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## NOTES ON NEOTROPICAL NYMPHALIDAE AND HESPERIIDAE WITH DESCRIPTIONS OF NEW SPECIES AND SUB SPECIES AND A NEW GENUS.

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### INTRODUCTION

My wife, Levona, and I collected butterflies in El Salvador for six years from 1967 to 1973 during which we discovered eleven hitherto undescribed species or sub species: ten Hesperids and one Nymphalid. One of the skippers was described earlier (Steinhauser, 1972); the remainder are described below plus one new skipper from Guatemala found in the US National Museum while doing comparative work.

Less has been published on the butterfly fauna of El Salvador than any other Neotropical country. Presumably because of its small size (about equal to the state of Massachusetts), relatively dense population and intensive agricultural development, the country has been practically ignored by collectors. The only collections that I could find for study besides my own were those of Miguel and Frank Serrano, Alberto Muyschondt, Victor Hellebuyck and the University of El Salvador, which latter is largely the result of the efforts of Frank Serrano and Victor Hellebuyck.

Frank and Miguel Serrano (1972) have already published an illustrated and keyed list of the known Papilionidae of El Salvador and plan to follow this with similar lists of the other families of the Papilionoidea. I plan to prepare a similar annotated list for the Hesperidae of El Salvador based on the above mentioned collections and any further material I can find.

Evans' (1951, 1952, 1953, 1955) monumental work on the American Hesperidae is the obvious base from which to start any revisional or systematic studies of the Hesperidae, and the few notes below on nomenclature and systematics are intended to clarify or correct a few ambiguities and apparent errors in Evans' classification. I have included illustrations of female genitalia where possible. Any student of the skippers knows the problems involved in determining many of the female skippers and I have found, in the very small sampling I have made, that the female genitalia are often equally as specifically distinctive as the male genitalia. I have also included several illustrations of both adults and male genitalia where I feel that inadequate illustrations exist in the literature, with the hope of simplifying problems of identification for other lepidopterists.

## ACKNOWLEDGEMENTS

I have received much help and encouragement from a great many people and especially wish to thank the following whom I list alphabetically:

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Victor Hellebuyck for lending material from his collection and that of the University of El Salvador;

T. G. Howarth for making genitalia preparations and sketches from material in the British Museum (Natural History) and for comparing a new *Ridens crison* sub species with type material in the British Museum;

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## NYMPHALIDAE (Limenitinae)

***Adelpha diocles* Godman & Salvin, 1884**

Figure 59

A single badly tattered female was taken by the author in December, 1967 at 2300 m. in the Miramundo Cloud Forest of the Hacienda Montecristo, El Salvador. The specimen later was partly eaten by psocids but enough of the genitalia remained to illustrate the ostium bursae area. Insufficient data have been published on the female genitalia of *Adelpha* and related Limenitinae to ascertain whether or not they offer usable taxonomic guides.

As noted by Miller and Miller (1970), *diocles* is an apparently rare species (this was the only specimen we ever saw); its capture in El Salvador in a cloud forest environment similar to that of its previously known range represents a further extension of that range.

***Adelpha albifilum*, new species**

Figures 1-4, 57, 58

*Male*: Upperside: Forewing, ground color dark brown. Prominent, broad (see wing measurements), slightly sinuous postmedian orange patch from costa (where narrowly black bordered) to behind  $Cu_1$  where it merges with ground color and continues caudally as narrow black stripe to  $2A$ , distally parallels termen, proximally concave between radius and  $M_2$ , thence straight, converging towards

distal edge. Prominent narrow (average and Holotype 1.5 mm. ranging from 0.9 to 1.9) white median band from  $Cu_1$  (sometimes faintly indicated in  $M_3-Cu_1$ ) to inner margin. Obscure transverse black bands in typical *Adelpha* pattern as illustrated. Fringe dark brown, white at apex, minutely white in centers spaces behind  $M_1$  or  $M_2$ ; ancestral position 1A indicated by faint fold and double white fringe spot  $Cu_2-2A$ .

Hindwing ground color as forewing. Prominent thread-like white median band, straight or slightly concave distally, from  $Sc+R_1$  at mid-costa directed to tornus, extending to behind  $Cu_1$  in Holotype and 21 Paratypes; may be reduced to mere traces (6 Paratypes), missing altogether (2 Paratypes) or vary between these extremes (11 Paratypes). Dull orange tornal spot between 1A and 2A, extending beyond 2A to inner margin and beyond 1A where it replaces ground color of narrow

crescent separating postmedian and inner submarginal black bands in form of a hook; between 1A and 2A distally black bordered at termen and with round black pupil. Obscure, transverse, black markings as illustrated. Fringe at termen broadly dark brown at vein ends, white between, whitish on inner margin between 2A and 3A, brown to wing base.

Underside: Ground color purple-brown; orange postmedian forewing patch as above but less prominent, obscured ochreous centrally, becoming purple-brown in  $Cu_1-Cu_2$  and continued to 2A as black-brown spot; second smaller black-brown spot separated distally by mauve streak. White median band as above distally bordered black-brown, its ancestral extremities indicated by mauve streak beyond cell end to forewing costa and on hindwing by continuation of its distal dark border to 2A near tornus where it hooks forward. Transverse banding more pronounced than above, marked by mauve and lighter brown coloration and prominently bordered by dark brown lines in inner half of both wings. Hindwing tornal spot obscured with brown, 2 black pupils prominent.

Head, thorax, and abdomen black-brown above, whitish beneath; antennae all black, palpi black above and on sides, white beneath; eyes densely hairy.

Genitalia show close relationship to the *A. pithys* (Bates, 1864) group (Miller, L.D. and J.Y. Miller, 1970). The sacculus of *albifilum* has a prominent toothed dorsal appendage (clunicula of Fruhstorfer, 1915), absent in *A. donysa* (Hewitson, 1847) and only indicated as a serrate edge in *A. pithys*. The terminal teeth on the valvae are quite variable as illustrated; there may be one, two or three. The aedeagus is more slender, curved and has a sharper tip than the other two.

*Female*: As male but larger, paler and with relatively broader orange forewing band.

Genitalia simple, lightly sclerotized in ostium bursae area, membranous elsewhere; lamella antevaginalis a broad wrinkled, weakly sclerotized plate.

Wing Measurements - Male, forewing length base to apex, Holotype 32.0 mm; average of type series (42 specimens) 32.2 mm. ranging from 30.0 to 34.0. Average width orange spot along  $M_1$  8.1 mm ranging from 7.1 to 9.0 (7.7 in Holotype). Ratio width of orange spot measured along  $M_1$  to forewing length: Holotype 0.241; average of type series 0.251 ranging from 0.231 to 0.280.

Female forewing length, base to apex, average of type series 35.1 mm ranging from 33.5 to 36.5. Average width orange spot 10 mm. Ratio width of orange spot to forewing length, 0.284 ranging from 0.274 to 0.299.

Type Material: Holotype ♂ N-1503; El Salvador: Hda. Montecristo, Cerro Miramundo Cloud Forest 2418 m., 10/III/73 S.R. & L.M. Steinhauser; in the Allyn Museum of Entomology.

Paratypes: 41♂, 4♀ as follows (all from same location as Holotype, those taken at 2418 m. were hilltopping at summit of Cerro Montecristo): 4♂ in University of El Salvador Collection: No. UELS-1 (2300 m.) 17/XII/71; UELS-2 (2300 m.) 26/III/72, V. Hellebuyck; UELS-3 & 4 (2418 m.) 26/III/71, F. Serrano. 5♂ in Victor Hellebuyck Collection: Nos. VH-1 & 2 (2418 m.) 26/III/72; VH-3 (2300 m.) 17/XII/71; VH-4 (2418 m.) 17/XII/71; VH-5 (2418 m.) 25/III/72, V. Hellebuyck. 2♂ in Serrano

Collection: No. MS-1 (2418 m.) 26/III/71; MS-2 (2418 m.) 26/III/72, F. Serrano. 1♂ in Yale Peabody Museum, No. H-1384 (2418 m.) 20/IV/72, T. Manley. 29♂, 4♀ in Allyn Museum: No. N-609♂ (2300 m.) 21/XI/70; N-610♀ (2300 m.) 23/I/71; N-611♂ (2300 m.) 27/II/71; N-612♂ (2300 m.) 5/III/71; N-741♂ (2300 m.) 13/III/71; N-975, 976♂♂ (2300 m.) 13/II/72; N-977♂ (2418 m.) 28/XII/71; N-978, 979♂♂ (2418 m.) 29/XII/71; N-1282♂ (2300 m.) 26/III/72; N-1378♂ (2300 m.) 29/IV/72; N-1379 thru 1383, 1385, 1386♂♂ (2418 m.) 30/IV/72; N-1448 thru 1450♀♀ (2300 m.) 3/XII/72; N-1451, 1452♂♂ (2418 m.) 3/XII/72; N-1477♂ (2418 m.), N-1479♂ (2300 m.) 11/II/73; N-1482♂ (2300 m.), N-1483♂ (2418 m.) 23/II/73; N-1500♂ (2300 m.) 8/III/73; N-1501, 1502♂♂ (2300 m.) 9/III/73; N-1503, 1504♂♂ (2418 m.) 10/III/73; N-1505♂ (2418 m.) 11/III/73.

*Adelpha albifilum* is immediately recognizable by its broad orange forewing spot, very thin (thread-like on hindwing) white median stripe and generally dark aspect. It belongs in the *pithys* group of species and more nearly resembles *donysa* than *pithys*, though abundantly distinct from both. The genitalia differences, while less pronounced, are distinct, as discussed under male genitalia above.

Of the four *Adelpha* species known from the Miramundo Cloud Forest (*leuceria* (Druce, 1874), *synra* Fruhstorfer, 1915, *diocles* Godman & Salvin, 1884, and *albifilum*), *albifilum* is by far the most common. Its flight habits are quite similar to those described by Miller and Miller (1970) for *A. donysa* although *albifilum* is less aggressive. The males are frequent hilltoppers at the peak of Cerro Montecristo where the cloud forest is replaced by a few acres of heath scrub, but even hilltopping they usually stay beneath the tops of the scrub and rest on low, sunny perches rather than the top leaves as does *A. synra*. Within the forest clearings they visit wet sand, mud, dog dung and sometimes perch in dry dust in the road, but are usually found flying near ground level or in sunny areas of the undergrowth. We have not seen them visiting flowers. The females are scarce (or remain hidden); foodplant is unknown.

The observed flight season is from November through May but is undoubtedly more extensive; the single specimen taken in November was a badly worn male. Though none were captured after April, they were seen on the wing in May. The capture record, which is biased by more intensive collecting from February through early April shows 1 ♀ in January, 8 ♂ in February, 16 ♂ in March, 9 ♂ in April, 1 ♂ in November, 8 ♂, 3 ♀ in December.

## HESPERIIDAE (Pyrginae)

### *Zestusa levona* Steinhauser, 1972

Since its description in 1972, *Z. levona* has turned up over a wider geographical range than originally reported. There is a specimen in the American Museum of Natural History from Guatemala and another in The Allyn Museum of Entomology from Chiapas, Mexico. I have not had the opportunity to examine these specimens to determine if they show any variation from the type material from El Salvador.

### *Ridens crison howarthi*, new subspecies

Figures 9-12, 62, 68

*Both sexes*: Upperside: Forewing ground color bluish black more or less overscaled dull bronze-green. Prominent hyaline white spots forming transverse central band spaces  $Cu_2-1A$ ,  $Cu_1-Cu_2$  (the largest), discal cell,  $Sc-R_1$  and (females only) costal cell. Postdiscal band of similar spots  $M_3-Cu_1$  to  $M_1-M_2$  joining 4 prominent subapical spots  $R_2-M_1$  to  $R_2-R_3$ . Spot in  $M_1-M_2$  variable: absent in 1.6% ♂♂; present one side only in 1% ♂♂; present both sides but minute in 10.7% ♂♂ including Holotype and 3.6% ♀♀; present both sides as prominent single spot in 53.5% ♂♂

and 71.4% ♀♀; single spot one side, double spot other side in 7.5% ♂♂ and 10.7% ♀♀; double spot both sides in 25.6% ♂♂ and 24.3% ♀♀ Fringes concolorous with wing, may have some white scales at tornus.

Hindwing ground color blue-black, more blue than forewing, overscaled dull blue-green, basal half densely clothed long dark bluish gray hairs. Indistinct pale bluish discal spots  $Cu_1$ - $Cu_2$  to  $M_1$ - $M_2$  around cell end. Fringes distal margin narrowly white, ground color on inner margin.

Underside: Forewing as above with more or less prominent pale blue-green overscaling superimposed on the normal dull greenish overscaling and forming vague interneural spots beyond the hyaline spots (prominent in 12.0% ♂♂ including Holotype and 32.2% ♀♀; trace in 40.4% ♂♂ and 55.5% ♀♀; absent in 47.6% ♂♂ and 12.3% ♀♀). Fringes white at tornus.

Hindwing with irregular postdiscal band of pale bluish white spots from  $Cu_2$ -2A to  $Sc+R_1$ -Rs sometimes extending, at least as a trace, into costal cell (19.5% ♂♂ including Holotype and 47.3% ♀♀). Spots  $Cu_2$ -2A and costal cell always single. Spot  $Sc+R_1$ -Rs either single (56.5% ♂♂ and 41.9% ♀♀); double with inner spot a mere trace (8.7% ♂♂ including Holotype and 3.6% ♀♀) double with well marked small inner spot (32.1% ♂♂ and 50.9% ♀♀) or double with very prominent inner spot about as large as outer spot (2.7% ♂♂ and 3.6% ♀♀). Fringes white on outer margin.

Head, thorax, abdomen and legs densely clothed with dark blue-grey hairs becoming greenish above on forward part of thorax. Palpi mixed black and grey hairs below.

Genitalia: Male; Uncus bifid, gnathos broad-ended; aedeagus blunt, moderately broad, no cornuti; valvae broad, valvula (tip of Evans' "cuiller") ending in sharp point, sometimes with second tooth; cucullus extending dorsally as long, serrate process, somewhat spatulate.

Female; Simple membranous corpus bursae without signa, ductus bursae not sclerotized, short, simple sclerotized antrum fused to lamella antevaginalis, lamella postvaginalis broad, centrally excavate and connected to lamella antevaginalis by expansive crinkled membrane forming large sack which extends well forward of ostium bursae.

Wing measurements: Male: Forewing base to apex, Holotype 25.0 mm.; average of 187♂♂ of type series 24.4 mm. ranging from 21.8 to 26.5. Female: average of 57♀♀ of type series 26.3 mm. ranging from 24.2 to 28.5.

Type Material: Holotype ♂, H6790, Hda. Montecristo, Cerro Miramundo Cloud Forest, El Salvador, 2300 m. 24/II/73 S.R. & L.M. Steinhauser, in Allyn Museum of Entomology. 191♂ and 57♀ Paratypes, same location, distributed as follows:

U. S. National Museum - 1♂ (H229) 18/I/70, 1♀ (H233) 17/I/70 S.R. & L.M. Steinhauser;

British Museum (Natural History) - 2♂ (H1214, 1216) 18/III/71. 1♀ (H1351) 9/V/71 S.R. & L.M. Steinhauser;

H. A. Freeman Collection - 3♂ (H747, 748, 750) 1♀ (H753) 21/XI/70 S.R. & L.M. Steinhauser;

Miguel Serrano Collection - 1♂, 3♀ 21/III/71 M. Serrano;

Victor Hellebuyck Collection - 1♂, 2♀ 28/III/72, 1♀ 26/III/71 V. Hellebuyck; Univ. of El Salvador Collection - 4♂ 30/II/72, 1♀ 24/III/71 V. Hellebuyck;

Allyn Museum - 179♂, 47♀: 2♂, 1♀ 21/III/71 M. Serrano; 4♂ (H213-216) 7/III/70, 1♂ (H230) 17/I/70, 4♂ (H234-236, 238) 11/I/69, 1♂ (H237) 30/XII/67, 1♂ (H239) 24/II/68, 3♂ (H749, 751, 752) 1♀ (H754) 21/XI/70, 5♂ (H812-816) 18/I/70, 4♂ (H1024-1027) 1♀ (H1035) 23/I/71, 4♂ (H1029-1032) 2♀ (H1033, 1034) 24/I/71, 5♂ (H1133-1137) 20/II/71, 10♂ (H1138-1147) 1♀ (H1148) 27/II/71, 9♂ (H1153-1161) 3♀ (H1150-1152) 5/III/71, 4♂ (H1164-1167) 13/III/71, 2♂ (H1162, 1163) 14/III/71, 4♂ (H1211-1213, 1215) 2♀ (H1209, 1210) 18/III/71, 1♀ (H1352) 9/V/71, 1♀ (H3203) 13/XI/71, 1♂ (H3204) 1♀ (H3205) 14/XI/71, 1♂ (H3465) 1♀ (H3464) 12/XII/71, 1♂ (H3691) 27/XII/71, 1♂ (H3692) 1♀ (H3693) 28/XII/71, 3♂ (H3694-3696) 30/XII/71, 20♂ (H3840-3859) 3♀ (H3837-3839) 12/II/72, 26♂ (H3860-3885)

3♀ (H3886-3888) 13/II/72, 2♂ (H4079, 4080) 1♀ (H4081) 2/III/72, 6♂ (H4073-4075, 4077, 4078, 4189) 1♀ (H4076) 3/III/72, 3♂ (H4084-4086) 3♀ (H4082, 4083, 4190) 4/III/72, 2♂ (H4072, 4191) 1♀ (H4071) 5/III/72, 1♂ (H4225) 5♀ (H4222-4224, 4303, 4304) 25/III/72, 4♂ (H4226, 4227, 4300, 4305) 2♀ (H4228, 4229) 26/III/72, 3♀ (H4447-4449) 30/IV/72, 5♂ (H4451-4455) 2♀ (H4450, 4456) 1/V/72, 3♂ (H4520, 4521, 4614) 1♀ (H4613) 20/V/72, 1♂ (H6077) 1♀ (H6076) 2/XII/72, 3♂ (H6073-6075) 3♀ (H6070-6072) 3/XII/72, 2♂ (H6809, 6810) 10/II/73, 10♂ (H6811-6820) 11/II/73, 1♂ (H6787) 22/II/73, 6♂ (H6781, 6788, 6789, 7105-7107) 1♀ (H7108) 23/II/73, 8♂ (H6791-6794, 6821-6824) 24/II/73, 1♂ (H6829) 1♀ (H6830) 8/III/73, 4♂ (H6831, 7504-7506) 9/III/73, 1♂ (H7507) 10/III/73, S.R. & L.M. Steinhauser.

There are apparently a number of closely related forms in the *Ridens crison* complex: *crison* (Godman & Salvin, 1893), the Holotype a female from Cerro Zunil, Guatemala; *cachinnans* (Godman, 1901), the Holotype a male from Chiriqui, Panama; an as yet undescribed form from Chiapas, Mexico and *howarthi* from El Salvador. For simplicity in the following discussion of this group I have illustrated besides *howarthi* (Figs. 9, 10♂; 11, 12♀; 62♂ genitalia and 68♀ genitalia), *crison* (figs. 7, 8♂ and 61♂ genitalia), *cachinnans* (figs. 5, 6♀, Chiriqui, Panama and 63♂ genitalia, left valva of specimen from Costa Rica used by Evans for his illustration of *crison*).

Freeman (1969) reported 5 male *crison* from Chiapas with genitalia distinct from *cachinnans* and used this distinction to separate the two as distinct species rather than subspecies. The dorsal process of the cucullus of the valva of this Chiapas material is quite different from the rest of the group and there are some constant maculation differences. Dr. Rindge kindly loaned me material from the American Museum of Natural History which included a male *crison* from Mpio. Acatenango, Quisache, Chimaltenango, Guatemala (very close to the *crison* type locality) collected by E. C. Welling 20/XI/65. This and the female Holotype in the British Museum (Natural History) are the only two examples of *crison* that I know of. Allowing for individual variation, the genitalia of this male from Guatemala are identical to a sketch by Howarth of the left valva of the specimen of *cachinnans* illustrated rather roughly by Evans (1952) (compare figures 61 and 63). This clearly indicates that Freeman's Chiapas "*crison*" is indeed an undescribed new species and that *crison* is apparently conspecific with *cachinnans*.

*Howarthi* differs from its nearest relative, *crison*, in having generally smaller forewing hyaline spots particularly the spot in Cu<sub>2</sub>-1A and in having blue-green coloration of the entire hindwing rather than limited to the basal half as in *crison*. On the underside, the inner spot in space Sc+R<sub>1</sub>-Rs is larger and more distinct than the outer in *crison* whereas in *howarthi* the inner spot is completely missing in 56.5% of the ♂♂ and 41.9% of the ♀♀, present at least as a trace but definitely smaller than the outer spot in 40.8% of the ♂♂ and 54.5% of the ♀♀. It approaches the size and prominence of the inner spot of *crison* in only 5♂♂ (2.7% of the ♂ type series) and 2♀♀ (3.6% of the ♀ type series). In the undescribed species from Chiapas this spot is even more prominent than in *crison*. The male genitalia of *howarthi* differ slightly from *crison* in the form of the dorsal process of the cucullus which is more curved, less strongly serrate and less spatulate in *crison* (also in *cachinnans*). There is a weakly developed basal prong of this process in *crison* not found in *howarthi*. Until a sufficient series of *crison* becomes available, these structural differences are too minor to justify specific rank for *howarthi* which fits well into the concept of geographic subspeciation.

From *cachinnans*, *howarthi* is easily distinguished by its blue-green rather than grey-green color, by the smaller size of its forewing spots, especially Cu<sub>2</sub>-1A, by the more compact and less divided band of *cachinnans* on the hindwing beneath and by the slightly crenulated and more rounded hindwing of *howarthi*. Genitally *cachinnans* differs in the same way as *crison* but lacks the basal prong of the dorsal process of the cucullus of *crison*. Howarth (personal communication 1973) states that the genitalia of ♂ *cachinnans* is surrounded by creamy scales which are not found in *crison* or *howarthi*. The great similarity between *crison*

and *cachinnans* genitalia indicate the validity of Evans' (1952) classification of the latter as a subspecies of the former.

The undescribed species from Chiapas, which I only examined briefly, differs in the very prominent inner spot in Sc+R<sub>1</sub>-Rs of the hindwing beneath and in the valvae which have a very attenuated dorsal process of the cucullus according to a sketch by Freeman (personal communication 1970).

The flight season of *howarthi* extends at least from November to May (dry season). During February and March it is the commonest skipper in the Miramundo cloud forest. The adults, both sexes, commonly visit the purple flowers of a small tree determined by J. Wurdack of the Smithsonian Institute as a *Fuschia* sp. and the pale blue flowers of another small tree determined by H. Robinson of the Smithsonian as *Bartlettina luxii* B. L. Robinson. Territorial behavior is not strongly developed; males seldom challenge other males. When not feeding or flying they rest with wings partly open on leaves orienting themselves to the sun.

The observed food plant is two unidentified species of *Piper* (determined by J. Wurdack), one a vine, the other a small tree. The egg is a somewhat flattened sphere, pale green, vertically ribbed into 14 sections, 1.3 mm. in diameter. The larva in its first three instars is bluish green, shaped like the larva of *Phocides pigmalion*. None were reared to adulthood and no eggs or larvae preserved.

I am pleased to name this insect for Mr. T. G. Howarth of the British Museum (Natural History) in recognition of his great assistance in comparing it critically with the types of *crison* and *cachinnans*.

#### **Ridens toddi, new species**

Figures 17-20, 65, 67

*Male*: Upperside: Forewing, costal fold just reaching spot in costal cell; dark brown with hyaline white spots forming irregular and separate central and subapical bands. Subapical band of small spots M<sub>2</sub>-M<sub>3</sub> to R<sub>2</sub>R<sub>3</sub>; spot Rs-M<sub>1</sub> largest, spot M<sub>1</sub>-M<sub>2</sub> 1/2 its length and beneath its distal half; spot M<sub>2</sub>-M<sub>3</sub> subequal to M<sub>1</sub>-M<sub>2</sub> and offset proximad (these two spots deeply excavate distally, frequently to point of division into two separate spots in each space); remaining spots staggered, those in R<sub>4</sub>-R<sub>5</sub> and R<sub>2</sub>-R<sub>3</sub> with distal edges opposite centers of those in R<sub>5</sub>-M<sub>1</sub> and R<sub>3</sub>-R<sub>4</sub>. Central band of very irregular spots: one in discal cell crosses cell, about 1/2 as long in costal 1/2 of cell as in dorsal 1/2; above cell spot are two costal spots in Sc-R<sub>1</sub> and costal cell, generally narrow and nearly as long as upper edge of discal cell spot but sometimes reduced to round dots; large spot in Cu<sub>1</sub>-Cu<sub>2</sub> excavate both ends, at least as long as dorsal 1/2 discal cell spot; smaller spot in M<sub>3</sub>-Cu<sub>1</sub> distally excavate, extending distad of spots in Cu<sub>1</sub>-Cu<sub>2</sub> and cell but overlapping each proximally without reaching base of M<sub>3</sub>-Cu<sub>1</sub> thus leaving small black triangle at base M<sub>3</sub>-Cu<sub>1</sub> (in one specimen spot in M<sub>3</sub>-Cu<sub>1</sub> does not overlap cell spot, merely touches it); short (about 1/2 length of spot in Cu<sub>1</sub>-Cu<sub>2</sub>) irregular spot in Cu<sub>2</sub>-2A behind center or distal half spot Cu<sub>1</sub>-Cu<sub>2</sub> extending to vein 2A. Fringe concolorous, white-tipped in Cu<sub>2</sub>-1A.

Hindwing with short lobe end 2A; darker, nearly black; white discal band touching distal end cell, from Rs to Cu<sub>2</sub>, in spaces M<sub>3</sub>-Cu<sub>1</sub> to Rs-M<sub>1</sub> slightly hyaline covered with white scales, in space Cu<sub>1</sub>-Cu<sub>2</sub> diffuse and opaque; band usually continued to Sc+R<sub>1</sub> as sparse white scaling in Sc+R<sub>1</sub>-Rs. Whitish ground color in anal cell, grey brown in costal cell. All but outer 1/2 of wing densely hairy, black except for admixed grey-white in basal area; very narrow grey-white streak along basal portion 1A and dense grey-white tuft outer half 2A-3A. Fringe white, disappearing at apex, reaching maximum on lobe where it extend inward just beyond 2A; black on inner margin.

Underside: Forewing same as upperside, slightly paler basal 1/2 costa and lower 1/2 Cu<sub>2</sub>-2A; whitish grey in anal cell. Fringe as above. Hindwing black-brown, slightly paler at apex; grey-black abdominal fold. White discal band from

Sc+R<sub>1</sub> to 2A just touching cell end (discocellulars white), widened opposite cell end to include irregular distal black streak in spaces M<sub>3</sub>-Cu<sub>1</sub> to Rs-M<sub>1</sub>. Fringe as above.

Head, thorax, abdomen black-brown; thorax above densely clothed long silky hairs, black with grey tinge giving slightly dusty appearance; abdomen with white hairs and scales at tip. Palpi blackish above, grey below; cheeks whitish. Legs black-brown with white scaling at joints, fringed with long black hairs. Antennae plain, black, club white above, nudum 24 - 27, light brown.

Genitalia: Gnathos broad, undivided; uncus deeply bifid, arms blunt-ended, divergent. Aedeagus relatively broad, short, no cornuti. Valvae broad, variable, both individually and from right to left in individuals. Valvula generally with sharp tooth at apex which may be missing or double, short or long, present one side or both; two dorsal appendages of cucullus: outer, a variable sized simple thorn-like projection, inner, a longer curved process, smooth on the outer edge and toothed along inner edge, hooking forward slightly at tip and with a basal prong obtusely angled over outer edge of ampulla and parallel to ventral edge of cucullus. This basal prong, 1/2 the length of inner dorsal process; attached its entire length to dorsal edge of cucullus.

*Female*: Identical to male in all respects except: 1) lacks costal fold; 2) less white on upper surface of antennal club; 3) lacks tuft of white hairs upperside hindwing space 2A-3A; 4) wing shape slightly different, forewing slightly broader; ratio length to width averages 1.96 for ♀♀, 2.04 for ♂♂.

Genitalia: Ductus bursae a simple tube, unsclerotized except at antrum: corpus bursae simple, unadorned; lamella antevaginalis lightly sclerotized tapering broadly to ostium bursae, last part of taper stepped; lamella postvaginalis broad, caudal edge straight with small V-shaped central notch, lightly sclerotized.

Wing Measurements: Male, forewing length, base to apex Holotype 26.0 mm; average of type series 26.0 mm ranging from 24.3 to 27.0. Female, forewing length, base to apex, average of type series 25.9 mm ranging from 24.0 to 27.0.

Type Material: Holotype ♂ (H4188), Hda. Montecristo, Cerro Miramundo Cloud Forest, El. Salvador, 2300 m 5/III/72 S.R. & L.M. Steinhauser, in the Allyn Museum of Entomology. 9♂ and 5♀ Paratypes, same location as Holotype distributed as follows: US National Museum - 1♂ (H241) 11/I/69 S.R. & L.M. Steinhauser; Yale Peabody Museum - 1♀ (H4445) 1/V/72 T. R. Manley; Univ. of El Salvador - 1♀ 26/III/71 V. Hellebuyck; Allyn Museum 8♂ 3♀: 1♂ (H242) 18/I/70, 1♂ (H1023) 24/I/71, 1♀ (H1238) 18/III/71, 1♂ (H3836) 13/II/72, 2♂ (H4094, 4187) 4/III/72, 1♂ (H4306) 1♀ (H4307) 25/III/72, 1♂ (H4308) 26/III/72, 1♀ (H4446) 1/V/72, 1♂ (H6795) 24/II/73 S.R. & L.M. Steinhauser.

*Ridens toddi* is very closely related to *R. ridens* (Hewitson, 1876) (Figs. 13, 14♂ Panama, 64♂ genitalia) and *R. fieldi*, a new species described below. It differs from *ridens* in the forewing maculation; the costal spots of *ridens* are generally longer, the spot in M<sub>3</sub>-Cu<sub>1</sub> does not overlap the cell spot as in *toddi* and the apical spots of *ridens* are not as noticeably staggered as *toddi*. The genitalia show clearly that these are separate species. The tip of the valvula is extremely variable in both species, both between individuals and from left to right in the same specimen. The most constant and diagnostic feature is the cucullus; in *toddi* this always has two dorsal processes, the inner, longer one with a short basal prong always much shorter than the dorsal process. In *ridens* the outer dorsal process is seldom clearly separable from the various teeth of the valvula, the inner process is much shorter than in *toddi* and its basal prong much longer, sub-equal to the dorsal process.

*Toddi* differs from *fieldi* (Figs. 15, 16, 66) in the placement of the spot in M<sub>3</sub>-Cu<sub>1</sub>, which in *fieldi* is the same as in *ridens*. The costal spots of *fieldi* are placed slightly more distad with respect to the cell spot than either *toddi* or *ridens*; the apical spots of *fieldi* are arranged as in *ridens*, not staggered as in *toddi*. On the underside hindwing the white band of *fieldi* is narrower than either *toddi* or *ridens* and lacks the outwardly separated portion beyond the cell end. The valvae



of *fieldi* lack the dorsal process of the cucullus, only the strongly serrate basal prong remains, overlapping the ampulla.

There is less left-right variation in the valvae of *toddi* than of *ridens* and *fieldi* and less individual variation in the arrangement of the dorso-apical teeth; in *toddi* the outer dorsal thorn-like process is quite consistent.

The genitalic differences are based on comparison of the entire type series with one ♂ *ridens* from Chiriqui in the USNM, sketches by Howarth of 2♂ *ridens* from Chiriqui in the BMNH (including the specimen illustrated by Evans), one ♂ *ridens* from Chiriqui in the AMNH and the holotype of *R. fieldi*.

The female of *fieldi* is unknown and the female genitalia of *ridens* have not been examined, thus no comparisons are possible of female genitalia.

*R. toddi* has been taken in the Miramundo cloud forest in January, February, March and May. It flies with *R. c. howarthi* and exhibits the same behavior but is very scarce. It has also been observed drinking from damp rocks and hilltopping. Nothing is known of its food plant or early stages.

I have named this insect *toddi* in appreciation of the effort and trouble taken by my friend Dr. E. L. Todd who made genitalia preparations and sketches of the USNM *ridens* and *fieldi* material and who has been a continual source of help and inspiration in my efforts to understand neotropical butterflies.

### **Ridens fieldi**, new species

Figures 15, 16, 66

*Male*: Upperside: Forewing ground color dark brown with hyaline white spots forming separate irregular central and subapical bands. Spots arranged as in *R. toddi* except apical spots in  $R_2$ - $R_3$  to  $R_5$ - $M_1$  not as staggered; costal spots above discal cell spot more distad with respect to cell spot and spot in  $M_3$ - $Cu_1$  does not overlap cell spot. Hindwing as *R. toddi* but white discal band does not extend forward of Rs.

Underside: As *R. toddi* but hindwing white discal band narrower and lacking separate outer portion in  $M_3$ - $Cu_1$  to  $Rs$ - $M_1$ .

Head, thorax, abdomen as *R. toddi*.

Genitalia as illustrated (figure 66) differing from *R. ridens* and *R. toddi* as described under *R. toddi*. Wing measurements, forewing base to apex 25.3 mm.

Female unknown. Type material - Holotype ♂ Volcan Sta. Maria, Guatemala April, Schaus & Barnes Coll. in USNM.

*R. fieldi* and *R. toddi* will both key out to *R. ridens* in Evans' key (1952). The genitalic and maculation differences noted above and under the description of *R. toddi* will serve to separate *fieldi* from the other two.

I am please to name this skipper for Wm. D. Field of the USNM.

### **Achalarus casica** (Herrich - Schäffer, 1869)

Figure 69

#### **A. tehuacana** (Draudt, 1922)

Figure 70

These two species, classified by Evans (1952) as subspecies, are, in fact, valid separate species with overlapping ranges. Three examples of *A. casica* have been taken in El. Salvador, a male 8/VII/68 and a female 14/VI/66 by Miguel Serrano at Los Chorros and a male by Steinhauser along the Rio El Molino at Ahuachapan 11/IV/71. The three examples are individually variable in size and markings and may represent a different subspecies but insufficient material is on hand to establish it. The male genitalia of *casica* are abundantly distinct

from *tehuacana*. The *tehuacana* genitalia, from a specimen from Oaxaca, Mexico (8 km North of Nejapa) 12/VIII/71 S.R. & L.M. Steinhauser have much longer valvae with a short, narrow ampulla, widely separated from the simple, strongly curved valvula, contrasting with the broad protruding ampulla lobe of *casica* which nearly closes with the more strongly hooked valvula which has an additional serrated caudal process. The uncus of *tehuacana* has the arms connivent rather than widely separated as in *casica*, and the gnathos of *tehuacana* is short and squared off rather than long and pointed as in *casica*. The aedeagi differ principally in the cornuti; *tehuacana* having two bundles of short spines whereas *casica* has a single thorn-like cornutus.

*Achalarus casica* is a new record for El Salvador.

### ***Bolla salva*, new species**

Figures 25, 26, 71

*Male*: Upperside: Forewing with well developed costal fold, ground color medium brown with dark brown discal band extending nearly to wing base which is darker than ground color and a postdiscal curved band; a row of vague, slightly darker than ground color submarginal spots. The entire wing very sparsely sprinkled with pale grey-brown scales. Two or three faint subhyaline apical pale spots usually weakly developed or at least suggested.

Hindwing same ground color, basal third and costa dark brown; dark brown postdiscal and submarginal bands (latter more or less broken into spots) do not reach inner margin. Sparsely sprinkled with pale grey-brown scales. Outer margin weakly excavate at ends of  $M_2$  and 1A similar to many *Staphylus* species.

Underside: Forewing dark brown becoming paler towards termen and along inner margin. Subhyaline apical spots as above weakly developed. More or less sparse pale grey superscaling mostly in costal and submarginal areas.

Hindwing as above but bands very faint and superscaling heavier.

Head, thorax and abdomen dark brown above; abdomen ochreous grey beneath; palpi and pectus pale grey beneath. Antennae dark brown above, pale ochreous grey beneath club; shaft checkered beneath; nudum 11 in 5 specimens, 12 in 4 including holotype.

Genitalia: Uncus tapered to point, long and thin, slightly hooked down at tip; tegumen expanded laterally into two horn-like processes; gnathos densely spined, parallel to and deeply ventrad of tegumen processes; saccus very short. Aedeagus slender, tapered, heavily barbed caudally like a rasp; anellus with long, heavy spines on either side of aedeagus (vinculum brushes of Evans?). Valvae long, slender; cucullus approximately half the entire valva, smoothly rounded terminally; costa with prominent, triangular ventral process.

Wing Measurements: Forewing base to apex, Holotype 14.0 mm; average of type series (9) 14.5 mm ranging from 14.0 to 15.5 mm.

Female unknown.

Type Material: Holotype ♂ (H1329) Rio El Molino, Ahuachapan, El Salvador 600 m 1/V/71 S.R. & L.M. Steinhauser, in Allyn Museum; 8♂ Paratypes, same collector: (H1330) same data as holotype, (H1016) 16/I/71, (H4197) 18/III/72 San Isidro, Cerro Verde, El Salvador 1000 m. (H1325) 24/IV/71, (H6769) 13/II/73 Los Chorros, El Salvador 700 m. (H2489) 25/IX/71 Sta. Tecla - Comasagua Road, El Salvador 1200 m. (H4574) 24/V/72, (H5512) 22/VI/72 Sta. Tecla, El Salvador 900 m, all in Allyn Museum.

There is some uncertainty as to whether this insect belongs in *Bolla* or *Staphylus*; it has characteristics which suggest a bridge between the two genera. The antennal club is somewhat flattened, but not broadly so as in *Staphylus*, and the nudum contains 11 or 12 segments instead of the 13 of *Bolla* and 10-11 of *Staphylus*. The wing shape approaches *Staphylus*, but the size is that of a small *Bolla*. The general aspect of the genitalia and the shape of the antennal club have

led me to place it in *Bolla*.

Its nearest relatives are *B. ziza* Evans, 1953, and *S. zuritus* Freeman, 1969, neither of which I have examined. From the descriptions and genitalia sketches these two could easily be the same. It is nearly impossible to separate them from *salva* on the basis of maculation unless long series are compared. Structurally *salva* is separated by having a prominent costal fold lacking in the other two, by the longer, more evenly rounded cucullus of the valva and the heavier ventral process of the costa which is placed more basad than in either *ziza* or *zuritus*.

*B. salva* flies in El Salvador with a great variety of small dark Pyrginae of the *Telemiades* and *Erynnis* groups. Like these it is fond of drinking from muddy seeps and creek banks in semishaded areas, flies close to the ground and is indistinguishable on the wing from most *Bolla* and *Staphylus* species with which it associates. Of the eight *Bolla* species so far known from El Salvador, only *clytius* Godman and Salvin, 1897, is scarcer.

### **Carrhenes calidius** Godman & Salvin, 1895

Figure 72

### **C. fuscescens fuscescens** (Mabille, 1891)

Figure 73

Evans (1953) classifies these as subspecies yet shows broadly overlapping geographic ranges. Both have been taken in El Salvador. I have illustrated the male genitalia of *calidius* from a specimen taken 1/V/71 flying with the holotype of *Bolla salva* along the Rio El Molino at Ahuachapan, El Salvador 600 m, S.R. & L.M. Steinhauser. To the best of my knowledge, this has never been published. For easy comparison I have also figured the genitalia of *fuscescens* taken 17/IV/71 at San Isidro, Cerro Verde, El Salvador 1000 m, S.R. & L.M. Steinhauser.

The principal differences are in the much slenderer cucullus of *calidius* which is more widely separated from the fan shaped ampulla (in Fig. 72 the tip was broken in preparing the slide which explains the irregularity shown), the longer harpe of *calidius*, the different shape of the uncus in ventral view and the wider separation of gnathos and uncus in *fuscescens* seen laterally. They are clearly separate and distinct species. Both represent new records for El Salvador.

### **Ebrietas sappho**, new species

Figures 27-30, 74, 76

*Male*: Upperside: Forewing with costal fold; ground color purple-brown; irregular black-brown discal band from costa to 2A, widest in discal cell, joined V-wise at  $Cu_2$  to obscure, narrow postdiscal band which curves proximad beyond cell end, terminating at costa with more prominent spots in  $R_3-R_4$ ,  $R_4-R_5$ ; prediscal band from inner margin across cell, not reaching costa, obscurely joining discal band in base  $Cu_1-Cu_2$ , proximally bordered pale brown; band of submarginal dark spots, most prominent at tornus. Hindwing with three dark brown bands.

Underside: Purple-brown, strong purple glaze; upperside markings repeated narrower and less distinct; forewing paler along inner margin.

Body dark brown, some gray hairs on legs and palpi; hind tibiae with hair tuft. Genitalia asymmetrical; left valva with finger-like caudal projection dorsally serrate and with bifid toothed dorsal process; sacculus with broad triangular spined dorsal process. Right valva caudally hooked, the dorsal process a rounded lobe; cucullus not projecting dorsally. Viewed ventrally uncus broad-ended with lateral "horns"; in lateral view, broad rounded central lobe is bent sharply ventrad; vinculum flared caudally forming asymmetrical flanges to tegumen; gnathos

bilobed, asymmetrical at base (left side larger); aedeagus long (about 1.3 times length of tegumen plus uncus), thin, evenly curved upward, basally curved to left, prominent lateral terminal tooth on right side, caudal  $2/5$  serrate on right side, single tooth-shaped cornutus.

*Female*: As male but paler and larger; no tibial tuft, no costal fold. Genitalia asymmetrical, characterized by divided lamella antevaginalis that is complexly infolded and well sclerotized; membranous, poorly developed lamella postvaginalis and strongly sclerotized twisted ductus bursae. Eighth sternum heavily sclerotized forming strong ventral arch, the left side narrow with a short apophysis anterior, right side broad with prominent vertical groove and no separately distinguishable apophysis anterior. Eighth (my count) tergite asymmetrical.

Wing Measurements: Forewing length base to apex, male 18.0 mm Holotype and Paratype; female 20.0 mm.

Type Material: Holotype ♂ (H5851) and one Paratype ♂ (H5852), Los Chorros, El Salvador 700 m 11/XII/72, S.R. & L.M. Steinhauser; Paratype ♀ (H2121), Santa Tecla, El Salvador 900 m 14/IX/71, same collector. All in Allyn Museum.

*E. sappho* flies with *E. anacreon* (Staudinger, 1876) in El Salvador and superficially is almost indistinguishable from it. I have included figures of *anacreon* (Figs. 31-34, ♂ and ♀; 75, ♂ genitalia and 77, ♀ genitalia) for easier comparison. They differ slightly in the upperside forewing basal maculation, *anacreon* having an indistinct dark basal spot in the cell and  $Cu_2-2A$ , whereas in *sappho* this area is no darker than ground color although contrasting with the narrow pale band bordering the prediscal band, and in the width of the discal (middle) band of the hindwing beneath which is generally narrower in *sappho* though in individual *anacreon* specimens it may be nearly as narrow.

Both sexes of *sappho* are genitally distinct from *anacreon*. The principal genitalic features for separating males of these two species are found in the valvae and aedeagus. I have illustrated only the aedeagus of *anacreon* as Evans' (1953) figure of the valvae is adequate. The right valva of *anacreon* is broadly blunt instead of hooked and the left valva has a shorter caudal projection and a rounded instead of triangular dorsal process of the cucullus. The aedeagus of *anacreon* is longer (about 1.8 times the length of tegumen plus uncus in contrast to 1.3 times for *sappho*), straighter, with a shorter terminal tooth on the right side and a thin ribbon-like cornutus. The complex uncus and gnathos differ slightly between the two species in the shape of the lateral processes and the form and positioning of the gnathos lobes, but the differences are difficult to use diagnostically or to illustrate.

The problem of nomenclature of the component parts of female genitalia is particularly acute in *Ebrietas*; exactly what is analogous to which is not always clear. I have tentatively decided that the pairs of sclerotized plates which I have stippled on the figures are, in fact, the lamellae antevaginalis. Whether correctly labelled or not, they do show considerable difference between the two species studied, being much broader in *sappho*. This and the form of the intricately convoluted ductus bursae, which is less deeply curved in *sappho*, offer the best diagnostic features for species separation in the females. The somewhat different form of the 8th tergite may be significant or may be individually variable. Further studies are needed to determine how applicable these features are in the rest of the genus and how much individual variation can be expected.

*E. sappho* also somewhat resembles both *E. livius* Mabille, 1897 and *E. evanidus* Mabille, 1897, especially in the male genitalia, but can be immediately distinguished by the lack of a tibial tuft in these two.

#### HESPERIIDAE (Hesperiinae)

#### *Vettius tertianus* (Herrich-Schäffer, 1869)

Figures 35, 36, 60, 78

A single female was taken in Santa Tecla, El Salvador in Sept. 1970. Robert Wind took another single female at Pichucalco, Chiapas, Mexico in June, 1973. I have since taken a small series of both sexes at Cali, Valle del Cauca, Colombia. Until I saw the males from Cali I was unable to identify this skipper and had decided it represented a new species, probably of the genus *Justinia* Evans, as it is one of the two *Vettius* species with smooth mid tibiae. Once determined, it is simple to see that Evans' description (1955 p. 188) is quite adequate, but to correctly place a female from Evans' key and the very poor illustration in Seitz (Pl. 189, c, 1 & 2 as *peninsularis*) is extremely difficult. I have included a photo of *V. tertianus* female from El Salvador to help overcome this difficulty.

The female genitalia of the single El Salvador specimen differ slightly in some details from the Colombian material which is probably more nearly typical, although no location is given for the type. As an afterthought I decided to include a figure of the genitalia of Colombian *tertianus*; unfortunately most of the plates were already prepared and it was not possible to present the two figures together. The corpus bursae is simple with no signa; in the El Salvador specimen the cervical region is more striated and crinkled than in the Colombian. The ductus bursae is short and membranous, shorter in the Colombian material; antrum very short and sclerotized. The lamella antevaginalis is more strongly sclerotized in the El Salvador example resulting in sharp caudal points on each side of the broadly and deeply excavated ostium area; these points are not obvious in the Colombian material due to weaker sclerotization. The lamella postvaginalis is weakly sclerotized with a prominent central lobe. The apophyses anteriores are strongly developed in the El Salvador specimen, but missing in the Colombian.

It is possible that these differences signify a separate subspecies for the Central American population but not enough is known of variation in female genitalia to use such differences as a basis for establishing a new taxon; this must await the discovery of Central American males.

This represents a new distribution record for El Salvador and probably Mexico as well.

#### **Onespa, new genus**

Type species: *Onespa nubis* new species.

Palpi quadrate, shaggy, third segment slender, slightly porrect, hidden in hairs of second segment. Antennae about 1/2 costa; club stout, about 1/3 shaft, bent to constricted apiculus beyond thickest part; nudum 5/7, subequally divided between club and apiculus which is about 1.5 times club width; shaft black above, checkered yellow and black below; club black above, yellow below; nudum brown.

Wings somewhat produced; forewing at apex 1.3 - 1.4 times length along vein 2A; hindwing longest at veins 2A and Cu<sub>1</sub>; 3A=Sc+R<sub>1</sub>. No secondary sex characters in male. Hindwing origin Rs nearer to cell end than base. Forewing origin Cu<sub>2</sub> mid base and origin Cu<sub>1</sub>. Wings brown with ochreous (male), ochreous and white (female) maculation.

Mid and hindtibiae smooth with long, dense fringes; midtibiae with one pair spurs, hindtibiae two pairs; outer spur in each pair 1/2 or less inner spur.

Male genitalia with gnathos bifid, arms slender and connivent; uncus narrow, slightly bilobed at end, same width as gnathos in dorsal view; separation of gnathos and uncus in lateral view moderately deep. Valvae remarkably simple and unarticulated. Aedeagus broad with complex cornuti, but lacking terminal processes common in *Poanes* and *Paratrytone*.

Female genitalia characterized by long (2.5 mm), straight, heavily sclerotized ductus bursae, longer than corpus bursae. Lamella antevaginalis broad, deeply indented V-wise; lamella postvaginalis with smooth U-shaped indentation; ostium bursae broad and shallow, twice as broad as deep. Corpus bursae lightly striated longitudinally.

The genus *Onespa* belongs in the *Hesperia* sub-group of the *Hesperia* group (Group M of Evans) of the sub-family Hesperinae. It is closest to *Poanes*, differing in the smooth tibiae, the male and female genitalia and the slightly more produced hindwings, features which more nearly approach *Euphyes* of the *Phemiades* subgroup, but from which it is immediately separated by the shorter nudum and quadrate palpi. Only two other genera of the *Hesperia* subgroup, *Atrytone* and *Problema*, have smooth midtibiae combined with lack of stigma, but these have quite different male genitalia and antennae. *Onespa nubis* bears a superficial resemblance to some of the darker *Mellana* species but is easily distinguished by the antennae and smooth tibiae.

I have compared the female genitalia with that of *Poanes zabulon* (Boisduval & Le Conte, 1829), *P. inimica* (Butler & Druce, 1872), *Paratrytone melane poa* Evans, 1955 and *Mellana montezuma* Freeman, 1969, none of which exhibit the long sclerotized ductus bursae of *O. nubis*. The female genitalia of the two *Poanes* species and one *Paratrytone* show great general similarity *inter se*, quite distinct from *M. montezuma*. A great volume of work is needed, however, on female Hesperidae before definite conclusions can be drawn regarding generic characteristics of female genitalia.

*Onespa* is a meaningless anagram of *Poanes*, and I consider its gender to be feminine.

### ***Onespa nubis*, new species**

Figures 37-40, 79, 80

*Male*: Upperside: Forewing dark brown, basal 1/2 costa ferruginous; ferruginous scaling basal 1/2 cell; dark ochreous scaling and hairs basal 1/3 to 1/2  $Cu_2-2A$  and basal 2/3 anal cell. Elongate opaque ochreous subapical spots in  $R_5-M_1$ ,  $R_4-R_5$ ,  $R_3-R_4$  slightly nearer cell-end than apex. Opaque ochreous discal spots as follows: small, diffuse, proximally excavate cell spot; narrow triangular spot lower half  $Cu_2-2A$  (=1A-2A), may be minute upper spot in line with distal edges lower spot and spot in  $Cu_1-Cu_2$ ; large (2mm), quadrate, inwardly convex, outwardly excavate spot  $Cu_1-Cu_2$ ; +1.5 mm spot  $M_3-Cu_1$ , inner edge in line with outer edge to center of spot in  $Cu_1-Cu_2$ ; may be minute spot  $M_2-M_3$  distad of spot  $M_3-Cu_1$ . Fringes dark brown becoming grey-brown at outer edge and slightly ochreous at tomsus.

Hindwing dark brown, basal 2/3 to 3/4 overlain with long hairs below  $Sc+R_1$  (dark brown in  $Rs-M_1$  and  $Sc+R_1-Rs$ , ochreous in cell and below). Opaque ochreous discal spots  $Cu_1-Cu_2$ ,  $M_3-Cu_1$ ,  $M_1-M_2-M_3$  in straight line and minute spot  $Rs-M_1$  over inner edge of spot  $M_2-M_3$ . Fringes outwardly greyish-brown to ochreous.

Underside: Forewing costa, distal half cell and distal portion of wing forward of line from end cell to end  $Cu_2$  ferruginous with mixed ochreous scales and slight milky blue, opalescent reflection in side light; remainder blackish brown. Apical spots as above but partly obscured by extensive ochreous scaling. Cell spot larger, paler and more clearly defined than above. Discal spots as above but slightly larger, proximally sharply defined, distally more diffuse; spot in  $Cu_2-2A$  pale yellow, filling space from mid inner margin to slightly distad of spot in  $Cu_1-Cu_2$ . Fringes grey-brown.

Hindwing ground color ferruginous with ochreous scales except for abdominal fold (1A-3A) which is black-brown with thin cover of ferruginous scales. Ferruginous areas with slight milky blue opalescent reflection in side light. Vague ochreous discal spots  $Sc+R_1-Rs$  (also has faint basal spot) and  $Rs-M_1$ ; slightly more prominent  $Cu_2-1A$  to  $M_1-M_2$  forming pale discal band. May be faint indication of cell spot. Fringes grey-brown.

Thorax and abdomen black-brown above with ferruginous hairs at tip of abdomen and collar; dark ochreous hairs elsewhere; ferruginous below. Tegulae ferruginous. Hairs on head and thorax with green reflection. Palpi with mixed

ochreous, ferruginous and few black hairs, paler near base and cheeks. Antennae black above; beneath, club yellow, shaft checkered yellow and black. Legs black-brown with long ochreous and ferruginous fringes.

Genitalia: characterized by simple, non-articulated valvae with no separation of cucullus and ampulla; small dorsal tooth projects inwardly in undissected specimen. Aedeagus broad and blunt with two large simple thorn-like cornuti and one ribbon-like, twisted and covered with small, caudally directed spines. Saccus slightly longer than combined tegumen and uncus. Other features noted in generic description.

*Female*: Upperside: Forewing dark brown, same ferruginous scaling as male, but ochreous scaling and hairs sparse, giving overall darker aspect. Spots as male, but all except Cu<sub>2</sub>-2A (pale yellow) are semihyaline white; cell spot larger, nearly crosses cell; may be minute white spots M<sub>2</sub>-M<sub>3</sub> and/or M<sub>1</sub>-M<sub>2</sub>. Hindwing as male, but less ochreous hairs; spots somewhat paler; may also have small cell spot.

Underside: Forewing as male, but spots semihyaline white except for pale yellow Cu<sub>2</sub>-2A. Ferruginous areas darker; opalescent reflection barely detectible. Hindwing as male but darker ferruginous and generally lacking opalescent reflection.

Thorax, abdomen, legs, palpi and antennae as male, but body slightly darker.

Genitalia: Described under genus *Onespa*.

Wing measurements: ♂ forewing length, base to apex, Holotype 17.5 mm: Paratype 17.0 mm. ♀ forewing length, base to apex average of 3♀ Paratypes 18.0 mm ranging from 17.0 to 18.7.

Type Material: Holotype ♂ (H4271) 25/III/72 Hda. Montecristo, Cerro Miramundo Cloud Forest, El Salvador, 2300 m, S.R. & L.M. Steinhauser; 1♂ 3♀ Paratypes, same location and collector: 1♀ (H3780) 13/III/71, 1♂ (H4272) 1♀ (H4273) 26/III/72, 1♀ (H3779) 28/XII/71, 2418 m ovipositing on *Chusquea* sp. All in Allyn Museum.

*Onespa nubis* looks superficially like a large *Paratrytone melane poa* Evans, 1955, but is immediately separated from it and other similar appearing skippers by its distinct morphological features: no ♂ stigma, smooth midtibiae, quadrate palpi, long antennal club with 5/7 nudum and distinctive male and female genitalia.

### Biological Notes

One female was found ovipositing on scrub bamboo (*Chusquea* sp. determined by T. R. Soderstrom of the Smithsonian Institute) in the heath scrub zone at the absolute summit of Cerro Montecristo, 2418 m, known as the Trifinio where El Salvador, Guatemala and Honduras meet. To claim this as solely an El Salvador species is difficult as this specimen was taken within one meter of Guatemala and two meters of Honduras. After watching it lay one egg beneath a leaf, I netted and killed it. The leaf proved to have two eggs, one white and one crimson. Further search revealed 10 more eggs varying from white to pink. In the ensuing days before hatching, they all faded to white, so I assume the color is crimson only when first laid. We were unable to keep the food plant fresh and the newly emerged larvae refused all other bamboos and grasses offered and died. Expecting to find more, I foolishly discarded the shells and dead larvae; subsequently we have never found any more. The other four specimens were taken feeding at flowers along the road through the forest at 2300 m.

### *Mellana tecla*, new species

Figures 41-44, 81, 82

*Male*: Upperside: Forewing ground color bright fulvous; dark brown distal

border (2 mm in  $M_2$ - $M_3$ ,  $M_1$ - $M_2$ ), deeply invaded by ground color along veins. Dark brown bar in  $M_1$ - $M_2$  beyond end discal cell nearly reaching dark border and extending into  $M_2$ - $M_3$  as dark scaling but not reaching  $M_3$ . Veins dark brown including at least trace of dark scaling along median fold of discal cell. Fringes inwardly dark brown, outwardly pale brown at apex becoming bright fulvous at tornus.

Hindwing bright fulvous; dark brown distal border (1 - 1.5 mm in  $Rs$ - $M_1$ , 2 - 3 mm in  $Cu_2$ -2A), only slightly invaded by ground color along veins. Veins dark brown; discocellulars faintly so;  $M_2$  usually not so. Costal cell dark brown at base, distally golden yellow with dark brown scaling at apex.  $Sc+R_1$ - $Rs$  and at least base  $Rs$ - $M_1$  dark brown. Anal cell and 2A-3A dark brown with bright fulvous overscaling. Vein 1A broadly scaled dark brown leaving narrow, bright fulvous streak forward of vein 2A. Basal 2/3 of wing with dense fulvous hairs from radius to vein 3A; some dark brown hairs forward of discal cell. Fringes, including inner margin, bright fulvous with some dark brown basal scales along termen.

Underside: Forewing ground color bright fulvous, dull reddish fulvous in apical area coinciding with upperside dark border area; more or less pale yellowish grey overscaling gives faint greenish tinge to some specimens; paler and yellower in  $Cu_2$ -2A. Veins (including distal portion of discal cell fold) and distal half costa narrowly dark brown; discocellulars heavily scaled dark brown. Black-brown in base discal cell, base  $Cu_2$ -2A to just beyond origin  $Cu_2$ , entire anal cell and tornal, submarginal smudge in  $Cu_1$ - $Cu_2$  and  $Cu_2$ -2A. Thread-like black distal margin. Fringes inwardly bright fulvous, outwardly light brown at apex becoming bright fulvous at tornus.

Hindwing ground color similar to forewing apical area with similar pale yellowish grey overscaling more or less developed between veins 1A and 3A. 1A-2A bright fulvous with narrow yellow streak along 1A; 2A-3A bright fulvous with dark brown scaling which may extend forward of 2A. Indistinct to obsolete yellow discal spots  $Cu_1$ - $Cu_2$  to  $M_1$ - $M_2$  in line; proximally separated spots  $Rs$ - $M_1$  and end of discal cell. Cubitus and discocellulars somewhat darkened; usually tiny black marginal dots at vein ends. Fringes bright fulvous beyond thread-like black marginal line.

Head, thorax and abdomen above dark brown; densely (in fresh specimens, completely) covered with bright fulvous hairs and scales. Abdomen beneath white. Thorax beneath covered with dull, light fulvous hairs. Legs dorsally bright fulvous, ventrally pale yellow to whitish. Pectus pale fulvous; palpi beneath pale yellow, second segment with narrow outer stripe of black hairs, yellowish white along sides; above ochreous with some dark brown scaling 3rd segment. Eye fringe pale yellow; gena yellowish white. Antennae black behind with some yellow scales base of club, bright fulvous in front with or without black checkering along shaft; nudum brown.

Genitalia: Uncus and gnathos bifurcate in ventral view uncus U-shaped between lobes; in lateral view uncus lobes upturned at end, bluntly rounded; gnathos widely separated from uncus, sickle shaped. Valvae symmetrical; cucullus projecting caudally as blunt, finger-like process and dorsally as rounded nose overlapped by costa which has small inward projection about mid point. Harpe a single blunt triangular tooth dorsad of bend in ventral edge valva. Aedeagus broad-ended with one large and one minute cornutus. Valvae on undissected specimen densely clothed bright fulvous scales becoming pale yellow along ventral edge and white at base ventrally.

*Female*: Upperside: Forewing dark brown, three yellowish subapical spots in line  $R_5$ - $M_1$  to  $R_3$ - $R_4$ , that in  $R_5$ - $M_1$  largest and semihyaline, in  $R_3$ - $R_4$  faint; upper and lower cell spots; small (1 mm) quadrate spot  $Cu_1$ - $Cu_2$  with inner edge beneath center lower cell spot and small spot  $M_3$ - $Cu_1$ , well separated from spot  $Cu_1$ - $Cu_2$ , all semihyaline yellowish white. Small, narrow, opaque yellow spot 1A-2A. Sparse fulvous scaling in proximal costal and cell area; yellow scaling and yellow hairs in proximal half  $Cu_2$ -2A and anal cell. Fringes brown at base becoming grey distally; paler toward tornus.



Hindwing dark brown, spots in cell,  $Cu_1$ - $Cu_2$ ,  $M_3$ - $Cu_1$  and  $M_2$ - $M_3$  very faintly indicated by sparse yellow scales. Basal 2/3 overlaid with dark brown hairs from mid-cell forward, yellow hairs mid-cell to inner margin. Fringes brown at base turning pale grey outward.

Underside: Forewing costa and apical 1/3 dull red-brown with bright fulvous overscaling more pronounced along veins. Remainder black-brown. Spots as above with addition of faintly indicated opaque dot  $M_2$ - $M_3$ ; apical spots yellow, more clearly marked than above, interneural spaces distad of cell spots slightly darker than ground color; spot  $Cu_2$ -2A whitish with distal diffuse whitish scaling. Threadlike marginal black line. Fringes fulvous at base turning pale brown outwardly.

Hindwing dull red-brown with bright ochreous overscaling, somewhat stronger along veins and concentrated to form yellowish streak from cell base extending along rear edge of  $M_1$ , and along 1A. Ground color between 1A & 3A blackish brown with ochreous overscaling. Faint indications of yellow spots in cell and  $M_2$ - $M_3$ , merely suggested in  $Cu_1$ - $Cu_2$ ,  $M_3$ - $Cu_1$  and  $Rs$ - $M_1$ . Threadlike marginal black line. Fringes fulvous at base, pale brown outwardly, lighter at tornus.

Head, thorax and abdomen above dark brown overlaid with ochreous scales and hairs, yellow eye fringe. Abdomen below dark brown with opalescent violet gloss, overlain centrally with whitish scales increasing caudally. Thorax below dark brown overlaid with yellow ochreous hairs. Legs dark brown with ochreous scales ventrally very pale ochreous dorsally. Palpi, pectus and gena (cheeks) yellow with a few fulvous scales and black hairs on second palpal segment. Palpi above ochreous with black hairs. Antennae above black with small yellow area at base of club and some yellow checkering near base of shaft; beneath pale yellow on basal 1/2 club extending as checkering to mid shaft.

Genitalia: Lamellae postvaginalis well sclerotized, trilobed, central lobe spined, long and thin, extends well beyond lateral lobes (tip is broken off in illustration); antrum sclerotized, somewhat longer than very short membranous ductus bursae; combined antrum and ductus bursae subequal to wrinkled cervix; apophyses anteriores well developed, about half the length of apophyses posteriores.

Wing measurements: Forewing, base to apex Holotype ♂ 16.0 mm. Average of type series (11) 15.6 mm ranging from 15.0 to 16.2. ♀ forewing base to apex 17.3 mm.

Type Material - Holotype ♂ (H4768) Santa Tecla, El Salvador 900 m, 11/VII/72 S.R. & L.M. Steinhauser. 10♂, 1♀ Paratypes same collector: 1♂ (H331) 10/VII/70, 1♂ (H4505) 21/VII/70, 2♂ (H424, 426) 28/VII/70, 1♂ (H3406) 1/VIII/70, 1♀ (H4549) 25/V/72, 1♂ (H5678) 18/VII/72, 2♂ (H4825, 5679) 26/VII/72, 1♂ (H5221) 29/VII/72 Santa Tecla, El Salvador 900 m, 1♂ (H4757) 8/VII/72 Tamanique, El Salvador 1000 m. All in Allyn Museum.

It should be noted that the section in Evans (1955) concerning *Mellana* is almost wholly unreliable. He apparently misidentified several species in this genus from material in the British Museum and lacked the time for comparing genitalia of these specimens with Bell's (and probably other's) figures. Thus the Evans figure of male genitalia for *eulogius* is completely different from Bell's (1942) figure of *mulleri* which Evans lists as a synonym of *eulogius*; there is likewise no similarity between Bell's (1941, 1942) and Evans' figures for *nayana* and *fieldi*.

*M. tecla* keys out close to *nayana* (Bell, 1941) in Evans (1955) and the genitalia are reasonably close to Evans' figure, but in no way resemble Bell's. It is possible that the single male in the BMNH which Evans determined as *nayana* is actually *tecla* or at least close to it. *Tecla* belongs to the *nayana* group of species (upper forewing apical spots conjoined with the tawny costal area) but can be easily separated from the rest by its more extensive ochreous area above and dull reddish tinge below. From *nayana* which it most closely resembles, it can be separated by the less deeply incised and narrower forewing border, the much greater extent of ochreous in  $Rs$ - $M_1$  of the hindwing above, its greater size (15.0 - 16.2 mm forewing length for *tecla* males versus 13.7 for the Holotype of *nayana*),

the darker and redder color beneath and the distinctly different male genitalia.

I have not located any females of *nayana* for comparison with female *tecla*. There is some uncertainty concerning the correct identification of the females of *Mellana*, resulting primarily from the generally pronounced sexual dimorphism in the genus. The underside maculation and coloring offer the best clues for pairing females correctly with males in the absence of finding them in copula. The dull reddish underside tinge of the female I selected as *tecla* matches the underside of *tecla* males better than any of the other *Mellana* males found in El Salvador. The genitalia of this specimen, however, are very similar to those of two superficially distinct, unidentified females which are illustrated (Figs. 45-48, 88, 89) and described below.

### ***Mellana tamana*, new species**

Figures 49-52, 83, 84

*Male*: Upperside: Forewing ground color bright fulvous with more or less dark brown overscaling extending diffusely from dark brown areas; broad (2-2.5 mm in  $M_2-M_3$ ) dark brown distal border deeply invaded by ground color along veins. Dark brown bar  $M_1-M_2$  connecting discal cell-end with dark border, but leaving at least a few fulvous scales immediately behind  $M_1$ ; dark scaling extending diffusely into  $M_2-M_3$ . Veins dark brown, especially pronounced on cubitus, discocellulars, radius along distal half discal cell and median fold discal cell. Base  $Cu_2-1A$  to just beyond base  $Cu_2$  dark brown overlaid with ochreous hairs. Anal cell dark brown with overscaling ochreous hairs and scales basal half. Fringes inwardly dark brown, outwardly paler becoming somewhat fulvous at tornus.

Hindwing ground color bright fulvous with slight dark brown overscaling; broad (1.5-2 mm in  $Rs-M_1$ ) dark brown distal border moderately invaded by ground color along veins. Veins dark brown;  $M_2$  very weakly so or not at all. Costal cell dark brown except for central shining yellow area;  $Sc+R_1-Rs$ , proximal half  $Rs-M_1$ , forward  $1/3-1/2$  discal cell and all of wing behind  $1A$  dark brown which extends in varying intensity into  $Cu_2-1A$ . One paratype (H5228) with bright fulvous streak along  $2A$ . Basal  $2/3$  of wing with fulvous hairs from mid discal cell to  $3A$ ; some dark brown hairs forward of mid cell. Fringes inwardly brown, outwardly ochreous to greyish ochreous at apex and along inner margin, becoming ochreous to bright ochreous at tornus.

Underside: Forewing ground color dull orange-brown; bright fulvous in areas corresponding to bright fulvous areas above, slightly yellower in  $Cu_2-2A$ . Black-brown in base discal cell, entire anal cell, base  $Cu_2-2A$  and tornal submarginal smudge in  $Cu_1-Cu_2$  and in  $Cu_2-2A$  where it proximally invades V-wise the yellowish fulvous area. Veins, including median fold of discal cell narrowly dark brown; discocellulars heavily so. Thread-like black distal margin. Fringes inwardly grey-brown with ochreous scales, outwardly paler at apex becoming fulvous at tornus.

Hindwing ground color dull orange-brown; cells  $1A-3A$  lacking the reddish brown scales which help create the ground color but with varying distribution and intensity of black-brown underscaling causing area to vary from bright fulvous to darker than ground color. Discal and cell spots either absent or merely suggested by slightly paler and yellower scaling. Thread-like black distal margin. Fringes ochreous.

Head and thorax above dark brown clothed in dull fulvous hairs. Abdomen above dark brown with dull fulvous scales and hairs, beneath white, yellowish toward sides. Thorax beneath with dull ochreous hairs; legs dorsally bright fulvous, ventrally yellowish white. Pectus greyish ochreous, gena yellowish white; palpi beneath pale yellow with admixed black scales, black hairs along outer edge of second segment; above ochreous with black scales. Antennae black behind with a

few fulvous scales at base of club, bright fulvous in front checkered black; club fulvous in front; nudum brown. Eye fringe pale ochreous.

Genitalia: uncus and gnathos bifurcate in ventral view, uncus U-shaped between lobes; in lateral view uncus lobes sharply upturned, slightly beaked caudally; gnathos widely separated from uncus, crescent shaped. Valvae symmetrical; cucullus bluntly rounded caudally; broad, rounded dorsal projection barely overlaps costa. Harpe a single sharp triangular tooth dorso-cephalad of bend in ventral edge valva. Aedeagus moderately broad-ended with one large and one minute cornutus. Undissected valva clothed in ochreous hairs dorsally, becoming whitish ventrally.

*Female*: Upperside: Forewing ground color dark brown, some fulvous scales and ochreous hairs in basal area. Three yellowish white hyaline subapical spots  $R_3$ - $R_4$  (may be obsolete),  $R_4$ - $R_5$  and  $R_5$ - $M_1$  in line directed behind mid-termen. Upper (may be obsolete) and lower, white hyaline cell spots, often fused. Three white to yellowish white hyaline spots  $M_2$ - $M_3$  (in line with or slightly distad of apical spots),  $M_3$ - $Cu_1$ ,  $Cu_1$ - $Cu_2$  (inner edge about in line with outer edge cell spot), in line with elongate opaque yellow spot 1A-2A. Fringes inwardly dark brown, outwardly grey brown.

Hindwing ground color dark brown; basal 3/4 covered with ochreous hairs behind mid discal cell, dark brown hairs forward. Postdiscal, small, opaque yellow spots  $M_1$ - $M_2$  to  $Cu_1$ - $Cu_2$  in line slightly nearer termen at forward end; similar inwardly detached spot  $Rs$ - $M_1$  and spot in cell-end, both may be obsolete. Central portion costal cell paler. Fringes inwardly dark brown, outwardly greyish ochreous.

Underside: Forewing ground color dull olive brown; large black-brown area behind radius from base to tornus, reaching or nearly reaching apical spots and spot  $M_2$ - $M_3$ . Spots as above; spot in 1A-2A white with white suffusion distally to beyond spot  $Cu_1$ - $Cu_2$  and reaching  $Cu_2$ ; minor proximal suffusion. Faint thread-like distal marginal dark line. Fringes inwardly ground color, outwardly pale grey-brown.

Hindwing same ground color; slightly darker between 1A and 3A due to dark brown underscaling. Narrow pale yellow streak along 1A. Spots as above, pale yellow, generally weakly developed, may be obsolete. Faint dark distal marginal line. Fringes ground color.

Head, thorax and abdomen above dark brown with dull yellowish olive hairs. Abdomen beneath whitish; ochreous scaling on sides. Legs dorsally dull ochreous, ventrally whitish. Pectus dull yellowish white, palpi beneath pale yellow with admixed black and fulvous scales, line of black hairs on outer edge second segment, third segment black with some yellow scaling. Gena white; eye fringe yellowish white. Antennae black behind, some yellowish white scaling at club base; yellowish white in front checkered black on shaft; distal half club black; nudum brown.

Genitalia: Lamella antevaginalis membranous, not shown. Lamella postvaginalis trilobed; median lobe broad, bluntly pointed, more than twice width and length of lateral lobes, densely spined with generally hair-like setae. Ductus bursae heavily sclerotized full length; about twice as long as antrum.

Wing Measurements: Male forewing base to apex Holotype 14.7 mm, average of type series (13) 14.8 mm ranging from 14.0 to 16.0. Female forewing base to apex average of type series (4) 16.2 mm ranging from 16.0 to 16.5.

Type Material - Holotype ♂ (H5231) Tamanique, El Salvador 1300 m 3/VIII/72 S.R. & L.M. Steinhauser; 12♂ and 4♀ Paratypes, same collector: 3♂ (H4754-4756) 1♀ (H4777) Tamanique, El Salvador 1000 m 8/VII/72; 1♀ (H6577) 20/VII/70 1♀ (H4816) 24/VII/72 Santa Tecla, El Salvador 900 m; 1♀ (H2410) Santa Tecla-Comasagua Road, El Salvador 1200 m 6/VIII/70; 9♂ (H5227, 5230, 5232-5236) Tamanique, El Salvador 1300 m 3/VIII/72. All in Allyn Museum.

*M. tamana* males bear at least a superficial resemblance to *M. fieldi* (Bell, 1942), *gladolis* (Dyar, 1914) *sista* Evans, 1955, *balsa* (Bell, 1942), *mulleri* (Bell,

1942), *mexicana* (Bell, 1942) and *montezuma* Freeman, 1969. They come perhaps closest to *fieldi* from which they differ by having bright fulvous rather than deep orange-fulvous upperside markings which are also slightly more extensive on both wings than in *fieldi*. The hindwing fringes of *tamana* males are ochreous to greyish ochreous rather than orange-fulvous as *fieldi*. Beneath they are very similar but the hindwing discal band of *fieldi* is more clearly defined. The male genitalia are quite distinct. The uncus of *tamana* is distally more upturned than *fieldi*; the gnathos arms crescent shaped and much longer and more widely separated from the uncus. The valva of *tamana* is shorter, wider and has a tooth-like harpe not found in *fieldi*. The shape of the cucullus and its dorsal projection over the costa is quite different.

*Gladolis* has a more extensive ochreous area of the hindwing above, less deeply incised upper forewing dark border and much paler (bright fulvous) underside than *tamana*. I have not seen the male genitalia of *gladolis*.

*Sista* has a dark brown streak from the base of the forewing above in Cu<sub>2</sub>-1A separating the fulvous streak in 1A-2A from the discal fulvous area, and the shape of the valva is completely different.

*Balsa* has the same dark streak as *sista*, paler fringes than *tamana* and on the underside hindwing the discal spots are more sharply defined. The uncus of *balsa* is not upturned though the gnathos is similar to *tamana*; the shape of the valva is quite different.

*Mulleri* has the same dark streak as *sista* and *balsa* and a yellow under hindwing with no or very faint indications of discal spots. The separation of the uncus and gnathos is shallow in *mulleri* and the valva has a dorsal hook on the cucullus.

The bright fulvous upperside markings of *mexicana* are much more sharply defined than *tamana*, its uncus and gnathos shallowly separated and the valva narrower and shaped differently.

The bright orange-yellow underside hindwing of *montezuma* and its very different, narrow valva separate it easily from *tamana*.

### **Mellana balsa freemani, new subspecies**

Figures 53-56, 85, 86

*Male*: Upperside: Forewing ground color dark brown with minor bright fulvous overscaling. Bright fulvous markings as follows: costal cell; Sc-R<sub>1</sub>; R<sub>1</sub>-R<sub>2</sub>; base R<sub>2</sub>-R<sub>3</sub> not reaching costa; subapical spots R<sub>3</sub>-R<sub>4</sub>, R<sub>4</sub>-R<sub>5</sub>, R<sub>5</sub>-M<sub>1</sub>, somewhat elongate, deeply excavate distally; sometimes a dot M<sub>1</sub>-M<sub>2</sub> behind distal end of spot R<sub>5</sub>-M<sub>1</sub>; long (5X width), narrow spot M<sub>2</sub>-M<sub>3</sub>; distally deeply excavate spots M<sub>3</sub>-Cu<sub>1</sub>, Cu<sub>1</sub>-Cu<sub>2</sub> filling basal half of cells; spot 1A-2A from immediately behind origin Cu<sub>2</sub> to center of spot Cu<sub>1</sub>-Cu<sub>2</sub> and extending distally as more or less diffused scaling along 2A nearly to termen (basal 2/5 of 1A-2A dark brown with dense bright ochreous over-scaling in sharp contact with inner edge of spot); upper (smaller) and lower (larger) spots in discal cell well separated by dark brown median fold; upper and lower basal cell streaks, upper often detached from spot, lower usually contiguous. Veins dark brown; fringes inwardly dark brown, outwardly paler, sometimes ochreous at tornus.

Hindwing ground color dark brown, costal cell mostly pale shining yellow. Bright fulvous markings as follows: long lower spot in discal cell from near base to cell end; oblique quadrate postdiscal spot Rs-M<sub>1</sub>; slightly elongate postdiscal spots M<sub>2</sub>-M<sub>3</sub>, M<sub>3</sub>-Cu<sub>1</sub>, Cu<sub>1</sub>-Cu<sub>2</sub> reaching bases of cells and excavate distally. Veins except M<sub>2</sub> dark brown. Basal 3/4 or more of wing behind mid discal cell heavily clothed with fulvous hairs. Basal half forward of mid cell with dark brown hairs. Fringes inwardly dark brown, outwardly pale whitish grey with ochreous tinge toward apex.

Underside: Forewing ground color dull red-brown with moderate to dense pale milky overscaling which obscures ground color and gives a greenish tinge of

varying intensity. Discal spots as above; costal cell, most of discal cell and discal spots clear ochreous with more or less orange tinge. Apical spots ochreous, rather faintly marked. Extreme base discal cell, base of  $Cu_2-2A$  to just beyond origin  $Cu_2$ , all of anal cell and submarginal smudge in  $Cu_1-Cu_2$  and  $Cu_2-2A$  black brown. Ochreous spot  $1A-2A$  greatly expanded, pale yellow, filling central half of  $Cu_2-2A$ . Costal vein, distal half or more of median fold in discal cell,  $M_3$ ,  $Cu_1$ ,  $Cu_2$ , where they cross ochreous areas, dark brown. Threadlike dark distal marginal line. Fringes inwardly ochreous, outwardly grey-brown, paler toward tornus.

Hindwing same ground color and overscaling as forewing. Pale overscaling missing between  $1A$  and  $3A$ , this area more or less heavily underscaled dark brown. Generally ill-defined small pale ochreous spots in discal cell, postdiscal series from  $Rs-M_1$  to  $Cu_1-Cu_2$ , that in  $Rs-M_1$  proximally out of line but contiguous. Pale ochreous streak along distal portion of  $1A$ . Discocellulars more or less darker red brown. Thread-like dark red-brown distal marginal line. Fringes inwardly dull pale ochreous, outwardly pale grey.

Head and thorax above dark brown, clothed in fulvous hairs; abdomen above dark brown with fulvous overscaling; a few white scales anally; white beneath. Legs fulvous dorsally, light yellow ventrally. Pectus ochreous; palpi beneath yellow, second segment with line of black hairs at outer edge, above yellow with black hairs; gena and eye fringe yellowish white. Antennae behind black, some ochreous scaling at club base; in front, fulvous above, ochreous beneath; shaft checkered black; nudum brown.

Genitalia: Uncus and gnathos bifurcate in ventral view, uncus V-shaped between lobes; in lateral view uncus lobes slightly upturned, sharply beaked caudally; gnathos arms curved upward, shallowly separated from uncus. Valvae symmetrical; cucullus a broad rounded caudal lobe without dorsal process, not overlapping straight narrow costa. Harpe a single, sharp isosceles tooth, slightly curved cephalad, dorso-cephalad of bend in ventral edge of valva. Aedeagus broad-ended with single large cornutus. Undissected valva clothed in dark brown hairs dorsally, ochreous hairs centrally, white hairs ventrally.

*Female:* Upperside: Forewing ground color dark brown with some basal dark fulvous overscaling and ochreous hairs behind discal cell. Hyaline spots as follows: three small subapical, yellowish white spots  $R_3-R_4$  to  $R_5-M_1$  in line directed to mid termen; conjoined upper and lower white spots in discal cell; small yellowish white spot  $M_2-M_3$  slightly offset proximally from line of apical spots; distally excavate white spot  $M_3-Cu_1$ ; large (2.5-3.0 mm) white spot  $Cu_1-Cu_2$  somewhat excavate distally; opaque yellow spot  $1A-2A$  elongated along  $2A$ . Fringes grey brown at tornus (insufficient fringe remaining on these specimens to describe).

Hindwing ground color dark brown with overlay of ochreous hairs in base of cell and basal  $2/3$  of wing below cell except for abdominal fold. Discal band of ochreous spots  $Rs-M_1$  to  $Cu_1-Cu_2$  that in  $M_2-M_3$  longest, extending proximally; small ochreous spot in lower cell. Note that spot (figures 55 and 56) in  $Sc+R_1-Rs$  and costal cell is a rubbed area, not a spot. Fringes grey.

Underside: Forewing black brown except for costa, upper basal part of cell and apical  $1/4$  of wing which is grey-brown, densely overscaled in apical area with blue green opalescent scales; hyaline spots (white) as above; large diffuse white area in  $Cu_2-2A$ . Fringes as above.

Hindwing dark brown densely overscaled blue-green opalescent creating a pronounced blue sheen. Poorly defined pale buff spots as above. Fringes as above.

Head, thorax and abdomen dark brown above with some ochreous grey hairs. White scales on collar and above eyes. Abdomen beneath grey brown with whitish transverse banding on abdominal segments; thorax grey beneath, legs brown dorsally, grey ventrally; palpi beneath whitish with admixed dark brown and dull ochreous hairs on second segment. Antennae dark brown above, whitish beneath basal half of club, shaft checkered white.

Genitalia: antrum very broad and rounded, wider than cervix, strongly sclerotized; ostium bursae broad; lamella postvaginalis trilobed, central lobe

spined, broader than lateral lobes, rounded; ductus bursae very short, membranous; corpus bursae with irregularly sclerotized portions immediately forward of cervix.

Wing Measurements: ♂ forewing base to apex, Holotype ♂ 16.4 mm average of type series (6) 16.2 mm ranging from 15.8 to 16.5; ♀ average of type series (3) 18.4 mm ranging from 18.0 to 19.0.

Type Material: Holotype ♂ (H4715) Santa Tecla, El Salvador 900 m 27/VI/72 S.R. & L.M. Steinhauser; 5♂, 3♀ Paratypes same location and collector as holotype: 1♂ (H4504) 11/VII/70, 1♀ (H3078) 22/X/71, 1♂ (H4749) 30/VI/72, 1♂ (H4774) 6/VII/72, 1♂ (H4775) 12/VII/72, 1♂ (H4776) 1♀ (H4778) 13/VII/72, 1♀ (H5677) 20/VII/72. All in Allyn Museum.

*M. b. freemani* males differ from typical *balsa* mainly in size and color. The forewing length of the Holotype of *balsa* is about 14 mm; that of *freemani* ranges from 15.8 to 16.5 in the type series. The underside forewing apical area and all the hindwing of *freemani* are much darker than *balsa* and have a much heavier pale milky overscaling. There is some minor difference in the shape of some of the forewing spots above, but no more than the variation observed within the type series of *balsa*. The male genitalia are essentially identical. It was not possible to compare females as no *balsa* females were available.

As mentioned in the discussion of *M. tecla*, the females of *Mellana* species present a problem. I have been able to compare females of only *tecla*, *tamana*, *freemani*, *montezuma*, *myron* (Godman, 1900) (or is it *verba* Evans, 1955?) and two unidentified females from El Salvador. The characteristics upon which discrimination among these forms can be based appear to be, in decreasing order of importance (based on a very limited geographic sampling): a) underside color b) genitalia c) maculation.

There is undoubtedly some overlap of significance among these characters, but exactly where one begins and another leaves off is difficult to say with such a paucity of data. The easiest separations are those which can be based on underside color and are borne out by genitalic differences. Thus we find that *myron* (or *verba*) which has a very characteristic pea-green color beneath also has a very distinctive thin central lobe to the lamella postvaginalis (Fig. 90) and a long sclerotized ductus bursae. The next most distinctive underside color appears in *freemani* with its strong opalescent overscaling lending a very characteristic blue-green color. This is accompanied by a very distinctive broad sclerotized antrum and relatively broad central lobe of the lamella postvaginalis. *M. tamana* and *montezuma* are not so simply separable on a color basis alone; *tamana* is dull olive brown and *montezuma* a more ochreous brown. However, the maculation differences are distinct; the forewing spots of *montezuma*, especially in  $Cu_1$ - $Cu_2$  are much larger and the hindwing discal spots of *montezuma* are longer, not quadrate as in *tamana*. Coupled with these features, there is a very great difference in the genitalia, principally in the central lobe of the lamella postvaginalis which is narrow, long and pointed in *montezuma* (Fig. 87) and extremely broad, dwarfing the lateral lobes, in *tamana*. Both have a relatively long sclerotized ductus bursae. It is in comparing *tecla* with the two undetermined females that the system threatens to break down. In *tecla* the underside color has a distinct dull red tinge; *Mellana* sp. H-4716 (Figs. 47, 48, 89) is dull fulvous beneath with faintly marked ochreous discal spots on the hindwing and a well marked forewing cell spot. *Mellana* sp. H-4782 (Figs. 45, 46, 88) is a much darker brownish fulvous beneath with more contrasting pale discal spots on the hindwing placed farther from the termen, and with an almost obsolete forewing cell spot. All three of these, however have nearly identical genitalia. Either or both of the unidentified females could easily be *M. eulogius* (Plötz, 1883), the sole remaining El Salvador species for which I have not found a female. We just do not know enough about the genus *Mellana*; much more work and study are needed.

I am pleased to name this insect for H. A. Freeman who has done so much for the advancement of our knowledge and understanding of neotropical skippers.

**Vacerra cervara, new species**

Figures 21-24, 91, 93

*Male*: Upperside: Forewing dark brown with some ochreous scaling concentrated mostly in basal half cell and costa and in anal cell. Yellowish hyaline spots as follows: subapical band  $R_5-M_1$  to  $R_3-R_4$ ; small spot  $M_2-M_3$  in line with subapical band; + 2 mm spot  $M_3-Cu_1$  well separated from spot  $M_2-M_3$ ; large (5 mm) spot  $Cu_1-Cu_2$  nearly reaching base of that space, slightly excavate distally and touching or nearly touching spot  $M_3-Cu_1$ ; + 2 mm spot lower  $Cu_2-2A$  extending just forward of 1A, its inner edge in line with inner edge spot  $Cu_1-Cu_2$ ; upper and lower cell spots, lower + 2 mm by 1 mm wide, its inner edge just distad inner edge spot  $Cu_1-Cu_2$ , upper spot slightly longer and narrower, offset distad. Fringes dark brown becoming grey at tornus.

Hindwing dark brown, slightly paler in costal cell; lower part of discal cell to 3A clothed dull ochreous hairs in basal 2/3. Small hyaline white spot lower cell; discal band quadrate hyaline white spots from  $Cu_1-Cu_2$  to  $M_1-M_2$ . Fringes greyish white.

Underside: Forewing dull brown with dull ochreous scaling along costa, slightly paler in apical third of wing. Hyaline spots as above, that in  $Cu_2-2A$  diffusely surrounded pale yellowish scales. Fringes brown becoming pale brown at tornus.

Hindwing same dull brown as forewing underside apical area, darker in abdominal fold. Broad (+ 4 mm) dark brown band from mid-costa to tornus, distal edge relatively straight touching inner edge hyaline spot  $M_1-M_2$ , outer edge spot  $M_3-Cu_1$ ; lavender superscaling more or less developed along mid-termen and in basal third of wing behind mid-cell. Discal band of hyaline spots as above continued into  $Cu_2-2A$  as narrow dash of lavender scales. Cell spot as above but fainter. Fringes pale brown, slightly darker at apex.

Head, thorax and abdomen above dark brown with some ochreous hairs; abdomen beneath dark brown with some whitish scales. Thorax beneath and legs dark brown; pectus dull ochreous brown; palpi beneath pale whitish brown. Antennae above dark brown, some white at base of club; beneath club pale buff, shaft narrowly checkered dark brown.

Genitalia: uncus bilobed in ventral view, with a slender curved beak in lateral view; gnathos bifurcate, arms widely separated in ventral view, wider than uncus, tips curved inward; in lateral view long and slender, longer than uncus, curved dorsally; saccus long; valvae symmetrical, broad; cucullus projecting dorsally to sharp pointed nose extending well beyond ampulla which terminates in rounded lobe; aedeagus very long, in lateral view deeply excavate terminally, in ventral view broadened terminally, with several small serrate cornuti.

*Female*: Upperside: Forewing dark brown with ochreous scaling in anal cell and base of  $Cu_2-2A$ , yellowish hyaline spots as follows: three quadrate subapical spots  $R_5-M_1$  to  $R_3-R_4$ ; minute spot  $M_1-M_2$  well distad of spot  $R_5-M_1$ ; small spot  $M_2-M_3$  about in line with apical spots; spot  $M_3-Cu_1$  well separated from spot  $M_2-M_3$ ; large quadrate spot  $Cu_1-Cu_2$ , excavate proximally, oblique distally, not touching spot  $M_3-Cu_1$ ; slightly darker quadrate spot 1A-2A; double conjoined cell spot centered above inner edge spot  $Cu_1-Cu_2$ . Fringes dark brown, paler at tornus.

Hindwing dark brown, paler in costal cell; ochreous hairs behind mid-cell in basal 2/3. Pale spot very faintly indicated in cell; hyaline white spot  $M_1-M_2$  conjoined to similar spot  $M_2-M_3$ ; smaller hyaline white spot  $M_3-Cu_1$ , offset proximally. Fringes pale brown becoming grey at tornus.

Underside: Forewing dark brown, paler submarginally and in anal cell, ochreous scaling along costa, lavender overscaling along termen forming lilacine submarginal band from apex to  $Cu_2$ . Hyaline spots as above, that in 1A-2A with diffuse white scaling distally. Fringes as above.

Hindwing dark brown, paler in outer 1/4 of wing; lavender overscaling sparse in basal 1/3, stronger in outer 1/4 leaving broad dark brown central area analogous

to dark band of male; hyaline spots as above, that in  $M_1$ - $M_3$  narrowly bordered dark brown distally, forming an invasion of the submarginal lilacine area. Fringes as above.

Head, thorax, abdomen, etc. as male.

Genitalia: Lamella postvaginalis weakly sclerotized with long rounded central lobe directed ventro-caudally; long, broad, heavily sclerotized ductus bursae about twice as long as corpus bursae.

Wing measurements: ♂ forewing base to apex, Holotype 20.8 mm, Paratype 19.8 mm; Average 20.3 mm; ♀ forewing 21.5 mm (two of the three Paratype ♀♀, the other has broken wing tip).

Type Material: Holotype ♂ (H2979) Tamanique, El Salvador 1000 m, 12/X/71, S.R. & L.M. Steinhauser; 1♂ (H5341), 3♀ (H5342-5344) Paratypes, Concepcion de Ataco, El Salvador, 27/VII/72, same collector. All in Allyn Museum.

*V. cervara* belongs to the *egla* group of *Vacerra* species, characterized by a rather plain underside with no conspicuous white markings. The male differs from *egla* (Hewitson, 1877) in having a spot on the forewing in  $M_2$ - $M_3$ ; the spot in  $Cu_1$ - $Cu_2$  of *egla* is smaller; the hindwing spots of *egla* are more elongate creating a wider band, and on the hindwing beneath the outer two spots of the discal band are distad of the dark brown band in *cervara* whereas in *egla* all the hyaline spots are within the dark band. *Cervara* also lacks the yellow costal spot on the forewing beneath. The male genitalia of *cervara* differ in the shape of the valvae, principally the protruding nose of the cucullus and in the much slenderer and more widely separated uncus and gnathos.

From Evans' (1955) description of *egla* females the only difference from *cervara* is in the relationship of the forewing cell spot to the spot in  $Cu_1$ - $Cu_2$  which have their inner edges in line in *egla* whereas in *cervara* the cell spot is slightly proximad. I assume that the underside hindwing relationship between hyaline spots and dark band is the same as in the males.

*V. gayra* (Dyar, 1918) and *lachares* Godman, 1900 males both have the underside hindwing hyaline spots wholly within the dark band as in *egla*. Both *gayra* and *lachares* have the forewing cell spots smaller and more separated than *cervara* and the spot in  $Cu_1$ - $Cu_2$  much smaller. The forewing spots in  $Cu_1$ - $Cu_2$  to  $M_2$ - $M_3$  are practically contiguous in *gayra* and completely separate in *lachares*, whereas in *cervara* only  $M_2$ - $M_3$  is widely separated. The hindwing band of hyaline spots in *gayra* is wider than *cervara* and in *lachares* the spot in  $M_1$ - $M_2$  is offset distad.

The male genitalia of *gayra* as illustrated by Evans (1955) has a very distinctive narrow cucullus of the left valva. The genitalia of Dyar's type in the USNM have not been examined. The valvae of *lachares* (Fig. 94) are slightly asymmetrical, the caudal end of the cucullus is slightly hooked rather than round as in *cervara* and there is a very short dorsal nose. The uncus and gnathos are much blunter than *cervara*. I have illustrated the male genitalia of *lachares* because I find Evans' figure misleading. I have also illustrated the female genitalia of *V. bonfilius aea* (Plötz, 1882) (Fig. 92), the only other female *Vacerra* I had available, in order to show the type of specific variation that can be expected. The lamella postvaginalis of *aea* is broader and blunter than *cervara* and the ductus bursae somewhat shorter and narrower.

## CONCLUSION

It is generally conceded that the female genitalia of butterflies are poorly understood and have been largely neglected in the literature. It is heartening to see that recent authors, especially when dealing with the Lycaenidae and occasionally the Nymphalidae, have illustrated the female genitalia and used them as diagnostic tools. I hope that the few figures I have included here will serve to point out that there is tremendous variation, at least on the generic level, in the



female genitalia of the HesperIIDae. I urge all authors of papers on HesperIIDae, new species and old, to consider including illustrations of female genitalia. Perhaps some of the mysteries of male-female species matching can be cleared up.

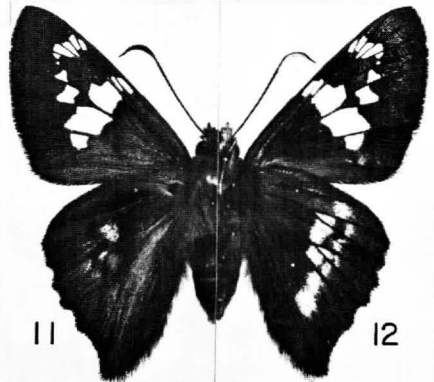
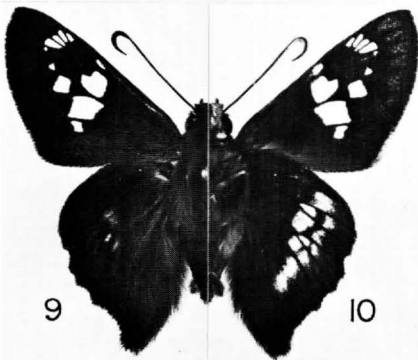
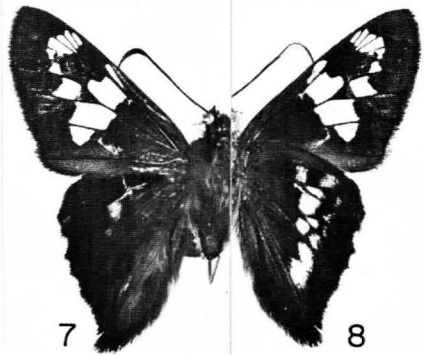
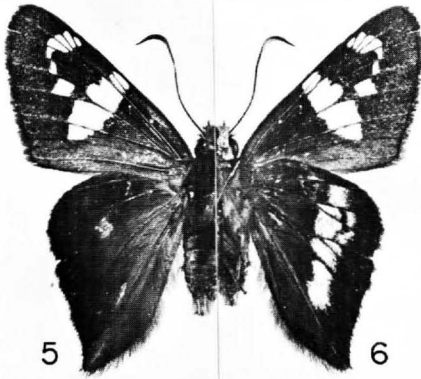
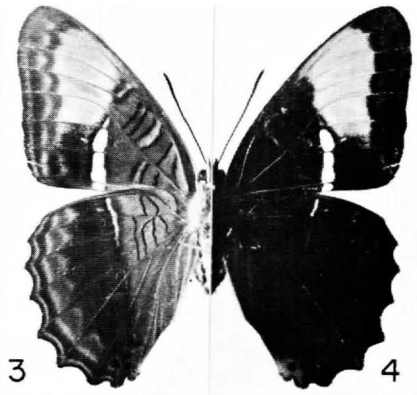
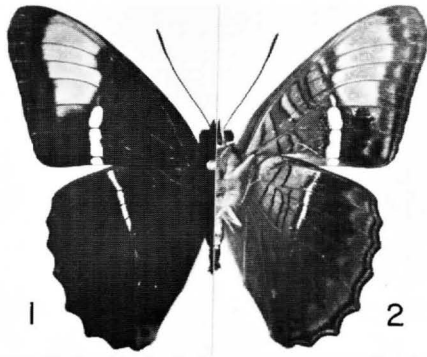
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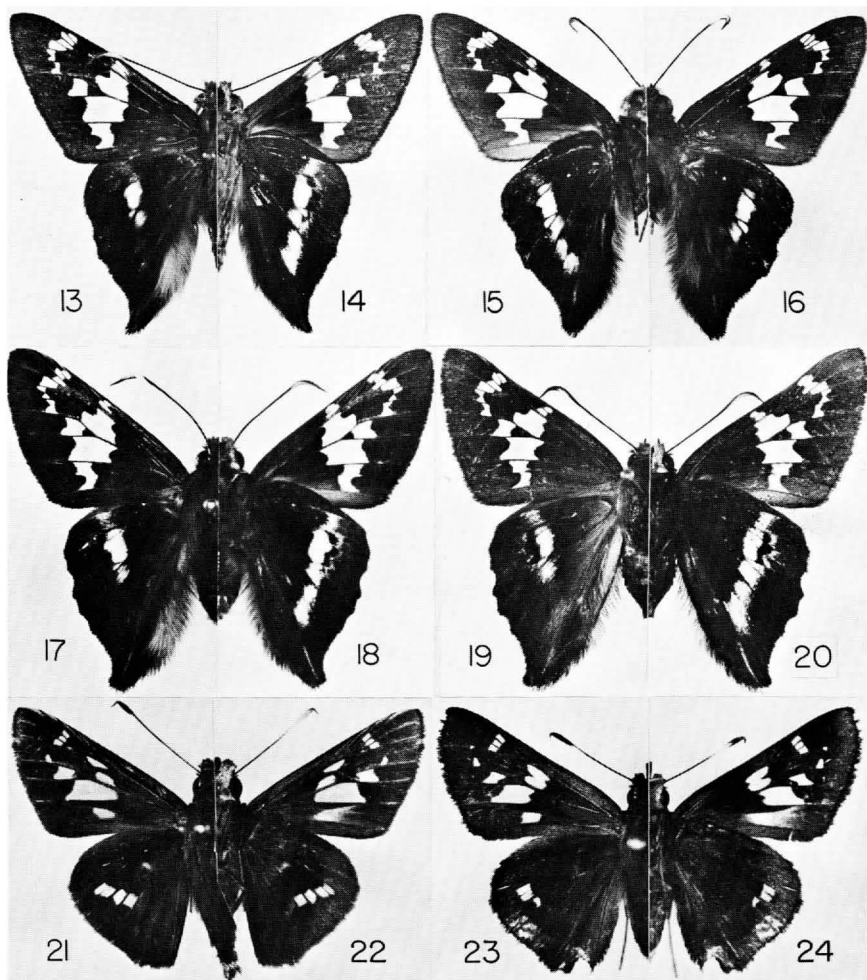
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Figures 1-12, Neotropical Nymphalidae (1-4) and HesperIIDae (Pyrginae) (5-12). 1-2 *Adelpha albifilum*, new species, Holotype ♂ N1503, EL SALVADOR: Hda. Montecristo, Cerro Miramundo Cloud Forest, 2418 m. 3(UN)\*-4 Same, Paratype ♀ N1448, same location 2300 m. 5-6 *Ridens crison cachinnans* (Godman, 1901) ♀, PANAMA: Chiriqui (AMNH)+ 7-8 *R. c. crison* (Godman and Salvin, 1893) ♂, GUATEMALA: Quisache: Chimaltenango (AMNH).+ 9-10 *R. c. howarthi*, new subspecies, Holotype ♂ H6790, EL SALVADOR: Hda. Montecristo, Cerro Miramundo Cloud Forest, 2300 m. 11-12 Same, Paratype ♀ H4190, same location.

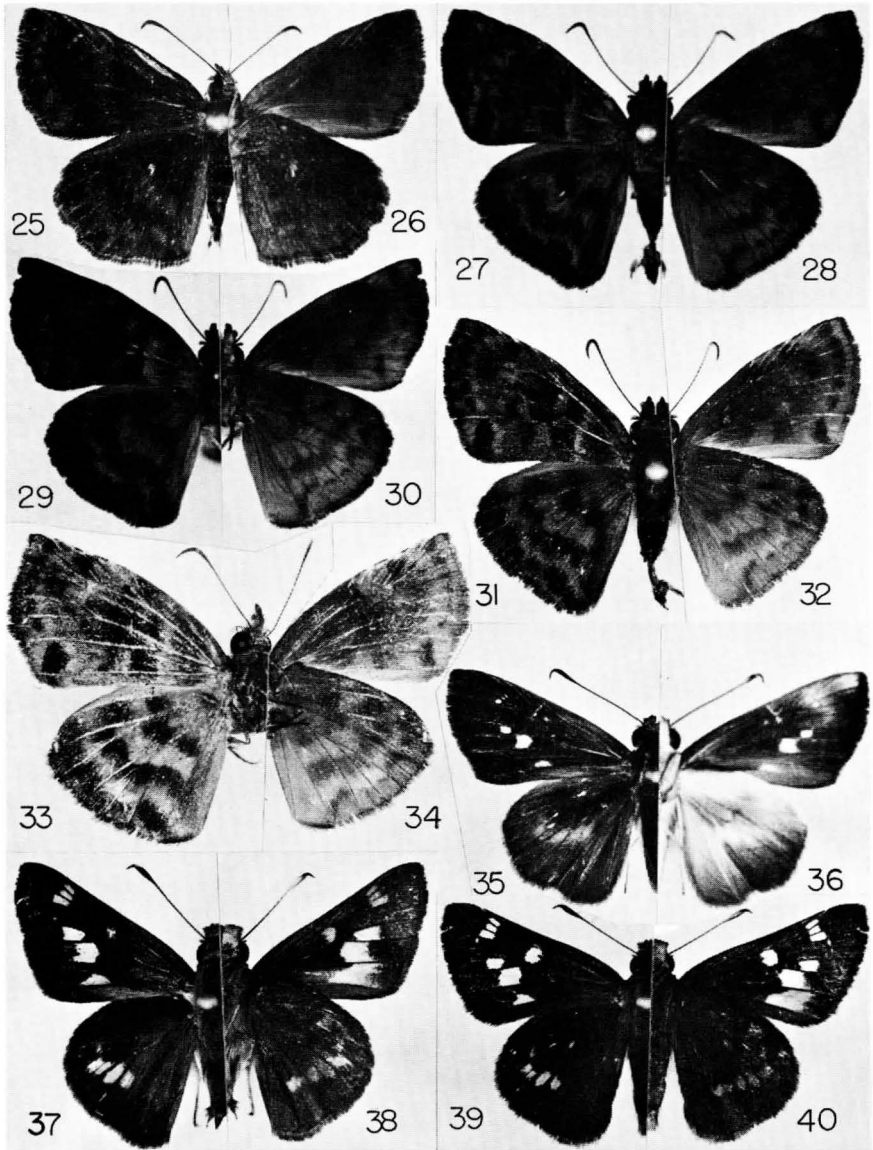
\* Odd numbers of figures of adult insects show the upperside; even numbers the underside, unless odd number of pair is followed by (UN).

+ Unless otherwise noted, all insects figured are in the Allyn Museum of Entomology;

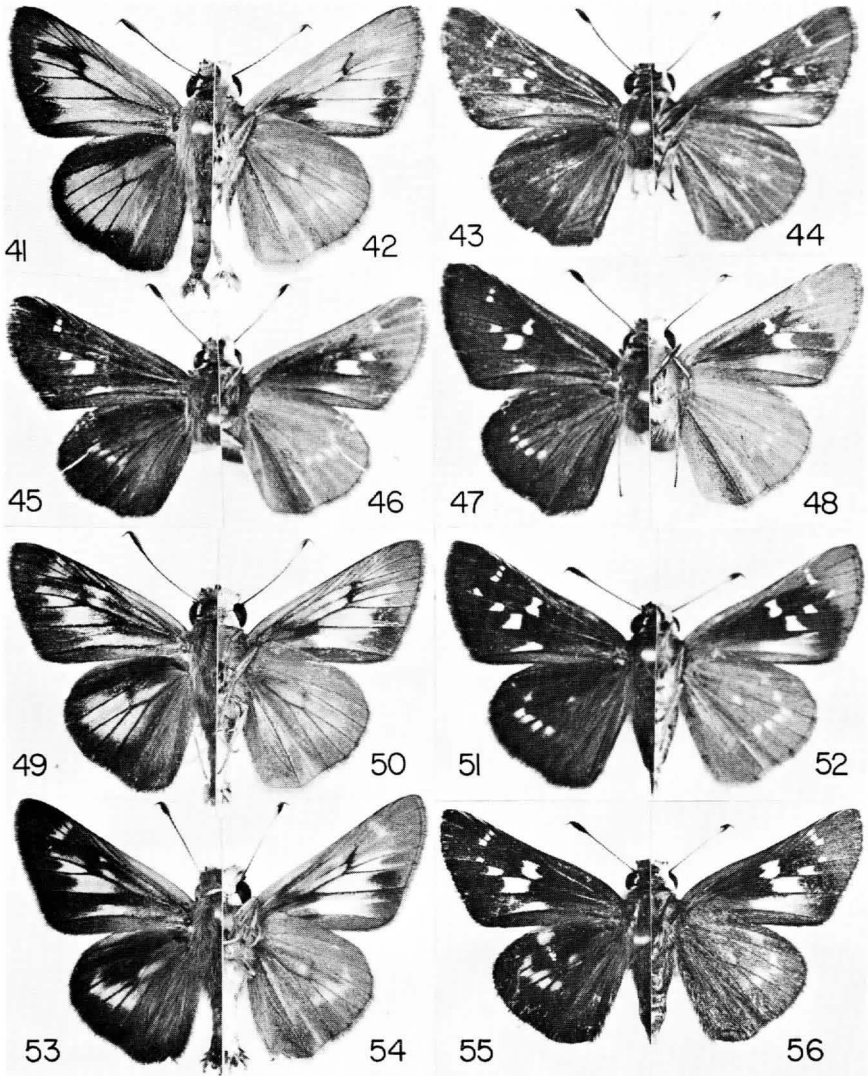




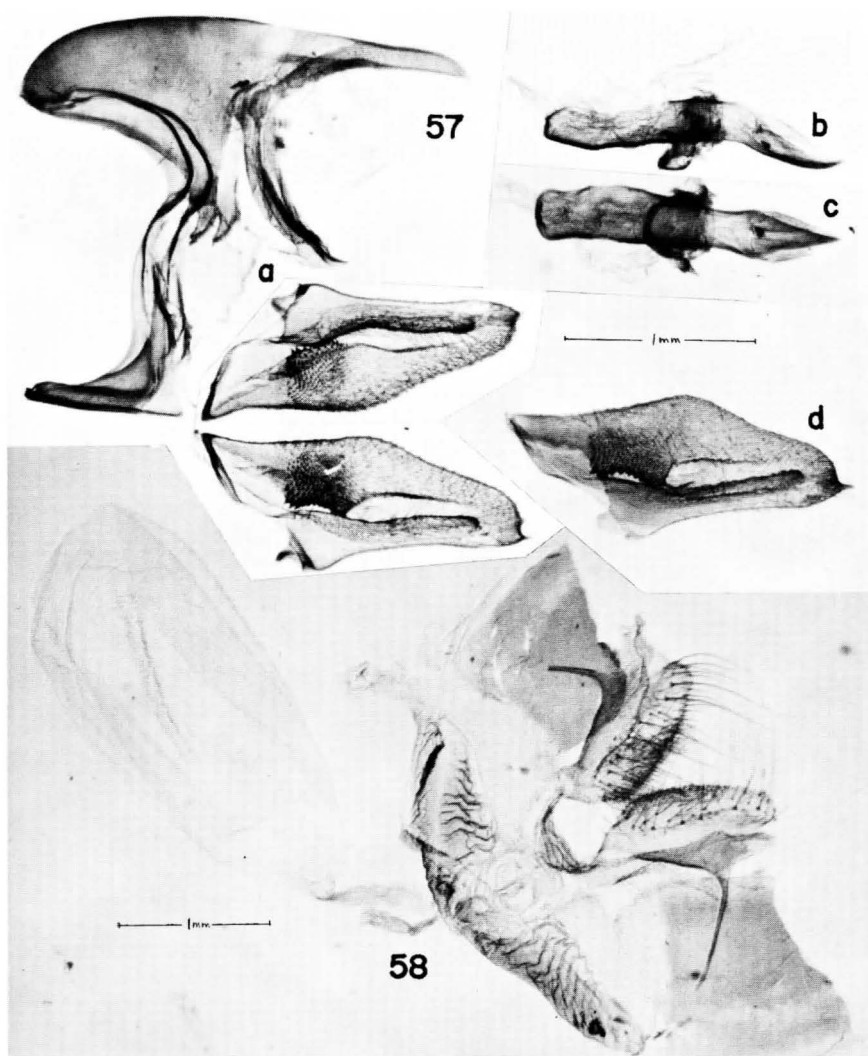
Figures 13-24, Neotropical Hesperiiidae (Pyrginae 13-20) (Hesperinae 21-24). 13-14 *Ridens ridens* (Hewitson, 1876) ♂, PANAMA: Chiriqui (AMNH). 15(UN)-16 *R. fieldi*, new species, Holotype ♂, GUATEMALA: Volcan Sta. Maria, April, Schaus and Barnes coll. (USNM). 17-18 *R. toddi*, new species, Holotype ♂ H4188, EL SALVADOR: Hda. Montecristo, Cerro Miramundo Cloud Forest, 2300 m. 19-20 Same, Paratype ♀ H1238, same location. 21-22 *Vacerra cervara*, new species, Holotype ♂ H2979, EL SALVADOR: Tamanique, 1000 m. 23-24 Same, Paratype ♀ H5343, EL SALVADOR: Concepcion de Ataco.



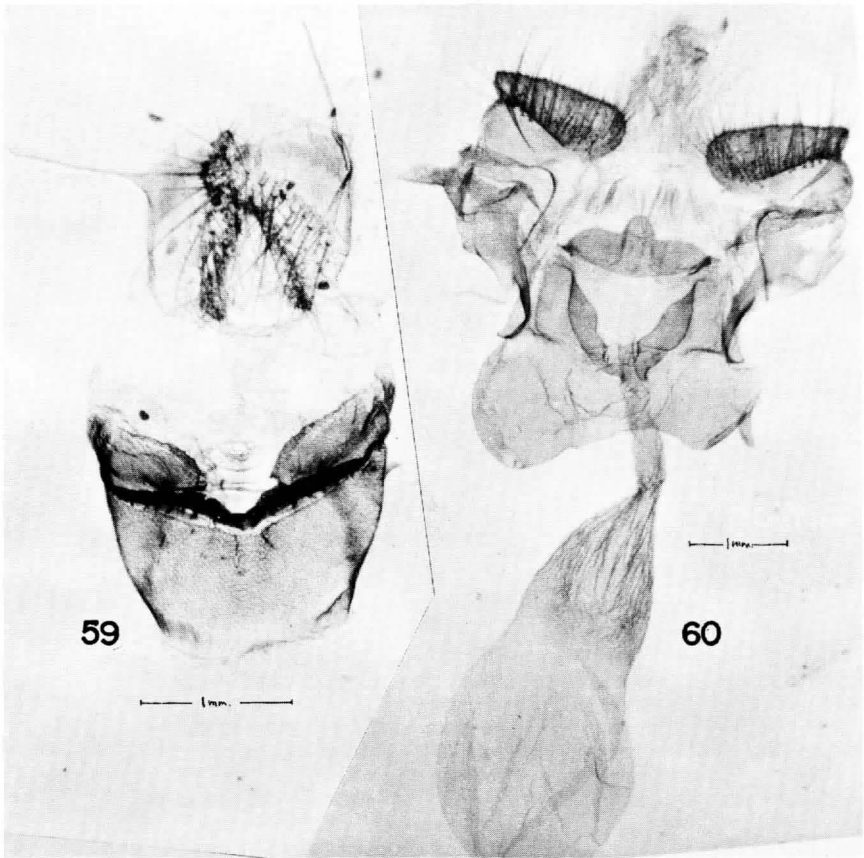
Figures 25-40, Neotropical Hesperiidæ (Pyrginae 25-34) (Hesperiinae 35-40). 25-26 *Bolla salva*, new species, Holotype ♂ H1329, EL SALVADOR: Ahuachapan, Rio El Molino 600 m. 27-28 *Ebrietas sappho*, new species, Holotype ♂ H5851, EL SALVADOR: Los Chorros, 700 m. 29-30 Same, Paratype ♀ H2121, EL SALVADOR: Santa Tecla, 900 m. 31-32 *E. anacreon anacreon* (Staudinger, 1876) ♂ H5853, EL SALVADOR: Los Chorros, 700 m. 33-34 Same, ♀ H173, EL SALVADOR: La Libertad. 35-36 *Vettius tertianus* (Herrich-Schäffer, 1869) ♀ H621, EL SALVADOR: Santa Tecla, 900 m. 37-38 *Onespa nubis*, new species, Holotype ♂ H4271, EL SALVADOR: Hda. Montecristo, Cerro Miramundo Cloud Forest, 2300 m. 39-40 Same, Paratype ♀ H3779, same location, 2418 m.



Figures 41-56 Neotropical Hesperiidæ (Hesperiiinae), Genus *Mellana* Hayward, 1948. 41-42 *M. tecla*, new species, Holotype ♂ H4768, EL SALVADOR: Sta. Tecla, 900 m. 43-44 Same, Paratype ♀ H4549, same location. 45-46 *M. sp.* (undetermined) ♀ H4782, EL SALVADOR: Sta. Tecla, 900 m. 47-48 *M. sp.* (undetermined) ♀ H4716, EL SALVADOR: Sta. Tecla, 900 m. 49-50 *M. tamana*, new species, Holotype ♂ H5231, EL SALVADOR: Tamanique, 1300 m. 51-52 Same, Paratype ♀ H4816, EL SALVADOR: Sta. Tecla, 900 m. 53-54 *M. balsa freemani*, new subspecies, Holotype ♂ H4715, EL SALVADOR: Sta. Tecla, 900 m. 55-56 Same, Paratype ♀ H3078, same location.

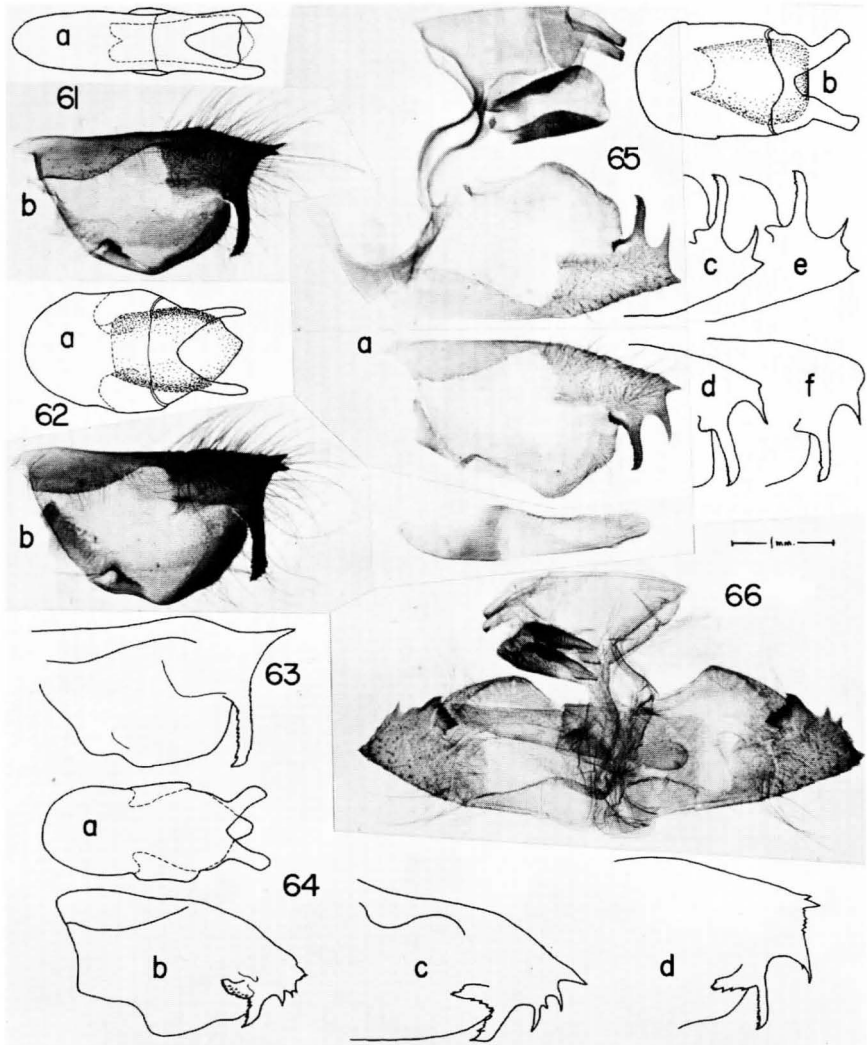


Figures 57-58 Genitalia of Neotropical Nymphalidae. 57 *Adelpha albifilum*, new species, Paratype ♂♂: a) lateral view; b) lateral view aedeagus; c) ventral view aedeagus, all of Paratype N609 (slide M2396); d) left valva Paratype N741 showing variation in terminal spines (slide M2397). 58 Same, Paratype ♀ N610 (slide M2395). Scales as shown.

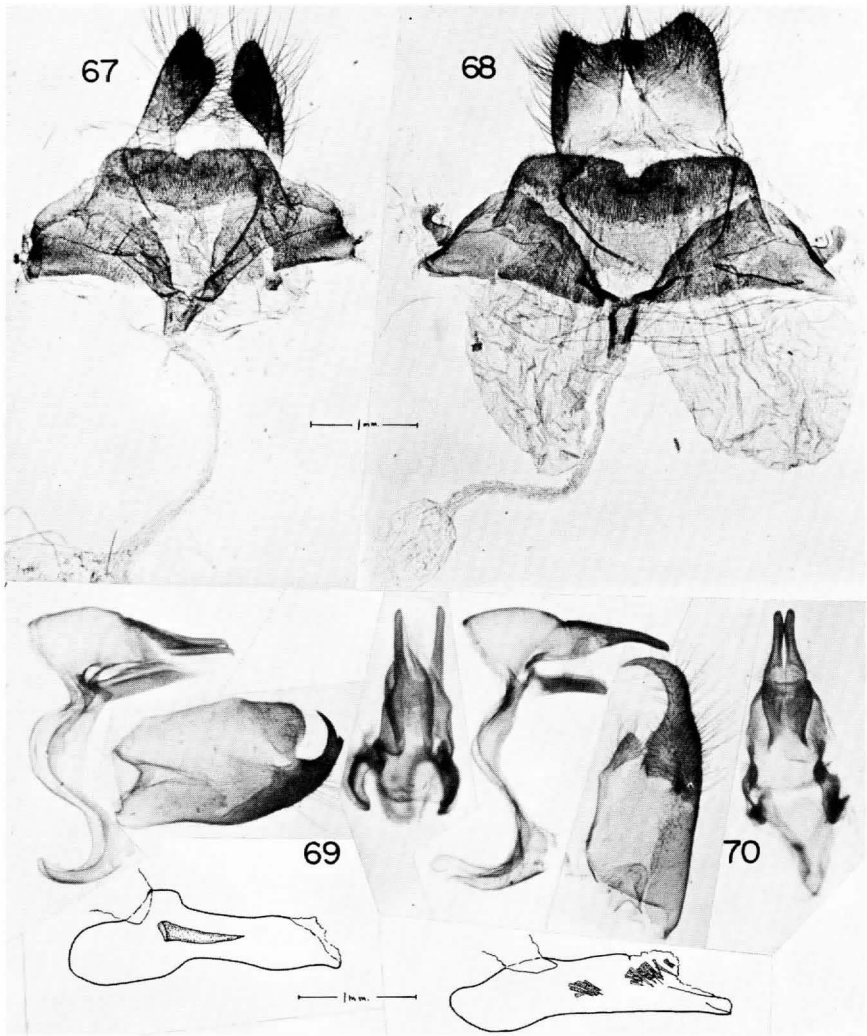


Figures 59-60 Genitalia of Neotropical Nymphalidae and Hesperiiidae (Hesperiiinae). 59 *Adelpha diocles* Godman and Salvin, 1884 ♀ N1343, EL SALVADOR: Hda. Montecristo, Cerro Miramundo Cloud Forest, 2300 m (slide M2372), specimen partly eaten by Psocids. 60 *Vettius tertianus* (Herrich-Schäffer, 1869) ♀ H621, EL SALVADOR: Sta. Tecla, 900 m (slide M2394). Scales as shown.

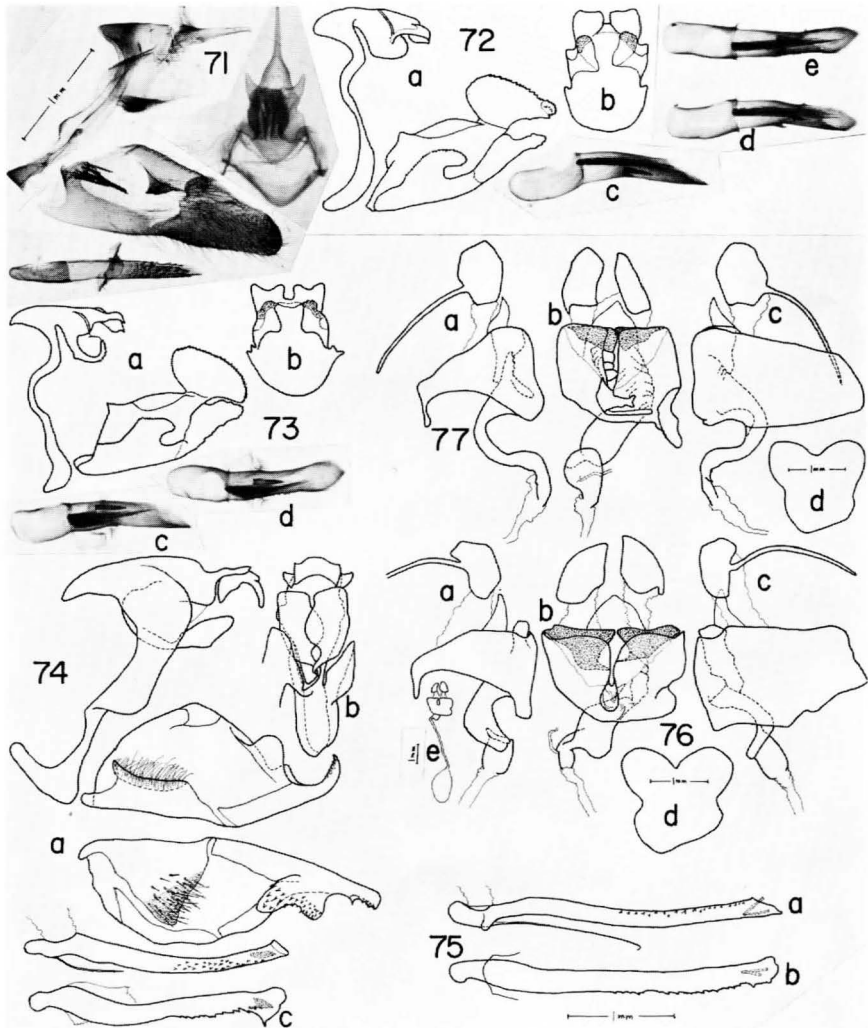




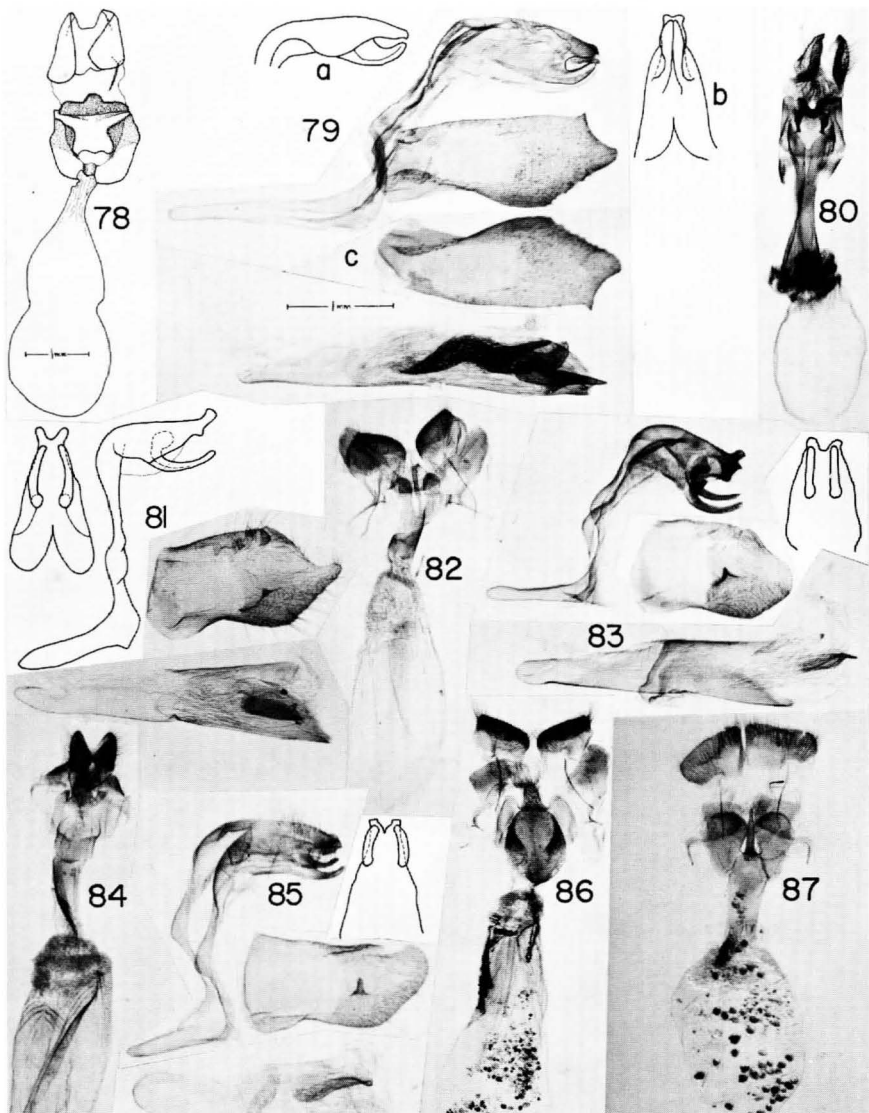
Figures 61-66 Genitalia of Neotropical Hesperiiidae (Pyrginae). 61 *Ridens crison crison* (Godman and Salvin, 1893) ♂, GUATEMALA (AMNH) (slide M1624): a) dorsal view uncus; b) left valva. 62 *R. c. howarthi*, new subspecies, Paratype ♂ H3862, EL SALVADOR: a) dorsal view uncus; b) left valva (slide M2373). 63 *R. c. cachinnans* (Godman, 1901) ♂, COSTA RICA (BMNH), left valva after T. G. Howarth. This is the specimen figured by Evans (1952) as *crison*. 64 *R. ridens* (Hewitson, 1876) ♂♂, all specimens from PANAMA: Chiriqui: a) dorsal view uncus (AMNH); b) left valva (USNM) (E. L. Todd slide 2376); c) left valva of specimen figured by Evans (1952), (BMNH) after Howarth; d) left valva (BMNH) after Howarth. 65 *R. toddi*, new species, Paratype ♂♂, EL SALVADOR: a) lateral view; b) dorsal view uncus, both of H4306 (slide H4306G); c) right valva H241; d) left valva H241; e) right valva H4094; f) left valva H6795. 66 *R. fieldi*, new species, Holotype ♂, GUATEMALA (USNM) (E. L. Todd slide 2377).



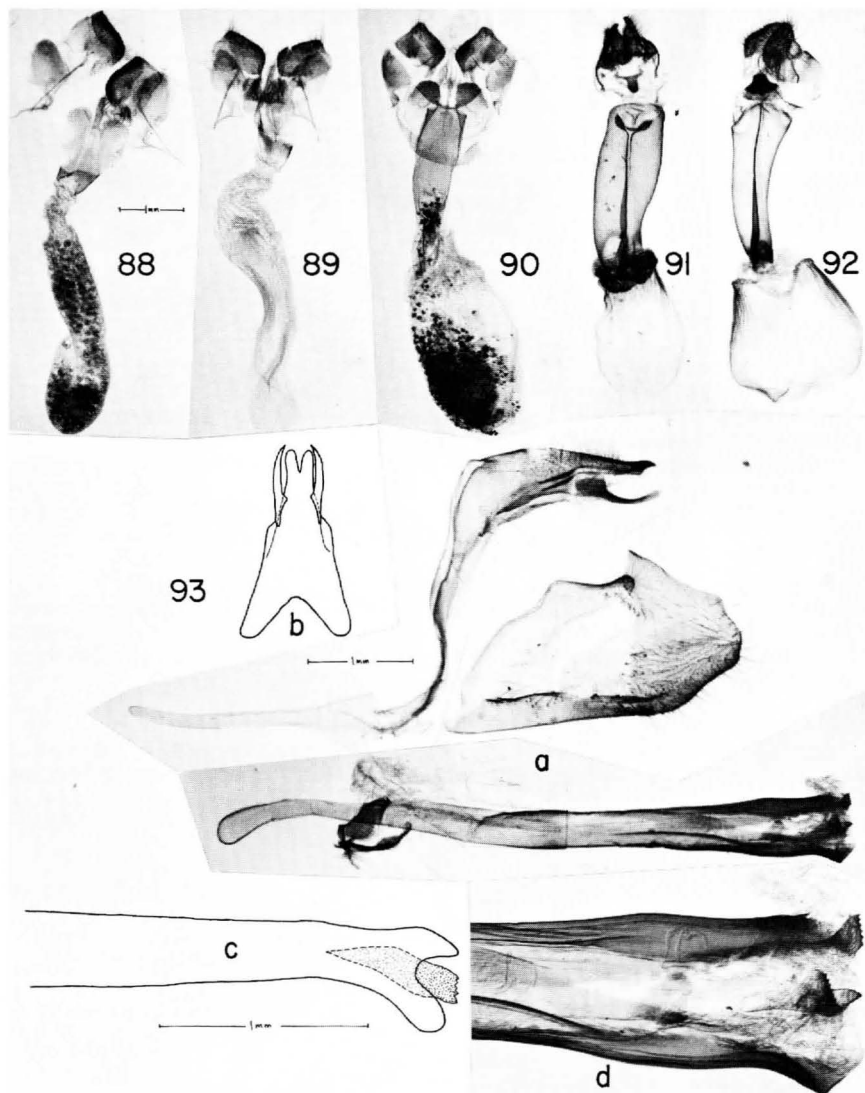
Figures 67-70, Genitalia of Neotropical Hesperidae (Pyrginae). 67 *Ridens toddi*, new species, Paratype ♀ H4307, EL SALVADOR (slide M2383). 68 *R. crison howarthi*, new subspecies, Paratype ♀ H4076, EL SALVADOR (slide M2382). 69 *Achalarus casica* (Herrich-Schäffer, 1869) ♂ H1306, EL SALVADOR: Ahuachapan, Rio El Molino, 600 m, showing lateral view with left valva removed and ventral view of uncus, etc. 70 *A. tehuacana* (Draudt, 1922) ♂ H1564, MEXICO: Oaxaca: 8 km. N. of Nejapa; same views as Fig. 69 (slide M2380). Scales as shown.



Figures 71-77, Genitalia of Neotropical Hesperidae (Pyrginae). 71. *Bolla salva*, new species, Paratype ♂♂, EL SALVADOR: lateral views are of H2489, ventral view of uncus H1016. Scale as shown. 72 *Carrhenes calidius* Godman and Salvin, 1895, ♂ H1328, EL SALVADOR: Ahuachapan, Rio El Molino, 600 m: a) lateral view with right valva; b) ventral view uncus; c) aedeagus lateral, d) dorso-lateral, e) dorsal. Scale as in Fig. 75. 73 *C. fuscescens fuscescens* (Mabille, 1891) ♂ H1286, EL SALVADOR: San Isidro, Cerro Verde, 1000 m: a) lateral view with right valva; b) ventral view uncus; c) aedeagus lateral, d) dorsal. Scale as in Fig. 75. 74 *Ebrietas sappho*, new species, Paratype ♂ H5852, EL SALVADOR: (slide M2370). Scale as in Fig. 75. 75 *E. anacreon anacreon* (Staudinger, 1876), ♂ H5853, EL SALVADOR: a) aedeagus lateral, b) ventral. Scale as shown. 76 *E. sappho*, new species, Paratype ♀ H2121, EL SALVADOR: a) lateral view left side; b) ventral view; c) lateral view right side, scale as in Fig. 75; d) dorsal view 8th abdominal tergite; e) sketch of entire genitalia showing relation to corpus bursae. Scales (d and e) as shown. Slide M2371. 77 *E. a. anacreon* ♀ H173, EL SALVADOR: a), b), c) and d) and scales as in Fig. 76. Slide M2369.



Figures 78-87, Genitalia of Neotropical Hesperiidae (Hesperinae). 78 *Vettius tertianus* (Herrich-Schäffer, 1869), ♀, COLOMBIA: Valle del Cauca: Cali (Cañas Gordas) 1000 m. 79 *Onespa nubis*, new species, ♂♂: a) lateral view tegumen and uncus, Holotype ♂ H4271; b) ventral view of (a); c) lateral view Paratype ♂ H4272, (slide H4373G). 80 Same, Paratype ♀ H3780 (slide M2375). 81 *Mellana tecla*, new species, Paratype ♂ H4505 (slide H4505G). 82 Same, Paratype ♀ H4549 (slide M2391). 83 *M. tamana*, new species, Paratype ♂ H5229 (slide M2385). 84 Same, Paratype ♀ H6577 (slide M2387). 85 *M. balsa freemani*, new subspecies, Paratype ♂ H4504 (slide H4504G). 86 Same, Paratype ♀ H4778 (slide M2389). 87 *M. montezuma* Freeman, 1969 ♀ H4817 (slide M2390). Scale for ♀♀ shown on Fig. 78; ♂♂ on Fig. 79.



Figures 88-93, Genitalia of Neotropical HesperIIDae (HesperIIDae). 88 *Mellana* sp. (undetermined) ♀ H4782, EL SALVADOR, slide M2393. 89 *Mellana* sp. (undetermined) ♀ H4716, EL SALVADOR, slide M2392. 90 *M. myron*? (Godman, 1900) or *verba*? Evans, 1955 ♀ LM 1969-1648, MEXICO: Vera Cruz (slide M2388). 91 *Vacerra cervara*, new species, Paratype ♀ H5344 (slide M2379). 92 *V. bonfilius aea* (Plötz, 1882) ♀ H508, EL SALVADOR (slide M2376). 93 *V. cervara*, new species, Paratype ♂ H5341 (slide M2377): a) lateral view (aedeagus twisted); b) ventral view uncus; c) lateral view aedeagus enlarged; d) same ventral. Scale for (a) and (b) shown on (a); for (c) and (d) on (c); scale for ♀ genitalia shown on Fig. 88.

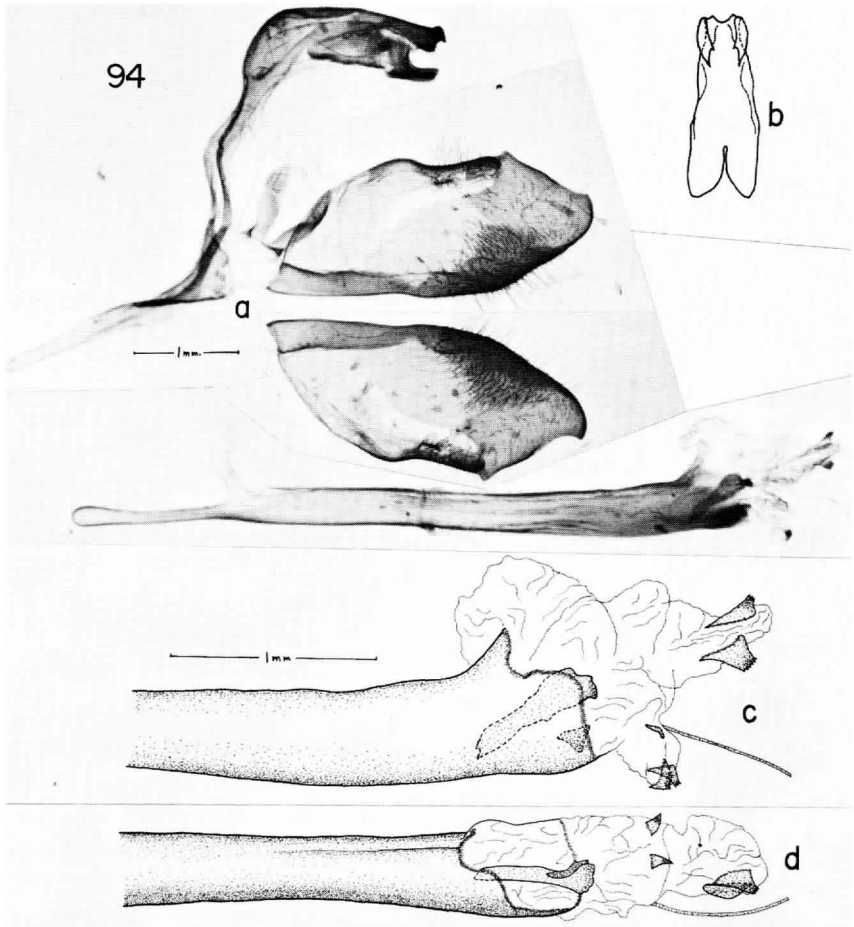


Figure 94, Genitalia of Neotropical Hesperiidae (Hesperiinae), *Vacerra lachares* Godman, 1900 ♂ H2413, EL SALVADOR (slide M2378): a) lateral view; b) ventral view uncus; c) lateral view aedeagus enlarged; d) same ventral. Scales as shown.