

# The Caddis Flies (Insecta: Trichoptera) of Trinidad and Tobago, West Indies.

by Lazare BOTOSANEANU & Mary ALKINS-KOO

## Abstract

Results of a collecting trip to Trinidad and Tobago in 1991. Forty species are named; 13 of them are here described as new; two others will be described elsewhere in a new genus, and one in *Ochrotrichia*; with at least 7 other species which could not be named, and a few others already recorded from Trinidad but not found during the present study, slightly more than 50 species of Trichoptera are known from the two islands. This fauna is quite heterogeneous in respect to distributional and affinity patterns. Remarkably high (26) is the number of species presently known only from Trinidad and/or Tobago – maybe an indication of a high speciation rate. The world of Trinidad and Tobago Caddisflies is very different from that of the Antilles – even of the nearby Lesser Antilles. Ecological results of this study were published elsewhere.

**Key words:** Trichoptera, taxonomy, faunistics, distribution, Trinidad and Tobago, West Indies.

## Résumé

Résultats d'un voyage à Trinidad et Tobago en 1991, consacré à la récolte des trichoptères. Quarante espèces sont nommées; parmi celles-ci 13 sont décrites comme nouvelles; 2 autres (appartenant à un genre nouveau) ainsi qu'une espèce d'*Ochrotrichia* le seront ailleurs; si l'on y ajoute au moins 7 autres espèces qui n'ont pas pu être nommées, ainsi que quelques autres déjà connues pour Trinidad mais non retrouvées lors de cette étude, on arrive à un peu plus de 50 espèces connues des deux îles. Cette faune est fort hétérogène aux points de vue de la distribution et des affinités. Le nombre des espèces actuellement connues seulement de Trinidad et/ou Tobago est remarquablement haut (26) – indication, peut-être, de spéciation rapide. Le monde des Trichoptères de Trinidad et Tobago est nettement différent de celui des Antilles – même des Petites Antilles les plus proches. Des résultats écologiques de cette étude ont été publiés ailleurs.

**Mots-clés:** Trichoptera, taxonomie, faunistique, distribution, Trinidad et Tobago, Indes Occidentales.

## Introduction

In the frame of his work on the Caddis Fly fauna of the Caribbean Islands, the first author made, in April 1991, a trip to Trinidad and Tobago, two islands relatively poorly known in this respect. During several weeks these insects were intensively collected in a number of good localities on the two islands, but especially in the rain forest of the Northern Range of Trinidad where most of the water courses are located, a special attention being given to the catchment of the mainly pristine River Guanapo, where sampling was done on water courses belonging to stream orders I to V. Adults were collected mainly by night, using a portable UV lamp, and preserved mostly in alcohol, some specimens being kept dry; whereas during the day observations were made on the selected localities and on their fauna, aquatic instars being collected generally by hand. Some material found in the Department of Zoology at St. Augustine was, too, used for the present study. Most of the material (including the holotypes and allotypes of all newly described species) is kept in the collections of the Zoological Museum of the University of Amsterdam; a number of specimens were placed in the Institut royal des Sciences Naturelles (Brussels), in the N.M.N.H., Smithsonian Institution (Washington), or in the Department of Zoology, University of the W. Indies at St. Augustine (Trinidad). Besides the present study, a paper (BOTOSANEANU & SAKAL, 1992) was published on the autecological and synecological aspects of the distribution of Caddis Flies on the two islands – especially Trinidad.

**List of sampling localities** (only material either sampled during the 1991 trips, or found in the Zoology Department, University of the West Indies at St. Augustine). L.B. = L. BOTOSANEANU; D.S. = DEXTER SAKAL.

## TRINIDAD

### *N. Trinidad*

(both slopes of the Northern Range; from W. to E.)

- I. The stream just below Blue Basin Waterfall. 17.IV.1991. Light. L.B. & D.S. leg.
- II. Hygropetric habitat (spring from rock) on Northern Coast Road W. from Maracas Bay. 19.IV.1991 (aquatic instars; L.B. & D.S. leg.) and 30.IV.1991 (adults: light; L.B., D.S. and Kathy Dalip leg.).
- III. The stream just below Maracas Waterfall. 12.IV.1991. Light. L.B. & D.S. leg.  
B. Maracas Waterfall. 6.XI.1990. "Larvae... found on rocks directly under waterfall". Zool. U.W.I. leg.
- IV. Maracas River: various locations and dates. Where no collector name available: Zool. U.W.I. leg.  
A. "Maracas Valley at light". 19.III.1987.  
B. "Maracas Valley, light trap on the bank of the Maracas River"; "Z 310". 10-11.XII.1990.  
C. "Maracas River". Feb. 1988. L. Maharaj leg.  
D. "Maracas River". April 1988. L. Maharaj leg.  
E. "Maracas River". 15.XI.1990.  
F. "Maracas River middle course". 11.IV.1991.  
G. "Maracas River, opposite R[oman] C[atholic] school". 11.IV.1991.  
H. "Lower Maracas River, WASA pump station". 11.IV.1991.
- V. Streamlet at foot of Mt. Saint Benedict (Tumpuna, St. Benedict Gardens). 18.IV.1991. Light. L.B. leg.
- VI. Arima River: various locations and dates – dates mostly not specified. Where no collector name available.: Zool. U.W.I. leg.  
A. "Arima River... upper stream"; "U.W.I. 376", "U.W.I. 377", "U.W.I. 397".  
B. "Arima River... upper stream"; "U.W.I. 379".  
C. "Arima River... upper stream"; U.W.I. 396"; "V.J. [ones] 49".  
D. "Arima River... upper stream"; "U.W.I. 389", "U.W.I. 390, V.J. [ones] 51".  
E. "Arima River... upper cascade"; "U.W.I. 369"; "V.J. [ones] 43".  
F. "Arima R[iver] Cascade Mar[ch] [19]85 to light trap"; "U.W.I. 370".  
G. "Arima Cascade to light trap. 17.4.85"; "U.W.I. 367".

- VII. Paria River: various locations and dates (dates not always specified). Where no collector name available: Zool. U.W.I. leg.  
A. "Paria River... nr. Brasso Seco, upper cascade"; "U.W.I. 371".  
B. "Paria River stream nr. Brasso Seco Mar[ch] [19]85 light trap"; "U.W.I. 378".  
C. "Paria River, stream to light trap 3. [19]85"; "U.W.I. 373".  
D. "Paria River, stream Mar[ch] 1985 V. Jones light trap"; "U.W.I. 368", "U.W.I. 375".  
E. "Paria R[iver] stream V.J. [ones] 108"
- VIII. Two 1st order streams at "La Laja", catchment of Rio Guanapo. Ca. 420 m.a.s.l. 14.IV.1991. Light. L.B. & D.S. leg.
- IX. 2nd. order stream at "La Laja", catchment of River Guanapo. Ca. 480 m.a.s.l. 13.IV.1991. Light. L.B. & D.S. leg.
- X. Upper course of River Guanapo (3rd order and upper part of 4th order stream), in dense rain forest. Ca. 200 m.a.s.l. 16.IV.1991. Adults: light. L.B., D.S. & Dorothy PETERKIN leg.
- XI. Lower course of River Guanapo near WASA pump station, ca. 1 mi. upstream from locality XII (lower part of 4th order stream). Less than 100 m.a.s.l. 17.VII.1991. Adults: light. D.S. leg.
- XII. Lower course of River Guanapo at Lala track (lower part of 4th order stream). Less than 100 m.a.s.l. 15.IV.1991. Light. L.B. & D.S. leg.
- XIII. Lowest course of River Guanapo, at Tumpuna Road, below confluence with Arima River (5th order stream). About 20 m.a.s.l. 15.IV.1991. Light. L.B. & D.S. leg.; 3.VII.1991. Light. D.S. leg.
- XIV. River Cumaca, where it leaves Oropouche cave. 24.IV.1991. L.B. & D.S. leg.
- XV. Shark River. 6.III.1989. L. MAHARAJ leg.

### *Central Trinidad*

- XVI. Couva River in its lower course, at Couva Main Road. 28.IV.1991. Light. L.B. & D.S. leg.

### *South Trinidad*

- XVII. Sluggish streamlet tributary of River Morocopani (San Francique; catchment of River Oropouche). 27.IV.1991. Light. L.B. & D.S. leg.

## TOBAGO

- XVIII. "Courland River, Mason Hall" (and "Courland R. trib [utary]"') April 1986. Zool. U.W.I. leg.
- XIX. "Little Englishman's Bay River" April 1986. V. JONES leg.
- XX. "Dead Man Bay River" April 1986, V. JONES leg.

- XXI. Parlatuvier West River at Parlatuvier. 20.IV.1991. Light. L.B. & Michael KOO leg.
- XXII. Streamlet cut by road Roxborough-Parlatuvier, near summit. 21.IV.1991. Light. L.B. & Michael KOO leg.
- XXIII. Argyll River below Argyll waterfall. 22.IV.1991. Adults: light. L.B., Mary ALKINS-KOO & Michael KOO leg.

### Systematic part

## GLOSSOSOMATIDAE PROTOPTILINAE

### *Protoptila ignera* FLINT, 1974 (figs 1-2, 4)

#### Material:

I: 3♂, 1♀; IV B: 9♂, 100♀; IV C: 9♂, 2♀; IV D: 12 pupae and metamorphotypes; IV F: many larvae, pupae and metamorphotypes; IV H: many larvae, pupae and metamorphotypes; V: 11♂, 9♀; X: 75♂ + ♀; XI: 1♂, 19♀; XII: 1♂, 6♀; XIV: many larvae, praepupae and pupae; XXII: 2♀; XXIII: 59♂ + ♀.

This species was described from "Trinidad, Simla" (FLINT, 1974a) and subsequently never mentioned. The ♀ and larva were not described.

#### Description of ♀

On venter VI a short, laterally compressed "tooth". Segment VIII is a complete ring; it is postero-dorsally directly continued by a pair of large, ear-shaped lobes, each with a small digitiform appendage at apex; from their position it may be inferred that these lobes represent dorsum IX (despite the presence of the digitiform appendages, which could indicate segment X). Sternite IX laterally with large rounded lobes (in ventral view: triangular) with strong setae; medially with highly characteristic complex of 3 lobes, easily seen also in non-prepared alcohol specimens: 2 shorter lateral lobes with blunt apex, one longer central lobe with sharp tip turned anteriad; from this complex starts a very long rod (apodeme?) reaching segment VI. Segment X not strongly developed, slightly chitinized, laterally with important zones covered by small tubercles.

#### The larva

This is much darker than that of the other Protoptiline from Trinidad, *Mexitrichia simla*; for instance its meso- and metanotum sclerites are much more distinct. The shape of the abdominal dorsum IX sclerite (fig. 4) is highly distinctive: this plate is very well developed laterally, where it does not show two distinct lobes on each side, and it is only slightly emarginate distally.

### *Mexitrichia simla* FLINT, 1974 (figs 3, 5)

#### Material:

V: 1♂; VI D: 4 larvae, 1 praepupa, 1 pupa, 1♀ metamorphotype; X: 150♂ + ♀, larvae, praepupae, pupae, 1♀ metamorphotype, cases; XI: 4♂, 37♀, many larvae, praepupae, pupae, metamorphotypes, pharate adults; XIV (?): some larvae?

This species, too, was described (FLINT, 1974a) from "Trinidad, Simla", and subsequently never mentioned. ♀ and larva were not described.

#### Description of ♀

On venter VI a short, laterally flattened "tooth". Segment VIII is a complete ring, its dorso-distal margin with very strong curled setae. Dorsal part of segment IX normal; its ventral part is highly characteristically shaped: laterally a pair of strong lobes looking like horns, with tips turned laterad; centrally with an elongate formation longer than the lateral lobes, having in its distal part a conspicuous black "nucleus" which is easily seen also in non-prepared alcohol specimens, allowing recognition of the species. Main (= dorsal) part of segment X dome-shaped in ventral and posterior view, with pair of papillae.

#### The larva

This is much paler than that of *Protoptila ignera*, the sclerites of meso- and metanotum being extremely indistinct. Sclerite on dorsum IX only slightly developed laterally, where deep sinuses determine 2 distinct lobes on each side, and rather deeply emarginate distally (fig. 5).

## HYDROPTILIDAE

### *Zumatrixia anomalopectera* FLINT, 1968

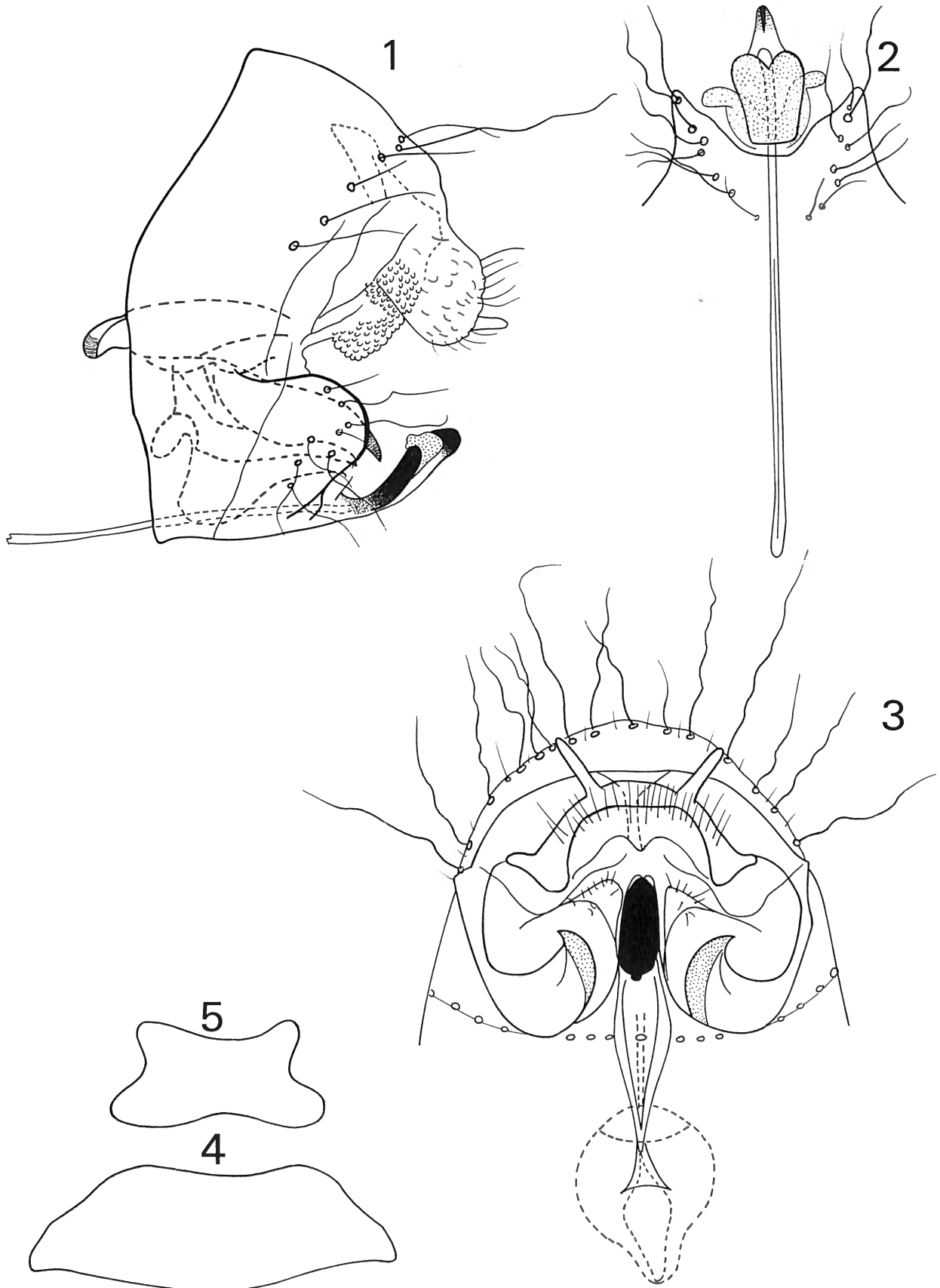
#### Material:

IV B: 148♂, 85♀; X: 4♂, 6♀; XXIII: 61♂ + ♀. This species was previously known from Guadeloupe, Dominica, Martinique, St. Lucia, St. Vincent, and Grenada.

### *Leucotrichia fairchildi* FLINT, 1970 (figs 6-7)

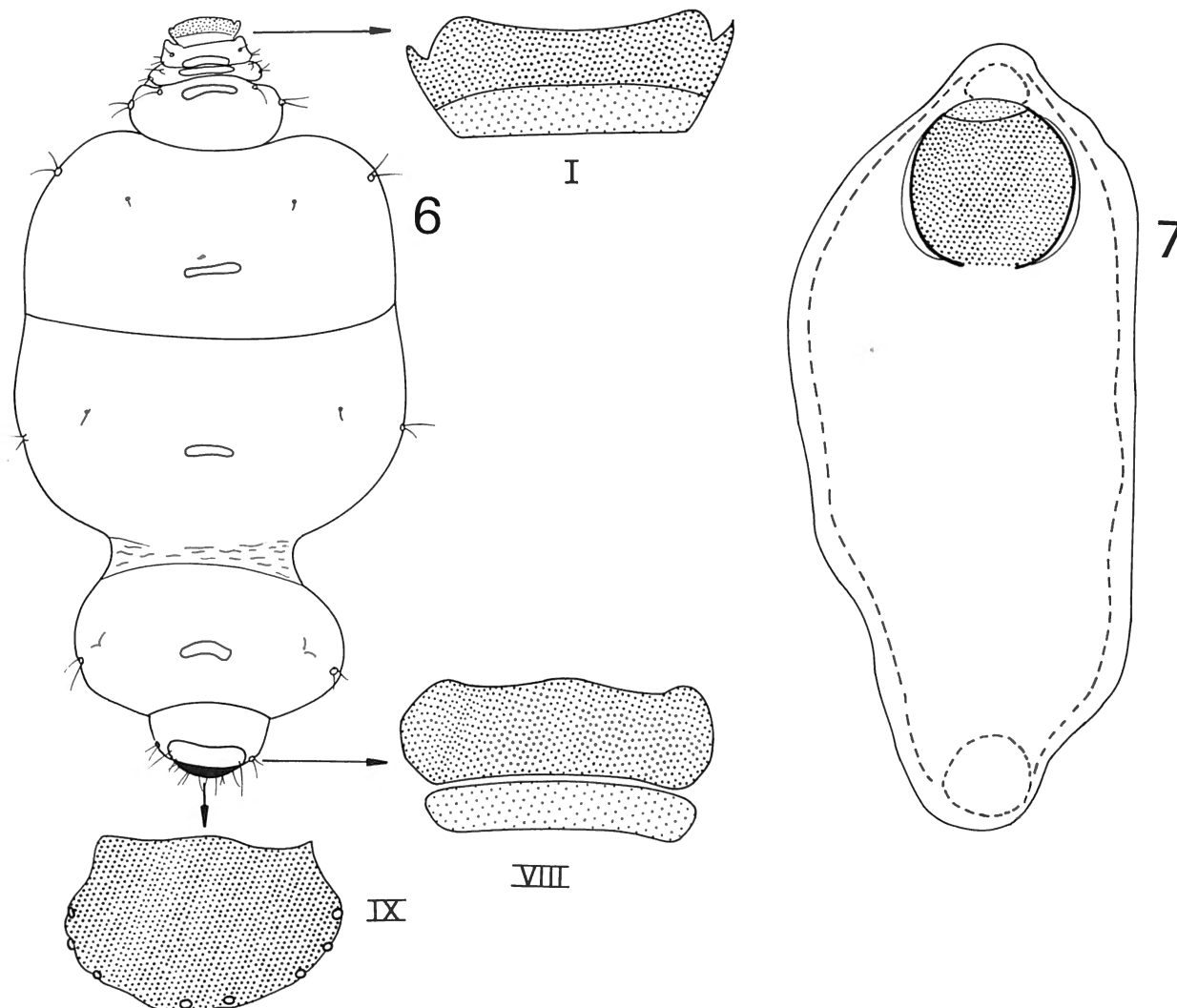
#### Material:

VII D: 6♂; X: many larvae, praepupae, pupae, metamorphotypes; XIX: larvae, praepupae, pupae, ♂ and ♀ metamorphotypes; XX: larvae, praepupae, pupae, 1♀ metamorphotype; XXIII: 3♂, many larvae, praepupae, pupae, 7 metamorphotypes.



Figs 1-2, 4 – *Protoptila ignera* FLINT, 1974 (1: ♀ genitalia, lateral; 2: sternite IX of ♀, ventral; 4: sclerite of larval abdominal dorsum IX).

Figs 3-5 – *Mexitrichia simla* FLINT, 1974 (3: ♀ genitalia, ventral; 5: sclerite of larval abdominal dorsum IX).



Figs 6-7 – *Leucotrichia fairchildi* FLINT, 1970 (6: last instar larva, arrows pointing to sclerites of abdominal dorsa I, VIII, and IX; 7: abandoned pupal case).

*L. fairchildi* was described (FLINT, 1970) from Panamá, and subsequently (FLINT, 1981) mentioned from Venezuela. At my request Dr. O.S. FLINT, Jr. compared specimens from Trinidad with the holotype and found nothing distinctive. Larva and pupal case were not yet described.

#### The larva

The larva in the last instar (fig. 6) has much blue-greenish pigment especially in the thorax and in the first four abdominal segments. On abdominal segments I, VIII and IX, relatively large sclerites; sclerites of the remaining segments are very narrow transverse stripes; sclerite on segment I with anterior part much darker than posterior part, slightly produced below anterior angles; sclerite VIII distinctly divided in two by transverse suture, anterior part much darker than posterior; sclerite IX a shield with anterior margin sinuate and posterior margin rounded; sclerites on sides of the abdominal segments minute.

#### Pupal case

This is normal for the genus. In many, not all, cases still inhabited by a praepupa or a pupa, a perfectly circular, paler "mark" is seen near the anterior end; in one abandoned case (fig. 7) there is here a round lid still adhering to the case by a very short proximal portion. The circular hole covered by a round flap, is cut by the emerging pupa; the "mark" mentioned above is a result of the interesting phenomenon of "case reoccupancy" described (McAULIFFE, 1982) for *L. pictipes* (Banks): old pupal cases are reinhabited by the next generation(s) of instar V larvae; after reoccupying an old case a larva spins new silk over the cut edges of the emergence hole; in some cases the entire hole is covered by new silk, in others the outline of the old emergence hole can be readily recognized for some time.

Very often the pupal cases are found in pairs – a common situation in *Leucotrichia*. In one case two praepupae were found – rather strange situation.

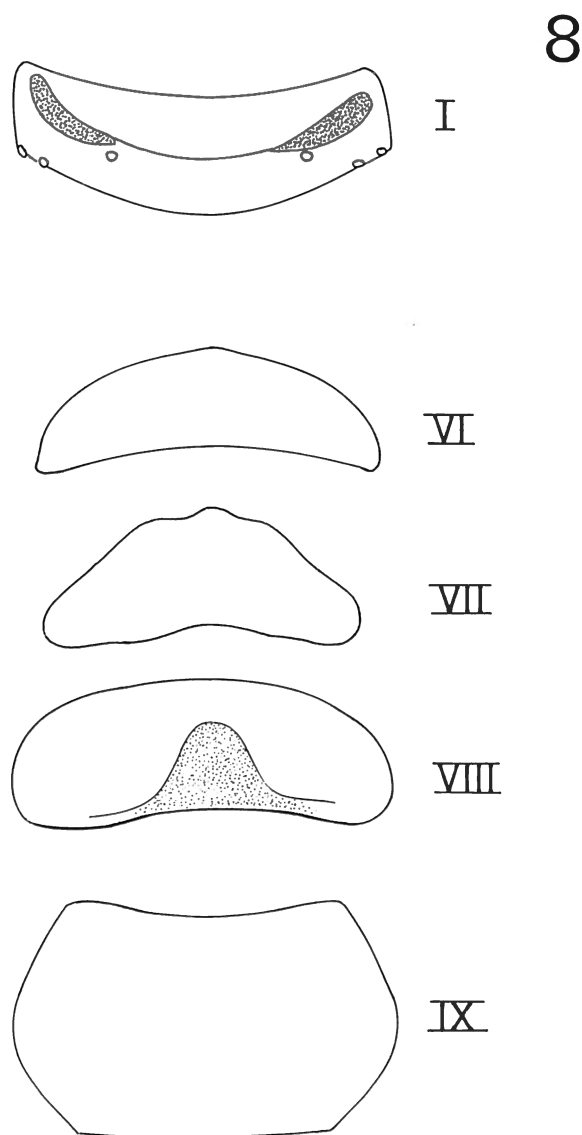


Fig. 8 – *Leucotrichia limpia* ROSS, 1944, sclerites of larval abdominal dorsa.

***Leucotrichia limpia* ROSS, 1944**  
(fig. 8)

**Material:**

II: larvae, praepupae, pupae, 1♂ metamorphotype; VIII: larvae, pupae, 1♀ metamorphotype; IX: larvae, praepupae.

*L. limpia* was described (♂, ♀) from Texas (Ross, 1944), and redescribed by FLINT (1970: ♂, larva) who also mentions it from Arizona, Mexico, and Costa Rica. The present identification could be based mainly on 1♂ metamorphotype, and there is no doubt about its validity; moreover, larval head ornamentation and anal claw are exactly like described and illustrated in FLINT (1970).

**Supplement to description of ♂ and larva**

The description of the proximal parts of the phallic apparatus in the mentioned publication (“a large basal

loop”) has to be supplemented: we have here one pair of interesting organs (glands ?) with distinct alveolar structure, organs which are continued distad by a pair of chitinous rods – part of the “dorsal complex” of the phallic apparatus.

Shape and pigmentation of the larva: like in *fairchildi*. The following can be said about the medio-dorsal abdominal sclerites of the larva (fig. 8) – sclerites which always enable easy distinction of the different *Leucotrichia* species. Sclerite on segment I in its middle with a black transverse strip (which can be reduced to lateral fragments); on segments II-V: relatively narrow transverse plates; VI: somewhat more strongly developed, slightly curved plate; VII: sclerite much better developed, roughly triangular; VIII: sclerite not divided, with large dark medio-posterior spot; IX: polygonal shield. Lateral abdominal sclerites slightly larger than, for instance, in *fairchildi*.

***Leucotrichia inflaticornis* BOTOSANEANU n. sp.**  
(figs 9-15)

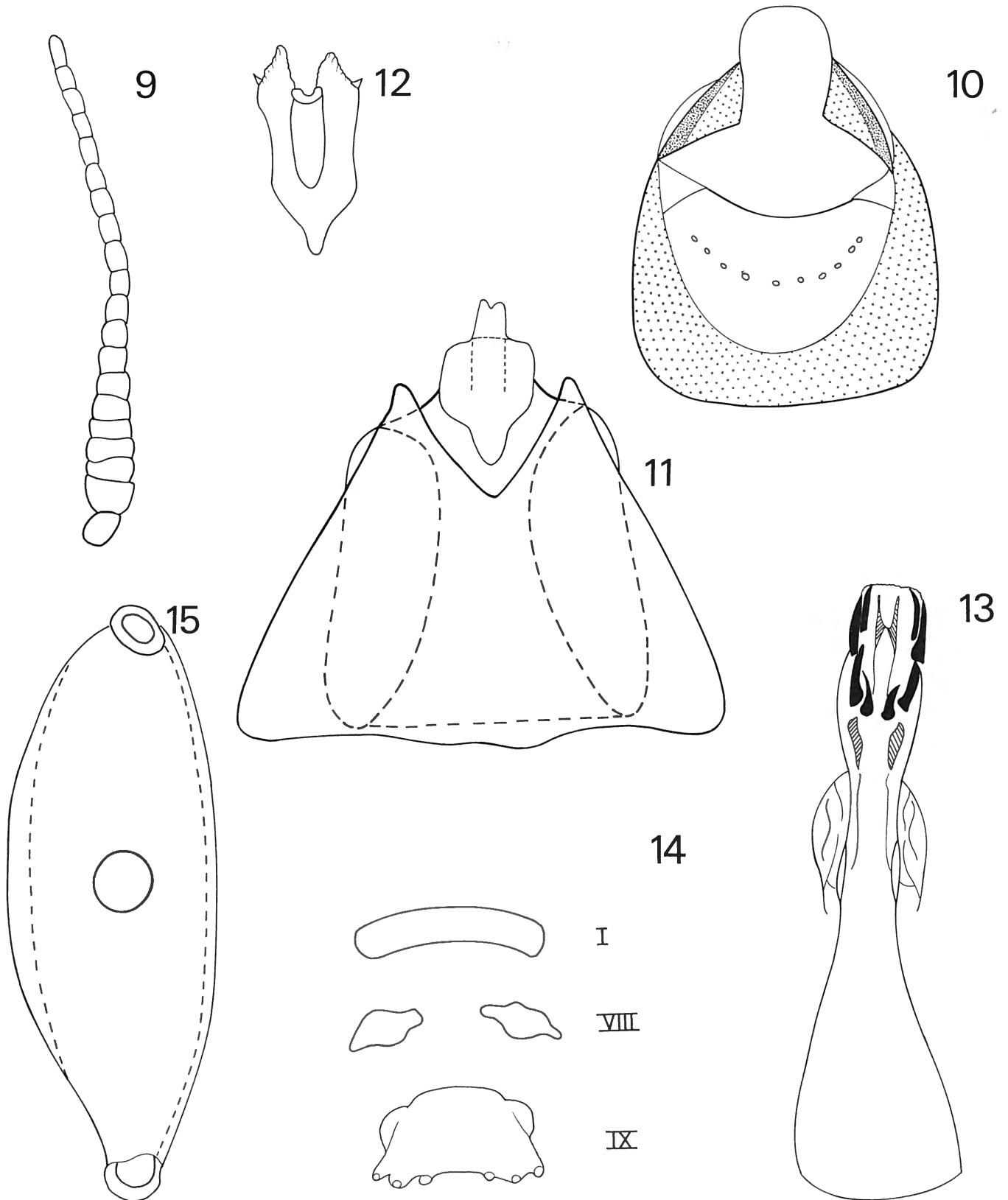
**Material:**

IX: larvae, praepupae, pupae, 6♂ and 3♀ metamorphotypes; X: many larvae, praepupae, pupae, 3♂ and 2♀ metamorphotypes. Holotype: one ♂ metamorphotype from locality IX; all other ♂ and ♀ metamorphotypes are paratypes.

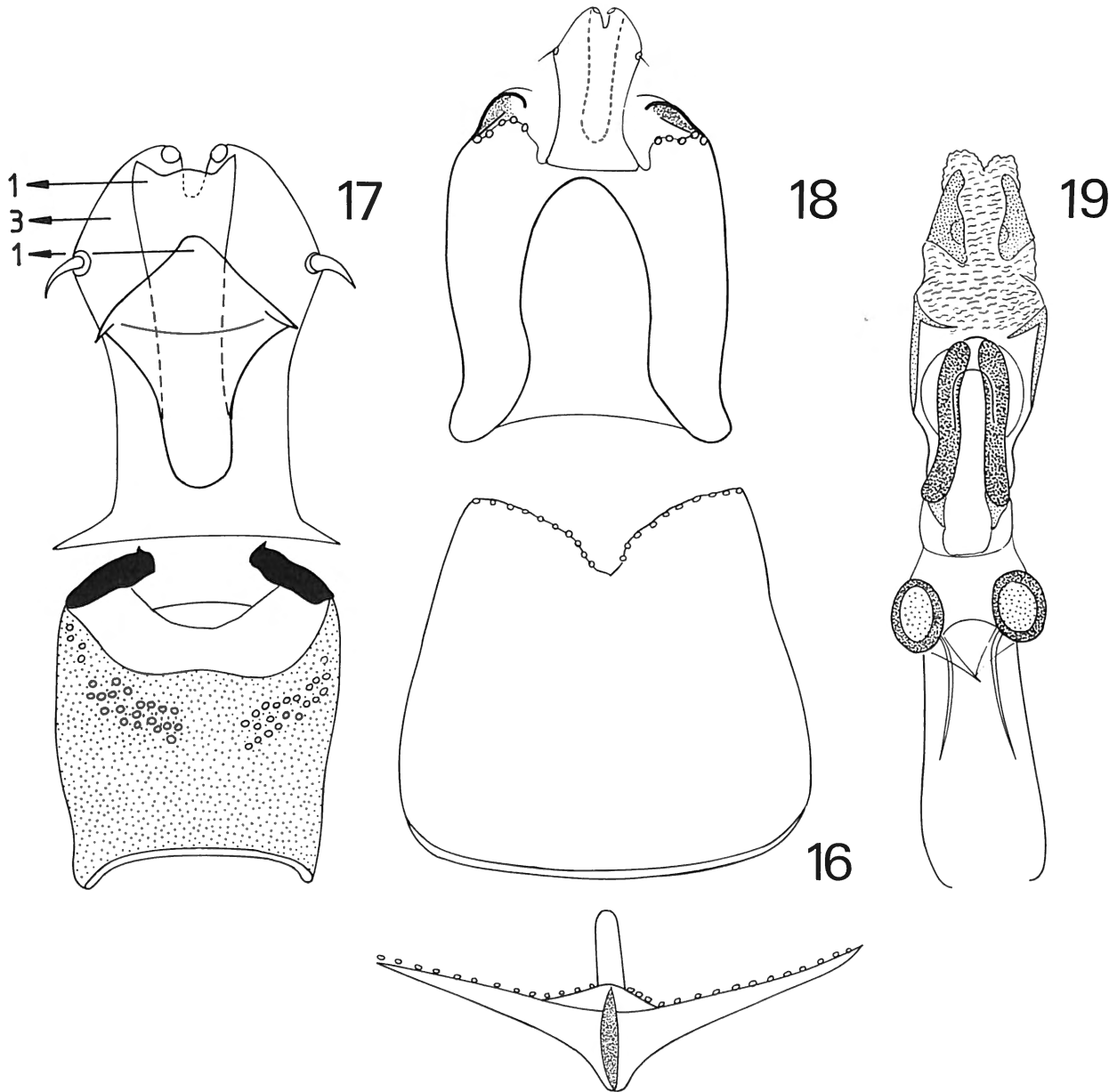
**Description of adults**

Very small species. Ocelli (♂, ♀): 3. Antennae of ♀ normal. ♂ antennae with 20 segments, scapus small, following 5 or 6 segments distinctly – but not enormously – broadened (fig. 9), shape resembling somehow that found in *L. pictipes* (BANKS, 1911). Dorsal face of head (♂) glabrous, but occipital face with dense black setae. No “tooth” from venter VII.

♂ genitalia (figs 10-13). Segment VIII disto-ventrally with moderately deep triangular sinus. Segment IX with shallow dorso-distal emargination, a large distal part of the dorsum being much paler than the lateral and proximal parts; from the latero-distal angles of the segment (fig. 10) strong, black, triangular sclerites directed ventrad and converging mediad. Segment IX ventrally open (fig. 11) for a large median part. Connected with the black sclerites from the latero-distal angles of segment IX is a complex of median plates: subgenital plate and plate formed by the fused inferior appendages; this complex could not be satisfactorily studied on the material consisting of metamorphotypes (figs 10-11 are in this respect quite incomplete), but, anyway, the subgenital plate (fig. 12) is apically bilobed and there is at the base of these lobes, on each side, a minute point. Phallic apparatus very well characterized by the presence in its apical section of 4 pairs of symmetrically arranged black spines which are short but, nevertheless, easily seen also at slight magnifications; dorsal complex relatively slightly developed.



Figs 9-15 – *Leucotrichia inflaticornis* BOTOSANEANU, n. sp. (9: antenna of ♂; 10: segment IX of ♂, dorsal; 11: segments VIII and IX of ♂, ventral; 12: subgenital plate of ♂ genitalia; 13: phallic apparatus, ventral; 14: sclerites of larval abdominal dorsa; 15: abandoned pupal case).



Figs 16-19 – *Leucotrichia termitiformis* BOTOSANEANU, n. sp., ♂ (16: segments VII and VIII, ventral; 17: segment IX and complex of plates following it distad, dorsal; 18: segment IX and “gonopodial plate”, ventral; 19: phallic apparatus, dorsal).

It would not be wise to give a description of the ♀ genitalia based on metamorphotypes.

#### *Description of larva and pupal case*

The (small) larva has the shape and blue-greenish pigment of other *Leucotrichia*. The posterior 1/4 of the metathoracic tergum is dark brown, in contrast with the very pale medio-dorsal abdominal sclerites whose pattern (fig. 14) is highly characteristic. On segment I a well developed, slightly curved transverse sclerite; no medio-dorsal sclerites on segments II-VII (lateral sclerites minute); on segment VIII one pair of small sclerites in the middle of the dorsum; on segment IX a shield with

complex shape. An abandoned pupal case (fig. 15) shows a small circular perforation almost exactly in the middle of the dorsal face.

#### *Notes*

Although clearly belonging to the “*melleopicta*-group” (FLINT, 1970) this species is very well characterized especially by: basal part of ♂ antennae inflated (the specific name alludes to this); absence of a “tooth” on venter VII; four pairs of symmetrically arranged black spines in distal part of phallus; and a larva without medio-dorsal plates on abdominal segments II-VII and with one pair of plates on VIII.



*Leucotrichia termitiformis* BOTOSANEANU n. sp.  
(Figs 16-20)

*Material:*

III: 1♂ (holotype); III B: 1♂ metamorphotype (paratype), larvae, praepupae, pupae; IX: larvae, praepupae, 1 pupa.

*Description of ♂*

A very large species: length of forewing 3.9 mm. 3 ocelli. Antennae normal, 24 segments, no paler distal segments; just ventrally from antennal roots, a tuft of black setae. Frontally on head numerous whitish thickened setae, replaced by black setae in the occipital zone. Forewings dark brown; apparently (material in alcohol!) no green spots on wings or other parts. Tegulae with dense, thickened, whitish setae (also with some black ones). Genitalia (figs 16 – 19). Venter VII with short median appendage with parallel margins (not spatulate), from conspicuous triangular base. Segment VIII ventro-distally broadly bilobed, excision between the lobes clearly angular. Segment IX slightly longer than broad, proximally with very slight emargination of dorsal margin, and with extremely long but only moderately broad sinus of ventral margin (sinus which almost completely divides the sternite in two parts); dorsum IX mostly dark but with distinctly paler distal part; from latero-distal angles of segment IX, on each side, a strong, trianguloid, black sclerite (sometimes interpreted in *Leucotrichia* as segment X), these sclerites directed ventrad and mediad. To these sclerites is attached a complex of ventral and medio-distal plates apparently present in all *Leucotrichia*: at the lowermost level a plate (3 in fig. 16; fig. 18) probably resulting from coalescence of the two inferior appendages, devoid of a dorsal tooth at midlength in lateral view, medio-distally with a short sinus and with a pair of rather long lateral spines at the bottom of its distal third; at a more superior level a narrow tongue-shaped plate (2 in fig. 16) slightly widened distally and slightly trilobed at apex; at the uppermost level a plate (1 in fig. 16) having roughly the shape of a mushroom; it is presently not possible to decide what belongs to segment IX and, respectively, to segment X, from these two last plates. Phallic apparatus showing (dorsal view) the following parts from apex to base: a membranous part having latero-distally a pair of rather pale sclerites; a conspicuous black sclerite with the shape of an inverted U; proximally to this the phallus is somewhat swollen, with 2 conspicuous spherical tubercles from which a pair of extremely slender rods project proximad.

*Description of larva and pupal case.*

In extension the full-grown larva attains 7-8mm. No blue-greenish pigment. The shape is remarkable: abdominal segments V-VIII enormously developed, without conspicuous difference (and strangulation) between VI and VII or VII and VIII (this reminds of the larva of *Anchitrichia duplifurcata* FLINT: GUAHYBA, 1991). Anterior part of frontoclypeus and lateral margins of pro-

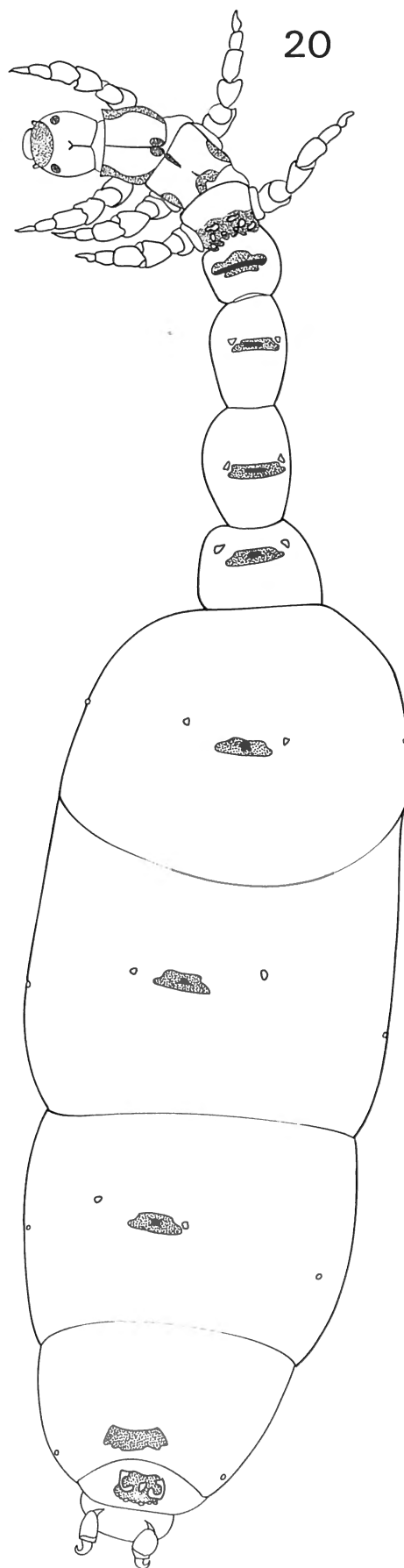


Fig. 20 – *Leucotrichia termitiformis* BOTOSANEANU, n. sp., last instar larva.

notum black; posterior half of metanotum "marbled". Fig. 20 shows the shape of all medio-dorsal abdominal sclerites; on segments II-IV there are relatively large lateral sclerites near the anterior corners of the medio-dorsal sclerites; on V-VIII these are smaller and more distant from the medio-dorsal sclerites; plate of segment IX relatively small, with distinct pattern of pale and dark patches.

In the pupal case exactly the same situation was found as in *L. fairchildi* with respect to the emergence hole, and lid.

#### Notes

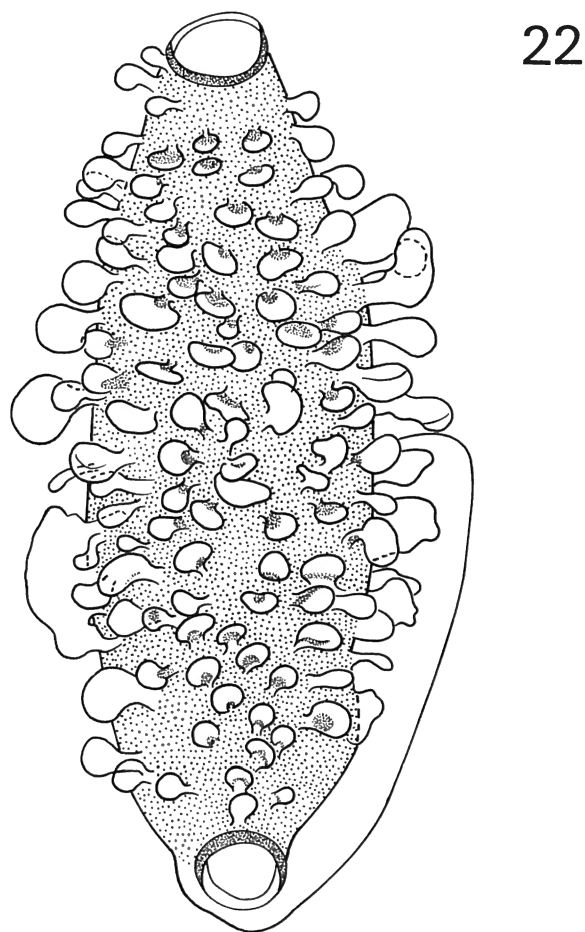
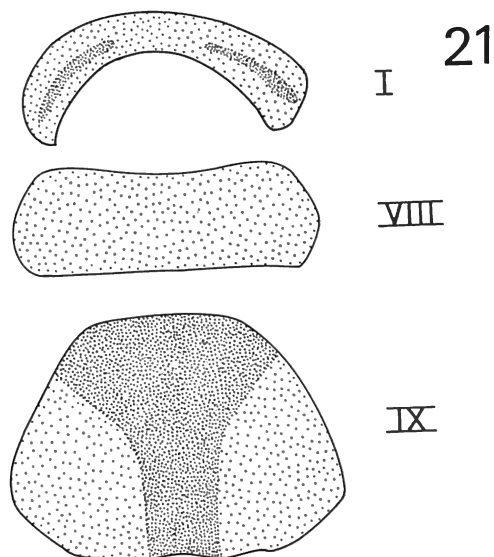
This is possibly the sister-species of *L. viridis* FLINT, 1967 (FLINT, 1967a; known from Mexico, Guatemala, El Salvador, Panamá). Many small differences will enable distinction of the ♂ from that of *viridis*: larger size (forewing length in *viridis*: 3 mm); antennae without subapical series of pale segments; no green setae on forewings, head, tegulae (but: the only perfect adult specimen of *termitiformis* is in alcohol!); postero-mesal process on venter VII not spatulate; posterior lobes of sternum VIII broader, excision between them angular – not rounded; segment IX only with very slight excision of dorsal proximal margin; clasper without dorsal tooth at midlength; and, especially, phallus quite different in several details (compare with fig. 13 in FLINT, 1970). The name reminds of the typical "termitiform" shape of the posterior abdominal segments of the larva.

*Leucotrichiini* (certainly or very probably *Leucotrichia* spp.): specimens not surely associated.

CASE 1. *Leucotrichia* sp. Material: IX, 3 larvae, 3 cases (in one of them a few larval sclerites). This is a very small species; without pigment; body shape typical for *Leucotrichia*. Thorax very pale; metanotum with triangular emargination of posterior border. The medio-dorsal abdominal sclerites (fig. 21) are as follows: on I a strongly curved transverse band; on II-VII narrow stripes, a little bit stronger on VI and VII; on VIII a transverse plate with oblique lateral margins; on IX a trapezoidal shield, anterior margin much shorter than posterior margin, an important darker zone medially. From the 3 cases, one (with the larval sclerites) was certainly abandoned by the pupa, and had a perfectly round hole and lid exactly like in *fairchildi* and *termitiformis*. The 3 cases are really extraordinary (fig. 22): on their surface they have a larger or smaller number of remarkable excrescences from silk; most of these are round or oval and have a pedicel, those on the margins are the largest, and sometimes coalescent, forming a "hem" certainly used in fastening the case.

CASE 2. ? *Leucotrichia* sp. Material: III, 1 ♀. Length of forewing: 2.7 or 2.8 mm. Apparently 3 ocelli, but median one very small, indistinct. There is a complex of internal sclerites (fig. 23) which may be characteristic.

*Two new species belonging to a new hydroptilid genus.*



Figs 21-22 – *Leucotrichia* sp. (21: sclerites of larval abdominal dorsa; 22: pupal case).

This new genus belonging either to Stactobiini or to Leucotrichiini, will be described (by S.C. Harris, L. BOTOSANEANU & O.S. FLINT, Jr.) to include several insular or continental Neotropical species, including one

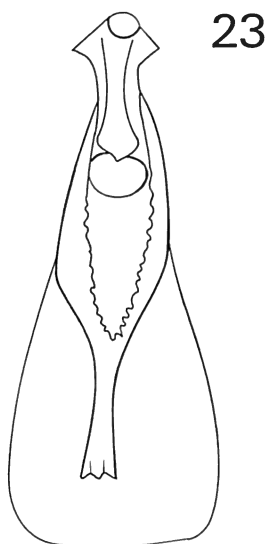


Fig. 23 – ? *Leucotrichia* sp., ♀, internal abdominal sclerites.

from Trinidad and one from Tobago, both discovered during the trichopterozoological study of these islands in April 1991. It is probable that both would have been put earlier in *Alisotrichia* FLINT. One of these species was caught in many specimens only on Trinidad, in the following localities: I (23 ♀), II (1 ♂, 5 ♀), III (26 ♂, 28 ♀) VIII (4 ♂, 1 ♀), IX (3 ♂, 1 ♀). The second species was taken in only one locality on Tobago: XXIII (3 ♂, 1 ♀).

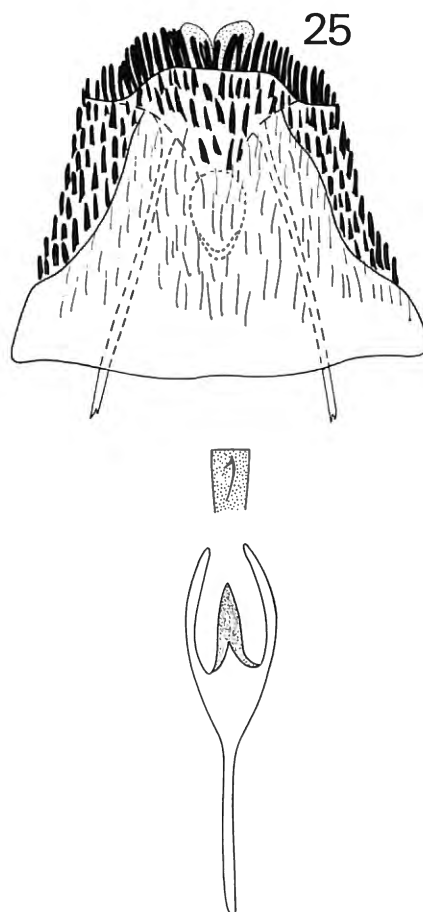
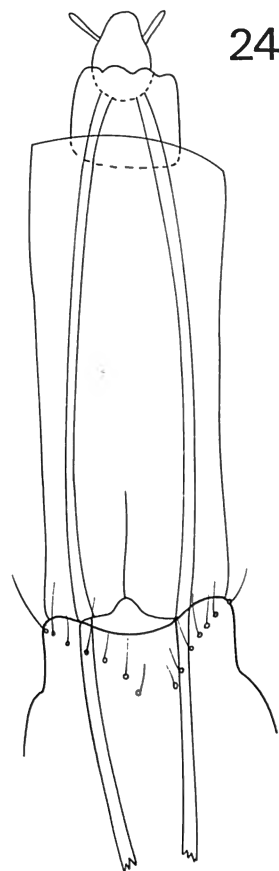
*Hydroptilidae* g. sp. (*Rhyacopsyche* sp.?)  
(figs 24-25)

*Material:*

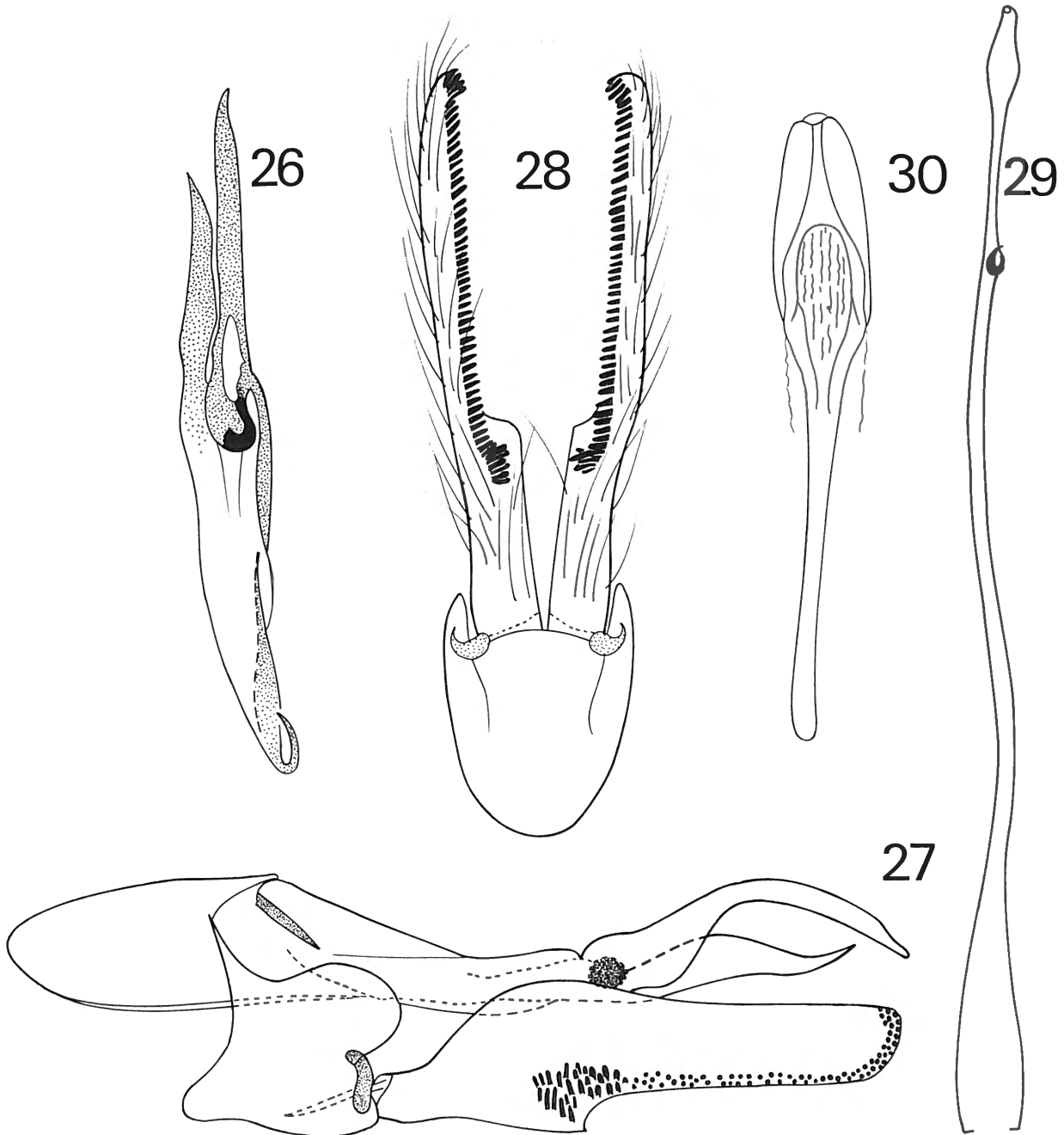
IX: 1 ♀

*Description of ♀*

Length of forewing: 1.75 mm. 3 ocelli. Head normal, posterior warts not loose. Antennae normal, very short, of 18 segments. Spurs 1, 3, 4. Wings acuminate. Mesoscutellum "brilliant-shaped", transversally divided, posterior "wall" obsolete in middle. Metascutellum roughly pentagonal. Sternite VI with minute point. Segment VII highly modified: dorsum finishing in two lobes separated by rather shallow sinus; venter very characteristically shaped: trapezoidal, medio-distally protruding (from below this part, a pair of rounded, rugose lobes), laterally with shallow depressions; very numerous



Figs 24-25 – *Hydroptilidae* g. sp. (*Rhyacopsyche* sp.?), ♀  
(24: distal part of segment VII + segments VIII-X, dorsal; 25: spermathecal sclerites in segment VI -below-, point on sternite VI -centre-, and segment VII -above-, ventral).



Figs 26-30 — *Ochrotrichia (O.) oblongata* BUENO & SANTIAGO, 1992 (26: ♂ segment X, dorsal; 27: ♂ genitalia, lateral; 28: ♂ sternite IX and gonopods; 29: phallic apparatus, ventral; 30: spermathecal sclerites of ♀).

short, thickened, very dark setae are everywhere on the venter, but especially in the lateral depressions and on the distal parts; internally, a complex of sclerotized structures on which the roots of the extremely long apodemes are implanted (apodemes almost reaching abdominal segment I!); in lateral view, segment VII has distally a rather deep sinus separating the venter from the latero-distal lobe. Segment VIII extremely long, cylindrical, proximodorsally with incomplete longitudinal suture, and with pair of apodemes as long as those of segment VII. Segment IX very small, nearly quadrate. Segment X

pyriform, with pair of papillae. Inside segment VI, complex of spermathecal sclerites with rather long shaft.

#### Notes

This is an intriguing specimen. Practically all non-genitalian parts agree with the diagnosis of *Rhyacopsyche* Müller in FLINT (1971). *Rhyacopsyche* ♀♀ (FLINT, 1971; ANGRISANO, 1989) have, too, highly modified genitalia. Nevertheless, important differences become evident when the genitalia of our specimen are compared with descriptions in the above mentioned publications,

where segment VIII (not VII) is strongly modified, and the "very long internal rods" belong to VIII and IX (not VII and VIII). At our request, Dr. O.S. FLINT, Jr., has re-examined ♀ specimens of *Rhyacopsyche* in the U.S.N.M. collections, with the result that there is a sternal point (in his opinion on sternum VII !; in FLINT, 1971, no such point is mentioned). The spermathecal sclerites of our specimen are very similar to those described for *R. yatay* ANGRISANO, 1989, another point of similarity being the presence of strongly thickened setae. It is possible that the interpretation of the abdominal segments in FLINT (1971) and ANGRISANO (1989) is not the correct one. For the time being, we see no better solution than considering, with some doubt, this ♀ as being a *Rhyacopsyche*.

*Ochrotrichia (O.) oblongata* BUENO & SANTIAGO, 1992  
(figs 26-30)

*Material:*

I: 3♂; VIII: 2♂; IX: 4♂; X: 1♂.

*Redescription of ♂*

Length of forewing: 2.3 – 2.5mm. Venter VII with very fine, laterally compressed "tooth". Segment IX: tergite oval in lateral view, considerably more strongly protruding anteriorly than the sternite; sternite with the shape of a shield, with strong, rounded latero-distal lobes. Segment X strongly developed and sclerotized: from a simple common basal trunk a pair of long, strong, strongly asymmetrical distal appendages (left one longer, curved ventrad, broad basally and slender distally; right one shorter, rather broad with apex slender and pointing dorsal). Inferior appendages as long as segment X, margins of distal 2/3 parallel, blunt at apex; ventro-internal margin with right-angled excision separating a broader basal third from the very slender distal two thirds; very setose (fine, pale setae) and along the ventro-internal margin with long, continuous row (sigmoid in lateral view) of short black spines. Phallus a very slender tube (excepting the basalmost part), apically with a characteristic ampullar swelling, preapically with a minute external hook.

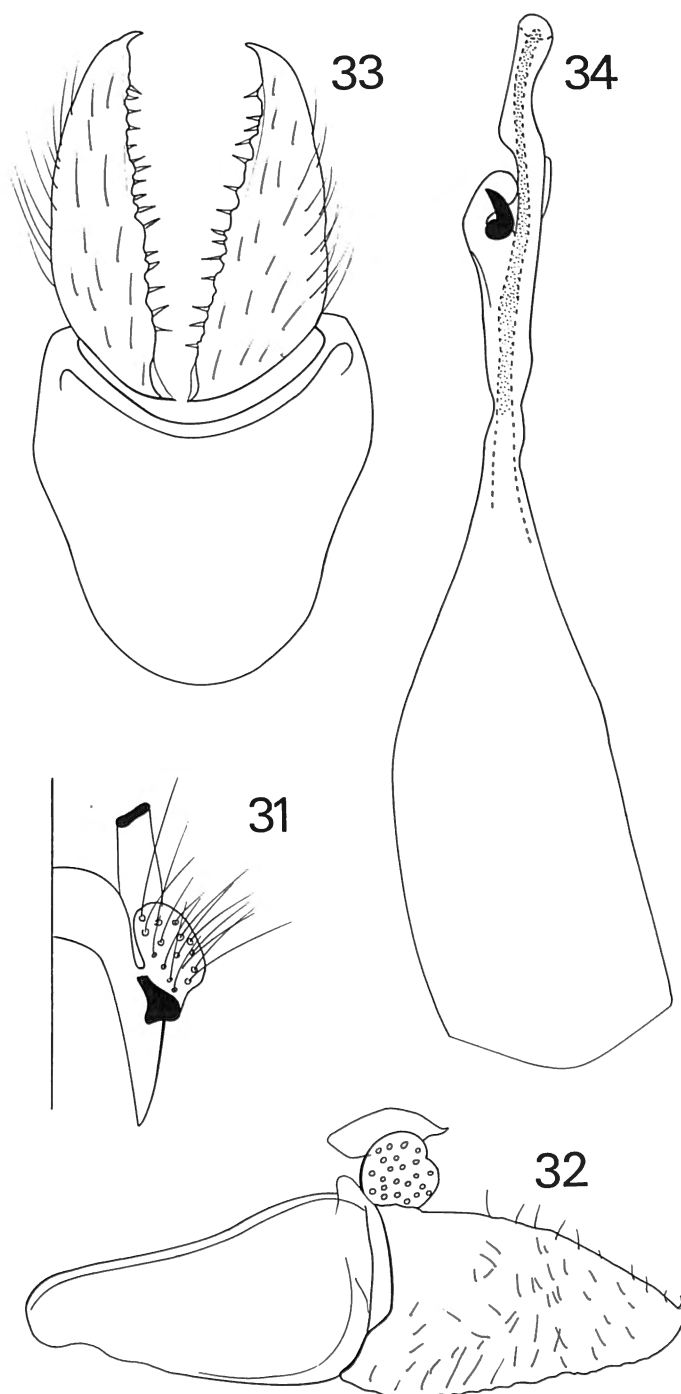
*Description of ♀*

Length of forewing: 2-2.5mm. Spermathecal sclerites: fig. 30.

*Notes*

There is apparently only one described species with which *O. oblongata* is more closely related: *O.(O.) aldama*

(\*) Several ♂♂ specimens belonging to an undescribed species of *Ochrotrichia (O.)* closely related to *oblongata*, were caught in localities I and II; this species, also taken by Dr. O.S. Flint during a recent trip to Trinidad, will be described elsewhere. Females belonging to these two species could not as yet be surely associated, and are not mentioned here.



Figs 31-34 – *Ochrotrichia (M.) platigona* BOTOSANEANU, n. sp., ♂ (31: left half of segment X, dorsal; 32-33: genitalia, lateral and ventral; 34: phallic apparatus, dorsal).

MOSELY, 1937, from Mexico (MOSELY, 1937; FLINT, 1972). These two species share segment X of the ♂ cleft in two strong appendages, as well as the elongate gonopods; but *oblongata* is clearly distinguished from *aldama* by many details of the two appendages of segment X, and especially by the gonopods, which are much

more elongate and with a different disposition of the black spines (lateral view) and (ventral view) much more slender, with the right-angled excisions along their inner margins situated much more basally than in *aldama*. *O.* is probably a widely distributed representative of the genus on Trinidad.

*Ochrotrichia (Metrichia) platigona* BOTOSANEANU n. sp.  
(figs 31-34)

*Material:*

III: 1 ♂ (paratype), 2 ♀ (association not sure!); VIII: 1 ♂ (paratype); XXIII: 1 ♂ (holotype).

*Description of ♂*

Length of forewing: 1.9-2.0mm. Very dark (brown) species. Although the abdomen is very setose, there are no special setal brushes on any of the segments. Tergum VIII (or other pregenital terga) not modified. Large, very dark (easily seen also on non-prepared specimens), easily extruded pairs of pouches filled with numerous black filaments in segment III (fastened at limit with segment IV) and in segment IV (at limit with V); moreover, one pair of very small, paler, digitiform pouches without filaments, in segment V (at limit with VI). Venter VI with fine, laterally compressed "tooth".

Genitalia. Segment IX completely open dorsally. In lateral view, size and shape of segment IX and of inferior appendage curiously similar, the one being like the reflected image of the other. Segment X: fig. 31. Gonopod large and broad, almost triangular (foliaceous) in lateral view, at apex with a minute hook directed dorsad and mediad; medio-ventral margin with short, pale spines. Phallus with extreme contrast between the proximal broad and the distal narrow half; at midlength of the narrow part, on the right side, a complex of two formations: a club-shaped protuberance, and a very short, stout, slightly-curved, black spur; distalmost part twisted, with wide opening.

*Notes*

This new *Metrichia* does not enter in one of the (probably non-monophyletic) species-groups proposed by FLINT (1972: 11). It is distinct from all other known species by the presence of three pairs of intraabdominal androconial pouches, but can be easily recognized, too, by the shape of gonopod and phallus. Apparently no close relative is known.

The specific name was coined from (Greek) Πλατύνε = broad, referring to the shape of the inferior appendage.

*Ochrotrichia (Metrichia) favus* BOTOSANEANU n. sp.  
(figs 35-40)

*Material:*

VIII: 1 ♂ (holotype)

*Description of ♂*

Length of forewing: 1.6mm. In the basal part of its lower face the forewing has a highly characteristic androconial formation: a large, swelled zone with alveolar structure (pentagonal cells), with a row of rather long setae from its lower border – possibly for spreading pheromones produced in the androconial organ (whose alveolar structure disappears after immersion in glycerin). Dorso-laterally on segments V and VI numerous very long, straight setae. A pair of large androconial pouches of complex shape and covered by dense, minute spinules (fig. 36) apparently between segments V and VI. Venter VII with strong median "tooth". Dorsum VII unmodified.

Genitalia. Segment IX completely open dorsally, elongate, strongly narrowing proximally. Segment X: figs 37 and 38. Inferior appendages only half as long as segment IX, concave medially, with rather complex roots (ventral view); a large and deep distal sinus divides them (lateral view) into a shorter but much broader superior lobe, and a slightly longer, but narrower inferior lobe, both with pale spines internally. Phallus extremely long: twice as long as segment IX + gonopods!; its broad basal part is comparatively very small, most of it being a straight tube; apical part slightly broadened, with complex structure of membranous and slightly or more strongly sclerotized parts, and with two dissimilar, relatively small spurs: more proximal one slightly sinuous, more distal one strongly curved, pointing dorsad; through most of the phallus runs a dark ductus ejaculatorius (confused with a "long spine" in several descriptions of *Metrichia*).

*Notes*

*O.(M.) favus* n. sp. is very well characterized, for instance, by the androconial zone with alveolar structure on the forewings, and by the complex form of the intraabdominal androconial pouches. It is difficult to discover its affinities; the huge setae on abdominal segments V and VI are also present in FLINT's (1972) "*penicillata*" and "*exclamationis*" groups – but several other peculiarities of the new species do not allow inclusion in these "species-groups"; intraabdominal pouches between segments V and VI are present in rather many, non-related species. An androconial system (not alveolar but consisting of scale-like trichomae) was found also in a Cuban species: *excisa* KUMANSKI, 1987, which also has strongly excised gonopods.

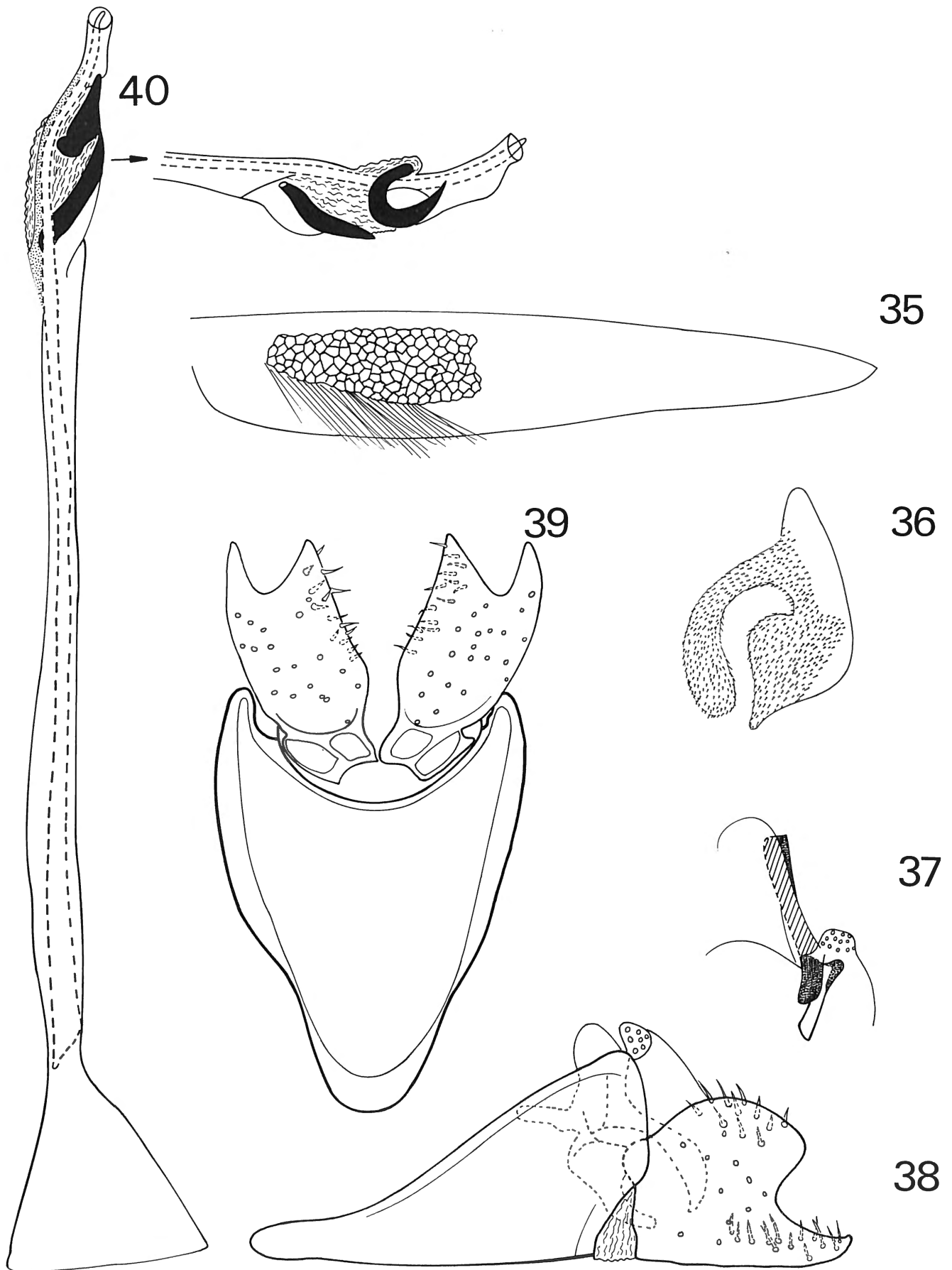
Favus (Lat.) = honeycomb, alluding to the structure of the androconial organ of the forewing.

*Neotrichia pequenita* BOTOSANEANU, 1977

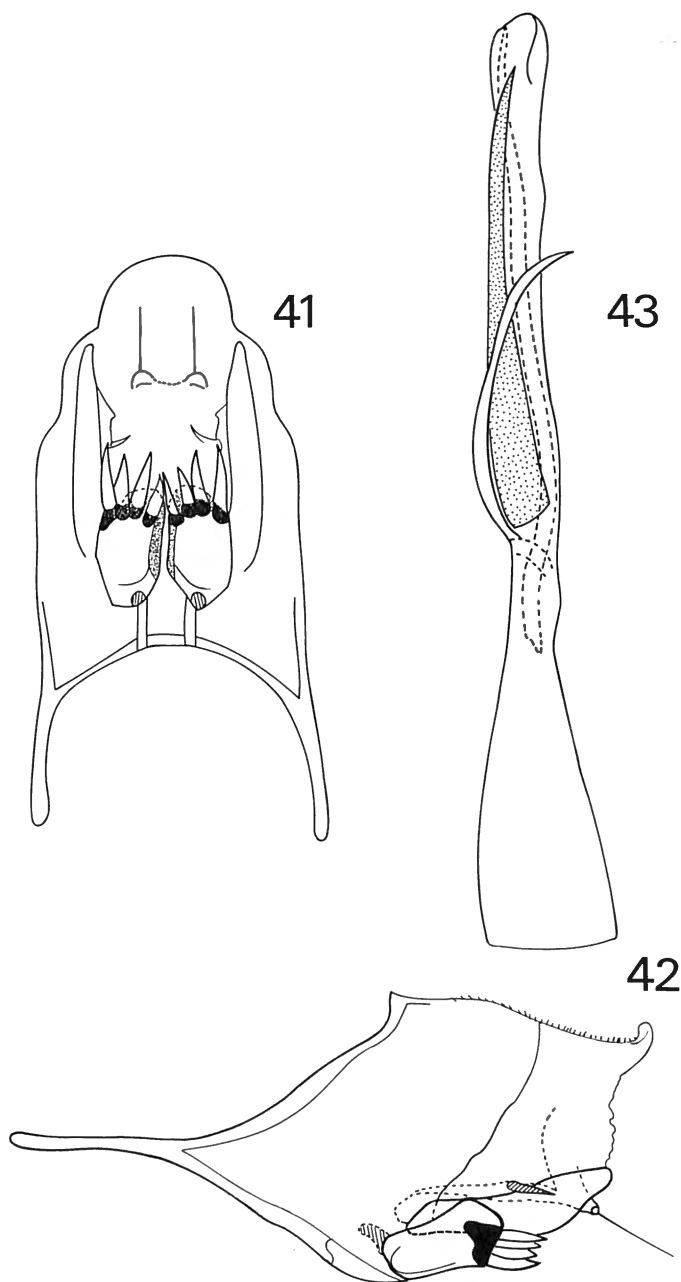
*Material:*

XIII: 2 ♂, 1 ♀; XVII: 8 ♂, 3 ♀.

Described and redescribed by BOTOSANEANU (1977, 1990), this species was previously known from Cuba, Haiti and Barbados.



Figs 35-40 – *Ochrotrichia (M.) favus* BOTOSANEANU, n. sp., ♂ (35: forewing, lower face; 36: left intraabdominal androconial pouch, ventral; 37: half of segment X, dorsal; 38-39: genitalia, lateral and ventral; 40: phallic apparatus, dorsal, arrow pointing to lateral view of its apex).



Figs 41-43 — *Neotrichia armata* BOTOSANEANU, n. sp., ♂ (41-42: genitalia, ventral and lateral; 43: phallic apparatus, dorsal).

*Neotrichia armata* BOTOSANEANU n. sp.  
(figs 41-43)

**Material:**

XXIII: ♂ holotype, 36 ♂ paratypes.

**Description of ♂**

Length of forewing: 1.3-1.5mm. On the pale abdomen, the black distal margin of the gonopods is easily distinct in ventral view even in non-macerated alcohol specimens. Genitalia. The proximal lateral projections of segment IX are long and slender; dorsally and ventrally the pro-

ximal margin of segment IX is fairly well excised. In dorsal and ventral view, segments IX + X have a curious shape "in three stores". Segment X mostly membranous. Bracteoles simple, elongate. Placed mediad from the bracteoles (figs 41-42) is one pair of appendages with an apical point and a small preapical spine. Medially there is a "subgenital plate" (incompletely shown in fig. 41) with, at its distal margin, a pair of rather long setae on small protuberances. Most characteristic are the inferior appendages: stout, somewhat angular, almost touching medially, distal zone distinctly blackened; on each gonopod are subapically inserted four strong pale spines. The thickenings connecting the gonopods to segment IX margin are extremely short. Phallus simple with (besides the slender paramere, of course) only one very long (half of phallus length) pale spine which is much broader in its basal than in its distal section.

**Notes**

The ♀ could not be surely associated, because many ♀ ♀ of two different species were caught in the same locality (XXIII) in company of ♂ ♂ of 2 different *Neotrichia*. But it is quite possible that the ♀ of *N. armata* n. sp. is that which will be described later in this paper as "*Neotrichia* ♀ sp. B".

It was not possible to find close relatives of this species, or to range it in one of Marshall's (1979) species-groups (it should be added that HARRIS, 1990, is negative about the reliability of these species-groups). Maybe (?) it is not very far from *pequenita* BOTS. which has relatively similar broad inferior appendages, but it can easily be distinguished from it by numerous features of the ♂ genitalia, and especially by the impressive distal armature of spines of the gonopod. It is this peculiarity of the new species that has suggested the specific name: *armatus-aum* (Lat.) = armed.

*Neotrichia nesiotetes* FLINT & SYKORA, 1993  
(figs 44-48)

**Material:**

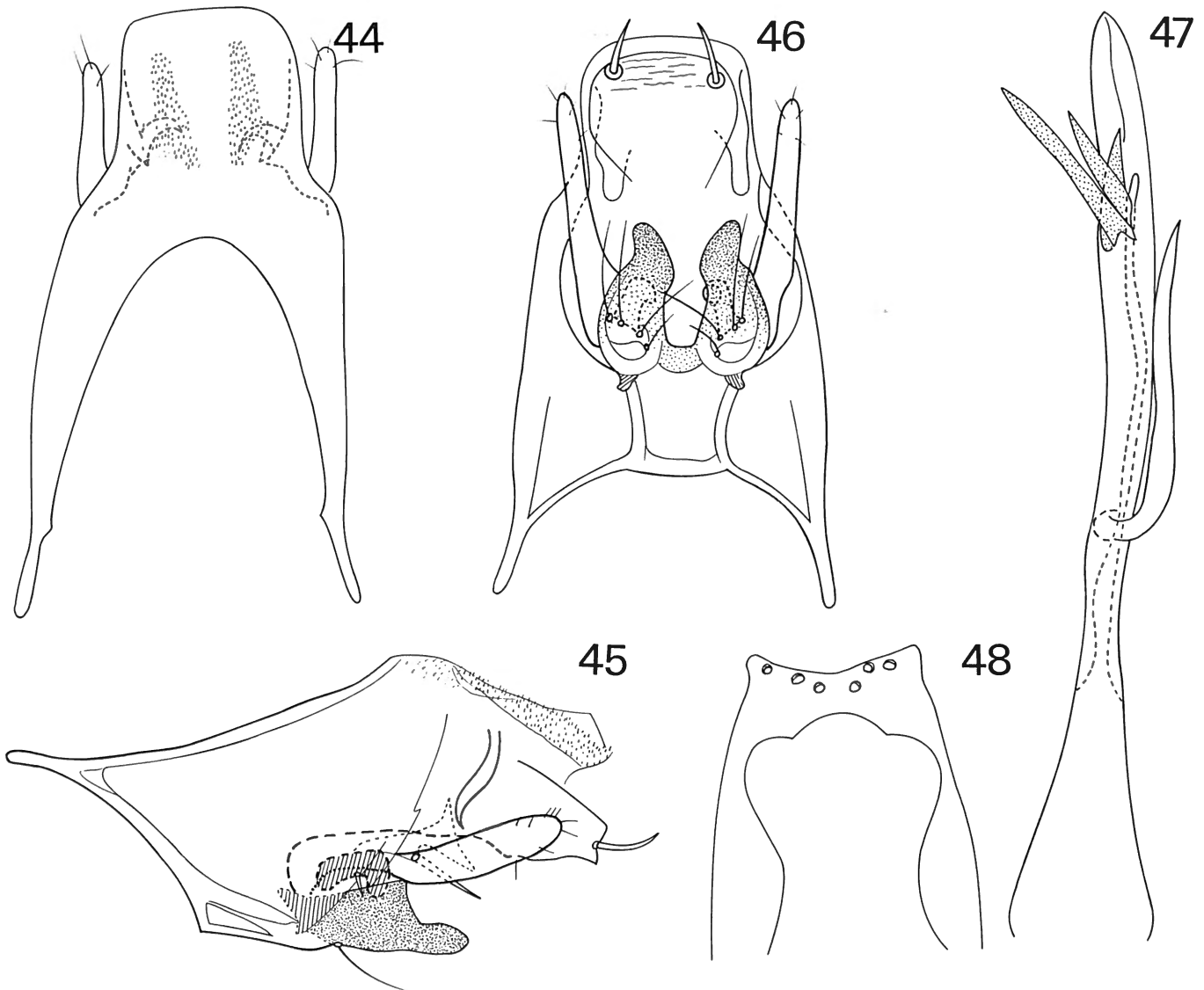
XVII: 4 ♂, 16 ♀.

**Redescription of ♂**

Length of forewing: 1.4-1.5mm.

Segment IX with extremely deep proximal excision dorsally, with much shallower excision ventrally, laterally with short proximal projections; longitudinal median thickenings on sternum IX delimiting an almost quadrate field. Segment X roughly rectangular, mostly membranous. Bracteolae well developed, simply elongate. Quite laterally from distal part of segment IX there is a pair of appendages whose shape is well seen in fig. 45: each of them has distally a strong triangular projection and proximad to this a very small one supporting a strong seta. Viewed ventrally, the quite distally placed subgenital plate is roughly rounded, distal part less strongly sclerotized, with a pair of short, strong latero-distal setae;





Figs 44-48 – *Neotrichia nesiotetes* FLINT & SYKORA, 1993. (44-46: ♂ genitalia, dorsal, lateral, ventral; 47: phallic apparatus, dorsal; 48: venter VIII of ♀).

in lateral view the plate is angular, and below the lateral seta there is a minute point directed ventrad. Inferior appendages much darker than all other genitalia parts, of complex structure, consisting of a ventral and of a dorsal “branch”; the ventral “branch”, which is the largest, has in ventral view a highly characteristic shape: its proximal part is a rather broad, roughly oval plate, its distal part being much narrower, twisted first mediad, then laterad, with blunt tip; the equally dark dorsal “branch” is much smaller, like a strong tubercle, in lateral view with proximal part horizontal and distal part strongly curved ventrad (turned mediad in ventral view). Phallus with widened proximal part relatively short (less than 1/3 of total length); paramere strong; ductus ejaculatorius not very dark; a good deal before the apex there are 3 pale spurs (one slightly shorter and broader is possibly internal; the two others are external, starting from a common root).

#### *Description of ♀*

Length of forewing: ca. 1.5mm. Most of venter VIII is covered by a large sclerotized plate, distinctly trilobed distally, only slightly narrowed proximally.

#### *Notes*

According to FLINT & SYKORA (1993), this species, described from Grenada, is related to *N. pequenita* Botosaneanu.

#### *Neotrichia tauricornis* MALICKY, 1980

#### *Material:*

I: 2 ♀; IV B: 1 ♂, 1 ♀; XII: 1 ♂; XXII: 1 ♀.

Already known from Guadeloupe, Martinique, St. Lucia, Grenada and Colombia (Antioquia).

*Neotrichia unamas* BOTOSANEANU n.sp.  
(figs 49-53)

**Material:**

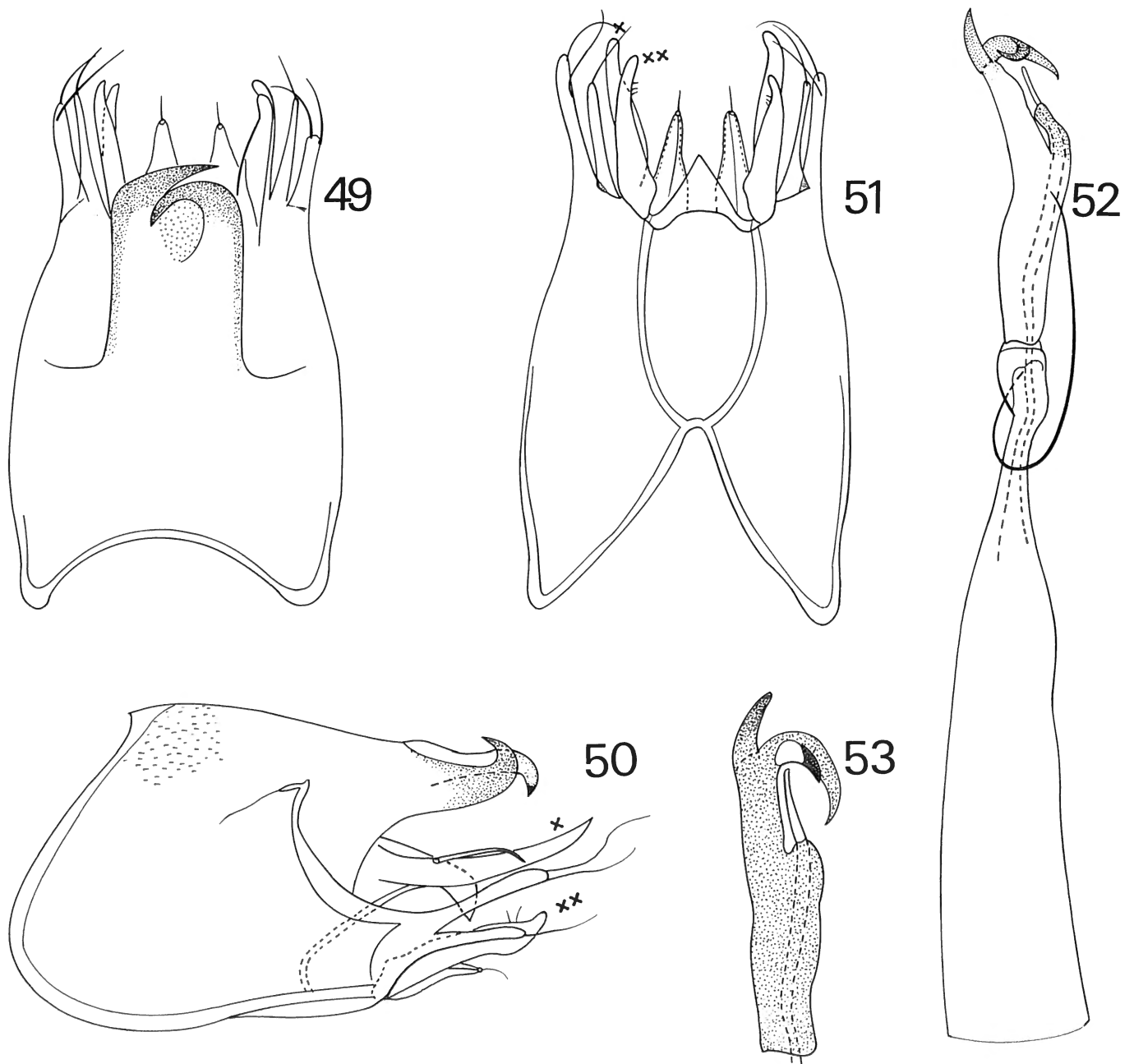
I: 1♂ paratype; X: 11♂ paratypes; XXIII: ♂ holotype, 79♂ paratypes.

**Description of ♂**

Length of forewing: 1.1-1.3mm.

Segment IX proximally with rather shallow, round dorsal emargination, and with very deep, triangular ventral excision; in lateral view massively rounded proximally. The following appendages are in relation with segment IX, from dorsal to ventral (see especially lateral

fig. 50): a median plate (subgenital plate) in lateral view finishing in a stout "beak" directed ventrad, with one pair of strong dorsal setae; a pair of rather long and strong, dorsad turned, glabrous blades (marked with X in figs 50-51), which cannot be properly interpreted; a pair of strongly forked appendages – the bracteoles – from the lower distal angle of segment IX, both branches digitiform, upper one slightly longer than lower one and with 2 apical setae (lower branch with one apical seta); one pair of strong appendages (XX in figs 50-51) placed laterally to the inferior appendages (maybe representing a lateral branch of them?), sinuous and with narrower tip slightly curved dorsad in lateral view, and with several anteapical setulae; the gonopods, which are



Figs 49-53 – *Neotrichia unamas* BOTOSANEANU, n. sp., ♂ (49-51: genitalia, dorsal, lateral, ventral; 52-53: phallic apparatus, and its distal parts in another specimen, dorsal).

rather short, triangular (pointed), with very slightly emarginate internal margin, rather widely distant medially, topped by short seta; between the gonopods one large triangular equilateral plate. The limit between segments IX and X (fig. 49) is in the middle of the genital capsule. Segment X elongate, with parallel sides, extremely modified in its distal parts where it has the shape of a pair of large asymmetrical hooks which lie on the tergite's surface – not protruding beyond it; left hook turned right (in lateral view: turned up), right hook turned left (in lateral view: turned down). Phallus with flask-like proximal half and complex, narrower, very dark distal part; part distad from the bulbous "neck" well separated from the rest; from the "neck" a very slender paramere; preapically on left side a short tube inside which penetrate ductus ejaculatorius whose end protrudes beyond opening of the tube; quite apically 2 strong (although short) external spurs, shorter one directed more or less distad, longer one turned to the left, curved, and with a small "annex hook" almost in the middle (there is some slight variability in the distal parts of the phallus: figs 52-53).

#### Notes

The ♀ could not be surely associated, because many ♀ ♀ of two different species were caught in the same locality (XXIII) in company of ♂ ♂ of 2 different *Neotrichia*. But it is quite possible that the ♀ of *N. unamas* n. sp. is that which will be described later in this paper as "*Neotrichia* ♀ sp. A".

Interestingly, this species is quite closely related with 3 Mexican species, two of which were described in MOSELY's genus *Dolotrichia* (MOSELY, 1937; MARSHALL, 1979: "*canixa*-group"), the 3rd one being described by BUENO SORIA & HAMILTON (1986). In all parts of the ♂ genitalia, only small – but nevertheless clear – differences allow distinction of these 4 sister-species; these differences will be enumerated below (presently some parts of the ♂ genitalia cannot be properly compared because of differences in style of descriptions and illustration in the various publications).

– From *N. canixa* MOS., 1937 (Chiapas): limit (dorsal view) between segments IX and X in middle of genital capsule in *u.*, much more distally in *c.* (in other words: in *u.* segment IX appendages have their roots at level with apex of segment X, in *c.* at level with base of segment X); appendages marked with X in figs 50-51: glabrous in *u.*, with strongly fringed margin in *c.*; upper branch of bracteole with blunt apex in *u.*, finishing in a more slender finger in *c.*; subgenital plate (lateral view) finishing in a stout "beak" in *u.*, in a slender «beak" in *c.*; "lateral branch of gonopod" (XX in figs 50-51) much stronger (lateral and ventral view) in *u.* than in *c.*; lobe between gonopods large and triangular in *u.*, small and rounded in *c.*; distal margin of sternum IX not excised in its middle in *u.*, excised in *c.*

– From *N. xicana* MOS., 1937 (Chiapas, same locality as *canixa*): appendage marked with X in figs 50-51 with completely different shape, simply blade-like in *u.*, in *x.*

with very broad base, sinuous shape, bifid apex; apex of subgenital plate (lateral view) more slender and sinuous in *x.*; upper branch of bracteole twice as long as lower branch in *x.*, shorter in *u.*; triangular lobe between gonopods much larger in *u.* than in *x.*

– From *N. maria* BUENO SORIA & HAMILTON, 1986 (Oaxaca): base of segment X (dorsal view) in middle of genital capsule in *u.*, more distad in *m.*; field delimited by the median thickenings on sternite IX much narrower proximad in *u.* than in *m.*; proximal ventral excision of segment IX triangular in *u.*, rounded in *m.*; subgenital plate (lateral view) stout in *u.*, very slender apically in *m.*; horns of segment X completely different (in *m.*: pair of simple similar horns directed dorsad); paramere much longer in *u.* than in *m.*; longer apical phallic spur in *m.* apparently (?) without the small "annex hook" observed in *u.* It should be added that in the original description of *N. maria* details of segment X are erroneously described as belonging to segment IX (Dr. J. BUENO SORIA, Mexico City, agrees with this, i.l.).

We cannot find close affinity with other species. BUENO SORIA & HAMILTON (1986) compare *N. maria* with *N. dikeros* FLINT, from Argentina and Uruguay, and with *N. hiaspa* (MOSELY) from Chiapas – but there is certainly no close relationship between these species. There is, moreover, no close relationship between the group of 4 sister-species mentioned above and some other species belonging (or: maybe belonging) to the "*canixa*-group". "Una mas" (Spanish) = one more.

#### *Neotrichia* ♀ sp. A (fig. 54)

#### Material:

I: 1 ♀; V: 1 ♀; XXIII: 16 ♀.

This is the ♀ either of *N. unamas* n. sp. or of *N. armata* n. sp., but more probably of the first one.

Distal margin of venter VII angular, covered by very dense, dark, thickened setae. Venter VIII distally roundly excised; on its surface a pair of strongly sclerotized, small, vertical, widely distant plates with black tips – well distinct also in non-macerated alcohol specimens. The apodemes of segment VIII originate at level with these plates.

#### *Neotrichia* ♀ sp. B (fig. 55)

#### Material:

XXIII: 39 ♀

Also this ♀ may belong either to *N. unamas* n. sp. or to *N. armata* n. sp., but more probably to the second one. Distal margin of venter VII roundly excised, with very pale, silky setae. Venter VIII angularly excised distally. On venter VIII a large, pale plate, dome-shaped but with small disto-median slightly darker point; basally this plate

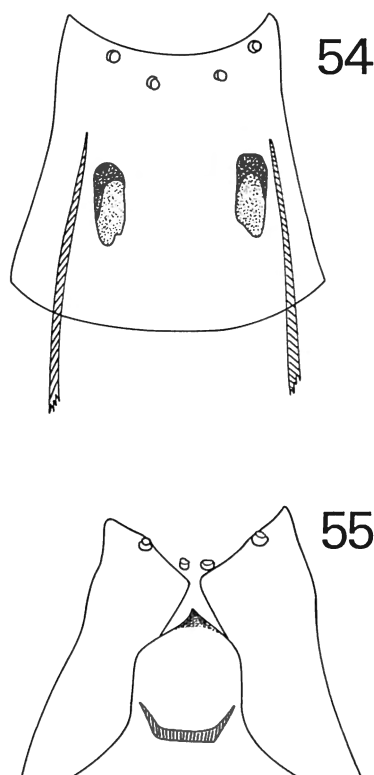


Fig. 54 – *Neotrichia* ♀ sp. A (*N. unamas?*), venter VIII.  
 Fig. 55 – *Neotrichia* ♀ sp. B (*N. armata?*), venter VIII.

considerably widenes, the widened part being separated from the dome-shaped one by a transverse ridge. Distally from the plate the venter is medially split.

*Hydroptila veracruzensis* FLINT, 1967  
 (figs 56-61)

**Material:**

I: 37♂, many ♀; II: 1♂ (and 1 larva); III: 3♀; IV B: 3♂, 7♀; IV C: 23♂, 10♀; V: 130♂ + ♀ (mostly ♀); VII E: 1 metamorphotype ♀ (and larvae, praepupae, pupae); VIII: 4♀; IX: 2♂, 9♀; X: 19♂, 92♀; XI: 12♂, 8♀ (and larvae maybe belonging to this species); XII: 3♀; XVI: 3♀.

**Description of ♀**

The female was not previously described. It has (fig. 61) a characteristically shaped chitinous plate on abdominal venter VIII; at slight magnifications this appears roughly as a longitudinally placed rectangle, but at stronger magnifications it becomes apparent that it is slightly broader posteriorly, that its lateral margins are slightly sinuous, and that it has posteriorly two small lighter fields.

**Notes**

This species was described from Mexico (Vera Cruz, San Luis Potosí: FLINT, 1967a) and a redescription based on material from different provinces of Mexico was published by BUENO SORIA (1984). Although these descriptions do not provide many details, and despite the differences in style of the illustration, it is practically beyond doubt that the most abundant *Hydroptila* on Trinidad is *veracruzensis*: if there are differences from Mexican specimens these are certainly extremely slight; should be mentioned only the fact that the lower margin of the clasper in lateral view does not show, in specimens from Trinidad, the slight downwards projection seen in the type material. The species belongs to the large *consimilis*-group. In the description of a closely related species from Colombia, *H. narifer*, FLINT (1991: 47) states that “Together with *H. grenadensis* FLINT, *H. bidens* FLINT, *H. coscaroni* FLINT, and *H. antilliana* FLINT, this species forms a distinctive subgroup in the genus *Hydroptila*” (a subgroup of the *consimilis*-group is certainly meant, and also *veracruzensis* belongs to it). FLINT (1991: 484) states that *H. grenadensis*, a species described from Grenada (FLINT, 1968) is “apparently widespread across northern South America and southern Central America”, being present also on Trinidad. Based on the fact that *H. veracruzensis* was found in large numbers from several localities on Trinidad, as well as on the fact that no one specimen of *grenadensis* could be caught during the 1991 travel (or seen in the Department of Zoology, St. Augustine) we had some doubt concerning the presence of *grenadensis* on this island. This doubt disappeared when, at our request, Dr. O.S. FLINT, reexamined some specimens in the U.S.N.M.: specimens from “Arima Cascade” proved to be *veracruzensis*, not *grenadensis* as they were labelled, whereas specimens from Simla (in the same Arima valley !) are clearly *grenadensis*. Both species are thus present on Trinidad, sometimes maybe in the same localities, but *veracruzensis* is by far the most frequently and abundantly represented. If *grenadensis* seems to have a wide distribution, *veracruzensis* is presently known only from Mexico and from Trinidad.

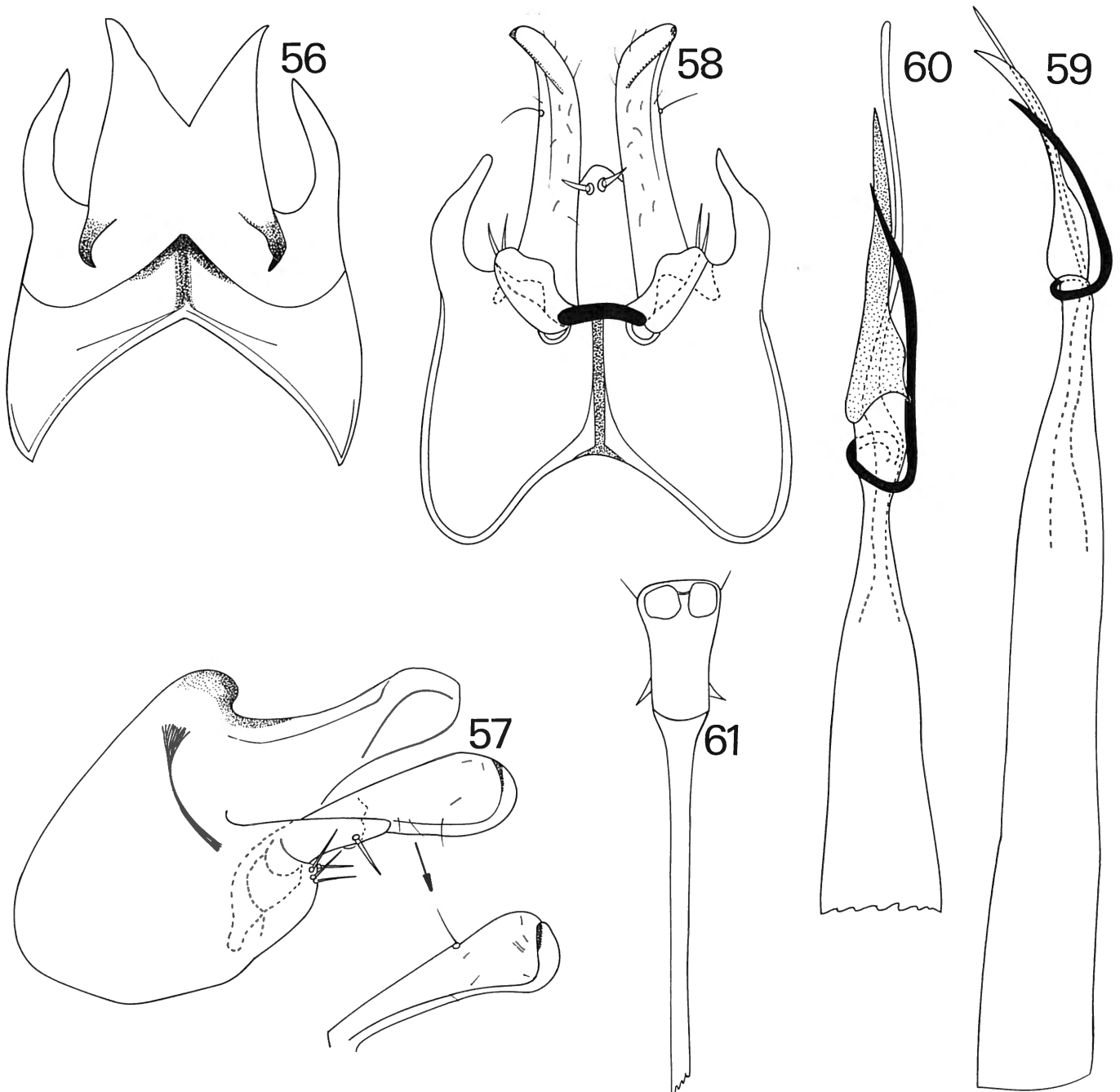
*Hydroptila acutissima* BOTOSANEANU n. sp.  
 (figs 62-67)

**Material:**

I: 1♀; X: 8♂, 38♀; XI: 13♀ (and larvae maybe belonging to this species); XII: 3♀; XXI: 1♂; XXII: 2♂, 2♀; XXIII: 3♂, 2♀. ♂ holotype and ♀ allotype from locality X: all remaining ♂ and ♀ specimens are paratypes.

**Description of ♂**

Forewing length: 1.9-2mm. The cephalic “scent-organs” are enormous; they consist of a very large spongy mass, certainly glandular, with an alveolar structure (hexagonal cells) at least at their surface, this gland being pro-

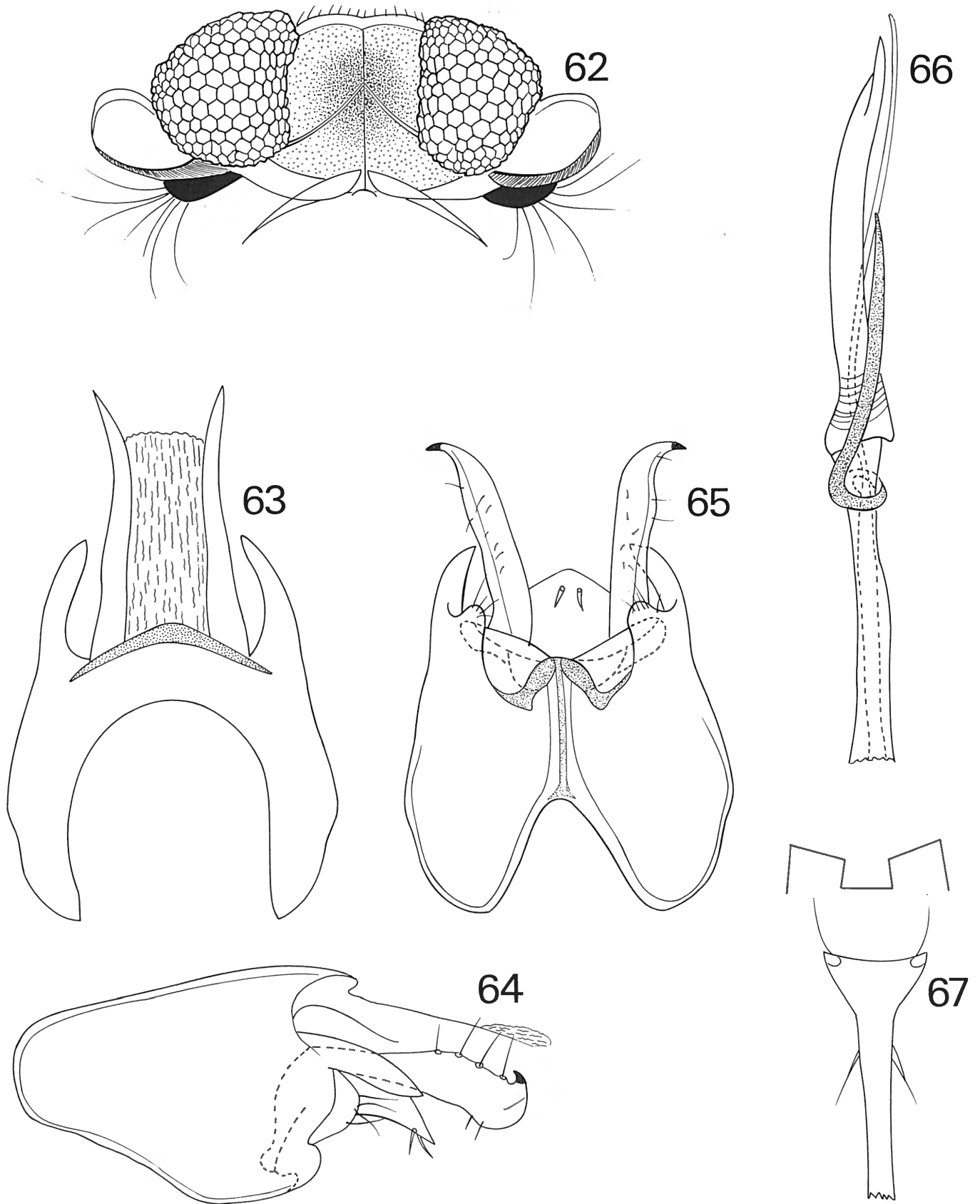


Figs 56-61 – *Hydroptila veracruzensis* FLINT, 1967 (56-58: ♂ genitalia, dorsal, lateral, ventral, in fig. 57 arrow pointing to slightly different view of gonopod; 59-60: phallic apparatus, and its more strongly enlarged apical parts, dorsal; 61: the plate on abdominal venter VIII of ♀, not cleared in KOH).

tected by a large “scent-organ cap” having on its surface an elongated setose wart (in black in fig. 62); when the scent-organs are completely extruded – this being often the case with alcohol specimens – a vast cavity becomes apparent in the occipital zone of the head.

Genitalia. Segment IX proximally with very broad and deep dorsal excision, and much smaller ventral excision. Dorsal limit IX/X marked by a narrow but laterally well developed, not very dark thickening. Segment X in dorsal view with sclerotized lateral parts ending in sharp

points, and with membranous central part. Most characteristic are the gonopods: in ventral view elongate, narrow, with slight preapical lateral swelling, and with sharp, blackened tip strongly curved laterad; in lateral view distal half distinctly broader than proximal half, with small preapical angle of the lower margin, sharp tip turned dorsad and proximad. Phallus extremely long, its part distad from the “neck” slightly sinuous, ending in slightly twisted, sharp tip; in the slightly widened “root” of this distal part, a spiral structure is seen; ductus ejaculatorius with long free distal part.



Figs 62-67 – *Hydroptila acutissima* BOTOSANEANU, n. sp. (62: head of ♂ with scent organs extruded; 63-65: ♂ genitalia, dorsal, lateral -segment X incompletely represented-, and ventral; 66: distal parts of phallic apparatus; 67: distal limit of dorsum VIII of ♀ -above-, and plate on venter VIII of ♀ -below-).

*Description of ♀*

Forewing length: 1.9-2.5mm. Distal limit of dorsum VIII with characteristically angular median excision. Chitinous plate on venter VIII clearly calyciform.

*Notes*

One more species of the large *consimilis*-group. In the shape of the clasper (lateral, especially ventral) there is much similarity with a species from Brazil, *H. producta* MOSELY, 1939, or with one from Alabama, *H. chatanooga* Frazer & HARRIS, 1991; but this is not enough for allowing the conclusion that they are closely related species.

Acutissima = superlative from (Lat.) *acutus*, *a*, *um* (sharply pointed), reminding of the sharp points of tergite X, gonopods, and phallus.

*Hydroptila tobaga* BOTOSANEANU n. sp.  
(figs 68-73)

*Material:*

XXII: ♂ holotype, 2♂ paratypes, ♀ allotype, 3♀ paratypes; XXIII: 1♂ paratype.

*Description of ♂*

Length of forewing: 1.8-2mm. On the head there are "loose" occipital setose warts (dark, in contrast with the generally pale head), but "scent organs" are absent. Genitalia. Segment IX proximally with very broad but not very deep, rounded, dorsal and ventral excisions. Segment X with narrow and apically pointed latero-dorsal sclerites, most of its dorsal and lateral parts developed as conspicuous membranous mass. Gonopods in ventral view with quite complex shape: broad oblique basal part (the basal parts of the two gonopods almost touching medially on a short sector), followed distad by a narrower "neck", and then by a strongly capitate distal part with elongate and blunt tip, with rather strong, obtuse, medio-basal projection, and ventro-laterally with a black point placed in its proximal half; in lateral view a narrow proximal shaft is followed by the strongly dilated distal part, with the black point well distinct. Phallus exceedingly long, its complex distal part (i.e. distad from the root of the paramere) having only ca. 1/5 of the total length; just proximad from the paramere's root, a small swelling; the rather long paramere reaches the base of the apical hook of the phallus; the distal portion of the phallus is strongly developed, bulbous basally, then narrower, and ending in a hook two times twisted; the free part of ductus ejaculatorius is protected by a thin hyaline theca.

*Description of ♀*

Length of forewing: 1.8-2mm. The complex distal parts of segment VIII are strongly sclerotized and extremely dark, much darker than the rest of the body. Dorsum VIII finishing in two lateral lobes separated by a large

excision whose bottom is slightly sinuous. Venter VIII apically trilobed, round central lobe much larger than the more angular lateral lobes; the median sclerite on this venter is stout, cup-like; the most characteristic part of the ♀ genitalia is a large, roughly elliptical plate situated just distad from this median sclerite, and having a large, round, almost central black "nucleus".

*Notes*

This interesting new species is certainly closely related with *H. venezuelensis* FLINT, 1981, from Venezuela (in his description FLINT, 1981, mentions a Nearctic species, *protera* Ross, 1938, from Oklahoma, as being "most closely related to *venezuelensis*"). In the ♂, the new species can be distinguished from *venezuelensis* by: a different ventral shape of the gonopod (more strongly produced distal capitate part, black point placed more basad, and less acute); a different position of the sclerotized "frame" of segment X, which is latero-dorsal in the new species, but was described and figured as latero-ventral in *venezuelensis*; several details of the phallus (part distad from the "neck" not divided transversally, this distal part of clearly different shape, paramere longer). In the ♀ there are important differences in the ventral aspect of segment VIII: compare our fig. 73 with fig. 136 in FLINT, 1981.

*Oxyethira (Loxotrichia) azteca* (MOSELY, 1937)

*Material:*

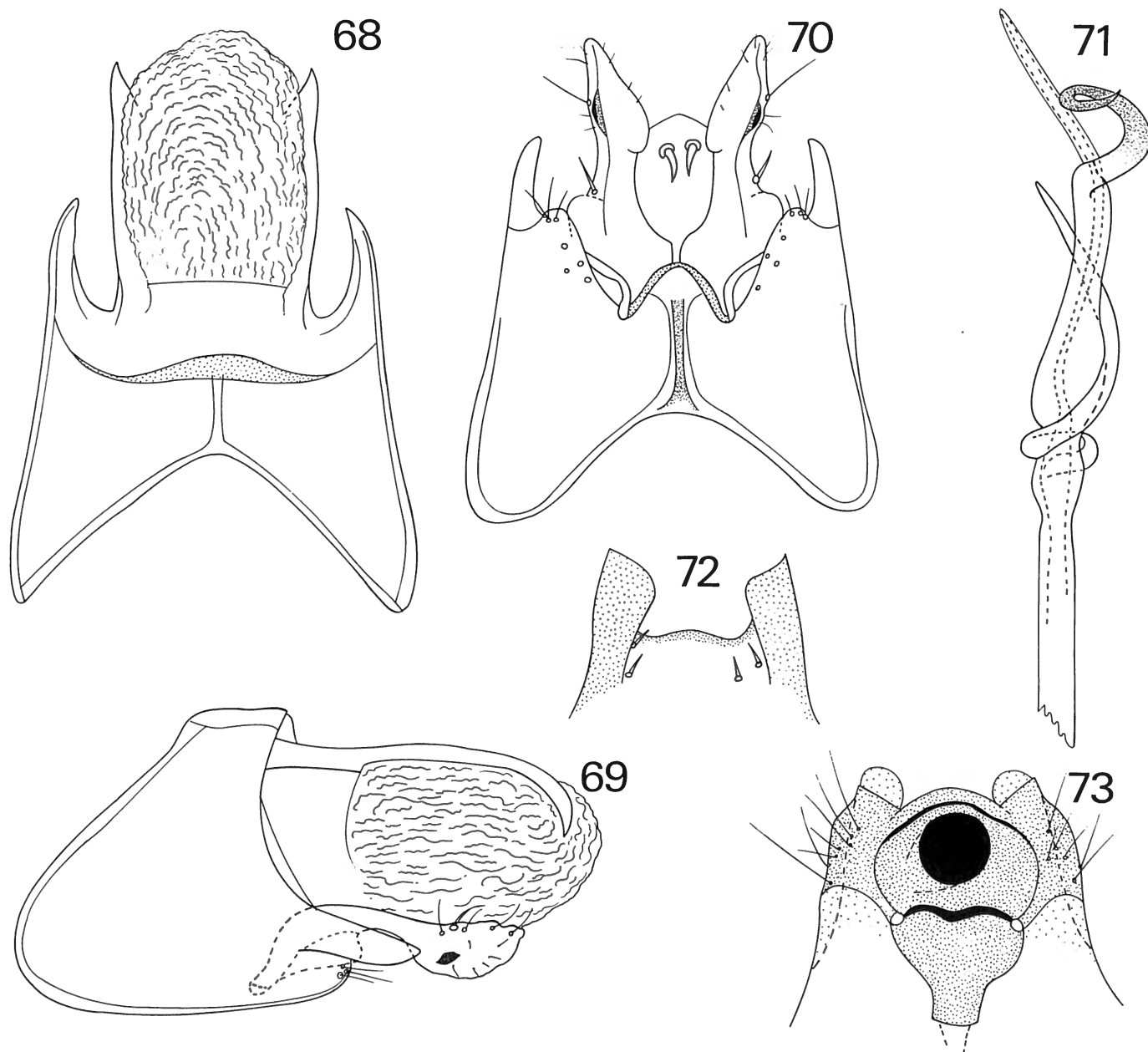
I: 21♂, 15♀; III: 38♂, 18♀; IV B: 15♂; IV C: 2♂; V: 3♂; IX: 9♂, 7♀; X: 73♂, 35♀; XI: 3♂; XII: 2♂; XVIII: 1♂ metamorphotype (and a few larvae, praepupae, pupae); XXI: 275♂, 151♀; XXII: 92♂, 51♀; XXIII: 8♂, 8♀. No serious attempt was made to separate the ♀♀ of this species from those of *O. (L.) tica* (see below); all ♀♀ from samples where only ♂♂ of *azteca* were present, are considered here as belonging to this species.

*O. azteca* is widespread: from the U.S. and Mexico, through Central America, to Venezuela, Colombia, Surinam, Trinidad and Tobago, Grenada (recorded also from Argentina, but this seems to be somewhat doubtful in the light of the discovery – FLINT & REYES, 1991 – that *O. (L.) parce* (EDWARDS & ARNOLD, 1961) is more widespread in South America than *azteca*).

*Oxyethira (Loxotrichia) tica*  
HOLZENTHAL & HARRIS, 1992  
(figs 74-77)

*Material:*

IV B: 6♂; IV C: 1♂; V: 1♂; XI: 1♂; XII: 1♂; XVI: 12♂.



Figs 68-73 – *Hydroptila tobaga* BOTOSANEANU, n. sp. (68-70: ♂ genitalia, dorsal, lateral, ventral; 71: distal parts of phallic apparatus, ventral; 72: distal limit of dorsum VIII of ♀; 73: ♀ genitalia, ventral).

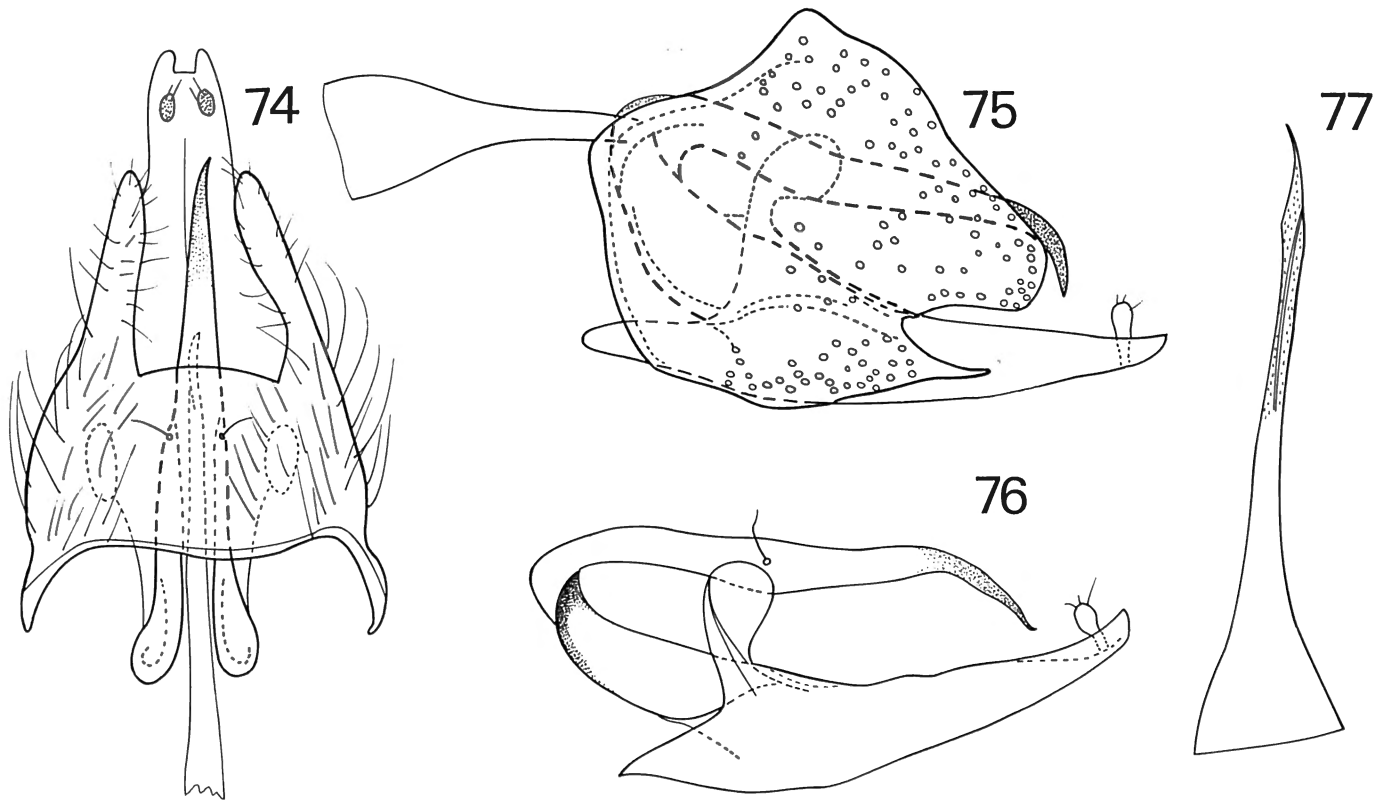
#### Notes

This species recently described from Costa Rica is a typical member of subgenus *Loxotrichia*, and undoubtedly a sister-species of two previously described members of this subgenus: *janella* Denning, 1948 (from Florida, Mexico, Central America, Isla del Coco, and all Greater and Lesser Antilles; see FLINT, 1968: figs 136-137, and BOTOSANEANU, 1979: fig. 12) and *puertoricensis* FLINT, 1964 (known only from Puerto Rico and Haiti). These three sister-species have probably affinities with the pair of sister-species *azteca* (MOSELY, 1937; see FLINT, 1968: figs 138-139, and FLINT & REYES, 1991: figs 33-36; for distribution see above) and *parce* (EDWARDS & ARNOLD, 1961; distributed at least from Texas to Peru, but never

found on a Caribbean island; see FLINT & REYES, 1991: figs 39-41). These 5 species represent a distinct group inside sg. *Loxotrichia*.

Despite the clear overall similarity, there are subtle ♂ genitalic differences between *tica* and *janella* and *puertoricensis* (for instance: relative length of the parts of the lower complex formed by segment IX + gonopods, protruding *distad* and respectively *proximad* from the vertical stem belonging to this complex); but one difference is conspicuous and relatively easily seen (even on specimens not cleared in KOH, if the setae of segment VIII are, at least partly, removed): the lower distal lobe of this segment (lateral view) is, in *tica*, extremely slender, pointed (rounded and shorter than the upper lobe in





Figs 74-77 – *Oxyethira (L.) tica* HOLZENTHAL & HARRIS, 1992, ♂ (74-76: genitalia, dorsal and lateral – 76: in another specimen, without segment VIII-; 77: phallic apparatus).

*janella*, conical and longer than it in *puertoricensis*). Anyway, distinguishing between these more or less closely related *Oxyethira (Loxotrichia)* is not an easy task if numerous specimens have to be examined.

*O. tica* is certainly more widespread than presently known. Preliminary examination of specimens previously identified by the first author, from several Lesser Antilles, as *O. janella*, has shown that *tica* is here present in some cases, together with *janella*; it is possible that it was misidentified as *janella* also from other islands or continental countries.

#### PHILOPOTAMIDAE

*Wormaldia plana* ROSS & KING, 1956 (in: ROSS, 1956)

##### Material:

I: 1 ♀; II: 13 ♂, 2 ♀; III: 2 ♂, 5 ♀ (+ 1 ♀ pinned); VI G: 5 ♂; VII D: 1 ♂; VIII: 15 ♂, 1 ♀; IX: 5 ♂; X: 32 ♂, 17 ♀ (+ 3 ♂, 1 ♀ pinned); XXI: 2 ♂; XXIII: 2 ♂. Also seen (from U.S.N.M.): several specimens, pinned or in alcohol, from Trinidad or Tobago. A very widespread species: from Mexico through Central America to Colombia, Venezuela (and Margarita), Brazil, Grenada; already known from Trinidad and Tobago.

#### *Chimarrhodella tobagoensis*

BLAHNIK & HOLZENTHAL, 1992

Belonging to the small genus *Chimarrhodella* Lestage, 1925, this species was recently described (BLAHNIK & HOLZENTHAL, 1992) from a few specimens caught in Tobago (Charlotteville). From another locality in northern Tobago (XXI) we have caught 1 ♂ (designated as paratype in the original description).

#### *Chimarra (C.) flinti* BUENO SORIA, 1985

(fig. 78)

##### Material:

I: 26 ♂, 28 ♀; III: 24 ♂, 42 ♀ (+ 3 ♂, 20 ♀ pinned); IV A: 44 ♂, 9 ♀; IV B: 85 ♂, 151 ♀; IV C: 12 ♂; IV D: 8 larvae; IV F: 3 larvae; VI B: 8 larvae; X: 31 ♂, 110 ♀ – maybe not all this species-, 3 young larvae (+ 2 ♂, 12 ♀ pinned); XI: 20 ♂, 5 ♀, 1 ♂ metamorphotype, larvae, 1 praepupa, 1 pupa; XV: 1 ♂, 1 ♀; XXI: 4 ♂; XXII: 8 ♂, 9 ♀ (+ 2 ♀ pinned); XXIII: 13 ♂, 9 ♀ (+ ? 2 ♀ pinned). Also seen (from U.S.N.M.): several specimens, pinned or in alcohol, including paratypes, from Trinidad or Tobago.

*Notes*

A species commonly found on Trinidad and Tobago; it is widespread, being also known from Mexico, through Central America, to Colombia and Venezuela. Its larva being not described we illustrate here (fig. 78) the anterior margin of the frontoclypeus.

*Chimarra (C.) spangleri* BUENO SORIA, 1985  
(fig. 79)

*Material:*

IX: 4♂ (+ 8♀ not surely associate) + 4♂ pinned; X: 2♂.

*Notes*

The discovery of this species on Trinidad (where it seems to be rather rare, anyway much less widely distributed than *C. flinti*) is interesting because it was previously known only from Costa Rica (BUENO SORIA, 1985; HOLZENTHAL, 1988).

The species is related to *C. poolei* FLINT, 1981, from Venezuela, and also to *C. uara* FLINT, 1974, from Surinam and northern Brazil. The gonopod viewed from behind was misleadingly illustrated by BUENO SORIA (his fig. 5, moreover, made from the right gonopod – not from the left one, as indicated in the legend). The differences in the posterior view of the gonopod (fig. 79) are apparently considerable; but the lateral shape of the genitalia and the phallus structure are identical; there is, maybe, some (geographic?) variability in this species.

*Chimarra (C.) caribea* FLINT, 1968

*Material*

IV C: 2♂. Also seen (from U.S.N.M.): many specimens from Trinidad (Simla, Arima Valley).

*Notes*

*C. (C.) caribea* was described by FLINT (1968) based on material from Grenada and from Trinidad – only the specimens from Grenada being designated as types. Some time the species was considered as having a describable geographic variability. FLINT (1974 b) described a new ssp., *surinamensis*, based on 1♂ from Surinam. BOTOSANEANU (1989) mentioned the nominate subspecies of *C. caribea* from the Venezuelan island of Margarita. BOTOSANEANU (1990) described *C. caribea tobaga* based on 1♂ from Tobago, without comparing with type material, and illustrated the unknown larva of the species. In 1981 FLINT synonymized his ssp. *surinamensis* with *C. (C.) bidens* ULMER, 1909, from Northern Venezuela. For the present study, ♂ specimens from Trinidad and the ♂ holotype of *C. caribea tobaga* were compared with 1♂ paratype of *C. caribea* from Grenada (from the U.S.N.M., presently in the Z.M.A.), and they were found

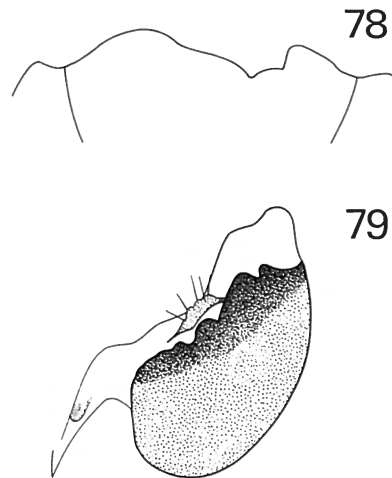


Fig. 78 – *Chimarra (C.) flinti* BUENO SORIA, 1985, anterior margin of frontoclypeus of larva.

Fig. 79 – *Chimarra (C.) spangleri* BUENO SORIA, 1985, ♂ right gonopod from behind.

identical; accordingly, *tobaga* can in my opinion no longer be considered as good ssp., and *C. caribea* (presently known from Margarita, Tobago, Trinidad and Grenada) has apparently no important geographic variation. It should be added that the most informative illustration of the ♂ genitalia in dorsal view of this species is that in BOTOSANEANU (1990: fig. 27; as *C. caribea tobaga*).

*Additional notes on Chimarra*

From locality II we have 1♂ with genitalia unfortunately mutilated (no gonopods and phallus); tergite VIII in this species is clearly bilobed, the lobes normal, glabrous. This is without doubt a 4th *Chimarra* species from Trinidad. From several localities (IV C, VIII, IX, XII, XIII) we have not surely attributable ♀♀ or/and young larvae.

## XIPHOCENTRONIDAE

*Xiphocentron (Antillotrichia) sp. (spp.?)*

The larval galleries of *Xiphocentron* were seen – often in enormous numbers – in almost all localities sampled in 1991. Larvae were sampled from localities II, VIII, IX, X, XIV, XXIII. From Trinidad, 2 species of this genus were described: *X. (A.) insulare* (ULMER, 1916), and *X. (A.) nisus* Schmid, 1982. According to Dr. O.S. FLINT, Jr. (i.l.): “There is a possibility that *Xiphocentron nisus* Schmid is a syn. of *insularis* (Ulm.)”.

## POLYCENTROPODIDAE

*Cernotina mandeba* FLINT, 1974  
(figs 80-82)*Material:*

I: 1♂.

*Notes*

Previously known only from Surinam. It is doubtless that our single ♂ belongs to this species, despite some slight apparent differences from the figures in the original description (our drawings were compared with a paratype by Dr. O.S. FLINT, Jr.).

Additional notes on *Cernotina*

1♂ of a *Cernotina* certainly distinct from *mandeba* was found in one of the samples (IV B) but unfortunately lost before being studied.

Unidentifiable ♀♀ of *Cernotina* sp. (spp.?) are from localities IX (2♀) and XVI (1♀).

*Polycentropus* sp. (spp.?)

Unidentifiable ♀♀ are from localities I (2♀) and X (1♀). Also seen (from U.S.N.M.): only ♀♀ from Trinidad (Simla, Arima Valley).

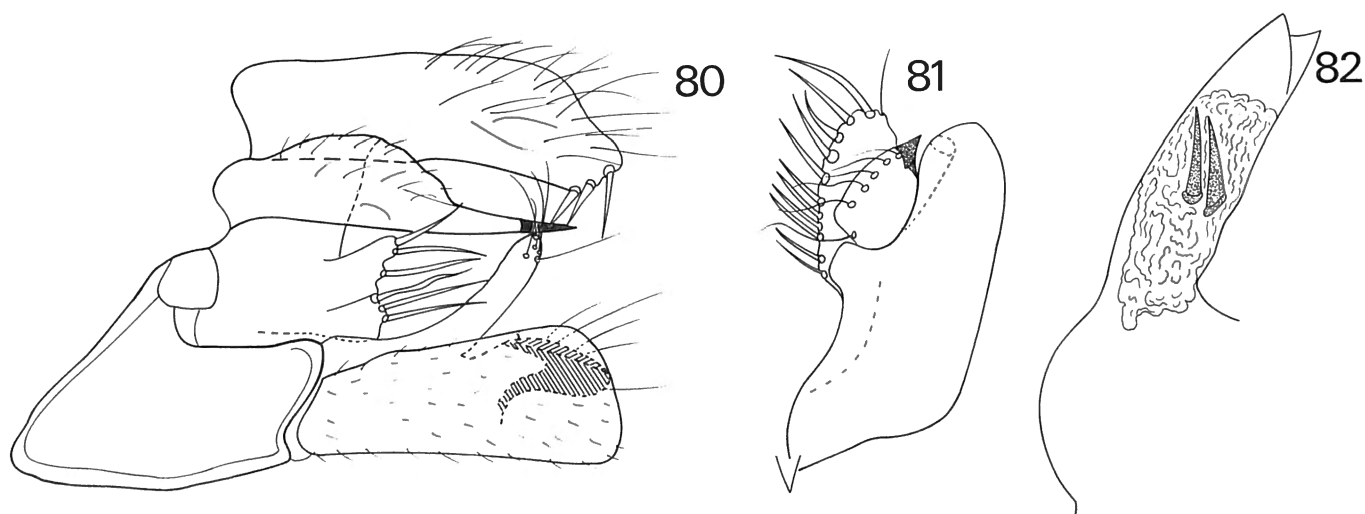
*Polyplectropus pugiunculatus* BOTOSANEANU n. sp.  
(figs 83-88)*Material:*

I: ♂ holotype; IV B: 12♂ and 3♀ paratypes; X: ♀ allotype, 1♂ paratype; XXII: 1♂ paratype.

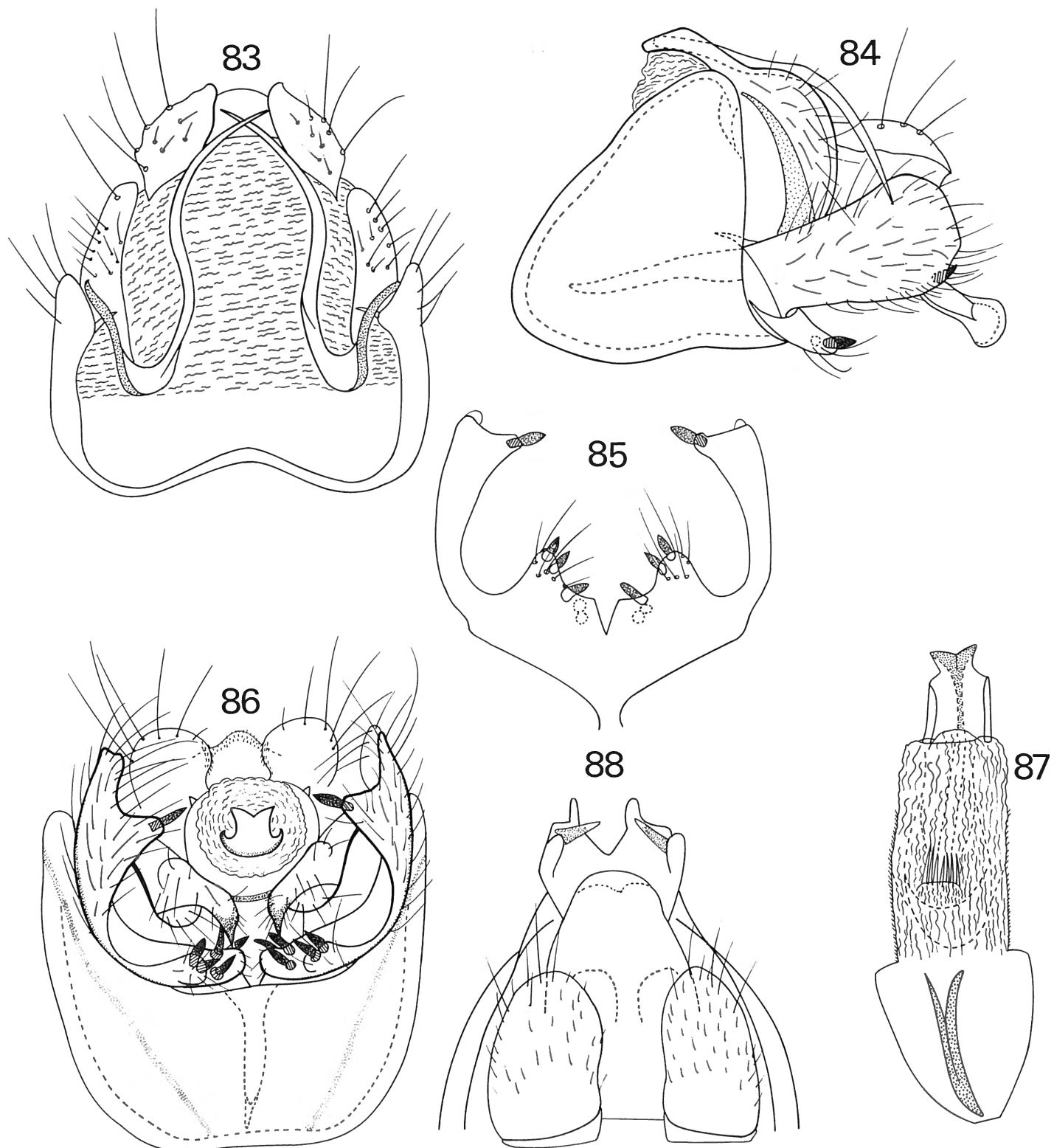
*Description of ♂*

Forewing length: 4.8-5.3 mm. Membrane of forewing light brown with distinct pattern of large pale flecks which occupy most of the surface in the basal half of the wing (leaving the space between C and R1 brown). Abdominal segment V without filaments.

Genitalia. Segment IX well sclerotized ventrally and laterally, but mostly membranous dorsally (this membrane sometimes considered in the bibliography as belonging to segment X!); sternite with central part slightly convex; in lateral view the segment is much longer ventrally than at its dorso-distal end, where it is broadly obtuse – as is its anterior angle, too. Disto-laterally from segment IX there is a complex of sclerites probably belonging to this segment, and which was sometimes described, in this genus and in other Polycentropodidae, as “cercus” and elements connected to the cercus; we prefer to use for this complex of sclerites the term “paraprocts” (Nielsen, 1957: 47, etc.); in this complex we distinguish the following 3 parts: laterally, large sclerites with lighter and darker zones (fig. 84); on these sclerites is dorso-basally rooted, on each side, a long, slender, sinuous appendage, first turned mediad, then posteriad and ventrad; finally, each of the main sclerites is directly continued ventro-medially by a long, strong hook with rather complex shape (these hooks – fig. 86 – strongly converging, their pointed apices downturned). Segment X represented by a pair of ear-shaped, concave appendages at the distal end of the genitalia; they are connected by a kind of hyaline “bridge”. Gonopods with quite different shape in apical, ventral, and lateral view; they circumscribe a large elliptical space and consist of a lateral (dorsal) and a median (ventral) branch, the former much longer than the latter; lateral (dorsal) branch in lateral view roughly rectangular, but narrower



Figs 80-82 – *Cernotina mandeba* FLINT, 1974, ♂ (80: genitalia, lateral; 81: clasper + “ventromesal lobe of cercus” – cf. FLINT, 1974 -, ventral; 82: phallic apparatus, lateral, less enlarged).



Figs 83-88 – *Polyplectropus pugiunculatus* BOTOSANEANU, n. sp. (83-84: ♂ genitalia, dorsal and lateral; 85: the gonopods, ventral; 86: ♂ genitalia, from behind; 87: phallic apparatus, dorsal; 88: ♀ genitalia, ventral, not cleared in KOH).

proximally than distally; in ventral or apical view slightly curved, concave internally, distal margin deeply emarginate, thus bilobed, lower lobe topped by one short but strong spine; the short, roughly conical median branch has a rather complex relief and in it are implanted 5 short but strong, brown spines forming two groups. Phallic apparatus with curved, broad phallobase with dark longitudinal, apically bifid stripe in its middle; long membranous endotheca showing dorsally a comb of extremely fine hyaline spines; and strongly sclerotized aedeagus apically split in two angular lobes, laterally reinforced by additional sclerites (parameres?), and capitate in lateral view.

#### Description of ♀

Length of forewing: 5.2-5.5 mm. Forewing color like in ♂. Genitalia: fig. 88.

#### Notes

*P. pugiunculatus* clearly belongs to the species-group *thilus*, as defined by Bueno Soria (1990), a group comprising the species *deltoides* (Yamamoto, 1967) from Panamá and Costa Rica; *carolae* Bueno Soria, 1990, from Mexico; *denticulus* Bueno Soria, 1990, from Mexico, Costa Rica and Nicaragua; and *thilus* (Denning, 1962) from Mexico.

Pugiunculus (Lat.) = a small dagger, alluding to the dagger-like spines on the two branches of the gonopod (phylogenetically not significant: encountered also in other, non related species of the genus).

#### *Polyplectropus* sp.

6 not surely associated larvae are from locality XIV. It is possible that they belong to *P. pugiunculatus* n. sp.

### HYDROPSYCHIDAE

#### *Leptonema albovirens* (Walker, 1852)

#### Material:

I: 1♂, 4♀; III: 2♂, 6♀; IV A: 1♂, 1♀; IV B: 259♂ + ♀; IV C: 2♂, 6♀; IV D: 1♀ metamorphotype, 1♀ pupa; IV H: 2 larvae; V: 4♂; VI E: 1 imago without abdomen; VI F: 1♂, 1♀; VII A: 2 larvae; VIII: 3♂, 2♀, larvae, pupae; IX: 2♀, 8 larvae; X: 1♂, 1♀, larvae, 1 praepupa; XI: 27♂, 8♀, larvae, praepupae; XIII: 1♂; XIV: larvae, pupae; XXI: 2♂, 1♀; XXII: 1♂, 1♀; XXIII: 4♂, 9♀, larvae, pupae. Also seen (from U.S.N.M.): numerous specimens, in alcohol or pinned, from several localities on Trinidad or Tobago. This species, extremely frequent in Trinidad and Tobago wherefrom it was already recorded, has a wide distribution from Texas to the North, to Colombia and Venezuela to the South (it is also known from the island of St. Vincent).

#### *Macrostemum ulmeri* (BANKS, 1913)

#### Material:

XVII: 2♀ (+ 1♀ pinned).

Although new for Trinidad, this is a widely distributed species: Central America, Colombia, Venezuela, Surinam, Ecuador, Perú, Brasil. It was illustrated in FLINT, 1967b.

#### *Centromacronema pygmaeum* BOTOSANEANU n. sp. (figs 89-93)

#### Material:

II: 1♂ (holotype).

#### Description of ♂

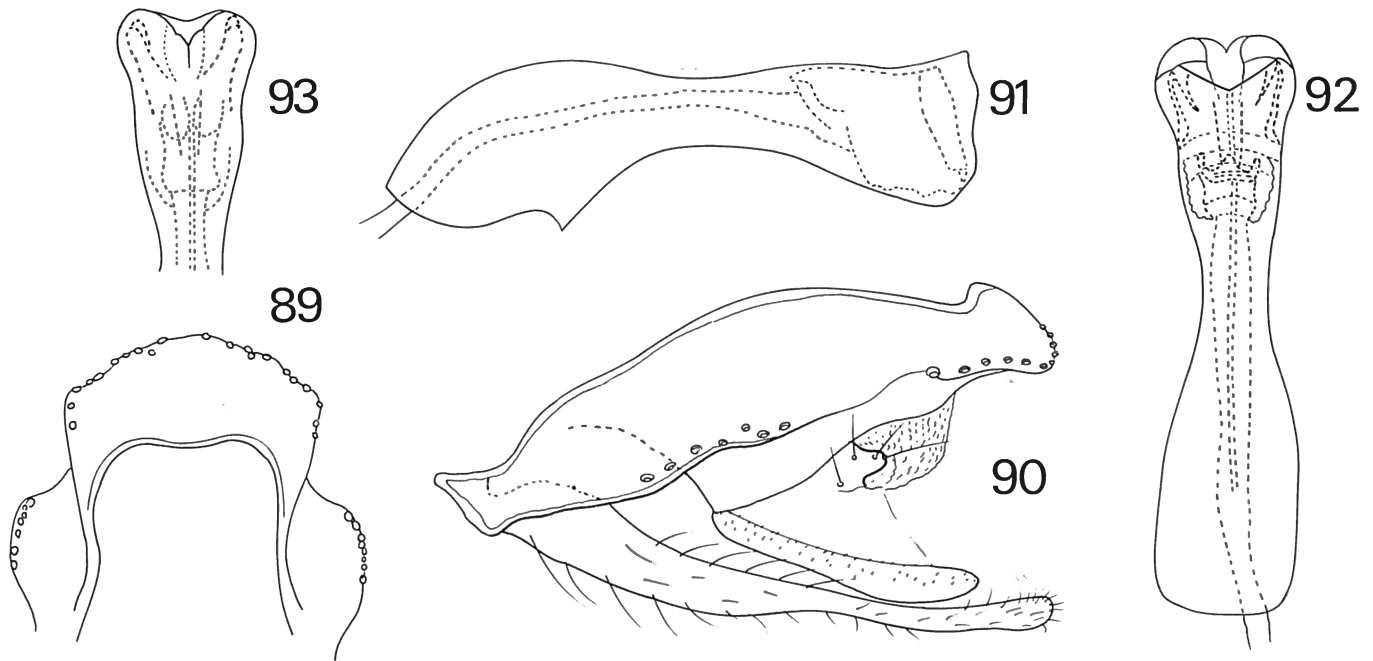
Length of forewing 7mm. Ventral parts of thorax, legs and spurs yellow; dorsal parts brown or dark brown: head brown but for the very large anterior setose warts which are yellow; pronotum brown but for its yellow setose warts; mesonotum brown, its lateral parts blackened; metanotum brown with a distinct dark brown pattern on scutum. Forewings relatively light (greyish), not darker than hindwings; although in alcohol, they show a distinct, rather broad, transverse, dark band, not widened at one of the ends, exactly in the broadest sector of the wing.

Genitalia. Segment IX in lateral view slender, without any important proximally projecting part; dorsal part only slightly and bluntly projecting above segment X. In lateral view, segment X with distinct division in upper, membranous, and lower, more or less sclerotized part; this lower part ends in a distinct but not very long or sharply ending point; in the angle between upper and lower part of segment X a large setose wart placed near the limit IX/X (not in middle of the lateral face of segment X). Gonopod slightly but clearly reaching beyond apex of segment X. Phallus in lateral view with the dilated "head" finishing in a slightly sinuous line – without clearly projecting upper or lower point; no right angle between proximal and distal half (phallus nearly straight); internal structure of apical part extremely complex.

#### Notes

*Centromacronema* ULMER is a small Neotropical genus distributed from Mexico to the North to Brasil to the South; excepting one mention from Margarita, this is the first record of a *Centromacronema* from an island. It is useless to try to discover the affinities of this new species, and comparisons of ♂ genitalia are made difficult by important differences in style of the various descriptions and illustrations.

This species was not already described. It is apparently the smallest known representative of the genus (the smallest previously described, *C. nigripenne* FLINT, 1981, from Venezuela, has a forewing of 10-12mm, and most of the species are even larger or much larger). The dark, uniformly broad transverse band in the broadest sector



Figs 89-93 — *Centromacronema pygmaeum* BOTOSANEANU, n. sp., ♂ (89: segment IX, dorsal; 90: genitalia, lateral; 91-93: phallic apparatus, lateral, ventral, and apex in dorsal view).

of the forewing is characteristic. The following combination of peculiarities of the ♂ genitalia can, too, be considered as more or less characteristic: segment IX very slender in lateral view; segment X with lower part finishing in distinct point, setose wart quite proximally placed; phallus not right-angled, its "head" with sinuous distal margin, without protruding point. Finally, the specimen was caught in a spring with madicolous niches, far from any other water course, an unusual habitat for a Macronematine.

Ethymology: *pygmaeum* alludes to the very small size for a *Centromacronema*.

*Smicridea (S.) bivittata* (HAGEN, 1861)

**Material:**

I: 68♂, 104♀; IV A: 2♂, 1♀; IV B: 240♂ + ♀; IV C: 3♂, 2♀; IV H: 2 larvae; V: 26♂, 16♀; VII D: 21♂, 12♀; X: 1♂; XI: 3♂, 4♀, 1 larva, 1 praepupa, 3 pupae; XII: 1♀; XIV: larvae, praepupae, 1♂ pupa; XVI: 15♂, 2♀ (+ 6♂ pinned); XVII: 12♂, 18♀; XXI: 11♂, 16♀; XXII: 3♂, 6♀ (+ 1♂ pinned); XXIII: 37♂, 38♀ (+ 4♂, 5♀ pinned).

**Notes**

This species — by far the most frequent *Smicridea* on Trinidad and Tobago — has a wide known distribution from Mexico through Central America to Venezuela and Surinam. There were not yet published records from Trinidad and Tobago. A fact observed in all our ♂ and

♀ specimens from Trinidad and Tobago, including those pinned, is the absence — or the presence only of a faint — proximal white band on the forewings.

*Smicridea (S.) tobada* FLINT & DENNING, 1989

**Material:**

VIII: 1♂, 1♀ (and 1♀ pupa, larvae: conjecturally associated); IX: 2♂; XXIII: 1♂.

**Notes**

This species is presently known only from Trinidad and Tobago. According to FLINT & DENNING (1989) it is related to a species from Surinam: *S. (S.) bulbosa* FLINT, 1974.

*Smicridea (S.) anomala* FLINT & DENNING, 1989

This peculiar species, presently known only from Trinidad and Tobago and probably without known close relatives, was caught (6♂) in locality IX.

**Additional notes on *Smicridea***

We have specifically unidentifiable material from localities IX (4♀, 1 larva), X (2 larvae), XXIII (1 larva, 1 pupa).

## LEPTOCERIDAE

*Oecetis avara* (BANKS, 1895)*Material:*

I: 2♂, 5♀; IV B: 3♂, 15♀; IV C: 1♂, 3♀; IV H: 1 larva, empty cases; V: 2♂, 2♀; X: 9♂, 17♀ (+ 2♂, 4♀ pinned); XI: 10♂, 7♀.

*Notes*

*O. avara* was long time considered as species restricted to Canada and the United States (FISCHER, 1966, 1972), but North American workers presently recognize that it is also widely distributed from Mexico, through Central America, to Venezuela. The present records are the first for Trinidad, and the species is not (yet) discovered on Tobago.

The ♂ genitalia (lateral view) of our specimens are looking like fig. 2 on Pl. 34 in BETTEN (1934) or fig. 818 in ROSS (1944); even more convincingly, the very characteristic sclerotized plates on abdominal segment I of the larva are exactly like in fig. 813 in ROSS (1944). The species is extremely close to *O. metlacensis* BUENO SORIA (1981) described from Mexico. Mr. E. CHEN (Clemson, S.C.; presently performing a study of *Oecetis*) informs us (i.l.) that also two other very similar "species", *O. disjuncta* (BANKS), described from California, and *O. elatus* DENNING & SYKORA, from Mexico, belong to his "avara-group". It is possible that during a future revision of the genus one or several of these "species" will be synonymized with *avara*.

*Oecetis* sp.

Clearly distinct from *O. avara* (forewings without brown dots) this *Oecetis* represented in our material only by 3♀♀ from locality XII could not be specifically identified.

*Nectopsyche gemmoides* FLINT, 1981*Material:*

I: 3♀; IV B: 5♂, 28♀; IV C: 1♂, 3♀; IV D: 5 larvae; IV E: larvae in various instars, 1♀ pupa; IV G: 1 larva; IV H: 1 larval case; V: 3♂, 13♀; VII B: 1♂, 2♀; X: 4♂, 25♀ (+ 3♀ pinned); XI: 1♂, 10♀; XII: 1♀; XIII: 1♀. Also seen (from U.S.N.M.): a few specimens from Trinidad (Arima Valley).

*Notes*

This fine species was known from Mexico, through Central America, to Colombia, Venezuela, Guyana, Ecuador, Paraguay, and it was already recorded from Trinidad. It is somewhat surprising that it was not yet found on Tobago. Larva and pupa were described by BOTOSANEANU & FLINT (1982). The larval cases of *Nectopsyche*, slender, conical, entirely made from silk, will

be easily distinguished from those of the other frequent genus of Leptoceridae in Trinidad, *Oecetis* (cases more cylindrical, stouter, from sand particles).

*Nectopsyche cupreosquamosa* BOTOSANEANU n. sp.  
(figs 94-96)*Material:*

XI: ♂ holotype, 1♂ paratype, ♀ allotype, 2♀ paratypes.

*Description of ♂*

Length of forewing (holotype) 8.2mm. Eyes small: width ca. 1/3 of interocular distance. Antennae completely yellow. Thorax, yellow too, but dorsally slightly darker. Membrane of forewings uniformly very pale, probably completely covered by very fine yellow setae, mostly rubbed in our alcohol specimens; with relatively numerous very dark triangular scales with metallic (copper) shine in several patches (but: no "eye-spots"! on dorsal face of cubital and anal apical cells (this is the pattern seen in all ♂ and ♀ specimens, but it is not impossible that some other scales were rubbed off).

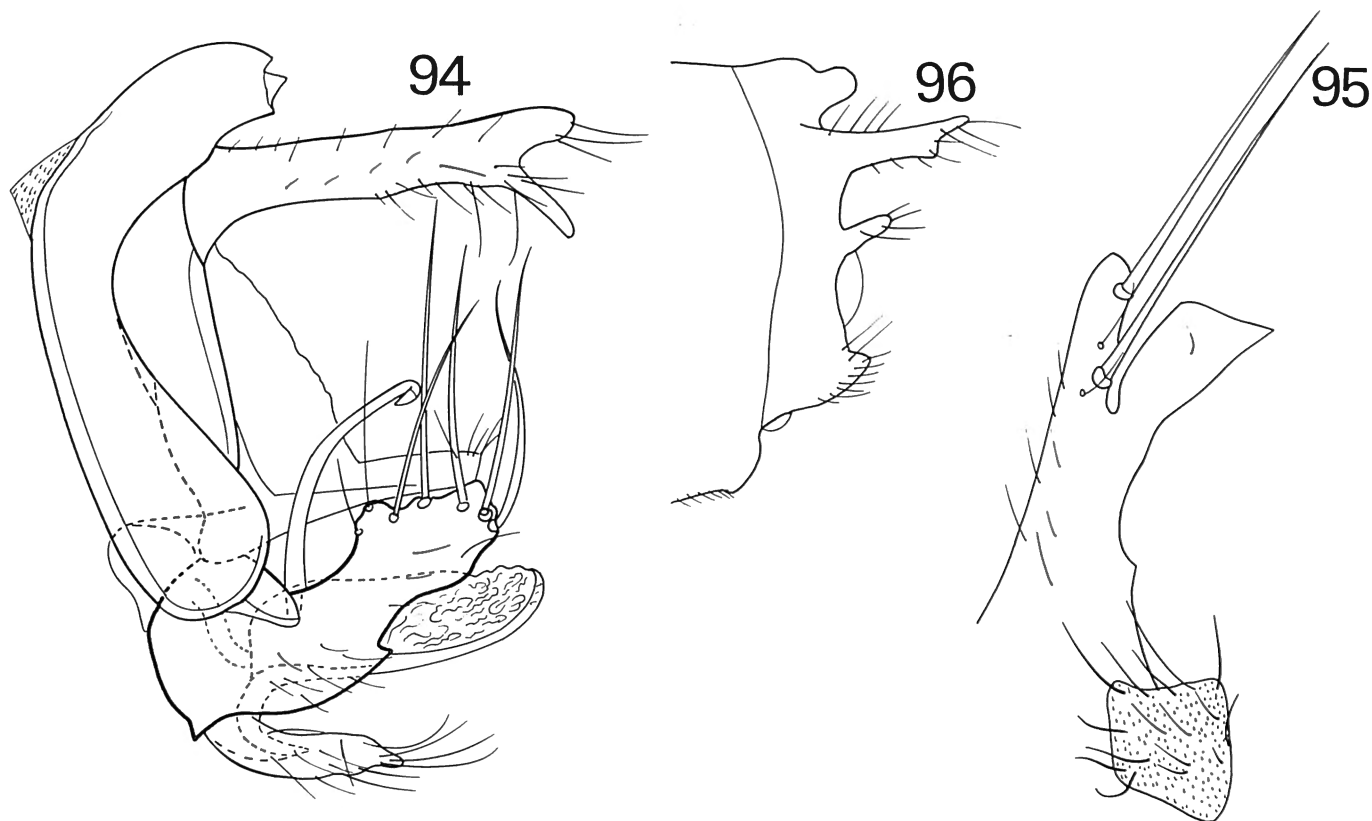
Genitalia (in the description we mainly use the terminology in various publications by FLINT, e.g. FLINT, 1981). Dorsum IX in lateral view apically with 2 small pointed lobes; "dorsolateral arms" (are they not representing dorsum X?) apically strongly bifid, ventral lobe digitiform, dorsal lobe obtuse. Segment X with upper part hyaline, probably only slightly sclerotized, lower well sclerotized part ("ventral processes") not baculiform but relatively strong, apex somewhat angular. Basodorsal process of the clasper not extremely slender, not dilated apically, but with tip strongly curved laterad and proximad; the clasper proper is broad basally, rather strongly narrowed in its middle, with a distinct projection in the middle of its lower margin followed distad by an emargination, and its distal part is palmate, apical margin irregular and with several very long setae; "apicomeral process" of the clasper in ventral view (fig. 95) apically strongly dilated, angular; "basal lobe" of the clasper united to base of clasper, in ventral view (fig. 95) very broad, roughly quadrate, distal margin not lobate. Phallus sclerotized ventrally, most of it membranous, apparently without internal spines or other sclerites.

*Description of ♀*

Length of forewing 6.3-6.5mm. Color (including that of forewings, where the same pattern of scales is present) exactly like in ♂. Eyes larger, width slightly less than 1/2 of interocular space. Profile of last abdominal segment: fig. 96.

*Notes*

This species is certainly distinct from all already described *Nectopsyche*, this being shown especially by the dark scales with metallic-copper shine in the posterodistal



Figs 94-96 — *Nectopsyche cupreosquamosa* BOTOSANEANU, n. sp. (94: ♂ genitalia, lateral; 95: a gonopod, ventral; 96: apex of ♀ abdomen, lateral, not cleared in KOH).

angle of the forewing, as well as by all the constitutive parts of the inferior appendages. It is not easy to discover its affinities; despite the absence of "eye-spots" on the forewings, it may belong to the "gemma-group" which includes species like the mainly South American *gemma* (MÜLLER, 1880), *gemmoides* FLINT, 1981, *aureofasciata* FLINT, 1981 (from Venezuela), or *argentata* FLINT, 1991 (known from Colombia, Venezuela, Costa Rica, and maybe from Mexico).

Ethymology: from *cuprum* (Lat.) = copper and *squamosus*, *a, um* = scaled.

***Amphoropsyche multispinosa* BOTOSANEANU n. sp.**  
(figs 97-103)

**Material:**

VIII: ♂ holotype, 3♂ paratypes, ♀ allotype.

**Description of ♂**

Length of forewing 4.7-4.9mm. Membrane of forewing uniformly medium-brown; from the vestiture not much is left in alcohol, but this is probably brown, too (not golden-yellow). Hindwings with very long fringes.

Genitalia. Sternite IX with very broad and deep medio-distal emargination. Superior appendages with the typical structure of all *Amphoropsyche* (huge internal gland which is dorsally roughly quadrangular, with very well distinct opening) but with the following peculiarities: they

are completely coalescent medially; medio-distally their dorsal surface is continued by a strong, deeply bilobed plate with sinuous lateral margins (in lateral view it becomes apparent that the upper part of this plate is darker than the lower part). Segment X with slightly shorter central lobe whose ventral surface is setose, and with pair of lateral lobes; these lateral lobes strongly developed in lateral view, roughly triangular but lower margin very strongly rounded in proximal 2/3, and with a thickening along it (in ventral view these thickenings misleadingly looking like slender, acuminate appendages); apical part in lateral view strongly narrowed, with distinct point directed upwards. Inferior appendages with structure typical for the genus; annex branch (rooted near limit coxopodite — harpago) short, slender, pointed; the median projection of the main branch is well developed, conical, apically with a minute spine. Phallic apparatus well characterized by a pair of very conspicuous brushes of brown, short spines arising from the membranous endotheca; proximad to them, a pair of ventral nipple-shaped protuberances topped by a spine; phallobase with pair of lateral, single-pointed appendages.

**Description of ♀**

Length of forewing 4.8mm. The genitalia of the unique specimen did not clarify well; it was not possible to study the internal (vaginal) apparatus, and in the ventral fig. 103 some details are not quite correctly represented. Cerci (belonging to segment IX, not X as they were sometimes

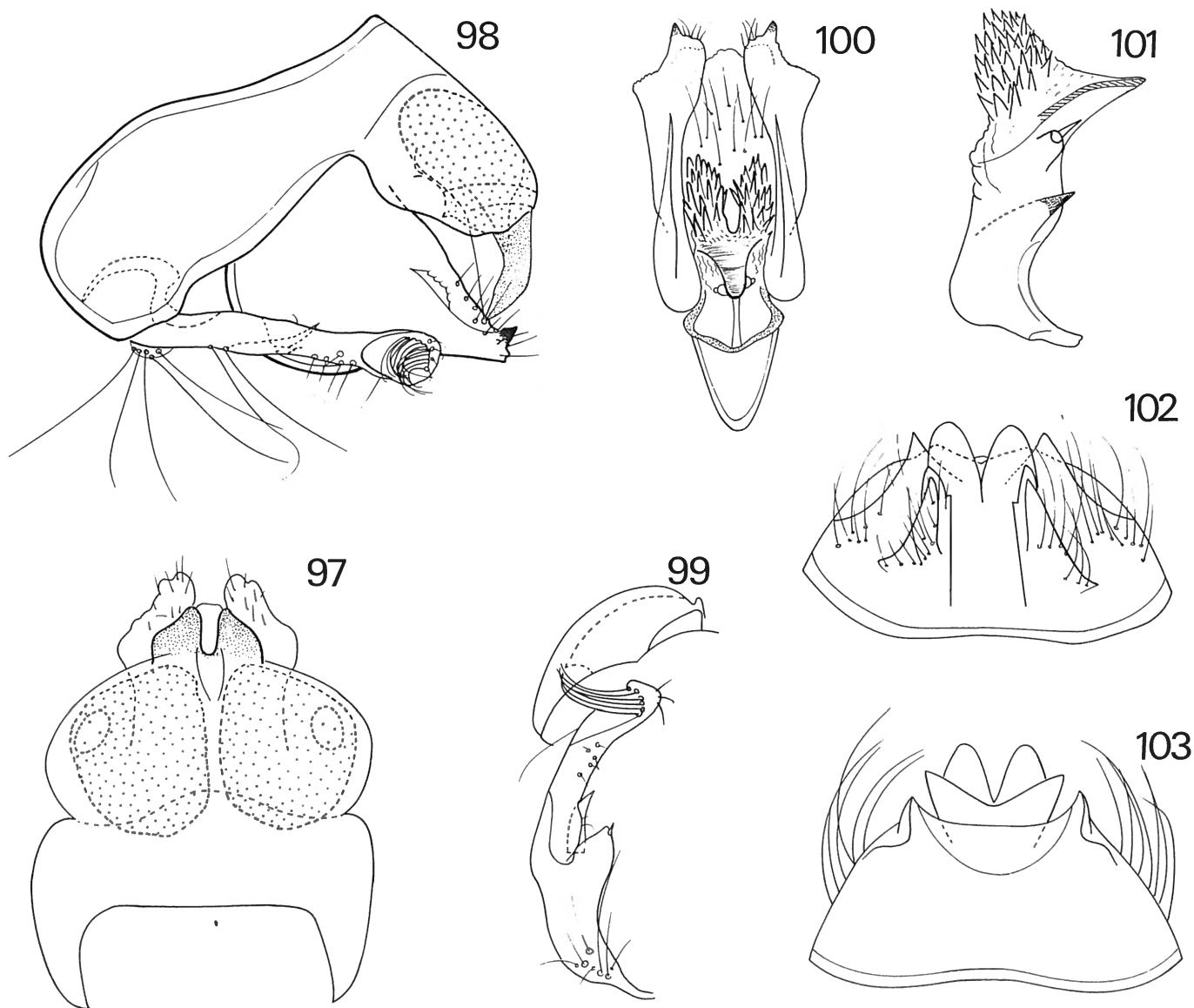


described in *Amphoropsyche*) relatively slender (conical), with a distinct relief dorso-laterally, and with small subapical indentation of their median margin. Laterodistal projections of segment IX small, pointed. Segment X lightly sclerotized, deeply bilobed, lobes bluntly ending.

#### Notes

In the remarkable genus *Amphoropsyche* HOLZENTHAL, 1985, presently 12 species are known, most of them from Colombia, Venezuela, or Bolivia, with 2 insular species on Dominica and on St. Vincent (and Mustique). Considering the ♂ genitalia, it is clear that the species from Trinidad is closely related only to two species from northern Venezuela: *refugia* HOLZENTHAL, 1985, and *aragua* HOLZENTHAL, 1985; these are probably 3 sister-

species. With both these Venezuelan species *multispinosa* n. sp. shares superior appendages completely fused medio-dorsally and with a well sclerotized process arising from their dorso-mesal portion; from this point of view the new species is more similar to *refugia*, which has a *paired* process (simple in *aragua*). On the other hand, segment X in lateral view of the new species is similar to that of *aragua* (whereas it is deeply excised in *refugia*). From some points of view the ♂ genitalia of *multispinosa* are distinct from both *refugia* and *aragua* (for instance: much shorter annex branch of the gonopod); but the important differences are in the phallic structure, the brushes of spines from the endotheca being unmistakable and not known in any described species of the genus. In the ♀ genitalia the cerci somehow resemble those in *refugia*, whereas the deeply bilobed segment X is quite different (♀ of *aragua* not known).



Figs 97-103 — *Amphoropsyche multispinosa* BOTOSANEANU, n. sp. (97-98: ♂ genitalia, dorsal and lateral; 99: gonopod and superior appendage, ventral; 100: segment X + phallic apparatus, ventral; 101: phallic apparatus, lateral; 102-103: ♀ genitalia, dorsal and ventral).

## CALAMOCERATIDAE

*Phylloicus angustior* ULMER, 1905  
(figs 104-109)

Syn. *P. hansonii* DENNING, 1983 (in: DENNING, RESH & HOGUE, 1983). N. syn.

*Material:*

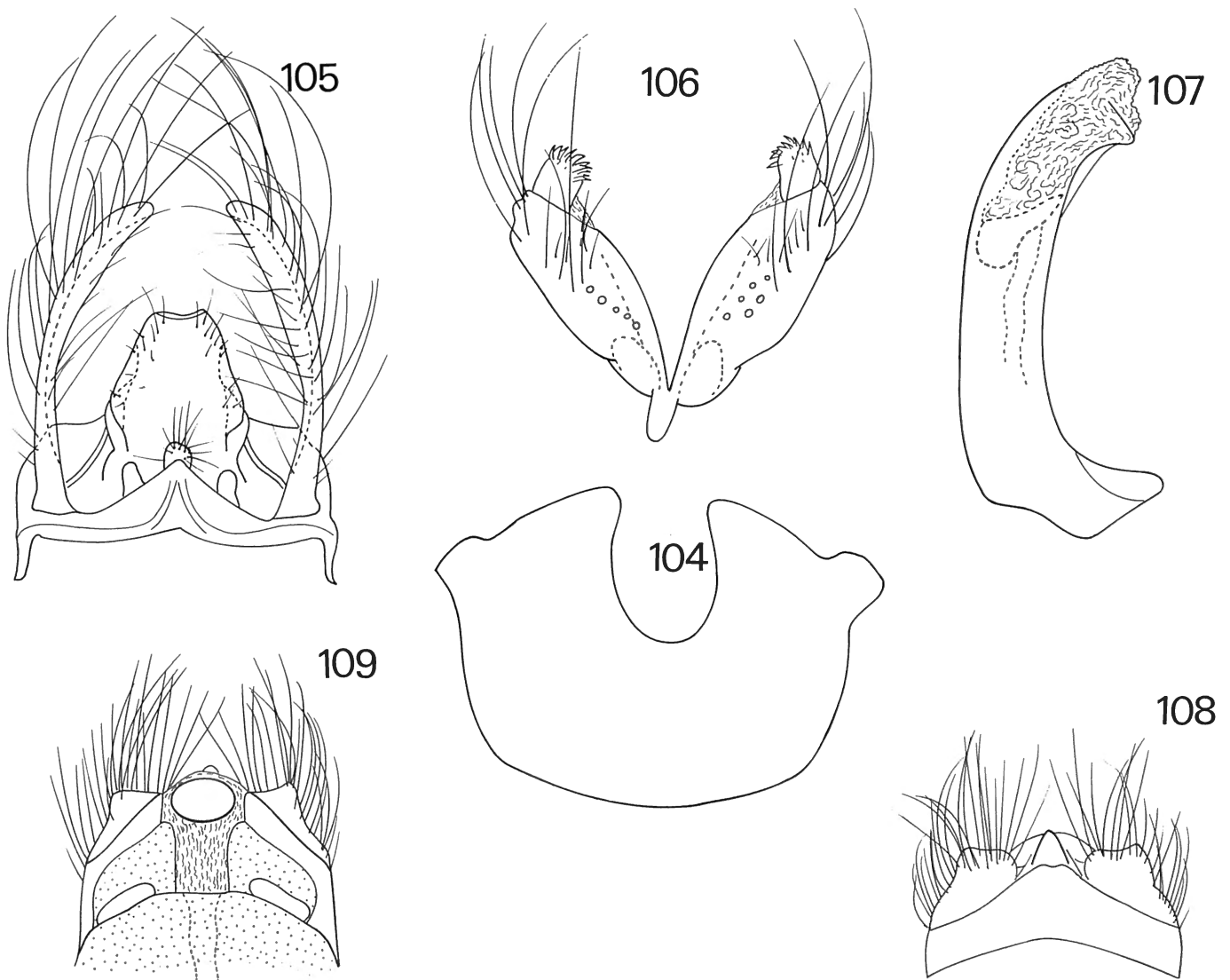
I: 4♂, 3♀ (+ 8♂, 1♀ pinned); IV A: 1♀; IV B: 2♂; IV C: 4♂; IV D: 1 praepupa, 2 pupae; V: 4♂, 4♀; VI A: 2♂, 2♀ pupae, 2 pupal exuviae, case; IX: 1 larva, 1 pupa (+ 1♂, 1♀ pinned); X: 1♂, 4 larvae, 1 praepupa, 1 pupa (+ 1♂ pinned); XI: 1 praepupa; XIV: 1 larva. Also seen, from U.S.N.M.: 2♀ from Trinidad: Simla, Arima Valley.

*Notes*

All the adult specimens seen from Trinidad are one species, and this is indubitably *angustior*: specimens were compared by Dr. O.S. FLINT, Jr., with *angustior* from Venezuela, and found in perfect agreement. This is a species with vast distribution in South America: Argentina, Brazil, Paraguay, Bolivia, Colombia, Venezuela; Trinidad is at – or near – the northern limit of its distribution.

There is no doubt that *P. hansonii*, rudimentarily described and illustrated from Trinidad (Simla) is a synonym of *angustior*.

Description and illustration of *angustior* in various publications (ULMER, 1905; FLINT, 1966, 1981, 1991) require a few additions. This species has, in both sexes, pencils of brown-reddish setae from the lower basal angle



Figs 104-109 – *Phylloicus angustior* ULMER, 1905 (104: sternite VIII; 105: ♂ segments IX + X, dorsal; 106: gonopods, ventral; 107: phallic apparatus, lateral; 108-109: ♀ genitalia, dorsal and ventral, not cleared in KOH).

of the hindwings (much longer in the ♂ than in the ♀); these pencils have nothing in common with the hindwing fringes. The forewing pattern observed on pinned specimens is as follows: general color rather dark brown, but with the following distinct zones covered by white (cream) setae: oblique and rather narrow transverse band approximately in the middle of the wing; rather large fleck on the anastomosis; longitudinal stripe practically filling the "basal cell" formed by the last anal veins. Figures of ♂ and ♀ genitalia are here given (figs 104-109). Some details on the larva, with a figure of the larval thorax, are in BOTOSANEANU & FLINT (1982).

### HELICOPSYCHIDAE

*Helicopsyche margaritensis* BOTOSANEANU, 1959  
(figs 110, 111, 113, 115, 117)

#### Material:

I: 31 ♀; IV A: 3 ♂, 1 ♀; IV B: 11 ♂, 21 ♀; IV C: 4 ♂, 3 ♀; IV D: 13 ♂ + ♀ metamorphotypes; IV F: 3 larvae; IV H: numerous larvae, praepupae, pupae, and metamorphotypes; V: 3 ♀; VI C: 3 larvae, 4 pupae; XI: 3 ♂, 13 ♀, 5 larvae, praepupae and metamorphotypes; XIV: 8 larvae, empty cases, 1 ♂ metamorphotype; XVI: 2 ♂, 1 ♀. With some doubt were identified: 1 ♀ (pinned) from XXII, and 1 ♀ from XXIII. Also seen (from U.S.N.M.): a few pinned ♂ from 2 localities on Trinidad.

#### Additional information on the larva

Although a description of the young instars of this species was published (BOTOSANEANU, 1959), we give here (fig. 110) drawings of head and thorax patterns of the full grown larva (sclerites, color, partly chaetotaxy). This will allow easy distinction from the larva of the other *Helicopsyche* presently known from Trinidad: *H. maculisternum* n. sp. (described below).

#### Notes

*H. margaritensis*, most frequent and abundant representative of the genus on Trinidad, was described from the Venezuelan island of Margarita (BOTOSANEANU, 1959, 1989). In some publications a doubt was expressed about the existence of specific differences between this species and *H. vergelana* ROSS, 1956, described from Mexico and later mentioned from many countries of Central and South America, including Trinidad (FLINT, 1974b, 1981, 1991; FLINT & Reyes, 1991; HOLZENTHAL, 1988). In order to try to find the solution of this problem, the ♂ holotype of *vergelana* (kept in the collections of the Illinois Natural History Survey) was studied by L. BOTOSANEANU during a stay in the N.M.H.N., Washington, in 1983. The ♂ genitalia of this specimen are here illustrated (figs 112, 114, 116, 118) side-by-side with those of a topotype of *margaritensis* (figs 111, 113, 115, 117). The differences are rather numerous, maybe

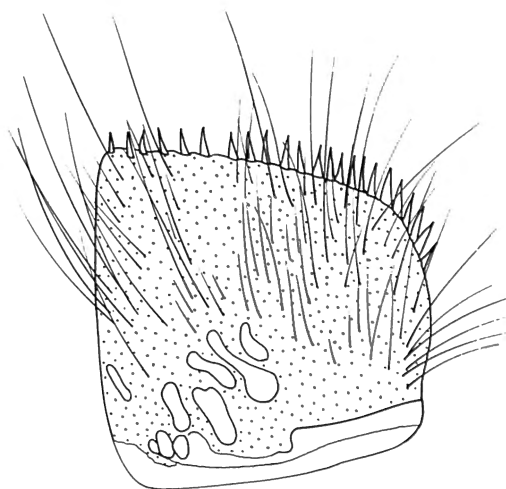
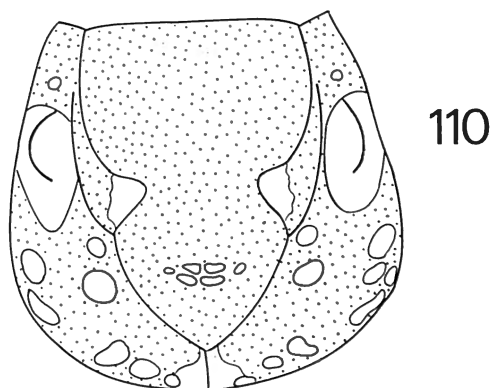
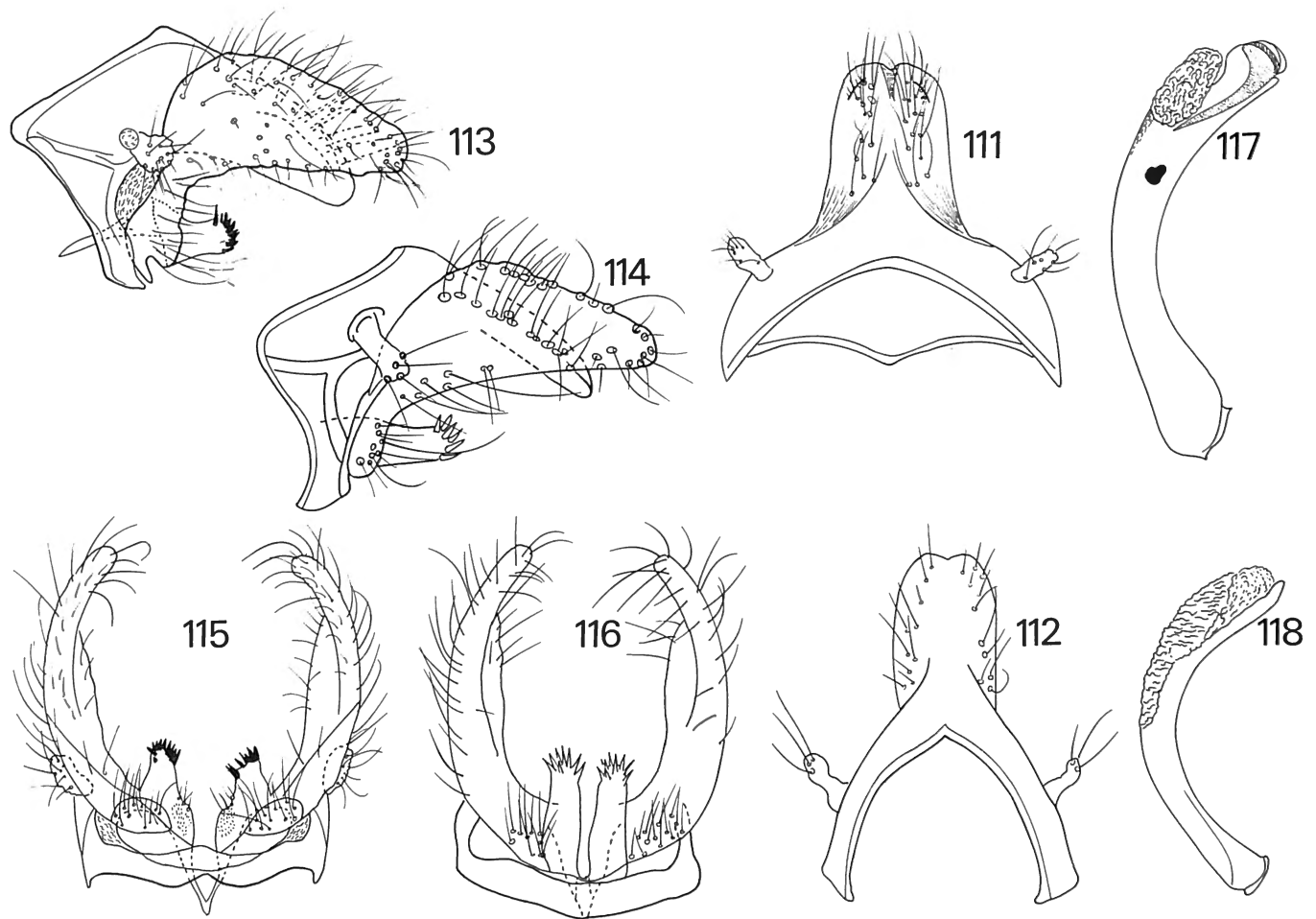


Fig. 110 – *Helicopsyche margaritensis* BOTOSANEANU, 1959, head and thorax of larva.



Figs 112, 114, 116, 118 – ♂ genitalia of *Helicopsyche vergelana* ROSS, 1956 (holotype), dorsal, lateral, ventral, and lateral view of phallic apparatus.

Figs 111, 113, 115, 117 – ♂ genitalia of *Helicopsyche margaritensis* BOTOSANEANU, 1959 (topotype), ditto.

the easiest observed being in the shape of the basomedian branch of the gonopod in ventral view (compare figs 115 and 116): in *vergelana* slender and without basomedian projection, in *margaritensis* stout and with distinct basomedian projection.

At our request, Dr. O.S. FLINT, Jr. has compared specimens from the rich collections of the U.S.N.M., and I quote here from his interesting observations (letter of January 17, 1992): "After your query about *vergelana-margaritensis*... I first looked at the example from Grenada, it was absolutely like the figures of the type of *vergelana*. With the two side-by-side, I could very easily distinguish them. Then, however, I began looking at more examples from Mexico, Honduras, Costa Rica, Panamá, Colombia, Ecuador, Perú, Venezuela, Suriname, Brazil and Paraguay. Some from Mexico, Costa Rica and Ecuador seemed to be about indistinguishable from *margaritensis*; others from Suriname, Brazil, Paraguay and Mexico were closest to *vergelana*. Unfortunately, others from Panamá, Colom-

bia, Ecuador, Perú and Venezuela seemed to fall into all spots in between... A total resolution of the problem, if it is possible, will require more time... In any case I will call the Grenadan example *margaritensis*, as it agrees perfectly, mentioning the seeming intermediates from that extreme to the *vergelana* extreme".

*Helicopsyche maculisternum* BOTOSANEANU n. sp.  
(figs 119-125)

**Material:**

I: 2 ♀ paratypes; II: 1 ♂ paratype, 1 ♀ pupa, 3 larvae, 2 empty cases; III: ♂ holotype, 2 ♀ (allotype and paratype); IX: 1 ♀ paratype; X: 1 ♀ paratype.

**Description of ♂**

A small species: length of forewing 3.5mm. Forewing very pale. Abdominal sternite III with characteristic pattern: the large zone covered by reticular ornamentation is followed posteriorly by a conspicuous ogival dark mark; sternite IV in its posterior 1/2 completely covered

by strong reticulation; similar situation for sternite V, but reticulation less dark; appendage on sternite VI parallel-sided, reaching the venter's posterior margin. Genitalia. Sternite IX revolver-shaped in lateral view, with disto-median sinus. Segment X (dorsal view) moderately long, parallel sided, deeply cleft apically, with rather poor chaetotaxy mainly represented by short spines laterally inserted in its dorsal half (a few basalmost spines more medially inserted). Gonopod (lateral view) with main (lateral, or dorsal) branch narrow basally, then considerably widening, dorso-distal angle broadly rounded, separated by shallow sinus from ventro-distal angle which is strongly protruding, digitiform, definitely directed medially; ventral margin of this branch convex, with one pair of strong setae on inflated alveolae; median (ventral) branch conical in its distal part which is well separated from the main branch and has an antepical row of 3 small spines, and roughly quadrate in its basal part. In ventral view the shape of the gonopod changes considerably: dorso-distal and ventro-distal "lobes" of the main branch appear now completely distinct, the relief of the zone basad from the ventro-distal "lobe" is complex, for instance with a conical projection of the median edge, projection topped by a spine; the median (ventral) branch of the gonopod – in lateral view so clearly distinct from the main branch – shows in this position a suprisingly "low relief", not protruding medially or dorsally;

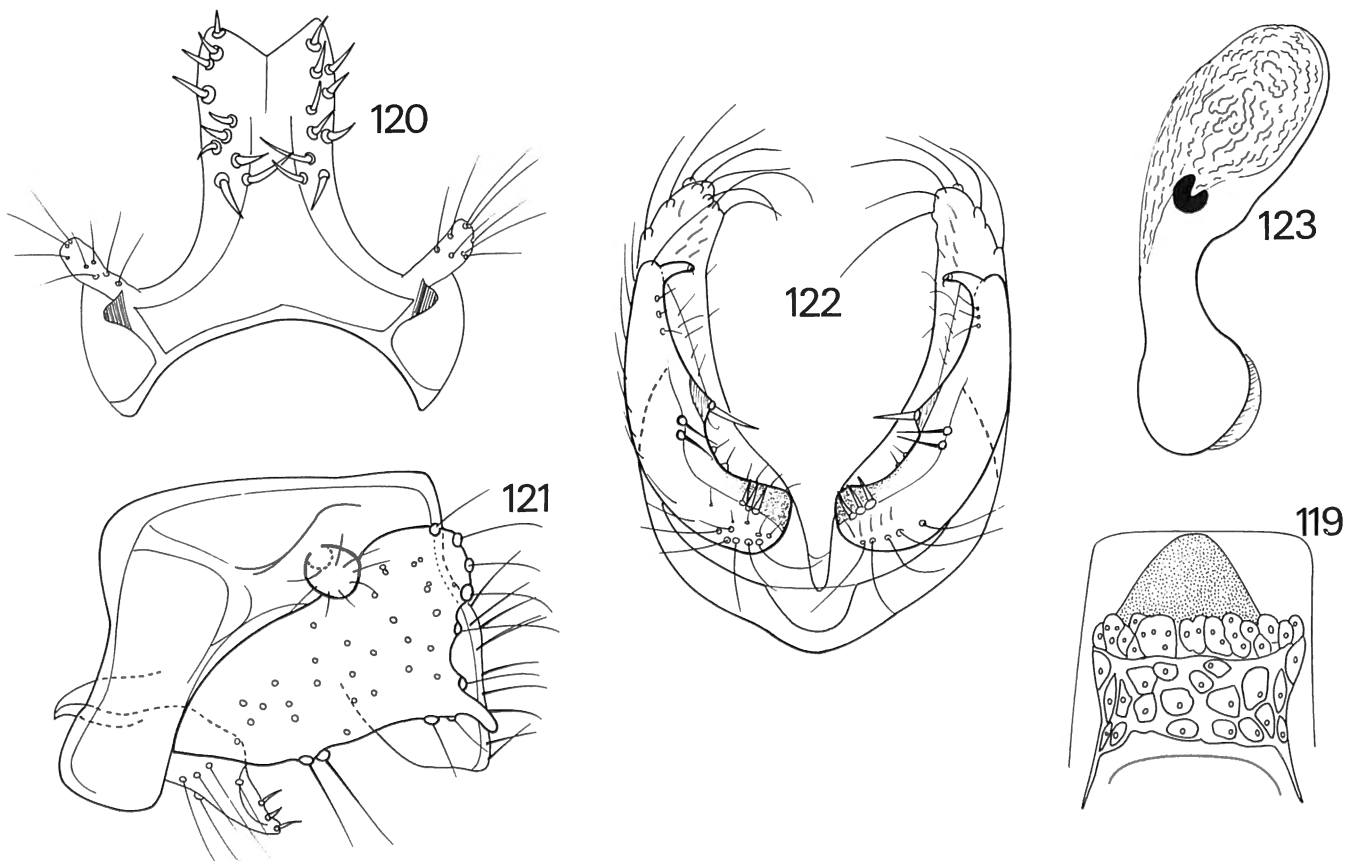
two levels can be recognized here: a distal one, corresponding to the conical part of the branch in lateral view, setose and with the row of 3 small spines, and a more proximal one, angular and slightly darkened (corresponding to the base of the branch in lateral view). Phallic apparatus with strongly bulbous basal part, separated by a short but deep sinus of the ventral margin from the larger, strongly inflated, mainly membranous distal part.

#### Description of ♀

Length of forewing: 3.3-3.9mm. As in all *Helicopsyche* the pattern of the pregenital abdominal sternites seems to be more useful in characterizing the species than the genitalian structures. Sternites III and IV with very well developed reticular ornamentation; sternite V only with faint or very faint reticulation; sternite VI with conical, pointed appendage (rather short but with point protruding beyond the distal margin of the sternite); the characteristic sclerotizations on sternites VII and VIII are represented in fig. 124.

#### Description of larva and case

Larval head completely pale, without any trace of a pattern. Pronotum pale too (only in its posterior 1/3 with a faint pattern of darker and paler spots); on the anterior border almost only normal setae are inserted. Mesonotum with indistinct pattern of darker fields. Metanotum



Figs 119-123 – *Helicopsyche maculisternum* BOTOSANEANU, n. sp., ♂ (119: pattern of abdominal sternite III; 120-122: genitalia, dorsal, lateral, ventral; 123: phallic apparatus, lateral).

characterized by 3 distinct dark spots: two lateral, in the distal end of the small sclerites on both sides of the median shield; and one just at the base of this shield. Larval and pupal case typically helicelliform, soft, from very regularly placed fine sand grains, surface smooth; umbilicus well open.

#### Notes

Apparently, *H. maculisternum* n. sp. belongs to the relatively large Neotropical "haitiense-group", more exactly to those species having gonopods with the lower distal angle of the main branch definitely produced. Some (quite possibly misleading!) similarity can be found with several species from the Greater Antilles (see: BOTOSANEANU & FLINT, 1991), with *H. apicauda* FLINT, 1968, from Dominica, or with the Mexican *H. incisa* ROSS, 1956; but it is presently impossible to find close relationship with some described species. The ♂ genitalia in lateral view, or segment X in dorsal view, may be reasonably similar to those of one or another species belonging to the group already mentioned; but the complex ventral shape of the gonopods, as well as the dark mark on sternite III, render this very small pale species unmistakably distinct.

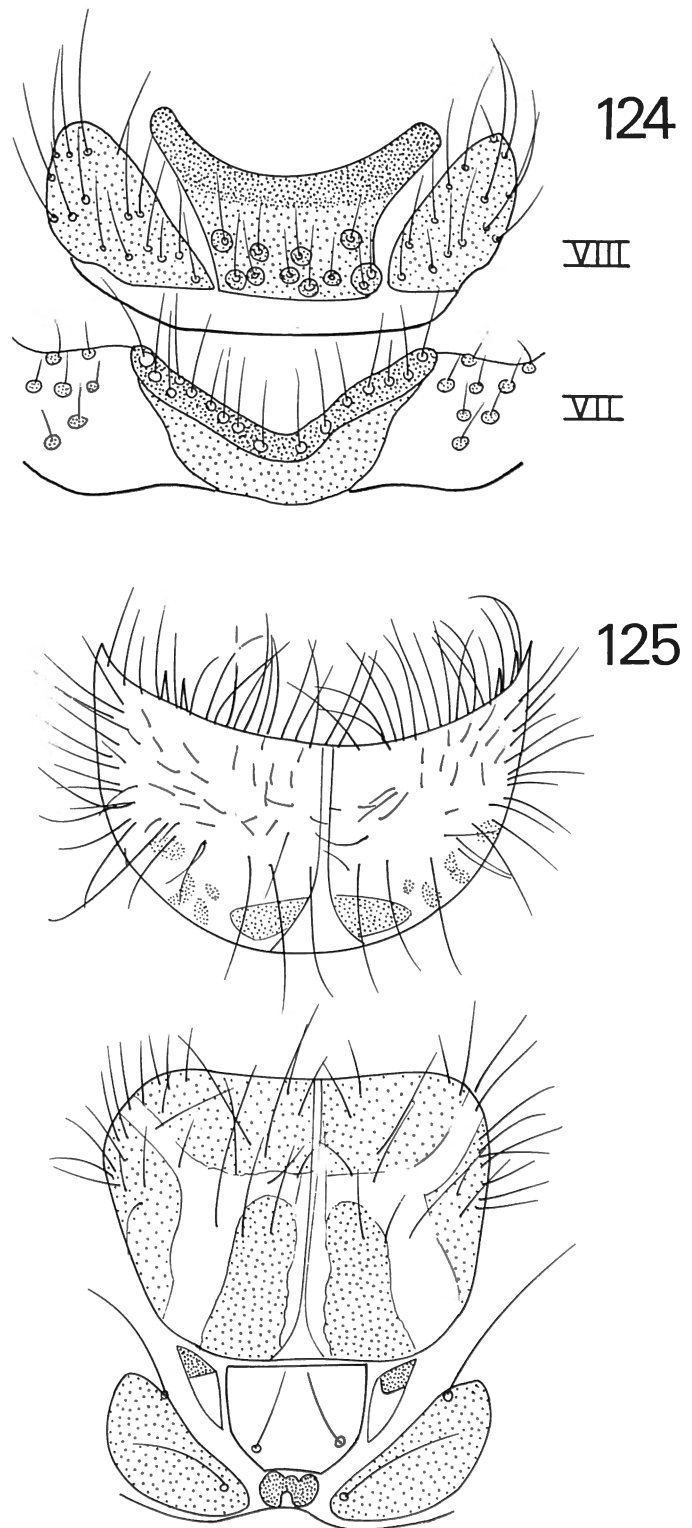
The specific name refers to the characteristic dark mark on abdominal sternite III of the ♂.

#### Faunistic and zoogeographic remarks.

During the present study, 40 species could be named, and 3 others will be named in other publications. At least 7 other species (belonging to genera *Leucotrichia*, ? *Rhyacopsyche*, *Chimarra*, *Xiphocentron*, *Cernotina*, *Polycentropus*, *Oecetis*) could not be named, for one or another reason. Already recorded from Trinidad were also the following species not found during our study: *Hydroptila grenadensis* FLINT, 1968, *Smicridea bulara* FLINT & DENNING, 1989, and *Xiphocentron insularis* (ULMER, 1916) and *X. nisus* SCHMID, 1982. This makes a total of slightly more than 50 species presently known as inhabiting the two islands.

As could be expected, the Caddisfly fauna of Trinidad and Tobago is quite heterogeneous in respect to distributional and affinity patterns. Here follow some more relevant examples.

Rather numerous species have a vast distribution generally from Mexico through Central America to northern South America (sometimes farther northwards: to southern U.S.A., or even farther; sometimes more widely penetrating in South America; and in several cases presently known only from a limited or very limited part of this area). Examples are: *Leucotrichia fairchildi*, *L. limpia*, *Hydroptila veracruzensis*, *Oxyethira azteca*, *Wormaldia planae*, *Chimarra flinti*, *C. spangleri*, *Leptonema albiovirens*, *Smicridea bivittata*, *Oecetis avara*, *Nectopsyche gemmoides*. Species presently known only from our islands, but showing clear affinities with species having such a distributional pattern, are *Leucotrichia ter-*



Figs 124-125 – *Helicopsyche maculisternum* BOTOSANEANU, n. sp. (124: pattern of abdominal sternites VII and VIII of ♀, not cleared in KOH; 125: thorax of larva).

*mitiformis*, *Ochrotrichia oblongata*, *Neotrichia unamas*, *Polyplectropus pugiunculatus*.

A second, less important group, is that of the species distributed – besides our islands – mainly or only in

South America: *Cernotina mandeba*, *Macrostemum ulmeri* (also Central America), *Phylloicus angustior*. With clear affinities with South American elements are species like *Hydroptila tobaga*, *Chimarra spangleri*, *Smicridea tobada*, *Nectopsyche cupreosquamosa*, *Amphoropsyche multispinosa*.

A third, distinctly less important group, is that of the species present also on other Caribbean islands: *Zumatrixia anomaloptera* (Lesser Antilles), *Neotrichia pequenita* (some Greater and Lesser Antilles), *N. nesiotis* (Grenada), *N. tauricornis* (Lesser Antilles – but also Colombia), *Chimarra caribea* (Grenada, Margarita), *Helicopsyche margaritensis* (Grenada, Margarita; but distribution possibly much wider). Clear Caribbean affinities are shown by *Oxyethira tica*.

Remarkable is the high number of species presently recorded only from these islands. Are known only from Trinidad and Tobago: *Protoptila ignera*, *Ochrotrichia platigona*, *Neotrichia unamas*, *Hydroptila acutissima*, *Polyplectropus pugiunculatus*, *Smicridea tobada*, *Smicridea anomala*. Only from Trinidad were recorded: *Mexitrichia simla*, *Leucotrichia inflaticornis*, *L. termitiformis*, n.g.n.sp. 1, *Ochrotrichia oblongata*, *Ochrotrichia* undescribed sp., *O. favus*, *Xiphocentron insularis*, *X. nisus*, *Centromacronema pygmaeum*, *Smicridea bulara*, *Nectopsyche cupreosquamosa*, *Amphoropsyche multispinosa*, *Helicopsyche maculisternum*. In the present state of our knowledge are restricted to Tobago: n.g.n.sp. 2, *Neotrichia armata*, *Hydroptila tobaga*, *Chimarrhodella tobagoensis*.

This makes a total of not less than 25 species being potential endemics. Of course, it may be expected that several of these will be rediscovered on adjacent parts of the South American continent (for instance: the Coastal Range of eastern Venezuela) when these will be carefully searched for Caddis Flies. Nevertheless, if some of the above listed species will prove to be genuine endemics of Trinidad and/or Tobago, this would be an excellent example of rapid rate of speciation. The separation of Trinidad from the continent is a recent event. According to COMEAU (1991) Tobago has a common origin with the Northern Range of Trinidad and may have been contiguous with Trinidad (and therefore South America) from 18,000 y.b.p. and until at least 14,000 y.b.p., this being largely based on assessment of fluctuations of sea depths between the two islands during and after the last glacial period. The separation of Trinidad from the continent began after this event, and the final land separation between Trinidad and S. America occurred some 10,000 y.b.p. (this is a commonly quoted figure). It must be, nevertheless, noted that KENNY (1988) speculates – on the basis of subrecent carbon-dated oceanic coral communities – that separation of Trinidad from the mainland may have been as recent as 1000 years ago, a separation at that time being “more likely to have been a cataclysmic event resulting in inflow of Orinoco waters into the Gulf of Paria, than a gradual rise of sea level or subsidence of sea bottom”. Even if we consider the 10,000 figure as correct, this would be a short time for speciation.

Rather often the importance of passive dispersal for aquatic insects is stressed. Our results may show that this was probably overestimated. There are differences between the trichopteran fauna of Trinidad and Tobago, although these islands are on the same continental shelf and separated only by some 20 km. But the difference between their fauna and that of the Lesser Antilles is impressive, despite the fact that only some 130 km separate Trinidad from Grenada.

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