀ (AMNH, USNM).

The type specimen of suivalens (USNM type No. 16476) actually bears two labels giving different places of capture: the topmost label states that the specimen was taken at Orizaba, in Veracruz state, and a handwritten one further down the pin gives San Buenaventura as the locality. Dyar's description (1914: 365) definitely states that San Buenavenura is the type-locality, and Hoffmann (1940: 667) lists Puebla as one of the states in which *suivalens* is found. I suspect that the latter citation was taken directly from the original description, since the Hoffmann collection now at AMNH had no Puebla material. The Escalante collection also had no Puebla *suivalens,* even though that state was well represented in the collection.

The butterfly is certainly more frequently found in Veracruz, but even from that state records are meagre. I suspect that this species is another in which the

older localities are misleading: probably *suivalens* has not been collected in either Jalapa or Orizaba, but rather in the mountains west of these towns.

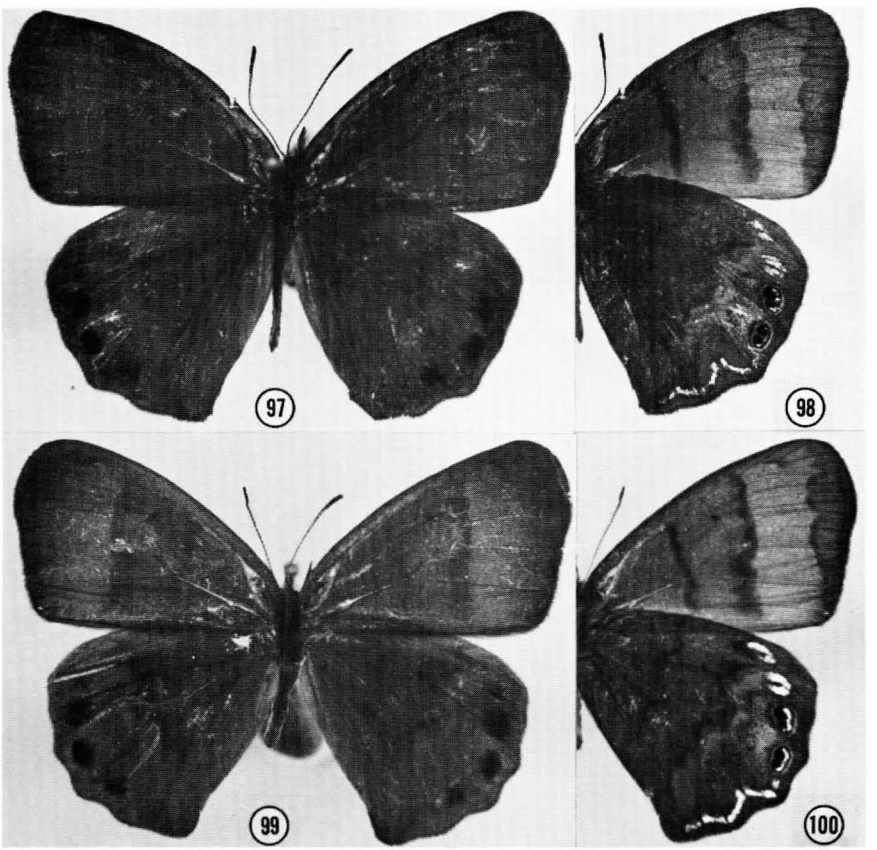
Cyllopsis suivalens escalantei, new subspecies

Figures 97, 98 (♂), 99, 100 (♀), 101 (♂ genitalia), 102-104 (androconial scales)

Males: Upper surface differs from that of nominate subspecies in its darker color and by presence in most specimens of third black submarginal spot in hindwing space Cu_1-Cu_2. Under surface also darker than in *s. suivalens* (hindwing much darker) with hindwing markings especially more distinct and outer edging of hindwing extradiscal band fulvous, rather than ochreous.

Length of forewing of Holotype ♂ 22.0 mm., those of the 31 ♂ Paratypes ranging from 18.0 to 23.0 mm., most being from 21.0 to 22.0 mm.

♂ genitalia similar to those of *s. suivalens.*



Figures 97-100: *Cyllopsis suivalens escalantei,* new subspecies. 97-98, Holotype ♂ upper (97, photo no. 011674-A-17) and under 98, photo no. 011674-A-18) surfaces; MEXICO: OAXACA: Cerro Pelon (Muo Cuóu) (A). 99-100, Paratype ♀ upper (99, photo no. 011674-A-19) and under (100, photo no. 011674-A-20) surfaces; same data (A).

Androconial patch not prominent and occupying same position as that in nominate *suivalens*.

Female: Superficially differs from the ♀ of the nominate race in the same manner as does the ♂.

Lengths of forewings of the ten ♀ Paratypes range from 21.0 to 23.5 mm., averaging 22.1 mm.

Described from 42 specimens, 32 males and 10 females, from the states of Oaxaca and Chiapas, Mexico.

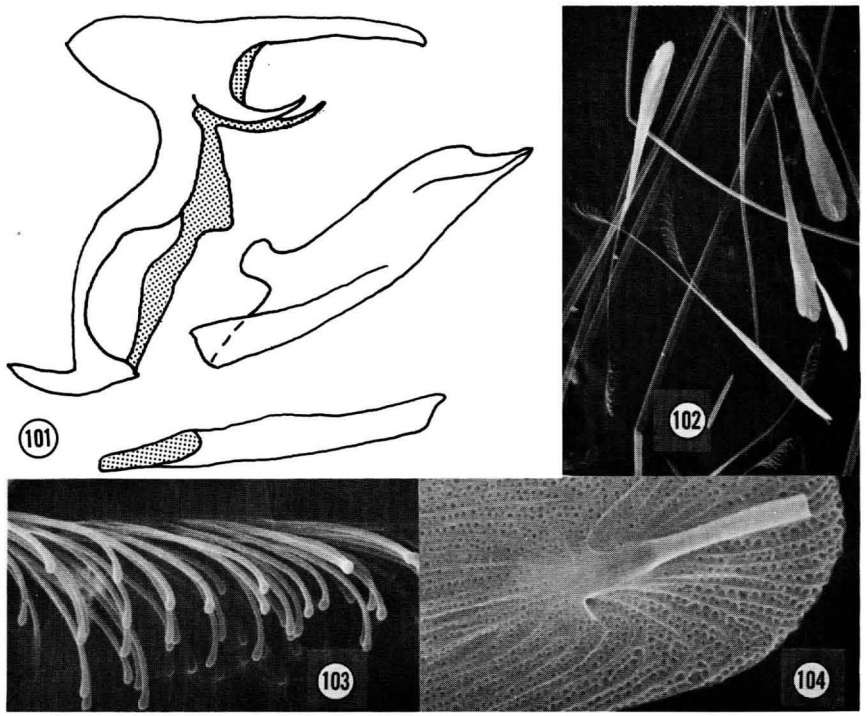
HOLOTYPE ♂: MEXICO: OAXACA: Cerro Pelón (Muo Cuóu), Mpio. Yolox, 2150 m., 12.ix.1961 (E. C. Welling).

PARATYPES: all MEXICO: OAXACA: same locality and collector as Holotype, 27♂ 9♀, ix.1961; Puerto Eligio, 1♂, ix, 1♂ x (all E. C. Welling); CHIAPAS: 2♂ 1♀, Pichucalco, vii-viii.1941 (T. Escalante).

Disposition of type material: Holotype ♂, seven ♂ and seven ♀ Paratypes (A); 24♂ and three ♀ Paratypes (AMNH). The type-series may be further divided later among other institutions.

This subspecies is named for Dr. Tarsicio Escalante of Mexico, D. F., in recognition of his service to lepidopterists interested in the Mexican fauna. The number of new taxa and new records for Mexico discovered through his efforts has been immense.

This subspecies seems to be the commoner of the two, at least in the mountains of southern Oaxaca. The Chiapas records are surprising and might indicate



Figures 101-104: *Cyllopsis suivalens escalantei,* new subspecies. 101, ♂ genitalia (slide M-1611) of Paratype; MEXICO: OAXACA: Cerro Pelon (Muo Cuóu) (AMNH). 102, androconial scale, approx. 200× (SEM photo 0448). 103, tip of same scale, approx. 2000× (SEM photo 0449). 104, base of same scale, approx. 2000× (SEM photo 0450).

that this butterfly could be found in Guatemala. I have had no firsthand experience with this species and can say nothing of its habitat preference or habits.

The distribution of the two subspecies of *suivalens* are plotted in Fig. **105.**

the **pyracmon** group

This group contains most of the "gray patch" species. The valva separates these insects from the *gemma* group: in the present group it is rather long and narrow, especially in the species most closely allied to *pyracmon*. Ten species belong to this group, most of which have a rather more northern distribution than other *Cyllopsis*, but one, *pephredo*, occurs further south than does any other species in the genus.

Cyllopsis pyracmon (Butler), 1866

This species, perhaps more than any other member of *Cyllopsis*, has been confused almost since its discovery over a century ago. That it has been considered conspecific with *henshawi* has further made older records of either suspect. Most previous workers have not had access to series of this insect or *henshawi*, and the conclusions they reached are not surprising. The two butterflies are undeniably fairly close relatives, but they are abundantly distinct when one has a series before him.

C. pyracmon is known from the southwestern U. S. through Mexico and into Central America. It can be split into two subspecies which break at about the same point in Mexico as do the two subspecies of *henshawi*, a factor that perhaps accounts for some of the confounding and lumping of the two species. These subspecies may be distinguished by the characters in the key below.

KEY TO THE SUBSPECIES OF *Cyllopsis pyracmon* (BUTLER)

1. Under surface all bands well developed and ground color smoky brown; most of Mexico to Guatemala.
   ..... *C. pyracmon pyracmon* (Butler)

1'. Under surface all bands except extradiscal one on hindwing narrow (may be absent) and ground color light brown; Arizona to Chihuahua, Durango and Sonora ..... *C. pyracmon nabokovi*, n. ssp.

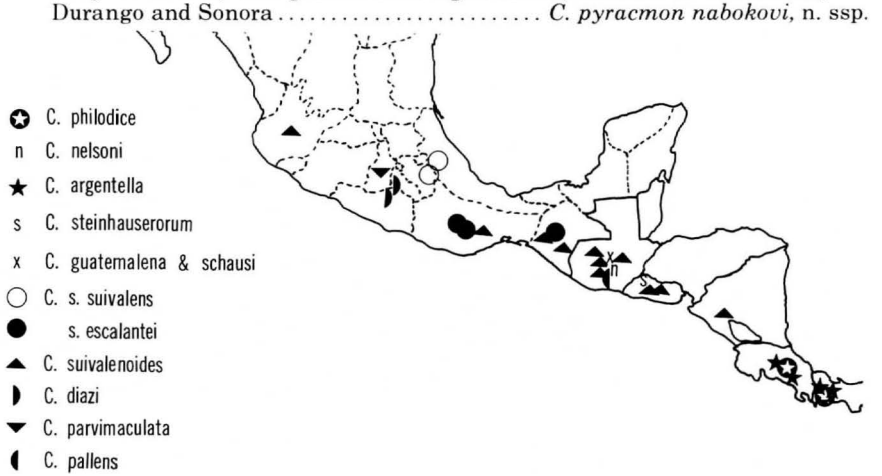


Figure 105: distribution of members of the *Cyllopsis argentella* group.

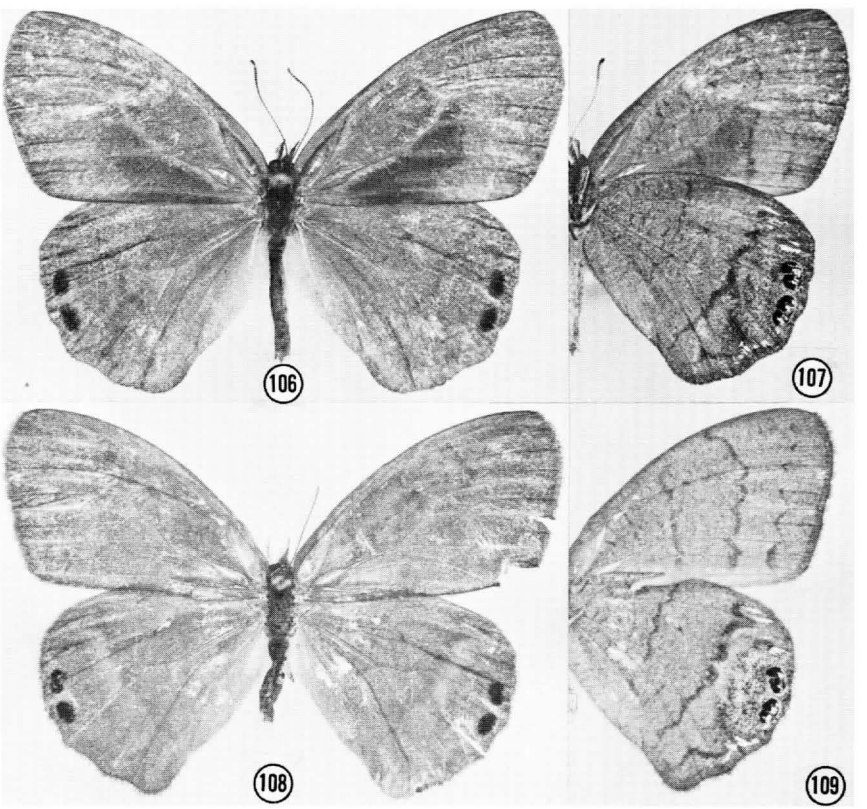
Cyllopsis pyracmon nabokovi, new subspecies

Figures 106, 107 (♂), 108, 109 (♀), 110 (♂ genitalia)

Male: Head, thorax and abdomen clothed with brown dorsal and tan ventral hairs. Palpus clothed with grayish-tan scales, pale tan ones laterally. Antennal shaft brown above narrowly ringed with fulvous, fulvous below narrowly ringed with brown; club brown above, fulvous below and blackish-brown at tip. Legs clothed with gray-brown hairs.

Upper surface of forewing dull brown, narrowly reddish along cubital stem and associated veins and with prominent dark brown androconial mass (see below). Hindwing above dull brown, shaded reddish in area of hindwing extradiscal band of under surface and in submarginal area, bearing two submarginal spots in M_2-M_3 and M_3-Cu_1 (rarely a trace of a third in Cu_1-Cu_2). Fringes gray-brown.

Hindwing below light brown to tan, brown scrawling more or less developed in all but posterior part, transcellular band usually poorly developed (occasionally



Figures 106-109: *Cyllopsis pyracmon nabokovi,* new subspecies. 106-107, Holotype ♂ upper (106, photo no. 011674-B-17) and under (107, photo no. 011674-B-18) surfaces; U. S. A.: ARIZONA: Cochise Co.: Ramsey Canyon, Huachuca Mtns. (A). 108-109, Paratype ♀ upper (108, photo no. 011674-C-0) and under (109, photo no. 011674-C-1) surfaces; U. S. A.: ARIZONA: Santa Cruz Co.: Madera Canyon, Sta. Rita Mtns. (AMNH).

absent) and very narrow, extradiscal and submarginal bands also narrow and frequently absent in anterior part of wing, all bands reddish-brown; a single dark brown marginal line. Under surface of hindwing light brown with brown scrawlings and bearing markings as follow: transcellular band poorly developed, narrow and reddish-brown (may be absent), straight extracellular band reddish-brown, proximally and ochreous distally and produced toward margin along veins from Cu_1 to apex; gray patch prominent in submarginal area from Rs to near Cu_2 enclosing double silver-pupilled black ocelli in M_2-M_3 and M_3-Cu_1; silver submarginal spots in Rs-M_1 and M_1-M_2; a wavy silver submarginal line from Cu_1 to tornus, these markings being inwardly edged in reddish-brown and an ochreous, incomplete marginal line. Fringes grayish-brown.

Length of forewing of Holotype ♂ 21.5 mm., those of the 61 ♂ Paratypes range from 18.5 to 22.5 mm., most being between 20.0 and 21.0 mm.

♂ genitalia as figured, differing from those of *henshawi,* with whom this species has been lumped, in the broader valva and somewhat more curved uncus.

Androconia in an extensive, dense mass from inner margin to M_3 outside cell and from M_2 to Cu_1 inside cell. Individual scales as shown (Figs. **115-118**) for nominate subspecies.

Female: Head, thorax, abdomen and appendages as in ♂. Upper surface of forewing dull brown with discal reddish overscaling and extradiscal line of under surface showing through on this surface clearly (extradiscal reddish shading varyingly developed in series). Hindwing above dull brown with area outside level of extradiscal line strongly reddened; most specimens show at least traces of third submarginal fuscous spot in Cu_1-Cu_2. General tone of upper surface not as dark as in ♂. Under surface as in ♂, but all transverse bands darker, so that transcellular bands of both wings present in all specimens examined.

Lengths of forewings of the 22 ♀ Paratypes range from 20.5 to 23.0 mm.,

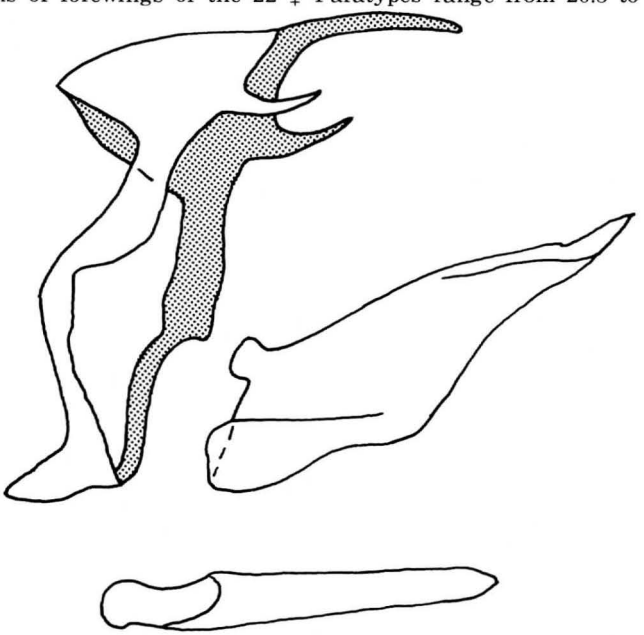


Figure 110, *Cyllopsis pyracmon nabokovi,* new subspecies, ♂ genitalia (slide M-2437) of Paratype; U. S. A.: ARIZONA: Cochise Co.: Ramsey Canyon, Huachuca Mtns. (A).

averaging 22.1 mm.

Described from 89 specimens, 62 males and 27 females, from the southwestern United States.

HOLOTYPE ♂: ARIZONA: Cochise Co.: Ramsey Canyon, Huachuca Mtns., 3.ix.1950 (*ex colln.* D. C. Ferguson).

PARATYPES: NEW MEXICO: Otero Co.: High Rolls, vi, vii, 2♂. ARIZONA: Cochise Co.: same locality as Holotype, viii, ix, 7♂ 5♀; Carr Canyon, Huachuca Mtns., viii, ix, 4♂ 3♀; Garden Canyon, Huachuca Mtns., vii, 1♀; Chiricahua Mtns., ix, 1♀; Cave Creek, Chiricahua Mtns., vi, 1♀; Rucker Canyon, viii, 1♂; Stewart Campground, ix, 1♂ 1♀; Palmerlee, viii, 1♂; Paradise, viii, 1♂; 4 mi. W of Paradise, 6000-7000', ix, 1♀; Garces, 1♂. Pima Co.: Mud Springs, Sta. Catalina Mtns., vii, 1♂. Santa Cruz Co.: Madera Canyon, Sta. Rita Mtns. (sometimes labelled from Pima Co.), vi, viii, ix, 30♂ 7♀; Sta. Rita Mtns., ix, 10♂ 7♀; Hershaw, Patagonia Mtns., ix, 1♂.

Disposition of type material: Holotype ♂, four ♂ and one ♀ Paratypes (A); 16♂ and 10 ♀ Paratypes (AMNH); four ♂ Paratypes (CM); 32♂ and 15♀ Paratypes (LACM); five ♂ and one female Paratypes (KR).

This subspecies is name for Dr. Vladimir Nabokov who first pointed out that both *pyracmon* and *henshawi* occurred in the desert southwest of the U. S. His papers, as with all of his literary endeavors, are highly entertaining and informative, and his work on the United States *Cyllopsis* (Nabokov, 1942), as *Neonympha,* too long has been ignored.

Nabokov (1942) had the species of *Cyllopsis* rather well sorted, but he did not look at Mexican or Guatemalan *pyracmon;* had he, I trust that he would have detected the differences and described the present race. Chermock (1947) attempted to equate *henshawi* and *pyracmon* (they look very different) and recognized the former as a subspecies of the latter. This error has been continued by succeeding authors, resulting in the present confused state of the nomenclature. Differences in *Cyllopsis* are seldom dramatic, but they are consistent.

Personal experience with this subspecies indicates that the species of *Cyllopsis* in the southwestern U. S. are very difficult to distinguish in the field. All play in sunny spots in rather open woods, except during the heat of the day when all are to be found in varying degrees of shade. The present species is presumably bivoltine, though most of the records come from August and September.

I have examined an additional four Mexican specimens that are not included in the type series, but seem to be referable to *p. nabokovi:*

MEXICO: SONORA: on the road to Cananea, viii, 1♂ (AMNH); 28 rd. mi. E Bacerac, ix, 1♂ (AMNH). SINALOA: Rancho Santa Lucia, 3600-4000', x, 1♂ (AMNH). DURANGO: Coyotes, Durango dist., 8300', viii, 1♀ (AMNH).

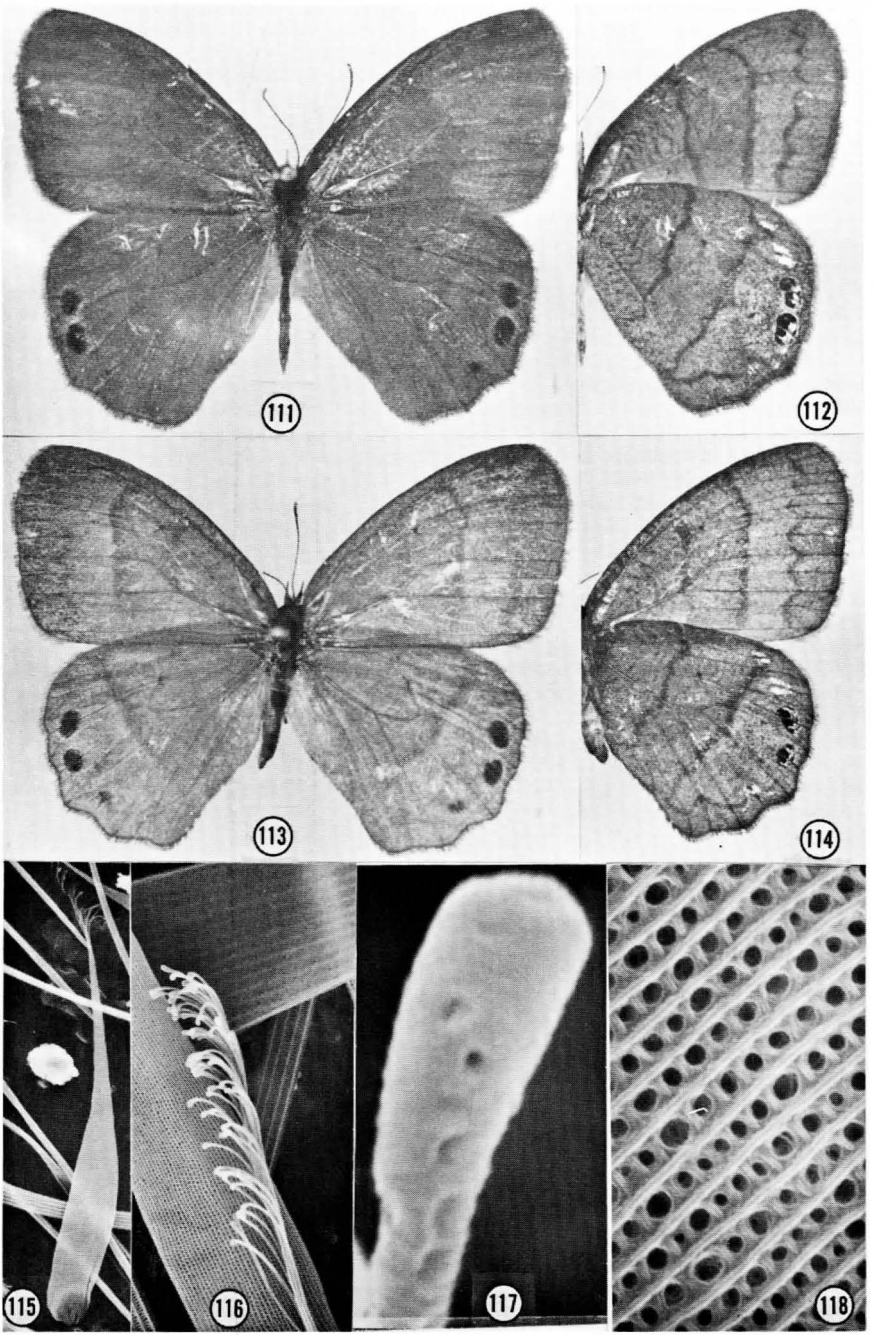
As with *henshawi,* the intervening area between the southern and the basically U. S. populations of this species should be sampled: material that might be uncovered could be very interesting.

Cyllopsis pyracmon pyracmon (Butler), 1866

Figures 111, 112 (♂), 113, 114 (♀), 115-118 (androconial scales), 119 (♀ genitalia)

Euptychia pyracmon Butler, 1866: 499 ("Oajaca", [Mexico]). Type BM.

Figures 111-118: *Cyllopsis pyracmon pyracmon* (Butler). 111-112, ♂ upper (111, photo no. 011674-C-2) and under (112, photo no. 011674-C-3) surfaces; MEXICO: CHIAPAS: San Carlos (A). 113-114, ♀ upper (113, photo no. 011674-C-4) and under (114, photo no. 011674-C-5) surfaces; MEXICO: OAXACA: San José Pacífico (A). 115, androconial scale, approx. 270× (SEM photo 0412). 116, tip of same scale, approx. 900× (SEM photo 0415). 117, detail of tip of same scale, approx. 6650× (SEM photo 0416). 118, interrib structure, approx. 8600× (SEM photo 0413).


111
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118

The Mexican and Guatemalan specimens of *pyracmon* are considerably darker, especially on the under surface. Since the type of the species is Mexican, and since I have material at hand that agrees well with the type (a photograph of which was made available for this study), the following description demonstrates the differences between nominate *pyracmon* and *p. nabokovi.*

Male: Upper surface coloration generally darker than *nabokovi* and reddish suffusion not so pronounced. Under surface with ground color darker, transverse bands browner, transcellular bands of both wings well developed and gray submarginal patch of hindwing not so contrasting with ground color as in *nabokovi.*

The general size and ♂ genitalia as in *p. nabokovi.*

Androconial distribution as in *p. nabokovi,* but because of the darker upper surface coloration, patch contrasting less than in the northern subspecies. Scales rather typical for the genus: brush-like organelles somewhat sparsely distributed along shaft of scale; interstices not of the same size throughout.

Female: Upper surface much darker than in *nabokovi* with reduced rusty suffusion and that that is present mostly restricted to area outside level of extradiscal band of under side. Under surface also much darker than in *nabokovi* with dark markings browner and area between extradiscal and submarginal bands strongly tinged with rusty color; gray patch rather less distinct, as in ♂.

Size as in *nabokovi.*

In addition to the photograph of the type of *p. pyracmon* I have 100 specimens before me from the following localities:

MEXICO: NAYARIT: 3 mi. S Emiliano Zapata, 900 m., viii, 1♀ (A). MICHOACAN: Tzararacua Falls, 6 mi. S Uruapan, 1500-1580 m., viii, 1♂ (A). PUEBLA: Manzanilla, vii, ix, 2♂ 1♀ (AMNH). D. F.: Pedregal, viii, ix, xi, 2♂ 1♀ (A). MORELOS: Cuernavaca, vi, 1♀ (USNM); Tepoztlán, vii, viii, 2♂ 1♀ (A). GUERRERO: 4 mi. E Chilpancingo, 1680 m., viii, 1♂ 1♀ (A); Acahuizotla, iii, vii, x, 4♂ 1♀ (A). OAXACA: San José Pacífico, Mpio. Rio Hondo, 2400 m., x, xi, xii, 11♂ 30♀ (A); La Soledad, Mpio. Rio Hondo, 1450 m., x, 1♂ (AMNH); Jalatengo, Mpio. Rio Hondo, 1450 m., xii, 1♂ (AMNH); El Portillo del Rayo, Mpio. Candelaria Loxicha, 1550 m., xii, 1♂ (AMNH); Dos de Mayo, Mpio. San Pedro El Alto, 1800 m., xii, 1♀ (AMNH); "Oajaca" (type of *pyracmon,* ♀, BM); "Oaxaca", 1♂ 1♀ (USNM). CHIAPAS: Campet, x, 1♂ (A); San Carlos, iii-vi, 4♂ 2♀ (A); Ochuc (preferably Oxchuc), vii-xi, 6♂ 3♀ (A).

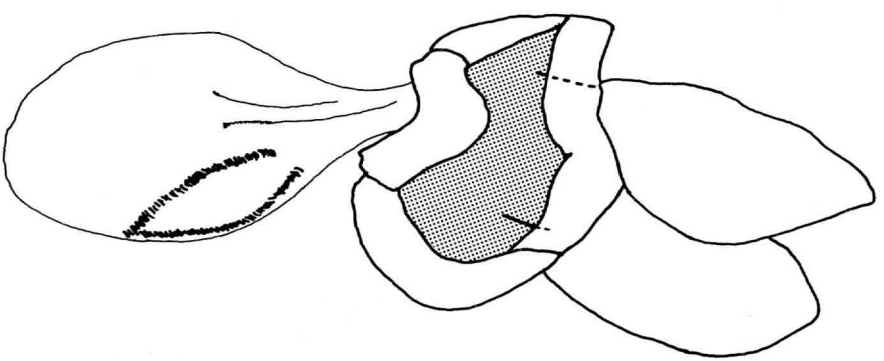


Figure 119, *Cyllopsis pyracmon pyracmon* (Butler), ♀ genitalia (slide M-2549); MEXICO: CHIAPAS: Ochuc (A).

GUATEMALA: Cd. Guatemala, ix, x, 3♂ (CM, USNM); CHIMALTENANGO: Antigua, xi, 1♂ (USNM); Quisache, Mpio. Acatenango, 1750 m., vii, x, 2♀ (AMNH); SOLOLA: Chaquitya, Mpio. Solola, 2250 m., 1♂ 2♀ (AMNH); Chuchexik, Mpio. Santa Lucia Utatlax, 2250 m., 2♂ (AMNH); Prov.?: Llano del Coyote, Sacapulas, 1800 m., x, 2♂ 1♀ (A).

No locality: 1♂ (USNM).

Some of the specimens from the Distrito Federal and Puebla are somewhat aberrant in that the markings of the under surface on both surfaces are drastically reduced in both sexes, and the Puebla female is very red on the upper surface. There are normal individuals in the same populations, though, so I do not feel that the Valle Central material requires separate subspecific designation. Perhaps later additional material will change this analysis.

This species seems to be one of the commonest and widespread of the *Cyllopsis*. The habits are much like those of *p. nabokovi* mentioned above, but the butterflies seem to be found in more open situations, as least in the northern part of the range.

The known distribution of the subspecies of *C. pyracmon* is plotted on the map in fig. **120**.

Cyllopsis pephredo (Godman), 1901

Figures 121, 122 (♂), 123, 124 (♀), 125 (♂ genitalia), 126-129 (androconial scales)

Euptychia pephredo Godman, 1901 (*in* Godman and Salvin, 1879-1901): 657 ("Centre valleys, Guatemala", hereby designated). Lectotype BM (see below).

This species has also been much misunderstood. Many specimens in the older U. S. collections of *pephredo* have stood in series of *pyracmon*, whereas material identified as *pephredo* has usually been referable to *nayarit*. The original description was a bit vague in its comparison of *pephredo* with *gemma*, but its pattern similar-

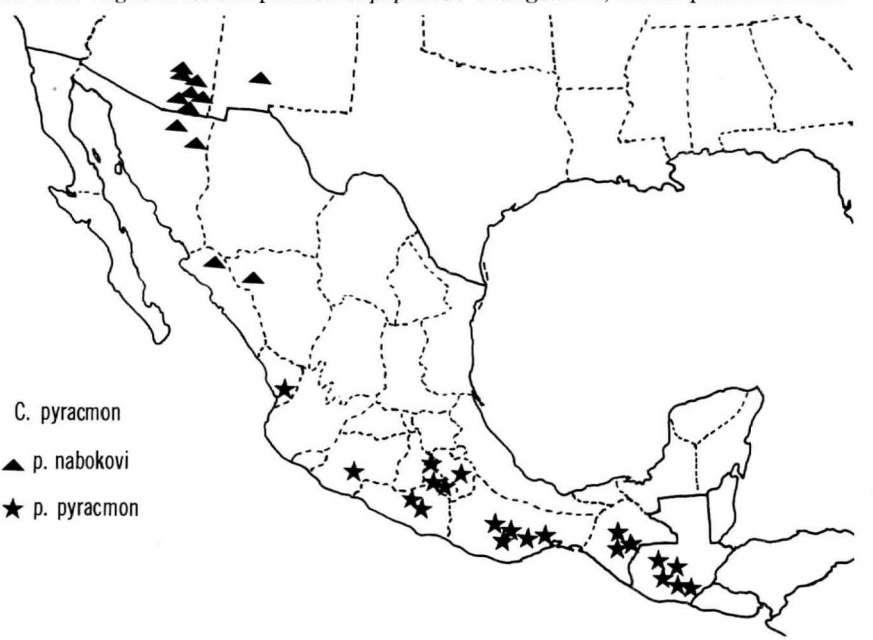


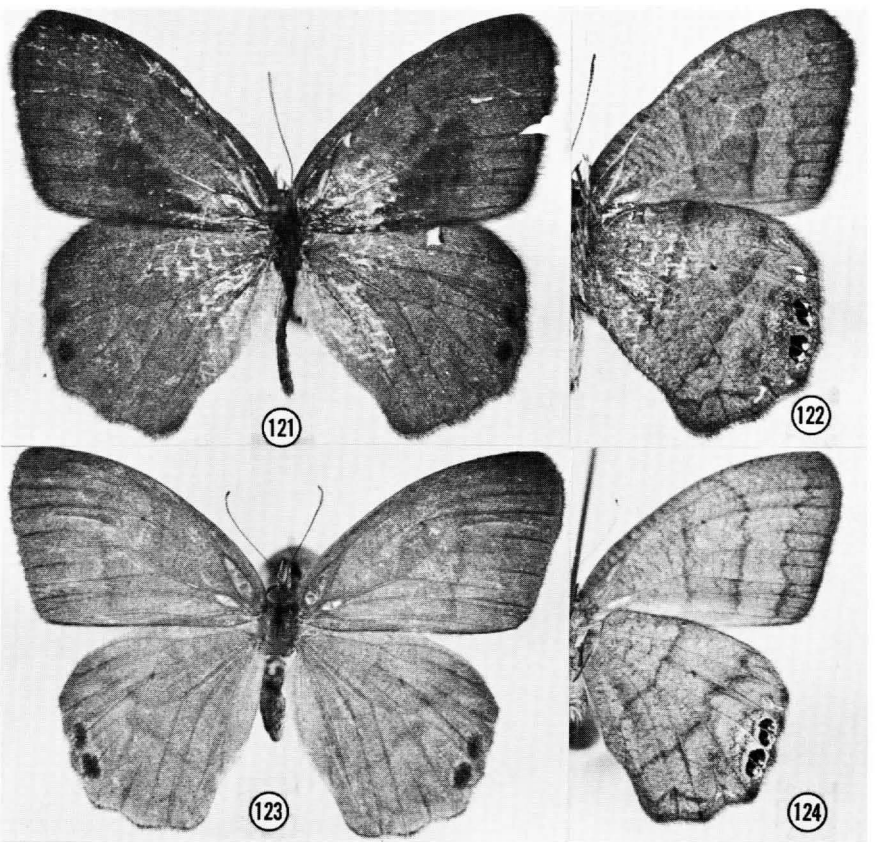
Figure 120: distribution of the subspecies of *Cyllopsis pyracmon*.

ities are with *pyracmon*. The structural similarities are with the *hilaria* complex.

Male: Head and thorax clothed with brown hairs above, gray-brown ones below; abdomen with brown hairs above, grayish-tan ones below. Palpus clothed with gray-brown hairs. Antennal shaft brown narrowly ringed with yellow above and below; club brown above, tan below, tip blackish-brown. Legs clothed with gray-brown hairs.

Upper surface of forewing dark brown, darker still marginad and unmarked save for androconial mass outside cell (see below). Hindwing above also dark brown, slightly darker costad, with extracellular band of under side showing through weakly above and two fuscous submarginal spots in M_2-M_3 and M_3-Cu_1. Fringes dark grayish-brown.

Under surface of forewing basically warm brown, light in some specimens, darker and grayish in others, with dark brown to gray-brown scrawls especially in cell, along costa and marginally, and bearing reddish-brown bands as follows: a straight one across cell, a slightly undulate one around cell end and a serrate one placed submarginally; a single brown marginal line; marginal area and area



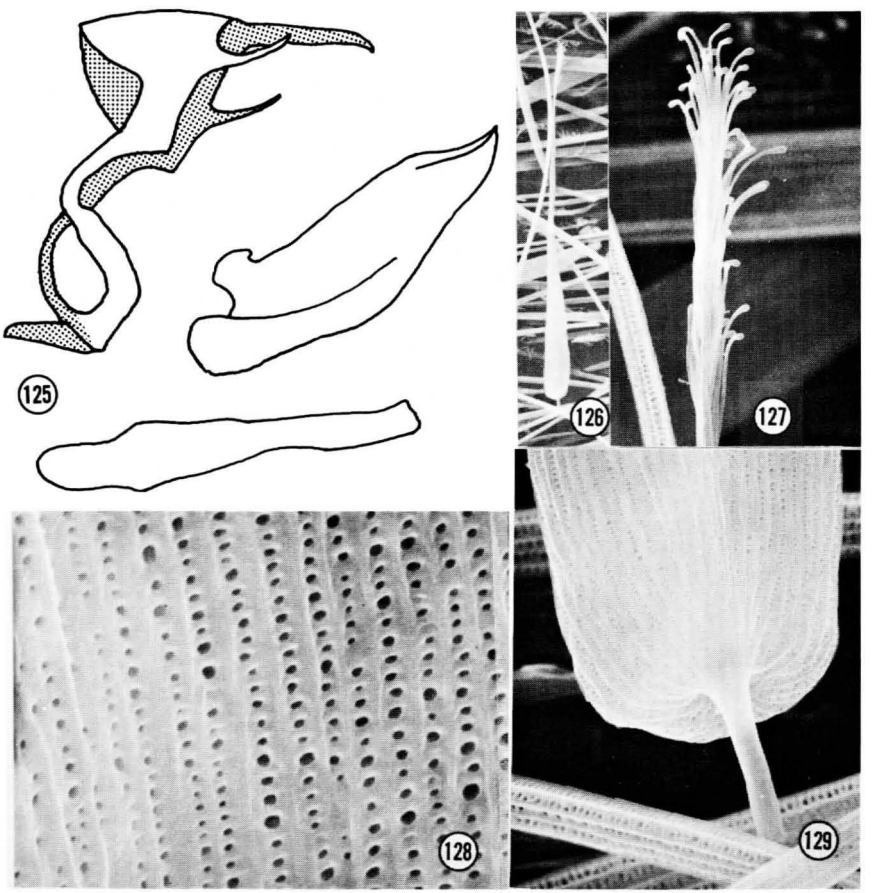
Figures 121-124: *Cyllopsis pephredo* (Godman). 121-122, ♂ upper (121, photo no. 011674-B-5) and under (122, photo no. 011674-B-6); MEXICO: CHIAPAS: San Carlos (A). 123-124, ♀ upper (123, photo no. 011674-B-7) and under (124, photo no. 011674-B-8) surfaces; EL SALVADOR: Santa Tecla (A).

between transcellular and extracellular bands somewhat darker than remainder of wing. Hindwing below with same ground color as forewing and with dark scrawls in basal half; red-brown transcellular band narrow, rather serrate extracellular band red-brown proximally, ochreous distad with projections marginad along veins from Rs through at least Cu_1; gray patch rather small and bearing double black, silver pupilled ocelli with narrow yellow rings in M_2-M_3 and M_3-Cu_1; submarginal silver markings present from apex to anal angle; single brown marginal line. Fringes below gray-brown.

Lengths of forewings of the ♂ specimens at hand range from 15.5 to 18.5 mm., most being between 16.0 and 17.0 mm.

♂ genitalia as figured, resembling rather closely those of *hilaria* with the rounded valvae, which are, however, longer than those of the latter.

Androconial patch restricted to area outside cell from M_3 to inner margin of



Figures 125-129: *Cyllopsis pephredo* (Godman). 125, ♂ genitalia (slide M-2100); MEXICO: CHIAPAS: Lagos de Montebello (A). 126, androconial scale, approx. 330× (SEM photo 0404). 127, tip of same scale, approx. 1330× (SEM photo 0403). 128, interrib structure, approx. 6650× (SEM photo 0405). 129, base of scale, approx. 2000× (SEM photo 0406).

forewing. Base of scale rather blunt, interstitial pits rather small and uniform; brush-like tip with many tightly packed filaments.

Female: Head, thorax, abdomen and appendages as in ♂. Upper surface as in ♂ (no andcoconial patch), but under surface markings more clearly defined on this side, the extracellular band of both wings occasionally represented by a red band; in a few specimens a third submarginal fuscous spot present in Cu_1-Cu_2. Under surface also as in ♂, but dark markings usually more distinct.

Lengths of forewings of the ♀ specimens at hand range from 18.0 to 21.0 mm., most being between 19.0 and 19.5 mm.

I have examined, in addition to photographs of some of the type-series, 129 specimens from the following localities:

MEXICO: VERACRUZ: Coatepec, 1♀ (USNM); Orizaba, xii, 1♀ (JBS); Fortín de las Flores, 950m., ii, viii, 2♂ (A, AMNH); Tezonapa, iv, 1♂ (AMNH); Las Vigas, Pelote, v, 1♀ (USNM). CHIAPAS: Ochuc (preferably Oxchuc), v, vii-xi, 14♂ 15♀ (A, AMNH); San Carlos, iv-vii, 4♂ 3♀ (A); Union Juarez, vi, 2♂ 1♀ (AMNH); Rayan, vi, 1♂ (AMNH) Santa Anita, vii, 1♂ (AMNH); Pueblo Nuevo Solistahuacan, vi, 1♂ (AMNH);l Rancho Santa Anna, 27 km. SE Santa Rosa, vi, 1♂ (AMNH); Lagos de Montebello, 4800', iii, 1♂ (A).

GUATEMALA: GUATEMALA: Cd. Guatemala, iv, ix, 1♂ 2♀ (USNM). CHIMALTENANGO: Quisache, Mpio. Acatenango, 1750m., vi-xii, 23♂ 9♀ (A, AMNH); Panajabal, Mpio. San Pedro Yepocapa, vii, 1♂ (AMNH). ALTA VERAPAZ: Baleu, Mpio. San Cristobal Verapaz, vii, 1♀ (AMNH). AMATITLAN: Palin, xii, 1♂ (USNM). QUETZALTENANGO: Volcán Santa Maria, iv, vi, vii, 3♂ 1♀ (USNM). SACATEREQUEZ: Antigua, 5000', vii, viii, 3♂ 4♀ (A). QUICHE: Xutixtiox, Jetzajel, Mpio. Sacapulus, xii, 1♂ (AMNH). "Guatemala", 3♂ (CM, USNM).

EL SALVADOR: San Salvador, iv-vi, xi, 2♂ 4♀ (A); Santa Tecla, v-vii, ix, xi, 4♂ 2♀ (A); Los Chorros, Santa Tecla, i, viii, 1♂ 1♀ (A); Comasagua, viii, 1♂ (JBS); Majaditas (Metapan), 1100m., x, 1♂ (A).

NICARAGUA: 10 mi. N of Matagalpa, 4500', vii, 1♂ (A).

COSTA RICA: San José, 1200m., viii, 1♂ (CM).

PANAMA: CHIRIQUI: Volcan Chiriquí, 4900', vi, 1♂ (A); Boquette, 3000', vi, 4♀ (A). PANAMA: Cerro Campana, v, 1♀ (A).

Mexican specimens tend to be uniformly dark and well marked, whereas those from further south are frequently paler and less well marked, especially as regards the extradiscal band of the hindwing beneath. Dark individuals occur within the more southern populations, too, so the species should not be subdivided into subspecies.

Godman's original description (Godman and Salvin, 1879-1901: 657) of this species mentions ten specimens before him at the time. This material was from Chilpancingo, Guerrero (this species?), and Cordova, Veracruz, Mexico, "central valleys", Dueñas and San Gerónimo, Guatemala. These ten specimens, should they still exist, are the syntypes of *C. pephredo* and until now must be considered coequal. Riley and Gabriel (1924: 44) informally selected a single individual from the series as the "type" (B. M. Type No. Rh. 3279), and this specimen was among those photographed at my request by personnel of at the British Museum. I have seen many specimens in U. S. collections that are virtually identical to the Riley and Gabriel "type" and feel sufficiently confident to hereby validate the decision of Riley and Gabriel (1924:44). Accordingly, I hereby designate the specimen, a male, of *Euptychia pephredo* Godman as the Lectotype of that species. It bears a British Museum type label and the type no. 3279 placed there presumably by either Riley or Gabriel, and I am sending a label reading as follows to be attached to the specimen (in red: handwritten): "LECTOTYPE ♂ / *Euptychia pephredo*/ Godman/ designated by/ Lee D. Miller, 1974".

Much of the confusion regarding this species may be attributed to Godman and Salvin (1879-1901: 92; pl. 8, fig. 12) who described and illustrated a specimen of the present species as *gemma* in the main part of the *"Biologia"*. The subsequent

description of *pephredo,* published after Salvin's death, was vague and left the impression that *pephredo* differed from *gemma* in only the presence of the androconial patch on the forewing above. The longer, more pointed forewing of the present species was not mentioned in the description (there actually was no additional description in the Supplement ot the *Biologia*), and without this clarification it is small wonder that subsequent writers have confounded *pephredo* and the closely related (though round-winged like *gemma*) *nayarit.*

I have taken *C. pephredo* in three separate locations in Mexico and Costa Rica, but the habitats bore some similarities to one another: in all instances the specimens were captured in woods-edge situations, but very near deeper forest. The flight is typically weak and fluttering.

The known distribution of *C. pephredo* is shown in the map (Fig. **142**).

Cyllopsis nayarit R. Chermock, 1947

Figures 130, 131 (♂), 132, 133 (♀), 134 (♂ genitalia), 135-138 (androconial scales)

Euptychia (Cyllopsis) nayarit R. Chermock, 1947: 198 (Compostela, Nayarit, Mexico). Type Cornell University.

This species is presently recognized as being rather common throughout Mexico, but especially in the western states. Many of the specimens now referred to *nayarit* have been placed in various collections as *pephredo,* due partially to a misunderstanding of the concept of that species (see discussion under *pephredo*).

Male: Head, thorax and abdomen clothed with brown hairs above, grayish-tan ones below. Palpus clothed with brown hairs. Antennal shaft brown narrowly ringed with tan above, tan ringed with brown below; club brown above, tan below, dark brown at tip. Legs clothed with brown hairs.

Upper surface of forewing brown, slightly darker marginad, unmarked except for brownish-black androconial patch (see below). Hindwing above brown with extradiscal band of under surface faintly indicated and two (or three) fuscous submarginal spots in M_2-M_3, M_3-Cu_1 (and possibly Cu_1-Cu_2); narrow brown marginal line often indicated beyond spots. Fringes gray-brown.

Under surface of forewing light brown with dark brown scrawls and poorly indicated transcellular, extracellular and submarginal reddish-brown bands and a narrow brown marginal line. Hindwing below light brown with dark brown scrawlings, a red-brown undulate transcellular band, extradiscal band inwardly slightly undulate and red-brown, distally thick and ochreous and projecting marginad along viens from M_3 to spex; gray patch small but prominent and bearing large black doubly silver-pupilled ocelli in M_2-M_3 and M_3Cu1; a rather complete silver submarginal line from apex to Cu_2-2A (represented by silver markings in ocelli in M_2-Cu_1); thick ochreous marginal line present from apex to inner margin, except in M_2-Cu_1. Fringes grayish-tan.

Lengths of forewings of the ♂ specimens at hand range from 15.0 to 18.0 mm., most being from 16.0 to 17.0 mm.

♂ genitalia as figured and characterized by valval diversion inward, which appear on slides as downward-pointing valve tips in most specimens. In a few specimens the tips of the valvae will be diverted dorsad, but in these specimens it is simply a difference in the mounting of the genital elements.

Androconial patch rather narrow and composed of elements outside forewing cell from M_3 to inner margin and an intracellular element from origin of M_1 to near origin of M_3. Scales rather broad at base, tapering to a dense mass of distal organelles. Ribbing rather coarse with larger interstices than in some other related species.

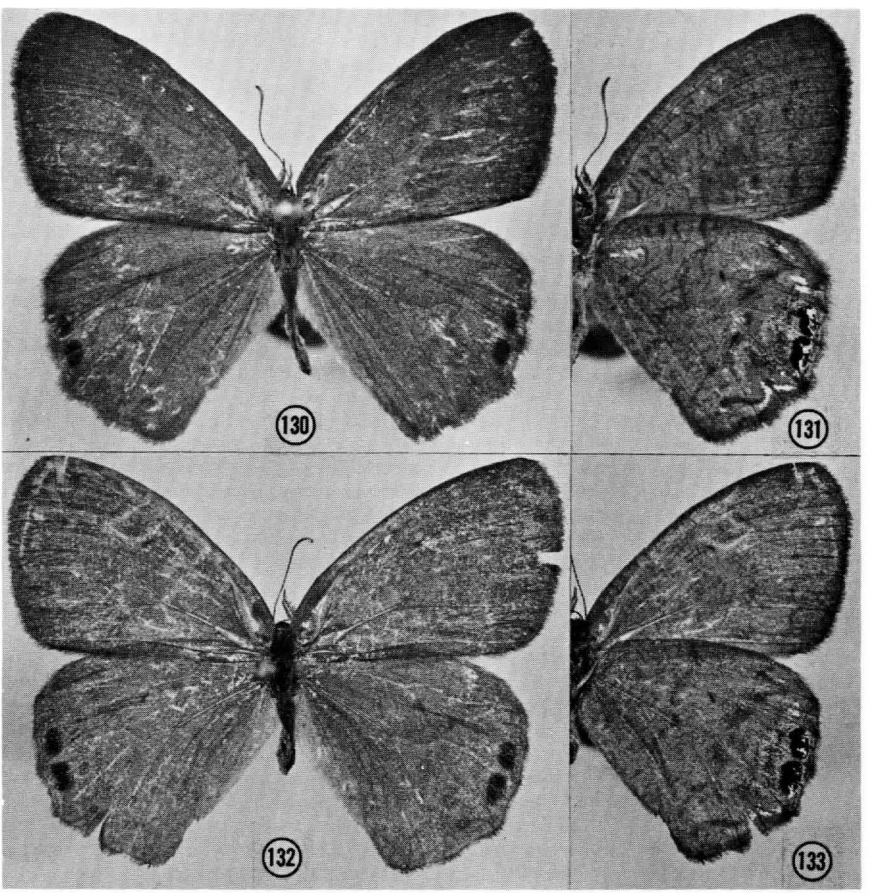
Female: Similar to ♂, but lacking the androconial patch; markings of under surface slightly more prominent; coloration generally duller and paler.

Lengths of forewings of the ♀ specimens at hand range from 16.0 to 18.5 mm.,

most being between 17.0 and 18.0 mm.

I have examined 72 specimens of this species from the following Mexican locatlities:

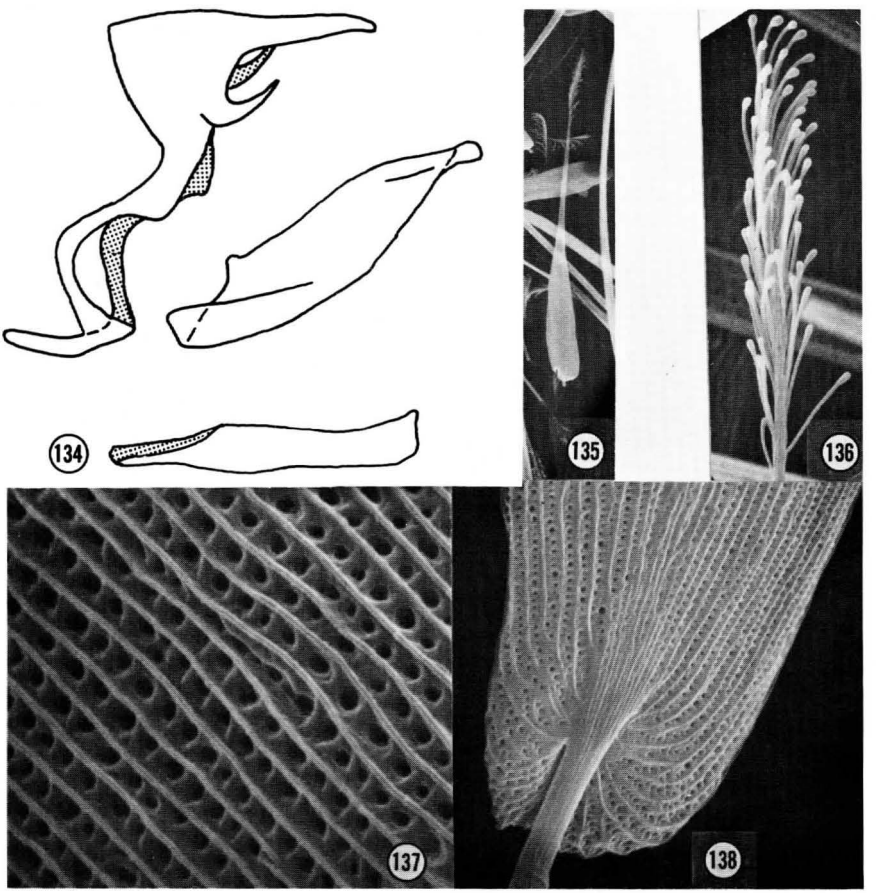
MEXICO: SINALOA: Rancho Santa Lucia, 3600-4000', x, 1♂ (AMNH). NAYARIT: Compostela, x, 1♂ (type of *nayarit,* Cornell Univ.). JALISCO: Guadalajara, 3♂ (USNM). MICHOACAN: San Jose Purua, xi, 1♂ 1♀ (JBS); vic. Arteaga, xii, 1♂ (AMNH); 3 mi. N Uruapan, 1900 m., viii, 2♂ (A); Tzararacua Falls, 6 mi. S Uruapan, 1500-1560 m., viii, 2♂ (A); 8.5 mi. S Uruapan, 1520 m., viii, 3♀ (A). MEXICO: Malinalco, vii-ix, 1♂ 2♀ (A). GUERRERO: Iguala, 1♂ (AMNH); Acahuizotla, ix, 1♂ (A); Sierra de Guerrero, ix, 1♀ (USNM); "Guerrero", xi, 2♂ (USNM). MORELOS: 1 mi. S Xochilcalco ruins, 1400 m., viii, 2♂ (A); Tepoxtlán, vii, 2♂ 12♀ (A). OAXACA: Miahuatlan, 1550 m., x-xii, 13♂ 5♀ (A); Huajuapan, ix, 1♀ (AMNH); Oaxaca, 4♂ 1♀ (USNM). PUEBLA: Atlixco, vi, 1♂ (A); Jaulilla, Mpio.



Figures 130-133: *Cyllopsis nayarit* R. Chermock. 130-131, ♂ upper (130, photo no. 011674-B-11) and under (131, photo no. 011674-B-12) surfaces; MEXICO: MICHOACAN: vic. Uruapan (A). 132-133, ♀ upper (132, photo no. 011674-B-13) and under (133, photo no. 011674-B-14) surfaces; MEXICO: MICHOACAN: S of Uruapan (A).

Tehuitzingo, 1200 m., xii, 1♀ (A). VERACRUZ: Jalapa, 1♂ (AMNH); Orizaba, 4♂ (USNM); Fortín, 600', vi, 1♀ (A). No data: 2♂ (A).

This species may be immediately distinguished from *pephredo* by the ochreous hindwing markings and by the rounder wing shape, as well as by the genitalia. The problem with recognition of this butterfly has been the confusion generated by Godman (1901, *in* Godman and Salvin, 1879-1901: 657) where he compared



Figures 134-138: *Cyllopsis nayarit* R. Chermock. 134, ♂ genitalia (slide M-2455); MEXICO: OAXACA: Miahuatlan (A). 135, androconial scale, approx. 200× (SEM photo 0408). 136, tip of same scale, approx. 1330× (SEM photo 0409). 137, interrib structure, approx. 6650× (SEM photo 0410). 138, base of scale, approx. 2650× (SEM photo 0411).

pephredo with *gemma,* rather than one of the species with more produced forewings (*gemma, hilaria,* etc.).

Our specimens have been taken in rather open woodland habitats, and all of the ones I have seen were weak fliers by comparison with other species. The habits do rather closely resemble those of *gemma,* but morphologically (except for the rounded forewings, *nayarit* and *gemma* are not closely related in *Cyllopsis.*

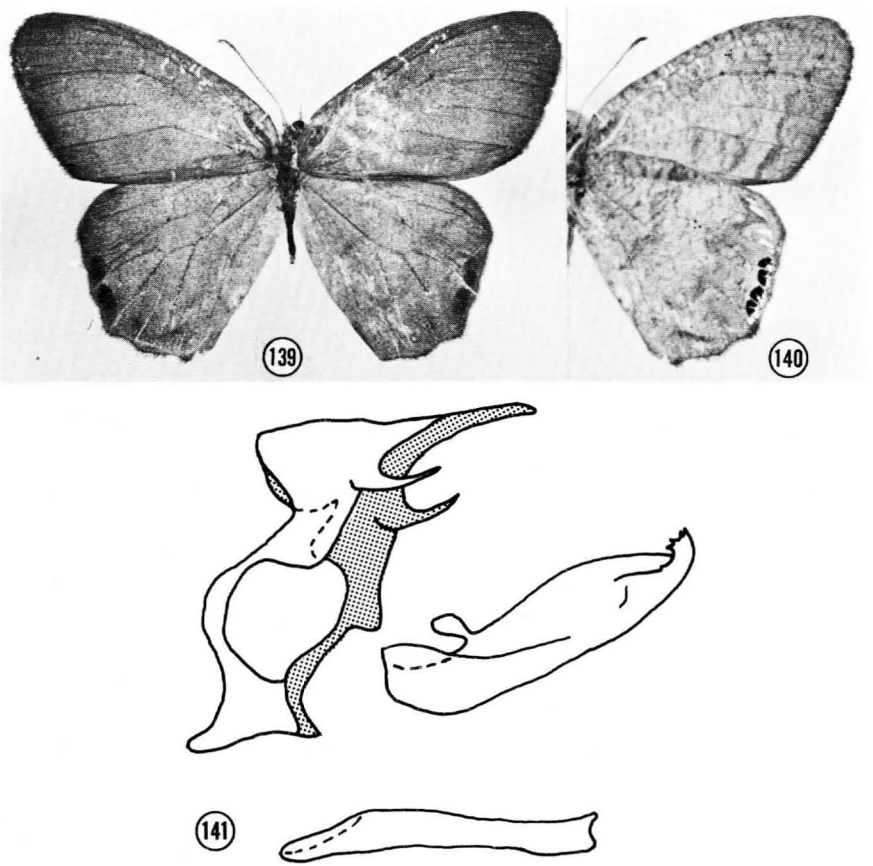
The distributional records for *C. nayarit* are shown on the map in Fig. **142.**

Cyllopsis pseudopephredo R. Chermock, 1947

Figures 139, 140 (♂), 141 (♂ genitalia)

Euptychia (Cyllopsis) pseudopephredo R. Chermock, 1947: 200 (San Angel, D. F., Mexico). Type AMNH.

This species, the type of which is apparently still unique, occupies the same position in the *pephredo* complex as does *dospassosi* in the *hilaria* complex. Each



Figures 139-141: *Cyllopsis pseudopephredo* R. Chermock. 139-140, Holotype ♂ upper (139, photo no. 020574-B-3) and under (140, photo no. 020574-B-4); MEXICO: D. F.: San Angel (AMNH). 141, ♂ genitalia (slide 46-261; R. L. Chermock) of Holotype.

is the only species of its group with no well-defined androconial patch.

Male: Head, thorax and abdomen clothed with brown upper and gray-brown under hairs. Palpus clothed with mixed brown and gray-brown hairs. Antenna brown ringed with buff above, buff below; tip of club dark brown. Legs clothed with gray-brown hairs.

Upper surface of forewing warm brown, slightly darker apically and marginally; otherwise unmarked. Hindwing above warm brown, slightly darker apically and marginally with fuscous submarginal spots in M_2-M_3 and M_3-Cu_1; otherwise unmarked. Fringes brown.

Under surface of forewing grayish-tan, rather heavily scrawled with dark brown, with a trace of a brown transcellular band (the part present is that posteriad of cell) and dentate extradiscal and submarginal bands of same color, heaviest toward inner margin, and a single thin marginal line. Hindwing below grayish-tan scrawled with brown and with a heavy dentate brown transcellular band, a heavy extracellular band, brown proximally and ochreous distally, marginally projected along veins from apex to M_3; gray patch poorly delimited and containing submarginal silver pupilled black ocelli in M_2-M_3 and M_3-Cu_1; submarginal silver flecks from apex to Cu_2; some submarginal ochreous markings terminated by a single brown marginal line. Fringes gray-tan.

Length of forewing of the unique Holotype ♂ 17.0 mm.

♂ genitalia as figured, differing from all other species in the blunt, distally upturned valvae.

There is no androconial patch in this species.

Female: Unknown.

I have seen but the one specimen.

MEXICO: D. F.: San Angel, vi, 1♂ (type of *pseudopephredo,* (AMNH).

There is little that can be said about this species. The single specimen was taken at a somewhat higher elevation than are most *Cyllopsis* of the group, and Chermock's characterization (1947: 200) is quite accurate. I take great pleasure in figuring this unusual *Cyllopsis* for the first time here.

Cyllopsis henshawi (Edwards), 1876

This is a species of the southwestern United States mountains and the high country of Mexico. The United States populations have been well characterized by Nabokov (1942), and the confusion still remaining on the identity of *henshawi* was resolved by Brown (1964). Unfortunately, too many authors have chosen to

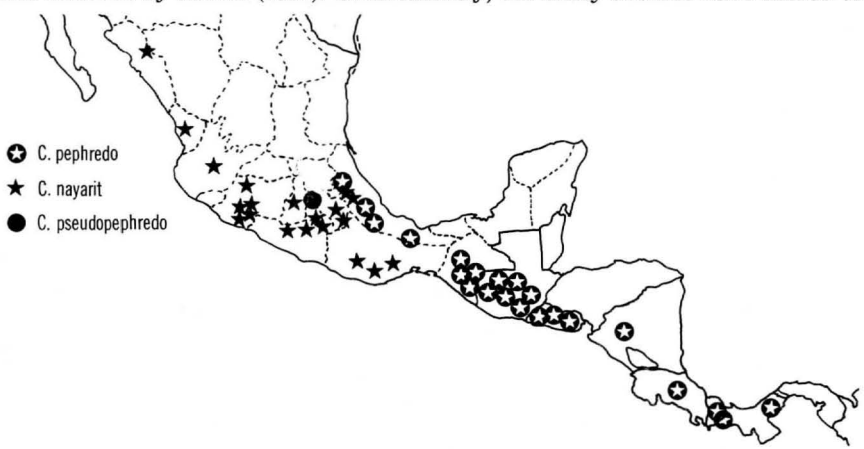


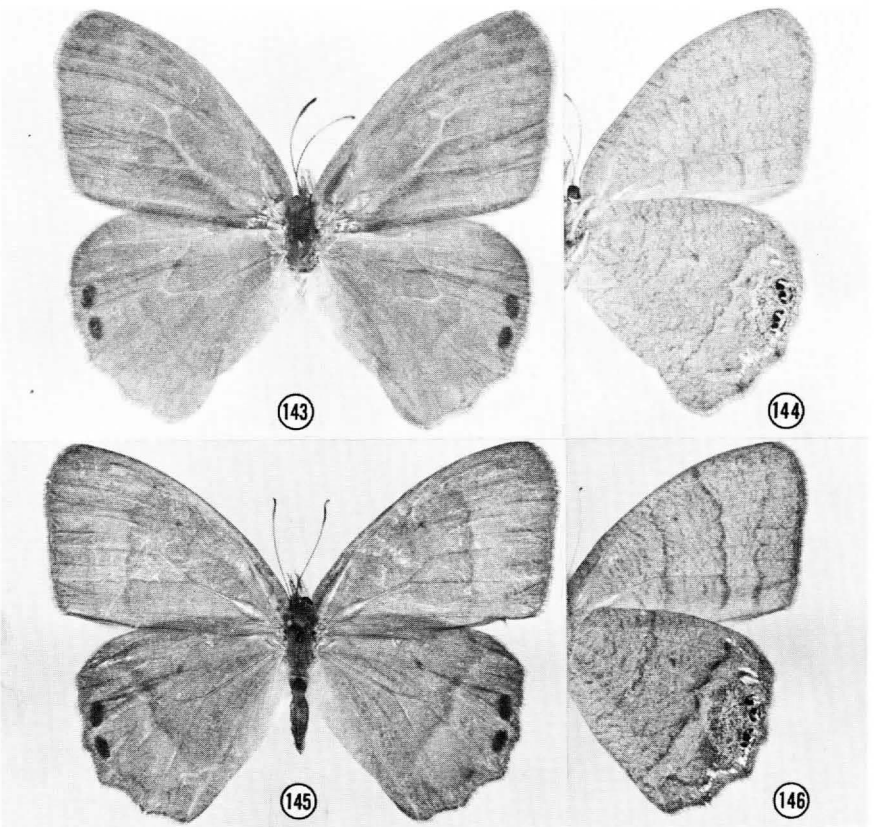
Figure 142: distribution of members of the *Cyllopsis pephredo* subgroup.

ignore these works, and the North American literature relating to the identities of *henshawi, pyracmon, dorothea* and *maniola* is full of misidentification. Hoffmann (1940) did recognize the difference between *henshawi* and *pyracmon,* but his work was not documented by the differences and has not been followed. Chermock (1947) mistook *henshawi* for a northern subspecies of *pyracmon* (there is one of these, too), and these errors have been perpetuated in the literature to date.

Two subspecies are recognized in *C. henshawi,* and these are characterized as follows:

KEY TO THE SUBSPECIES OF *Cyllopsis henshawi* (EDWARDS)

1. Hindwing below rather pale brown, gray patch very distinct on margin, bands of both wings below not contrasting much with ground color; southwest U. S., north Mexico
   ..... *C. Henshawi henshawi* (Edwards)
1'. Hindwing below darker brown, gray patch not distinct at margin; bands



Figures 143-146: *Cyllopsis henshawi henshawi* (Edwards). 143-144, ♂ upper (143, photo no. 011674-C-6) and under (144, photo no. 011674-C-7) surfaces; U. S. A.: ARIZONA: Cochise Co.: Huachuca Mtns. (LACM). 145-146, ♀ upper (145, photo no. 011674-C-8) and under (146, photo no. 011674-C-9) surfaces; U. S. A.: ARIZONA: Cochise Co.: Chiricahua Mtns. (A).

of both wings beneath prominent; Mexican highlands
..... *C. henshawi hoffmanni,* n. ssp.

Cyllopsis henshawi henshawi (Edwards), 1876

Figures 143, 144 (♂), 145, 146 (♀), 147 (♂ genitalia)

Euptychia henshawi Edwards, 1876: 205 ("Arizona and New Mexico": restricted to area near Camp Lowell, Pima Co., Arizona, by Brown [1964: 331]). Type CM.

The nomenclatorial confusion surrounding this species is great: Edwards (1876: 205-206) started it all by describing *henshawi* from a mixed series of this species and *C. dorothea* form *"edwardsi"* (Nabokov, 1942: 61-62). The southwestern U. S. *Cyllopsis* long stood together as *"henshawi"* until Nabokov (1942) demonstrated that more than one species were so labelled in collections. Still later Chermock (1947) undid some of the splitting of the old *"henshawi"* by Nabokov and demoted *henshawi* to a subspecies of *pyracmon.* Brown (1964: 331-333) formalized Nabokov's selection of a single female from Arizona as the Lectotype of *henshawi,* but sidestepped the Chermock position that the present insect was a subspecies of *pyracmon.*

Analysis of specimens from many sources has revealed that both *pyracmon* and *henshawi* occur in the southwestern U. S. and are quite distinct. Both are further represented in Mexico by separate subspecies, though *pyracmon* is the more widespread and common throughout northern Central America as well.

The present subspecies may be characterized as follows:

Male: Head and thorax with brown hairs above, grayish ones below; abdomen with brown hairs above, tan ones below. Palpus clothed with grayish-brown hairs,

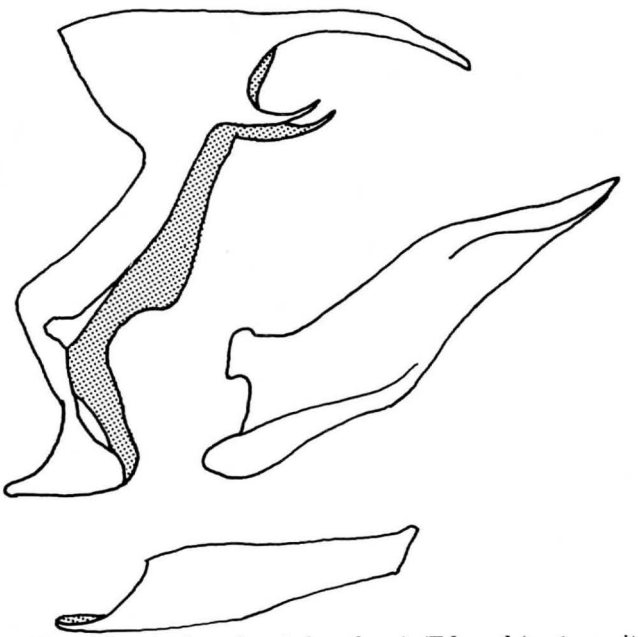


Figure 147, *Cyllopsis henshawi henshawi* (Edwards), ♂ genitalia (slide M-1774); U. S. A.: ARIZONA: Santa Cruz Co.: Madera Canyon, Sta. Rita Mtns. (LACM).

tan scales laterad. Antenna brown above, fulvous below; tip of club russet. Legs clothed with grayish-brown scales.

Forewing above slightly reddish-brown with cubital stem and veins arising from it definitely reddened; otherwise unmarked except for androconial mass (see below). Hindwing upper surface also slightly reddish-brown with extradiscal band of under surface showing through slightly as a transverse brown to red-brown band, two submarginal spots in M_2-M_3 and M_3-Cu_1 and a narrow dark brown marginal line. Fringes a bit grayer than ground color.

Forewing under surface tan with many short fine brown striae and with narrow (sometimes obsolescent) brown bands across cell, outside cell and halfway between cell and margin, extracellular band being most dentate, and a brown marginal line. Under surface of hindwing also tan with brown striae concentrated in basal two-thirds, terminated by a straight dark brown extracellular band which is more or less bordered outwardly by yellow scaling, then a partial brown submarginal band cut by gray patch in M_1-Cu_1 enclosing two double-pupilled black eyespots in M_2-M_3 and M_3-Cu_1; submarginal band continued through gray patch in silver and silver flecks from gray patch to Cu_2-2A. Fringes grayish-tan.

Lengths of forewings of the ♂ specimens at hand range from 19.0 to 22.0 mm., most being in the 20-21 mm. range.

♂ genitalia as figured, differing from *pyracmon* in the longer uncus, but shorter, less finely drawn valva.

Forewing androconial patch as illustrated by Nabokov (1942: 63, fig. 3) and extending from M_3 to inner margin outside cell, from origin M_2 to near origin Cu_2 within cell. Scale formation as in *C. h. hoffmanni* (Figs. **152-155**).

Female: Head, thorax, abdomen and appendages as in ♂. Upper surface of forewing brown with a prominent reddish wash throughout, most pronounced in area between extradiscal and submarginal bands of under surface; reddish wash subdued marginad. Hindwing above brown with slight fulvous shading in basal two-thirds, area just distad of extradiscal band of under side strongly reddened; two large fuscous submarginal spots, edged inwardly with fulvous, in M_2-M_3 and M_3-Cu_1. Under surface as in ♂, but all dark markings more prominent and yellow shading between hindwing extradiscal band and gray patch nearly complete and definite.

♀ forewing lengths of the specimens at hand range from 21.0 to 25.0 mm., most being from 22.0 to 23.0 mm.

I have examined 135 specimens of this subspecies, but I have been unable to include the extensive series from the USNM in this listing. The localities represented by the material at hand include:

U. S. A.: COLORADO:: "Colorado", 1♂ (AMNH). NEW MEXICO: Hidalgo Co.: Cottonwood Canyon on Cloverdale-Douglas road, 1-3 mi. E. of New Mexico-Arizona line, vi, 1♂ (KR). Sandoval Co.: Jemez Springs, vi, 1♀ (CM). ARIZONA: Apache (?) Co.: White Mtns., vii, 1♀ (AMNH). Pima Co.: Sta. Catalina Mtns., v, 2♂ (AMNH); vic. Camp Lowell, 1♀ (type of *henshawi,* CM); Mud Springs, Sta. Catalina Mtns., vii, 1♂ (AMNH). Graham Co.: Mt. Graham, 1♂ (AMNH). Santa Cruz Co.: Madera Caynon, St.a Rita Mtns., 5800-6400', vi, viii, x, 8♂ 17♀ (A, AMNH, KR, LACM, UCB); Roundup Campground, Madera Canyon, 5800', vi, 3♂ 2♀ (LACM); Daly Mine trail, Sta. Rita Mtns., 6200', vi, 5♀ (KR); Florida Campground, Sta., Rita Mtns., vii, 1♀ (CM); Sta. Rita Mtns., vii, 2♀ (CM). Cochise Co.: Paradise, 1♀ (LACM); Ramsey Canyon, Huachuca Mtns., v-vii, 8♂ 7♀ (A, AMNH, LACM, UCB); Miller Canyon, Huachuca Mtns., vi, 1♀ (AMNH); Cave Creek, Chiricahua Mtns., v, vii, 1♂ 1♀ (LACM); S Fork Cave Creek, Chiricahua Mtns., 5200', vii, 1♂ (KR); Pinery Canyon, Chiricahua Mtns., 5000', 2♂ 2♀ (CM, UCB); Chiricahua Mtns., v-vii, 4♂ 6♀ (A, AMNH, CM, LACM); Montezuma Pass, vi, 1♂ (AMNH); Montezuma Canyon, Coronado Natl. Mon., vi, 1♂ (KR); 5 mi. W of Portal, vii, 1♀ (AMNH); "Cochise Co.", 1♂ (AMNH). "Southern Arizona", vi, 3♀ (LACM); "Arizona", 4♂ 3♀ (AMNH, CM).

MEXICO: SINALOA: Durango-Villa Union road, 6500', iv, 1♂ (AMNH).

CHIHUAHUA: Sta. Clara Canyon, vi, 2♀ (AMNH).

No data: 2♂ (CM).

In addition to the localities cited, this butterfly will probably be found in northern Sonora, western Durango and possibly western Coahuila, Mexico. These areas have not had the collecting they deserve as yet, and all of the states mentioned have suitable habitats in the mountain ranges that dot them.

My own experience with this species indicates that it is not one of the deep shade butterflies, but rather it prefers to fly and perch in sunny areas within open woods. The flight is weak, even for a *Cyllopsis,* and were it not for undergrowth these butterflies would be simple to capture.

The distribution of *C. henshawi* shows a very definite gap in the ranges of the nominate subspecies and the one from the Mexican plateau. I have seen no specimens from the northcentral portion of Mexico where the two subspecies could intergrade, and much of the land in Jalisco and Zacatecas that could be expected to serve as a connecting point for the two subspecies is not suitable for these butterflies. Nevertheless, these two states, especially in their northern parts, should be searched for them.

Cyllopsis henshawi hoffmanni, new subspecies

Figures 148, 149 (♂), 150, 151 (♀), 152-155 (androconial scales)

Male: Upper surface similar to that of nominate *henshawi,* but the reddish tinge to both wings is less pronounced and hindwing extradiscal line of under surface less clearly indicated above. Under surface somewhat darker than in the nominate subspecies with dark markings more prominent and brown striae evident on hindwing distad of extradiscal dark band; gray patch of hindwing only vaguely indicated; hindwing transcellular band clearly marked in present subspecies.

Length of forewing of the Holotype ♂ 18.5 mm., those of the ♂ Paratypes range from 18.0 to 21.0 mm., averaging 20.0 mm.

♂ genitalia as in nominate *henshawi.*

Androconial patch as in *h. henshawi.* Individual scales long and thin with terminal brushlike organelles rather thinner than in some species and not so dense. Ribbing of scale comprised of small interstices and rather tight ribs.

Female: Upper surface as in *h. henshawi,* but reddish suffusion less pronounced. Under surface darker than that of *h. henshawi* with dark markings more prominent, transcellular band and well developed and gray marginal patch of hindwing only faintly indicated.

Lengths of forewings of the eight ♀ Paratypes range from 20.0 to 23.0 mm., averaging 22.4 mm.

Described from thirteen specimens, five males and eight females, from the Mexican highlands.

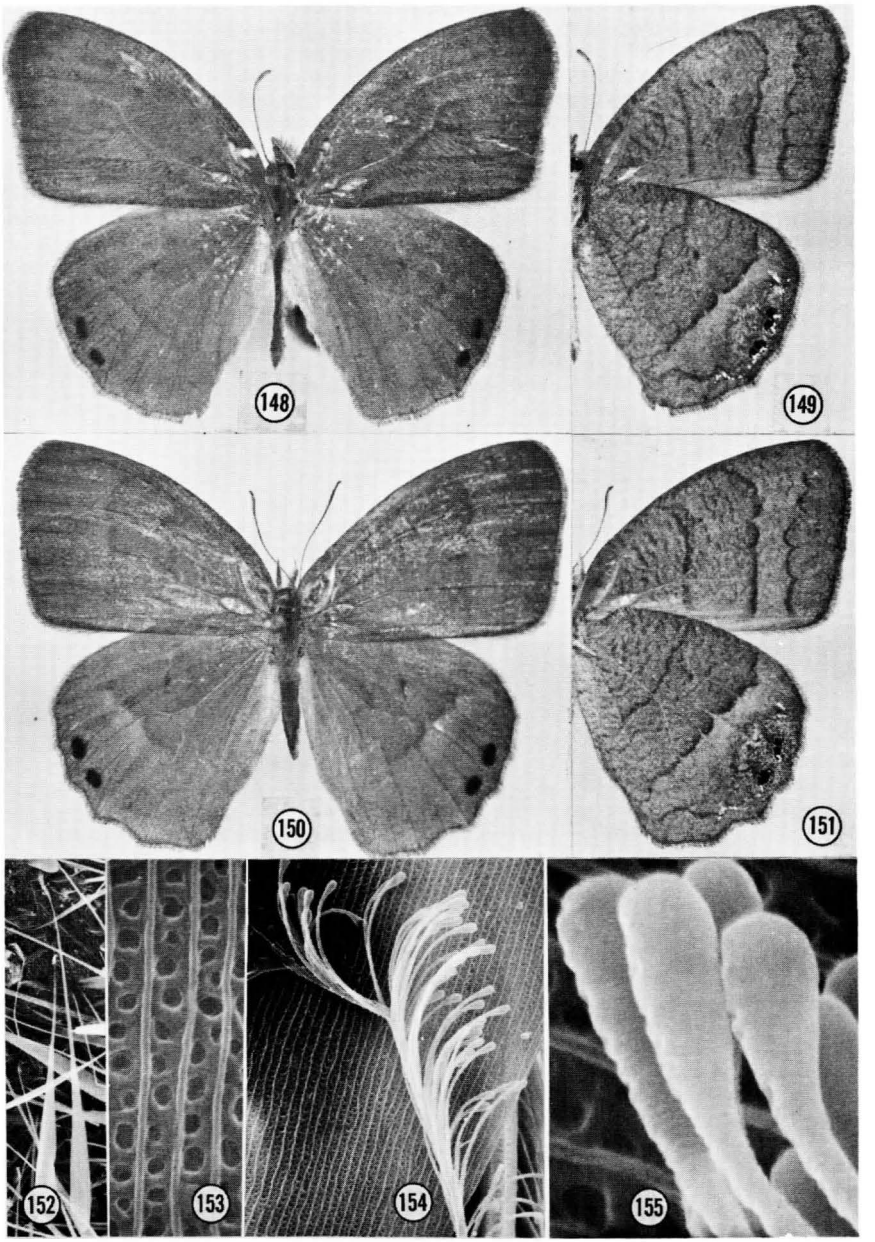
HOLOTYPE ♂ : MEXICO: MEXICO: Tenancingo, vi.1968 (T. Escalante).

PARATYPES: all MEXICO: MICHOACAN: Uruapan, iii, 1♂ 1♀. MEXICO: Malinalco, viii, 1♂. GUERRERO: Iguala, iv, 1♀. MORELOS: Cuernavaca, iv, 1♀. DISTRITO FEDERAL: Pedregal, x, 1♂. PUEBLA: Tehuacan, 5500', ix, 1♀; San Juan Apulco, v, vii, ix, 1♂ 3♀; Manzanilla, ix, 1♀.

Disposition of type material: Holotype ♂, three ♂ and three ♀ Paratypes (A); three ♀ Paratypes (AMNH); one ♂ and two ♀ Paratypes (USNM).

This subspecies is named for the late Dr. Carlos C. Hoffmann of Mexico, D. F., in recognition of his work on the Mexican fauna. His list (Hoffmann, 1940) is still the standard checklist of Mexican Macrolepidoptera.

The present subspecies is apparently very local, but widespread, throughout the central Mexican highlands. It has long masqueraded in collections as other species: the USNM material being integrated with *C. hilaria* and one of the AMNH specimens bearing a holograph determination label of Hoffmann's as the ♀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Figures 148-155: *Cyllopsis henshawi hoffmanni,* new subspecies. 148-149, Holotype ♂ upper (148, photo no. 011674-C-10) and under (149, photo no. 011674-C-11) surfaces; MEXICO: MEXICO: vic. Tenancingo (A). 150-151, Paratype ♀ upper (150, photo no. 011674-C-12) and under (151, photo no. 011674-C-13) surfaces; MEXICO: PUEBLA: San Juan Apulco (A). 152, androconial scale, approx. 105× (SEM photo 0417). 153, interrib structure, approx. 6650× (SEM photo 0420). 154, tip of androconial scale, approx. 1330× (SEM photo 0418). 155, detail of tip, approx. 13,200× (SEM photo 0419).

of *C. hedemanni.* It is not a common insect, especially compared with the series before me of Mexican highland *C. pyracmon* and *pertepida.*

The distribution of the subspecies of *C. henshawi* is plotted on the map in Fig. **156.** Note especially the "gap" in the distribution of this species throughout the northcentral part of Mexico: such disjunct distributions are perhaps more impressive evidence of the lack of collection in these intervening areas than actual breaks in the species' distributions, indicating a need for greater collecting activity in these unprepossessing looking areas.

Cyllopsis pertepida (Dyar), 1912

This species and its included subspecies are found in discontinuous populations throughout the southwestern United States and montane Mexico. There is greater variation between individuals within local demes in *pertepida* than in other

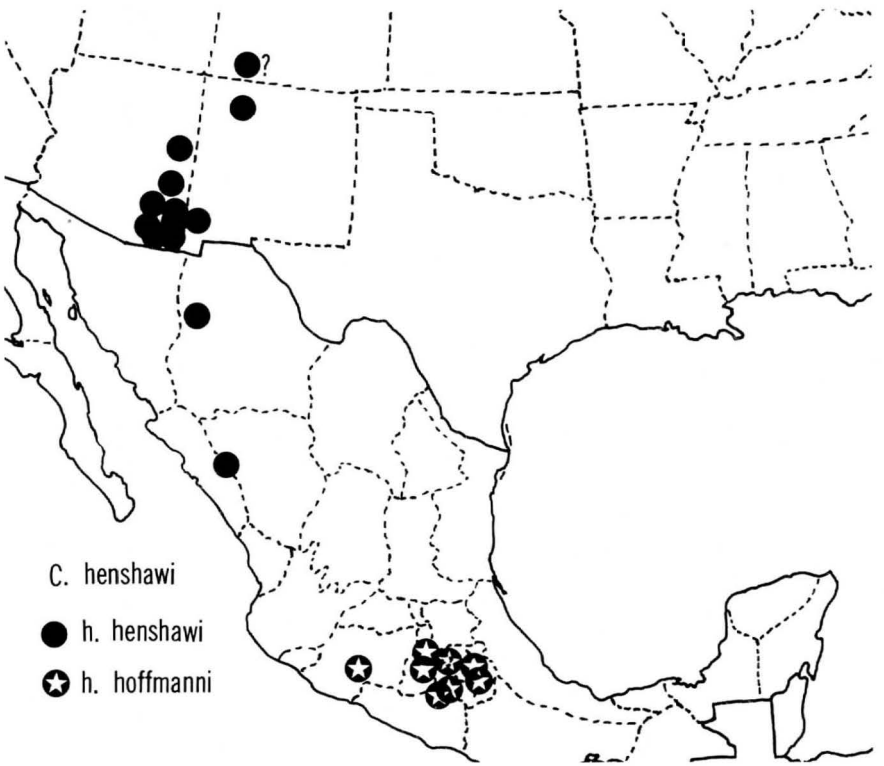


Figure 156: distribution of subspecies of *Cyllopsis henshawi.*

members of *Cyllopsis*, compounded by the fact that some of the populations at least appear to be multiple-brooded. There is minor variation between populations, in addition, and many of these demes could be named, but it seems better to retain only those subspecific names recognized here so as to demonstrate the similarities between populations, rather than emphasizing their differences.

In addition to the seasonal forms mentioned above, the situation with *pertepida* is confused by apparent genitalic polymorphism. This might be more a function of the preparation techniques, however, since the valvae are strongly incurved at the tips, resulting in various configurations of the valvae when they are flattened onto slides. Not all of the apparent genitalic polymorphism can be ascribed to artifact, since there are some real differences between the genitalia of different specimens. There seems to be a greater upturning of the tip of the valva in Mexican specimens than in those from the northern parts of the range, but this characteristic is not absolute and various configurations can be obtained from specimens taken in the same place. The variation is not confined to seasonal forms, either, both configurations being found among specimens of the same apparent brood.

It is unfortunate that Nabokov (1942) did not have material available to him of *pertepida* from the Mexican highlands when he described *dorothea* and its relatives. He was aware of this and decried the lack of information on habits, broods, related Mexican and Central American forms and early stages in the introductory statement to his paper (Nabokov, 1942: 61). Had present-day information and series been available to him, I feel certain he would have detected the conspecificity of his *dorothea*, etc., and *pertepida*. It seems that very few people have critically examined both *dorothea* and *pertepida* in the past, and the continued separation of these butterflies thus has been carried on in the literature.

Inasmuch as there are brood distinctions in at least two of the populations, the key presented below is best used with a series of specimens. I have had to make the key a bit more cumbersome than I should have liked so that more individual specimens could be determined from it. The situation is further complicated because there are intermediate populations that share attributes of two (occasionally three) subspecies, and such specimens are nearly impossible to run through the key. Material from these transitional areas (see map, Fig. **187**) should be carried as simply intermediate, unclassified populations.

KEY TO THE SUBSPECIES OF *Cyllopsis pertepida* (Dyar)

1. Extradiscal band of hindwing beneath dark brown without trace of reddish coloration ..... 2.
1'. Extradiscal band of hindwing beneath with at least traces of reddish-brown in anterior part ..... 3.
2. Band of hindwing beneath comprised of semicircular elements between veins, not dentate; general throughout Mexican highlands from Durango southward to Distrito Federal and Guerrero ..... *C. pertepida pertepida* (Dyar)
2'. Band of hindwing beneath not as above, but rather dentate as in other subspecies; southwestern Chihuahua ..... *C. pertepida intermedia*, n. ssp.
3. Ground color of hindwing beneath with definite gray shading; upper surface usually paler fuscous with varying reddish shading ..... *C. pertepida maniola* (Nabokov)
3'. Ground color of hindwing below without gray shading, though gray-brown scrawls may be present, but if so, the gray submarginal patch prominent ..... 4.
4. Ground color of hindwing beneath rather uniform ochreous brown; ground color of forewing beneath with definite ochreous cast; Texas to montane southern Nuevo Leon, Mexico ..... *C. pertepida avicula* (Nabokov)
4'. Ground color of hindwing beneath of a darker brown shade; forewing

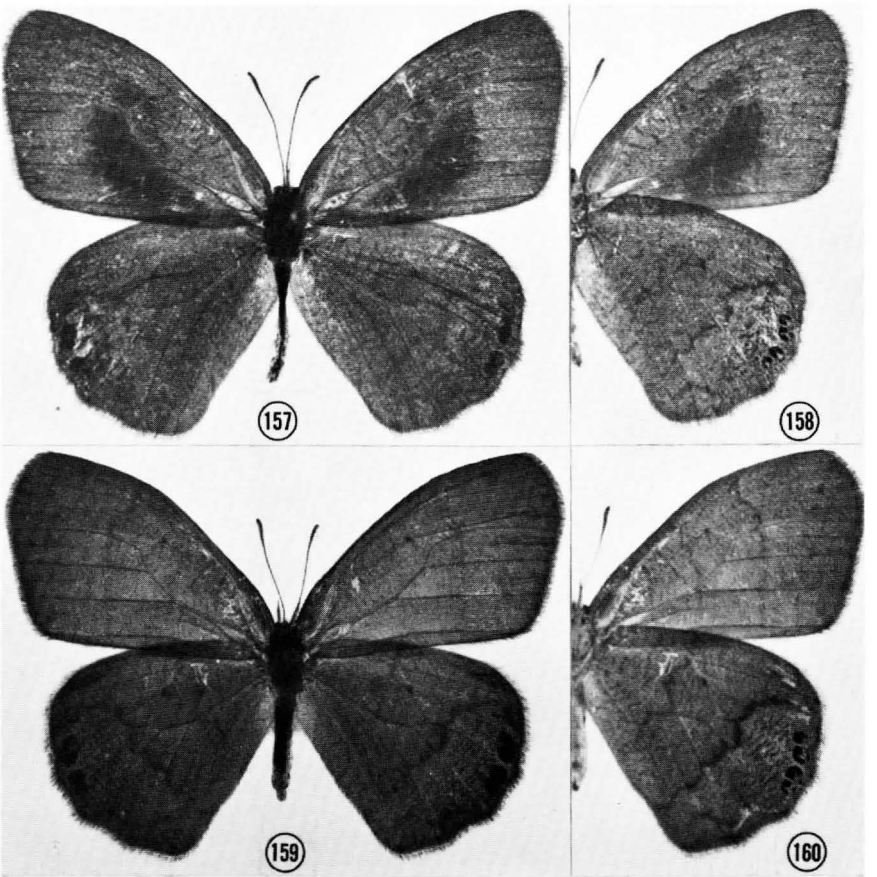
below with at least trace of rusty shading; Colorado and Utah to central New Mexico and Arizona ..... *C. pertepida dorothea* (Nabokov)

Cyllopsis pertepida dorothea (Nabokov), 1942 [NEW STATUS]

Figures 157, 158 ("dorothea" ♂), 159, 168 ("dorothea" ♀), 161, 162 ("edwardsi" ♂), 163, 164 ("edwardsi" ♀), 165 (♂ genitalia), 166-168 (androconial scales)

Neonympha dorothea dorothea Nabokov, 1942: 64 (south rim of Grand Canyon, Coconino Co., Arizona). Type MCZ.
= *Neonympha dorothea edwardsi* Nabokov, 1942: 66 (Gila Co., Arizona). Type MCZ.

I should have liked to have been able to retain the subspecific name *edwardsi*

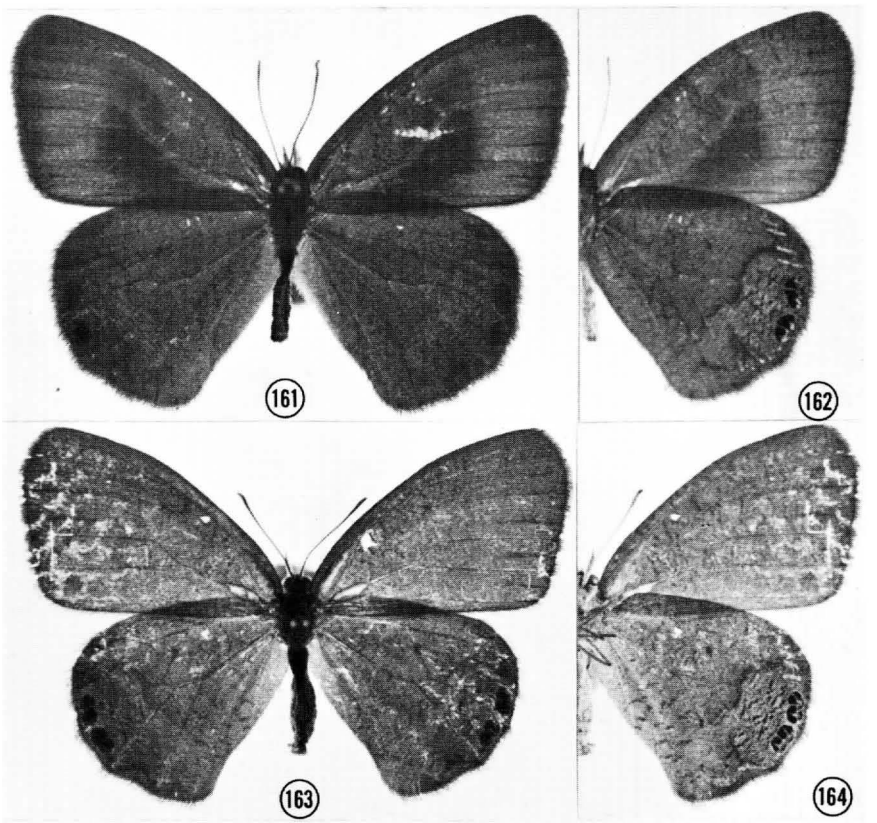


Figures 157-160: *Cyllopsis pertepida dorothea* (Nabokov), form "dorothea". 157-158, ♂ upper (157, photo no. 043074-7) and under (043074-8) surfaces; U. S. A.: COLORADO: Montezuma Co.: Mesa Verde Natl. Park (A). 159-160, ♀ upper (159, photo no. 043074-9) and under (160, photo no. 043074-10) surfaces; same data (A).

for the easily recognizable red morph of this butterfly, but both forms do occur together in a few places, and the distribution of "typical" *dorothea* is sporadic throughout the listed range. In some few places the "dorothea" form flies early in the season and the "edwardsi" form later, but even this is not consistent. It seems best, therefore, to place both names as forms of a single subspecies.

The "dorothea" form is characterized by slightly larger size, a somewhat truncated forewing apex and darker coloration above and below: this form is the only one present in the Front Range of Colorado and appears to be the first generation of the subspecies in some more southerly and westerly populations of *dorothea*. The "edwardsi" form is redder, smaller and has a more rounded forewing outline: this form is dominant throughout the extreme southern part of the range of the subspecies and forms the second brood in other areas, such as southeastern Utah. Descriptions of the two forms follows.

"dorothea" form male: Head, thorax and abdomen covered with fuscous hairs above and gray ones below. Palpus dark gray, white internally. Antenna



Figures 161-164: *Cyllopsis pertepida dorothea* (Nabokov), form "edwardsi". 161-162, ♂ upper (161, photo no. 043074-11) and under (162, photo no. 043074-12) surfaces; U. S. A.: ARIZONA: Yavapai Co.: Mingus Mtn. (A). 163-164, ♀ upper (163, photo no. 043074-13) and under (164, photo no. 043074-14) surfaces; U. S. A.: ARIZONA: Coconino Co.: Oak Creek Canyon (AMNH).

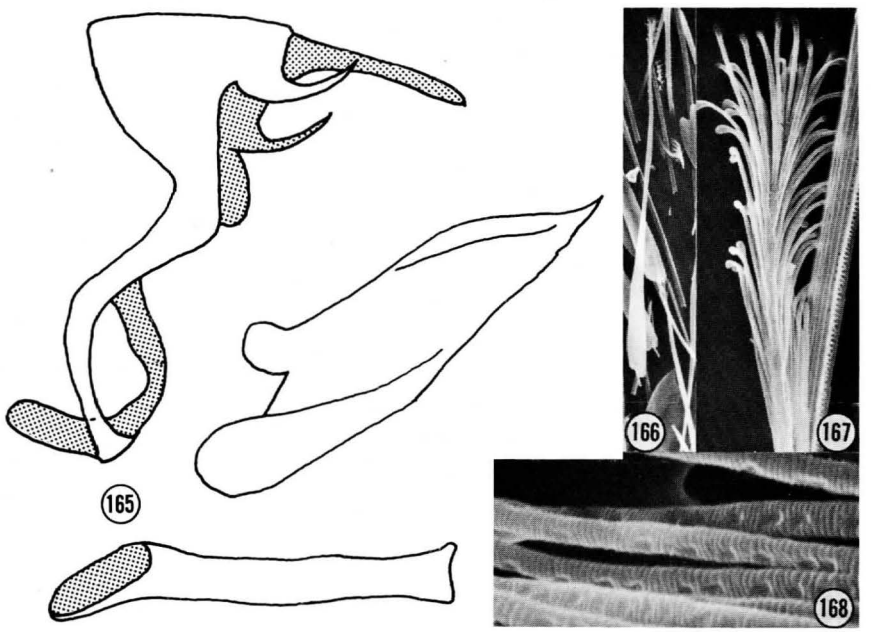
brown above and at tip of club, ochreous narrowly ringed with brown below. Legs clothed with gray hairs.

Upper surfaces of both wings fuscous barely contrasting with androconial patch in discal area of forewing (see below); very slight reddish-brown shading in forewing disc outside androconial patch and narrowly along veins associated with cubital stem; hindwing submarginal blind dark fuscous ocelli in M_2-M_3 and M_3-Cu_1. Fringes gray-brown.

Forewing below rusty with yellowish-gray shading and short brown scrawls costally and apically; bands reddish-brown: transcellular band (may be obsolescent) uniformly bowed outward in middle and extending from costa to Cu_2-2A, extracellular band best developed passing around cell from costa and thence to 2A, outer band placed inward further than in many species and consisting of dashes between veins near tornus. Hindwing below with basal two-thirds warm brown with prominent dark brown scrawls and somewhat paler in outer third; basal band across cell reddish-brown and well developed (may be dentate or rather straight); extracellular band heavy, reddish-brown and somewhat dentate; gray submarginal patch enclosing the double-pupilled black ocelli in M_2-M_3 and M_3-Cu_1 very well developed and prominent; a nearly complete submarginal silver line from apex to tornus, bounded at outer edge by reddish-brown from tornus to Cu_1-Cu_2. Fringes of forewing gray-brown, of hindwing grayish.

Lengths of forewings of the "dorothea" ♂ specimens at hand range from 19.0 to 21.0 mm., averaging about 20 mm.

"edwardsi" form male: Head, thorax, abdomen and appendages as in "dorothea" ♂, but hairs slightly paler. Upper surface of wings not as dark as in "dorothea" ♂ and with prominent reddish shading on both wings outside cell



Figures 165-168: *Cyllopsis pertepida dorothea* (Nabokov). 165, ♂ genitalia (slide M-1637) of Paratype demonstrating the "dorothea type" genitalia (see text); U. S. A.:ARIZONA: Coconino Co.: Grand Canyon (AMNH). 166, androconial scale, approx. 130× (SEM photo 0421). 167, tip of same scale, approx. 1300× (SEM photo 0422). 168, detail of tip, approx. 8650× (SEM photo 0423).

(occasionally with some reddish shading within cell of forewing, too). Under surface generally ruddier than in "dorothea" ♂ and with transcellular bands of both wings obsolescent; gray submarginal patch of hindwing very prominent.

Lengths of forewings of the "edwardsi" ♂ specimens before me range from 17.0 to 20.0 mm., averaging about 19 mm.

♂ genitalia as figured, but some specimens have valva resembling those of *C. p. pertepida* (Fig. **183**). The *"dorothea*-type" genitalia are distinguished from those of the nominate subspecies (and *C. p. maniola*) by the straight, not upturned, distal tip of the valva.

The androconial patch is substantially as figured by Nabokov (1942: 63; fig. 2), but the patch is occasionally not reduced in width toward vein 2A, thence resembling more Nabokov's figure of *maniola* (1942: 63; fig. 1). The scales themselves conform well to the pattern shown by nominate *pertepida* (Figs. **184-186**), but the brush-like tip is more dense in the present subspecies.

"dorothea" form female: Head, thorax, abdomen and appendages as in "dorothea" ♂, but very slightly paler. Upper surface of forewing dull fulvous with costa, apex and margins fuscous; bands of under surface showing through weakly above. Upper surface of hindwing differing from that of "dorothea" ♂ in that the extradiscal area and distal part of cell shaded with fulvous. Under surface as in "dorothea" ♂, but paler.

The lengths of the forewings of the ♀ "dorothea" form at hand range from 21.5 to 24.0 mm., averaging about 23 mm.

"edwardsi" form female: Head, thorax, abdomen and appendages as in "edwardsi" ♂. Upper surface also as in "edwardsi" ♂, but tinged with reddish-fulvous over both wings except marginal portions. Under surface as in "edwardsi" ♂.

Lengths of the forewings of the ♀ "edwardsi" I have in hand range from 19.0 to 21.5 mm., averaging just over 20 mm.

I have examined 142 specimens from the localities listed below:

U.S.A.: COLORADO: El Paso Co.: Williams Canyon, 6800-7200', vii, 1♂ 1♀ (UCB); Star Ranch, vii, 7♂ (A, UCB). Fremont Co.: 2 mi. NE Hillside, viii, 1♂ 1♀ (A); Rouch Gulch, vii, 1♂ (A); gulch betw. Leonard Cr. and West Cr., viii, 1♂ (A): gulch betw. Howard Cr. and West Cr., viii, 1♂ (A): Kerr Gulch, vii, 1♀ (A). Saguache Co.: 0.5-1.4 mi. W of La Garita, 7900', viii, 1♀ (A). Montezuma Co.: Sleeping Ute Mt., 7000', vi, 1♀ (UCB); near Gateway, Mesa Verde Natl. Park, 6000', viii, 1♀ (A); Mesa Verde Natl. Park, 7000', vi, vii, 2♂ 2♀ (A, AMNH). "So. Colo.", 1♂ (CM); "Colorado", 2♂ (AMNH). NEW MEXICO: Taos Co.: Taos Canyon, viii, 1♀ (LACM). McKinley Co.: Fort Wingate, vi, vii, 2♂ 2♀ (AMNH, CM); "Water Cañon, 5000', viii, 3♂ (CM). Lincoln Co.: Highrolls, vi, 1♀ (AMNH); Pinos Altos, viii, 1♂ (A); San Antonito, viii, 1♂ (CM). Socorro Co.: 28 mi. SW Magdalena, 8500', vii, 2♂ (AMNH). Catron Co.: 2-3 mi. E of Mogollon, 7200-7600', vii, 2♀ (AMNH). "New Mexico", 3♂ 1♀ (AMNH). UTAH: Grand Co.: N side La Sal Mtns., intersection of Polar Mesa Rd. and Gateway-Castleton Rd., 8000', vi, 1♀ (A). San Juan Co.: Pack Cr., La Sal Mtns., vi, 1♂ (A); 3 mi. N Devil's Canyon campground, S side Abajo Mtns., 8000', vi, 1♂ (A). Washington Co.: Hellhole Pass, Beaverdam Mtns., viii, 1♂ (A); Pig Cr., Pine Valley Mtns., vii, 1♀ (A). not located: Parrowan Canyon, viii, 1♀ (AMNH). ARIZONA: Apache Co.: 4 mi. N of Alpine, 8500', vii, 1♂ (AMNH). Coconino Co.: Grand Canyon (type locality of *dorothea),* vi, 10♂ 1♀ (AMNH, UCB); Bright Angel, Grand Canyon, 7000', v-vi, 1♂ (UCB); Oak Creek Canyon, 5000', vi, 2♂ (A, LACM) Todd's Lodge, Oak Creek Canyon, vi, ix, x, 12♂ 3♀ (AMNH). Yavapai Co.: Mingus Mtn., vi, ix, 16♂ (A, LACM); 2 mi. SW of Jerome, vi, 5♂ (LACM); Mescal Canyon, 2 mi. SW of Jerome, vi, ix, 5♂ (KR); Prescott, vii, 1♀ (AMNH); "Yavapai Co.", vi, 1♂ (AMNH). Maricopa Co.: 1-3 mi. N of Sunflower, ix, 1♂ 1♀ (KR). Pinal Co.: Pinal Mtns., v, 1♂ (UCB). Gila Co. (type locality of *edwardsi*): Globe, vii, 1♀ (AMNH); Reservation Spgs., 12 mi. SE of Globe, 4900', v, vi, 3♂ (CM). not located; Rose Peak, Blue Range, vii, 1♂ (KR). "Ariza.", 1♂ 1♀ (the pseudotypes of *henshawi,* CM). no locality, v, 1♂ (UCB). no data, 1♂

(CM). "Paradise", viii, ix, 16♂ 5♀ (CM).

The material in CM labelled "Paradise" represents the northern *dorothea,* but the majority of Poling's Paradise material represented populations of insects from Cochise or Santa Cruz Co., Arizona. It is probable that these specimens, rather than being taken in southeastern Arizona were most likely caught either in the White Mountains of Apache Co. or in New Mexico. Either locality would have been accessible to Poling. The specimens almost certainly were *not* taken in Poling's usual haunts, the Davis Mountains of Texas or in the Baboquivari or Huachuca Mountains of Arizona.

Eight additional specimens have been examined which combine characters of *C. p. dorothea* and *C. p. maniola.* The specimens are from the following localities:

ARIZONA: Graham Co.: Wet Canyon, Graham Mtns., 6400', vi, 3♂ 2♀ (LACM).

NEW MEXICO: Grant Co.: Silver City, viii, 1♂ (UCB); Twin Sisters Cr., Fort Bayard, ix, 1♂ (A). Sierra Co.: Black Range, ix, 1♂ (A).

The Graham Co., Arizona, population appears to be a complete intergradation between the two subspecies with the dark upper surface tinged with fulvous of *dorothea,* the brightly colored forewing under surface of the same subspecies, but they have a strong indication of the grayish overscaling on the under surface of the hindwing that characterizes *maniola.* The New Mexican specimens are closer to true *dorothea,* but the under surface again is tinged with gray on the hindwing as in *maniola.* There are also some similarities between these specimens and *avicula,* especially as regards the basically ochreous under forewing, though in the present specimens the posterior part of the wing is tinged with fulvous as in true *dorothea.* All of these specimens are probably true intermediates, a conclusion reinforced by their occurrence in transitional areas.

I have not seen a recent, well documented specimen of *C. h. henshawi* from Colorado. Both of the specimens heretofor recorded from that state are referable to the present insect. I have been unable to locate the single specimen I took in Boulder, Boulder Co., Colorado, during 1957 (the specimen is presently in Carnegie Museum), but I have examined the specimen recorded by Brown, Eff and Rotger (1954: 10) from Sleeping Ute Mountain, Montezuma Co., Colorado, and it is definitely a specimen of the "edwardsi" form of *dorothea.* The specimen figured by them as *henshawi* is definitely that, but it is an Arizona example, not the one from Montezuma Co. which is now in the UCB collection.

Brown, Eff and Rotger (1954: 11) further state that *dorothea* is single-brooded, in this following implicitly Nabokov (1942). Assuming that my conclusion that *dorothea* and *edwardsi* are the same beast (see above), the species must be double-brooded throughout much of its range. The multivoltine nature of *dorothea* is well represented in the records given above by the material from Todd's Camp, Oak Creek Canyon, Coconino Co., Arizona, where specimens were taken in June and then again in September-October. A similar pattern is shown by the Mingus Mountain, Yavapai Co., Arizona, records. I suspect that part of the confusion has arisen from the unpopularity of these butterflies with collectors who are generally after more spectacular game than *dorothea.*

The "dorothea" form closely resembles the new subspecies *intermedia* from southern Chihuahua, but the two subspecies are separated from one another by the distinctive *maniola* in southern Arizona and northern Chihuahua. In any event, *dorothea* can be separated from *intermedia* by the coloration of the band (reddish in the present insect) and by its more angular hindwing extradiscal band.

Cyllopsis pertepida maniola (Nabokov), 1942 [NEW STATUS]

Figures 169, 170 (♂), 171, 172 (♀)

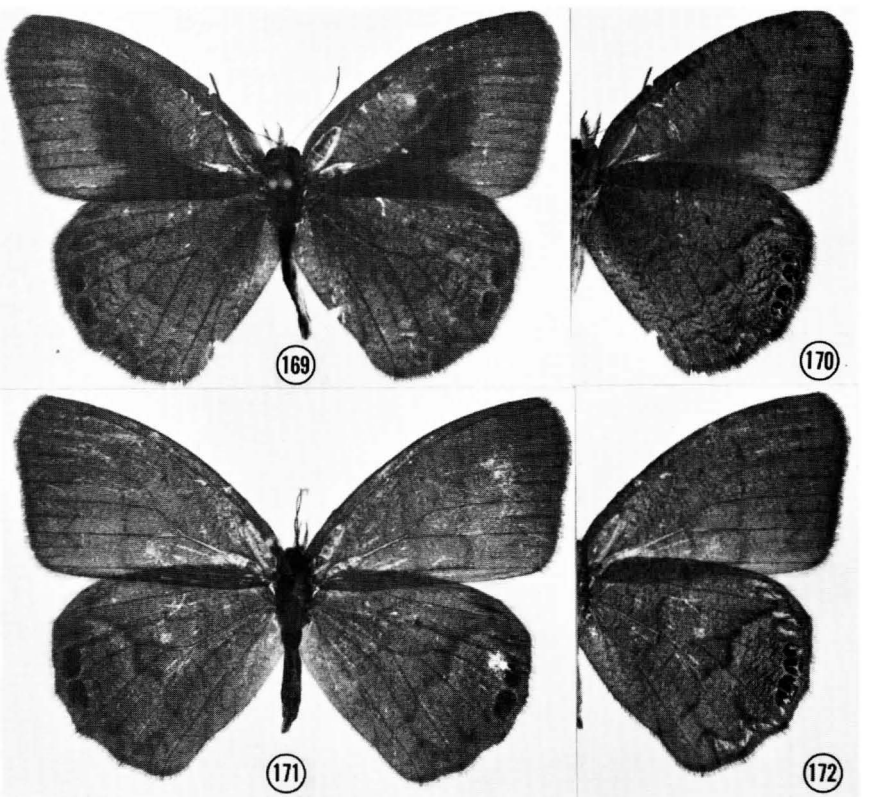
Neonympha maniola Nabokov, 1942: 68 (Cochise Co., Arizona). Type MCZ.

Nabokov (1942: 68) described the southern Arizona population of *pertepida* as a separate species on the basis of differences in the distribution of androconia between it and "typical" *dorothea* (Nabokov, 1942: 63; fig. 1). These differences have been shown to be not consistent after examination of adequate series. Nevertheless, *maniola* should be retained as a subspecies of *pertepida*.

Male: Basically of the "dorothea" form. Upper surface of wings of a paler, warmer brown than in that form with suggestions of extradiscal fulvous overscaling on both wings and strong fulvous shading just inside submarginal fuscous spots of the hindwing.

Under surface basically paler than that of *dorothea:* forewing ground color with a definite ochreous cast, transverse bands poorly developed (except for extradiscal one); hindwing ground color with a strong gray cast overall, contrasting poorly with the gray submarginal patch, and extradiscal band the only one that is prominently developed; silver submarginal line quite definite, as are submarginal black, doubly silver-pupilled ocelli.

Lengths of forewings of the ♂ specimens before me between 19.5 and 22.0 mm., averaging 20.6 mm.



Figures 169-172: *Cyllopsis pertepida maniola* (Nabokov). 169-170, ♂ upper (169, photo no. 043074-15) and under (170, photo no. 143074-16) surfaces; U. S. A.: ARIZONA: Santa Cruz Co.: Madera Canyon, Sta. Rita Mtns. (AMNH). 171-172, ♀ upper (171, photo no. 043074-17) and under (172, photo no. 043074-18) surfaces; U. S. A.: ARIZONA: Cochise Co.: Pinery Canyon, Chiricahua Mtns. (A).

Female: Differs from the ♀ of the "dorothea" form in the same manner as does the ♂.

Lengths of forewings of the ♀ specimens before me range from 18.0 to 24.5 mm., averaging 22.8 mm.

♂ genitalia of the *"pertepida*-type" (Fig. **182**), but some few are of the *"dorothea*-type".

I have examined 108 specimens of this subspecies from southeastern Arizona and northern Chihuahua.

U.S.A.: ARIZONA: Cochise Co. (type-locality of *maniola*): Huachuca Mtns., v, vi, ix, 6♂ (AMNH, CM, LACM); Ramsey Canyon, Huachuca Mtns., v, vi, 9♂ 5♀ (A, AMNH, CM, UCB); Garden Canyon, Huachuca Mtns., vii, 1♀ (AMNH); Chiricahua Mtns., v, vi, 19♂ 2♀ (AMNH, CM, LACM); Pinery Canyon, Chiricahua Mtns., vi, vii, 14♂ 8♀ (A, KR, UCB); above Rustler Park, Chiricahua Mtns., 8200', vi, 9♂ 1♀ (LACM); 5 mi W of Portal, v, vi, 2♂ 2♀ (AMNH); Turkey Creek Canyon, vi, 1♂ (UCB); Paradise, 1♂ (CM); Garces, vii, 1♂ (CM). Santa Cruz Co.: Santa Rita Mtns., vi, 1♂ (LACM); Madera Canyon, Santa Rita Mtns., vi-viii, 5♂ 5♀ (A, AMNH, LACM); Daly Mine Trail, Santa Rita Mtns., 6200', vi, vii, 3♀ (KR).

MEXICO: CHIHUAHUA: "Chihuahua" (actually upper Rio Piedras Verdes 30°15' N, 108° 15' W, 7100-7300'), vi, vii, 6♂ 6♀ (CM).

There seems no good reason that *C. p. maniola* should not be found in southwesternmost New Mexico and in northeast Sonora, though specimens have not been collected from there to my knowledge. The distribution of the present insect parallels that of *Paramacera allyni* L. Miller closely (Miller, 1972: 15), and I would suspect that the isolation of *maniola* from other *pertepida* populations closely coincided with the fragmentation of the *Paramacera xicaque* group.

C. p. maniola may be distinguished from all other *pertepida* populations by its lighter upper surface coloration and by the distinctly gray cast to the under surface of the hindwing. At first glance this washed out, gray general coloration would appear to be an adaptation to the deserts of southern Arizona and northwestern Mexico, but *maniola* flies in well-watered canyons in rich oak and pine woods throughout its range. These habitats are actually considerably moister than are the ones in which the dark "dorothea" form of *C. p. dorothea* flies in much of northern Arizona.

Cyllopsis pertepida avicula (Nabokov), 1942 [NEW STATUS]

Figures 173, 174 (♂), 175, 176 (♀)

Neonympha dorothea avicula Nabokov, 1942: 67 (Fort Davis, Jeff Davis Co., Texas). Type AMNH.

= *Neonympha henshawi texana* Wind, 1946: 27 (Marfa-Alpine, Presidio [?] - Brewster [?] Co., Texas). Type colln. Wind.

The description of *texana* can fit many specimens of *avicula,* and the localities are so close to one another that it seems likely that both names are based on specimens drawn from the same population. It is not as common a subspecies in most collections as are the preceding two, but this may be a function of lessened collecting in some of the western Texas localities that harbor it.

Male: Head, thorax, abdomen and appendages similar to those of *C. p. maniola.* Upper surface of wings similar to those of "dorothea" form of *C. p. dorothea,* but somewhat lighter and reddish-fulvous extradiscal shading more extensive.

Ground color of under surface of both wings rather ochreous and marked about as in "dorothea" form, the entire effect being paler than in that form; gray submarginal patch of hindwing below more prominent than in most "dorothea" form specimens and dark scrawling very evident.

Lengths of forewings of the ♂ *avicula* at hand range from 18.0 to 19.5 mm.,

averaging 18.5 mm.

♂ genitalia of the *"dorothea*-type" in all material examined.

Female: Differs from the ♀ of the "dorothea" form of *C. p. dorothea* in the same manner as does the ♂.

The lengths of the forewings of the ♀ specimens at hand range from 19.5 to 20.0 mm., averaging about 19.8 mm.

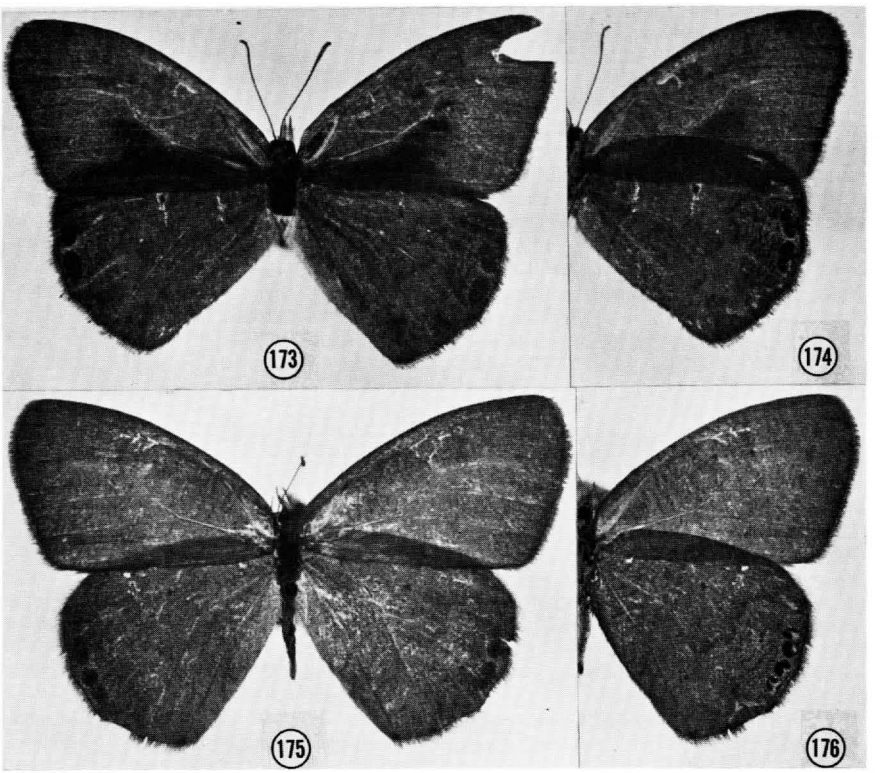
I have seen very few specimens of this form (11 in all) from western Texas and southern Nuevo Leon, Mexico.

U.S.A.: TEXAS: Jeff Davis Co.: Alpine, vi, vii, 3♂ (AMNH, LACM); 17 mi. SW of Toyahvale, v, 3♂ (KR). Brewster Co.: 15 mi. SE of Alpine, 4500', ix, 1♂ (AMNH); "Brewster Co.", x, 1♀ (LACM). County (?): Signal Mtn., viii, 1♂ 1♀ (LACM).

MEXICO: NUEVO LEON: SE side of Cerro Potosí, 2770m., ix, 1♀ (A).

The Nuevo Leon specimen that my wife and I took on Cerro Potosí is somewhat aberrant in that the upper surface coloration is duller and more uniform than are western Texas females. The under surface coloration and pattern conform well to the Texas *avicula,* and I can see no reason to separate the Cerro Potosí material into another subspecies, at least until additional material becomes available.

The rather uniform ochreous under surface separates *avicula* from other



Figures 173-176: *Cyllopsis pertepida avicula* (Nabokov). 173-174, ♂ upper (173, photo no. 043074-A-1) and under (174, photo no. 043074-A-2) surfaces; U. S. A.: TEXAS: Jeff Davis Co.: Alpine (AMNH). 175-176, ♀ upper (175, photo no. 043074-A-3) and under (176, photo no. 043074-A-4) surfaces; U. S. A.: TEXAS: Signal Mtn. (AMNH).

subspecies.

Cyllopsis pertepida intermedia, new subspecies

Figures 177, 178 (♂)

Male: Head, thorax, abdomen and appendages as in "dorothea" form of *C. p. dorothea.* Upper surface of wings almost indistinguishable from that of "dorothea" form, but the fulvous shading outside the androconial patch on the forewing slightly more prevalent. Under surface of both wings also similar to corresponding surface of "dorothea" form, but transverse bands brown, rather than reddish-brown (especially prevalent in extradiscal band of hindwing).

Length of forewing of Holotype ♂ 20.0 mm., those of the four ♂ Paratypes range from 19.5 to 21.0 mm., averaging 20.0 mm.

♂ genitalia of the *"pertepida*-type".

Female: Unknown.

Described from five specimens, all males, from southwestern Chihuahua, Mexico.

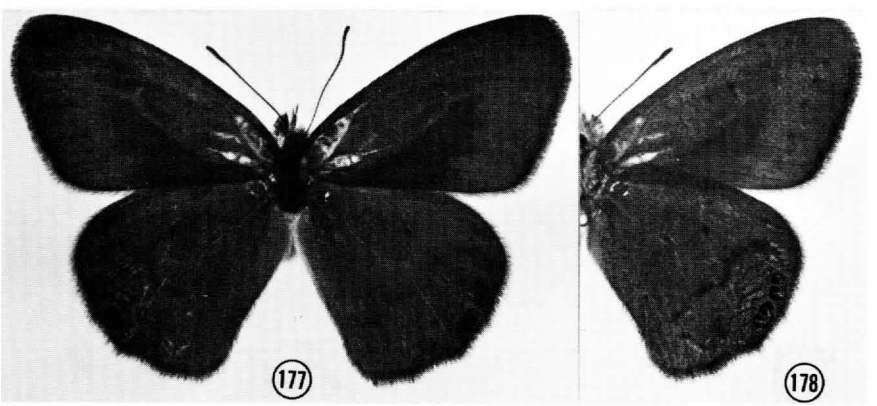
HOLOTYPE ♂: MEXICO: CHIHUAHUA: Madera, vi.1966 (*ex colln.* T. Escalante); ♂ genitalia slide no. M-2528 (Lee D. Miller).

PARATYPES: 4♂, same data as Holotype.

Disposition of type material: The entire type-series is now in collection (A).

I have seen one additional specimen, also from Dr. Escalante's collection, that is referable to this subspecies. The is specimen, also a ♂, is from MEXICO: MORELOS: Cuernavaca, xi.1970 (T. Escalante; A). Assuming that the data are accurate, it indicates a substantial range extension and a surprising one, since the specimen comes from very near populations of nominate *pertepida.* The question of the validity of the data of this specimen has caused me not to include it in the type-series.

Other material collected along with the type-series of this insect shows a remarkable similarity to that taken in Arizona. Some of the species in common are *Callophrys (C.) a. apama* (Edwards), *C. (Mitoura) spinetorum* (Hewitson) and *Speyeria nokomis coerulescens* (Holland).



Figures 177-178: *Cyllopsis pertepida intermedia,* new subspecies, Holotype ♂ upper (177, photo no. 043074-A-5) and under (178, photo no. 043074-A-6) surfaces; MEXICO: CHIHUAHUA: Madera (A).

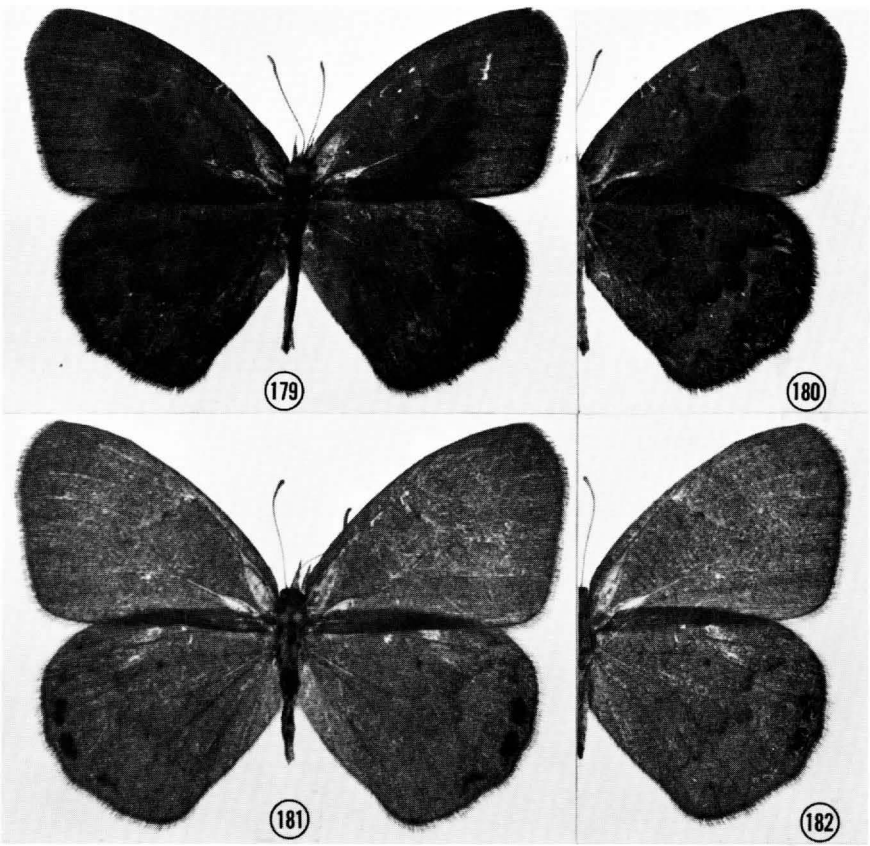
Cyllopsis pertepida pertepida (Dyar), 1912

Figures 179, 180 (♂), 181, 182 (♀), 183 (♂ genitalia), 184-186 (androconial scales)

Euptychia pertepida Dyar, 1912: 39 (Mexico, D. F., Mexico). Lectotype USNM (see below).

This species is restricted to the Mexican highlands and is not uncommon, though very local. Throughout its range the males are remarkably similar and the females display some individual variation. The facies are quite different from those of the other four subspecies, especially as regards the pattern of the hindwing beneath, but genitalic examination shows that the five entities are indeed geographical representatives of the same species.

Male: Head, thorax, abdomen and appendages as in ♂ "dorothea" form of *C. p. dorothea*. Upper surface of wings quite dark fuscous, usually with no trace of extradiscal rusty scaling on either wing (one ♂ from Hidalgo with both wings extensively shaded extradiscally with rust-red scales), and normally little con-



Figures 179-182: *Cyllopsis pertepida pertepida* (Dyar). 179-180, ♂ upper (179, photo no. 043074-A-7) and under (180, photo no. 043074-A-8) surfaces; MEXICO: HIDALGO: vic. Encarnación (A). 181-182, ♀ upper (181, photo no. 043074-A-9) and under (182, photo no. 043074-A-10) surfaces; same data (A).

trasting with androconial patch (see below;) submarginal almost black spots prominent in M_2-M_3 and M_3-Cu_1.

Under surface of wings distinctive. Forewing below dull brown, shaded fulvous toward inner margin, with upper half of wing heavily scrawled with brown markings; transverse bands brown: transcellular one very poorly developed, extradiscal one well developed and submarginal one represented by a series of intracellular spots midway between margin and cell. Hindwing below dull brown, shaded yellow outside extracellular band, with transverse bands well developed and brown: transcellular one very dentate and incomplete, extracellular one characteristically formed of a number of outwardly pointing crescents between the veins; gray patch not prominent, but present, and silver submarginal line not complete or well-developed.

Fringes of both wings as in *dorothea.*

Lengths of forewings of the material at hand range between 17.0 and 20.0 mm., averaging 18.8 mm.

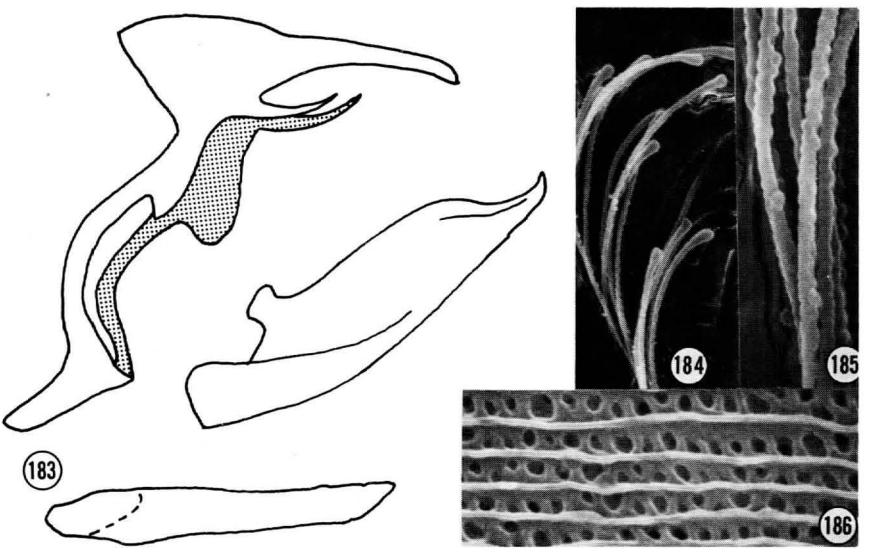
♂ genitalia consistently as figured (the "*pertepida*-type") with distal tip of valva characteristically diverted dorsad.

Androconial patch shaped like that of *dorothea,* and especially as in *maniola,* but somewhat variable as regards its development in Cu_2-2A. The individual scale is as that in *dorothea,* but the terminal brush-like structure is not so dense.

Female: Head, thorax, abdomen and appendages as in ♂. Upper surface rather more like that of *avicula* than other subspecies, but most specimens have a more distinct two-tone effect on the hindwing with fuscous and fulvous markings well defined; extradiscal hindwing band well shown above with its characteristic prolongation marginad in M_3-Cu_1.

Under surface as in ♂.

Lengths of forewings of the ♀ *pertepida* before me range from 18.5 to 22.0



Figures 183-186: *Cyllopsis pertepida pertepida* (Dyar). 183, ♂ genitalia (slide M-2087) demonstrating the "*pertepida* type" genitalia (see text); MEXICO: HIDALGO: vic. Zimapán (A). 184, tip of androconial scale, approx. 2000× (SEM photo 0427). 185, detail of tip, approx. 6650× (SEM photo 0428). 186, interrib structure, approx. 6650× (SEM photo 0426).

mm., averaging 20.3 mm.

I have examined 87 specimens of this subspecies from the Mexican highlands: **MEXICO:** DURANGO: Palos Colorados, 8000', viii, 5♂ 1♀ (AMNH); Otinapa, 8200', viii, 2♂ (AMNH). HIDALGO: 5mi. NE Zimapán, 1980-2140m., i, ii, 21♂ 12♀ (A, CM); vic. Encarnación, 2300-2450m., ii, viii, 6♂ (A); 1 mi. N Trancas, 2060m., i, 1♂ (A); Progreso, vii, 1♂ (A); Puende la Zorra, iv, 1♂ (A). TLAXCALA: La Malinche, vii, 3♂ (A). MEXICO: Atizapan, vi, viii, 3♂ 1♀ (A). DISTRITO FEDERAL: México City, xi, 2♂ 4♀ (including type; USNM, JBS); Pedregal, ii, ix, xi, 14♂ 6♀ (A, AMNH); "Dept. Fed.", x, 3♂ (CM). GUERRERO: Acahuizotla, v, 1♀ (A).

Females from the northern populations and the western ones tend to be more evenly fulvous above and have the hindwing demonstrating less contrast than do

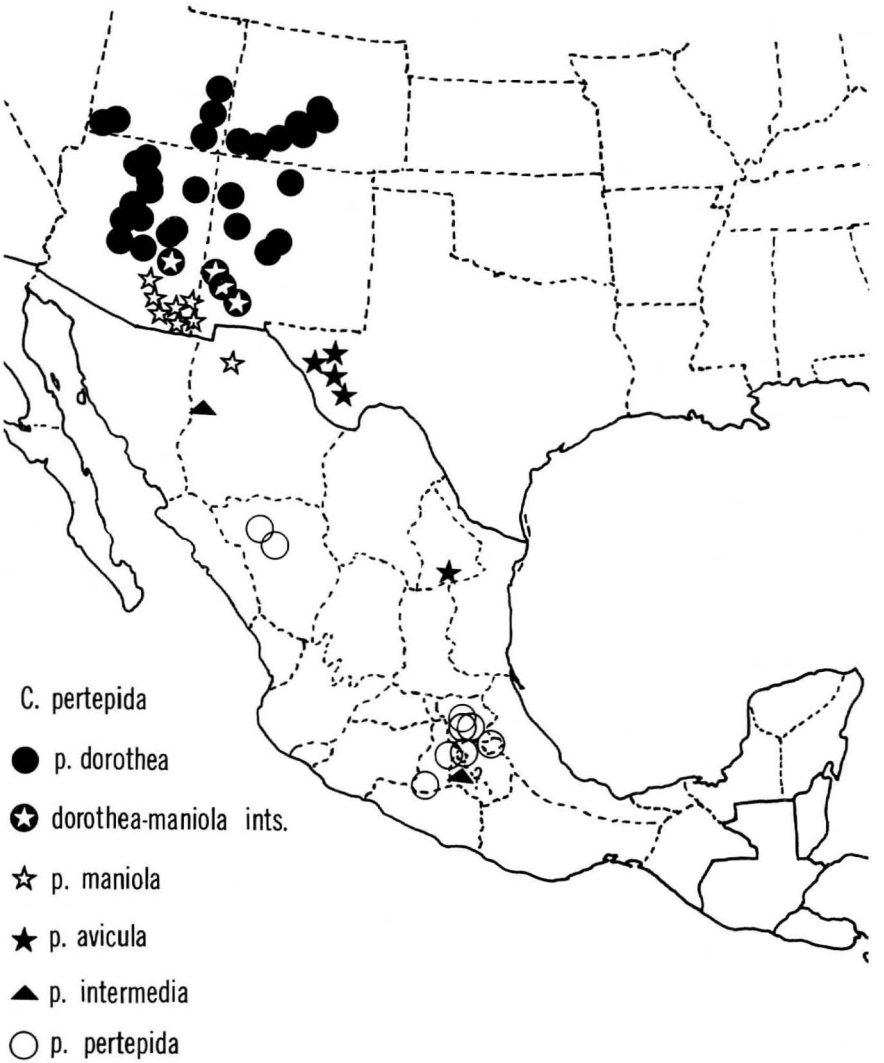


Figure 187: distribution of subspecies of *Cyllopsis pertepida.*

those from the more eastern parts of the highlands. There are, however, a few females from the Distrito Federal and from Hidalgo that show this characteristic, and I cannot justify separating the Durango to Guerrero populations as another subspecies.

Dyar (1912: 39) described *pertepida* from several specimens collected by Mueller in or around México, D. F., in November. Two of these specimens, one male and one female, are labelled as Co-types in the collection of the USNM, and at least one other specimen from the Mueller series is still extant, another female. All of these specimens are referable to the same butterfly, *C. P. pertepida*, and I hereby select the male as the Lectotype. This specimen bears the following labels:

1. A printed label: "Nov. 10"
2. A printed label: "Mexico City/ Mex.".
3. A printed label: "R. Muller [*sic.*]/collector".
4. A handwritten label: "1299".
5. A partly printed, partly handwritten (*italics*) label: "Cotype no. *1382*/ USNM".

To these labels I am adding another handwritten one in black ink on red paper: "LECTOTYPE ♂/ Euptychia pertepida/ Dyar/ designated by/ Lee D. Miller, 1974". The other two Mueller specimens are Paralectotypes.

The distribution of the subspecies of *C. pertepida* is shown on the map (Fig. **187**).

Cyllopsis hilaria (Godman), 1901

Figures 188, 189 (♂), 190, 191 (♀), 192 (♂ genitalia), 193-195 (androconial scales)

Euptychia hilaria Godman, 1901 (*in* Godman and Salvin, 1879-1901): 658 (Misantla, Veracruz, Mexico: here designated). Lectotype BM (see below).

This species begins a series of four closely-related basically Mexican ones which in turn show affinities toward *pephredo*, and these insects seem to be a connecting link between the *pyracmon* and *gemma* grops. The *hilaria*-like species may be distinguished by the extradiscal band of the hindwing being strongly diverted basad at vein M_3.

Male: Head, thorax and abdomen clothed with warm brown hairs above and grayish-tan ones below. Palpus clothed with grayish-tan scales, except tan lateral ones. Antennal shaft dark brown above narrowly ringed with yellow, yellowish below narrowly ringed with dark brown; club dark brown above and at tip, yellow to fulvous below in proximal part. Legs clothed with grayish-tan hairs.

Forewing above dark brown, slightly paler in discal area, with an extensive blackish-brown androconial patch below and outside cell (see below). Hindwing above dark brown with fuscous submarginal spots in M_2-M_3 and M_3-Cu_1, the extradiscal line of the under surface showing through vaguely on this surface and with a single darker marginal line from at least apex to Cu_1. Fringes brown.

Under surface of forewing light brown with extensive dark brown scrawls and a straight narrow red-brown transcellular band, a narrow red-brown extracellular band and a narrow, partly broken brown to red-brown submarginal band that is placed more proximad than in many species; marginal area and area between transcellular and extracellular bands frequently very much darker (especially in Mexican material), giving a broad-banded appearance to the wing; single marginal brown to red-brown marginal line present. Hindwing above also light brown with extensive dark brown scrawling and with a narrow undulate brown transcellular band, a narrow brown to red-brown extracellular band with yellow distal edging and diverted proximad along vein M_3; gray patch inconspicuous, but rather extensive, and bearing black submarginal ocelli with double silver pupils in M_2-M_3 and M_3-Cu_1; silver submarginal marks from M_1

to inner margin; single brown marginal line. Fringes of forewing ochreous brown, those of hindwing light brown.

Lengths of forewings of the ♂ specimens before me range from 15.5 to 18.0 mm., most being from 16.5 to 17.0 mm.

♂ genitalia as figured and characterized by the valva being somewhat blunted distally, but upturned, and with a dorsal shoulder in the middle of its length.

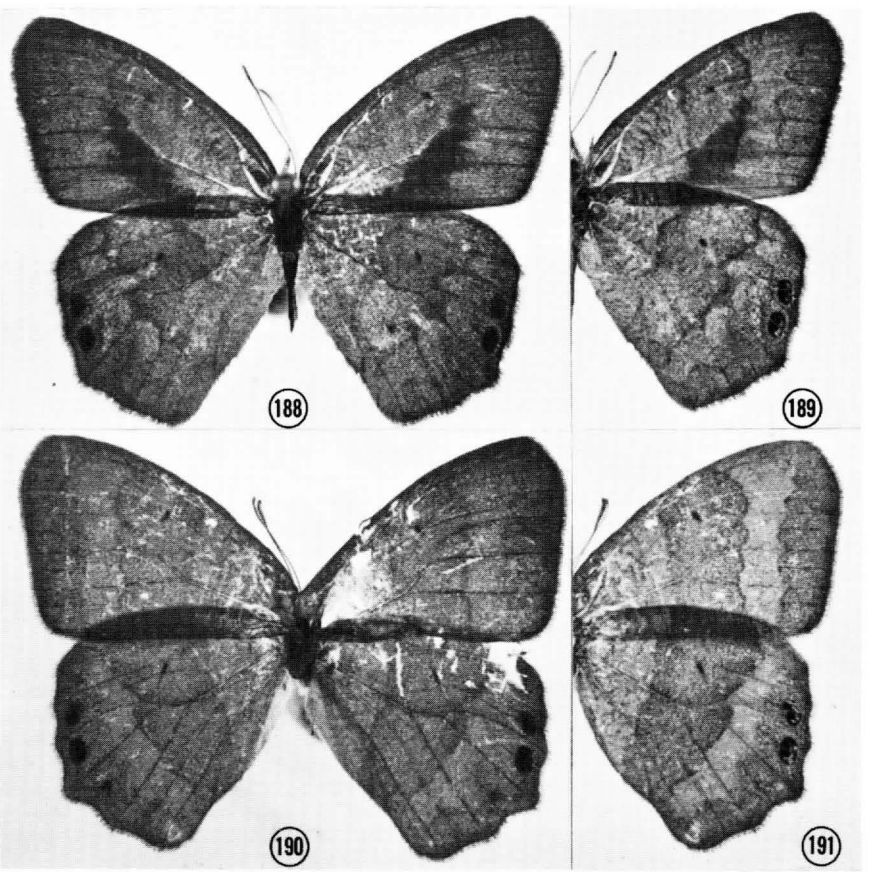
Androconial patch narrow and extending from inner margin to forewing vein M_3 origin entirely outside cell. Scale rather narrow, but not abnormal; interstitial pattern composed of regular, small pits.

Female: Very similar to ♂, but lacking the androconial patch, of course.

Lengths of ♀ forewings of specimens at hand range from 17.5 to 20.0 mm., most being between 18.0 and 19.0 mm.

I have seen 65 specimens in addition to the photographs of the four Syntypes, ranging from northern Mexico to northern Panama, as follows:

MEXICO: TAMAULIPAS: 0-3 mi. W Gomez Farias, 280-700 m., ii, 1♂ (A).



Figures 188-191: *Cyllopsis hilaria* (Godman). 188-189, ♂ upper (188, photo no. 043074-A-11) and under (189, photo no. 04374-A-12) surfaces; MEXICO: CHIAPAS: Ochuc (A). 190-191, ♀ upper (190, photo no. 043074-A-13) and under (191, photo no. 043074-A-14) surfaces; MEXICO: VERACRUZ: vic. Fortín de las Flores (A).

VERACRUZ: Jalapa, 5♂ 6♀ (AMNH, USNM); 1 mi. W Fortín de las Flores, 950 m., ii, 6♂ 2♀ (A); Orizaba, iii, 1♀ (Syntype of *hilaria,* BM); Coatepec, 1♀ (USNM); Misantla, iii, 1♂ (Lectotype of *hilaria,* see below, BM). CHIAPAS: Ochuc (preferably Oxchuc), v, vi, x, 6♂ (A); Ococinco, vi, 1♀ (A); San Carlos, iv, 1♀ (A); Lagos de Montebello, 1300-1500 m., i, 1♀ (A).

GUATEMALA: CHIMALTENANGO: Quisache, Mpio. Acatenango, 1750 m., ii, xi, xii, 6♂ 5♀ (A, AMNH). QUETZALTENANGO: Volcán Santa Maria, iv, vi, x, xi, 4♂ 4♀ (USNM); San Sebastian, Retalhuleu, 1♀ (USNM). SOLOLA: Panajachel, v, vi, 6♂ 2♀ (LACM); El Quiche, Mpio. Sacapulus, Xutioxtiox, Jetzajel, xii, 1♀ (AMNH).

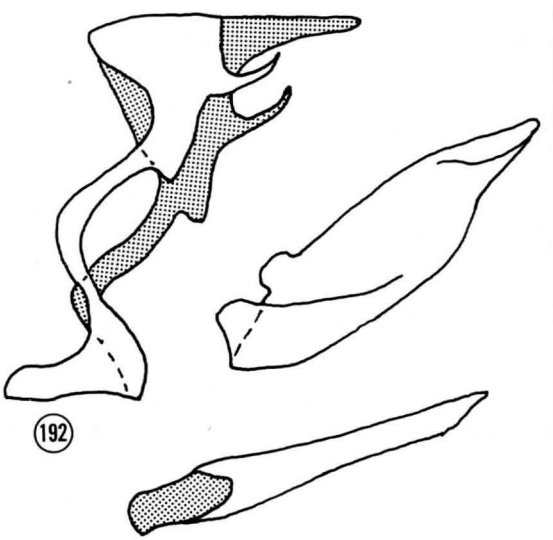
EL SALVADOR: San Salvador, xii, 1♂ (A); Cerro Verde, i, 1♂ (A); Hda. Montecristo, Cerro Miramundo, 2300 m. cloud forest, ii, 1♀ (A).

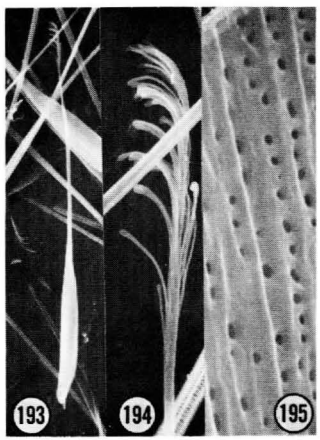
COSTA RICA: Mt. Poas, xii, 1♂ (USNM).

PANAMA: CHIRIQUI: El Volcán Chiriquí, iii, 1♀ (AMNH); Vol. de Chiriquí, 3-4000 ft., 2♂ (Syntypes of *hilaria,* BM).

Mexican material is quite different from that from the southern end of the range of *hilaria.* The Mexican (and most Guatemalan) specimens have extensive dark blotching just outside transcellular and just inside extracellular bands, whereas the southern specimens display little difference in the color of the above region and that of the remainder of the wings, in this resembling rather closely *pephredo.* I have too few specimens from El Salvador south at hand to determine whether this variation is accidental due to small samples or real and taxonomically significant, hence, no name is proposed for the southern populations.

Godman (1901, *in* Godman and Salvin, 1879-1901: 658) cites many specimens on which he based *hilaria,* including the four that were photographed and sent to me. All of these specimens, including both Mexican and Chiriqui material, are Syntypes, and morphologically they run the gamut of pattern differences mentioned above. Riley and Gabriel (1924:24) have made the problem somewhat easier, however, by informally designating a male and a female from Mexico as





Figures 192-195; *Cyllopsis hilaria* (Godman). 192, ♂ genitalia (slide M-2098); MEXICO: VERACRUZ: vic. Fortín de las Flores (A). 193, androconial scale, approx. 150× (SEM photo 0395). 194, tip of same scale, approx. 1000× (SEM photo 0394). 195, interrib structure, approx. 6650× (SEM photo 0396).

the "types". The male specimen is from Misantla, Veracruz, and conforms to the usual pattern of most Veracruz specimens. I am designating this specimen as the Lectotype of *Euptychia hilaria* Godman, 1901, and sending the following label to the British Museum to be affixed to it (label in red): "LECTOTYPE ♂/ *Euptychia hilaria*/ Godman/ designated by/ Lee D. Miller, 1974". This specimen is the British Museum type no. Rh. 3277.

C. hilaria seems to be ecologically somewhat more broadly tolerant ecologically than are most species in the genus, probably accounting for its wide range. Steinhauser took it in an El Salvadorian cloud forest, and we have taken it in humid environments in Tamaulipas and Veracruz, Mexico, and in a mesic habitat in Chiapas. The Veracruz specimens were taken in deep shade in a banana plantation and were not uncommon. The flight is weak, and the insects are not especially shy.

The absence of records from Honduras and Nicaragua is almost certainly only a measure of the lack of collecting activity in these countries. Apparently the butterfly is not found on the west coast of Mexico north of the Isthmus of Tehuantepec, but is replaced there by *C. windi* and *perplexa*. The latter two species are almost certainly recent offshoots of the basic *hilaria* stock, as is *C. dospassosi* from the Sierra de Tamaulipas of eastern Mexico.

Cyllopsis dospassosi L. Miller, 1969

Figures 196, 197 (♂), 198 (♂ genitalia)

Cyllopsis dospassosi L. Miller, 1969 ("1968"): 53 (52 mi. E. Cd. Victoria, Tamaulipas, Mexico). Type CM.

The type of this species has remained unique and is characteristically the palest *Cyllopsis*, with an almost olive appearance on both surfaces. It cannot be confused with any other species. The lack of an androconial patch is strange.

Male: Head, thorax and abdomen clothed with dull brown hairs above, tan ones below. Palpus clothed with dark brown hairs above, tan ones below. Antenna brown dorsad with shaft narrowly ringed with tan, tan ventrad with shaft ringed narrowly with brown; tip of club dark brown. Legs clothed with tan hairs.

Forewing above dull grayish-brown shading to darker dull brown marginad and along distal half of costa: otherwise unmarked, no androconial patch. Hindwing upper surface also dull grayish-brown, darker apically, with double fuscous submarginal spots in M_2-M_3 and M_3-Cu_1 and markings of under surface showing through weakly on this surface. Fringes dull brown.

Forewing below olive-tan with many olive-brown scrawls, especially in basal part, an olive brown blotch at end of cell, a spotband of the same color just outside cell from costa to Cu_2-2A and a submarginal olive-brown spotband from R_5-M_1 to Cu_2-2A. Under surface of hindwing also olive-tan with similar scrawlings of olive-brown and with an olive-brown transcellular band of blotches and a similarly colored extracellular band of blotches, both bands straight and from costa to near inner margin; gray patch almost indistinguishable, containing doubled black submarginal ocelli with silver pupils in M_2-M_3 and M_3-Cu_1; silver submarginal markings following level of wing margin from apex to inner margin and a partial olive-brown marginal line. Fringes olive-tan.

The length of the forewing of the single specimen known is 16.0 mm.

♂ genitalia as figured, differing from those of *hilaria* in the blunt, straight valve tip; uncus straight.

No androconial patch.

Female: Unknown.

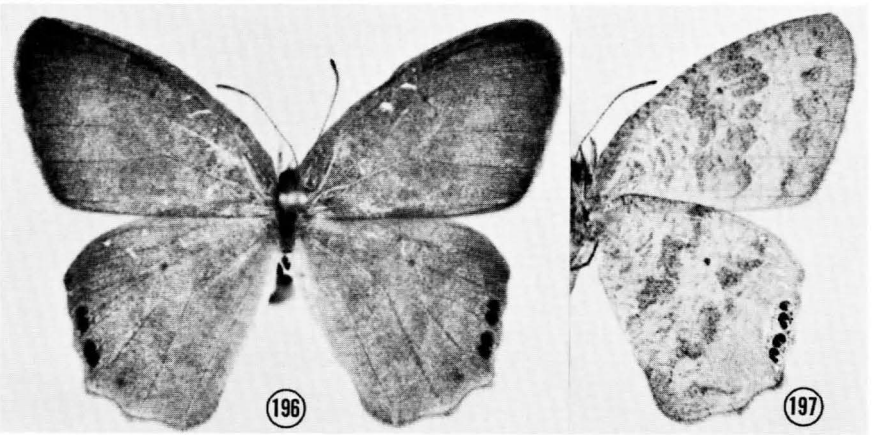
This specimen was described from a single specimen that I took in the Sierra de Tamaulipas, Tamaulipas, Mexico:

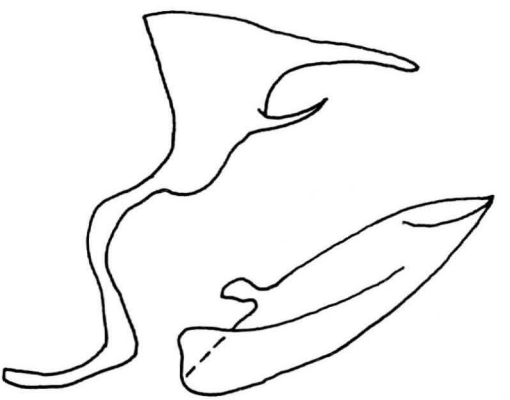
MEXICO: TAMAULIPAS: 52 mi. E Cd. Victoria, 510 m., i, 1♂ (CM)

The single specimen was taken in midst of a brushy area in a submontane environment. The conditions were mesic. more or less toward the dry side, and the specimen was in the midst of a number of *C. gemma freemani* (in fact, I did not recognize it as different from *freemani* until the material had been prepared some months later).

Obviously this butterfly is an offshoot of the *hilaria* complex, but perhaps more distinct, indicating somewhat longer isolation, as well as possible climatic changes in the Sierra de Tamaulipas. I now doubt the statement, perhaps a bit too optimistic, that *C. dospassosi* might occur in Texas (L. Miller, 1969: 55).

The distribution is plotted on the same map (Fig. **215**) as are *hilaria, windi* and *perplexa.*





Figures 196-198: *Cyllopsis dospassosi* L Miller. 196-197, Holotype ♂ upper (196, photo no. 101272-B-15) and under (197, photo. no. 101272-B-16) surfaces; MEXICO: TAMAULIPAS: E of Cd. Victoria (CM). 198, ♂ genitalia (slide M-1496) of Holotype.

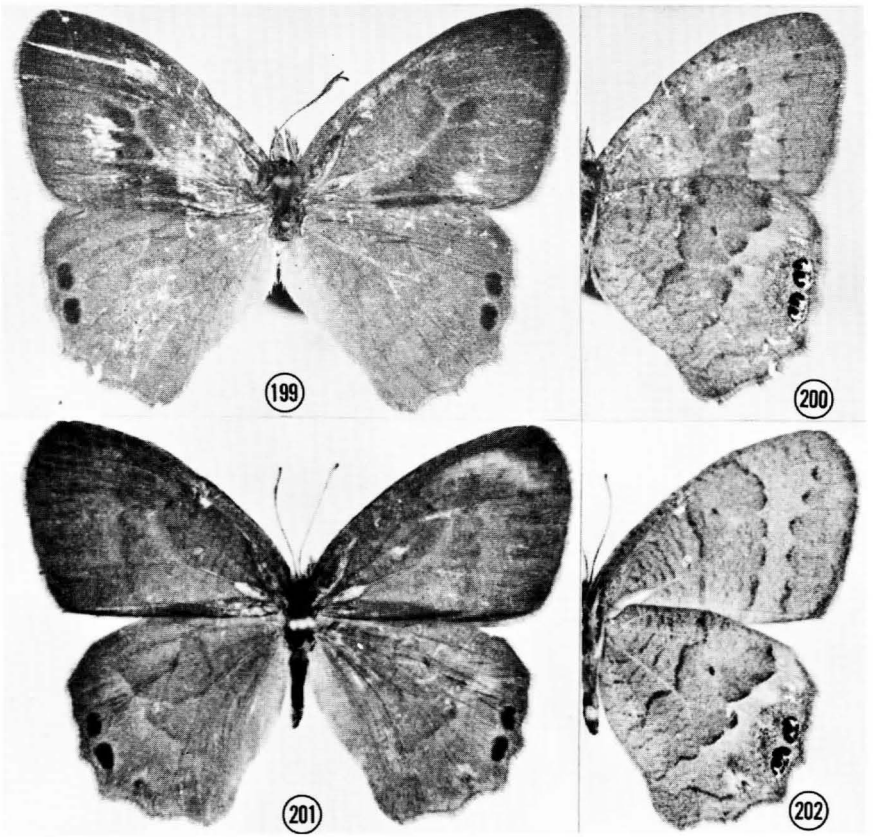
Cyllopsis windi, new species

Figures 199, 200 (♂), 201, 202 (♀), 203 (♂ genitalia), 204-206 (androconial scales)

Male: Head and thorax clothed with dull brown hairs above, grayish ones below; abdomen with dull brown hairs above, tan ones below. Palpus clothed with gray-brown hairs. Antenna brown above, yellow below; tip black. Legs clothed with grayish-tan hairs.

Forewing above warm brown, paler along cubital stem and bases of M_3, Cu_1 and Cu_2, with well-developed brownish-black androconial mass within and outside cell (see below); ground color somewhat darker apically. Hindwing above brown with subapical fuscous spots in M_2-M_3 and M_3-Cu_1 (occasionally trace of a third in Cu_1-Cu_2); ground color slightly darker apically. Fringes gray-brown.

Forewing below light brown with fine darker striae and straight red-brown narrow transcellular (further distad than in *hilaria*) and extracellular bands and



Figures 199-202: *Cyllopsis windi,* new species. 199-200, Holotype ♂ upper (199, photo no. 011674-B-9) and under (200, photo no. 011674-B-10) surfaces; MEXICO: COLIMA: Volcán de Colima (A). 201-202, Paratype ♀ upper (201, photo no. 101272-B-11) and under (202, photo no. 101272-B-12) surfaces; MEXICO: OAXACA: Miahuatlan (A).

a submarginal spotband of red-brown from M_1-M_2 to inner margin; ground color only slightly darker between transcellular and extracellular bands and marginally: single brown marginal line. Hindwing below also warm brown with dark brown scrawls and with narrow straight red-brown transcellular band, an undulate red-brown to brown partially broken narrow band outside cell which is diverted basad at M_3; gray patch prominent and with two black submarginal ocelli with double silver pupils in M_2-M_3 and M_3-Cu_1, other silver submarginal markings from apex to Cu_2; area between extradiscal band and gray patch filled with yellow more or less completely; the extradiscal band apparently meeting that of forewing or halfway between it and submarginal band; in *perplexa* extradiscal band of this wing appears to meet forewing submarginal band. Fringes brown, gray at tips.

Length of forewing of Holotype ♂ 16.0 mm., those of the eight ♂ Paratypes range from 16.0 to 16.5 mm., averaging 16.1 mm.

♂ genitalia as figured, differing from those of *hilaria,* etc. in the inwardly pointing valva tips (which appear as a ventrad diversion in most laterally-mounted slides): valva relatively shorter than that of *hilaria.*

Androconial mass rather larger than that of *hilaria* with an element inside cell from origin of M_2 to near origin of Cu_2 of forewing. Scale similar to that of *hilaria,* but crossveining somewhat coarser and brush-like terminal organelles denser.

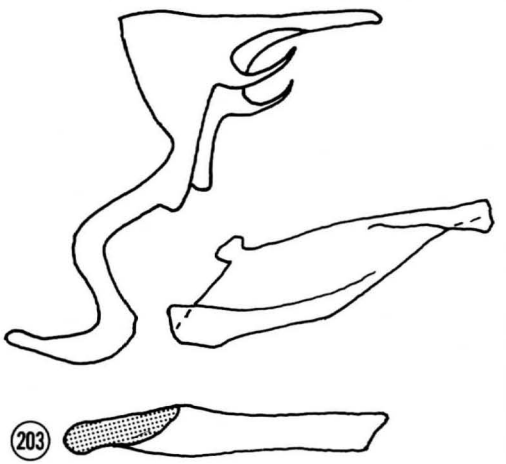
Female: Head, thorax, abdomen and appendages as in ♂. Upper surface as in ♂, lacking the androconial patch, of course, and with extradiscal band of hindwing under surface represented by a reddish, irregular band above. Under side as in ♂, but all markings more prominent.

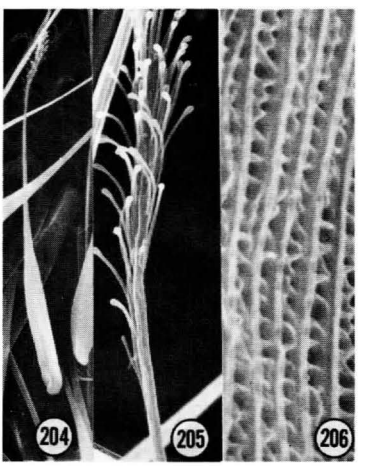
Lengths of forewings of the nine ♀ Paratypes range from 17.0 to 19.5 mm., averaging 18.0 mm.

Described from 18 specimens, nine males and nine females, all from western Mexico.

HOLOTYPE ♂: MEXICO: COLIMA: Volcán de Colima, 5000', 12.xii.1967 (Robert Wind); ♂ genitalia slide no. M-2099 (Lee D. Miller).

PARATYPES: all MEXICO: GUERRERO: "Guerrero", xii, 1♂; MORELOS: Tepoztlán, vii, 4♂ 2♀; Cuernavaca, ii, 1♀; OAXACA: Miahuatlan, xi, xii, 5♂ 3♀; Juchatengo, 5 mi. N Rio Atoyac, xii, 1♀; "Oaxaca", 1♀.





Figures 203-206: *Cyllopsis windi,* new species. 203, ♂ genitalia (slide M-2464) of Paratype; MEXICO: MORELOS: Tepoztlán (A). 204, androconial scale, approx. 200× (SEM photo 0397). 205, tip of same scale, approx. 1100× (SEM photo 0398). 206, interrib structure, approx. 6650× (SEM photo 0399).

Disposition of type material: Holotype ♂, eight ♂ and five ♀ Paratypes (A); two ♀ Paratypes (AMNH); two ♀ Paratypes (USNM).

This species is named for Robert Wind of San Cristobal de las Casas, Mexico, who collected the Holotype and has contributed so many specimens toward a better understanding of the Mexican fauna.

Mr. Wind told me that the Holotype was taken on a very short trip up the Volcán de Colima in a rugged area into which he never got again. The butterfly was one of very few that he found at this locality, hence his failure to return. Other specimens have been turned up in somewhat drier localities than have most Mexican *hilaria*.

This species may best be distinguished from *hilaria* genitalically and by the presence extra androconial elements and the yellow extradiscal shade mentioned in the description. From *perplexa* the present species may be told by the paler color below, the more prominent transcellular bands on the under surfaces of both wings and of course, genitalically.

Cyllopsis perplexa, new species

Figures 207, 208 (♂), 209, 210 (♀), 211 (♂ genitalia), 212-214 (androconial scales)

Male: Head, thorax and abdomen clothed with brown hairs above, grayish-tan ones below. Palpus clothed with brown hairs above, tan ones below. Antenna brown ringed with buff above, buff below; club tip dark brownish-black. Legs clothed with grayish-brown hairs.

Upper surface of forewing warm, rich brown, darker at apex, along margin and with an extensive inter- and intracellular androconial mass (see below). Hindwing above also warm, rich brown, slightly darker at apex, and with small fuscous submarginal spots in M_2-M_3 and M_3-Cu_1. Fringes brown, those on forewing slightly reddened toward apex.

Forewing below light, slightly reddish-brown with fine dark brown striae and with a poorly developed transcellular band, a straight irregular band just outside cell and a poorly developed submarginal band, all of brown; area between extracellular and submarginal bands paler (yellowed in some specimens); narrow and partial marginal line of brown. Hindwing below also light, slightly reddish-brown with fine dark striae; poorly to well developed narrow transcellular band, narrow brown extracellular band with yellow edging outwardly (much indented at M_2); gray patch indistinct and with black submarginal ocelli with silver double centers in M_2-M_3 and M_3-Cu_1; nearly complete submarginal undulate silver line from apex to near anal angle; brown marginal line from Cu_1 to inner margin. Fringes grayish-brown.

Length of forewing of Holotype ♂ 16.5 mm., those of the 15 ♂ Paratypes range from 15.5 to 17.5 mm., averaging 16.1 mm.

♂ genitalia as figured, differing from those of *windi* by the thicker, less inwardly diverted valvae.

Androconial mass narrower than that of *windi* and extending from origin of M_1 of forewing to inner margin outside cell; inside cell androconia in a broad area from M_1 origin to origin of Cu_2. Scales rather short with terminal dense brush-like organelles; ribbing quite uniform.

Female: Similar to ♂ on both surfaces, lacking the androconial patch on upper surface of forewing.

Lengths of forewings of the 16 ♀ Paratypes range from 16.0 to 19.5 mm., averaging 17.6 mm.

Described from 32 specimens, 16 males and 16 females, mostly from western Mexico.

HOLOTYPE ♂: MEXICO: OAXACA: Miahuatlan, 1550 m., 3.xii.1971 (E. C. Welling); ♂ genitalia slide no. M-2468 (Lee D. Miller).

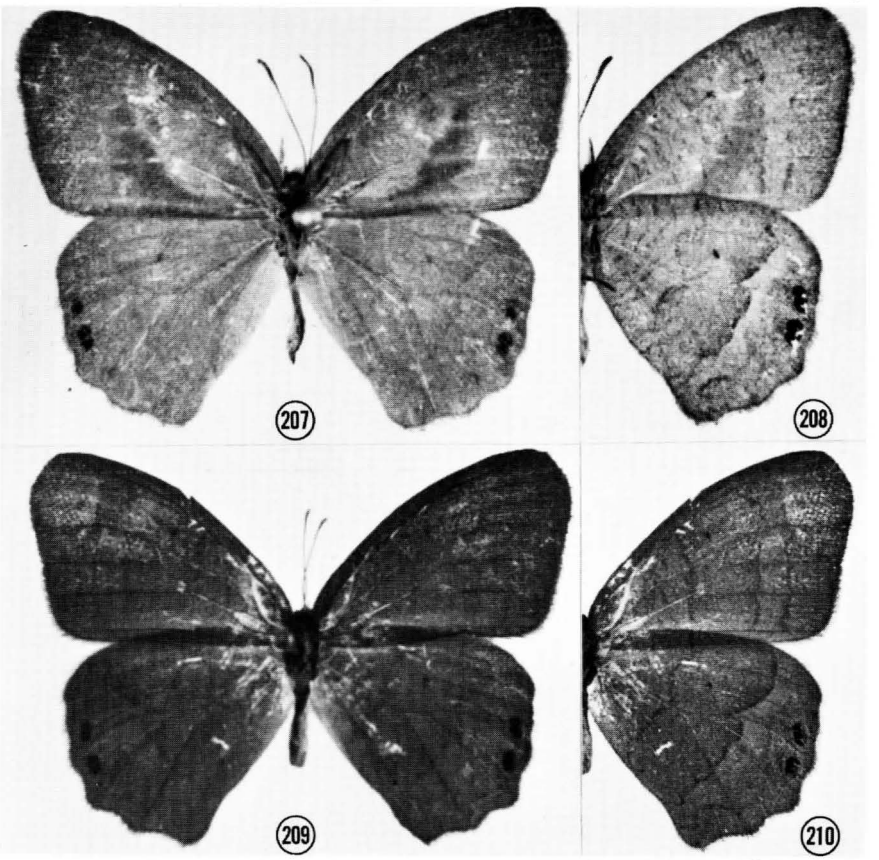
PARATYPES: all MEXICO: MICHOACAN: Uruapan, iii, 1♂; MEXICO:

Tenancingo, vi, 1♂ 3♀; MORELOS: Yautepec, vii, 1♂; Tepoztlán, vii, 4♂ 12♀; Cuernavaca, ii, 3♂; PUEBLA: San Juan Apulco, vii, 1♀; OAXACA: same locality as Holotype, xi, xii, 5♂.

Disposition of type material: Holotype ♂, 11 ♂ and 16 ♀ Paratypes (A); three ♂ Paratypes (AMNH); one ♂ Paratype (USNM).

For some time this species sat with the type series of *C. windi,* but the genitalic and superficial differences bothered me. The problem was whether the combined series represented a single species or more than one: finally the genitalic differences, coupled with a consistent correlation between the broadly yellow-laved hindwing pattern (*windi*) *vs.* a less contrasting patterned population convinced me that more than one species was involved. The two species fly in much the same habitat at the same time, but a series of spread specimens can be readily separated into the two entities.

The present species is characterized by the general reddish tone of the under surface, the usually very poor development of the transcellular bands on the under surfaces of both wings and by the genitalic differences cited in the formal descrip-



Figures 207-210: *Cyllopsis perplexa,* new species. 207-208, Holotype ♂ upper (207, photo no. 101272-B-9) and under (208, photo no. 101272-B-10) surfaces; MEXICO: OAXACA: Miahuatlan (A). 209-210, Paratype ♀ upper (209, photo no. 043074-B-5) and under (210, photo no. 043074-B-6) surfaces; MEXICO: MORELOS: Tepoztlán (A).

tion. Both this insect and *C. windi* appear to be the western Mexican representatives of the *hilaria* complex. They are not far distant from *C. nayarit* whose populations also are based in the western Sierra Madre of Mexico: indeed, it appears that the entire complex may have originated here.

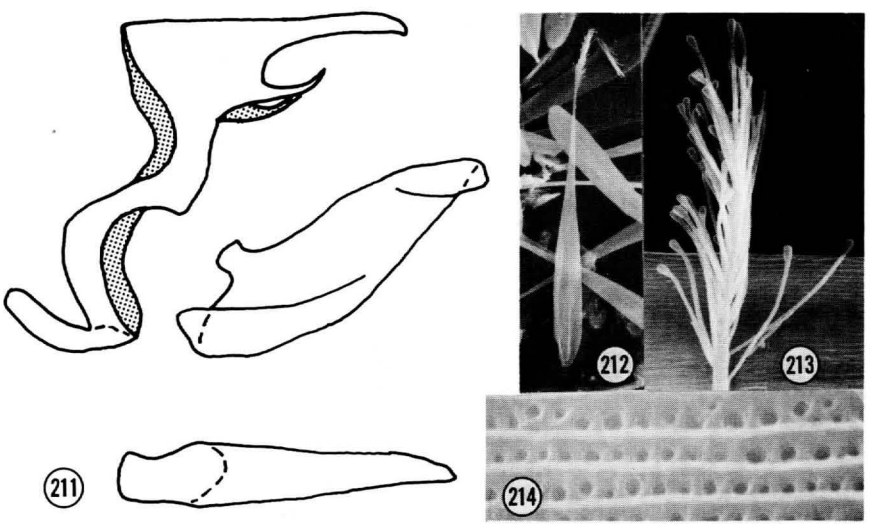
the **gemma** group

This group contains only a single species. It is the only *Cyllopsis* known from the eastern United States and is not found south of Guatemala and British Honduras. *Gemma* is also not known from the southwestern United States. It is a round-winged insect with finely drawn genitalia and is perhaps the least prepossessing member of *Cyllopsis*.

Cyllopsis gemma (Hübner), 1808

This species is the only one that occurs in the eastern United States, thence westward to Texas and south throughout Mexico to British Honduras and Guatemala. It is a common beast, so common that I will not list individual records for it, only the furthest extensions of its range that have come to my attention.

Two subspecies have been recognized in recent years, the southern Texas, Mexican and northern Central American specimens have been split away from the southeastern North American material. I am not particularly happy about



Figures 211-214: *Cyllopsis perplexa,* new species. 211, ♂ genitalia (slide M-2468) of Holotype. 212, androconial scale, approx. 170× (SEM photo 0401). 213, tip of same scale, approx. 1650× (SEM photo 0400). 214, interrib structure, approx. 6650× (SEM photo 0402).

these subspecies: one needs a good series to distingusih them, and there are intermediates throughout much of the southern portion of the range of nominate *gemma* and the northern part of the range of *freemani*. Nevertheless, I am including both subspecies because *most* specimens can be determined by the characteristic cited in the key.

KEY TO THE SUBSPECIES OF *Cyllopsis gemma* (HUBNER)

1. Ground color of wings below with a grayish cast; scrawlings of wings usually heavier; eastern United States to central Texas ..... *C. gemma gemma* (Hübner)
1'. Ground color of wings below usually reddish-brown with no gray cast; scrawlings of wings beneath generally poorly developed, except along median area; south Texas to British Honduras and Guatemala ..... *C. gemma freemani* (Stallings & Turner)

Cyllopsis gemma gemma (Hübner), 1808

Figurers 216, 217 (♂), 218, 219 (♀), 220-223 (androconial scales)

Oreas gemma Hübner, 1808: 3 (Georgia). Type apparently lost. (?) = *Papilio cornelius* Fabricius, 1793: 220.

Fabricius' (1793: 220) description and Godart's (1821: 493) redescription of *cornelius* are both too fragmentary to support Butler's (1866: 500) contention that this name refers to the familiar North American *gemma*. The practice of attempting to apply old, vaguely described taxonomic names to familiar species can serve only to upset the stability of nomenclature: it would be best to retain the well-known *gemma* and to suppress *cornelius* that may or may not refer to the same insect, by action of the International Commission on Zoological Nomenclature, if necessary. The Hübner description of *gemma* leaves no question as to what insect he was referring, so there is no justification for its suppression and the necessary explanations for the over 100 publications in which the butterfly has been called *"gemma"*.

The type specimen of *gemma* probably does not exist, but this conclusion can be supported only after examination of the various European collections in

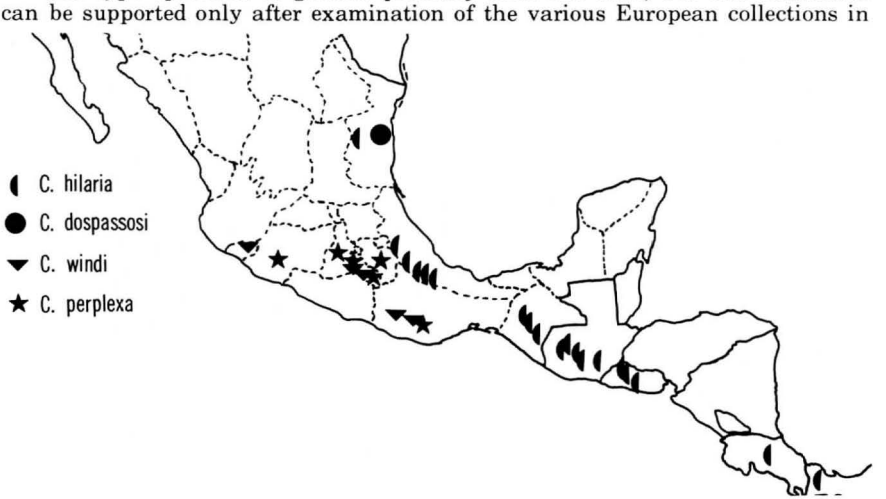
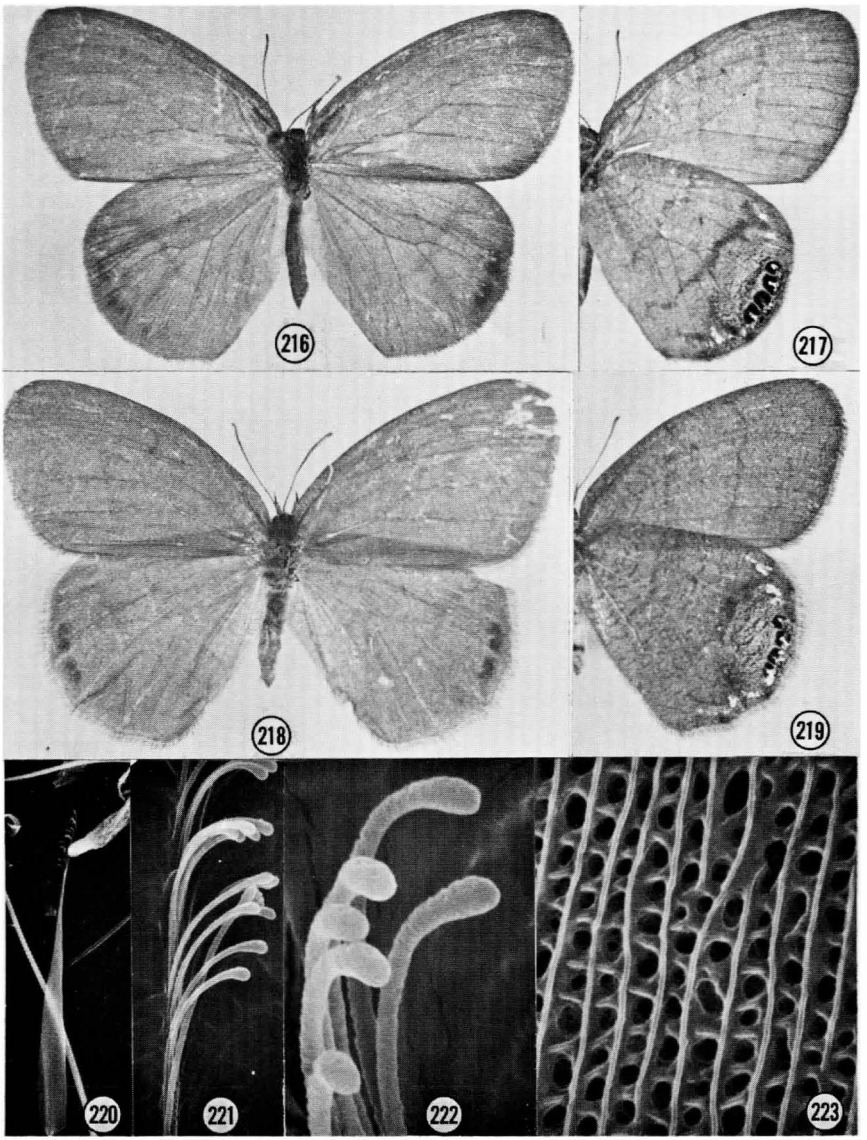


Figure 215: distribution of the *Cyllopsis hilaria* subgroup.



Figures 216-223; *Cyllopsis gemma gemma* (Hübner). 216-217, ♂ upper (216, photo no. 011674-C-16) and under (217, photo no. 011674-C-170 surfaces; U. S. A.: WEST VIRGINIA: Holly Grove (CM). 218-219, ♀ upper (218, photo no. 011774-1) and under (219, photo no. 011774-2) surfaces; U. S. A.: "West Virginia" (CM). 220, androconial scale, approx. 230× (SEM photo 0436). 221, tip of same scale, approx. 2000× (SEM photo 0434). 222, detail of tip, approx. 6650× (SEM photo 0433). 223, interrib structure, approx 6650× (SEM photo 0435).

which it may reside. Should it be provable that Hübner's type does not exist, a neotype should be proposed for *gemma,* but I have had no opportunity to conduct such a search.

Male: Head, thorax and abdomen clothed with dull brown upper and grayish lower hairs. Palpus with gray-brown dorsal and tan lower hairs. Antenna brown above, shaded fulvous toward tip, tan below ringed narrowly with fuscous; tip fuscous. Legs clothed with gray hairs.

Upper surface unmarked dull brown with only fuscous submarginal submarginal spots in hindwing spaces M_2-M_3 and M_3-Cu_1 (rarely one in Cu_1-Cu_2); androconial patch not prominent and of same color as ground color, extending outside cell from M_3-Cu_1 to near inner margin. Fringes dull brown.

Under surface dull brown with a grayish cast in *most* specimens with rather sparse reddish-brown to gray-brown scrawlings on both wings. Forewing with rather poorly defined reddish-brown transcellular, extradiscal and submarginal (usually macular) bands and a single marginal line. Hindwing below with somewhat dentate transcellular and extradiscal bands of reddish- to chestnut-brown, an extensive gray patch, doubled silver-pupilled submarginal ocelli in M_2-M_3 and M_3-Cu_1 and a rather complete silver, sinuous marginal line. Fringes gray-brown.

Lengths of forewings of the ♂ specimens at hand range from 15.0 to 17.0 mm., averaging about 16 mm.

♂ genitalia as shown for *freemani,* characterized by the long, narrow valva. Androconial mass as described above. Individual scales as figured and characterized by the gentle tapering from base to tip, the rather sparsely distributed, thin terminal organelles and by the relatively large and uneven interstitial pattern of the ribbing.

Female: Closely resembles the ♂ in all respects, except for the natural lack of an androconial patch.

Lengths of forewings of the ♀ specimens before me range from 15.5 to 18.5 mm., averaging about 17 mm.

I have examined many specimens from throughout the range of this insect. It is sufficiently widespread that I can see no reason to list individual data here. The most northern records are from southern Illinois, West Virginia and Kentucky, and the furthest south records are from Pasco Co., Florida, and Texas at least as far south as Houston. I have not enough material from extreme southern Texas to show where *g. gemma* leaves off and *freemani* begins, but the specimens from Brownsville and Pharr north to Corpus Christi are definitely referable to the more southern subspecies.

Klots (1951: 70) points up some of the difficulty of assigning *gemma* from some of its southwestern populations to subspecies. There are definitely specimens that seem to be transitional between the two subspecies in material from Louisiana and eastern Texas, especially among summer brood material. As stated above, I am not at all satisfied with the validity of the two subspecies, even though the majority of specimens from North America (north of the Rio Grande valley) are attributable to *gemma* and the southern ones to *freemani.* I have seen specimens from Chiapas, though, which look more like the classic concept of *gemma* than to that of *freemani.*

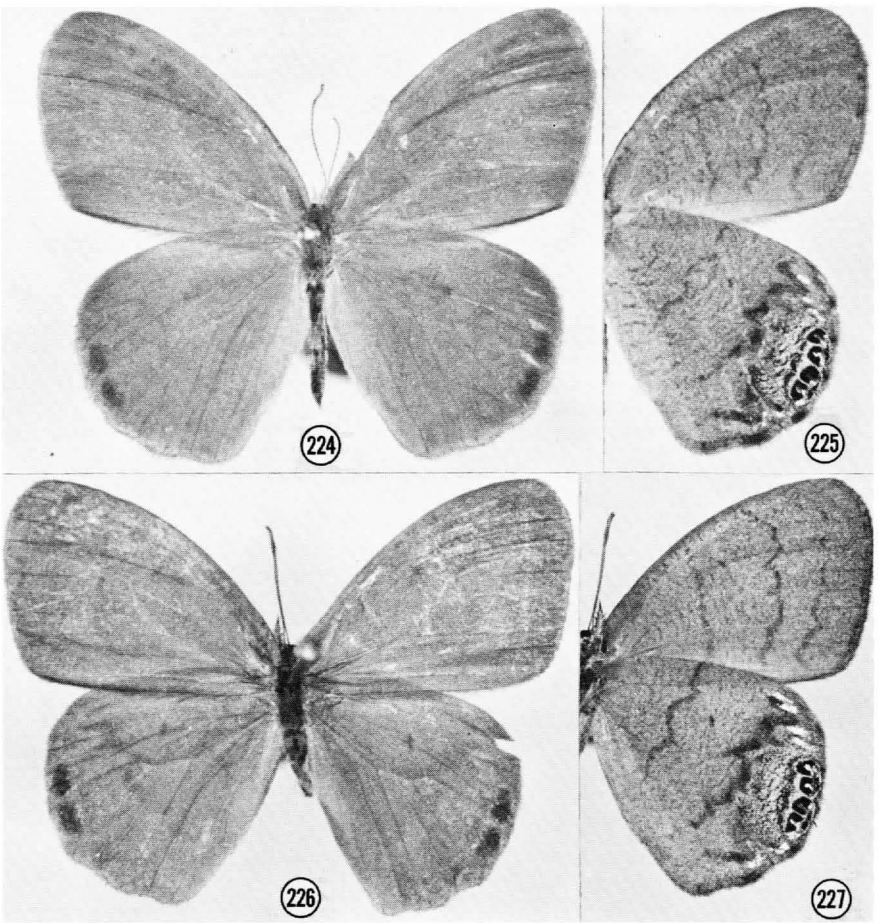
The specimens of *gemma* (both subspecies) that I have taken have been more intimately associated with water than have specimens of the remainder of *Cyllopsis.* I feel that the modification of microclimates by the proximity to water may account for the more northerly distribution of this species than its congenors. The flight is even weaker than is that of its relatives, and the species may easily avoid detection. The relative unpopularity of the group may aid in masking a far greater abundance and a somewhat wider range than is shown by the material at hand.

Cyllopsis gemma freemani (Stallings & Turner), [1947]

Figures 224, 225 (♂), 226, 227 (♀), 228 (♂ genitalia)

Neonympha gemma freemani Stallings & Turner, "1946" [947]: 136 (Pharr, Texas). Type USNM.
Neonympha gemma freemani f. hiem. "inductura" Stallings & Turner, "1946" [1947]: 136 (Pharr, Texas). Type USNM.

Male-female: Both sexes closely resembling *g. gemma*. The majority of specimens are somewhat darker above, with the androconial patch of the ♂ occasionally prominent. The under surface is more of a reddish-brown without the gray shading shown in more northern specimens, and the transverse bands of both wings are



Figures 224-227, *Cyllopsis gemma freemani* (Stallings & Turner). 224-225, ♂ upper (224, photo no. 011774-3) and under (225, photo no. 011774-4) surfaces; U. S. A.: TEXAS: San Patricio Co.: Mathis (A). 226-227, ♀ upper (226, photo no. 011774-5) and under (227, photo no. 011774-6) surfaces; same data (A).

frequently much more developed than in *gemma*.

The genitalia and size are as in *gemma*, and the androconial patch is comprised of identical scales.

I have examined nearly a hundred specimens of this subspecies ranging from the Rio Grande valley of Texas, as far upstream as at least Pharr, and north to Corpus Christi southward into Guatemala and British Honduras. The species generally is restricted to the area of Mexico east of the Valle Central, though I have seen a few specimens from the Valle itself. I have seen no specimens of *freemani* from the Sierra Madre Occidental from Oaxaca northward, even though many *Cyllopsis* from this area have come to my attention.

PHYLOGENETIC AND ZOOGEOGRAPHIC CONSIDERATIONS

As was the case with *Paramacera* (Miller, 1972: 15-16), the euptychiine origins of *Cyllopsis* are still mysterious. Within the genus, some rather firm conclusions may be drawn from the distribution of at least the material I have seen.

The close similarities of the genitalia of the various species is rather surprising in view of the great dissimilarities in patterns of these insects. It is a very closely-knit genus, and the original differentiation was more profound than were the later divisions of populations. The group does not appear to be an extremely young one, though, and it has many of the characteristics of a member of the "old Central American fauna", indicating a mid-Tertiary isolation from its congenors in South America.

The strangest, and perhaps the oldest in terms of being closest to the primitive condition in *Cyllopsis*, is *C. clinas* which is now restricted to the mountains of Guerrero, Mexico, and possibly adjacent areas, though it has not been taken elsewhere as yet. *C. clinas* bears a superficial resemblance to *Pindis squamistriga* R. Felder, but the genitalia are quite distinct from that species, as is the structure of the androconial scale. Two possible interpretations immediately present themselves: (1) *clinas* and *squamistriga* are from the same stock, but the characters of the genitalia and androconia have varied considerably, or (2) the similarities are convergent, because of the variation of the above-mentioned charateristics, and the two genera have nothing in common. Probably both interpretations are partially correct: the two genera are not closely related now, but they could have

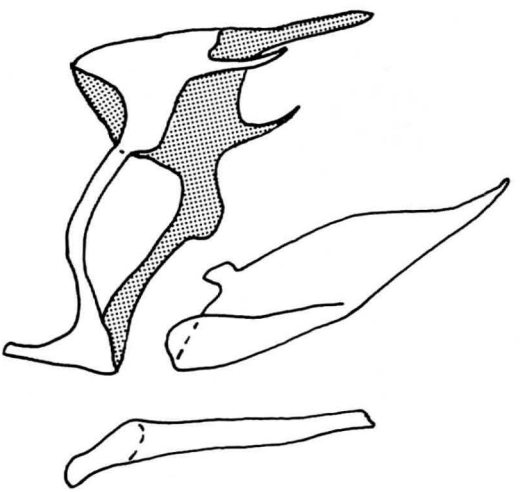


Figure 228, *Cyllopsis gemma freemani* (Stallings & Turner), ♂ genitalia (slide M-2089); MEXICO: VERACRUZ: vic. Fortín de las Flores (A).

arisen from an ancient common ancestor. The androconial patch of *clinas* is very *Pindis*-like, but the scales are very different, and it is difficult to determine which structure is the more important, though the structure of the scale is classically considered a more conservative character than is the presence or absence of a patch.

The other species fall into definite groups that may be more or less contemporaneous, with the exception of the "gray patch" species. These latter butterflies are probably the most recently evolved ones and will be treated below.

The *rogersi, argentella* and *hedemanni* groups are very probably of similar origin, although their later history seems quite different. All are of old development, probably mid-Tertiary when Central America and much of southern Mexico was a series of islands, and they have only fairly recently begun their spread in the region.

Perhaps the least successful evolutionarily of these groups is *hedemanni* which has remained a single species and has subspeciated fairly recently only in the northern part of its range. From a survival and an adaptational point of view, however, *hedemanni* has been quite successful, for it is not uncommon, though somewhat local, from Mexico to the Volcán de Chiriquí, a range duplicated or exceeded by very few *Cyllopsis*.

The *rogersi* group has fared even poorer, being restricted to populations in Costa Rica and possibly Panama (*rogersi*) and Oaxaca, Mexico (*jacquelineae*). The distributional pattern of these insects suggests possible extirpation of other members of the group sometime in the past. This group, like *clinas* gives the impression of being "on the way out".

Of these primitive *Cyllopsis* the *argentella* group has reached ascendancy and appears to be actively speciating at this time. Two and perhaps three radiations appear to have taken place in the group. The *philodice* subgroup split from the basic *argentella* group and became an almost immediate deadend: one population apparently reached Guatemala and evolved into *nelsoni,* while the other became *philodice* from the Sierra de Talamanca of Costa Rica and Panama. The basic *argentella* population spread rapidly throughout the area, was isolated apparently rather recently and has subsequently evolved into a bewildering array of closely-related species, centered in southern Mexico and Guatemala. A possible third split in the group involved *suivalens,* but this was very likely a more recent division, and that species, too, has subspeciated.

The "gray patch" species in the *pyracmon* and *gemma* groups are the more recent ones. The first of these groups has its area of greatest concentration in southern Mexico and Guatemala with outlying populations far to the north of there. The *hilaria* subgroup is the most restricted of the *pyracmon* group and is generally a lower country assemblage species. The *pyracmon* (*s. s.*) and *gemma* groups are the only ones which have invaded the United States, and in each instance the North American relatives are subspecifically different than their Mexican progenitors, suggesting a pre-Pleistocene Nearctic invasion. Only one of the species, *C. pertepida,* gives evidence of singificant post-Pleistocene evolution in the United States, it having three subspecies, all from a common general stock, within the confines of this country.

Cyllopsis are generally montane to submontane butterlies, and I suspect post-Pleistocene drying of the environment has resulted in fragmentation of previously contiguous populations. The "gray patch" species and the *argentella* group are the most likely ones to have differentiated during this time. I would suggest that all subspecies in *Cyllopsis* and the montane Mexican endemic species within the *hilaria* and *argentella* groups are basically of Pleistocene origin: the remainder seem to be of greater antiquity.

Additional species in the *argentella* group may be expected in the mountains of Guatemala and Honduras, and relict populations of other groups may be found almost anywhere within the range of the genus.

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