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# NOTES AND DESCRIPTIONS ON MEXICAN CHARAXINAE (NYMPHALIDAE)

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The subfamily Charaxinae contains some of the most spectacular butterflies in the world, and for this reason the group long has been a favorite of collectors and authors alike. The American tropics boast many species, most belonging to the genera *Prepona, Agrias* and *Anaea,* and these are among the most frequently studied of the Neotropical Nymphalidae. Even so a significant number of new species and subspecies have been described in these genera over the past fifteen years from such "well known" areas as Mexico and Central America. This suggests strongly to us that many such undescribed entities still await discovery throughout the American tropics.

The Museum's collection of Charaxinae has increased substantially over the past few years, and several series are of definite interest as new taxa, noteworthy range extensions or biological oddities. The present paper deals with some of these butterflies from Mexico. It is hoped that papers may be forthcoming later on species from further south, but such studies must await additional comparative material.

## Agrias

There have been many comments on the description of *Agrias zenodorus smalli* by L. Miller and Nicolay (1971). Most of these correspondents have noted that *smalli* might be synonymous with *A. z. oaxacata* Kruck, 1931. This latter insect is known from Mexico and Guatemala, whereas *smalli* has been taken thus far only in Panama, although H. L. King (*pers. comm.*) told us he was fairly certain he saw one near Turrialba, Costa Rica. Neither insect has been uncovered in El Salvador, Honduras or Nicaragua, and since *Agrias* are notoriously sensitive to geographic isolation, it seemed most unlikely that the two taxa were subspecifically identical.

In material received from Dr. Tarsicio Escalante there were two females and a single male of *A. z. oaxacata* from Chimalapa. Oaxaca, very near Kruck's type-locality. These specimens have made possible a detailed comparison of the Mexican and Panamanian populations, and this analysis has demonstrated the following fundamental differences between *oaxacata* and *smalli:* 1) the orange median fore-

wing band on the upper surface includes the base of $M_3$-$Cu_1$ in *smalli*, whereas in *oaxacata* this band does not include the extreme base of the space; 2) the hindwing blue patch on the upper surface of *smalli* is not so dark as that of *oaxacata* and is more extensive, extending well into $M_1$-$M_2$ (in *oaxacata* this patch barely crosses $M_2$ into the space); 3) the orange markings of the under forewing are much less extensive in *oaxacata*, less than half the discal cell being orange as opposed to more than half the cell being orange in *smalli*; 4) the yellow banding of the hindwing beneath is much better developed in *smalli*, some of the bands, especially in the cell and basal areas being broken up and obsolescent in *oaxacata*; and 5) the ocelli of the hindwing beneath which are at least partially separate and distinct in *smalli* are completely coalesced and definitely more diffuse in *oaxacata*. The sum total of these characters indicates the distinctness of the two taxa. *A. z. smalli* actually seems closer to some of the named Colombian forms, as indicated by L. Miller and Nicolay (1971), than to *oaxacata*. As is true of many *Agrias*, however, the differences between the various named forms and subspecies are rather slight, but at least the differences cited above appear to be consistent between populations.

**Prepona brooksiana** Godman and Salvin, 1889

Plate II, bottom figures (Holotype ♀)

Godman and Salvin (1889: 355) described this species from a single female taken by Brooks at Coatepec, Veracruz. Later, Godman (1901: 695; pl. 109, figs. 4, 5) figured the Holotype very well and mentioned that Schaus had another specimen "from Mexico". The male was unknown at the time of the description, and to our knowledge no specimen of that sex from the type locality exists in any collection. Alberto Diaz Frances (*pers. comm.*) has written us that recent specimens have been taken in the Sierra de Juaréz, Oaxaca, and at Villa Juaréz, Puebla. At least the latter specimen would seem to belong to the eastern Mexican population, and if it is a male, we hope it will be figured soon in *Revista de la Sociedad Mexicana de Lepidopterologia, A. C.*, or some other publication.

Descimon, Mast de Maeght and Stoffel (1974) reviewed *P. brooksiana* and attempted to make a case for the species coming not from Veracruz, but from the Sierra de Oaxaca. This practice is questionable, especially since the cloud forest environments of Veracruz have not been well sampled in recent years. Coatepec lies very near Jalapa and is in fact nearer to the Sierra Madre Oriental than is Jalapa. The older writers, especially Schaus, Godman and Salvin, described a great many species from just such regions, species that have subsequently been taken further up the slopes in the Sierra Madre Oriental (see for example L. Miller and J. Miller, 1970, regarding *Adelpha creton* Godman). Many taxa that were described from this region have not been encountered there in recent years (some have not been encountered anywhere), a fine example being the magnificent *Nymphalis cyanomelas* (Doubleday and Hewitson), an insect that almost certainly came from the slopes of Mt. Orizaba. The only recent captures of *cyanomelas* were two males from the Cerro Miramundo cloud forest on the common border between El Salvador, Guatemala and Honduras, and on the basis of these specimens we must assume that *cyanomelas* is an inhabitant of the poorly known and little collected cloud forest environments of northern Central America and Mexico.

Descimon, Mast de Maeght and Stoffel (1974) designate a specimen from the Lagos ("Lagunas") de Montebello, Chiapas, as the neallotype of *brooksiana*. We consider that the designation of a specimen from another locality, and drawn from a totally different gene pool (see below), is dangerous at best and indefensible at worst. It was precisely this sort of abuse of the allotype cancept that led to the dropping of the allotype from consideration under the present "Code" (I. C. Z. N., 1964: Arts. 71-75 and Recommendations). Inasmuch as the "Code" is so explicit in other matters, we cannot imagine that omission of the allotype from the listings of acceptable types was accidental.

A comparison of the females of the Chiapas population with the extant Coatepec and other Veracruz specimens must be undertaken to establish whether or not the "neallotype" actually represents true *brooksiana*. Such a comparison is revealing. We have illustrated the extremes of the Chiapas females we have seen (13 specimens) on Plate I, bottom right figure, and Plate II, top figures, and a perfunctory comparison with the Holotype of *brooksiana* will demonstrate some very real differences. None of the Chiapas females has as extensive orange markings on the upper surface as does the *brooksiana* Holotype. The ocellus in hindwing space Rs-$M_1$ above is far better developed in even the darkest Chiapas specimen than in the Holotype of *brooksiana*. The ocelli on the under surface of the hindwing are better developed in Chiapas material than in Veracruz specimens. The forewing extradiscal band on the under surface is shifted slightly more distad in Chiapas material. None of these characters can be ascribed to fading of the old Veracruz specimens, and the characteristics that are readily apparent to separate Chiapas and Veracruz specimens that may be due to fading have not been included in this diagnosis.

We feel that the differences cited above are of sufficient magnitude to demonstrate that the "neallotype" of Descimon, Mast de Maeght and Stoffel (1974) was drawn from a totally different population and gene pool than was the Holotype of *brooksiana*. Furthermore, there can be little question that the "Coatepec" locality refers to the Veracruz one (Godman and Salvin, 1879: xxi), and not to one in the Sierra de Oaxaca. Travel in the late XIX Century was not so simple as it is today, and it would not be likely that Brooks would have moved from Coatepec, Veracruz, to one in the Sierra de Oaxaca without changing the labelling of his specimens. While there were generalized locality labels for material collected during that period, use of the term "Coatepec" for a locality many days (or weeks) travel from this home base was unlikely. Because of the locality and superficial differences between the Veracruz and Chiapas females, as well as the recent captures in Puebla (on the other side of the Isthmus of Tehuantepec from Chiapas), we are unable to accept that the "neallotype" was validly proposed biologically, In fact, the differences are so great that it is necessary to describe the Chiapas population as new. We are not, however, going to accord the Chiapas insect specific status, but rather subspecific. The male genitalia, so distinctive in many other groups, are almost useless in the present group of *Prepona:* those of the Chiapas population are virtually indistinguishable from those of the otherwise abundantly distinct *P. escalantiana* Stoffel and Mast de Maeght (1973). A strict adherence to male genitalic characters would dictate placing both the Chiapas insect and *escalantiana* as subspecies of *brooksiana,* but so many superficial characters are vastly different between *escalantiana* and the other two butterflies that we hesitate to take such a drastic step.

### **Prepona (Prepona) brooksiana diaziana,** new subspecies

Plate I, top figures (Holotype ♂); bottom figures (Paratypes ♂ and ♀); Plate II, top figures (Paratype ♀)

*Prepona brooksiana* (*in partim*) Descimon, Mast de Maeght and Stoffel, 1974: 235-238 (*not* Godman and Salvin, 1889: 109).

Our reasons for not accepting the Chiapas population as nominate *brooksiana* are given above, and accordingly we are describing this insect here. The population is highly variable (none of the females, however, approaching typical *brooksiana*), so in the following description the Holotype will be described in full and other members of the type series compared with it (males) or with the Holotype of *b. brooksiana* (females).

*Male:* Holotype: Head, thorax and abdomen black above clothed with dully bluish-gray hairs. Head with white spots anteriad and posteriad of origin of antenna;

cheeks white. Thorax and abdomen clothed with gray ventral hairs. Palpus black dorsad, white ventrad. Antenna uniform black. Legs clothed with gray hairs.

Upper surface of forewing dark fuscous with a broad central reflective area consisting of scales that reflect deep purplish-blue except near inner margin where the scales reflect a bright blue; submarginal small fulvous spots from $R_5$-$M_1$ to $Cu_2$-2A, the end spots being the faintest. Hindwing above also dark fuscous with a central reflective band of blue (purplish-blue toward costa) scales; submarginal fulvous spots from Rs-$M_1$ to $Cu_2$-2A, the largest being those in Rs-$M_1$ and $Cu_1$-$Cu_2$, which bear black pupils and blue irides (that in $Cu_1$-$Cu_2$ the best developed of the two). Androconial tuft along 2A of hindwing dull ochreous-brown. Fringes narrowly white cut with broad black veins.

Forewing below with basal half of cell and area just posteriad of it silvery-gray with two black spots in cell; outside this area is a rich brown one delimited proximad and distad with jagged fuscous lines and enclosing a fuscous crescentic line entirely within cell; between this area and the marginal area is a somewhat paler, uniformly brownish-gray one delimited by fuscous lines (the subapical one unevenly developed); marginal area inwardly rich brown, outwardly paler gray-brown with submarginal whitish shading from $M_1$-$M_2$ to near tornus and enclosing dark brown circles just outside the distal band from $M_3Cu_1$ to $Cu_2$-2A. Hindwing below basally dull grayish-brown powdered with whitish scales along anal fold; then a subbasal silvery white area, widest at costa and distally outside cell at $M_3$ and pinched off in $Cu_2$-2A, enclosing black spots in costal cell and two in discal cell and delimited distad by a jagged black line; outer half of wing rich brown powdered with white scales distad and bearing two black ocelli with white irides and tan and black rings in Rs-$M_1$ and $Cu_1$-$Cu_2$, as well as blue-violet submarginal points from $M_1$-$M_2$ to $M_3$-$Cu_1$ and $Cu_2$-2A. Fringes deep brown, slightly whitened between veins.

Variation (Paratypes): Two of the ♂ Paratypes are similar to the Holotype; three others have very much reduced fulvous submarginal spots on the fore- and hindwings; in two others the forewing fulvous spots are totally wanting but the hindwing ones are completely discernable; and in seven others (also the Descimon, Mast de Maeght and Stoffel "neallotype" of *b. brooksiana*) the fulvous spots of the upper surface are lacking entirely (Plate I, bottom left figure). The blue irides in the ocelli of the hindwing above are usually as in Holotype, but in one Paratype with no fulvous above the irides are enlarged and extremely prominent. The under surface varies little from that of Holotype, the only variation being in the extent and prominence of the dark brown circles just outside the distal line.

The ♂ genitalia are apparently not distinctive in the group since those from a specimen of *diaziana* cannot be distinguished from those of a specimen of *P. (P.) escalantiana* Stoffel and Mast de Maeght (1973: 101-105; fig. B).

Length of forewing of Holotype ♂ 48.2 mm., those of the 15 ♂ Paratypes ranging from 46.0 to 52.0 mm., averaging 49.6 mm.

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

Upper surface of wings similar to that of *P. (P.) b. brooksiana,* but differing in the following particulars (♀ Paratype most heavily marked with orange: Plate II, top figures): greenish-blue median patch of forwing more tapered anteriad and expanded posteriad; submarginal orange fulvous patches much less well developed on forewing above and never approaching in size those of hindwing above; ocelli of hindwing above with blue irides much more developed, but double pupils in $Cu_2$-2A never developed or outlined in fulvous. The other ♀ Paratypes range through a series of gradations to the condition shown by the one least heavily marked with fulvous (Plate I, bottom right figure).

Under surface as figured (Plate II, top right figure); variation within the series comparable to that shown by the ♂ Paratypes.

Lengths of forewings of the 13 ♀ Paratypes range from 54.2 to 60.0 mm., averaging 55.7 mm.

Described from 29 specimens, 16 males and 13 females, all collected in Chiapas, Mexico.

HOLOTYPE ♂: MEXICO: CHIAPAS: Santa Rosa Comitan (properly Santa Rosa de las Margaritas, *fide* Carlos Beutelspacher Baights, *pers. comm.*); iii.1961 (*ex colln.* T. Escalante).

PARATYPES: all MEXICO: CHIAPAS: same locality as Holotype: 1♂ ix.1961, 1♂ x.1961, 1♂ iii.1962, 1♂ x.1962, 1♀ viii.1963, 1♂ 1♀ ix. 1963, 5♂ 2♀ iii.1966, 1♂ 4♀ iii.1967, 2♀ iii.1969, 1♀ ix.1969 (all T. Escalante), 1♂ 1♀ iii.1975, 2♂ ix.1975 (all A. Diaz F.); Lagunas de Montebello, 2000 m., 1♂ (the "neallotype" of *P. (P.) brooksiana* of Descimon, Mast de Maeght and Stoffel, 1974), 25.vi.1970 (R. Wind); Ocozocuautla, 1♀ vii.1940 (T. Escalante).

*Disposition of the type-series:* Holotype ♂, seven ♂ and eight ♀ Paratypes in Allyn Museum of Entomology; one ♂ and one ♀ Paratypes in British Museum (Natural History); one ♂ and one ♀ Paratypes in American Museum of Natural History; one ♂ and one ♀ Paratypes in Carnegie Museum; one ♂ and one ♀ Paratypes in National Museum of Natural History; three ♂ and one ♀ Paratypes in collection of Alberto Diaz Frances; and one ♂ Paratype (the "neallotype" of *P. brooksiana*) in collection of H. Descimon.

This distinctive insect is named for Sr. Alberto Diaz Frances who first called it to our attention. He has, directly or indirectly, supplied much of the material that is known of this butterfly, though relatively few of these eventually became type-lot specimens.

We have seen one additional specimen that was not included in the type-series because of its rather vague data. This was a male collected by Sr. Diaz Frances which bore the label "Chiapas, near Guatemala". The presence of several other specimens with better data precluded its inclusion in the type-series, but it is a rather average specimen for the Santa Rosa de las Margaritas-Lagos de Montebello population and almost certainly came from there.

Most of the confusion regarding this taxon may be laid to Hoffmann (1940: 691) who stated that the range of *brooksiana* was "Tierra templada de Veracruz (Coatepec). Interior de Chiapas (Ocozocuautla)." One of the Paratypes of *diaziana* is figured (Plate II, top figures) from a 1940 specimen taken at Ocozocuautla, and this may be the source (at least it certainly is one of the sources) of the identification of the Chiapas insect as identical with the Veracruz one. This single specimen that we have seen from Ocozocuautla is the most brilliantly marked with orange of any of the series at hand, and its determination as *brooksiana* by Hoffmann is understandable. The long series at hand from Santa Rosa de las Margaritas and the nearby Lagos de Montebello demonstrates that the Chiapas insect varies dramatically, even though none of the females from there is as brightly marked with orange as is the Ocozocuautla one, much less those from Veracruz.

The Chiapas insect cannot be the same as the Veracruz one, as shown above. The sensitivity of these insects to isolation is shown by the great superficial differences between true *brooksiana* and *diaziana* on the one hand and *escalantiana* on the other, even though the male genitalia of the last two are identical. Because of the genitalic similarities within the group and the very obvious superficial resemblances between *brooksiana* and *diaziana,* we have decided to describe the latter as a subspecies of the former. Experimental breeding of members of the complex should prove enlightening with regard to the conspecificity, or lack thereof, of *brooksiana, diaziana* and *escalantiana.*

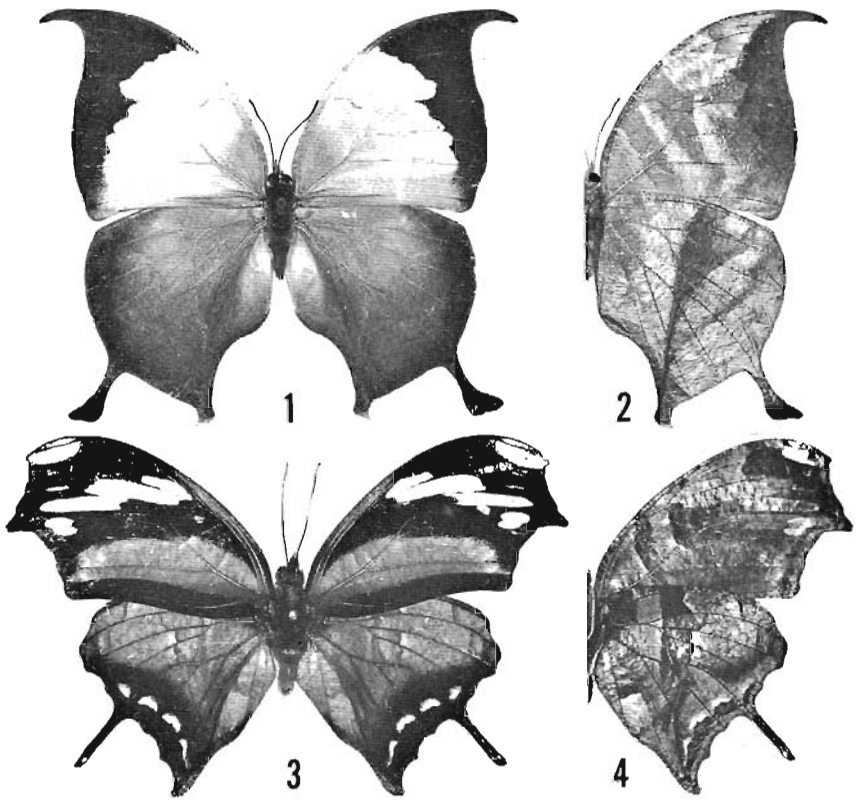
## Anaea

### the subgenus **Consul** Hübner

Comstock (1961) resurrected the ancient Hübnerian name *Consul* for not only its type-species, *fabius* (Cramer), but also for such apparently diverse species as *electra* (Westwood) and *panariste* (Hewitson). Our first impression was that the

six species Comstock included in *Consul* might not be consubgeneric, but the characteristics of the male genitalia are such that these species do seem to be closely related despite their very dissimilar superficial appearances. Three of the species occur in Mexico: *electra* is abundant throughout most of the country, *fabius cecrops* (Doubleday) is usually not common except in the southern part of Mexico and *excellens* (Bates) is quite uncommon and restricted to the southernmost states that adjoin Guatemala.

We received a long series of *Consul* from Dr. Escalante that had been collected near the town of Coahuayana in the state of Michoacan during the summer of 1950. The vast majority of the specimens were of *electra*, a male of which is figured in Figs. **1** and **2**. A few specimens were of perfectly typical *A. (C.) fabius cecrops*, a male of which is also figured (Figs. **3** and **4**). One specimen, here figured (Figs. **5** and **6**), was extremely odd combining the characteristics of both species, but resembling neither. Superficially this specimen seems to be a hybrid between *electra* and *cecrops*. The outline of the forewing shows a hint of the acute apex of *electra*, but to a much lesser degree than in that species, and it also demonstrates some of the prolongation at the end of $M_3$ that characterizes *fabius*. The ground color of the upper surface is a uniform rusty ochreous, neither so pale as in *electra*

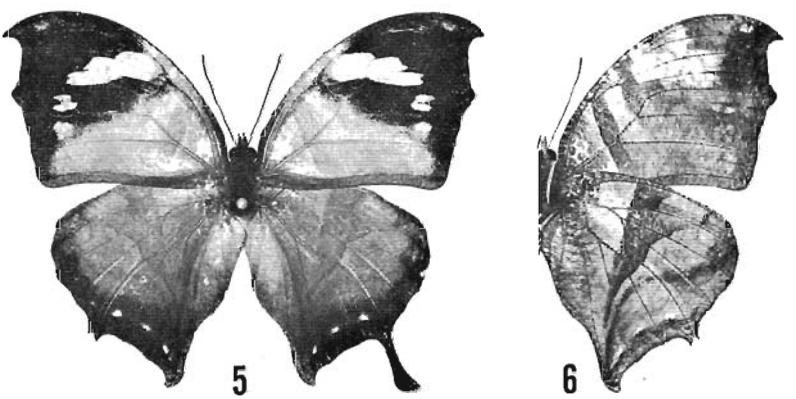



Figures 1-4, *Anaea (Consul)* species. 1-2, *A. (C.) electra* (Westwood), ♂ upper (1) and under (2) surfaces (Allyn Museum photos 012576-1/2); MEXICO: VERACRUZ: Presidio. 3-4, *A. (C.) fabius cecrops* (Doubleday), ♂ upper (3) and under (4) surfaces (Allyn Museum photos 012576-5/6); MEXICO: OAXACA: Chiltepec.

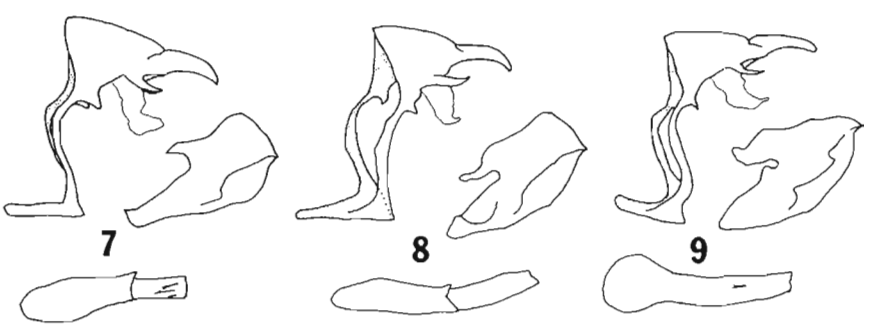
nor so fulvious as in *fabius cecrops*. The hindwing tail at the end of $M_3$ is more spatulate than is that of *cecrops*, but not so pronouncably so as in *electra*. The heavy forewing band across the cell on the upper surface that characterizes *cecrops* and is absent in *electra* is poorly developed, but present, in this single specimen. The under surface pattern is similar in all of these butterflies, but again that of the single specimen is intermediate between the configurations of *electra* and *fabius cecrops*.

The male genitalia of the unknown specimen (Fig. **8**) are likewise somewhat intermediate between those of *electra* (Fig. **9**) and *fabius cecrops* (Fig. **7**), resembling the former in the more finely drawn uncus, but more closely approximating *cecrops* in the configurations of the valva, saccus and penis.

The fact that both superficial and genitalic characteristics of the single individual from Coahuayana are intermediate between *electra* and *cecrops* strongly suggests that that specimen is the result of a natural hybridization between those two species.




Figures 5-6, *Anaea (Consul)*, probable hybrid between *A. (C.) electra* (Westwood) and *A. (C.) fabius cecrops* (Doubleday), ♂ upper (5) and under (6) surfaces (Allyn Museum photos 012576-3/4); MEXICO: MICHOACAN: Coahuayana. Compare these pictures with those of *electra* (Figs. **1-2**) and *fabius cecrops* (Figs. **3-4**).




Figures 7-9: ♂ genitalia of *Anaea (Consul)* species and hybrid. 7, *A. (C.) fabius cecrops* (Doubleday), slide M-3185 (Lee D. Miller); MEXICO: MICHOACAN: Coahuayana. 8, *A. (C.)*, probable hybrid between *electra* and *fabius cecrops*, slide M-3187 (Lee D. Miller); MEXICO: MICHOACAN: Coahuayana. 9, *A. (C.) electra* (Westwood), slide M-3186 (Lee D. Miller); MEXICO: MICHOACAN: Coahuayana.

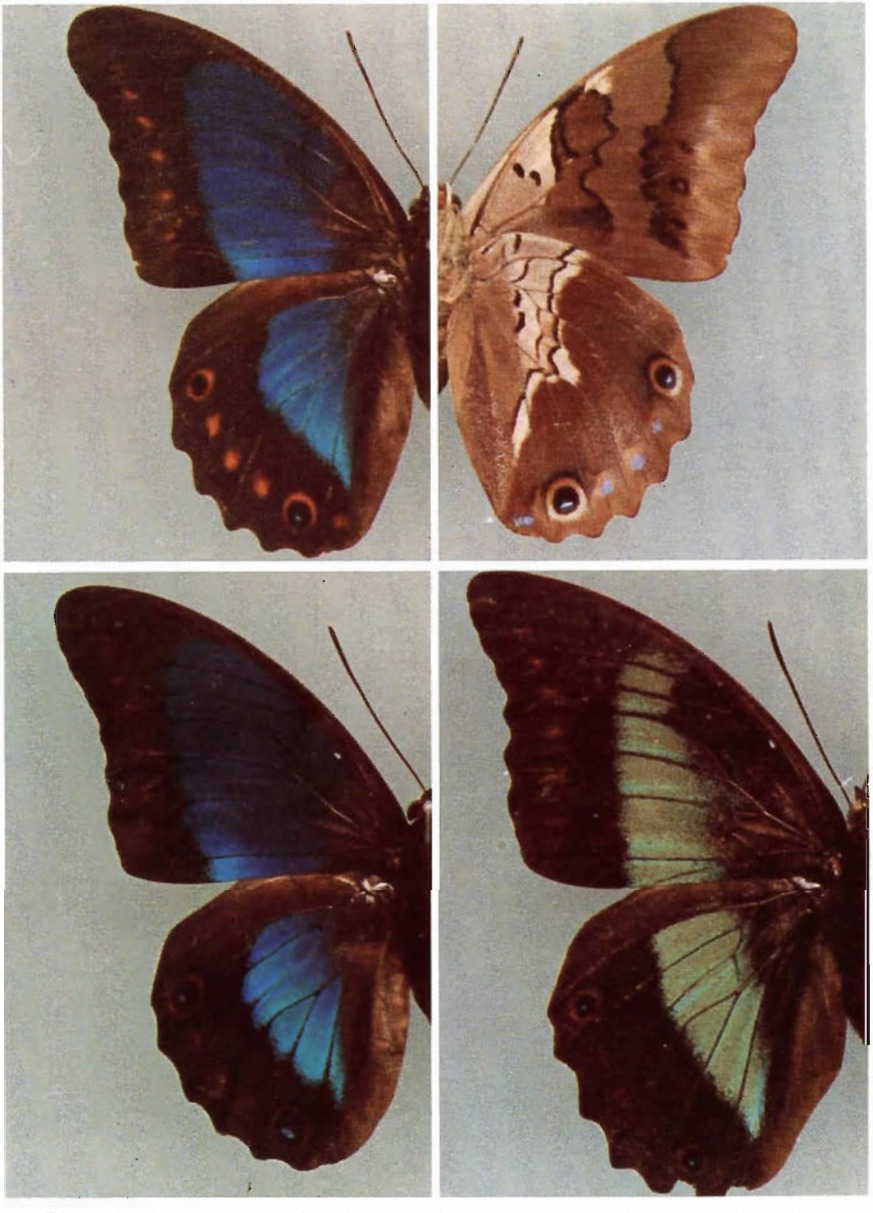


Plate I: *Prepona (P.) brooksiana diaziana*, new subspecies. Top figures: Holotype ♂ upper (left) and under (right) surfaces; MEXICO: CHIAPAS: Santa Rosa Comitán (Allyn Museum photos 082376-5/6). This specimen represents the morph that is brightly marked with orange (see text). Bottom figures: upper surfaces of Paratype ♂ (left) and Paratype ♀ (right): MEXICO: CHIAPAS: Santa Rosa Comitán (Allyn Museum photos 082376-3 and 082376-7, respectively). These specimens are referable to the darkest morph of the type series.

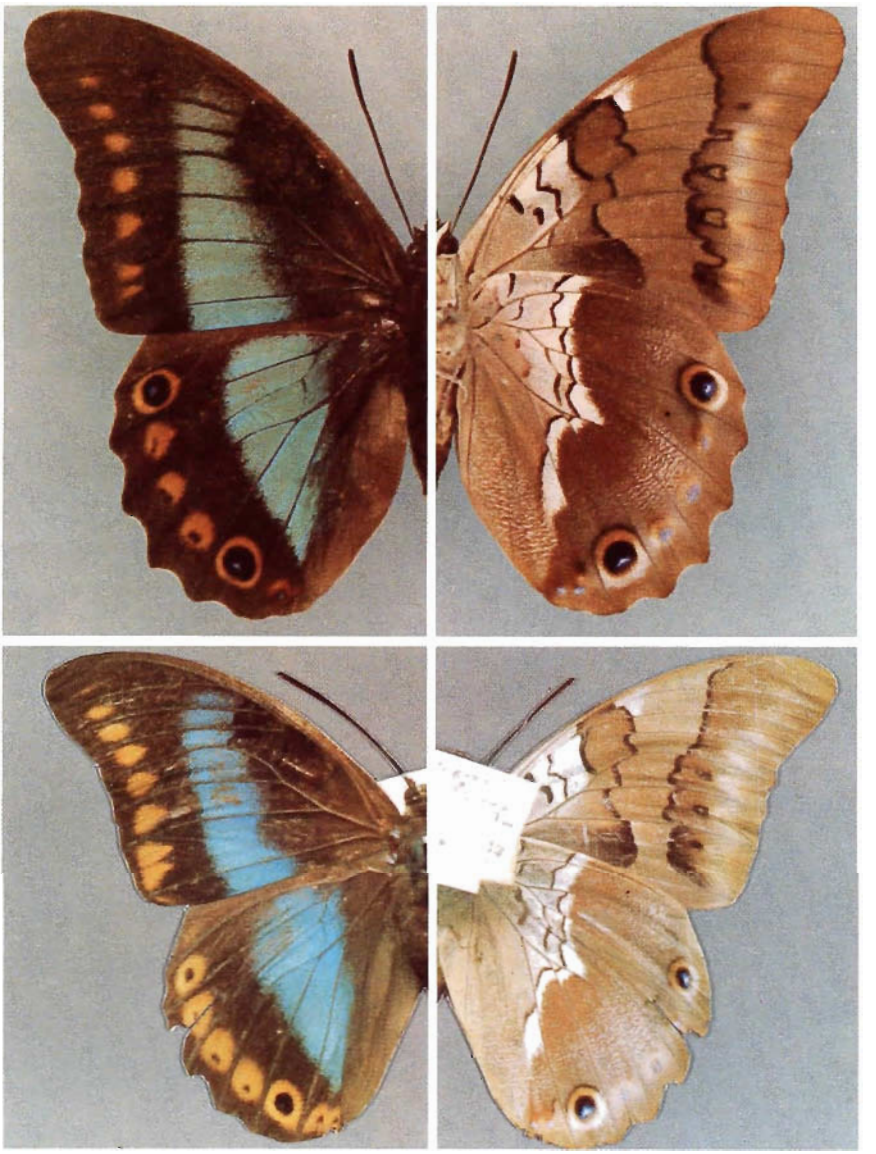


Plate II: *Prepona (P.) brooksiana* subspecies. Top figures: *P. (P.) brooksiana diaziana*, new subspecies, Paratype ♀ upper (left) and under (right) surfaces; MEXICO: CHIAPAS: Ocozocuautla (Allyn Museum photos 082376-9/10). This specimen is the female of the most heavily orange marked morph. Bottom figures: *P. (P.) b. brooksiana* Godman and Salvin, Holotype ♀ upper (left) and under (right) surfaces; MEXICO: VERACRUZ: Coatepec (British Museum; Allyn Museum photos 102173-23/24). The labels were left on this specimen during photography, hence the loss of detail on the under surface toward the bases of the wings.

With very few exceptions true natural hybrids are quite uncommon in nature. Most of the cases cited as such prove to be either intraspecific hybrids or separate species in their own rights. Apparently the most frequent cases of actual interspecific hybrids occur in instances where one of the parent species is abundant and the other rare in a locality. The other factor that might work in such an instance may be the aggressiveness or passivity of the parental species. Obviously if a species can mate with its own kind it will do so in preference to mating with a congenor, but if a sexually aggressive rare species is unable to find a suitable mate it is conceivable that it may mate with a more passive congenor, despite the futility of such a pairing in an evolutionary sense (sterility, lethality or the like). We suggest that in cases such as the mating of *fabius cecrops* and *electra* that the former, being the rarer species, was the male partner with *electra* being the female. The male is the sex that initiates courtship in most butterflies, hence there would be no advantage in a male *electra* courting a female *cecrops* when the appropriate female is so readily available.

**Anaea (Memphis) tehuana** Hall, 1917

Comstock (1961: 77-78; pl. 12, figs. 1-2) discusses and very accurately figures this species. He indicates that he had seen but three specimens, plus a figure of the type in the British Museum (Natural History). The states of Mexico represented by the material before Comstock were Guerrero, Campeche and Oaxaca. Our series is entirely from Piste, Yucatan, a range extension that is not entirely unexpected. The dates of capture are from July through October, and both the form with rounded forewings and the one with a semi-acute forewing are represented, seemingly without regard to season. Most of the male specimens at hand are more heavily marked below than is the type (Comstock, 1961: pl. 12, fig. 1), but the females are a good match for the one figured (fig. 2). It is curious that Hoffmann (1940) entirely overlooked the description of this species, especially since it was described more than twenty years prior to his catalogue.

**Anaea (Memphis) wellingi,** new species

Figures 10, 11 (Holotype ♂), 12, 13 (Paratype ♀), 14 (♂ genitalia)

*Male:* Head, thorax and abdomen clothed above with blue-gray hairs; head and thorax with rust colored ventral hairs; ventral hairs of abdomen gray. Antennal shaft dark brown above, checkered lighter brown and white below; club dorsally dark brown, ventrally rusty brown. Palpus clothed with dark brown, gray and white admixed scales. Legs dark brown with a longitudinal white stripe on outside of femur and tibia; tarsus dark brown with intersegmental points outlined in white.

Forewing above blackish-purple with basal part brilliant blue encompassing most of cell to origin of $Cu_1$ thence to tornus at its midpoint; a somewhat duller blue area begins marginally at tornus then curves basad to radial stem, its inner point being about midway along radial stem. Fringes pale gray. Hindwing above purplish-black with basal half (excluding anal fold) blue; margin powdered irregularly with blue scales in which are small black points in $Cu_2$-2A; anal fold grayish. Fringes gray, darker toward apex.

Most of under surface shiny reddish-brown, but marginal area of forewing and tornal third of hindwing duller ochreous brown; a complicated pattern of whitish markings, as indicated in figure and very small black submarginal points in hindwing spaces $Cu_1$-$Cu_2$ and $Cu_2$-2A (two), these latter ones with white adjacent patches just proximad of them. Fringes of both wings reddish-gray.

Length of forewing of Holotype ♂ 32.7 mm., those of the seven ♂ Paratypes range from 31.6 to 33.0 mm., averaging 32.4 mm.

Male genitalia as illustrated, more closely resembling those of the *xenica* group than those of *gudrun* with regard to the configuration of the valva. The general structure of the uncus, tegumen and penis is closer to that of *gudrun*, thus confirming

the superficial resemblance.

*Female:* Head, thorax, abdomen and appendages similar to those of ♂, but the rust color of hairs on head and thorax beneath of ♂ a warmer, paler rust in ♀.

Upper surface of forewing dark fuscous with inner half of wing exclusive of costa brilliantly blue. Upper surface of hindwing also deep fuscous with inner half exclusive of anal fold bright blue; anal fold gray; submarginal black points in $Cu_1$-$Cu_2$ and $Cu_2$-2a (two), the latter two with tiny bluish-white pupils. Fringes gray.

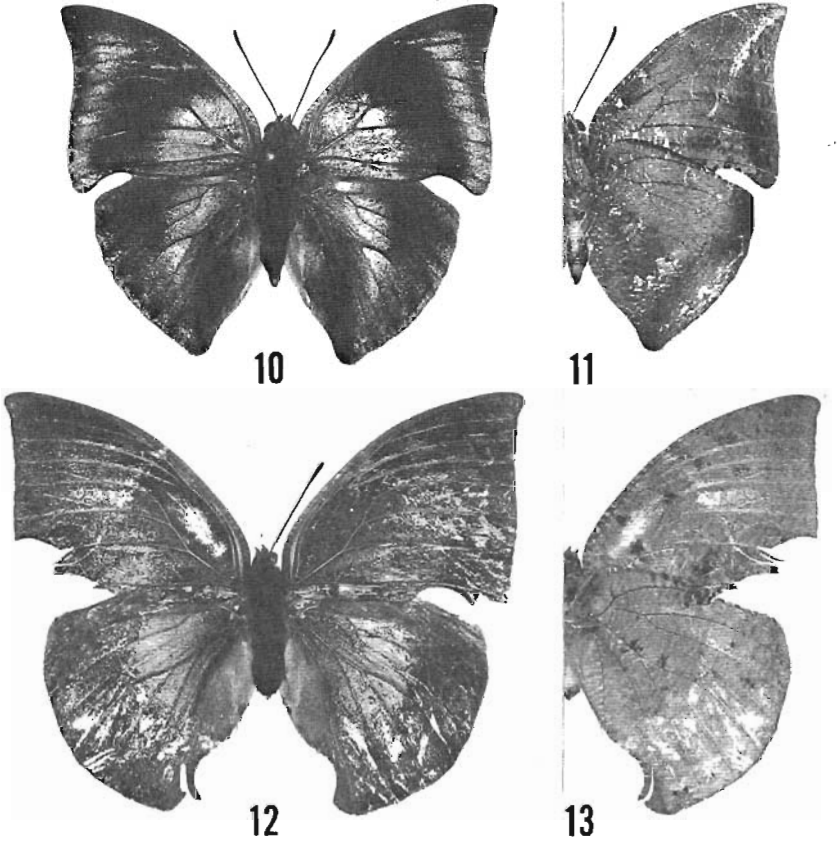
Under surface of wings pale reddish-brown with scattered white markings as in ♂ and additional heavy black ones not on ♂ specimens at hand; one black submarginal point in $Cu_1$-$Cu_2$ and two in $Cu_2$-2A, as in ♂. Fringes reddish-tan.

Length of forewing of single ♀ Paratype 39.1 mm.

Described from nine specimens, eight males and one female, from the state of Oaxaca, Mexico.

HOLOTYPE ♂: MEXICO: OAXACA: Candelaria Loxicha, 500 m., 19.x.1968 (E. C. Welling M.), *ex colln.* T. Escalante.

PARATYPES: all same locality and collector as Holotype: 1♂ 18.x.1967;




Figures 10-13, *Anaea (Memphis) wellingi,* new species. 10-11, Holotype ♂ upper (10) and under (11) surfaces (Allyn Museum photos 012576-7/8); MEXICO: OAXACA: Candelaria Loxicha. 12-13, Paratype ♀ upper (12) and under (13) surfaces (Allyn Museum photos 101476-5/6); MEXICO: OAXACA: Candelaria Loxicha.

1♀ 30.xi.1967; 1♂ 7.viii.1969; 1♂ 14.x.1970; 1♂ vi.1972; 1♂ 22.vii. 1972; 1♂ 22.ix.1972; 1♂ no date (one ♂ with genitalia slide M-2578, Jacqueline Y. Miller).

*Disposition of the type-series:* Holotype ♂, two ♂ and the female Paratypes in Allyn Museum of Entomology; one ♂ Paratype in American Museum of Natural History; four ♂ Paratypes retained in collection of E. C. Welling M.

It is with great pleasure that we name this distinctive new species for its discoverer, Sr. Eduardo C. Welling M. of Mérida, Yucatán, Mexico, who has discovered many new, rare and unusual Mexican butterfly species during the past two decades and has shared unselfishly his knowledge with other entomologists.

*A. (M.) wellingi* is one of the "tailless" *Anaea* that seem to abound in Mexico and Central America. It is almost unique, however, in that both the males and females are without tails, a situation shown by only *A. (M.) cleomestra* (Hewitson) in the illustrations of Comstock (1961). This fact alone suggests that *wellingi* may not be closely related to any other species in the group, although the species it most closely resembles superficially, *gudrun* Niepelt, is known only from the tailless male. The chief superficial characteristic that separates *wellingi* and *gudrun* is the broader, more diffuse submarginal blue area of the forewing in the former. Genitalically the two species are abundantly distinct, as can be seen by comparison of our figure of *wellingi* (Fig. 14) with Comstock's (1961: fig. 198) figure of the genitalia of *gudrun*.

Several new *Anaea* have been described from single localities, some of which have later been found to be more widespread, others remaining restricted (see Rotger, Escalante and Coronado-G., 1965). We have other, apparently equally restricted, *Anaea* from other parts of Mexico and from Central America, but we have not seen enough specimens, or at least good enough specimens, of these other underscribed species to enable us to describe them here. Such work must await more and better material and will be the province of future papers.

## ACKNOWLEDGMENTS

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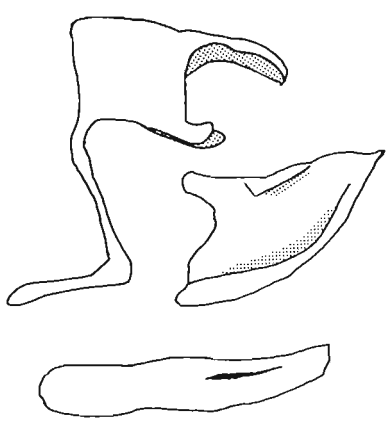

Figure 14, *Anaea (Memphis) wellingi*, new species, ♂ genitalia of Paratype, slide M-2578 (Jacqueline Y. Miller); MEXICO: OAXACA: Candelaria Loxicha.

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