STUDIES ON THE FAUNA OF SURINAME AND OTHER GUYANAS: No. 55

THE TRICHOPTERA OF SURINAM

STUDIES OF NEOTROPICAL CADDISFLIES, XV

by

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INTRODUCTION

Surinam (or Dutch Guiana) lies on the northeastern coast of South America between French Guiana on the east, Guyana on the west, and Brazil on the south. It is roughly rectangular in shape, about 350 kilometers (210 miles) wide by under 400 kilometers (240 miles) from north to south. Most of the country is less than 200 meters (650 feet) in elevation. The mountainous regions lie along the southern border with Brazil, and extend northwesterly into the center of the country, reaching their highest elevation, 1280 meters (4200 feet), at Julianatop in the Wilhelmina Mountains. The country is drained by five major river systems: from east to west they are the Marowijne, the Suriname, the Saramacca, the Coppename, and the Corantijn.

Stated succinctly, the climate is hot and humid. The mean temperature along the coast is about 27°C (80°F), with the temperatures rising somewhat just inland of the coast and then moderating in the central highlands. The rainfall along the coast decreases from about 2,440 millimeters (94 inches) at the eastern border to about 1,800 millimeters (70 inches) at the western. The rainfall inland apparently averages somewhat higher, and is probably over 2,500 millimeters (100 inches) in many localities. The rainfall occurs in two maxima, one in May–August and the other in December–January, with the minima in September–October and February. The northeast trade winds prevail over the country (summarized from REED, 1928).

This study is based almost entirely on the collections made by Dr. D. C. GEIJSKES in Surinam from 1939 through 1971, and other small but important collections made by other Dutch entomologists and forwarded by Dr. GEIJSKES. I have also included the few examples collected by the Cornell University Expedition to Surinam in 1927 (CU), as well as several specimens found in the collection here (USNM). The holotypes of the species from the GEIJSKES collection will be deposited in the Rijksmuseum van Natuurlijke Historie in Leiden, with duplicates retained here. All specimens without indication of collector have been gathered by this famous naturalist, a bibliography of whom has been recently published (WAGENAAR HUMMELINCK, 1972).

I wish to express my appreciation to Dr. P. WAGENAAR HUMMELINCK and Dr. P. H. VAN DOESBURG, JR., for their help in forwarding material and providing needed publications. Dr. S. KELLNER-PILLAUT of the Muséum National d'Histoire Naturelle, Paris, very kindly loaned the types of *Synoestropsis grisoli* Nav. and *S. euryphlebia* Nav.

Above all I am indebted to Dr. D. C. GEIJSKES who not only collected most of this material but suggested that I begin this study. He has been constantly helpful in checking localities and has prepared the excellent map accompanying this paper (Fig. 299).

ZOOGEOGRAPHY

The knowledge of the trichopterous fauna of South America is very imperfect, with the Guianas among the most poorly known. A few species have been described from French Guiana, one is recorded from Surinam (ULMER, 1913), and 21 are listed from Guyana by MOSELY (1931). In this paper 10 families, 29 genera, and 124 species are recorded from Surinam. Although this number is far greater than that reported from any other northern South American country, I expect that further collecting may double the number of species and add 10–12 genera. Most of the larger and more showy species in some families have been described, but in the families with small, obscure species we have barely begun to describe the fauna. Few species have been reported more than one or two times, and for those records other than that of the type the danger of misdetermination is rather high. With these uncertainties clearly in mind, I will advance the

following tentative generalities on the relationships of Surinam's fauna.

The fauna is one that is typically Neotropical, but it is seemingly made up of several elements. One, typical of the Brazilian Subregion, contains species distributed from northern Argentina northward into the Guianas. The following species, at least, belong to this group: *Cyrnellus risi* (Ulm.), *Nyctiophylax neotropicalis* Flint, *Leptonema sparsum* Ulm., *L. dissimile* Mos., *L. columbianum* Ulm., *Neoleptonema aspersum* Ulm., *Brachysetodes duodecimpunctatus* (Nav.), *Oecetis punctipennis* (Ulm.), *Nectopsyche gemma* (Müll.), *N. quatuorguttata* Nav., *N. punctata* Ulm., *N. muhni* Nav., *Triplectides gracilis* (Burm.), and *Cochliopsyche opalescens* Flint. These species seem to be encountered in the lowlands near the larger rivers.

A second element falls into a Circumcaribbean pattern. These species have a range across northern South America, northwardly into Central America, and sometimes into the Antilles. *Cyrnellus fraternus* (Bks.), *Oxyethira azteca* (Mos.), *Smicridea bivittata* (Hag.), *Macronema ulmeri* Bks., *M. fraternum* Bks., *Plectromacronema comptum* Ulm., and *Helicopsyche vergelana* Ross exhibit all or part of this pattern. It seems that these species are found in much the same areas in Surinam as the species of the preceding group.

The final element is composed of those species that are known from only one or a few localities in Surinam or adjacent countries. (I believe that further collecting will show that many of these species belong to one or the other of the preceding elements). However, it seems probable that a certain percentage are narrowly distributed and should be considered as Guianian. These are generally the species reported from the mountainous regions of Surinam, although some are found in the lowlands. Most of these species belong to genera whose larvae are restricted to small streams, flowing rapidly over a substrate of rocks and stones. Because these rather narrow ecological limits are to be found only in the mountainous regions, and the Guianan mountains have been isolated more or less continuously since the Miocene, it is logical to expect an endemic fauna. All of the potential endemics, however, belong to widespread Neotropical genera, and are probably of a more recent geological origin.

I see no evidence in the Trichoptera of an extremely ancient fauna as might be hypothesized if a number of endemic genera were found. Nor do I see any evidence of elements from the Chilean Subregion as is seen in southeastern Brazil and in the Andes.

TAXONOMY

The following keys to families should correctly place all genera known to occur in northeastern South America. The keys to genera and species, however, are designed to place only those genera and species encountered in this study. No determination should be considered complete until the genitalia of the specimen have been compared with, and found virtually identical to, the figures of the species under consideration.

KEY TO FAMILIES

1. Mesoscutellum with posterior forming a triangular, flat area with a vertical posterior margin; forewing length 4 mm or less . . . . . Hydroptilidae
   Mesoscutellum rounded, without vertical margins; forewing length 3 mm or more 2

2. Ocelli present 3
   Ocelli absent 5

3. Maxillary palpi with fifth segment 2 or 3 times as long as fourth . . . . . Philopotamidae
   Maxillary palpi with fifth segment barely longer than fourth 4

4. Foretibia with apical spurs large and conspicuous . . . . . Rhyacophilidae
   Foretibia with apical spurs lacking, or small and hairlike . . . . . Glossosomatidae

5. Terminal segment of maxillary palpus elongate and generally with suturelike cross-striae 6
Terminal segment of maxillary palpus subequal to preceding segment, without cross-striae 7

6. Foretibia often with preapical spur, or if without, then with R_{2+3} of forewing unbranched . . . . . Psychomyiidae
Foretibia never with preapical spur, forewing with R_{2+3} branched . . . . . Hydropsychidae

7. Midtibia with a preapical spur 8
Midtibia without preapical spur 9

8. Mesoscutellum small and rectangular . . Calamoceratidae
Mesoscutellum large, elongate, obliquely angulate anteriorly . . . . . Odontoceridae

9. Hindwing with anterior margin bearing a row of hooked hamuli basally . . . . . Helicopsychidae
Hindwing lacking hamuli . . . . . Leptoceridae

Family Rhyacophilidae

The Neotropical region contains many genera of the family, but all belong to the subfamily Hydrobiosinae. Most of these genera are confined to the Chilean Subregion, with only one, *Atopsyche*, having an extensive range outside of Chile. It is unlikely that any other genera of the family occur in Surinam.

Genus **Atopsyche** Banks

Species of *Atopsyche* are found from the southwestern United States thoughout Central America, the Greater Antilles, and the mountainous regions of South America as far south as western

Argentina. The larvae have been described a number of times (Flint, 1963, p. 458).

Atopsyche species

There are 4 females of a species of this genus in the collection. Unfortunately they cannot be determined to species at this time, but they are recorded here to signal the presence of this family and genus in Surinam.

Material. – Surinam, Nassau Mountains, 11.2, 19 March 1949, 3♀; same but creek, March 1949, 1♀.

Family GLOSSOSOMATIDAE

All of the 12 genera of the Glossosomatidae that are found south of the mountains of central Mexico belong to the subfamily Protoptilinae, which is unrecorded outside of the New World. Species are found in all parts of the Neotropical Region including Chile and the West Indies. Although all species for which males were taken in this survey belong to *Protoptila*, it is probable that *Mexitrichia* also occurs in Surinam, and several other genera may also. The most complete keys to the Neotropical genera are found in FLINT, 1963, p. 464 and 1971, p. 13.

Genus **Protoptila** Banks

This is a very large genus found over most of the New World; it is especially diverse in the tropics. Six species are here recorded from Surinam, but these undoubtedly represent only a fraction of the species that will ultimately be found.

KEY TO SPECIES OF *Protoptila*

1. Aedeagus with membranous lateral processes bearing an apical spine 2
   Aedeagous without lateral membranous processes . . *ctilopsis*

2. Aedeagus with a small, narrow basodorsal process 3
   Aedeagus with basodorsal process greatly widened dorsad 4

3. Lateral lobe of tenth tergum ending in a single sharp point, apex of central tube much enlarged . . . . . *simplex*
   Lateral lobe of tenth tergum obliquely truncate, apex of central tube of aedeagus slender . . . . . *lucia*

4. Tenth tergum with a distinct ventrolateral sclerite 5
   Tenth tergum a simple trianguloid lobe . . . . . *ensifera*

5. Tenth tergum with mesal lobe rounded apicolaterally . . . . . *ctenacantha*
   Tenth tergum with mesal lobe produced into an elongate apicolateral process . . . . . *mina*

Protoptila simplex Flint

Fig. 1

Protoptila simplex FLINT, 1971, p. 15.

This species was recently described from numerous localities in the Amazon Basin of Brazil. It is apparently widely distributed in Surinam as well.

Material. – Surinam, Nickerie River, Blanche Marie Falls, 15 Feb. 1971, at light 10 p.m., 6♂; same, but 11 Feb. 1971, 1♂. Käyser Airstrip, 27 June 1963, S. Ligorie, at light 8–9 p.m., 1♂. Suriname River, Marowijne Creek, kampsoela (Grandam), 29 July 1964, at light, 2♂. Lawa River, Anapaike, 14 Nov. 1963, S. Ligorie, at light, 62♂. Tapanahoni River, Gwé Rapids, 4 Oct. 1952, at light, 1♂.

Protoptila lucia n. sp.

Fig. 3

This species is very closely related to the preceding, *P. simplex* Flint, but may be distinguished by the male genitalia. In *lucia* n. sp., the lateral lobes of the tenth tergum are obliquely truncate, the eighth sternum is less deeply divided, the apical spine of the lateral arms of the aedeagus is larger and slightly angulate, and the apex of the central portion of the aedeagus is only slightly enlarged.

Adult. – Length of forewing, 1.5 mm. Color in alcohol dark brown; forewing with a transverse white band at midlength, a white spot on anterior margin at 3/4 length, possibly some white along posterior margin. Sixth sternum with an apicomesal point. Male genitalia: Eighth sternum produced as a scooplike lobe, apex shallowly divided. Ninth segment not produced into eighth sternum. Tenth tergite produced posterolaterally and bearing two small teeth apically. Aedeagus with basomesal structure formed of a narrow mesodorsal keel and a broad, transverse ventral plate; with membranous lateral arms bearing a large, apical, curved spine; midlength complex consisting of rounded lateral lobes, and an upright, pointed mesal process; apical tube not enlarged apicad, tip curved downward.

Material. – Holotype, male: Surinam, Lucie River, Camp, Wilhelmina Mountains Expedition, 8 July 1963, S. Ligorie, at light. Paratypes: Same data, 4♂.

Protoptila ensifera Flint

Fig. 5

Protoptila ensifera FLINT, 1971, p. 16.

This species was recently described from the Amazon Basin of Brazil and is easily recognized by the structure of the eighth sternum.

Material. – Surinam, Nickerie River, Lombok Falls, 5 Feb. 1971, 1♂. Nickerie River, Stondansi, 2 Feb. 1971, at light, 1♂.

Protoptila ctenacantha n. sp.

Fig. 2

This species is closely related to the following species, from which it differs most strikingly in the structure of the tenth tergum. In *P. ctenacantha* the mesal lobe of the tenth tergum is not prolonged apicolaterally, and the ventrolateral lobe is much shorter.

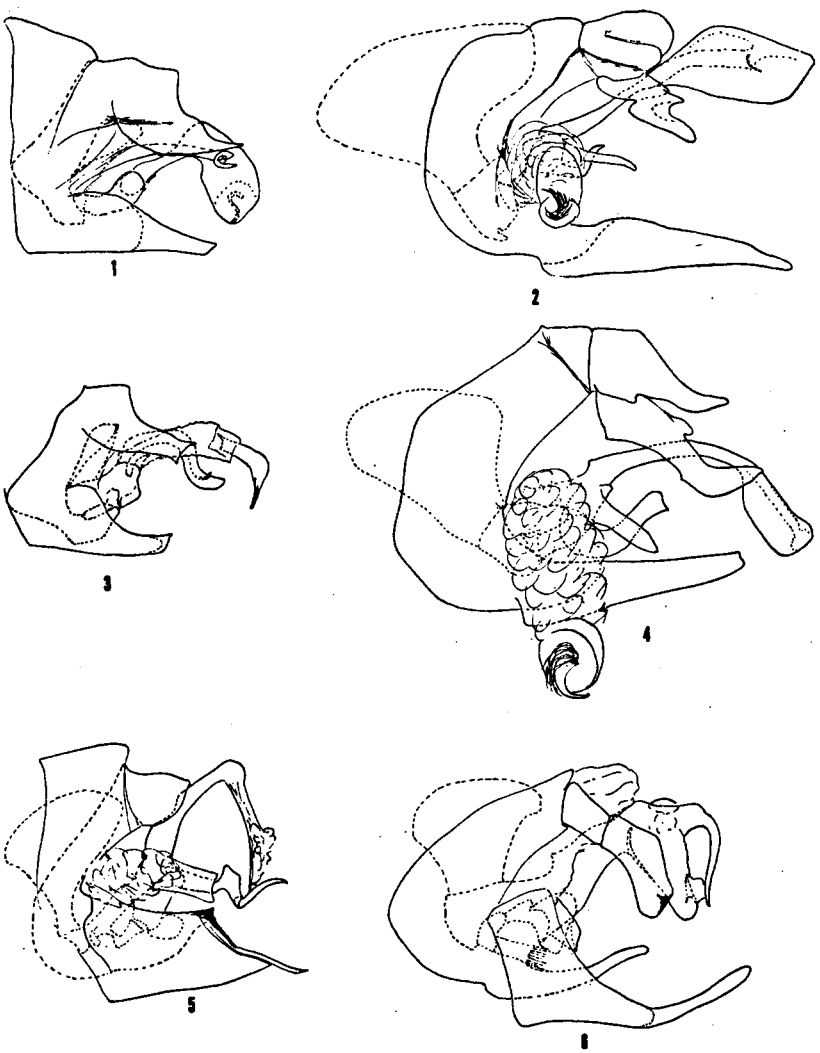
Adult. – Length of forewing, 3 mm. Color in alcohol, brown. Sixth sternum with a compressed mesal process; fifth sternum with a pair of anterolateral knobs connected across sternum by an embossed line. Male genitalia: Eighth sternum produced into a long, slender, mesal process. Ninth segment rounded anteriorly. Tenth tergum consisting of mesal and lateral lobes, the latter bearing a heavily sclerotized, ventrolateral, twisted process. Aedeagus with a large mesal, basodorsal lobe; midlength complex bearing a pair of posteriorly directed spines and a pair of more mesal, hooked spines; with a membranous lateral process with apical tube bearing a twisted, apical spine with many basal hairs; apical tube very slender basally, expanded apicad, with a small internal spine.

Material. – Holotype, male: Surinam, Coeroeni-eiland, Aug. 1959, D. C. Geijskes.

Protoptila mina n. sp.

Fig. 4

Although closely related to the preceding species, *P. mina* is easily recognized by the structure of the tenth tergum. The apicolateral arm of the mesal lobe and the long, ventrolateral lobes of the tenth tergum are diagnostic.



Figs. 1–6. — *Protoptila simplex* Flint: 1, ♂ genitalia, lateral. *P. ctenacantha* n. sp.: 2, ♂ genitalia, lateral. *P. lucia* n. sp.: 3, ♂ genitalia, lateral. *P. mina* n. sp.: 4, ♂ genitalia, lateral. *P. ensifera* Flint: 5, ♂ genitalia, lateral. *P. ctilopsis* n. sp.: 6, ♂ genitalia, lateral.

Adult. – Length of forewing, 3 mm. Color in alcohol, brown. Sixth sternum with a compressed ventromesal process. Male genitalia: Eighth sternum produced into a long mesal process tapering to a truncate apex. Ninth segment with anterior margin oblique, truncate. Tenth tergum consisting of mesal and ventrolateral lobes; mesal lobe produced into slightly bowed apicolateral arms, ventrolateral lobe elongate, narrow, with a small, blunt tooth on dorsal margin. Aedeagus with a large mesal, basodorsal lobe; midlength complex with lateral pair of spines enlarged, pointed, mesal pair enlarged, upturned, apically truncate; with a membranous lateral process with apical tube bearing a twisted spine with many basal hairs; apical tube very slender, slightly expanded apicad.

Material. – Holotype, male: Surinam, Wilhelmina Mountains, Linker Coppename River, Zuid Creek, 11 Aug. 1943, D. C. Geijskes, at light.

Protoptila ctilopsis n. sp.

Fig. 6

This species is very closely related to *P. condylifera* Flint. It differs in many small points throughout the genitalia, such as the shape of the tenth tergite, the dorsal spines of the aedeagus, but especially in the shape of the ventrolateral spines of the aedeagus which are very short and the ventromesal spines which are appressed to the body of the aedeagus, and the posterior process of the eighth sternum which in ventral aspect is much broader and more deeply divided.

Adult. – Length of forewing, 2.5 mm. Color in alcohol, brown. Sixth sternum with a bluntly pointed and compressed mesal process. Male genitalia: Eighth sternum produced into a long, and in ventral aspect broad, process deeply divided mesally. Ninth segment rounded anteriorly, produced into a long posteroventral process in ventral aspect rather broad with a shallowly divided tip. Tenth tergum with a roughly quadrate basal section, with apical section of roughly same width throughout, apex angled ventrad and with a

mesal tooth. Aedeagus with a large, mesal, basodorsal lobe; complex at midlength with a pair of ventral rodlike appendages, a pair of short, blunt, lateral lobes, and a pair of appressed mesal lobes; central tube with apical lobe bearing a small internal sclerite, and giving rise basodorsally to a pair of heavily sclerotized horns which are slightly twisted and decurved.

Material. – Holotype, male: Surinam, Brownsberg, mountain creek near Golddiggers camp, 10 Aug. 1958, D. C. Geijskes.

Family PHILOPOTAMIDAE

The family Philopotamidae is found in all regions of the world, with species occurring on some of the more remote oceanic islands. Four genera are known to occur in South America, although only 1 was taken in Surinam. It is probable that species of the genera *Wormaldia* and *Chimarrhodella* will be found in the more mountainous regions of the country in the future. A key to all Neotropical genera may be found in FLINT, 1971, p. 19.

Genus **Chimarra** Stephens

The genus *Chimarra* is very large and widely distributed, being found in all the zoogeographic regions of the World. It is largest and most diverse, however, in the tropics, especially those of the New World. Thirteen species of the genus are here recorded from Surinam, and it seems quite probable that more will be found.

KEY TO SPECIES OF *Chimarra*

1. Tenth tergum a simple, hoodlike structure; eighth tergum with hirsute posterolateral lobes. 2

Tenth tergum divided mesally, variously formed; eighth tergum often with processes, but these not hirsute 3

2. Dorsal branch of hirsute lobe of eighth tergum well developed; clasper with a pointed mesal process . . . . . *scopula*
Dorsal branch of hirsute lobe reduced to a few spines borne directly from lobe; clasper with a blunt mesal lobe . *scopuloides*

3. Tenth tergum consisting of 2 pairs of long, slender rods, dorsalmost well separated, ventralmost being contiguous except for tips 4
Tenth tergum variously formed, often with a pair of flattened plates 5

4. Tips of ventral rods of tenth tergum upturned, clasper with a broad mesobasal shelf . . . . . *septifera*
Tips of ventral rods recurved, clasper lacking mesobasal shelf . . . . . *retrorsa*

5. Eight tergum with posterior margin produced into 1 or 2 lobes or spines 6
Eighth tergum with posterior margin unmodified 9

6. Eighth tergum with posterior margin bearing a pair of submesal rounded lobes and a broad mesal flap. 7
Eighth tergum with a simple mesal lobe 8

7. Tenth tergite in lateral aspect evenly decurved, tapering . . . . . *fimbriata*
Tenth tergite nearly straight and truncate apically . . . . . *neofimbriata*

8. Tenth tergite in lateral aspect a broad, truncate plate. . . . . *truncatiloba*
Tenth tergite pointed apically, with a middorsal knob *claviloba*

9. Clasper long, slightly widened apically, tip bifid in both dorsal and lateral aspect . . . . . *simpliciforma*
Clasper short, generally broad basally, often tapering apically, tip not distinctly bifid 10

10. Slender processes dorsolaterally from ninth and tenth terga . . . . . *uara*
Such processes only from ninth tergum or lacking 11

11. A slender process posteriorly from dorsolateral angle of ninth tergum . . . . . *usitatissima*
Without this process 12

12. Clasper with an elongate apicodorsal lobe . . . . . *gondela*
Clasper elongate, without a distinct elongate lobe . . . . . *caribea surinamensis*

Chimarra (Curgia) scopula n. sp.

Fig. 7–10

This species is very closely related to the following. It is to be recognized by the dorsal branch of the hirsute process of the eighth tergum being well-developed, and the clasper which in posterior view bears a slender dorsomesal process.

Adult. – Length of forewing, 4.5 mm. Color brown; forewing brown, maculate with golden yellow hairs. Forewing without bulla between R_1 and R_s; hindwing with 4 branches to R_s and 3 to M. Male genitalia: Eighth segment narrow ventrally; tergum with a deep v-shaped cleft mesally, with thin dorsolateral lobes; with 2 pairs of brush-bearing processes from posterolateral margins, dorsalmost one being slender with only a few spinose setae, ventralmost one being broader with a large brush of spinose setae. Ninth segment prolonged anteriorly into a pair of ventrolateral lobes, with a slender middorsal process meeting base of cleft in eighth tergum; posteroventral process long and compressed. Tenth tergum entire,

hood-like with apex slightly bulbous. Cercus clavate, arising from flanks of tenth tergum. Clasper short and broad, with a dark, apicomesal process. Aedeagus with 3 heavy apical spines, a pair of longer basal spines, and a basal ring and rod.

Material. – Holotype, male: Surinam, Saramacca River, Wedeboh Rapids, 6 Mar. 1958, D. C. Geijskes. Paratypes. – Suriname River, Kabelstation, under leaves, 25 Sept. 1938, 1♂ 1♀; same, but river bank in leaves, 8♂.

Chimarra (Curgia) scopuloides n. sp.

Fig. 11–14

This and the preceding species are very closely related. In *C. scopuloides* the dorsal branch of the hirsute process of the tenth tergum is reduced to several spines borne directly from the process, the tip of the tenth tergum is distinctly upturned, and the clasper is quadrate in lateral aspect with the dorsomesal process reduced to a blunt, broad lobe.

Adult. – Length of forewing, 5.5 mm. Color in alcohol, pale brown. No bulla between R_1 and R_s in forewing; hindwing with 4 branches to R_s and 3 to M. Male genitalia: Eighth segment narrow ventrally; tergum deeply divided mesally with thin, rounded dorsal lobes, from ventrolateral angle bearing a curved process bearing an apical brush of setae, and a pair of enlarged setae at midlength. Ninth segment slightly produced anteroventrally, with a slender dorsomesal process meeting base of cleft in eighth tergum; posteroventral process broken. Tenth tergum entire, apex sharply upturned. Cercus clavate, arising from flank of tenth tergum. Clasper short, nearly rectangular in lateral aspect, with a darkened dorsomesal lobe. Aedeagus with 7 short spines, and a basal ring and rod assembly.

Material. – Holotype, male: Surinam, Tapanahoni River, Gwé Rapids, 4 Oct. 1952, D. C. Geijskes, at light.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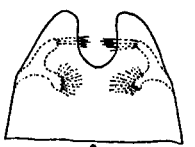
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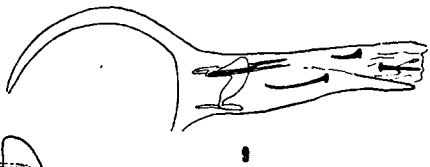
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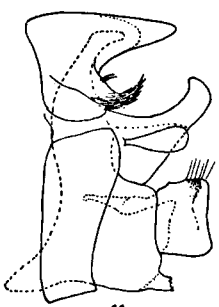
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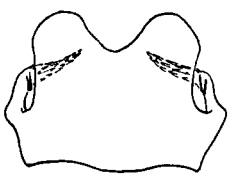
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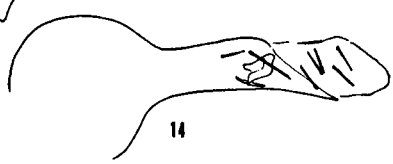
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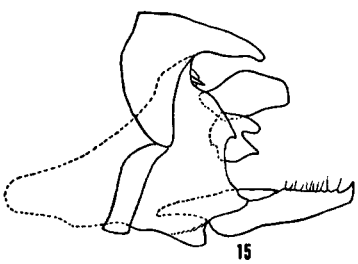
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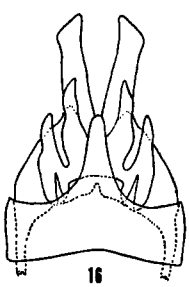
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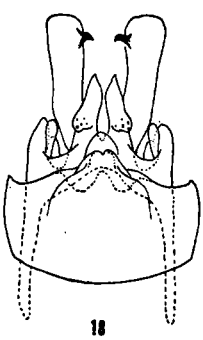
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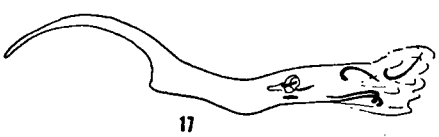
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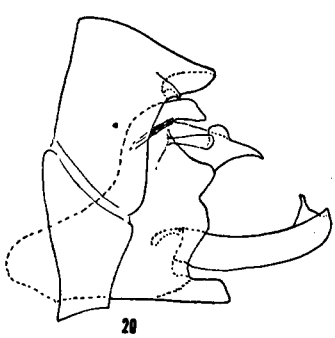
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Chimarra (Chimarra) truncatiloba n. sp.

Fig. 15–17

This species is closely related to *C. medioloba* Flint, recently described from the Amazon Basin. From this species it may be distinguished by the truncate apex of the tenth tergite, the longer ninth sternum, and the presence of a small, sharp point on each side dorsally from the ninth tergum.

Adult. – Length of forewing 4.5 mm. Color dark brown; wings mostly denuded. Forewing without a bulla between R_1 and R_s; hindwing with 4 branches to R_s and 3 to M. Male genitalia: Eighth tergum developed into a conical, hoodlike lobe over ninth segment. Ninth segment anteriorly produced into rounded, ventrolateral lobes; with a small midventral keel; dorsomesally produced into a transverse, straplike sclerite, flanked on each side by a small, pointed sclerite (cercus?). Tenth tergum composed of a pair of slightly sclerotized broad, rather rectangular plates flanking the apex of the aedeagus, from whose ventrolateral regions arises a heavy sclerotized, bifid sclerite. Clasper long and narrow, tip produced into a small upturned point. Aedeagus long, slender, and angulate; internally with 2 pairs of C-shaped spines apically, 1 pair of short spines and an indistinct ring basad.

Material: – Holotype, male: Surinam, Nassau Mountains, km. 16.4, creek, 22 Mar. 1949, D. C. Geijskes. Paratypes: Litani River, Waremapan Rapids, 29 July 1939, 1♂; same, but 30 July 1939, 1♂.

Fig. 7–20. — *Chimarra* (*Curgia*) *scopula* n. sp.: 7, ♂ genitalia, lateral; 8, eighth tergum, dorsal; 9, aedeagus, lateral; 10, clasper, posterior. *C.* (*Curgia*) *scopuloides* n. sp.: 11, ♂ genitalia, lateral; 12, eighth tergum, dorsal; 13, clasper, posterior; 14, aedeagus, lateral. *C.* (*C.*) *truncatiloba* n. sp.: 15, ♂ genitalia, lateral; 16, ♂ genitalia, dorsal; 17, aedeagus, lateral. *C.* (*C.*) *claviloba* n. sp.: 18, ♂ genitalia, dorsal; 19, aedeagus, lateral; 20, ♂ genitalia, lateral.

Chimarra (Chimarra) claviloba n. sp.

Fig. 18–20

Although this species is clearly a member of the *medioloba* group, it is quite different from the other described species. The rather simple structure of the eighth tergum, the dorsal knobs on the tenth tergum, and the hairs at the apex of the aedeagus, are all distinctive.

Adult. – Length of forewing, 6.5 mm. Forewing without bulla between R_1 and R_s; hindwing with 4 branches to R_s and 3 to M. Male genitalia: Eighth segment narrow ventrally; dorsally with posterior margin produced mesally, with a small apical excision, and with a small darkened tooth dorsolaterally in lateral aspect. Ninth segment produced anteriad lateroventrally; posteromesal process terete, short; dorsomesally produced into a small rounded lobe, posterolateral margin produced as a thin sclerite. Cercus a small clavate lobe. Tenth tergum deeply divided dorsomesally, each lateral half with a small knoblike dorsal lobe. Clasper elongate, parallelsided in dorsal aspect, slightly tapered in lateral, with a distinct upright, apicomesal point. Aedeagus with a bulbous base, basal ring and rod assembly, apically with six short, black spines; apicolateral margin with numerous short hairs.

Material. – Holotype, male: Surinam, Nassau Mountains, km. 11.2, creek, March 1949, D. C. Geijskes.

Chimarra (Chimarra) fimbriata n. sp.

Fig. 24–26

This and the following species, both members of the *medioloba* group, are very closely related. The dorsolateral processes of the ninth tergum are longer, the tenth tergite in lateral aspect more tapering and decurved, and the two basal fimbriate spines in the aedeagus are short and heavy in *fimbriata*. The mesal lobe of the eighth tergum is in dorsal aspect rounded and spoonlike in the type,

but the paratype has this lobe more sharply truncate as in the following species; however the lobes of the ninth and tenth terga, and spines of the aedeagus are like those of the type.

Adult. – Length of forewing 4.5 mm. Color brown, but mostly denuded. Forewing without bulla between R_1 and R_s; hindwing with 4 branches to R_s and 3 to M. Male genitalia: Eighth segment very narrow ventrally; dorsally produced into a pair of rounded lateral lobes, mesally with a thin, clavate lobe. Ninth segment produced anteriorly into a pair of rounded ventrolateral lobes; posteromesal process apparently broken; dorsolaterally with a long, slender process; posterolateral margin produced into a broadly bifid flap. Tenth tergum divided into a heavily sclerotized decurved, beaklike structure on each side of the aedeagus; a small, clavate lobe dorsolaterally (cercus?) and a slightly produced ventral lobe. Clasper elongate, nearly parallelsided with a small apical tooth. Aedeagus with a pair of long apical spines, 2 pairs of small subapical spines, a pair of large basal spines with fimbriate tips, and an indistinct basal ring.

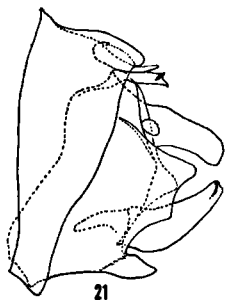
Material. – Holotype, male: Surinam, Nassau Mountains, trail south from km. 7, large mountain creek, 3 Mar. 1949, D. C. Geijskes. Paratype: Brownsberg, top, 475 m near small creek, 20 Sept. 1938, at light, 1♂.

Chimarra (Chimarra) neofimbriata n. sp.

Fig. 21–23

This species is very closely related to the preceding, but may be recognized by the shorter, blunter dorsolateral process of the ninth tergum, the broader, blunter lateral lobe of the tenth tergum, and the long, slender spines of the aedeagus.

Adult. – Length of forewing, 5.5 mm. Forewing without bulla between R_1 and R_s; hindwing with 4 branches to R_s and 3 to M. Color in alcohol pale brown; completely denuded. Male genitalia: Eighth segment narrow ventrally; tergum produced into a pair of rounded lateral lobes, mesally with a thin, parallelsided lobe, whose apex is shallowly emarginate. Ninth segment slightly produced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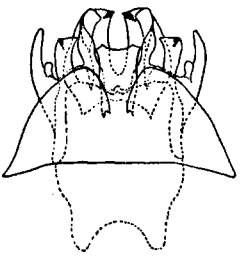
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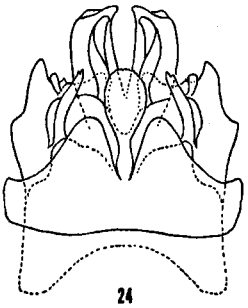
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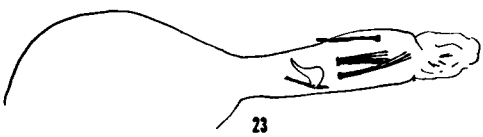
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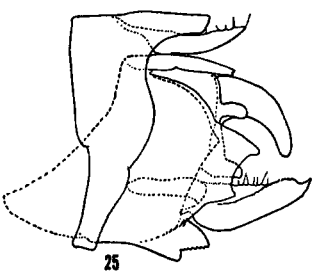
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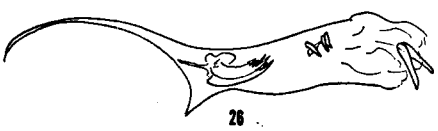
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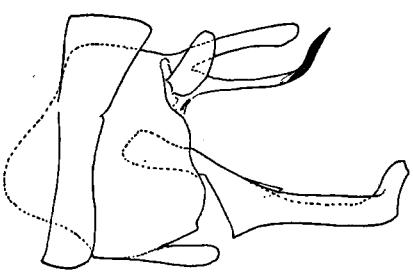
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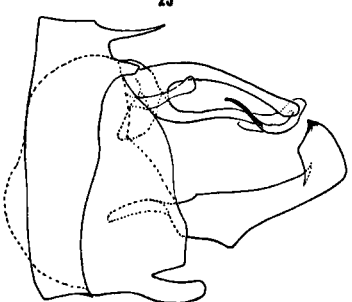
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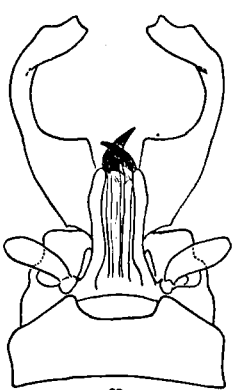
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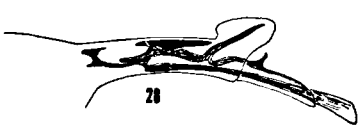
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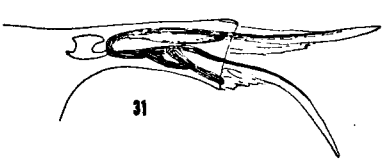
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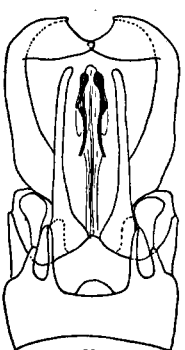
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anterolaterally; posteromesal process short and pointed; dorsolaterally with an elongate, truncate lobe; posterolateral margin produced into a thin, broad lobe. Tenth tergum deeply divided mesally, each lateral plate thin, slightly decurved. Cercus a small rounded lobe. Clasper elongate, nearly parallelsided with a small, darkened apicomesal tooth. Aedeagus with a pair of elongate spines, two pairs of multifid spines, several small apical spinlets, and a basal ring and rod.

Material. – Holotype, male: Surinam, Wilhelmina Mountains, trail II km. 12, mountain creek, 20 Sept. 1943, D. C. Geijskes.

Chimarra (Chimarra) septifera n. sp.

Fig. 27–29

This and the following species form a closely related pair. There are, however, differences between the two in all parts of the genitalia. The eighth tergum is quite simple, the tips of the ventral rods of the tenth tergum are upturned, and the claspers have a broad basomesal shelf in this species.

Adult. – Length of forewing, 4 mm. Color in alcohol, brown. Forewing without bulla between R_1 and R_s; hindwing with 3 branches to R_s and 2 to M. Male genitalia: Eighth segment narrowly annular, tergum with posterior margin shallowly emarginate mesally. Ninth segment broad laterally, with an elongate posteromesal process. Tenth tergum composed of a pair of long, slender, dorsal rods, and a slender central process bearing a pair of darkened, upturned apical spines. Cercus large, nearly circular. Clasper long and slender in lateral aspect with tip enlarged and angled dorsomesad, with a

Figs. 21–32. — *Chimarra* (*C.*) *neofimbriata* n. sp.: 21, ♂ genitalia, lateral; 22, ♂ genitalia, dorsal; 23, aedeagus, lateral. *C.* (*C.*) *fimbriata* n. sp.: 24, ♂ genitalia, dorsal; 25, ♂ genitalia, lateral; 26, aedeagus, lateral. *C.* (*C.*) *septifera* n. sp.: 27, ♂ genitalia, lateral; 28, aedeagus, lateral; 29, ♂ genitalia, dorsal. *C.* (*C.*) *retrorsa* n. sp.: 30, ♂ genitalia, lateral; 31, aedeagus, lateral; 32, ♂ genitalia, dorsal.

broad, shelflike, basomesal expansion. Aedeagus with a bulbous, membranous dorsal lobe from which projects ventrally a long rodlike process; a pair of slender lateral sclerotized ribbons bearing dorsally a long slender spine in the dorsal lobes, and a short spine more apicad, this pair of ribbons united into a basal tube with a dark hood; basally with a rod and ring assembly.

Material. – Holotype, male: Surinam, Brownsberg, mountain creek near Golddiggers camp, 10 Aug. 1958, D. C. Geijskes. Paratype: same data, 1♂.

Chimarra (Chimarra) retrorsa n. sp.

Fig. 30–32

This and the preceding species form a very distinctive group clearly related to *C. diakis* Flint from Brazil. From these species *retrorsa* is to be distinguished by the two pairs of spines from the posterior margin of the eighth tergum, and the basally directed apical spines of the ventral rod of the tenth tergum.

Adult. – Length of forewing, 4 mm. Color in alcohol, pale yellowish. No bulla in forewing between R_1 and R_s; hindwing with 3 branches to R_s and 2 to M. Male genitalia: Eighth tergum with two pairs of posterior processes, dorsalmost longest and swordlike. Ninth segment barely expanded anteriad; with an elongate ventromesal process. Tenth tergum consisting of a pair of long, slender dorsal rods and a slender central portion bearing a pair of slender apical spines directed basad. Cercus, very pale, but apparently thin and enlarged apicad. Clasper long and slender, with tip enlarged and angled dorsomesad, without a basomesal shelf. Aedeagus with a pair of lateral ribbonlike sclerites projecting as two pairs of long appendages apically, and bearing near base ventrally two pairs of short spines; with an indistinct basal rod and ring assembly.

Material. – Holotype, male: Surinam, Brownsberg, top, 475 m, near small creek, 15 Sept. 1938, D. C. Geijskes. Paratypes: Brownsberg, mountain creek near Golddiggers camp, 10 Aug. 1958, 2♂.

Chimarra (Chimarra) gondela n. sp.

Fig. 33–36

Although clearly a member of the *duckworthi* group of species, *C. gondela* is easily recognized by the structure of the male genitalia. The long, decurved and darkened lateral lobes of the tenth tergum, and the slender dorsal lobe arising from an expanded basal section of the clasper are distinctive.

Adult. – Length of forewing 4.5 mm. Color in alcohol, dark brown. Forewing with bulla between R_1 and R_s; hindwing with 4 branches to R_s and 3 to M. Male genitalia: Eighth segment narrowly annular, tergum unmodified. Ninth segment with a short anterior process dorsolaterally; with a conical, slightly compressed ventromesal process. Cercus small, barely projecting. Tenth tergum with a semimembranous dorsomesal lobe; lateral lobe with a dorsobasal flap, expanded ventrolaterally and bearing 2 sensillae, apex produced, tip darkened, decurved. Clasper with a broad base, and a digitate dorsal lobe curved posteromesally. Aedeagus (mostly everted in type) with a pointed apicoventral tip, two equal spines, a spiculate pouch with a black hook, and a slender sclerite bearing thin wings basally and at midlength, and with a pair of ovate structures near its tip.

Material. – Holotype, male: Surinam, Brownsberg, mountain creek near Golddiggers camp, 10 Aug. 1958, D. C. Geijskes.

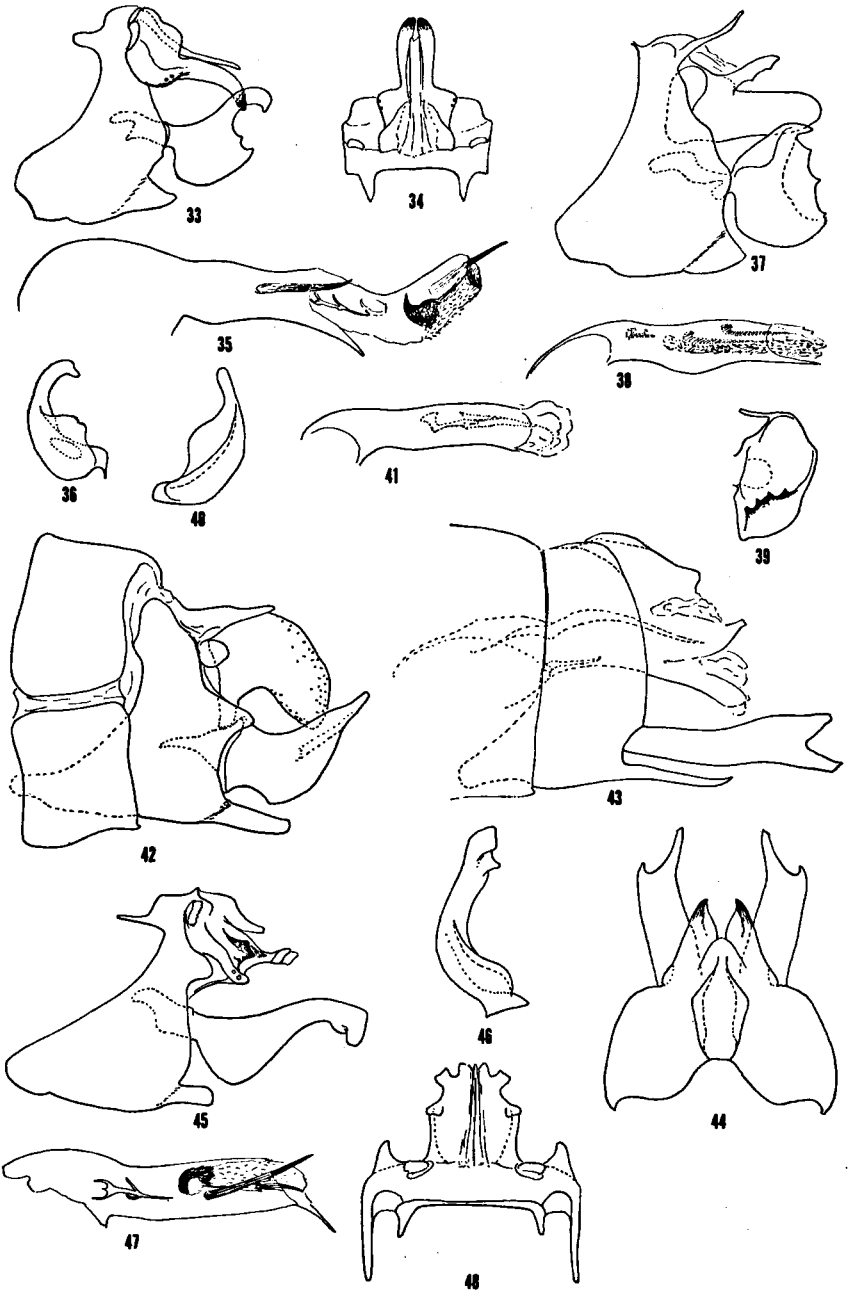
Chimarra (Chimarra) uara Flint

Fig. 37–39

Chimarra uara Flint, 1971, p. 24.

C. uara was recently described from near the Venezuelan border of northern Brazil. This is the first record from Surinam.

Material. – Surinam, Brownsberg, mountain creek near Golddiggers camp, 10 Aug. 1958, D. C. Geijskes, 4♂.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Chimarra (Chimarra) usitatissima Flint

Fig. 40–42

Chimarra usitatissima FLINT, 1971, p. 24.

This species was recently described from numerous localities in the Amazon Basin. It is apparently widespread in Surinam as well.

Material. – Surinam, Käyser airstrip, 22 June 1963, S. Ligorie, at light 8–9 p.m., 1♂. Wilhelmina Mountains, Linker Coppename River, Zuid Creek, 11 Aug. 1943, at light, 1♂. Upper Linker Coppename River, second base camp, 10 Sept. 1943, 1♂. Tapanahoni River, upper river camp, 11 May 1952, at light, 1♂.

Chimarra (Chimarra) simpliciforma Flint

Fig. 43–44

Chimara simpliciforma FLINT, 1971, p. 23.

This strange species was recently described from near Manaus, Brazil and is here recorded from Surinam.

Material. – Surinam, Boven Para, near Berlijn, 28 June 1962, P. H. van Doesburg, at light, 1♂.

Fig. 33–48. — *Chimarra* (*C.*) *gondela* n. sp.: 33, ♂ genitalia, lateral; 34, ninth and tenth terga, dorsal; 35, aedeagus, lateral; 36, clasper, lateral. *C.* (*C.*) *uara* Flint: 37, ♂ genitalia, lateral; 38, aedeagus, lateral; 39, clasper, posterior. *C.* (*C.*) *usitatissima* Flint: 40, clasper, posterior; 41, aedeagus, lateral; 42, ♂ genitalia, lateral. *C.* (*C.*) *simpliciforma* Flint: 43, ♂ genitalia, lateral; 44, ♂ genitalia, dorsal. *C.* (*C.*) *caribea surinamensis* n. subsp.: 45, ♂ genitalia, lateral; 46, clasper, posteroventral; 47, aedeagus, lateral; 48, ninth and tenth terga, dorsal.

Chimarra caribea surinamensis n. subspecies

Fig. 45–48

This form is very closely related to the typical subspecies, differing slightly in the tenth tergum and claspers. In *surinamensis* the apex of the tenth tergum is not produced into an elongate, bladelike structure, but is shorter and in dorsal view produced into a laterally directed lobe subapically, and the tip of the clasper is produced into a more distinct, rounded ventral lobe.

Adult. – Length of forewing, 5 mm. Color in alcohol, uniformly dark brown. Forewing with bulla between R_1 and R_s; hindwing with 4 branches to R_s and 3 to M. Male genitalia: Eighth segment narrowly annular; dorsum unmodified. Ninth segment with a pair of pointed dorsolateral processes anteriorly, with a rounded dorsolateral lobe from posterior; with a rodlike posteromesal process. Tenth tergum with a short, indistinct dorsomesal lobe; lateral lobe with a dark, pointed lateral structure, beneath which is a darkened area bearing two sensillae, apex short with a laterally directed process subapically. Clasper slightly enlarged basally, apex produced into a small rounded ventral lobe and a small mesally directed point. Aedeagus with a pointed apicoventral lip, two internal spines, one almost twice as long as the other, a spiculate eversible pouch ending in a dark knob and basally a slender sclerite bearing a pair of slender wings at midlength and basally.

Material. – Holotype, male: Surinam, Brownsberg, mountain creek near Golddiggers camp, 10 Aug. 1958, D. C. Geijskes.

Family Psychomyiidae

The Psychomyiidae of the Neotropical Region may be placed in several subfamilies, or families, depending on one's preference. Those genera found in Surinam fall into two subfamilies, the Xiphocentroninae (*Xiphocentron*) and the Polycentropodinae (all

the remaining genera). Species have been discovered in all the genera most likely to occur in Surinam.

KEY TO THE GENERA OF PSYCHOMYIIDAE

1. Foretibia with a preapical spur 2
   Foretibia lacking preapical spur 5

2. Forewing with R_2 present 3
   Forewing with R_2 fused with R_3 to wing margin 4

3. Hindwing with R_2 present; aedeagus with an elongate, pointed, mesoventral lip . . . . . *Polycentropus*
   Hindwing lacking R_2; aedeagus without mesoventral lip . . . . . *Polyplectropus*

4. Maxillary palpus with second and third segments subequal in length . . . . . *Cyrnellus*
   Maxillary palpus with second segment only about a third as long as third segment . . . . . *Nyctiophylax*

5. Forewing with Cu_1 branched . . . . . *Cernotina*
   Forewing with Cu_1 unbranched . . . . . *Xiphocentron*

Genus **Xiphocentron** Brauer

Adults of this interesting genus are rarely taken at lights. My experiences lead me to believe that the adults are diurnal, with the few that appear at lights having been disturbed from surrounding vegetation.

One species was discovered in the present collections. Undoubtedly more species will be found near waterfalls, rapids, or small tumbling streams in mountainous regions.

Xiphocentron surinamense n. sp.

Fig. 49–50

On the basis of similarity in shape of the ninth and tenth terga and claspers, this species would appear to be most closely related to the Dominican *X. fuscum* Flint. It may be distinguished by the much longer and more slender cerci which are distinctly angled near their bases.

Adult. – Length of forewing, 4 mm. Color in alcohol, brown; midleg white to level of basal pair of spines, hind leg white for about a third of this distance. Apical spine of hind leg in male terete, slightly more than a third as long as basal tarsomere. Male genitalia: Ninth segment dorsally with a pair of small submesal lobes from posterior margin, anteromesally with a deep, narrow division. Tenth tergum sclerotized laterally, tip decurved. Cercus sharply angulate basally, long and slender. Clasper enlarged basally, tip long and slender, slightly curved dorsad, mesally with a small group of black spicules basally, and beyond with scattered spicules. Aedeagus very long and rodlike, tip slightly enlarged and blackened.

Material. – Holotype, male: Surinam, Brownsberg, mountain creek near Golddiggers camp, 10 Aug. 1958, D. C. Geijskes.

Genus **Polyplectropus** Ulmer

Three species of this pantropical genus were found in the collections from Surinam. The genus is closely related to *Polycentropus* with which it may occur in the more mountainous regions. In the lower elevations with slower flowing, less agitated streams, *Polyplectropus* is usually found to the exclusion of *Polycentropus*.

KEY TO THE SPECIES OF *Polyplectropus*

1. Cercus with a long, pointed, dorsomesal process 2
   Cercus without such a process . . . . . *inarmatus*

2. Clasper with ventromesal lobe rounded apically in ventral aspect . . . . . *narifer*
   Clasper with ventromesal lobe produced into a point . . . . . *brachyscolus*

Polyplectropus inarmatus Flint

Fig. 51–53

Polyplectropus inarmatus FLINT, 1971, p. 26.

This species was described from several examples taken near the Venezuelan border of Brazil.

Material. – Surinam, Tafelberg Expedition, Boven Saramacca River, Base camp, near De Kockberg, 25 March, 1958, at light, 1♂.

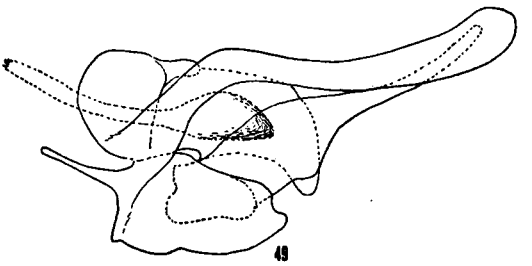
Polyplectropus brachyscolus Flint

Fig. 57–59

Polyplectropus brachyscolus FLINT, 1971, p. 27.

This is the first record for this species, described from Brazil, in Surinam.

Material. – Surinam, Wilhelmina Mountains, trail I, km. 8, 31 Aug. 1943, 1♂.



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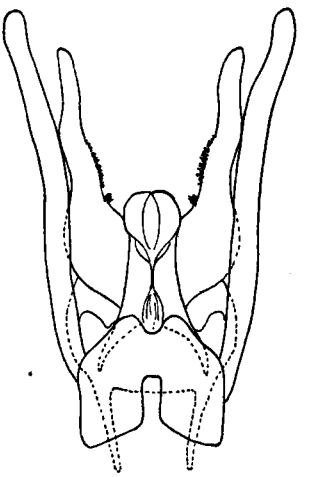

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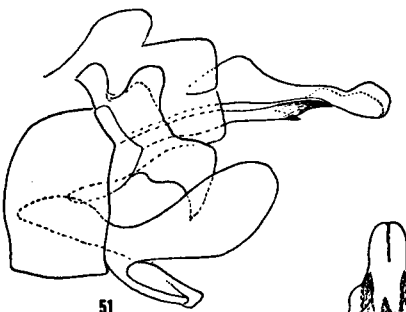

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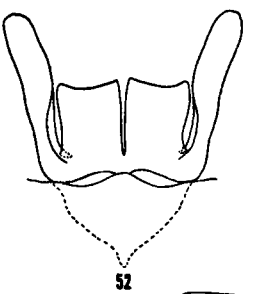

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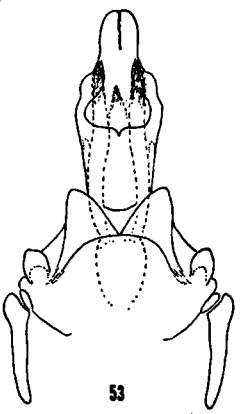

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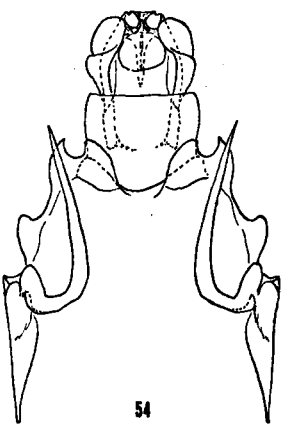

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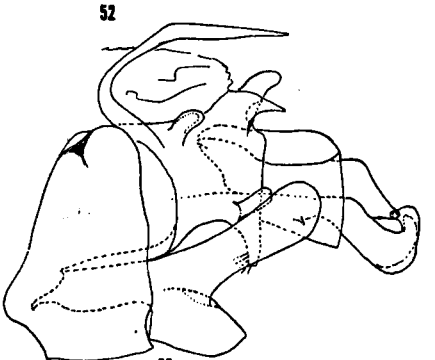

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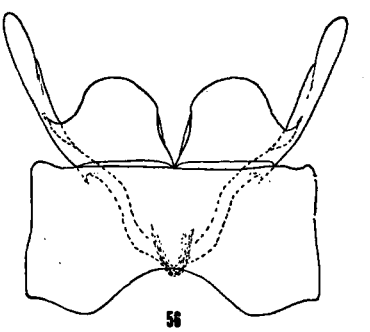

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Polyplectropus narifer n. sp.

Fig. 54–56

This species seems related to *P. annulicornis* Ulm. From *annulicornis*, *narifer* may be recognized by a different shape of the cercus, the more elongate dorsolateral lobes of the claspers, and very different internal parts of the aedeagus.

Adult. – Length of forewing, 4 mm. Color in alcohol pale brown; forewing without indication of color in membrane. Male genitalia: Ninth sternum broad, anterior margin with small lateroventral lobe. Tenth tergum membranous. Cercus with a long, curved, spinelike dorsolateral process; with a broad, platelike lateral lobe bearing dorsally two short processes at apex and a basal shoulderlike knob, a small lobe apicolaterally, and with apicoventral angle produced. Clasper with dorsolateral lobe thin, moderately broad, ventromesal lobe scoopshaped in lateral aspect, rounded apically in ventral aspect. Aedeagus tubular, with apicoventral spines reduced to a pair of very small points, apicomesal sclerite very complex in dorsal aspect with a large apicomesal opening dorsally, apex filled by a darkened structure with a pair of tubular submesal channels.

Material. – Holotype, male: Surinam, Brownsberg, mountain creek near Golddiggers camp, 10 Aug. 1958, D. C. Geijskes.

Genus **Polycentropus** Curtis

Although this genus is almost worldwide in distribution, it is most diverse in the Holarctic region. It is infrequently encountered

Figs. 49–56. — *Xiphocentron surinamense* n. sp.: 49, ♂ genitalia, lateral; 50, ♂ genitalia, dorsal. *Polyplectropus inarmatus* Flint: 51, ♂ genitalia, lateral; 52, claspers, ventral; 53, ninth and tenth terga, cerci and aedeagus, dorsal. *P. narifer* n. sp.: 54, ninth and tenth terga, cerci and aedeagus, dorsal; 55, ♂ genitalia, lateral; 56, claspers, ventral.

in South America outside of Chile where it is common. The species seem to be more strictly limited to the mountainous regions than is *Polyplectropus*. The immature stages of many Old World, North American, and West Indian species have been described.

KEY TO SPECIES OF *Polycentropus*

1. Clasper in lateral aspect divided into 2 lobes. *biappendiculatus*
   Clasper not deeply divided. . . . . *surinamensis*

Polycentropus biappendiculatus n. sp.

Fig. 60–62

This species is quite closely related to the following but is to be recognized by its smaller size and different male genitalia. The clasper with its two processes is quite different from that of *P. surinamensis* which bears only a small mesal point.

Adult. – Length of forewing, 4.5 mm. Color brown, forewing with numerous pale flecks. Forewing with cell R_2, but lacking in hindwing. Male genitalia: Ninth segment rounded anteriorly. Tenth tergum an elongate membranous lobe. Cercus with lateral lobe directed almost exactly laterad, with mesal margin strongly sclerotized and slightly produced posteriad; with a long slender dorsomesal process first directed basad then posteriad. Clasper with a thin, narrow, basodorsal lobe and a pointed posterolateral process. Aedeagus with a long, pointed apicoventral lip; internally with a pair of short spines apicodorsally, basally with a tubular structure which is forked apically in dorsal aspect.

Material. – Holotype, male: Surinam, Tafelberg Expedition, Kappelsavanne, 22 Mar. 1958, D. C. Geijskes, at light.

Polycentropus surinamensis n. sp.

Fig. 63–66

This species belongs to *P. insularis* Bks. group, and is most closely related to the preceding species. It differs from this species in the shape of the claspers which bear a broad dorsolateral lobe and a small mesal point.

Adult. – Length of forewing, 6–7 mm. Color brown; forewing with numerous flecks of golden hairs. Both pairs of wings with cell R_2. Male genitalia: Ninth segment rather large and rounded. Tenth tergum a membranous lobe. Cercus composed of an auriculate lateral lobe, a smaller, heavily sclerotized mesal lobe, and a long, slender dorsomesal process first curving basomesad then directly posteriad. Clasper with a thin dorsolateral lobe broadly united to a basal portion, with a short, broad spine from posterior margin. Aedeagus with a pointed apicoventral lip; internally with a pair of upturned spines beneath a bilobed dorsal shield at apex.

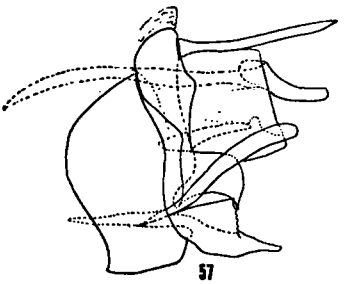
Material. – Holotype, male: Surinam, Nassau Mountains, km 11.2, 19 Mar. 1949, D. C. Geijskes. Paratypes: Same data, 2♂, 2♀.

Genus **Nyctiophylax** Brauer

This genus is found primarily in the Oriental Region and throughout the New World, but is also well represented in the Baltic Amber. The immature stages of several North American species have been described.

Key to species of *Nyctiophylax*

1. Aedeagus with a pair of long, free, lateral arms arising at its base and reaching the apex of the central tube . *neotropicalis*
   Aedeagus without basolateral arms . . . . . *elongatus*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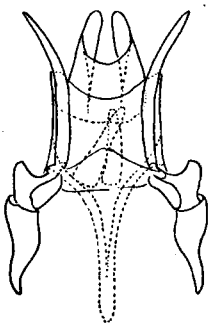
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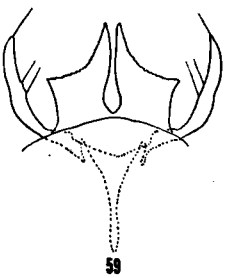
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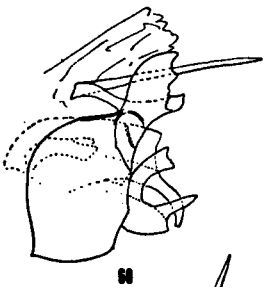
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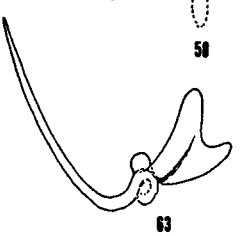
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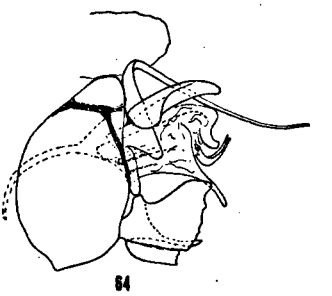
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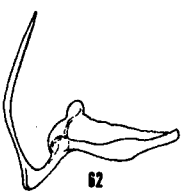
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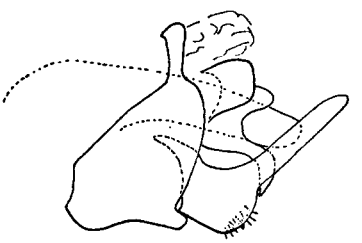
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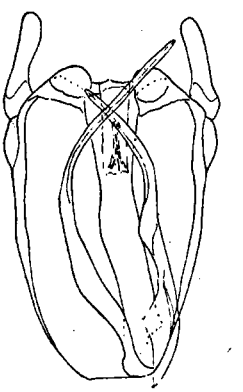
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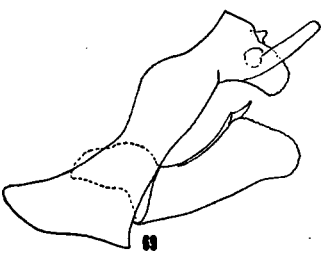
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Nyctiophylax neotropicalis Flint

Fig. 69–71

Nyctiophylax neotropicalis FLINT, 1971, p. 28; 1972, p. 230.

This species is known from Colombia, Brazil, and Argentina, and is now recorded from Surinam. The male genitalia of this little black species are very distinctive.

Material. – Surinam, Nickerie River, Blanche Marie, 12 Feb. 1971, 2♂.

Nyctiophylax elongatus n. sp.

Fig. 67–68

This species bears a distinct similarity to the North American species of the genus. It is easily recognized by the very elongate apicodorsal lobe of the clasper, and ventral hook of the cercus.

Adult. – Length of forewing, 3.5 mm. Color in alcohol, pale yellowish brown. Male genitalia: Ninth segment broad ventrally, with a narrow strap dorsally, and a slight lobe ventrally between claspers. Tenth tergum membranous. Cercus with a broad, rectangular dorsolateral lobe; two sides fused ventrally and produced into a long process whose tip is decurved (possibly this is developed from venter of aedeagal tube). Clasper long and slender, slightly enlarged basally, with a pad of short spines mesally. Aedeagus tubular, with several very indistinct internal structures.

Material. – Holotype, male: Surinam, Brownsberg, mountain creek near Golddiggers camp, 10 Aug. 1958, D. C. Geijskes.

Figs. 57–71. — *Polyplectropus brachyscolus* Flint: 57, ♂ genitalia, lateral; 58, ninth and tenth terga, cerci and aedeagus, dorsal; 59, claspers, ventral. *Polycentropus biappendiculatus* n. sp.: 60, ♂ genitalia, lateral; 61, clasper, ventral; 62, cercus, dorsal. *P. surinamensis* n. sp.: 63, cercus, dorsal; 64, ♂ genitalia, lateral; 65, clasper, ventral; 66, aedeagus, lateral. *Nyctiophylax elongatus* n. sp.: 67, ♂ genitalia, lateral; 68, clasper, posterior. *N. neotropicalis* Flint: 69, ♂ genitalia, lateral; 70, clasper, ventral; 71, ♂ genitalia, dorsal.

Genus **Cyrnellus** Banks

This genus which has recently been shown to contain a number of species in South America, is represented by two species in Surinam. Both species are comparatively common and widespread.

KEY TO SPECIES OF *Cyrnellus*

1. Clasper in ventral aspect with a blackened, trianguloid mesal process whose tip is directed mesad . . . . . *fraternus*
   Clasper with mesal process more pointed and with tip directed more posteriad . . . . . *risi*

Cyrnellus fraternus (Bks.)

Fig. 72–73

Cyrnus fraternus BANKS, 1905, p. 17.
Cyrnellus minimus BANKS, 1913a, p. 88.
Nyctiophylax marginalis BANKS, 1930, p. 231.
Cyrnellus zernyi MOSELY, 1934, p. 142.
Cyrnellus fraternus (Bks.) – FLINT, 1971, p. 29.

This common and somewhat variable species is found from the United States south into Brazil. Its presence in Surinam is not surprising, although it has not been recorded before.

Material. – Surinam, Coropina Creek, Republiek, 9–11 Sept. 1942, 12♂, 28♀; same, but 2 June 1951, at light 2♂. Republiek, 6 Aug. 1949, 2♂, 3♀; same, but 16 April 1949, at light, 2♀ 1?; same, but 2 Jan. 1955, 2♂, 2♀. Boven Para, near Berlijn, 28 June 1962, P. H. v. Doesburg, 2♂, 11♀. Tafelberg Expedition, Boven Saramacca, base camp near DeKockberg, 25 March 1958, at light, 1♂. Marowijne River, Albina, 3 Sept. 1939, at light, 3♂. Paramaribo, 13 Aug. 1938, at light, 1♂, 1♀. Paramaribo, Charlesburg, Krepi, 11–13 Jan. 1964, 1♂. Corantijn River, Wakay, 23 Mar. 1971, at light, 1♂, 7♀; same, but 22 Mar. 1971, 1♂, 7♀.

Cyrnellus risi (Ulmer)

Fig. 74–75

Cyrnus risi ULMER, 1907a, p. 40; 1913, p. 386.
Cyrnellus risi (Ulm.) – FLINT, 1971, p. 31.

This species was recorded from Albina and Bergendal Surinam by ULMER (1913, p. 386) and is thus the only species previously recorded from the country. The species which is known from Argentina and Brazil does occur frequently in Surinam as the following records indicate.

Material. – Wilhelmina Mountains, trail II, km 8, large sandy creek, 19 Sept. 1943, at light, 1♂. Coppename River, Tonckens Falls, 31 July 1943, 2♂. Wilhelmina Mountains, Linker Coppename River, Zuidcreek, 11 Aug. 1943, at light, 2♂. Marowijne River, Albina, 3 Sept. 1939, at light, 1♂. Suriname River, Botopasie, 21 May 1955, at light, 1♂. Coeroeni Island, Aug. 1959, 2♂. Toekoemoetoe Creek, base camp, Tafelberg trail, July 1944, L. Schmidt, 1♂.

Genus **Cernotina** Ross

Until recently this genus was unknown south of Panama, but a recent study of the Amazon Basin fauna disclosed many new species representing several divergent lines in South America. This diversity is also shown in Surinam with ten species reported here, of which 6 were also found in the Amazon study.

KEY TO SPECIES OF *Cernotina*

1. Dorsolateral lobe of cercus united with lateral lobe of tenth tergum to form a single large semimembranous lobe . . . . . *acalyptra*
   Dorsolateral lobe of cercus not united to tenth tergum . . 2

2. Lateral lobe of tenth tergum membranous, apex sometimes bearing a few enlarged setae 3
   Lateral lobe of tenth tergum ending in a blackened sclerotized point . . . . . *perpendicularis*

3. Genital capsule strongly depressed, lateral lobe of cercus born at same level as clasper . . . . . *depressa*
   Genital capsule terete, lateral lobe of cercus born dorsally . 4

4. Clasper with a distinct erect basodorsal lobe bearing a row of enlarged mesal setae, and with a platelike apicomesal lobe 5
   Clasper so modified that basodorsal lobe appears to be lacking 9

5. Dorsolateral lobe of cercus slender, much longer than tenth tergum and bearing 2 black spines, one at midlength, other apically . . . . . *longissima*
   Dorsolateral lobe of cercus shorter than tenth tergum, with dark spines apically 6

6. Dorsolateral lobe of cercus simple, elongate, apex often bearing an enlarged seta 7
   Dorsolateral lobe bifurcate, apex of each arm with a blackened tip . . . . . *declinata*

7. Apicomesal lobe of clasper rounded apically in ventral aspect 8
   Apicomesal lobe of clasper produced into a blackened point, directed slightly laterad . . . . . *mandeba*

8. Dorsolateral lobe of cercus ending in 2 spines; basodorsal lobe of clasper displaced to a subapical position . . *subapicalis*
   Dorsolateral lobe of cercus rounded apically; basodorsal lobe of clasper subbasal in position . . . . . *uara*

9. Ventromesal lobe of cercus long, slender and pointed apically . . . . . *filiformis*
   Ventromesal lobe short, bluntly pointed . . . . . *intersecta*

Cernotina acalyptra Flint

Fig. 76–78

Cernotina acalyptra FLINT, 1971, p. 34.

This species was described from Brazil near the Venezuelan border. It is here recorded for the second time.

Material. – Surinam, Tafelberg Expedition, Boven Saramacca River, base camp, near DeKockberg, 25 Mar. 1958, at light, 5♂.

Cernotina uara Flint

Fig. 79–80

Cernotina uara FLINT, 1971, p. 36.

This species was taken in the upper reaches of the Río Marauia, near the Venezuelan border of Brazil. It seems to be rather common in Surinam.

Material. – Surinam, Coppename River, Tonckens Falls, 1–4 Aug. 1943, at light, 1♂. Suriname River, Botopasie, 21 May 1955, at light, 1♂. Litanie River, near Feti Creek, 10 Aug. 1939, 1♂.

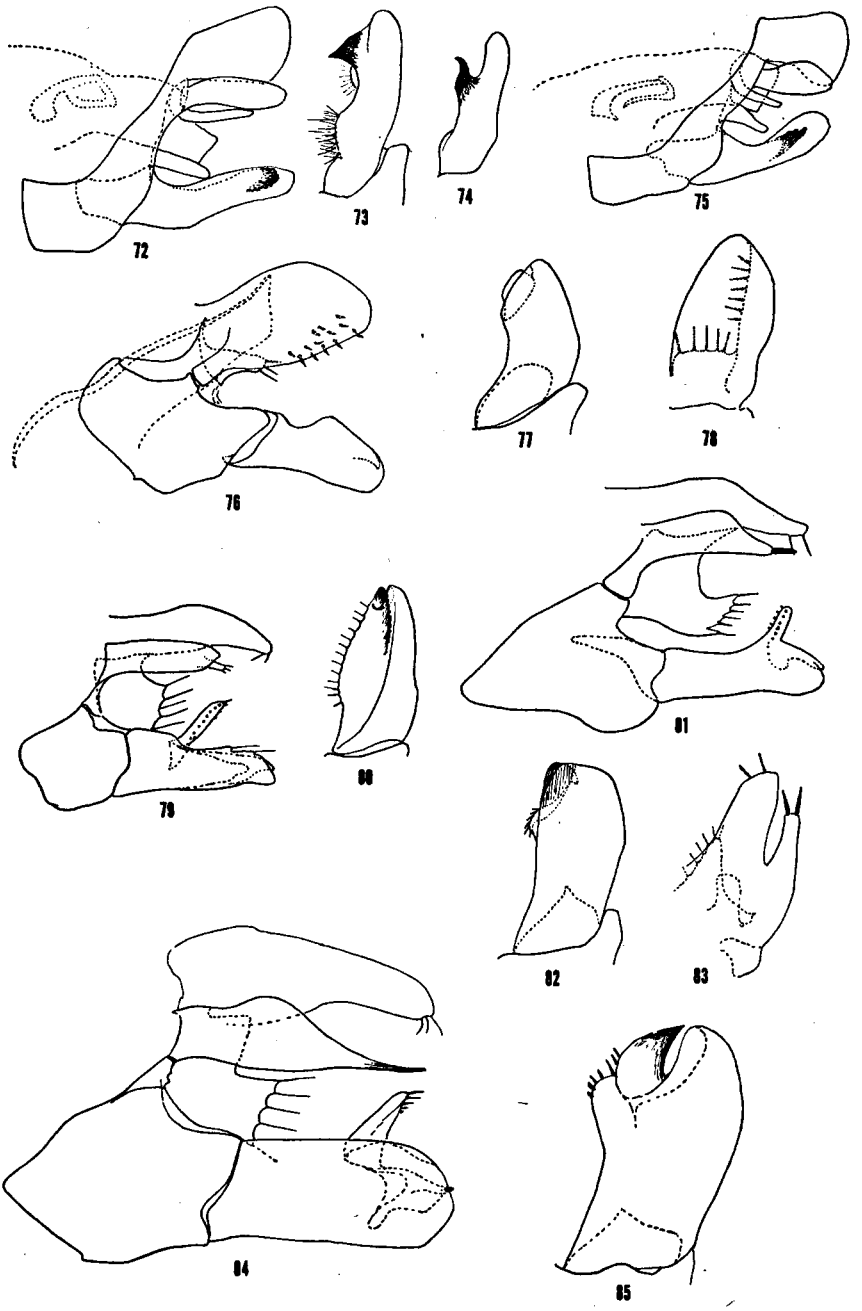
Cernotina subapicalis Flint

Fig. 81–83

Cernotina subapicalis FLINT, 1971, p. 35.

This species is widely distributed along the northern border of Brazil, and is here reported from several localities in Surinam.

Material. – Surinam, Brownsberg, mountain creek near Golddiggers camp, 10 Aug. 1958, 6♂. Toekoemoetoe River, base camp, Tafelberg trail, July 1944, L. Schmidt, 1♂. Wilhelmina Mountains, trail II km 8, large sandy creek, 19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Sept. 1943, at light 1♂. Wilhelmina Mountains, Kwatta camp, trail I km 3, 7 Sept. 1943, 2♂. Nickerie River, Blanche Marie, falls in creek behind meteo camp, 15 Feb. 1971, at light, 2♂.

Cernotina mandeba n. sp.

Fig. 84–85

This species is closely related to *C. subapicalis* Flint. From *subapicalis*, *mandeba* n. sp. differs most strikingly in the shape of the apicomesal lobe of the clasper which is separated from the remainder of the clasper and forms a pointed lobe. One paratype shows on the dorsolateral lobe of the cercus on one side, two apical dark points, indicating the potential for some variation in this character.

Adult. – Length of forewing, 3 mm. Color light brown, forewing posteriorly paler; head and thorax dorsally white, antennae yellowish. Male genitalia: Ninth segment produced into an anterolateral angle. Tenth tergum membranous, bilobed in dorsal aspect, each lobe with several large setae apicoventrally. Cercus 2 lobed: dorsolateral lobe elongate, tapering to a single (rarely double) dark point; ventromesal lobe broad, halves united ventromesally, slightly produced apicolaterally, with a row of enlarged setae along posterior margin. Clasper with basodorsal lobe displaced apicad, rather low but erect, with a row of stout setae mesally; apicomesal lobe separated from body of clasper, produced into a blackened point. Aedeagus tubular, with 2 internal spines.

Material. – Holotype, male: Surinam, Nickerie River, Blanche Marie, falls in creek, 15 Feb. 1971, D. C. Geijskes. Paratypes: Blanche Marie, 14 Feb. 1971,

Figs. 72–85. — *Cyrnellus fraternus* (Banks): 72, ♂ genitalia, lateral; 73, clasper, ventral. *C. risi* (Ulmer): 74, clasper, ventral; 75, ♂ genitalia, lateral. *Cernotina acalyptra* Flint: 76, ♂ genitalia, lateral; 77, clasper, ventral; 78, tenth tergum and cercus, dorsal. *C. uara* Flint: 79, ♂ genitalia, lateral; 80, clasper, ventral. *C. subapicalis* Flint: 81, ♂ genitalia, lateral; 82, clasper, ventral; 83, tenth tergum and cercus, dorsal. *C. mandeba* n. sp.: 84, ♂ genitalia, lateral; 85, clasper, ventral.

at light, 2♂. Lucie River, camp, Wilhelmina Mountains Expedition, 8 July 1963, S. Ligorie, at light, 2♂ (1♂ has 2 black points to dorsolateral lobe of cercus). Tapanahoni River, Mankodebakoe, 25 May 1952, at light, 1♂. Wilhelmina Mountains, Linker Coppename River, Zuidcreek, 11 Aug. 1943, at light, 1♂.

Cernotina longissima n. sp.

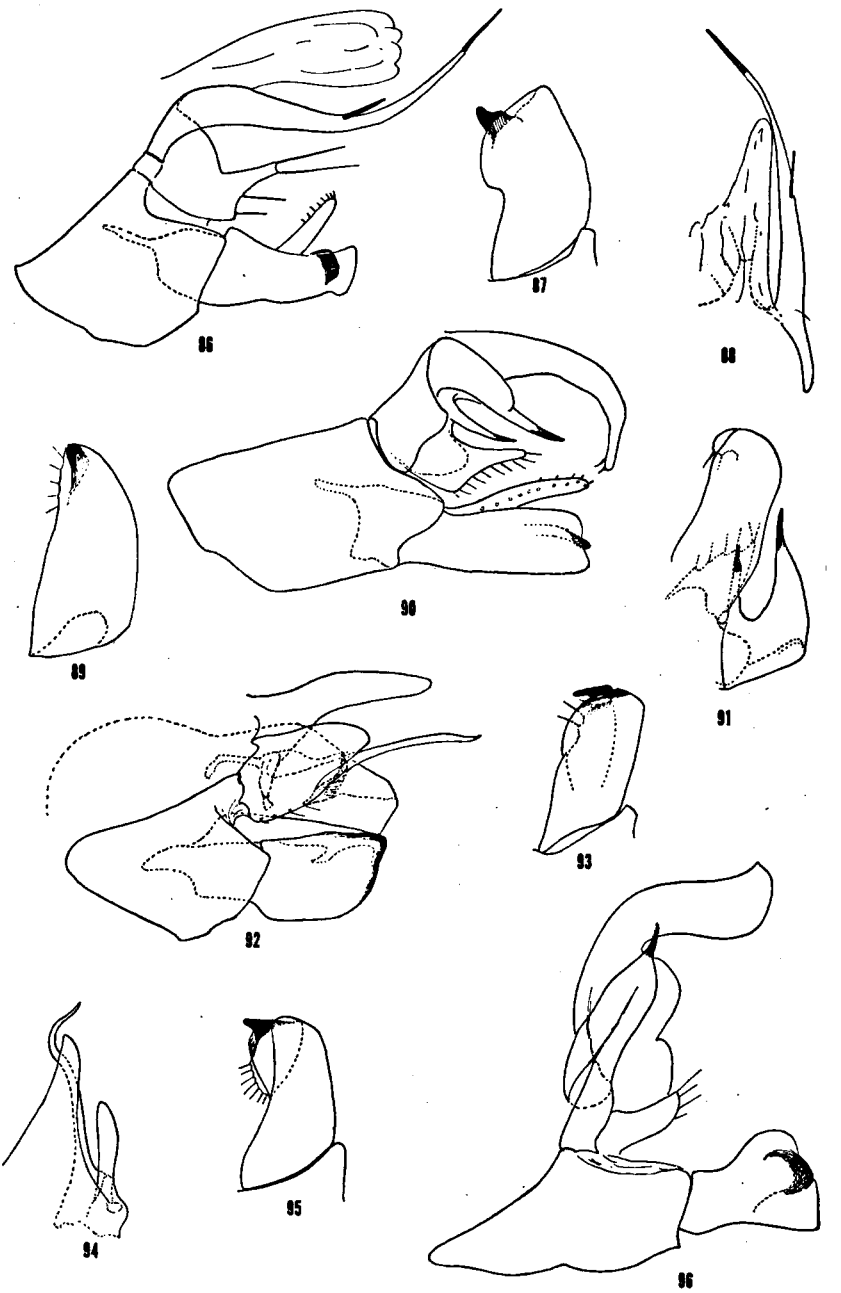
Fig. 86–88

This species is probably related to *C. subapicalis* Flint, although it is easily distinguished. The very long dorsolateral arms of the cercus, and the shape of the clasper and its lobes are distinctive.

Adult. – Length of forewing, 3 mm. Color in alcohol, pale yellowish brown. Male genitalia: Ninth segment moderately produced anterolaterally. Tenth tergum membranous, bilobed in dorsal aspect. Cercus 2 lobed; dorsolateral very long, slender, slightly sinuate, with a black tip, and a black spine at midlength; ventromesal lobes united mesally, slightly produced dorsolaterally with scattered enlarged setae posteriad. Clasper elongate, apex blunt in lateral and slightly bowed in ventral aspect; basodorsal lobe arising at midlength, semierect, with a row of stout setae mesally; apicomesal lobe narrow, but high in lateral and conical in ventral aspect. Aedeagus with 3 small internal spines.

Material. – Holotype, male: Surinam, Brownsberg, mountain creek near Golddiggers camp, 10 Aug. 1958, D. C. Geijskes. Paratypes: Same data, 8♂. Wilhelmina Mountains, trail I km 8, small stony creek, 31 Aug. 1943, 2♂. Wilhelmina Mountains, Kwatta camp, trail I km 3, 3 Sept. 1943, at light, 1♂.

Figs. 86–96. — *Cernotina longissima* n. sp.: 86, ♂ genitalia, lateral; 87, clasper, ventral; 88, tenth tergum and cercus, dorsal. *C. declinata* Flint: 89, clasper, ventral; 90, ♂ genitalia, lateral; 91, tenth tergum and cercus, dorsal. *C. filiformis* Flint: 92, ♂ genitalia, lateral; 93, clasper, ventral; 94, tenth tergum and cercus, dorsal. *C. intersecta* n. sp.: 95, clasper, ventral; 96, ♂ genitalia, lateral.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Cernotina declinata Flint

Fig. 89–91

Cernotina declinata FLINT, 1971, p. 36.

The species was described from northern Brazil very close to the border of Surinam.

Material. – Surinam, Nickerie River, Lombok Falls, 5 Feb. 1971, 1♂. Litani River, near Feti Creek mouth, 10 Aug. 1939, at light, 2♂.

Cernotina filiformis Flint

Fig. 92–94

Cernotina filiformis FLINT, 1971, p. 39.

This species was recently described from near Manaus, Brazil, and is here recorded from Surinam.

Material. – Surinam, Republiek, Coropina Creek, 9–11 Sept. 1942, 1♂. Nickerie River, Blanche Marie, falls in creek, 15 Feb. 1971, 1♂.

Cernotina intersecta n. sp.

Fig. 95–96

Although this species shows some resemblance to *C. verticalis* Flint in the general structure of the genitalia, it is easily recognized by the rather different shape and relationship of the cercus and tenth tergum.

Adult. – Length of forewing, 3 mm. Color in alcohol, pale yellowish brown. Male genitalia: Ninth segment with anterior margin produced ventrolaterally. Tenth tergum lightly sclerotized, consisting of nearly terete lateral lobes which are almost vertical

basally with apices angled posteriad, basomesally projecting beyond cerci. Cercus consisting of two lobes; dorsolateral lobe tapering to a spinelike apex curved mesally beneath apex of tenth tergite; ventromesal lobe small, tapering apicad. Clasper short, enlarged apicad; basodorsal lobe reduced to a rounded hump apically; apicomesal lobe pointed mesally in ventral aspect; apex of clasper with lateroventral margin produced into a thin projecting plate. Aedeagus very thin; internal structure indistinct.

Material. – Holotype, male: Surinam, Wilhelmina Mountains, trail I km 8, small stony creek, 31 Aug. 1943, D. C. Geijskes. Paratypes: Same data, 2♂.

Cernotina perpendicularis Flint

Fig. 97–99

Cernotina perpendicularis FLINT, 1971, p. 40.

This species recently described from the Central Amazon Basin is recorded from Surinam.

Material. – Surinam, Coeroeni Expedition, Zuid River, in Lucie River, 5–7 Sept. 1959, D. C. Geijskes, 1♂.

Cernotina depressa n. sp.

Fig. 100–101

This species with its strange depressed genital capsule is totally unlike any other known species. The lateral lobe of the cercus is very heavily sclerotized and borne at the same level, but laterad of, the claspers.

Adult. – Length of forewing, 2.5 mm. Color in alcohol, pale yellowish-brown. Male genitalia: Entire genital capsule strongly depressed with dorsolateral lobe of cercus at same level as claspers. Ninth segment rounded anterolaterally. Tenth tergum developed as

two fingerlike membranous lobes. Cercus 2-lobed; dorsolateral lobe arising from a complex, flattened basal area consisting of an erect, trianguloid basal section, and long, heavily sclerotized, incurved lateral arms; ventromesal lobe thin, halves united mesally, in ventral aspect widened and emarginate apically with a row of enlarged apical setae. Clasper semimembranous, enlarged apically, basodorsal lobe small, rounded, displaced to subapical position, apicomesal lobe a small darkened point. Aedeagus with two short, internal spines apically.

Material. – Holotype, male: Surinam, Lawa River, Anapaike, 14 Nov. 1963, S. Ligorie, at light.

Family Hydroptilidae

The hydroptilids are found in all parts of the world, but because of their small size (few are over a millimeter or two long) they are rarely collected by anyone other than a specialist. For this reason a rather incorrect impression of the true diversity of this family is presented in many parts of the world. I expect that the Surinam fauna is fairly well known at the generic level, but many more species are to be discovered.

Key to the genera of Hydroptilidae

1. Ocelli absent . . . . . *Hydroptila*
   Ocelli present 2

2. Foretibia with an apical spur 3
   Foretibia lacking apical spur 5

3. Male genitalia with eighth tergum small, sternum large and closing region of ninth sternum which appears to be lacking 4

Male genitalia with eighth tergum and sternum of comparable size, ninth sternum well developed . . . . . *Ochrotrichia*

4. With 2 ocelli. . . . . *Betrichia*
   With 3 ocelli. . . . . *Acostatrichia*

5. Hind tibia with only 1 preapical spur . . . . . *Neotrichia*
   Hind tibia with 2 preapical spurs . . . . . *Oxyethira*

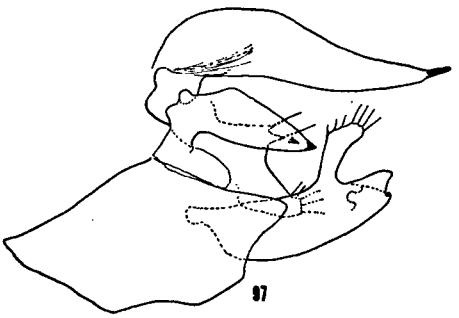
Genus **Acostatrichia** Mosely

The following 3 species are placed in *Acostatrichia* with which they agree in possessing 3 ocelli, a simple antenna and unmodified head, and a small bulla basally on the costa of the forewing. However, the genitalia differ somewhat from the form of the 2 previously known species, but not to the degree to warrant the erection of a new genus.

Key to species of *Acostatrichia*

1. Subgenital plate consisting of 2 long, slender arms; 2 distinct claspers present, each deeply bifid . . . . . *spinifera*
   Subgenital plate entire, beakshaped in lateral aspect; claspers mostly fused mesally, with long apicolateral processes . . 2

2. Eighth sternum with posterolateral process fimbriate apically . . . . . *fimbriata*
   Eighth sternum with posterolateral process produced into a sharp point . . . . . *brevipenis*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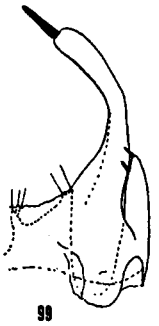
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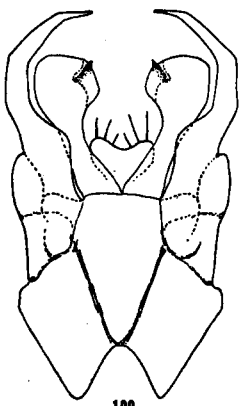
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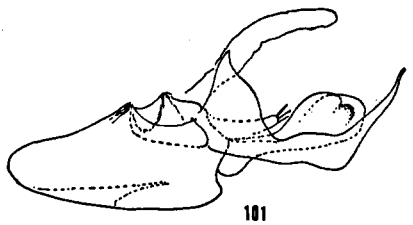
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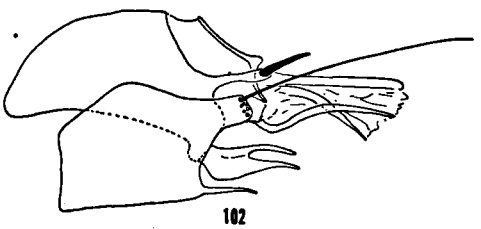
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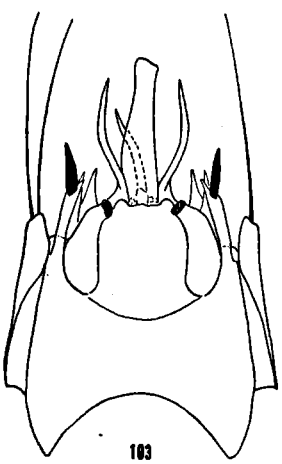
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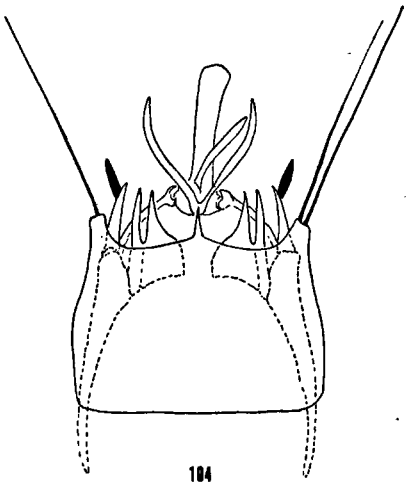
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Acostatrichia spinifera n. sp.

Fig. 102–104

This species bears some resemblance to the two Brazilian species in that all bear a process posterolaterally from the ninth segment which bears a large apical spine. From these species, *spinifera* may be easily recognized by the presence of processes from the eighth sternum, the bifid subgenital plate and claspers.

Adult. – Length of forewing, 2 mm. Color unknown; cleared. Ocelli 3; head unmodified; basal antennal segment elongate, about 3 times as long as broad. A small bulla present at base of costa in forewing. Seventh sternum with a posteromesal plate with either 2 very small processes or with processes broken off. Male genitalia: Eighth sternum with a posteromesal point; posterolateral angles produced and bearing about 6 (almost all broken off) long, thick spines. Ninth segment slightly produced anteroventrally; posterior margin with a process bearing subapically a large, black seta. Tenth tergite pointed in lateral aspect with a middorsal knob; in dorsal aspect ending in a darkened knob. Subgenital plate developed into a pair of slender, flaring arms. Claspers separated mesally; each consisting of a pointed trianguloid mesal portion and a spurlike lateral process. Aedeagus with typical basal tube, basal loop, and middorsal complex; apex with a slender straplike middorsal hood, and a single elongate spine.

Material. – Holotype, male: Surinam, Nickerie River, Lombok Falls, 5 Feb. 1971, D. C. Geijskes, at light.

Figs. 97–104. — *Cernotina perpendicularis* Flint: 97, ♂ genitalia, lateral; 98, clasper, ventral; 99, tenth tergum and cercus, dorsal. *C. depressa* n. sp.: 100, ♂ genitalia, ventral; 101, ♂ genitalia, lateral. *Acostatrichia spinifera* n. sp.: 102, ♂ genitalia, lateral; 103, ♂ genitalia, dorsal; 104, ♂ genitalia, ventral.

Acostatrichia brevipenis n. sp.

Fig. 105–107

This and the following species are clearly related to each other, and much less so to the previous species. The sharp posterolateral process from the eighth sternum is very different from the fimbriate lobe in *fimbriata*. The very short apical portion of the aedeagus is also quite different.

Adult. – Length of forewing 2 mm. Ocelli 3; head unmodified; basal antennal segment barely longer than broad. A small bulla basally on costa of forewing. Color fuscous; forewing mottled with green. Male genitalia: Eighth sternum produced into a pointed process posterolaterally. Ninth segment with anterolateral angle rounded; with a posterolateral shoulder bearing 5–6 elongate setea. Tenth tergite with ventral point considerably elongated in lateral aspect. Subgenital plate troughlike, developed into an apicoventral point, open dorsally. Claspers apparently fused mesally, with a long, slender, angled, apicodorsal process. Aedeagus with typical basal tube, basal loop, and middorsal complex; apex short, with 2 small spines.

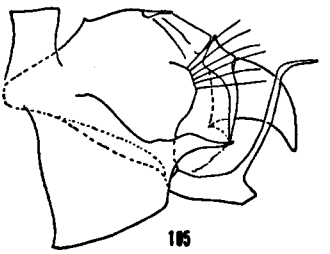
Material. – Holotype, male: Surinam, Lawa River, Anapaike, 14 Nov. 1963, S. Ligorie, at light. Paratypes: Same data, 7♂.

Acostatrichia fimbriata n. sp.

Fig. 108–110

Together with *A. brevipenis* n. sp., this species forms a distinctive group in the genus *Acostatrichia*. From *brevipenis*, *fimbriata* may be easily recognized by the long, bifid and fimbriate posterolateral process of the eighth sternum, and the elongate apical section of the aedeagus with two long internal spines.

Adult. – Length of forewing, 2 mm. Mostly decolored in alcohol; apparently with typical mottled fuscous and greenish pattern.



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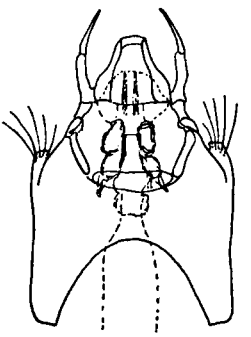

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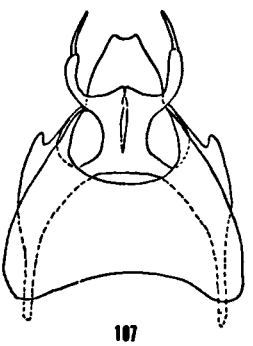

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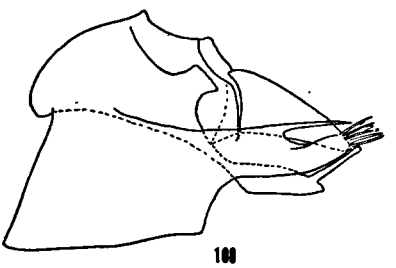

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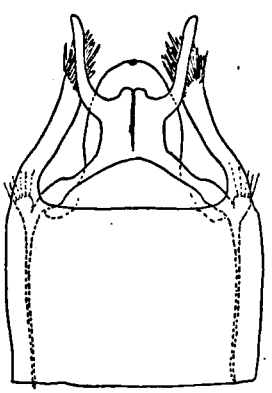

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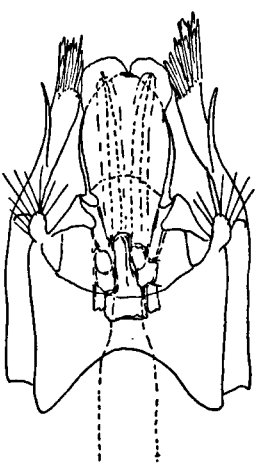

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Figs. 105–110. — *Acostatrichia brevipenis* n. sp.: 105, ♂ genitalia, lateral; 106, ♂ genitalia, dorsal; 107, ♂ genitalia, ventral. *A. fimbriata* n. sp.: 108, ♂ genitalia, lateral; 109, ♂ genitalia, ventral; 110, ♂ genitalia, dorsal.

Ocelli 3; head unmodified; basal antennal segment small. Seventh sternum with a long pointed process. Male genitalia: Eighth sternum with a broad posterolateral projection bearing from its dorsal margin a slender, pointed process, and ending in a large cluster of pale, broad, swordlike spines. Ninth segment slightly produced anteroventrally; with a posterolateral shoulder bearing a cluster of elongate setae. Tenth tergite with ventral point elongate. Subgenital plate troughlike, tapering to a rounded apex. Claspers apparently fused mesally, with a long apicolateral process. Aedeagus with usual basal tube, and midlength complex; apex with a pair of semimembranous dorsal lobes, and a pair of elongate spines.

Material. – Holotype, male: Surinam, Coppename River, Raleigh Falls, 9 July 1963, D. C. Geijskes. Paratypes: Same data, 2♂.

Genus **Betrichia** Mosely

MOSELY established this genus for a single Brazilian species possessing 2 ocelli, and an unmodified head, antennae, and wings. *B. occidentalis* n. sp. agrees with all these characteristics and is clearly congeneric. However, *B. surinamensis* n. sp. and *B. bispinosa* n. sp. agree with the type in possessing 2 ocelli, but in *surinamensis* the head is greatly modified and in *bispinosa* the antennae and head are slightly modified and the forewing possesses a reflexed costal cell. In *bispinosa* the genitalia are quite similar to those of the type-species, whereas in *surinamensis* the pattern of the genitalia is quite different. Rather than establish 1 or 2 new genera on these modifications of the male, I prefer to wait until the South American fauna is better known, and, if possible, until the larvae of the various species are known, before erecting more genera.

KEY TO SPECIES OF *Betrichia*

1. Two pairs of processes arising posterolaterally from ninth segment, each tipped with 1 or a few enlarged setae *surinamensis*
   Ninth segment without posterolateral processes 2

2. Eighth sternum reduced in size, with a pair of extremely long setae from posterior . . . . . *bispinosa*
Eighth sternum of usual size, posterior margin with a row of slightly enlarged setae . . . . . *occidentalis*

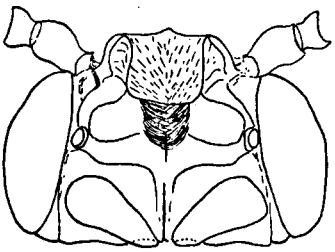
Betrichia surinamensis n. sp.

Fig. 111–115

I place this species in *Betrichia* at this time for reasons discussed under the genus. The structure of the head is totally different from any described species in the subfamily, as are the long, seta-tipped processes from the ninth segment of the male.

Adult. – Length of forewing, 4 mm. With 2 ocelli; antenna unmodified; head with posterior warts large, open beneath, with sclerotized areas mesally and laterally, with a heavily sclerotized quadrate plate anteriorly beneath which is found a pouch filled with modified, dark setae. Color fuscous; head and thorax dorsally mottled with green hairs, forewing mottled fuscous and green. Sixth and seventh sterna with mesal processes. Male genitalia: Eighth sternum produced posteriad, with a deep, posteromesal, V-shaped excision the sides of which bear a slender process tipped by an enlarged seta. Ninth segment truncate anteriorly, posterolateral lobe slightly enlarged with many setae. Subgenital plate reduced to a narrow, pointed structure. Two pairs of processes arising ventrolaterally from ninth segment, dorsalmost being very slender and tipped by a single enlarged seta, ventralmost broader and tipped by three enlarged setae. Claspers fused mesally, tip upturned in lateral aspect, tapering to a point in ventral aspect. Aedeagus with basal tube, basal loop, and middorsal complex; apex with a pair of dorsolateral, hoodlike sclerites covering a ventral membranous lobe, no spines.

Material. – Holotype, male: Surinam, Nickerie River, Blanche Marie, falls behind camp, 15 Feb. 1971, D. C. Geijskes, at light. Paratypes: Same data, 4♂, 1♀; same but falls in creek, 15 Feb. 1971, 1♂, 1♀. Marowijne River, Albina, 3 Sept. 1939, at light, 3♂. Tapanahoni River, Grandafoetoe, 13 Mar.



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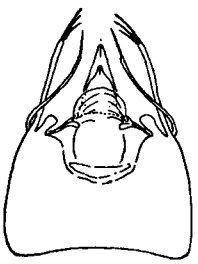

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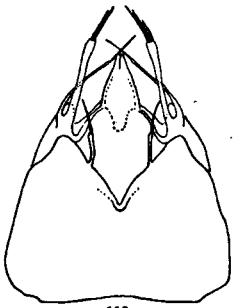

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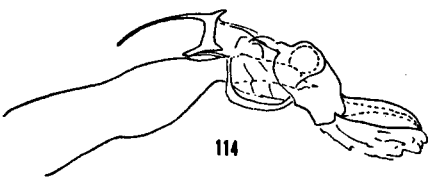

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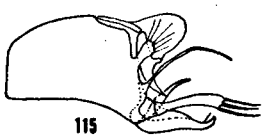

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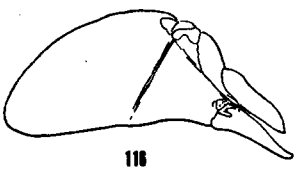

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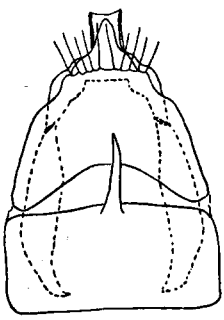

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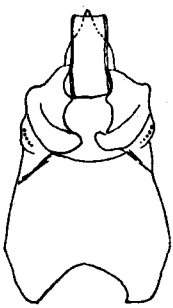

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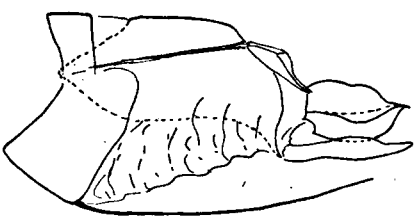

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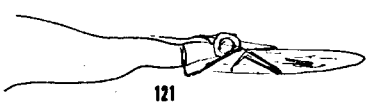

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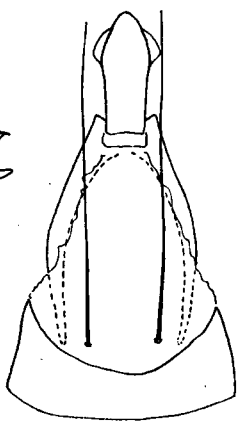

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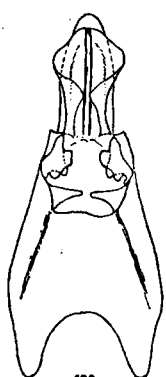


123

1952, at light, 2♂. Tapanahoni River, Mankodebakoe, 25 May 1952, at light, 1♂; same, but 17 Mar. 1952, 1♀. Tapanahoni River, Gwé rapids, 4 Oct. 1952, at light, 1♂.

Betrichia bispinosa n. sp.

Fig. 120–123

In the general structure of the ninth and tenth segments, subgenital plate, and claspers, this species would seem to be rather typical of the genus *Betrichia*. However, the pair of long spines from the eighth sternum, and modifications of the head, antennae, and forewings, are all unique within the genus.

Adult. – Length of forewing, 2.5 mm. With 2 ocelli; head with posterolateral warts bearing elongate, hairy tentacles from beneath, front of head concave with a tuft of hairs directed in this concavity from labrum, and from inner and ventral sides of first four antennal segments; basal antennal segment elongate, ovoid in lateral aspect with enlarged setae from inner and ventral faces, next three segments slightly inflated, with specialized setae. Color unknown, completely cleared. Forewing with an elongate, reflexed cell on basal half of costa. Seventh sternum with a slender apical spine. Male genitalia: Eighth sternum narrow, bandlike, with 2 long, stout setae submesally from posterior. Ninth segment considerably elongated, with a dorsolateral thickening. Tenth tergite pointed in lateral aspect, reaching dorsolateral angle of subgenital plate. Subgenital plate troughlike, flared dorsolaterally, with a thin ventral keel. Claspers fused mesally, elongate, narrow. Aedeagus with

Figs. 111–123. — *Betrichia surinamensis* n. sp.: 111, ♂ head, dorsal; 112, ♂ genitalia, dorsal; 113, ♂ genitalia, ventral; 114, aedeagus, lateral; 115, ♂ genitalia (eighth segment removed), lateral. *B. occidentalis* n. sp.: 116, ♂ genitalia (eighth segment removed), lateral; 117, aedeagus, lateral; 118, ♂ genitalia, ventral; 119, ♂ genitalia, dorsal. *B. bispinosa* n. sp.: 120, ♂ genitalia, lateral; 121, aedeagus, lateral; 122, ♂ genitalia, ventral; 123, ♂ genitalia, dorsal.

typical basal tube, but basal loop and middorsal complex small and flattened; apex with a pair of small basolateral spines and a small central spine.

Material. – Holotype, male: Surinam, Lawa River, Anapaike, 14 Nov. 1963, S. Ligorie, at light.

Betrichia occidentalis n. sp.

Fig. 116–119

This species is very closely related to the type-species, *B. zilbra* Mos., from southeastern Brazil. The differences in the external shape of the genitalia between the two species are almost nonexistant, but the aedeagus offers distinctive characters. In *zilbra* there is a ventral troughlike sclerite and a few small basal spines, whereas *occidentalis* bears a narrow, straplike dorsal hood and a pair of long internal spines.

Adult. – Length ot forewing, 2 mm. With 2 ocelli; head unmodified; antenna simple. Color of forewings mottled fuscous and green. Seventh sternum with a long mesal spine. Male genitalia: Eighth sternum slightly produced and truncate posteromesally, with a row of stout setae. Ninth segment rounded anterolaterally; without a posterolateral lobe. Tenth tergite heavily sclerotized, apex pointed in lateral, broadly tridentate in dorsal aspect. Subgenital plate elongate, troughlike, open dorsally. Claspers fused mesally, in ventral aspect conical with apical point dark. Aedeagus with usual basal tube, basal loop, and middorsal complex; apex with a narrow, middorsal, straplike hood, ventrally with two long spines.

Material. – Holotype, male: Surinam, Blanche Marie, falls in creek, 15 Feb. 1971, D. C. Geijskes. Paratypes: Same data, 1♂; same, but 14 Feb. 1971, at light, 1♂; same but falls behind camp, 15 Feb. 1971, 13♂. Wilhelmina Mountains, trail II km 8, large sandy creek, 19 Sept. 1943, at light ,1♂.

Genus **Ochrotrichia** Mosely

This genus is exclusively New World in distribution, being especially common in North and Central America and the West Indies. Heretofore, only two species of the subgenus *Metrichia* have been known from South America, and these were recorded from the southern Andes of Peru, Argentina, and Chile.

Two species belonging to the genus were discovered in Surinam, of which 1 is a typical species of the subgenus *Metrichia* Ross. The other is placed in *Metrichia* with which it agrees in possessing an apical spur on the foreleg. The genitalia of this species, however, are not typical of either subgenus and in fact combine characters of both with unique structures.

KEY TO SPECIES OF *Ochrotrichia*

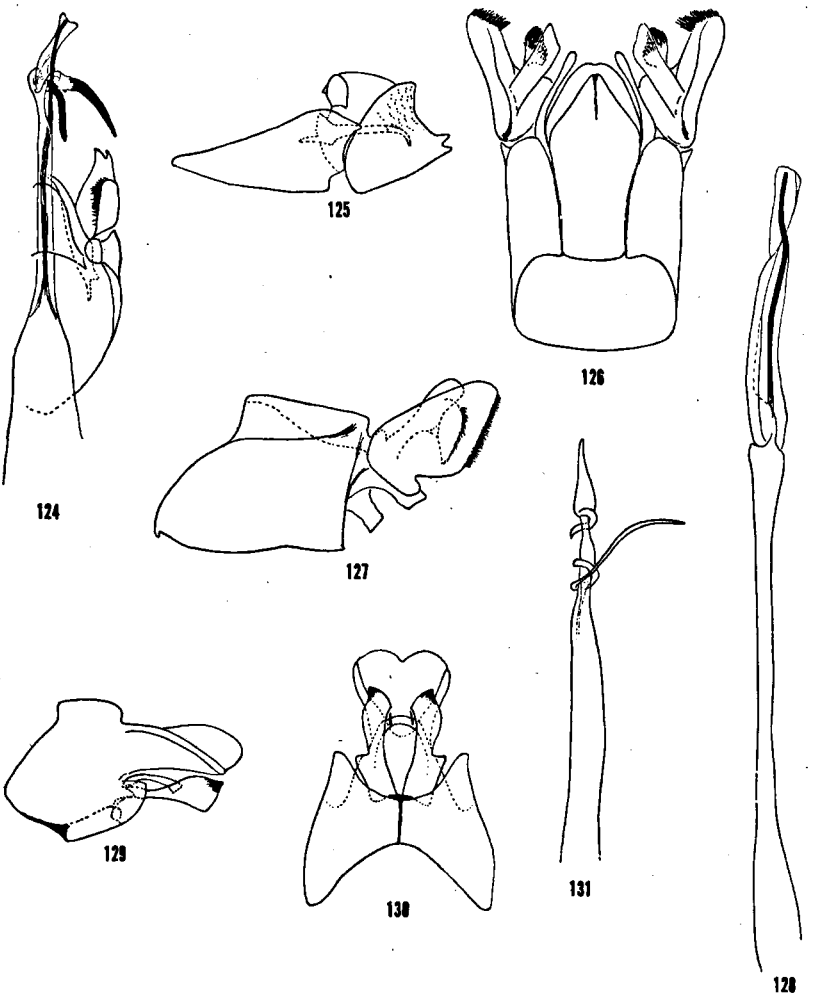
1. Aedeagus with a pair of free spines; clasper without a process from mesal face . . . . . *warema*
   Aedeagus without free spines; clasper with a complex process from mesal face . . . . . *dietzi*

Ochrotrichia (Metrichia) warema n. sp.

Fig. 124–125

This species is a typical member of the *campana* group. From all described species it differs in the shape of the claspers, especially in the presence of a basodorsal lobe with mesal peglike setae and the pair of apical teeth.

Adult. – Length of forewing, 2 mm. Color uniform reddish-brown. Male abdomen with a pair of seta-filled pouches between terga six and seven. Male genitalia: Ninth segment slightly more than twice as long as high in lateral aspect; posterior margin



Figs. 124–131. — *Ochrotrichia* (*Metrichia*) *warema* n. sp.: 124, ♂ genitalia, dorsal; 125 ♂ genitalia, lateral. *O.* (*M.*) *dietzi* n. sp.: 126, ♂ genitalia, dorsal; 127, ♂ genitalia lateral; 128, aedeagus, dorsal. *Hydroptila surinamensis* n. sp.: 129, ♂ genitalia lateral; 130, ♂ genitalia, ventral; 131, aedeagus, dorsal.

slightly oblique. Cercus ovate, upright. Tenth tergum high and elongate. Dorsolateral hook long and slender, apex slightly angled ventromesad. Clasper with a distinct basodorsal lobe bearing a

cluster of peglike setae on mesal face, apex bearing two small teeth. Aedeagus with two well-developed spines of equal size, origins approximate, arising at 3/4 length of internal tubule.

Material. – Holotype, male: Surinam, Litani River, Waremapan Rapids, 30 July 1939, D. C. Geijskes. Paratypes: Same data, 7♂, 4♀.

Ochrotrichia (Metrichia) dietzi n. sp.

Fig. 126–128

This species is, on the basis of male genitalia, totally unlike any other species in the genus. The species agrees with the subgenus *Metrichia* in the presence of ocelli, an apical spur on the foreleg, and structure of the thorax. The genitalia however, are unique. The large mesal process of the clasper with its ventral projection, or the thin lobe between the clasper and the ninth tergum could be the predecessor of the dorsolateral hook that is typical of the subgenus.

Adult. – Length of forewing, 2 mm. Color fuscous; legs paler, tarsal segments annulate; head with white hairs anteriorly, mesonotum with a transverse band of silver hairs continuing onto forewings for half their length, with a silver spot on posterior margin of forewing at this level and with several silver spots at 3/4 length and subapically. Seventh sternum with a small apicoventral keel. Male genitalia: Ninth segment elongate, slightly produced anteroventrally, with a longitudinal dorsolateral thickening; dorsally depressed, especially posteriad, and produced posteriorly as a rounded, membranous lobe. From posterior a structure (subgenital plate?) conical in shape in dorsal aspect, with an apicomesal dark line. A thin plate, broadly ovate in lateral aspect, arising between clasper and ninth segment and extending posteriad. Clasper short and broad, with a small basoventral lobe in lateral aspect, posterior margin with a comb of dark spines; with a mesal process consisting of a dorsal flange giving rise to an apicoventral lobe bearing a comb of dark spines. Aedeagus very long and slender; apex with a twisted ribbon-like structure with a twisted dark tubule.

Material. – Holotype, male: Guyana, Rockstone, Essequibo River, 27–29 March 1969, Duckworth and Dietz, USNM 72357. Paratypes: Same data, 1♀. Surinam, Wilhelmina Mountain Expedition, Lucie River camp, 8 July 1963, S. Ligorie, at light, 1♂.

Genus **Hydroptila** Dalman

Species belonging to the genus *Hydroptila* have been reported from all regions of the world. Only one species has been reported from South America previously. Although more species of *Hydroptila* will probably be discovered in South America, it seems that *Hydroptila* is proportionately much rarer in South than in North America.

Hydroptila surinamensis n. sp.

Fig. 129–131

This species is a member of the *consimilis* group. From all described species of this group it is easily recognized by the structure of the apical portion of the aedeagus. The pointed process arises in this species from the base of the enlarged apical portion rather than near its apex as in other species.

Adult. – Length of forewing, 2 mm. Color in alcohol, dark brown. Seventh sternum with an apicomesal point. Male genitalia: Ninth segment rounded anterolaterally, posterior margin developed into a rounded lobe laterad to clasper base. Tenth tergum with a declivent, sclerotized lateral band. Subgenital plate lightly sclerotized marginally, broad, with two well separated points apically in ventral aspect. Clasper in lateral aspect expanded apically, with an apicodorsal dark spot, in ventral aspect with a well-developed basolateral shoulder. Aedeagus tubular basally, with a spiral process wrapped around central tube at 3/4 length, subapically constricted and bearing at this point a short pointed process twisted around tube and directed slightly basad.

Material. – Holotype, male: Surinam, Blanche Marie, falls behind camp, 15 Feb. 1971, D. C. Geijskes, at light. Paratypes: same data, 2♂.

Genus **Oxyethira Eaton**

The genus *Oxyethira*, like *Hydroptila*, is found throughout the world. Although few species have been recorded from South America, 5 were found in the materials available for this study.

KEY TO SPECIES OF *Oxyethira*

1. Ninth sternum produced posteriad, tip deeply divided . *azteca*
   Ninth sternum not produced posteriad, posterior margin with a pair of short, dark processes 2

2. Ninth sternum with anterior margin produced beyond anterior margin of eighth segment at least length of eighth segment 3
   Ninth sternum with anterior margin only barely surpassing anterior margin of eighth segment 4

3. Aedeagus with a pair of long, recurved dorsal processes . . . . . *longissima*
   Aedeagus with a pair of short spines . . . . . *macrosterna*

4. Subgenital plate with apex angled sharply ventrad in lateral aspect . . . . . *unispina*
   Subgenital plate with apex directed posteriad . . . *obscura*

Oxyethira azteca (Mosely)

Fig. 132–133

Loxotrichia azteca MOSELY, 1937, p. 165.
Oxyethira azteca (Mosely). – ROSS, 1944, p. 295. – FLINT, 1968, p. 54.

The species is widely distributed over Central America, has been found on the island of Grenada, and now in Surinam.

Material. – Surinam, Nickerie River, Blanche Marie, 14 Feb. 1971, at light, 1♂; same, but falls in creek, 15 Feb. 1971, 1♂; same, but falls behind camp, 15 Feb. 1971, 1♂.

Oxyethira longissima n. sp.

Fig. 134–136

This species would appear to be distantly related to the following. It is easily recognised by the strange aedeagus with its pair of long, folded dorsal processes.

Adult. – Length of forewing, 2.5 mm. Color mostly bleached in alcohol, apparently mottled brown. Seventh sternum with an apicomesal point. Male genitalia: Eighth segment with anterior margin oblique, posterior margin produced into a small lobe laterally. Ninth segment with anteroventral angle greatly prolonged. Subgenital plate with a dorsomesal strap and a ventral plate, whose apex is slightly emarginate in ventral aspect; with a pair of lateral membranous processes. Claspers fused mesally, pointed in lateral aspect, produced into two dark, blunt lobes in ventral aspect. Aedeagus with a basal tube, a pair of slender, whip-like processes arising at midlength and sharply turned back at midlength, tips twisted; apical tube with a basolateral process bearing two dorsally directed winglike lobes.

Material. – Holotype, male: Surinam, Republiek, 2 Jan. 1965, D. C. Geijskes, at light. Paratypes: Same data, 2♂.

Oxyethira macrosterna n. sp.

Fig. 137–139

This species is most closely related to *O. jamaicensis* Flint. In *macrosterna* the aedeagus is quite different with its two spines being borne at midlength rather than apically, and the subgenital plate and claspers are quite different especially as seen in ventral aspect.

Adult. – Length of forewing, 2–2.5 mm. Color brown, mottled. Seventh sternum with a pointed apicoventral process. Male genitalia: Eighth segment with anterior margin oblique, very hairy posterolaterally, divided ventromesally. Ninth segment greatly prolonged anteroventrally. Subgenital plate roughly C-shaped in lateral aspect, in ventral aspect sclerotized marginally, produced apicomesally; bearing a pair of slender membranous processes laterally. Clasper bandlike in ventral aspect, with a pair of submesal black lobes. Aedeagus bearing two spines at midlength, one half length of other, apical tube convoluted, partially membranous.

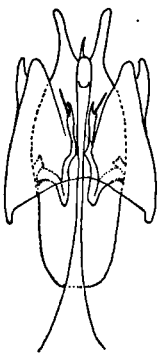
Material. – Holotype, male: Surinam, Nickerie River, Blanche Marie, falls in creek, 15 Feb. 1971, D. C. Geijskes. Paratypes: Same data, 5♂; same, but falls behind camp, 15 Feb. 1971, at light, 26♂.

Oxyethira unispina n. sp.

Fig. 142–143

This and the following species are clearly related as is shown by the general form of the genitalia. The sharply decurved apex of the subgenital plate and the distinct, apical spine of the aedeagus will serve to characterize this species.

Adult. – Length of forewing, 2 mm. Decolored in alcohol; probably mottled brown. Male genitalia: Eighth segment with posterior margin produced midlaterally. Ninth segment moderately produced anteroventrally. Subgenital plate bent at right angles in lateral aspect; sclerotized marginally in ventral aspect. Claspers



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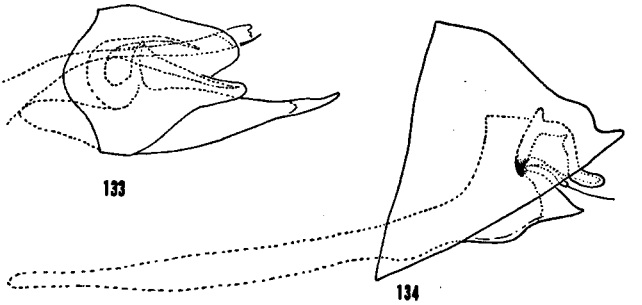

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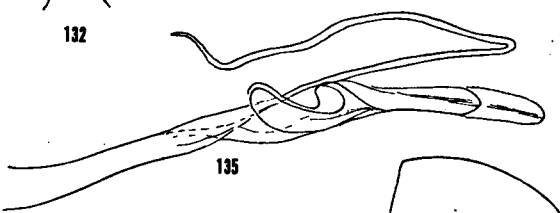

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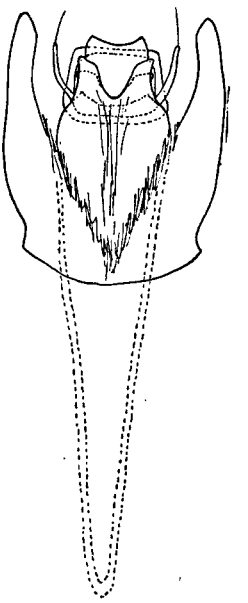

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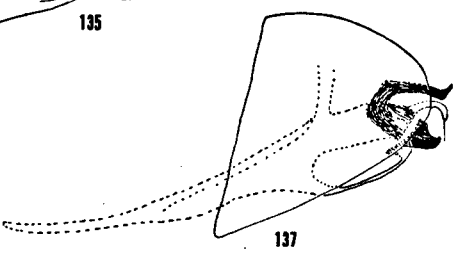

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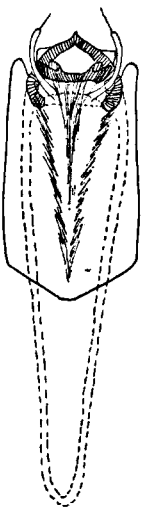

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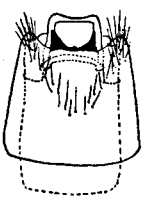

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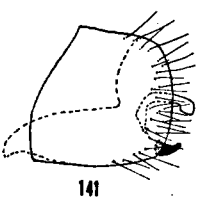

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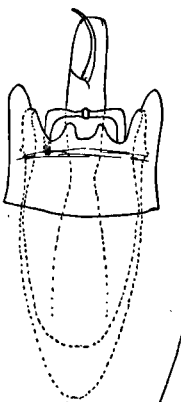

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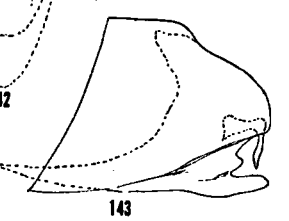

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very indistinct, produced as a pair of pale, submesal knobs. Aedeagus tubular, with a single apical spine.

Material. – Holotype, male: Surinam, Republiek, 2 Jan. 1965, D. C. Geijskes, at light.

Oxyethira obscura n. sp.

Fig. 140–141

This species is a member of the *grisea* group, easily distinguished from the other species by the male genitalia. The subgenital plate which is sclerotized marginally and C-shaped in lateral view and the simple, pointed claspers are diagnostic.

Adult. – Length of forewing, 1.5 mm. Color pale brown; forewing mottled with various shades of brown. Seventh sternum with an apicomesal keel. Male genitalia: Eighth segment forming a tube enclosing remainder of genital capsule. Ninth segment completely enclosed by eighth segment, anteroventral margin produced into a broad scoop. Subgenital plate C-shaped in lateral aspect, in ventral with posterior margin slightly indented mesally, with a heavily sclerotized margin. Clasper in lateral aspect a small, dark point, in ventral aspect with two claspers barely united mesally. Aedeagus tubular becoming more membranous subapically, with a slender, lightly sclerotized band (or spine?) apically.

Material. – Holotype, male: Surinam, Suriname River, Botopasie, 21 May 1955, D. C. Geijskes, at light. Paratypes: Same data, 1♂. Käyser airstrip, 22 June 1963, S. Ligorie, at light, 8–9 p.m., 3♂.

Figs. 132–143. — *Oxyethira azteca* (Mosely): 132, ♂ genitalia, dorsal; 133, ♂ genitalia, lateral. *O. longissima* n. sp.: 134, ♂ genitalia, lateral; 135, aedeagus, lateral; 136, ♂ genitalia, ventral. *O. macrosterna* n. sp.: 137, ♂ genitalia, lateral; 138, ♂ genitalia, ventral; 139, aedeagus, dorsal. *O. obscura* n. sp.: 140, ♂ genitalia, ventral; 141, ♂ genitalia, lateral. *O. unispina* n. sp.: 142, ♂ genitalia, ventral; 143, ♂ genitalia, lateral.

Genus **Neotrichia** Morton

Species of *Neotrichia* are found from southern Canada south to central Argentina. There are many species, most being no more than a millimeter or two long. The study of the Surinam species has caused me more difficulty than the study of any other genus. Not only does the size create problems, but the specimens have not cleared well with the result that I have not been able to see the structures clearly. In addition to the species I am recording, there were numerous others that I do not describe because the structures are too indistinct. Yet I am afraid that the drawings here presented still contain inaccuracies.

Key to species of *Neotrichia*

1. Claspers at least several times longer than broad, generally terete or flattened 2
   Claspers either reduced to dark spots, shorter, or bilobed . 7

2. Aedeagus with 1 or 2 dark, internal and apical spines . . 3
   Aedeagus without dark, internal spines 6

3. Aedeagus with 2 short, dark apical spines 4
   Aedeagus with 1 dark apical spine 5

4. Clasper with a distinct, dorsal protuberance . . . . . *bullata*
   Clasper lacking any protuberances . . . . . *biuncifera*

5. Clasper long and slender. . . . . *unispina*
   Clasper broader, especially in ventral aspect . . . *proboscidea*

6. Aedeagus with a distinct hooklike process at midlength . . . . . *falcifera*
   Aedeagus with a long, slender process at midlength . . . . . *corniculans*

7. Claspers reduced to a pair of small, dark spots . . . *rotundata*
   Claspers clearly present, although modified 8

8. Aedeagus with a pair of dark, internal spines . . . *interrupta*
   Aedeagus without internal spines 9

9. Tenth tergum consisting of a pair of ovoid plates much surpassing venter of genitalia . . . . . *lobata*
   Tenth tergum small and inconspicuous . . . . . *bifida*

Neotrichia bullata n. sp.

Fig. 144–146

This species is probably most closely related to the following new species. It is most easily recognized by the dorsal process of the claspers and the dark process from the posterolateral margin of the ninth segment.

Adult. – Length of forewing, 1.5 mm. Completely cleared; color unknown. Male genitalia: Ninth segment with anterolateral margin slightly produced; with a pair of ventral, submesal thickenings; posterolateral margin produced into an elongate, dark process with apicoventral angle slightly produced. Subgenital plate produced into a long, terete process. Bracteole long, terete. Clasper long, slender, with a distinct dorsal process at midlength. Aedeagus constructed at midlength; presence of spiral process uncertain; apex tubular with 2 short, curved spines and an internal tubule.

Material. – Holotype, male: Surinam, Käyser Airstrip, 22 June 1963, S. Ligorie, at light, 20–21 p.m. Paratype: Same, but 27 June 1963, 1♂.

Neotrichia biuncifera n. sp.

Fig. 147–149

Although clearly related to *N. bullata* n. sp., this species may be easily recognized by the lack of a dorsal knob on the claspers, and the lack of posterolateral process from the ninth segment.

Adult. – Length of forewing, 1.5 mm. Color unknown. Male genitalia: Ninth segment with anterolateral angle produced into a sharp point; with a pair of ventral submesal bars. Tenth tergum mostly destroyed or distorted in type. Subgenital plate with a sinuate, darker outer margin. Bracteole elongate, slightly flattened. Clasper elongate, terete. Aedeagus constructed at midlength; with a slender spiral process, apex with a pair of short, hooked spines.

Material. – Holotype, male: Surinam, Käyser Airstrip, 27 June 1963, S. Ligorie, at light. Paratype: Lucie River camp, Wilhelmina Mountains Expedition, 8 July 1963, S. Ligorie, at light, 1♂ (this specimen appears to have an appendage from the tip of the subgenital plate, and the claspers more incurved apically in ventral aspect).

Neotrichia unispina n. sp.

Fig. 150–152

From the two preceding species, to which it is related, *N. unispina* n. sp. is easily recognized by the presence of only a single internal spine of the aedeagus. The long subgenital plate, with its semicircular apex in ventral aspect is also distinctive.

Adult. – Length of forewing, 1.5 mm. Color unknown. Male genitalia: Ninth segment produced anterolaterally as a long, slender process; with a pair of short, submesal rods ventrally. Tenth tergum a membranous lobe. Subgenital plate apically semicircular in ventral aspect with a long mesal process (with aedeagus retracted the apex is directed dorsad and the ventral process swings free). Bracteole a long, slender membranous lobe. Clasper long, slender

and terete. Aedeagus apparently with a spiral process; apex enlarged, with a central tubule and a single short spine.

Material. – Holotype, male: Surinam, Lucie River camp, Wilhelmina Mountains Expedition, 8 July 1963, S. Ligorie, at light. Paratypes: Same data, 1♂. Käyser Airstrip, 27 June 1963, S. Ligorie, at light, 1♂. Marowijne River, Nason, 9 June 1952, at light, 3♂.

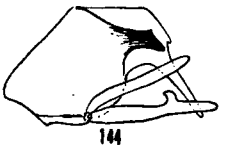
Neotrichia proboscidea n. sp.

Fig. 153–155

This species is probably most closely related to the preceding, but is easily recognized by the broader claspers and the blackened, bifid structure from the posterolateral margin of the ninth segment. The figure was prepared from an example with the claspers depressed, thereby freeing the apex of the subgenital plate; if the claspers were raised the mesal process would be directed more basad and tucked in between the bases of the claspers.

Adult. – Length of forewing, 1.5 mm. Completely cleared; color unknown. Male genitalia: Ninth segment produced anteroventrally; with a pair of ventral, submesal thickenings; posterolateral margin with a short, black, bifid process. Subgenital plate a long, slender process with a darkened tip. Bracteole elongate, apicodorsal angle slightly produced. Clasper elongate; broad in ventral aspect, approximate mesally, with apical margin darkened. Aedeagus with a spiral process at midlength; apical portion convoluted, with a small dark apical spine and a twisted apical process.

Material. – Holotype, male: Surinam, Nickerie River, Lombok Falls, 5 Feb. 1971, D. C. Geijskes. Paratypes: Käyser Airstrip, 27 June 1963, S. Ligorie, at light, 1♂. Lucie River camp, Wilhelmina Mountains Expedition, 8 July 1963, S. Ligorie, at light, 2♂. Wilhelmina Mountains, trail II km 8, large sandy creek, 19 Sept. 1943, at light, 1♂. Boven Saramacca River, Tafelberg Expedition, base camp near DeKockberg, 25 Mar. 1958, at light, 1♂.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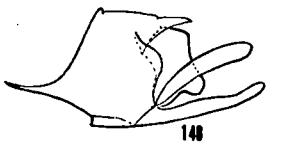
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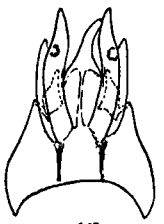
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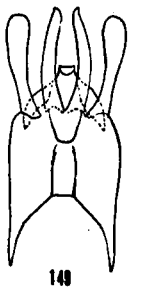
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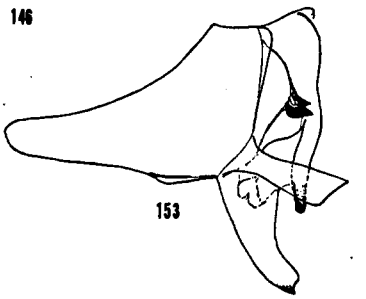
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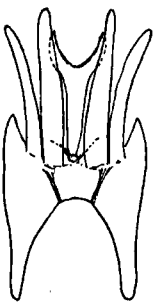
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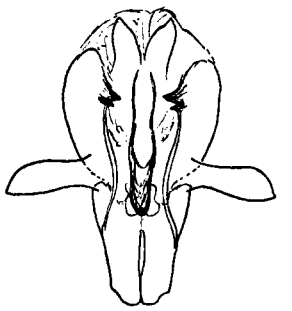
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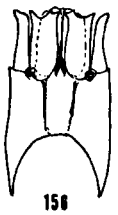
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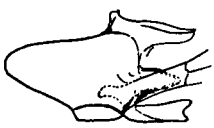
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Neotrichia falcifera n. sp.

Fig. 156–158

Although somewhat related to *N. proboscidea* n. sp. on the basis of the broad claspers and subgenital plate, this species is easily recognized by the forked apex of the subgenital plate, lack of posterolateral projection of the ninth segment, and especially by a very different structure of the aedeagus.

Adult. – Length of forewing, 1.5 mm. Completely cleared. Male genitalia: Ninth segment produced into a rounded anterolateral lobe; with a pair of ventral, submesal thickenings. Tenth tergum membranous, dorsal surface lightly sclerotized. Subgenital plate elongate, with apex forked and folded back between claspers. Bracteole rectangular, elongate. Clasper elongate, roughly rectangular, apicomesal point slightly produced. Aedeagus with a spiral process near midlength, with a dark, hooked spine just beyond, apex mostly membranous but slightly more sclerotized on one side.

Material. – Holotype, male: Surinam, Nickerie River, Blanche Marie Falls, 15 Feb. 1971, D. C. Geijskes, at light 10 p.m. Paratypes: Käyser Airstrip, 27 June 1963, S. Ligorie, at light, 1♂. Lucie River camp, Wilhelmina Mountains Expedition, 8 July 1963, S. Ligorie, at light, 3♂.

Figs. 144–158. — *Neotrichia bullata* n. sp.: 144, ♂ genitalia, lateral; 145, ♂ genitalia, ventral; 146, aedeagus, dorsal. *N. biuncifera* n. sp.: 147, aedeagus, dorsal; 148, ♂ genitalia, lateral; 149, ♂ genitalia, ventral. *N. unispina* n. sp.: 150, ♂ genitalia, lateral; 151, ♂ genitalia, ventral; 152, aedeagus, dorsal. *N. proboscidea* n. sp.: 153, ♂ genitalia, lateral; 154, aedeagus, lateral; 155, ♂ genitalia, posterior. *N. falcifera* n. sp.: 156, ♂ genitalia, ventral; 157, ♂ genitalia, lateral; 158, aedeagus, lateral.

Neotrichia corniculans Flint

Fig. 159–162

Neotrichia corniculans FLINT, 1968, p. 50.

This species was recently described from the Lesser Antillian island of Dominica. The Surinamese specimen differs from the type in that the bases of the tenth tergal horns are more elongate, and the longer bracteolar process surpasses the claspers which seem quite short.

Material. – Surinam, Brownsberg, mountain creek near Golddiggers camp, 10 Aug. 1958, 1♂.

Neotrichia rotundata n. sp.

Fig. 163–165

N. caxima (Mos.) from Mexico would appear to be related to this species. The aedeagi in the two species are quite different however, with *caxima* bearing 2 internal spines rather than a twisted external spine.

Adult. – Length of forewing, 1.5 mm. Color unknown. Male genitalia: Ninth segment elongate, anterior margin broadly rounded; anteroventral surface produced into a broad flap. Tenth tergum produced and lightly sclerotized laterally, membranous mesally. Subgenital plate developed as a thin rectangular plate with a large seta at each posterolateral angle. Apicoventral region with 5 small, black points in ventral aspect. Aedeagus with a spiral process at midlength; beyond a darkened complex giving rise to a small twisted spine and a slender apical tube.

Material. – Holotype, male: Surinam, Käyser Airstrip, 27 June, 1963, S. Ligorie, at light. Paratypes: Same data, 1♂. Lucie River camp, Wilhelmina Mountains Expedition, 8 July 1963, S. Ligorie, at light, 2♂.

Neotrichia interrupta n. sp.

Fig. 166–168

This species seems to be related to *N. noteuna* (Mos.) from Brazil. It differs most strikingly in possessing a sclerotized process from the posterolateral margin of the ninth segment and in the shape of the subgenital plate.

Adult. – Length of forewing, 1.5 mm. Color unknown. Male genitalia: Ninth segment slightly produced into a point anterolaterally; with a pair of ventral submesal bars; with a heavily sclerotized, slightly upturned process from posterolateral margin. Tenth tergal region badly damaged. Bracteole small, rounded, membranous. Clasper heavily sclerotized, short, tapering in lateral and ventral aspects to a blunt point. Aedeagus constricted, with a spiral process; apical region with an internal tubule and a pair of short apical spines.

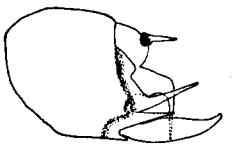
Material. – Holotype, male: Surinam, Lucie River camp, Wilhelmina Mountains Expedition, 8 July 1963, S. Ligorie, at light.

Neotrichia bifida n. sp.

Fig. 169–171

This species does not seem to have any clearly related species. It is easily recognized by the short, bifid claspers and lack of spines in the aedeagus.

Adult. – Length of forewing, 1.5 mm. Color unknown. Male genitalia: Ninth segment produced as a long, narrow rod anterolaterally; with a pair of ventral, submesal thickenings. Tenth tergum membranous. Subgenital plate indistinct, but with a pair of pointed lateral plates distinct in ventral aspect. Bracteole membranous, an indistinct upright lobe. Clasper produced as an elongate, apically darkened lobe with a short, darkened basomesal lobe.



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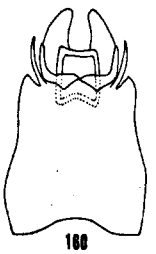

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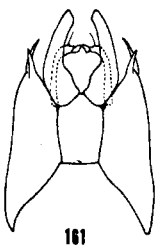

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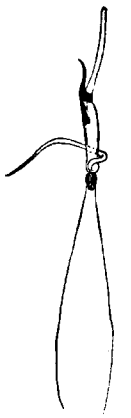

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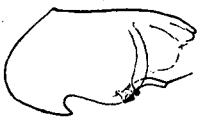

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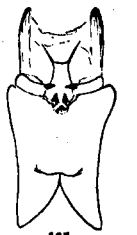

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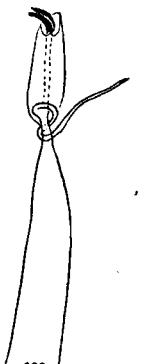

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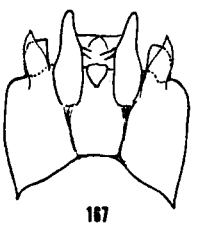

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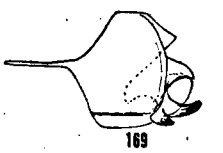

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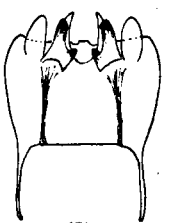

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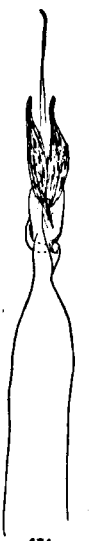

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Aedeagus tubular basally, with a spiral process at midlength; apical tube slender, darkened, apex bulbous.

Material. – Holotype, male: Surinam, Lawa River, Anapaike, 14 Nov. 1963, S. Ligorie, at light. Paratypes: Same data, 21♂. Coeroeni-eiland, Aug. 1959, 1♂. Lucie River camp, Wilhelmina Mountains Expedition, 8 July 1963, S. Ligorie, 8♂. Pepejoe, 20 May 1952, at light, 1♂.

Neotrichia lobata n. sp.

Fig. 172–174

Perhaps related to the preceding species, *N. lobata* n. sp. may be easily recognized by the greatly enlarged tenth tergal lobes, and two inflated external spines on the aedeagus.

Adult. – Length of forewing, 1.5 mm. Color unknown. Male genitalia: Ninth segment broadly angulate anteriorly; with a crescentic, transverse thickening posteroventrally. Tenth tergum composed of large, broad lateral plates. Subgenital plate large, apex rounded in ventral aspect with a small midventral keel. Bracteole a small, dark rounded lobe in lateral aspect, hooked mesally in ventral aspect. Clasper short, pointed. Aedeagus with a spiral process; a pair of dark, inflated, spines externally, and a long slender apical tube.

Material. – Holotype, male: Surinam, Lucie River camp, Wilhelmina Mountains Expedition, 8 July 1963, S. Ligorie, at light. Paratypes: Same data, 2♂.

Figs. 159–174. — *Neotrichia corniculans* Flint: 159, ♂ genitalia, lateral; 160, ♂ genitalia, dorsal; 161, ♂ genitalia, ventral; 162, aedeagus, dorsal. *N. rotundata* n. sp.: 163, ♂ genitalia, lateral, 164, aedeagus, lateral; 165, ♂ genitalia, ventral. *N. interrupta* n. sp.: 166, ♂ genitalia, lateral; 167, ♂ genitalia, ventral; 168, aedeagus, dorsal. *N. bifida* n. sp.: 169, ♂ genitalia, lateral; 170, aedeagus, dorsal; 171, ♂ genitalia, ventral. *N. lobata* n. sp.: 172, ♂ genitalia, lateral; 173, ♂ genitalia, ventral; 174, aedeagus, dorsal.

Family HYDROPSYCHIDAE

The hydropsychids are found in all regions of the world. Two subfamilies are found in Surinam, the Hydropsychinae represented by the genus *Smicridea*, and the Macronematinae with the genera *Synoestropsis*, *Plectromacronema*, *Macronema*, *Neoleptonema* and, *Leptonema*. It is very unlikely that other genera of hydropsychines will be found in Surinam, but the macronematine genera *Blepharopus*, *Centromacronema*, and *Pseudomacronema* may well be found in Surinam. ULMER (1907c) in his monograph of the Macronematinae presents a key that is complete for all the genera of the subfamily.

KEY TO THE GENERA OF HYDROPSYCHIDAE

1. Antenna generally shorter than forewing; size smaller, forewing rarely exceeding 5 mm . . . . . *Smicridea*
   Antenna longer than forewing; size larger, forewing usually over 7 mm 2

2. Palpi lacking . . . . . *Synoestropsis*
   Palpi present 3

3. Femur of hindleg with 3 spurs . . . . . *Plectromacronema*
   Femur of hindleg with 4 spurs 4

4. Maxillary palpus with third segment as long as, or longer than, second segment . . . . . *Macronema*
   Maxillary palpus with second segment longer than third . 5

5. Forewing with M_{3+4} branched well beyond m. . *Neoleptonema*
   Forewing with M_{3+4} branched at crossvein m . . *Leptonema*

Genus **Smicridea** McLachlan

This is the only genus of the subfamily Hydropsychinae that has been discovered in South America. I recognize two subgenera, *Smicridea* in which the male abdomen bears 2 pairs of internal reticulate sacs, and *Rhyacophylax* which is lacking these sacs. Both subgenera are common from the southwestern United States southward well into Patagonia, and occur again in Australia. Both subgenera were commonly collected in Surinam.

KEY TO SPECIES OF *Smicridea*

1. Abdomen of male with 2 pairs of internal reticulate sacs. . 2
   Abdomen of male without such sacs 11

2. Aedeagus tubular, long, apex with some internal sclerites . 6
   Aedeagus not tubular, short, open apically with various processes and spines 3

3. Aedeagus with a single, narrow apicoventral process and 4 pairs of internal spines 4
   Aedeagus with either 2 pairs of apicoventral processes or a broad, scoopshaped process, spines variable. 5

4. Aedeagus with apicoventral process distinctly decurved apically, all 4 pairs of spines of similar length. . . . *octospina*
   Aedeagus with apicoventral process nearly straight, ventral pair of spines much larger than other pairs . *inaequispina*

5. Aedeagus with 2 pairs of apicoventral processes. *appendicula*
   Aedeagus with a scooplike apicoventral lobe . . . . *cornuta*

6. Tenth tergite in lateral aspect with an erect apical point *erecta*
   Tenth tergite without an erect apical point 7

7. Tenth tergite very narrow in lateral aspect, in dorsal narrow apically, but greatly broadened basally . . . . *aequalis*
Tenth tergite broader in lateral aspect, in dorsal not markedly widened basally 8

8. Apical segment of clasper tapering to a point in dorsal aspect 9
Apical segment of clasper broad apically and more or less bifid 10

9. Apex of aedeagus distinctly inflated, with a pair of apicodorsal appressed sclerites . . . . . *bulbosa*
Apex of aedeagus slightly expanded ventrally, without sclerites . . . . . *obliqua*

10. Tip of tenth tergite directed laterad in dorsal aspect, tip of clasper distinctly bifid . . . . . *bivittata*
Tip of tenth tergite rounded in dorsal aspect, tip of clasper only slightly emarginate. . . . . *truncata*

11. Tenth tergite with a boot shaped dorsolateral sclerite which is covered with spicules . . . . . *caligata*
Tenth tergite without a dorsolateral sclerite 12

12. Tenth tergite truncate in dorsal and lateral aspects, but with a small, erect apicomesal lobe . . . . . *abrupta*
Tenth tergite tapering to a narrow, rounded apex 13

13. Tenth tergite with a ventrolateral lobe bearing spicules, tergites long, narrow and widely separated in dorsal aspect . . *lobata*
Tenth tergite without a ventrolateral lobe, tergites shorter, broader, and more nearly approximate in dorsal aspect . . 14

14. Tip of aedeagus with a pair of eversable, spiculate lobes ventrally . . . . . *columbiana*
Tip of aedeagus with a pair of ventrolateral sclerities . . . . . *scutellaris*

Smicridea (S.) octospina n. sp.

Fig. 175–177

This and the following three species belong to the *nigripennis* group of the subgenus *Smicridea*. This and the following species are very closely related, but *octospina* may be recognized by the more sharply decurved mesal process and the nearly uniform length of the spines of the aedeagus, and lesser differences in the shape of the ninth and tenth terga.

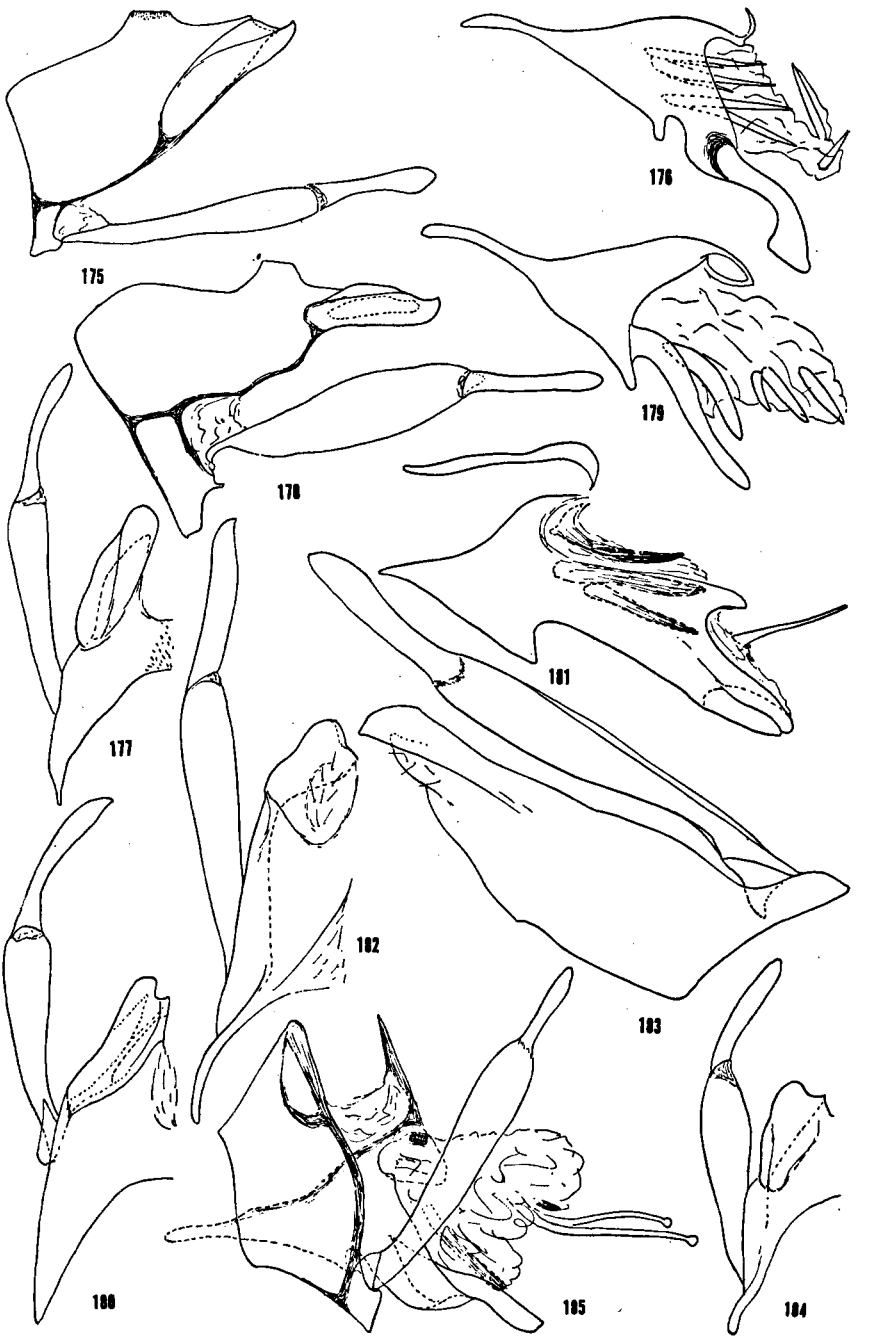
Adult. – Length of forewing, 4.5 mm. Color reddish-brown (probably nearly black in life); forewing mostly denuded but appearing to bear white hairs at apex, in a transverse band near anastamosis, and midway between outer band and wing base. Abdomen with reticulate internal pouches. Male genitalia: Ninth segment with anterior margin moderately produced. Tenth tergite with tip upturned and pointed in lateral aspect, rounded and flattened in dorsal aspect. Clasper very long and slender, apical segment about half length of basal segment. Aedeagus with a single long, decurved apicoventral process, with three pairs of long, heavily sclerotized (1 pair everted in type) and 1 pair of shorter, more lightly sclerotized spines.

Material. – Holotype, male: Surinam, Litani River, Waremapan, small spring creek, 31 July 1939, D. C. Geijskes. Paratypes: Same data, 4♂, 1♀. Coppename River, Wilhelmina Mountains, small creek, trail I km 15.6, 27 Aug. 1943, 1♂.

Smicridea (S.) inaequispina n. sp.

Fig. 178–180

From the preceding species, *S. inaequispina* may be recognized by the straight mesal process and the enlarged ventral pair of spines in the aedeagus. The ninth tergum is also more elongate, and the tenth tergite bears a small apicomesal tooth in dorsal aspect.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Adult. – Length of forewing, 5 mm. Color reddish-brown (probably nearly black in life); forewing with a transverse band of white hairs just basad of anastamosis, and another band midway between outer band and wing base. Abdomen with reticulate internal sacs. Male genitalia: Ninth segment with anterior margin greatly produced. Tenth tergite with tip upturned in lateral aspect, in dorsal aspect with tip bearing a small mesal tooth. Clasper very long, basal segment slightly inflated apicad, apical segment more than half length of basal segment. Aedeagus with a single, narrow, apicoventral process, a small conical apicodorsal lobe, a pair of large apicoventral and 3 pairs of smaller, heavily sclerotized spines.

Material. – Holotype, male: Surinam, Nassau Mountains, trail km 12.5, small creek in forest, 23 Mar. 1949, D. C. Geijskes. Paratypes: Same data, 1♂. Nassau Mountains, creek, km 11.3, Mar. 1949, 2♂.

Smicridea (S.) appendicula n. sp.

Fig. 181–183

This and the following species are related, albeit somewhat distantly. The structure of the aedeagus offers many distinctive characteristics, such as the dorsolateral tooth and the slender apical process.

Adult. – Length of forewing, 4 mm. Color in alcohol, brown. Male abdomen with 2 pairs of internal sacs. Male genitalia: Ninth segment produced anteriad. Tenth tergite with tip upturned in lateral aspect, in dorsal aspect very broad and short. Clasper very

Figs. 175–185. — *Smicridea* (*S.*) *octospina* n. sp.: 175, ♂ genitalia, lateral; 176, aedeagus, lateral; 177, ninth and tenth terga and clasper, dorsal. *S.* (*S.*) *inaequispina* n. sp.: 178, ♂ genitalia, lateral; 179, aedeagus, lateral; 180, ninth and tenth terga and clasper, dorsal. *S.* (*S.*) *appendicula* n. sp.: 181, aedeagus, lateral; 182, ninth and tenth terga and clasper, dorsal; 183, ♂ genitalia, lateral. *S.* (*S.*) *cornuta* n. sp.: 184, ninth and tenth terga and clasper, dorsal; 185, ♂ genitalia, lateral.

long, basal segment slightly inflated apicad, apical segment about half length of basal segment. Aedeagus with two pairs of apicoventral processes, ventralmost depressed and well separated mesally, other pair compressed and situated between first pair, dorsal margin with a distinct tooth; a long, thin, dorsal roof tapering from base to apex; internally with 3 pairs of spines, dorsalmost slightly sigmoid in dorsal aspect, with a single threadlike apicomesal process.

Material. – Holotype, male: Surinam, Brownsberg, mountain creek near Golddiggers camp, 10 Aug. 1958, D. C. Geijskes. Paratypes: Same data, 3♂.

Smicridea (S.) cornuta n. sp.

Fig. 184–185

Although this species is related to the preceding, as is shown in the general structure of the tenth tergum and claspers, the aedeagus is very distinctive. The aedeagus with the pair of erect points on the dorsal margin, and the pair of elongate, knobbed spines from the membranous central region, is unique.

Adult. – Length of forewing, 4.5 mm. Color in alcohol, pale brown. Abdomen with internal sacs. Male genitalia: Ninth segment barely produced anterolaterally. Tenth tergite short, rounded apically, very broad in dorsal aspect. Clasper long, basal segment slightly inflated apically, apical segment bluntly pointed. Aedeagus apicoventrally with a single, elongate scooplike sclerite slightly emarginate mesally in ventral aspect, ventrolateral margin produced into a thin lobe enclosing base of apicoventral sclerite; internally with a pair of long ventral spines, a pair of long, thin apically knobbed spines arising from central membranous region, and a dorsal sclerite; dorsal margin produced into a pair of pointed lobes.

Material. – Holotype, male: Surinam, Wilhelmina Mountains, trail I km 8, small stony creek, 31 Aug. 1943, D. C. Geijskes.

Smicridea (S.) erecta n. sp.

Fig. 186–187

This species is most closely related to the following species on the basis of structure of the aedeagus, and the pointed apex of the clasper. It is, however, easily recognized by the truncate apex of the tenth tergite which bears an erect apicomesal point.

Adult. – Length of forewing, 5 mm. Color in alcohol, brown (with a faint indication of a pale band in stigmal region). Male abdomen with internal sacs. Male genitalia: Ninth segment slightly rounded anteriorly. Tenth tergite with apicomesal angle produced into a sharp, erect point; apex broad and truncate, except for point, in dorsal aspect. Clasper with basal segment long, slightly inflated apicad; apical segment rather short, tapering to a point. Aedeagus long and slender, curving directly from basal region; apex slightly enlarged and membranous, internal sclerite indistinct, probably ribbonlike.

Material. – Holotype, male: Surinam, Nassau Mountains, km 11.3, creek, March 1949, D. C. Geijskes. Paratypes: Same data, 2♂.

Smicridea (S.) aequalis Banks

Fig. 188–190

Smicridea aequalis Banks, 1920, p. 358. – Mosely 1931, p. 170. – Fischer, 1963, p. 130. – Flint, 1967, p. 13.

This species, described from Bartica, Guyana, is here recorded from Surinam for the first time. New figures of the genitalia, showing more detail, and a description of the color of an unrubbed example, is given here to supplement the original description.

The basic color is fuscous, without white on the head; the forewing bears a white comma-shaped mark from the stigma and a

separate white mark on the posterior margin at the same level, and the tip of the wing has a white fringe.

Material. – Surinam, Zanderij, 25 May 1963, 3♂; same, but 3 Feb. 1952, 1♂. Upper Para River, at the bridge on road from Zanderij to Krakka, small swampy creek. 1 Nov. 1964, 24♂, 5♀. Phedra, forest creek, 26 Nov. 1961. 2♂.

Smicridea (S.) bulbosa n. sp.

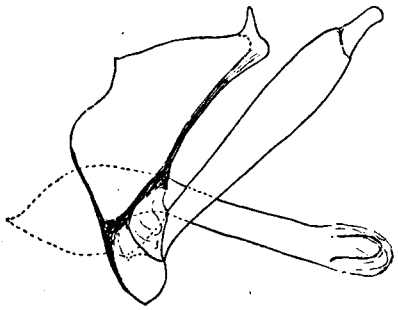
Fig. 191–193

This species is related to *S. aequalis* Bks. From the latter it is easily distinguished by the narrower, more elongate tenth tergites and the presence of a pair of apicodorsal sclerites on the tip of the aedeagus.

Adult. – Length of forewing, 5 mm. Color reddish-brown (probably nearly black in life); forewing with apical fringe white, with a transverse white band in the stigmal region, a transverse white band near base and a central white spot midway between; pronotum and head white medially. Male abdomen with internal sacs. Male genitalia: Ninth segment nearly vertical anteriorly. Tenth tergite narrow, apex upturned in lateral view, narrowly produced in dorsal aspect. Clasper long, basal segment slightly inflated apically; apical segment about a third as long as basal segment, apex pointed. Aedeagus tubular, apex slightly inflated, with a pair of dorsolateral sclerites, and a mesal straplike sclerite.

Material. – Holotype, male: Surinam, Moengo, 18 May 1954, at boat's light, 6 a.m., D. C. Geijskes.

Figs. 186–196. — *Smicridea* (*S.*) *erecta* n. sp.: 186, ♂ genitalia, lateral; 187, ninth and tenth terga and clasper, dorsal. *S.* (*S.*) *aequalis* Banks: 188, ninth and tenth terga and clasper, dorsal; 189, tip of aedeagus, dorsal; 190, ♂ genitalia, lateral. *S.* (*S.*) *bulbosa* n. sp.: 191, ♂ genitalia, lateral; 192, tip of aedeagus, dorsal; 193, ninth and tenth terga and clasper, dorsal. *S.* (*S.*) *obliqua* n. sp.: 194, tip of aedeagus,dorsal; 195, ninth and tenth terga and clasper, dorsal; 196, ♂ genitalia, lateral.



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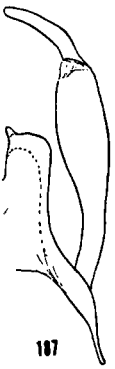

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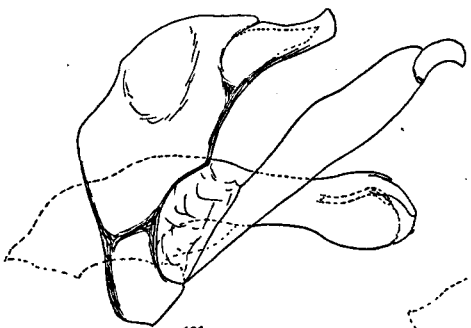

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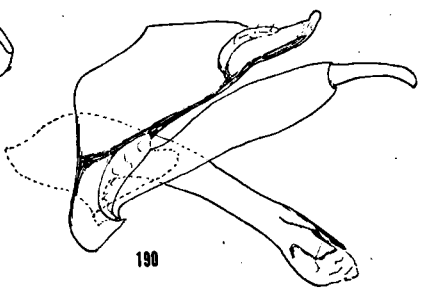

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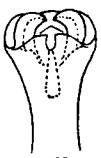

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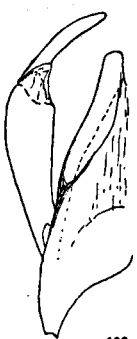

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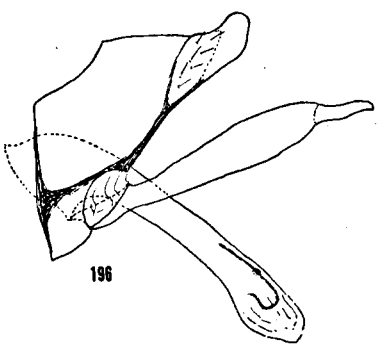

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Smicridea (S.) obliqua n. sp.

Fig. 194–196

This and the preceding species are related on the basis of shape of the aedeagus and apical segment of the clasper. It is easily distinguished by the tenth tergite whose apex is oblique and lacks the erect point.

Adult. – Length of forewing, 4.5 mm. General color fuscous; antennae and legs (especially mid tarsi) paler; head middorsally with white hairs, forewing with a transverse band of white hairs at stigma, and another midway to base of wings, apical fringe white. Abdomen with internal sacs. Male genitalia: Ninth segment vertical anteriorly. Tenth tergite upturned apicad, in dorsal aspect with tip obliquely truncate. Clasper long, basal segment slightly inflated apically, apical segment tapering to a point. Aedeagus tubular, curving directly from base, apex slightly enlarged, membranous; internal sclerite threadlike in lateral aspect, in dorsal aspect with base divided, a stemlike portion, then divided into a pair of curved, apical, ribbonlike appendages.

Material. – Holotype, male: Surinam, Kaboeri Creek, first camp, near Winnana Creek, 1 April 1971, D. C. Geijskes, at light, 7.30. Paratypes: Same, but 25 Mar. 1971, 1♂, 1♀. Boven Para, near Berlijn, 28 July 1962, P. H. v. Doesburg, at light, 8♂, 26♀. Tafelberg Expedition, Boven Saramacca, base camp near DeKockberg, 25 Mar. 1958, at light, 2♂, 2♀. Toekoemoetoe Creek, base camp, Tafelberg trail, July 1944, L. Schmidt, 5♂, 3♀. Toekoemoetoe Creek, Tafelberg trail km 3.7, creek, July 1944, L. Schmidt, 1♂.

Smicridea (S.) bivittata (Hagen)

Fig. 197–199

Hydropsyche bivittata HAGEN, 1861, p. 291. – ROSS, 1952, p. 33.
Smicridea bivittata (Hag.). – ULMER, 1913, p. 390. – FISCHER, 1963, p. 131. – FLINT, 1967, p. 13.

This species is common and widespread in Central America. This

is the first time that it has been recorded from South America.

Material. – Surinam, Brownsberg, mountain creek near Golddiggers camp, 10 Aug. 1958, 15♂, 12♀.

Smicridea (S.) truncata n. sp.

Fig. 200–202

This species is related to *S. bivittata* (Hag.). From the latter it differs in having the apices of the tenth tergites rounded in dorsal view, having the tips of the claspers only slightly bilobed, and in possessing a slightly differently shaped aedeagus.

Adult. – Length of forewing, 5.5 mm. Color fuscous; head with white hairs dorsally, forewing with a narrow, transverse, white band from stigma, a broader white band near wing base, and a white transverse dash between them. Abdomen with internal sacs. Male genitalia: Ninth segment nearly vertical anteriorly. Tenth tergite narrow, tip upturned in lateral view, rounded in dorsal. Clasper long, basal segment inflated apically; apical segment curved mesad, truncate but with a slight indication of two lobes apically. Aedeagus slender, tubular, apex slightly bilobed; with a lightly sclerotized internal sclerite apically.

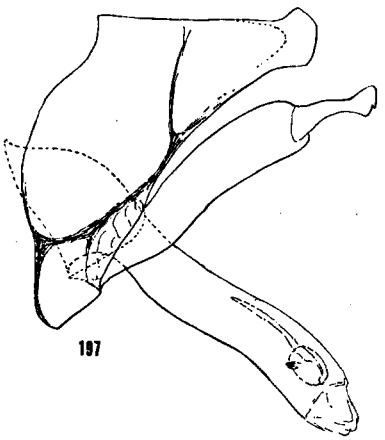
Material. – Holotype, male: Surinam, Kaboeri Creek, first camp, 1 April 1971, D. C. Geijskes, at light 7:30. Paratype: Nassau Mountains, trail km 6, near small creek, 5 Mar. 1949, at light, 1♂.

Smicridea (R.) caligata n. sp.

Fig. 203–206

This is a very distinctive new species, probably belonging to the *magna* group. I know of no other species that bears sclerites covered with spicules on the tenth tergum.

Adult. – Length of forewing, 5 mm. Color pale yellowish-brown;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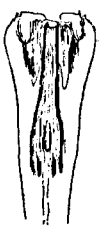
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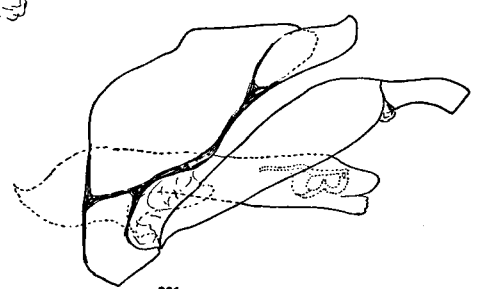
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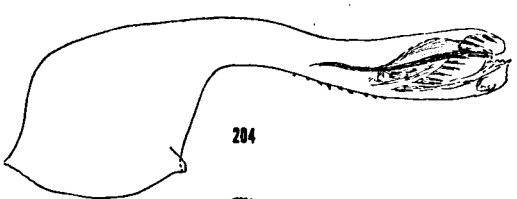
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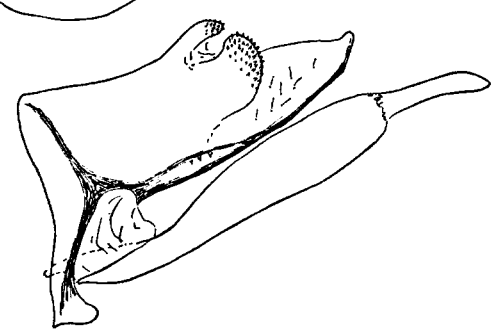
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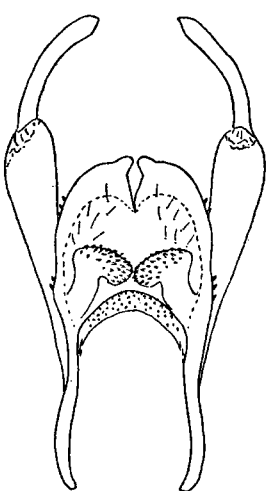
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forewing of male yellowish-brown with dark spots in cells M, 3A, and on nygma, with crossveins of chord and fork of Cu_1 darkened, with a subterminal, scalloped dark band; female with pale regions considerably infuscate. Male without internal sacs. Male genitalia: Ninth segment produced anterolaterally, with dorsal bridge narrow and with scabrous points, with a small rounded knob ventromesally. Tenth tergite with tip produced into a small apicomesal lobe; basolaterally with a large sclerite bearing many large points. Clasper with basal segment long, slightly inflated apicad; apical segment terete, apex rounded. Aedeagus with a broad basal section at right angles to stem, which bears a few spicules apicoventrally; apex with a pair of appressed ventrolateral flaps, internally with an elongate internal sclerite, considerably enlarged subapically, with lateral bands of short spines (when everted probably forming a crown of recurved spines).

Material. – Holotype, male: Surinam, Nickerie River, Blanche Marie, falls in creek, 15 Feb. 1971, D. C. Geijskes. Paratypes: Same data, many ♂♂ ♀♀; same, but falls behind camp, 15 Feb. 1971, at light, 17♂, 7♀. Blanche Marie, Meteo Camp, falls in forest, 15 Feb. 1971, at light, 11♂, 1♀.

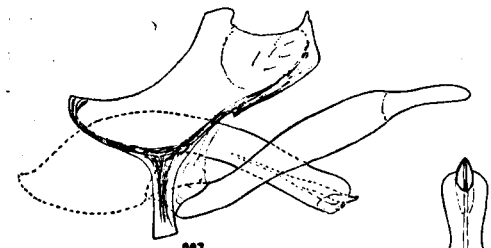
Smicridea (R.) abrupta n. sp.

Fig. 207–209

This is a very distinctive species, which although clearly a member of the subgenus *Rhyacophylax*, shows little resemblance to other described species. The truncate lobes of the tenth tergum which are produced into an upright point are distinctive.

Adult. – Length of forewing, 4 mm. Color in alcohol, uniformly dark brown, perhaps with a paler band in stigmal region. Abdomen

Figs. 197–206. — *Smicridea* (*S.*) *bivittata* (Hagen): 197, ♂ genitalia, lateral; 198, tip of aedeagus, dorsal; 199, ninth and tenth terga and clasper, dorsal. *S.* (*S.*) *truncata* n. sp.: 200, ninth and tenth terga and clasper, dorsal; 201, ♂ genitalia, lateral; 202, tip of aedeagus, dorsal. *S.* (*Rhyacophylax*) *caligata* n. sp.: 203, tip of aedeagus, dorsal; 204, aedeagus, lateral; 205, ♂ genitalia, lateral; 206, ♂ genitalia, dorsal.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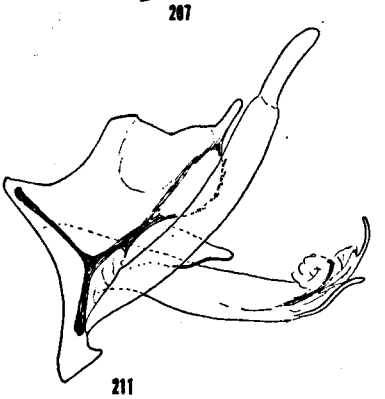
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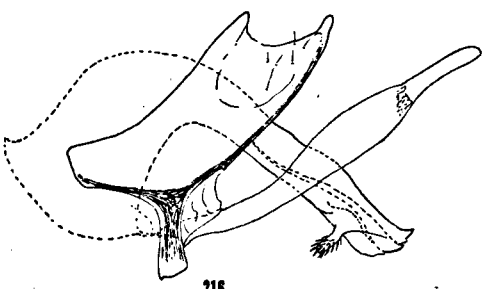
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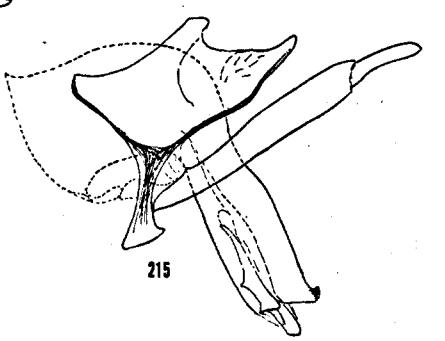
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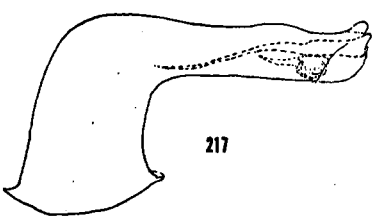
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without internal sacs. Male genitalia: Ninth segment produced anterolaterally, with a narrow dorsal bridge. Tenth tergite with apex truncate in lateral aspect, tip produced into a sharp dorsal point. Clasper with basal segment long, of nearly uniform thickness; apical segment bluntly pointed. Aedeagus with broadened basal section curving gradually into stem; internally with a simple, elongate rod, apparently without processes.

Material. – Holotype, male: Surinam, Coppename River, Raleigh Falls, 9 July 1963, D. C. Geijskes. Paratypes: Same, but 22–26 Sept. 1954, 2♂. Tapanahoni River, Granholo Poeketi, 4 May 1954, at light, 1♂. Tapanahoni River, Bonaparte, 24 Feb. 1952, 1♂.

Smicridea (R.) lobata (Ulmer)

Fig. 210–212

Rhyacophylax lobatus ULMER & THIENEMANN, 1909, p. 305; 1913, p. 392. – FISCHER, 1963, p. 136.

I am assigning these specimens to *lobata* (Ulm.) with some hesitation as I have not been able to study the type which is from Venezuela. They do agree closely, with allowances for the types being somewhat shriveled, to the figures originally published of the genitalia of the type.

Figures are here presented of the genitalia of Surinamese examples to allow easier comparison with the other species. The long, slender widely separated tenth tergites with a large, rather semicircular lobe from their ventral margins are quite distinctive. The internal sclerite of the aedeagus in the specimen figured is everted, but in

Figs. 207–217. — *Smicridea* (*Rhyacophylax*) *abrupta* n. sp.: 207, ♂ genitalia, lateral; 208, tip of aedeagus, dorsal; 209, ninth and tenth terga and clasper, dorsal. *S.* (*R.*) *lobata* (Ulmer): 210, ninth and tenth terga and clasper, dorsal; 211, ♂ genitalia, lateral; 212, tip of aedeagus, dorsal. *S.* (*R.*) *scutellaris* n. sp.: 213, tip of aedeagus, dorsal; 214, ninth and tenth terga and clasper, dorsal; 215, ♂ genitalia, lateral. *S.* (*R.*) *columbiana* (Ulmer): 216, ♂ genitalia, lateral; 217, aedeagus with spicule pouches retracted, lateral.

other examples is almost completely internal. The long, straplike sclerite apicomesally on the aedeagus appears to be constant in position as in other species of the *signata* group.

Material. – Surinam, Wilhelmina Mountains, trail II, km 8, large sandy creek, 19 Sept. 1943, at light, 2♂. Wilhelmina Mountains, Linker Coppename River, Zuid Creek, 11 Aug. 1943, at light, 4♂. Wilhelmina Mountains, Kwatta camp, trail I, km 3, 3 Sept. 1943, at light, 3♂. Brownsberg, mountain creek near Golddiggers camp, 10 Aug. 1958, 2♂.

Smicridea (R.) columbiana (Ulmer)

Fig. 216–217

Rhyacophylax columbianus ULMER, 1905a, p. 106; 1907b, p. 176; 1913, p. 390, 407. – ULMER & THIENEMANN, 1909, p. 306. – TOMASZEWSKI, 1961, p. 4. – FISCHER, 1963, p. 136. – WEIDNER, 1964, p. 95. – FLINT, 1966, p. 7.

The type locality of the species is Colombia; other records must be held in abeyance until their identity has been rechecked. These examples from Surinam are identical with the type.

Material. – Surinam, Käyser Airstrip, 27 June 1963, S. Ligorie, at light, 2♂, 1♀. Coeroeni River, lower course, 31 Jan. 1961, 1♂, 7♀. Coeroeni Expedition, Zuid River, in Lucie River, 5–7 Sept. 1959, 1♂, 1♀; same, but 10 Sept. 1959, at light, 5♂, 18♀. Lucie River camp, Wilhelmina Mountains Expedition, 8 July 1963, S. Ligorie, at light, 8♂, 3♀. Coppename River, Raleigh Falls, 9 July 1963, 2♂, 2♀. Wilhelmina Mountains, Linker Coppename River, Zuid Creek, 11 Aug. 1943, at light, 2♂. Boven Para, near Berlijn, 28 June 1962, P. H. v. Doesburg, at light, 1♂. Suriname River, Marowijne Creek, Grandamsoela, 30 July 1964, 7♂, 7♀; same ,but 29 July 1964, at light, 9♂, 13♀. Marowijne River, Albina, 3 Sept. 1939, at light, 1♂. Lawa River, Anapaike, 14 Nov. 1963, S. Ligorie, at light, 1♂, 4♀.

Smicridea (R.) scutellaris n. sp.

Fig. 213–215

This species is clearly related to *S. columbiana*. From *columbiana*, *scutellaris* may be recognized by the broader apex of the aedeagus,

and the presence of internal sclerites rather than spiculate lobes.

Adult. – Length of forewing, 4 mm. Color in alcohol brown; an indication of light and dark banding of forewing. Without internal sacs. Male genitalia: Ninth segment produced anterolaterally, with a narrow dorsal bridge. Tenth tergite narrowed apically. Clasper with basal segment long, of uniform thickness; apical segment tapering to a point. Aedeagus with a broad basal section at right angles to stem, which is generally enlarged apically; apex with a pair of small, dark dorsal points, with long, paired internal sclerites bearing a heavily sclerotized lateral plate.

Material. – Holotype, male: Surinam, Coeroeni-eiland, Aug. 1959, D. C. Geijskes. Paratypes: Same data, 17♂, 9♀. Nason, 9 June 1952, at light, 6♂, 2♀; same, but 20 Feb. 1952, 1♂. Tapanahoni River, Gwé rapids, 4 Oct. 1952, at light, 5♂, 4♀.

Genus **Leptonema** Guerin

This is a large genus of generally very large species found in the American and African tropics, including Madagascar. Most species are greenish in life, but quite a few have irrorate patterns on the forewings. The color, however, is mostly in the wing membrane with the rather sparse hairs serving to accentuate the pattern. The larvae of several species have been described.

Key to species of *Leptonema*

1. Forewing with a distinct, irrorate pattern 2
   Forewing nearly uniformly greenish or brownish 4

2. Foretibia with a single apical spine 3
   Foretibia with 2 apical spines . . . . . *sparsum*

3. Forewing with a boldly checkered pattern; clasper without a basomesal knob . . . . . *maculatum*
   Forewing with pattern less distinct and more uniform; clasper with a distinct basomesal knob . . . . . *irroratum*

4. Forewing with 1 or 2 black spots or patches of hair basally 5
   Forewing without any black spots basally . . . . . *dissimile*

5. Apex of aedeagus with a pair of processes, caliperlike in posterior aspect . . . . . *columbianum*
   Apex of aedeagus lacking such processes . . . . . *hirsutum*

Leptonema sparsum Ulmer

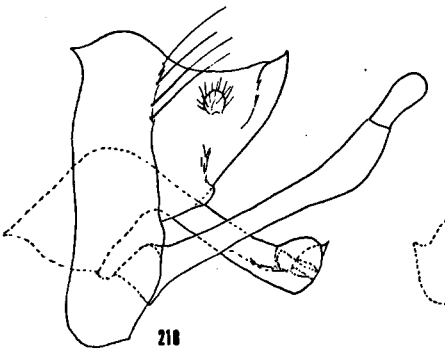
Fig. 218, Pl. 1A

Leptonema sparsum ULMER, 1905a, p. 76; 1907c, p. 56; 1913, p. 394. – BANKS, 1913a, p. 88. – MOSELY, 1931, p. 170; 1933, p. 25. – FISCHER, 1963, p. 172.

This species was described from Brazil, and recorded from Ecuador and Guyana. It is here recorded from Surinam for the first time.

Material. – Surinam, Kaboeri Creek, first camp, 25 Mar. 1971, at light, 2♂. Maratakka River, upper course, 5 Mar. 1971, 1♀. Coppename River, Raleigh Falls, 9 July 1963, 1♂; same, but 10 July 1963, 1♂.

Figs. 218–227. — *Leptonema sparsum* Ulmer: 218, ♂ genitalia, lateral. *L. maculatum* Mosely: 219, ♂ genitalia, lateral. *L. irroratum* n. sp.: 220, ♂ genitalia, lateral; 221, ninth and tenth terga, dorsal; 222, clasper, ventral; 223, tip of aedeagus, dorsal. *L. columbianum* Ulmer: 224, ♂ genitalia, lateral. *L. dissimile* Mosely: 225, ♂ genitalia, lateral; 226, tip of aedeagus, ventral; 227, tip of aedeagus, lateral.



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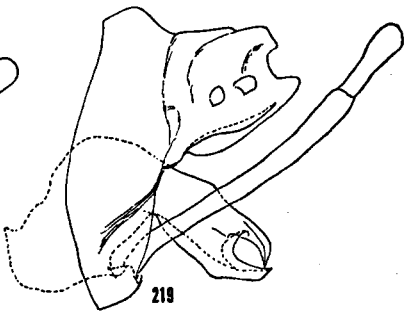

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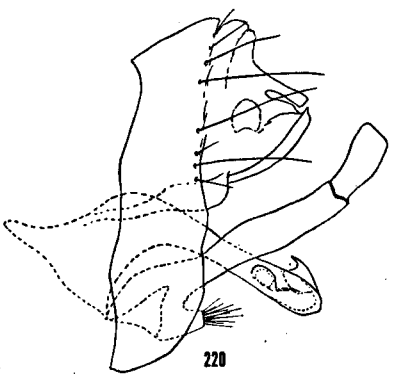

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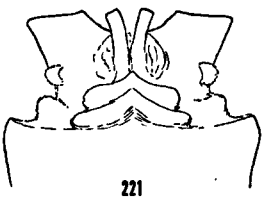

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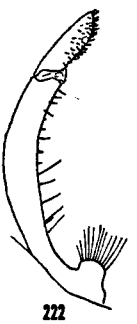

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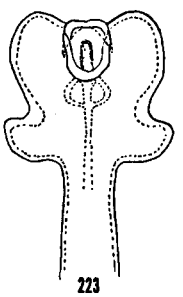

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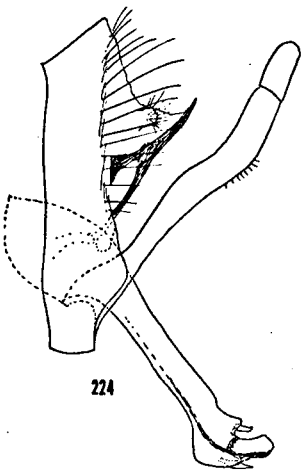

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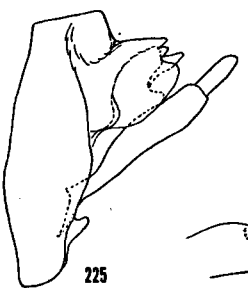

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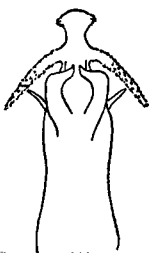

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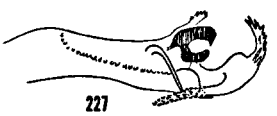

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Leptonema maculatum Mosely

Fig. 219, Pl. 1C

Leptonema maculatum MOSELY, 1933, p. 20. – FISCHER, 1963, p. 169.

This species has heretofore only been known from the lower Amazon region of Brazil. The male matches the figures of the type quite closely.

Material. – Surinam, Nickerie River, Blanche Marie, 14 Feb. 1971, at light, 1♀. Saramacca River, trail to Tafelberg, first camp, 26 Mar. 1958, at light, 1♂, 1♀. Nassau Mountains, 11.2, 19 Mar. 1949, 1♀.

Leptonema irroratum n. sp.

Fig. 220–223, Pl. 1B

This species is clearly related to *L. maculatum* Mos. and *L. aterrimum* Mos., all having a single apical spur on the foreleg and irrorate forewings. *L. irroratum* differs from both in the structure of the tenth tergum and aedeagus.

Adult. – Length of forewing, 10 mm. Color brownish; forewing considerably rubbed, but apparently regularly irrorate with brown and golden pubescence. Spurs: 1,4,4. Maxillary palpus extremely long; second and third segments long, subequal in length, fourth segment barely a third the length of third segment, fifth as long as basal four combined. Male genitalia: Ninth segment produced middorsally, dorsolateral margin with a row of enlarged setae. Tenth tergum with a bilobed basodorsal lobe appressed to ninth segment, with a pair of long dorsomesal lobes directed posteriad; posteroventral margin heavily sclerotized and upturned, produced laterad in dorsal aspect. Cercus distinct, rounded. Clasper rather short and broad; basal segment with a small basomesal knob bearing many enlarged setae, inner face with scattered enlarged setae; apical segment with inner face bearing many short, enlarged setae.

Aedeagus tubular, enlarged and angled basad; apex with a nearly circular, rimmed, dorsal opening, in dorsal aspect with lateral margins expanded and bilobed.

Material. – Holotype, male: Surinam, Nassau Mountains, trail km 11.2, north valley near large falls, 24 Mar. 1949, D. C. Geijskes.

Leptonema dissimile Mosely

Fig. 225–227

Leptonema dissimile MOSELY, 1933, p. 43. – FISCHER, 1963, p. 168. – FLINT, 1972, p. 235.

This species, known from Bolivia and Argentina, is here recorded from Surinam. As can be seen by comparing the figures of the type in MOSELY (1933, figs. 117–122) with those of the Surinam specimen, there are certain differences in the genitalia, especially in the lobes of the tenth tergum and processes of the aedeagus. However, these do not seem to be great enough, especially considering the distribution, to warrant the erection of a new species.

The females of this species have the yellow cellule on IA in the hindwing.

Material. – Surinam, Litani River, Waremapan rapids, 30 July 1939, 2♂, 2♀ (including ♂ ♀ marked in copula).

Leptonema columbianum Ulmer

Fig. 224

Leptonema columbianum ULMER, 1905a, p. 61; 1907c, p. 51; 1913, p. 394. – BANKS, 1913a, p. 89. – NAVAS, 1917, p. 404; 1920, p. 40, 64; 1930, p. 132. – MOSELY, 1933, p. 13. – TOMASZEWSKI, 1961, p. 3. – FISCHER, 1963, p. 168. – FLINT, 1966, p. 5; 1967, p. 8; 1972, p. 234.
Leptonema externum BANKS, 1913a, p. 87. – MOSELY, 1933, p. 13.

This species is widely distributed over South America, being

known from Argentina, Bolivia, Paraguay, Brazil, Ecuador, Colombia, and now Surinam and Guyana. The figure was prepared from a male collected at Picrewana Island, Guyana. The females of this species may be recognized by the flattened tibia and tarsus of the midleg.

Material. – Surinam, Paramaribo, 17 Sept. 1952, 1♀.

Leptonema hirsutum n. sp.

Fig. 228–232

This species is very closely related to *L. crassum* Ulm. and *L. columbianum* Ulm. From *columbianum* it is distinguished by the lack of the apical pincherlike lobes of the aedeagus and different shape of the tenth tergum. *L. crassum* is more closely related, the tenth tergum seeming to be the same in the two, but *hirsutum* may be recognized by the more slender claspers with the setal patch borne more nearly at midlength and the presence of an apicoventral lobe on the aedeagus.

Adult. – Length of forewing, 15 mm. Color golden-brown; forewing with a black subbasal spot on subcosta and a spot of dark hair on humeral angle, color slightly darker in stigmal region. Body densely hairy. Male genitalia: Ninth segment produced middorsally, dorsolateral margin bearing row of long setae. Tenth tergum with ventrolateral margin produced apically into an upturned point, middorsally slightly produced dorsad. Cercus small, rounded. Clasper long, slender, basal segment with a cluster of enlarged setae on inner face at midlength; apical segment tapered, inner face with short setae. Aedeagus tubular, with a slender stem; apex enlarged, with an apicoventral lobe, a small dorsal opening and internal sclerites associated with end of ejaculatory duct.

Material. – Holotype, male: Surinam, Tapanahoni River, Granholo Poeketi, 4 May 1954, D. C. Geijskes, at light. Paratype: Same data, 1♂.

Genus **Neoleptonema** Ulmer

This monotypic genus is found in the American Tropics only. The species seems very similar to species of *Leptonema* of the *sparsum* section and may ultimately be transferred to that genus. The immature stages are undescribed.

Neoleptonema aspersum Ulmer

Fig. 233, Pl. 1D

Neoleptonema aspersum ULMER, 1907c, p. 61; 1913, p. 408. – MOSELY, 1931, p. 170. – FISCHER, 1963, p. 175. – FLINT, 1972, p. 235.

This species, known from Argentina, Brazil, and Guyana, is apparently common in Surinam.

Material. – Surinam, Coeroeni-eiland, 30 Aug. 1959, at light, 4♀. Coeroeni Expedition, Zuid River, Sept. 1959, at light, 1♀. Sipaliwini River, camp loc. 4, 8 Feb. 1961, at light, 1♂. Nickerie River, Blanche Marie, 14 Feb. 1971, at light, 2♀. Maratakka River, savanna creek, 1 Mar. 1971, D. G. Reeder, 1♀. Coppename River, Raleigh Falls, 10 July 1963, 3♀. Coppename River, Tonkens Falls, 19 Dec. 1943, at light, 1♀. Coppename River, camp above Tonckens Falls, 31 July 1943, at light, 2♀. Paramaribo, 23 April 1963, P. H. v. Doesburg, 1♀. Kabelstation, river bank, 18 Sept. 1938, 1♀. Suriname River, Botopasie, 17 May 1955, L. Schmidt, 1♀. Tapanahoni River, Granholo Poeketi, 4 May 1954, at light, 18♀. Upper Tapanahoni River, 12 May 1952, at light, 4♀. Paloemeu River, Pepejoe, 20 May 1952, at light, 3♂, 6♀; same, but 16 May 1952, 7♀; same, but 12 May 1952, 1♀. Paloemeu River, Apetina, 24 Mar. 1952, at light, 2♀.

Genus **Macronema** Pictet

The genus *Macronema* is very large, species being found in almost all parts of the world except Europe and the highest latitudes. The differentiation of species is often most difficult, especially for those whose color pattern is formed primarily by the scales and hairs on

the wings and which are consequently subject to rubbing. The differences in the male genitalia are sometimes small and may not, in certain forms, be correlated with differences in color pattern. The species of this genus should be collected dry and pinned to preserve as much of the color pattern as possible. The larvae of a number of species from several regions of the world are known.

KEY TO SPECIES OF *Macronema*

1. Forewing with a strongly contrasting color pattern in the membrane on both basal and apical halves of the wing . . 2
   Forewing with color pattern due primarily to covering scales, basal half unicolorous, generally emerald green, and bordered outwardly by a white band, with apex variously colored . 5

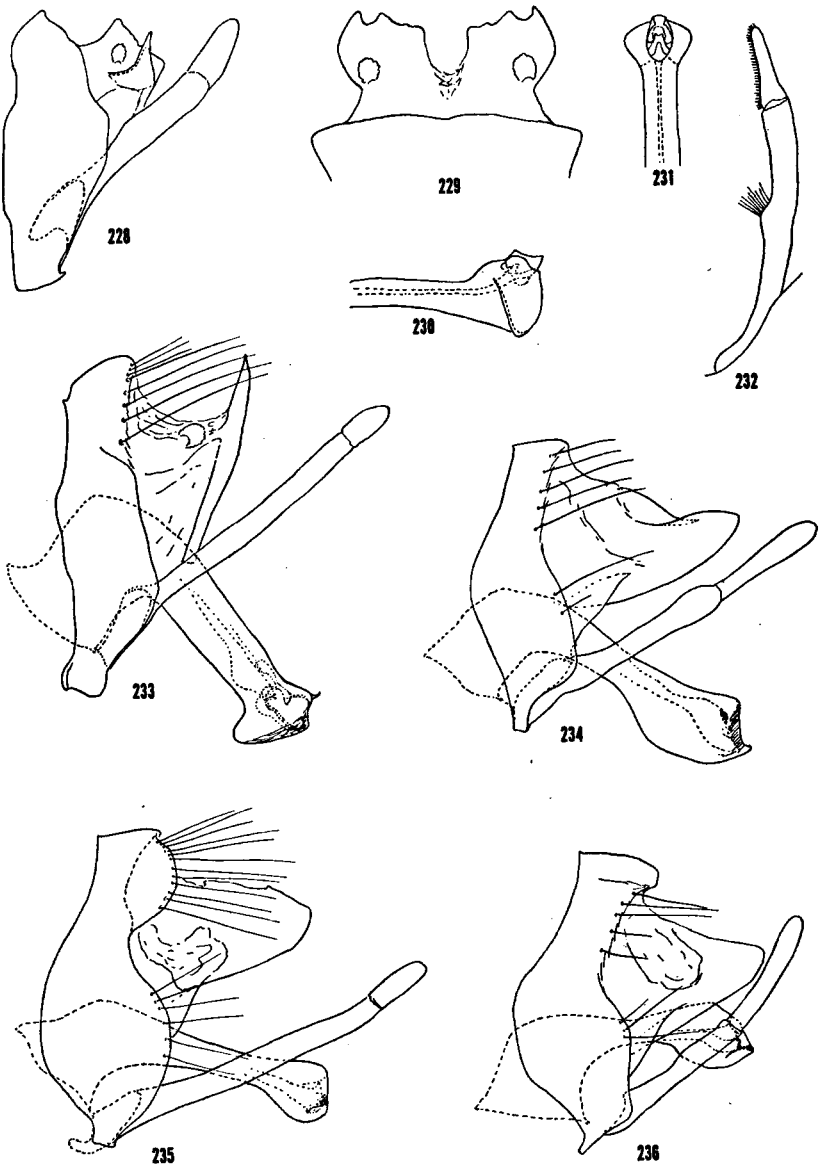
2. Forewing with 2 trianguloid pale marks from anterior margin at near midlength 3
   Forewing with a complete transverse band at near midlength 4

3. With a rounded pale spot in large subapical dark region . . . . . *arcuatum*
   Lacking such a pale spot . . . . . *ulmeri*

4. With a pair of basally united, pale dashes in apical dark field . . . . . *erichsoni*
   With a series of small spots in addition to above mark . . . . . *surinamense*

5. Eighth sternum of male with an apicomesal process . . . . . *argentilineatum*
   Eighth sternum without such a process 6

6. Aedeagus ending in 2 pairs of slender, elongate processes . 7
   Aedeagus with no more than 1 pair of apical processes . . 8



Figs. 228–236. — *Leptonema hirsutum* n. sp.: 228, ♂ genitalia, lateral; 229, ninth and tenth terga, dorsal; 230, tip of adeagus, lateral; 231, tip of aedeagus, dorsal; 232, clasper, ventral. *Neoleptonema aspersum* Ulmer: 233, ♂ genitalia, lateral. *Macronema arcuatum* Erichson: 234, ♂ genitalia, lateral. *M. ulmeri* Banks: 235, ♂ genitalia, lateral. *M. erichsoni* Banks: 236, ♂ genitalia, lateral.

7. Apex of forewing with a strongly contrasting golden and brown irrorate pattern . . . . . *percitans*
Apex of forewing with a golden wash centrally and a small silver crescent at tip . . . . . *picteli*

8. Tenth tergum with an erect basolateral process . . . . *fragile*
Tenth tergum without any basolateral process 9

9. Aedeagus apically enlarged and upturned, of a simple tubular form . . . . . *parvum*
Aedeagus apically either straight or decurved, tip either with processes or with dorsal surface produced 10

10. Apex of aedeagus with a pair of lateral lobes, appearing bilobate in ventral aspect . . . . . *hageni*
Apex of aedeagus with dorsal surface produced, sometimes narrowly bifid, but without rounded lateral lobes 11

11. Ninth sternum with a pair of elongate processes . . *bifidum*
Ninth sternum either unmodified or with a single broad lobe 12

12. Ninth sternum with a broad, scoopshaped lobe . . *paliferum*
Ninth sternum lacking lobes . . . . . *fraternum*

Macronema arcuatum Erichson

Fig. 234, Pl. 1E

Macronema arcuata Erichson, 1848, p. 586.
Macronema arcuatum Erich. – Hagen, 1861, p. 328; 1864, p. 845.
Pseudomacronema arcuatum (Erich.). – Ulmer, 1907c, p. 40. – Mosely, 1931, p. 170. – Fischer, 1963, p. 163.

Although this species has lost the crossvein from R_{2+3} to R_4 in the forewing, and thereby has been placed in *Pseudomacronema*, it is

closely related to the *hyalinum* section of *Macronema*, where it is now returned.

The species was described from Guyana, and recorded from northern Brazil. It is apparently rather frequent in Surinam.

Material. – Surinam, Coeroeni River, lower course, 29 Jan. 1961, 2♀; same, but 31 Jan. 1961, 1♀. Coeroeni-eiland, Aug. 1959, 1♀. Coeroeni River, falls near Sipaliwini River, 29 Jan. 1961, 1♀. Sipaliwini River, near the savanna, 4 Feb. 1961, at light, 1♀. Coeroeni Expedition, Zuid River, in Lucie River, 10 Sept. 1957, at light, 1♀. Nickerie River, Stondansi Falls, 29 Jan. 1971, at light, 7 p.m., 2♀. Nickerie River, camp near Lombok Falls, 5 Feb. 1971, D. G. Reeder, at light, 1♀. Coppename River, Raleigh Falls, 23 Sept. 1954, at light, 1♀; same, but 10 July 1963, 2♂. Rechter Coppename River, fourth camp, 15 Oct. 1943, at light, 1♂, 1♀. Linker Coppename River, base camp, 6 Feb. 1965, P. A. Florschütz & P. J. M. Maas, at light, 1♂. Suriname River, Botopasie, 21 May 1955, 1♀; same, but 14 Dec. 1955, L. Schmidt, 1♀. Marowijne River, Albina, 3 Sept. 1939, at light, 1♀. Marowijne River, Toetoeondro, 2 Oct. 1952, at light, 3♀. Tapanahoni River, Grandafoete, 13 Mar. 1952, 1♂. Tapanahoni River, Mankodebakoe, 25 May 1952, at light, 1♀. Paloemeu River, Pepejoe, 16 May 1952, at light, 1♂. Lawa River, Gransoela, 27 Sept. 1939, 1♀.

Macronema ulmeri Banks

Fig. 235, Pl. 1F

Macronema hyalinum Pict., var. – ULMER, 1907c, p. 76; 1913, p. 395. – MARTYNOV, 1912, p. 20.
Macronema ulmeri Banks, 1913b, p. 237. – FISCHER, 1963, p. 199. – FLINT, 1967, p 11.

This species, described from Colombia, has been recorded from Peru and Venezuela, and is here recorded from Surinam. It apparently is rather common from southern Central America and northern South America as far south as Peru and the Amazon Basin.

Material. – Surinam, Zanderij, Troelinde Creek, 2 p.m., 20 Aug. 1958, 1♂. Kraka, 13 July 1969, P. & P. Spangler, 3♂ (USNM). Brownsweg, km 115, small creek in forest, 23 April 1949, 1♂. Paloemeu River, final camp, small forest creek, 9 April 1952, 1♂. Litani River, Waremapan, small spring creek near warehouse, 31 July 1939, 1♂.

Macronema erichsoni Banks

Fig. 236, Pl. 2A

Macronema hyalinum Pict., var. – ULMER, 1913, p. 395.
Macronema erichsoni BANKS, 1920, p. 356. – MOSELY, 1931, p. 170. – FISCHER, 1963, p. 184. – FLINT, 1967, p. 9.

The species was described from French Guiana, and has been recorded from Brazil and Guyana. It is here recorded from Surinam for the first time.

Material. – Surinam, Zanderij I, 22 April 1927, Cornell Univ. Exp., 1♀ (CU); same, but 23 April 1927, 1♀ (USNM). Bosbivak, creek, under leaf of *Montrichardia*, 29 Dec. 1950, 1♀. Nassau Mountains, trail km 1.5, forest creek, 22 Feb. 1949, 1♂.

Macronema surinamense n. sp.

Pl. 2B

I am departing from my general rule and describing this species from the female sex. The color pattern seems so distinctive that there should be no difficulty in recognizing the species. Superficially there is a considerable resemblance to *M. erichsoni*, but the species is much larger, and the pale markings are a golden-yellow and somewhat differently formed.

Adult. – Length of forewing, 13 mm. Body yellowish ventrally; head with vertex fuscous with yellow warts, antennae infuscate; pronotum yellow, meso and metanota fuscous, foreleg with tibial hairs fuscous; forewing brownish-black with pale golden-yellow markings; abdomen with terga infuscate, especially apical segments.

Material. – Holotype, female: Surinam, Coppename River, Bakhuis Mountains, camp III, 20 Feb. 1965, P. A. Florschütz and P. J. M. Maas.

Macronema argentilineatum Ulmer

Fig. 237–239, Pl. 3B

Macronema argentilineatum Ulmer, 1905a, p. 77; 1907c, p. 68. – Banks, 1924, p. 453. – Tomaszewski, 1961, p. 4. – Fischer, 1963, p. 177. – Flint, 1966, p. 6.

This species was described from Pará, Amazonas, Brazil, and is now recorded for the second time.

Material. – Surinam, Maratakka River, upper course, 5 Mar. 1971, 1♂. Makambi Creek, upper course near rocks, May 1950, Chr. Bleys leg., 1♂. Litani River, Waremapan, 22 July 1939, 1♂.

Macronema percitans Walker

Pl. 2E

Macronema percitans Walker, 1860, p. 177. – Ulmer, 1907c, p. 73. – Betten & Mosely, 1940, p. 203.

The species was described from Brazil, and since recorded from various localities in South and Central America. However, a number of species have been listed under this name and, therefore, I prefer not to list its distribution in detail. There is a single female which appears to be this species. It differs slightly from the figure (a specimen from French Guiana), in that the subterminal brown band is considerably broader thereby reducing the golden region greatly. It does, however, agree more closely with *percitans* than with any other species.

I am unable to find differences in the male genitalia between *percitans* and *picteli* Bks., yet because of apparent colorational differences in the wing tips I regard them as distinct species at this time.

Material. – Surinam, Moengo, Boven Cottica River, 27 May 1927, Cornell Univ. Exp., 1♀ (CU).

Macronema picteli Banks

Fig. 240–242, Pl. 2D

Macronema percitans Walker, var. – ULMER, 1913, p. 395.
Macronema picteli Banks, 1915, p. 631. – MOSELY, 1931, p. 170. – FISCHER, 1963, p. 194.
Macronema picteti Bks. – FLINT, 1967, p. 11.

This species was described from Guyana, and is here recorded from Surinam. The figures were prepared from a specimen from Guyana.

Material. – Surinam, Sipaliwini River, base camp, 10 Feb. 1961, at light, 2♀. Sipaliwini River, 10 Mar. 1961, 1♀; same, but 1 Aug. 1962, Appelman, 1♂; same, but 7 June 1963, P. H. v. Doesburg, at light, 1♂. Moengo, Boven Cottica River, 18 May 1927, Cornell Univ. Exp., 1♀ (CU); same, but 20 May 1927, 1♀ (USNM).

Macronema fragile Banks

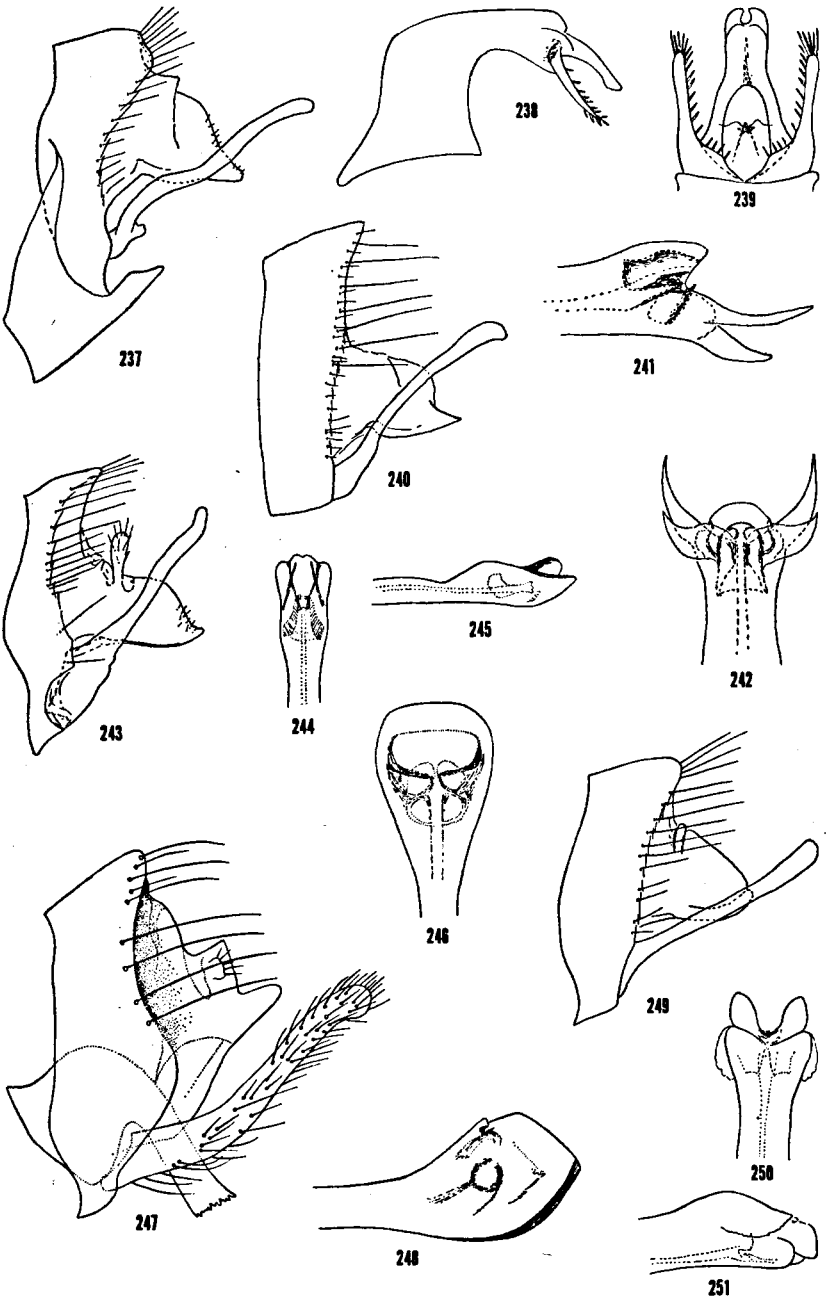
Fig. 243–245, Pl. 3A

Macronema fragilis BANKS, 1915, p. 631. – MOSELY, 1931, p. 170. – FISCHER, 1963, p. 187. – FLINT, 1967, p. 10.

This species has been known from Guyana, and is now recorded from Surinam.

Material. – Suriname, Zanderij I, forest creek, 10 Aug. 1964, 1♀. Nassau Mountains, trail km 10, savanna forest, 12 Mar. 1949, 1♂.

Figs. 237–251. — *Macronema argentilineatum* Ulmer: 237, ♂ genitalia, lateral; 238, aedeagus, lateral; 239, tip of aedeagus, ventral. *M. picteli* Banks: 240, ♂ genitalia, lateral; 241, tip of aedeagus, lateral; 242, tip of aedeagus, ventral. *M. fragile* Banks: 243, ♂ genitalia, lateral; 244, tip of aedeagus, ventral; 245, tip of aedeagus, lateral. *M. parvum* Ulmer: 246, tip of aedeagus, dorsal; 247, ♂ genitalia, lateral; 248, tip of aedeagus, lateral. *M. hageni* Banks: 249, ♂ genitalia, lateral; 250, tip of aedeagus, ventral; 251, tip of aedeagus, lateral.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Macronema parvum Ulmer

Fig. 246–248, Pl. 3C

Macronema parvum ULMER, 1905a, p. 73; 1907c, p. 69. – TOMASZEWSKI, 1961, p. 4. – FISCHER, 1963, p. 193. – FLINT, 1966, p. 7.

The types of this species were labelled South America only; the following record from Surinam thus represents the first specific locality. The accompanying figures were prepared from the lectotype.

Material. – Surinam, Nassau Mountains, 11.2, 19 Mar. 1949, 1♀.

Macronema hageni Banks

Fig. 249–251, Pl. 2C

Macronema hageni BANKS, 1924, p. 452. – MOSELY, 1931, p. 170. – FISCHER, 1963, p. 187. – FLINT, 1967, p. 10.

The species was described from the Amazonian region of Brazil, and is recorded from Guyana. It is here recorded from Surinam.

Material. – Surinam, Coeroeni-eiland, Aug. 1959, 1♀. Kaboeri Creek, first camp, 25 Mar. 1971, at light, 16♀. Nickerie River, upstream of Wageningen, 18 July 1951, at light, 1♂. Coppename River, fourth camp, 9 Aug. 1943, at light, 1♀. Saramacca River, near DeKockberg, base camp, with rainy weather 25 Mar. 1958, at light, 1♀. Republiek, 13 May 1931, 1♂; same, but 1 April 1962, 1♂. Republiek, Coropina Creek, 6 Aug. 1943, at light, 2♀. Moengo, Boven Cottica River, 17 May 1927, Cornell Univ. Exp., 1♀ (CU); same, but 18 May 1927, 1♀ (CU); same, but 13 May 1927, 1♀ (USNM). Lawa River, Aboenasoenga Falls, 3 July 1939, 1♂. Lawa River, Dagohede Falls, under leaf on small rocky island in river, 3 July 1939, 1♂.

Macronema bifidum n. sp.

Fig. 252–253

This species seems to be closely related to *M. fraternum* Bks. on the basis of genitalia. It is most easily recognized by the pair of pointed processes under the claspers, and the aedeagus with its bifid, upturned tip and the spiculate lateral surface around the opening. Unfortunately the specimen is denuded so its coloration is not known for certain, but if it conforms to other related species the basal region of the forewings would be covered with green scales, the crossband in the stigmal region would be silvery, and the apical region would be some combination of gold, fuscous, and silver patches.

Adult. – Length of forewing, 9 mm. Coloration unknown (but see above). Male genitalia: Ninth segment annular, with a row of enlarged setae along posterior margin dorsally; ventrally enlarged, with a pair of processes, spoonshaped in ventral aspect, beneath claspers. Tenth tergum with ventrolateral margin strongly sclerotized and produced into long, slender points apically. Clasper slender, cylindrical; not distinctly segmented. Aedeagus short, base enlarged and angled to axis of stem; apex with tip pointed and upturned in lateral aspect, in dorsal aspect, bifid; lateral surface surrounding apical opening densely spiculate, with an internal complex.

Material. – Holotype, male: Surinam, Litani River, near Feti Creek, 10 Aug. 1939, D. C. Geijskes.

Macronema paliferum n. sp.

Fig. 254–255

This species is closely related to *M. fraternum* Bks. and *M. bifidum* n. sp. The male genitalia are distinctive, especially the tip of the aedeagus which is not upturned but short and rounded, and the broad scoopshaped process from the ninth sternum.

Adult. – Length of forewing, 10 mm. Color unknown (but see comments under *M. bifidum*). Male genitalia: Ninth segment annular, with a row of enlarged setae along posterior margin dorsally; slightly enlarged ventrally, produced as a single, broad, lobe beneath claspers. Tenth tergum with ventrolateral margins heavily sclerotized and produced into slender processes apically, broad and flared laterad in dorsal aspect. Clasper slender, cylindrical; not distinctly segmented. Aedeagus with base enlarged and angled to axis of stem; apex bluntly rounded, tip broad and slightly bilobate in ventral aspect, lateral surface surrounding opening with spicules, especially ventrad, with an internal complex.

Material. – Holotype, male: Surinam, Apisiké, southern boundary, small spring creek in *Euterpe* swamp, 19 April 1952, D. C. Geijskes. Paratype: Same data, 1♂.

Macronema fraternum Banks

Fig. 256–258, Pl. 2F

Macronema fraternum BANKS, 1910, p. 159; 1924, p. 453. – MOSELY, 1931, p. 170. – FISCHER, 1963, p. 187. – FLINT, 1967, p. 10.

Originally described from Guyana, it is known from Ecuador and now Surinam.

Material. – Surinam, Carolina Creek, near Zanderij, 4 p.m., 30 July 1963, 12♂. Zanderij, small forest creek, 12 Aug. 1941, 1♂. Zanderij I, small creek, Indian village, 12 Aug. 1941, 1♀. Phedra, forest creek, 26 Nov. 1961, 1♀. Albina, 12 Aug. 1953, at light, 1♀.

Genus **Plectro macrone ma** Ulmer

The genus is exclusively one of the New World Tropics and contains very few species. The males of the species are quite a bit larger than the females, which is unusual in the Trichoptera in general. The larvae are undescribed.

Plectromacronema comptum Ulmer

Fig. 259, Pl. 3D

Plectromacronema comptum ULMER, 1906, p. 63; 1907c, p. 41. – NAVAS, 1924, p. 252. – MOSELY, 1931, p. 170. – FISCHER, 1963, p. 163.

This species is known from Brazil, Venezuela, and Guyana (the Argentine records refer to *subfuscum* Bks.), and is here recorded from Surinam.

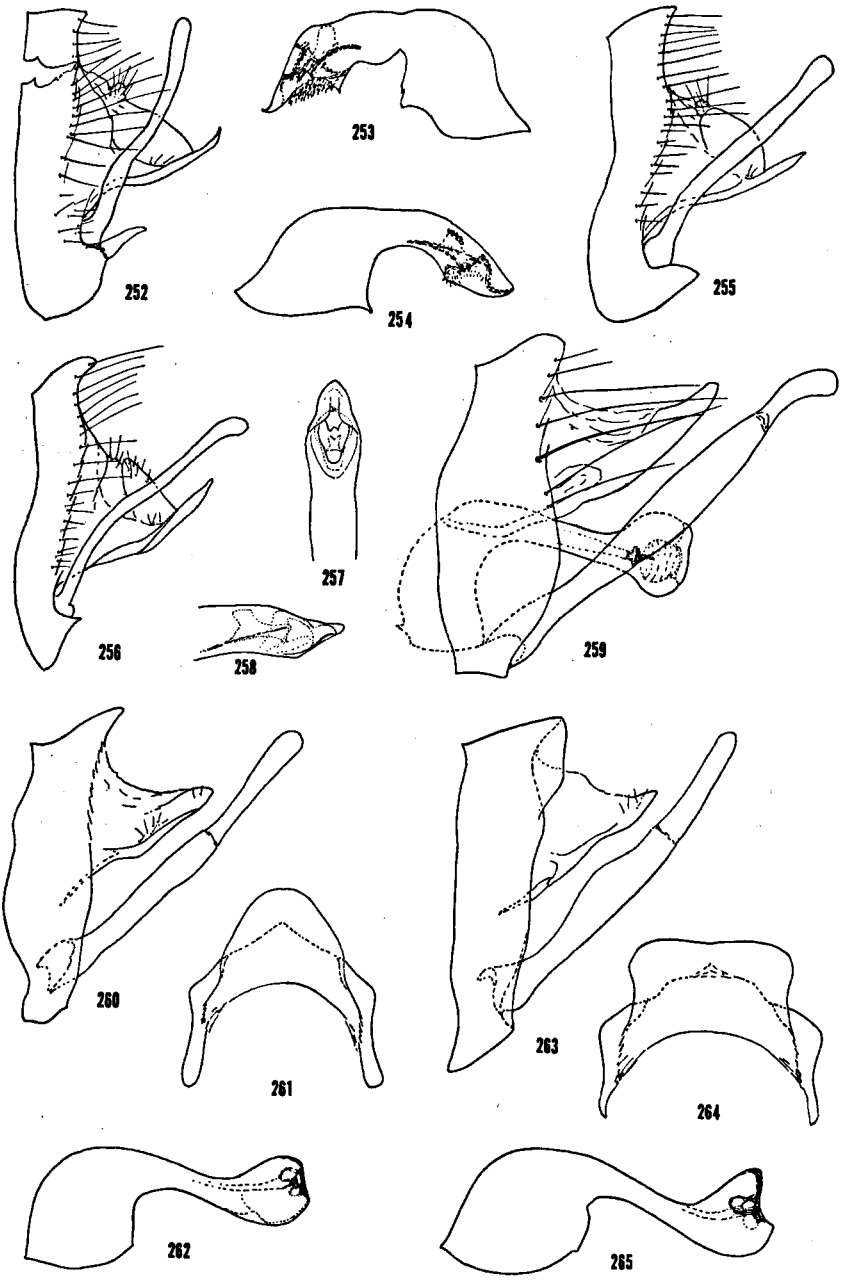
Material. – Surinam, Coeroeni-eiland, 30 Aug. 1959, at light, 4♀. Nickerie River, Lombok Falls, 5 Feb. 1971, at light, 2♀. Coppename River, Tonckens Falls, 19 Dec. 1943, at light, 2♀. Marowijne River, Albina, 19 Sept. 1963, 1♂; same, but 12 Aug. 1953, 5♀; same, but 11 Aug. 1953, at light, 1♂, 2♀. Lawa River, Magdafien, on water surface of river, 5 July 1939, 3♂; same, but on water surface during rainfall, 1♂; same, but in the evening, on water surface, 1♂. Tapanahoni River, Acoté, 26 Feb. 1952, at light, 1♀. Paloemeu River, Pepejoe, 20 May 1952, at light, 1♀.

Genus **Synoestropsis** Ulmer

This is the only genus of the Macronematine tribe Polymorphanisini to occur in the New World. Although species of the genus are easily recognized because they lack palpi, the differentiation of species within the genus is nearly impossible. Although larvae of this genus have probably been described, there are no certain associations yet published.

KEY TO SPECIES OF *Synoestropsis*

1. Vein Cu_1 in hindwing with a small apical fork . . . . *furcata*
   Vein Cu_1 lacking an apical fork. . . . . *grisoli*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Synoestropsis furcata n. sp.

Fig. 260–262, Pl. 3F

This species is closely related to *S. obliqua* Ulmer, known from southeastern Brazil and nearby areas. *S. obliqua* differs in having a more oblique crossvein s, in lacking the spots on the forewing, and in having the veins more strongly infuscate, but lacking the faint apical markings of *furcata*.

Adult. – Length of forewing, male 19–22 mm (ave. 6♂, 20.2 mm), female 16–25 mm (ave. 30♀, 20.0 mm). Color greenish (yellowish brown in older specimens); mesonotum with round, fuscous anterolateral spots; forewing basally with small fuscous spots on veins and crossveins, often with similar spots on R_1 and Sc at chord; wingtip with slight infuscations on veins. Head with frontal boss low and rough, middorsal tubercle pointed anteriorly. Forewing with crossvein s only slightly oblique; hindwing with m-cu at origin of M_{4+5}, or slightly in either direction. Cu_1 with a small apical fork. Male genitalia: Ninth segment annular, dorsally produced posteriad in a bluntly conical lobe. Tenth tergum with ventrolateral margins sclerotized, projecting slightly apicad. Clasper indistinctly two-segmented, terete. Aedeagus with an enlarged basal section at right angles to slender stem, apex enlarged, gently upturned; with a central tube ending near center of posterior face.

Material. – Holotype, male: Guyana, Esseq., 6 miles south of Wineperu, Picrewana Island, 8–16 Mar. 1969, Duckworth & Dietz. USNM Type 72358. Paratypes: Same data, 7♀. Mackenzie, Demerara River, 21 June 1927, Cornell Univ. Exp., 1♂, 1♀ (CU). Wineperu, 18–24 Mar. 1969, Duckworth & Dietz, 1♀.

Figs. 252–265. — *Macronema bifidum* n. sp.: 252, ♂ genitalia, lateral; 153, aedeagus, lateral. *M. paliferum* n. sp.: 254, aedeagus, lateral; 255, ♂ genitalia, lateral. *M. fraternum* Banks: 256, ♂ genitalia, lateral; 257, tip of aedeagus, ventral; 258, tip of aedeagus, lateral. *Plectromacronema comptum* Ulmer: 259, ♂ genitalia, lateral. *Synoestropsis furcata* n. sp.: 260, ♂ genitalia, lateral; 261, ninth and tenth terga, dorsal; 262, aedeagus, lateral. *S. grisoli* Navas: 263, ♂ genitalia, lateral; 264, ninth and tenth terga, dorsal; 265, aedeagus, lateral.

Venezuela, TFA, Alto Orinoco, Salto Bobadilla, 23 Sept. 1951, Anduze, 1♀; same, but Raudal Guaharibos, 6 Aug. 1951, 1♀; same, but Isla del Esfuerzo, 27 Aug. 1951, 1♂ (USNM).
Surinam, Corantijn River, camp before Lucie River, rainy night, 1 Aug. 1959, 1♂. Corantijn River, Frederik Willem IV Falls, 2 Aug. 1959, at light, 1♀; same, but 6 Aug. 1959, 1♀; same, but 7 Aug. 1959, 1♀. Corantijn River, Coeroeni-eiland, 21 Sept. 1959, at light, 1♀; same, but 23 Aug. 1959, 3♀; same, but 25 Aug. 1959, 1♀; same, but 30 Aug. 1959, 3♂ 10♀; same, but 24 Aug. 1959, 1♀; same, but 20 Sept. 1959, 1♀; same, but Sept. 1959, 1♂ 1♀; same but 10 Aug. 1959, 1♀. Corantijn River, Coeroeni-eiland, forest, 22 Sept. 1959, 1♀. Sipaliwini River, near savanna, 4 Feb. 1961, at light, 1♂. Sipaliwini River, base camp, 10 Feb. 1961, at light, 1♂; same, but 11 Feb. 1961, 1♂ 1♀; same, but 12 Feb. 1961, 1♀; same, but 3 Mar. 1961, 1♀; same, but 4 Mar. 1961, 1♀; same, but 9 Mar. 1961, 1♀. Sipaliwini River, third campground, 1 Feb. 1961, at light, 1♀. Sipaliwini River, fourth campground, 8 Feb. 1961, at light, 1♀. Sipaliwini River, 7 June 1963, P. H. v. Doesburg, at light, 1♂.
Coppename River, Bakhuis Mountains, final landing on Adampada Creek side, 28 July 1963, R. v. Aerde, 1♂. Coppename River, Adampada Creek mouth, 29 Jan. 1965, P. A. Florschütz & P. J. M. Maas, at light, 1♀. Linker Coppename River, 1 hour's sailing above the mouth, 30 Jan. 1965, P. A. Florschütz & P. J. M. Maas, 2♀. Coppename River, Kaaimanston, first camp downstream of Bergzicht, 13 July 1943, 1♀. Coppename River, Raleigh Falls, 12 Jan. 1944, at light, 1♀; same, but 10 July 1963, 1♀. Coppename River, Tonckens Falls, camp, 31 July 1943, at light, 1♀. Coppename River, upper camp, Tonckens Falls, 31 July 1943, at light, 1♀. Coppename River, Tonckens Falls, 19 Dec. 1943, at light, 1♀.
Saramacca River, Wedeboh rapids, 6 Mar. 1958, at light 8 o'clock, 1♂. Paramaribo, 23 April 1963, P. H. van Doesburg, Jr., 2♀. Suriname River, Kabelstation, river bank, 25 Sept. 1938, 1♀. Suriname River, Mamadam, 11 Dec. 1963, at light, 2♀. Suriname River, Gansee, 3 Aug. 1951, H. Heyde, 2♀. Suriname River, Botopasie, 17 May 1955, L. Schmidt, 1♀.
Marowijne River, Stoelmans Island, 14–20 Aug. 1953, at light, 1♀. Marowijne River, Langatabbetje, 1 May 1954, at light, 1♀. Tapanahoni River, Granholo Poeketi, 4 May 1954, 1♀. Tapanahoni River, Bonaparte, 24 Feb. 1952, at light, 1♀. Tapanahoni River, Manlobbi, 28 Feb. 1952, at light, 1♀. Paloemeu River, Pepejoe, 20 May 1952, at light, 2♀; same, but 18 May 1952, 1♀; same, but 16 May 1952, 1♀. Paloemeu River, Apetina, 24 Mar. 1952, at light, 1♀.

Synoestropsis grisoli Navas

Fig. 263–265, Pl. 3E

Synoestropsis grisoli NAVAS, 1924, p. 252. – FISCHER, 1963, p. 210.

This species, described from Venezuela, may be recognized by its

rather small (4♂ ave. 15.75 mm, and 20♀ ave. 13.20 mm) and strongly spotted forewings. I am indebted to Dr. S. KELLNER-PILLAUT of the Muséum National d'Histoire Naturelle, Paris, for the loan of the type of the species.

Material. – Surinam, Corantijn River, Coeroeni Island, 25 Mar. 1959, at light, 1♀; same, but 26 Aug. 1959, 2♀; same, but 25 Aug. 1959, 1♂; same, but 10 Aug. 1959, 1♂; same, but 30 Aug. 1959, 1♂ 10♀. Coeroeni Expedition, Zuid River, in Lucie River, Sept. 1959, at light, 1♂. Corantijn River, Matapi, 13 April 1971, at light, 1♀.

Nickerie River, Stondansi, 2 Feb. 1971, 1♀; same, but 18 Feb. 1971, at light, 2♀; same, but 31 Jan. 1971, 1♀; same, but at light 10 p.m., 28 Jan. 1971, 1♂. Nickerie River, Blanche Marie Falls, 11 Feb. 1971, at light, 1♀; same, but 14 Feb. 1971, 2♀.

Coppename River, Tonckens Falls, warehouse camp, 20 Dec. 1943, at light, 1♂; same, but 4 Aug. 1943, 1♀. Coppename River, Tonckens Falls, upper camp, 31 Aug. 1943, at light 2♀. Coppename River, Tonckens Falls, 19 Dec. 1943, at light, 1♀. Coppename River, Raleigh Falls, 9 July 1963, 1♀. Saramacca River, Lawaaidam, 9 Mar. 1958, at light 8 p.m., 1♀. Saramacca River, near DeKockberg, base camp, with rainy weather, 25 Mar. 1958, at light, 1♀.

Suriname River, Marowijne Creek, Grandam rapids, 30 July 1964, 1♀; same, but 29 Aug. 1964, at light, 1♀. Suriname River, Mamadam, 11 Dec. 1963, at light, 1♀.

Tapanahoni River, Granholo Poeketi, 4 May 1954, 1♂ 2♀. Tapanahoni River, Granbori, 28 May 1952, at light, 1♀. Upper Tapanahoni River, river bank, 12 May 1952, at light, 1♀.

Paloemeu River, Pepejoe, 20 May 1952, at light, 3♀; same, but 17 May 1952, 2♀; same, but 16 May 1952, 1♀. Paloemeu River, Apetina, 24 Mar. 1952, at light, 1♀. Paloemeu River, Sawaniboto Falls, 27 Mar. 1952, at light, 1♀. Litani River, Loë Creek, 21 Aug. 1939, 1♀.

Family LEPTOCERIDAE

The leptocerids are a family of extremely wide distribution, that appears to be equally as successful in the tropics as in the temperate zones. The larvae are case makers, with representatives inhabiting most types of aquatic habitats. In addition to the genera here reported, *Triaenodes* may occur in Surinam, and *Atanatolica* and *Leptocellodes* almost certainly do.

KEY TO GENERA OF LEPTOCERIDAE

1. Forewing with M apparently unbranched . . . . . *Oecetis*
   Forewing with M branched at or beyond r-m 2

2. Hindwing with vein of Rs atrophied . . . . . *Nectopsyche*
   Hindwing with Rs and branches clearly present 3

3. Hindwing with a well developed anal fan . . . . *Triplectides*
   Hindwing without an enlarged anal region . . . *Brachysetodes*

Genus **Brachysetodes** Schmid

This genus of rather small leptocerids was originally proposed for a number of Chilean species, but a species from the island of Dominica has been placed in it and now a widely distributed South American species. The larvae of the Dominican species were described.

Brachysetodes duodecimpunctatus (Navas)

Fig. 266

Setodes duodecimpunctata NAVAS, 1916a, p. 33. – BANKS, 1924, p. 447. – FISCHER, 1966, p. 45.
Brachysetodes duodecimpunctatus (Nav.). – FLINT, 1972, p. 244.

I have seen specimens which match the description and figures of *duodecimpunctatus* perfectly, from southern Brazil, Argentina, Colombia, Guyana, and now Surinam.

Material. – Surinam, Nickerie River, Stondansi, 2 Feb. 1971, 1♂. Nickerie River, Lombok Falls, 5 Feb. 1971, 1♂. Nickerie River, Blanche Marie Falls, 11 Feb. 1971, at light, 1♀; same, but 14 Feb. 1971, 1♀. Käyser Airfield, 22

June 1963, S. Ligorie, at light, 3♀; same, but 8–9 p.m., 2♀; same, but 27 June 1963, 1♀.
Coppename River, Tonckens Falls, 31 July 1943, 1♀. Wilhelmina Mountains, trail II km 8, large sandy creek, 19 Sept. 1943, at light, 39♀. Wilhelmina Mountains, Kwatta Camp, trail I km 3, 3 Sept. 1943, at light, 25♀.
Boven Para, near Berlijn, 28 June 1962, P. H. v. Doesburg, at light, 4♀. Nassau Mountains, base camp, small creek, 20 Feb. 1949, 1♂. Nassau Mountains, trail I km 0.2, small forest creek, 15 Feb. 1949, 1♂.
Upper Tapanahoni River, river camp, 11 May 1952, at light, 1♂. Paloemeu River, Pepejoe, 20 May 1952, at light, 1♀.

Genus **Oecetis** McLachlan

The genus is worldwide in distribution with many species in both the temperate and tropical regions. Males of six species were discovered in this study of the Surinam fauna. It seems quite probable that more will be discovered in the future. The larvae of many North American and Eurasian species have been described.

Key to species of *Oecetis*

1. Hindwing with M unbranched apically 2
   Hindwing with M branched before wing margin 3

2. Clasper long and slender, tip of aedeagus sharply angled ventrad . . . . . *connata*
   Clasper shorter, broader, apex of aedeagus enlarged but not sharply angled ventrad . . . . . *punctipennis*

3. Forewing of male with an elongate hair pencil basally on ventral surface; tenth tergum with a single, dorsal process . . . . . *scoparia*
   Male forewing without hair pencil; tenth tergum with a pair of dorsal rods 4

4. Clasper consisting of dorsal and ventral lobes 5
   Clasper enlarged basally, tapering apically . . . . . *inflata*

5. Clasper deeply divided from apex into dorsal and ventral lobes of approximately equal size . . . . . *bilobosa*
   Clasper with a small, thumblike dorsal lobe . . . . *doesburgi*

Oecetis connata n. sp.

Fig. 267

This and the following species are clearly related, not only on the basis of reduced venation, but also on the similarity of the male genitalia. *O. connata* may be recognized by the much longer claspers and shorter, more decurved aedeagus.

Adult. – Length of forewing, 6.5 mm. Color pale yellowish-brown; forewing with dark spots in forks of longitudinal veins, over crossveins of chord, and on stigma. Forewing with R_{2+3} branched slightly beyond s; hindwing with very reduced venation, R_{2+3} with a very small fork before margin, R_{3+4}, M, and Cu_1 all unbranched, anal area reduced. Male genitalia: Ninth segment annular; with a pair of very small points posterodorsally. Tenth tergum and cerci united into a single, large, hoodlike structure. Clasper long and slender, slightly enlarged basally. Aedeagus short, angled and elongated ventrally, ventral tip slightly enlarged.

Material. – Holotype, male: Surinam, Coeroeni River Expedition, Zuid River, in Lucie River, 10 Sept. 1959, D. C. Geijskes, at light. Paratypes: Nassau Mountains, trail km 11.2, 14 March 1949, at light, 1♂. Boven Para, near Berlijn, 28 June 1962, P. H. v. Doesburg, at light, 2♀. Litani River, near Feti Creek mouth, 10 Aug. 1939, at light, 1♂ 1♀.
Guyana, Imbaimadai, Pakairaima Mts., 500 m, 26–29 June 1971, T. W. Donnelly, 1♂ (USNM).

Oecetis punctipennis (Ulmer)

Fig. 268

Pseudosetodes punctipennis ULMER, 1905b, p. 77. – FISCHER, 1966, p. 104.
Oecetina parishi BANKS, 1915, p. 631. – MOSELY, 1931, p. 170.
Oecetis parishi (Bks.). – FISCHER, 1966, p. 139. – FLINT, 1966, p. 10.
Oecetis punctipennis (Ulm.). – FLINT, 1966, p. 10; 1972, p. 245.

This species is widely distributed over South America, being recorded from Argentina, Brazil and Guyana, and now Surinam.

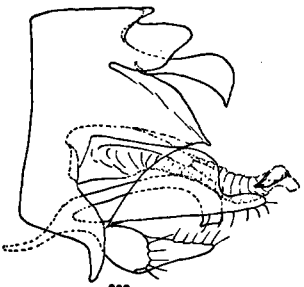
Material. – Surinam, Kaboeri creek, first camp, 1 April 1971, at light 7:30, 2♂. Lucie River camp, Wilhelmina Mountains Expedition, 8 July 1963, S. Ligorie, at light, 1♀. Nickerie River, Stondansi, 30 Jan. 1971, 1♀. Nickerie River, Post Arawarra, 27 Jan. 1971, at light, 8–9 p.m., 1♂. Coppename River, mouth Bari Creek, 15 July 1943, 1♀. Paramaribo, Combé, 14 May 1943, at light, 1♂; same, but 25 June 1950, 1♂. Boven Para, near Berlijn, 28 June 1962, P. H. v. Doesburg, at light, 46♀.

Oecetis scoparia n. sp.

Fig. 269–270

This species is closely related to *O. peruviana* (Bks.) and *O. pratti* Denn. In addition to differences in the genital parts, especially the more elongate claspers, *scoparia* may be immediately recognized by the presence of the large hair pencil on the under surface of the forewing.

Adult. – Length of forewing, 7 mm. Color in alcohol, brown. Forewing with R_{2+3} forked at s, branching of R and M-Cu very near wing base, on ventral surface with a long hair pencil from near base between R_s and M; hindwing, with R_{2+3} forked near wing margin, M forked deeply, Cu_1 forked about half as deeply, anal lobe bearing a large tuft of long hairs. Male genitalia: Ninth segment annular, with a small dorsomesal lobe from posterior. Tenth tergum with a single, dorsal process, slightly capitate in dorsal aspect, ventral lobe divided on midline beyond process. Cercus a simple, broad flap.



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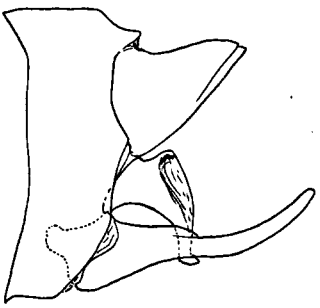

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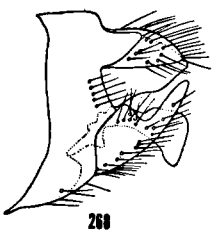

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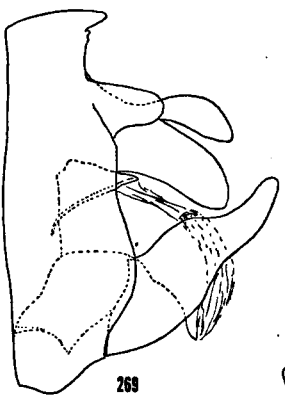

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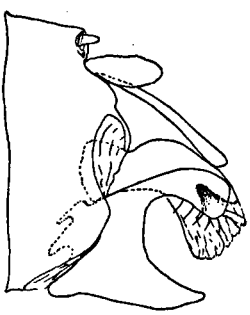

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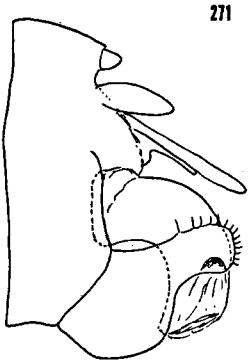

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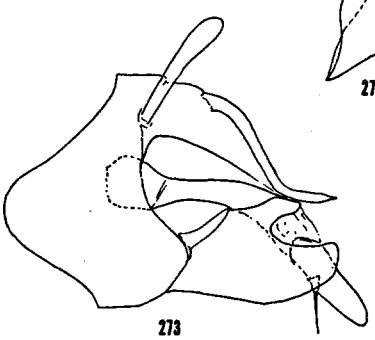

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Clasper elongate, slightly sinuate, tapering evenly from base to apex, in ventral aspect with a narrow basomesal shelf, apex curved slightly mesad. Aedeagus with a short, sclerotized, basodorsal hood, and a longer decurved, ventrolaterally sclerotized tube, with a small C-shaped internal sclerite in membranous dorsal region.

Material. – Holotype, male: Surinam, Nassau Mountains, km 11.3, creek, March 1949, D. C. Geijskes. Paratypes: Same data, 4♂. Nassau Mountains, km 6.3, small forest creek, March 1949, 1♂. Wilhelmina Mountains, trail II km 5.7, creek, 15 Sept. 1943, 3♂.

Oecetis inflata n. sp.

Fig. 272

Although closely related to *O. bilobosa* n. sp., this species may be easily recognized by the shape of the claspers which are not divided, but posess an enlarged basal area.

Adult. – Length of forewing, 6 mm. Color in alcohol, brown. Forewing with R_{2+3} forked at s; hindwing with R_{2+3} forked well before wing margin, M forked basad of r-m, Cu_1 forked well before wing margin. Male genitalia: Ninth segment annular; posterodorsally with a pair of small knobs. Tenth tergum consisting of a pair of slender, terete rods, beneath the basal half of each lies a thin, broader plate. Cercus an elongate lobe. Clasper with a short, apicodorsal lobe, and a broad, rounded basoventral flap. Aedeagus terete, membranous apically, apical half sharply decurved.

Material. – Holotype, male: Surinam, Wilhelmina Mountains, trail II km 5.7, creek, 15 Sept. 1943, D. C. Geijskes. Paratypes: Same data, 6♂.

Figs. 266–273. — *Brachysetodes duodecimpunctatus* (Navas): 266, ♂ genitalia, lateral. *Oecetis connata* n. sp.: 267, ♂ genitalia, lateral. *O. punctipennis* (Ulmer): 268, ♂ genitalia, lateral. *O. scoparia* n. sp.: 269, ♂ genitalia, lateral; 270, clasper, ventral. *O. bilobosa* n. sp.: 271, ♂ genitalia, lateral. *O. inflata* n. sp.: 272, ♂ genitalia, lateral. *O. doesburgi* n. sp.: 273, ♂ genitalia, lateral.

Oecetis bilobosa n. sp.

Fig. 271

This species is closely related to the preceding species, as is shown by the general form of the genitalia. It may be easily recognized by the deeply divided claspers.

Adult. – Length of forewing, 6 mm. Color pale brown; forewing mostly denuded, membrane with a dark band along crossveins of chord, and with dark spots in forks of longitudinal veins. Forewing with R_{2+3} forked at crossvein s; hindwing with R_{2+3} forked well before wing margin, M forked basad of r-m, Cu_1 forked well before wing margin, anal area slightly reduced. Abdomen unmodified. Male genitalia: Ninth segment annular, dorsally with a pair of small knobs from posterior. Tenth tergum composed of a pair of long rods, well separated and slightly divergent in dorsal aspect. Cercus a densely hairy, elongate lobe. Clasper deeply divided from posterior to form a rounded dorsal lobe and a more pointed ventral lobe. Aedeagus a slightly curved tube, apex membranous and with a dark internal point.

Material. – Holotype, male: Surinam, Nassau Mountains, trail km 11, 15 Mar. 1949, D. C. Geijskes. Paratypes: Nassau Mountains, km 6.3, forest creek, March 1949, 1♂. Nassau Mountains, km 11.2, creek, March 1949, 1♂.

Oecetis doesburgi n. sp.

Fig. 273

The genitalia of this species, especially the elongate cerci, tenth tergites, and aedeagus, indicate a relationship with *O. falica* Denn. From *falica, doesburgi* may be recognized by the very short dorsal process of the clasper and small differences throughout the genitalia.

Adult. – Length of forewing, 5 mm. Color in alcohol, pale yellowish-brown; forewing with dark spots at all forks of veins in basal half, short transverse bars on crossveins of chord, and spots

along margin at ends of veins. Forewing with apex rounded, fork of R_{2+3} slightly basad of s; hindwing with venation reduced, R_{2+3} with a very small fork at apex, M forked basad of r-m, Cu_1 forked at apex, anal area reduced. Male genitalia: Ninth segment expanded anterolaterally. Tenth tergum composed of a pair of heavily sclerotized, decurved, and in dorsal aspect bowed, rods, beneath each rod a very pale, elongate plate. Clasper short, mitten-shaped in lateral aspect. Aedeagus long, slender, with a subapical, ventral spine, and elongate, ovoid, lateral sclerites.

Material. – Holotype, male: Surinam, Boven Para, near Berlijn, 28 June 1962, P. H. van Doesburg, at light. Paratypes: Same data, 4♂.

Genus **Nectopsyche** Müller

The genus *Nectopsyche* was used by MÜLLER in 1879 without any included species, but with a mention that the larvae were able to swim and that the adults were golden with silver crossbands and dark spots. The next mention of *Nectopsyche* was in 1921 with the publication of MÜLLER's letters which contained several mentions of *Nectopsyche* including the combination *Nectopsyche gemma*. The genus was thus established in 1879 with the first included species, *gemma* (Müller), as its type. ULMER (1951, 1955) reestablished *Nectopsyche* which generally had been overlooked by trichopterists, but considered *gemma* (Müll.) and *bella* (Müll.) to be generically distinct from *Leptocella*. In good consience, however, I can not hold that there are any real generic differences between *gemma* and the remaining species of the genus, and consequently I must synonymize *Leptocella* Banks, 1899, with *Nectopsyche* Müller, 1879 (new synonymy).

As a consequence all the species listed in *Leptocella* by FISCHER (1966, p. 50–61) must be transferred to *Nectopsyche* (all new combinations), except for *gemma* (Müll.) which was transferred earlier, and *L. kiangsinica* Ulmer and *L. maculata* Banks which being Oriental are probably not congeneric. In addition the recently described *L. lewisi* Flint is to be transferred to *Nectopsyche*.

This is an exclusively New World genus of many species, some of which penetrate northwardly into southern Canada. The species have distinctive color patterns on the forewings, generally composed of hairs or scales which are easily rubbed off or lost in alcohol. Therefore they should be very carefully handled in the field and not put into alcohol. The larvae of a number of North American species have been described.

KEY TO SPECIES OF *Nectopsyche*

1. Forewing golden, with 2 transverse silver bands at midlength, narrow longitudinal white stripes basally, white spots apically, and with black spots along posteroapical margin . . . *gemma*
   Forewing differently marked 2

2. Forewing with 4 large white spots from anterior margin, mostly fuscous otherwise . . . . . *quatuorguttata*
   Forewing differently marked 3

3. Forewing covered mostly with white scales, with an irregular pattern of brown marks usually outlined with darker brown . . . . . *punctata*
   Forewing differently marked 4

4. Forewing yellowish or brownish, with many small brown spots usually on or beside veins and often arranged in transverse rows . . . . . *muhni*
   Forewing differently marked 5

5. Clasper with an erect basodorsal process; eyes of male very large . . . . . *diminuta*
   Clasper without an erect basodorsal process; eyes of male normal 6

6. Apices of apicomesal lobes of claspers and tenth tergites pointed and heavily sclerotized . . . . . *acutiloba*

Apices of apicomesal lobes of claspers and tenth tergites rounded, not modified . . . . . *taleola*

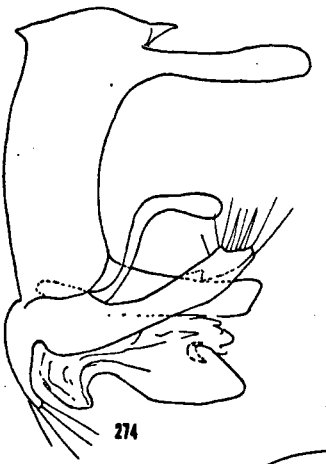
Nectopsyche gemma (Müller)

Fig. 274, Pl. 4A

Setodes gemma MÜLLER, 1880a, p. 110, 130; 1880b, p. 59, 80.
Leptocella gemma (Müll.). – ULMER, 1905b, p. 74; 1907b, p. 138; 1913, p. 402. – BANKS, 1920, p. 352. – FISCHER, 1966, p. 56.
Nectopsyche gemma (Müll.). – MÜLLER, 1921, p. 539. – ULMER, 1951, p. 407; 1955, p. 497. – FISCHER, 1972, p. 127.

This species is widespread over Latin America, being recorded from Argentina, Brazil, Bolivia, and Ecuador. There are, however, several color variations, possibly of specific validity, which confuse the status of most published records. The examples recorded below have longitudinal silver marks in the cells at the base of the forewing, and 3 longitudinal silver marks on the head, thorax, and scape. This form marches specimens at the Museum of Comparative Zoology, Harvard University, identified as *gemma* by MÜLLER many years ago.

Material. – Surinam, Coeroeni-eiland, 30 Aug. 1959, at light, 1♂. Nickerie River, Blanche Marie Falls, 11 Feb. 1971, at light, 1♂; same, but 12 Feb. 1971, 1♂; same, but 14 Feb. 1971, 3♂; same, but falls behind camp, 15 Feb. 1971, 1♀. Upper Linker Coppename River, fifth camp, 10 Aug. 1943, 1♂. Wilhelmina Mountains, trail II km 8, large sandy stream, 19 Sept. 1943, at light, 3♀. Tafelberg Expedition, Boven Saramacca River, base camp near DeKockberg, 25 Mar. 1958, at light, 1♀. Paloemeu River, Pepejoe, 16 May 1952, at light, 1♂; same, but 20 May 1952, 1♀. Boven Para, near Berlijn, 28 June 1962, P. H. v. Doesburg, at light, 15♂ 18♀. Boven Cottica River, Moengo, 17 May 1927, Cornell Univ. Exp., 1♀ (CU).



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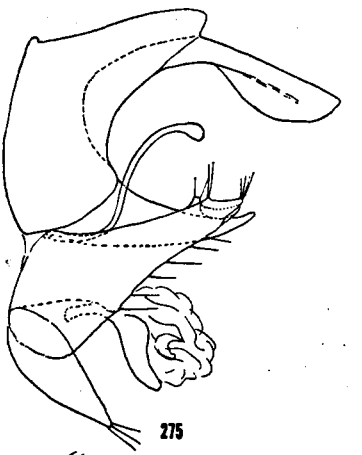

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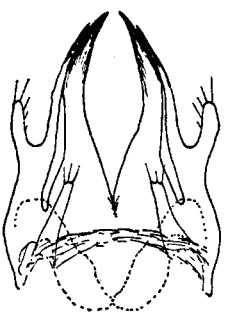

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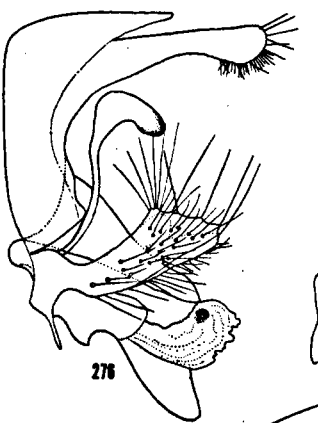

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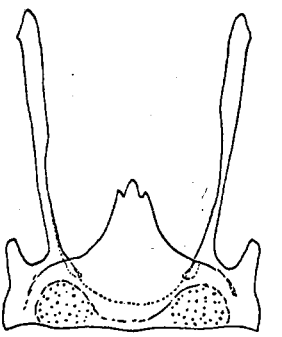

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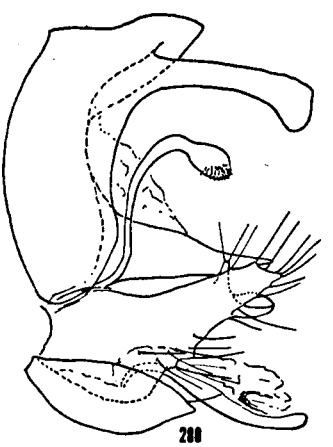

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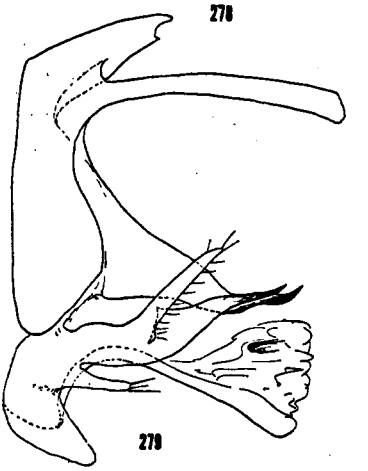

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Nectopsyche quatuorguttata (Navas)

Fig. 275, Pl. 4B

Leptocella quatuorguttata NAVAS, 1922b, p. 61. – FISCHER, 1966, p. 60.

This species was described from Bolivia, and has not been recorded since. It is easily recognized by the 4 large, pale spots on the costal margin of the primarily black forewing. The male genitalia of a specimen from Guyana are illustrated here. The genitalia are very similar to those of *N. muhni* (Nav.), from which it is easily distinguished by the coloration.

Material. – Surinam, Käyser Airstrip, 22 June 1963, S. Ligorie, at light 8–9 p.m., 1♀. Tafelberg Expedition, Boven Saramacca, base camp near DeKockberg, 25 Mar. 1953, at light, 1♂ 1♀. Paloemeu River, Pepejoe, 20 May 1952, at light, 3♀; same, but 16 May 1952, 1♀.

Nectopsyche punctata (Ulmer)

Fig. 276, Pl. 4E

Leptocella punctata ULMER, 1905b, p. 75; 1913, p. 402, 410. – FISCHER, 1966, p. 60. – FLINT, 1966, p. 9; 1972, p. 242.

This species is widespread over South America, being recorded from Argentina, Brazil, Bolivia, and Ecuador. It is easily recognized by its coloration, due primarily to scales, the forewing being white in

Figs. 274–280. — *Nectopsyche gemma* (Müller): 274, ♂ genitalia, lateral. *N. quatuorguttata* (Navas): 275, ♂ genitalia, lateral. *N. punctata* (Ulmer): 276, ♂ genitalia, lateral. *N. acutiloba* n. sp.: 277, tenth tergum and claspers, ventral; 278, ninth tergum, dorsal; 279, ♂ genitalia, lateral. *N. muhni* (Navas): 280, ♂ genitalia, lateral.

ground color with irregular marks of brown, usually bordered by darker brown.

Material. – Surinam, Coeroeni-eiland, Aug. 1959, 2♂ 3♀; same, but Sept. 1959, 1♂. Coppename River, Raleigh Falls, 9 July 1963, 1♂. Tapanahoni River, Granholo Poeketi, 4 May 1954, 1♀. Paloemeu River, Pepejoe, 20 May 1952, at light, 1♂. Oelemarie River, 11 Mar. 1953, L. Schmidt, 1♀.

Nectopsyche muhni (Navas)

Fig. 280

Leptocella muhni NAVAS, 1916b, p. 68; 1920, p. 39. – SCHMID, 1949, p. 388. – FISCHER, 1966, p. 58. – FLINT, 1972, p. 243.

This species, which was described from Santa Fé, Argentina, and recorded from Bolivia, appears to be widespread over South America. It is closely related to *N. pavida* (Hag.) from North America. The wings are pale yellow to pale brownish, with transverse rows of dark spots on, or adjacent, to the veins.

Material. – Surinam, Nickerie River, Arawarra Post, 27 Jan. 1971, at light 8–9 p.m., 16♂ 4♀. Nickerie River, Stondansi Falls, 28 Jan. 1971, at light 9 p.m., 1♂; same, but 29 Jan. 1971, 1♂. Nickerie River, Lombok Falls, 5 Feb. 1971, 1♂ 2♀. Nickerie River, Blanche Marie Falls, 10 Feb. 1971, at light, 1♂ 3♀; same, but 11 Feb. 1971, 3♀; same, but 14 Feb. 1971, 12♀; same, but falls in creek, 15 Feb. 1971, 8♀. Kaboeri Creek, first camp, 25 Mar. 1971, at light, 1♀.

Paramaribo, 16 July 1957, at light, 1♀. Republiek, Coropina Creek, 29 Oct. 1946, 1 (without abdomen). Carolina Creek, 7 April 1967, 1♂. Boven Para, near Berlijn, 28 June 1962, P. H. v. Doesburg, at light, 2♂. Moengo, 13 April 1953, at light, 10 p.m., 2♂ 3♀; same, but river boat 8 p.m., 1♂ 1♀; same, but Boven Cottica River, 18 May 1927, Cornell Univ. Exp., 4♀ (CU).

Suriname River, Botopasie, 17 May 1955, L. Schmidt, 1♀; same, but 21 May 1955, at light, 2♀. Suriname River, Marowijne Creek, (Grandam) camp soela, 27 July 1964, at light, 1♂.

Marowijne River, Albina, 11 Aug. 1953, at light, 1♂. Tapanahoni River, Granholo Poeketi, 4 May 1954, 3♀. Paloemeu River, Pepejoe, 20 May 1952, at light, 3♂. Lawa River, Anapaike, 14 Nov. 1963, S. Ligorie, at light, 2♂.

Nectopsyche diminuta Banks

Fig. 281, Pl. 4D

Leptocella diminuta BANKS, 1920, p. 353. – MOSELY, 1931, p. 170. – FISCHER, 1966, p. 54. – FLINT, 1967, p. 21.

This species has heretofore been known from Guyana only. It is now recorded from Surinam and Brazil. The figure of the male genitalia is from the lectotype, and the wing photograph is from a specimen from Belem, Brazil.

Because *N. diminuta* is not well characterized in the literature, I am partially redescribing the species here to help with its identification in the future. The combination of the following structural characters are distinctive: the large eyes in the male, the coloration, and the basally narrow and slightly sigmoid claspers lacking a basoventral process. The coloration, as shown, is quite distinctive: head, basal antennal segment and thorax dorsally covered with white hairs and scales; forewings scale covered, mostly white with longitudinally oblique brown (several shades) stripes from posterior margin, anterior margin mostly brown with narrow white cross-bands.

Material. – Surinam, Boven Para, near Berlijn, 28 June 1962, P. H. v. Doesburg, at light, 3♂. Paloemeu River, Pepejoe, 20 May 1952, at light, 1♂.

Nectopsyche acutiloba n. sp.

Fig. 277–279, Pl. 4C

In coloration this species is very much like *N. diminuta* (Bks.), but has larger areas of white on the anterior margin of the forewing. The genitalia are very distinctive, although quite similar to the following species. *N. acutiloba* may be recognized by having the apicomesal lobe of the clasper and the tenth tergites very long, heavily sclerotized, and pointed apically.

Adult. – Length of forewing, male 8 mm, female 6.5 mm. Color white; head, antennae, and thoracic nota covered with white hairs and scales; forewing covered with scales, mostly white, with longitudinally oblique brown stripes, with anterior margin about half white and brown stripes. Eyes small; width in dorsal aspect about 1/4 that of interocular distance. Male genitalia: Ninth tergum produced dorsomesally into a tridentate point; dorsolateral arms long and slender. Tenth tergites borne near ventral margin of ninth tergum, tapering to heavily sclerotized points, somewhat caliper-shaped in ventral aspect. Clasper without basodorsal process; slender, elongate, not expanded apicad; apicomesal lobe borne from near base, long, tapering to a sclerotized point; basal lobe terete, elongate, with a few apical setae; with a membranous basomesal lobe. Aedeagus sclerotized ventrally, with an apicodorsal membranous lobe.

Material. – Holotype, male: Surinam, Kaboeri Creek, first camp, 25 Mar. 1971, D. C. Geijskes, at light. Paratypes: Same data, 2♀.
Guyana, Imbaimadi, Pakairaima Mts., 500 m, 26–29 June 1971, T. W. Donnelly, 6♂ 2♀ (USNM).

Nectopsyche taleola n. sp.

Fig. 282–284

Although the types of this species are almost all completely denuded or in alcohol, I am describing the species because the male genitalia are completely different from any other described species in the genus. This and the preceding species are the only ones known to lack the erect basodorsal process of the clasper, and to have the apicomesal process of the clasper developed into a long, slender rod. It differs from *acutiloba* in that the apices of the apicomesal lobe of the clasper and tenth tergites are not heavily sclerotized and pointed.

Adult. – Length of forewing, male 7 mm, female 5 mm. Male eyes dorsally with diameter less than half that of interocular distance. Color of body and wing membrane brownish-black; antenna with

basal 12–15 segments with narrow basal rings of white scales, remainder brown, head with brownish and white scales; forewing covered mostly with brownish and white scales producing an irregular pattern. Male genitalia: Ninth tergum slightly concave dorsomesally; dorsolateral arms long and slender. Tenth tergite borne near ventral margin of ninth tergum, tapering to a point. Clasper lacking basodorsal process, slender and elongate, not expanded apically; apicomesal lobe borne from near base, long and slender; basal lobe short and terete, with a few apical setae. Aedeagus enlarged, bulbous, and strongly sclerotized basally, produced into a sclerotized, hoodlike, dorsal covering, with a ventral scoop-shaped sclerite, sigmoid in lateral aspect.

Material. – Holotype, male: Surinam, Litani River, Waremapan rapids, 29 July 1939, D. C. Geijskes. Paratypes: Same data, 12♂ 1♀; same, but 30 July 1939, 3♂; same, but 5 p.m. in shadow under bush, flying, 30 July 1939, 5♂. Maratakka River, upper course, 5 Mar. 1971, 16♂.

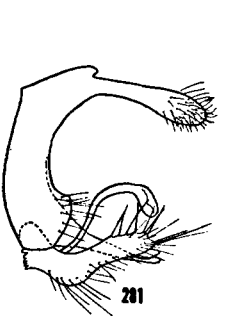
Genus **Triplectides** Kolenati

This is the only genus of the subfamily Triplectidinae that was taken in Surinam, but it is quite probable that one or more other genera will be found.

The genus *Triplectides* has been recorded throughout the Tropical regions of Asia, Australia and New Zealand, and the Americas including Chile. The separation of the species in the genus is, however, very unsatisfactory at this time. Larvae of many of the South American species bore into small twigs or use discarded cases of other species for their cases.

Key to species of *Triplectides*

1. Hindleg with only 1 preapical spur . . . . . *egleri*
   Hindleg with 2 preapical spurs . . . . . *gracilis*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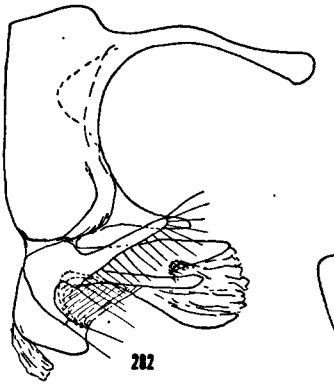
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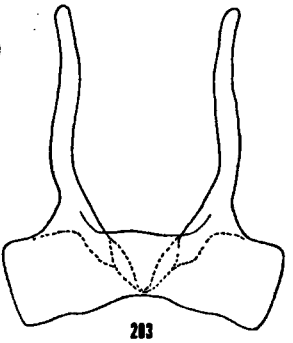
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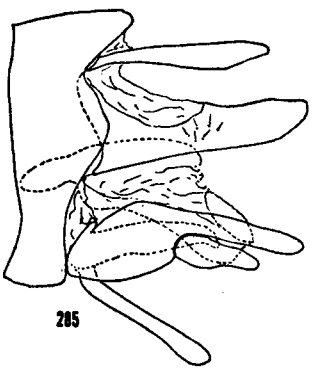
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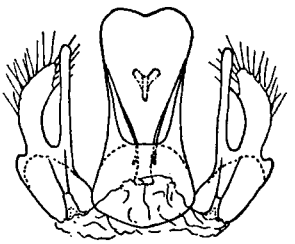
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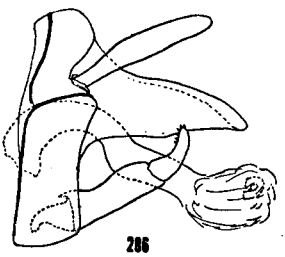
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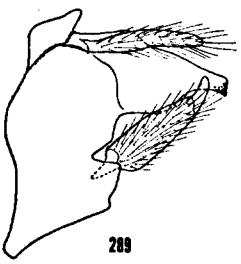
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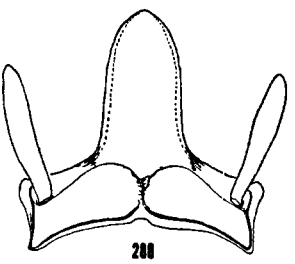
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Triplectides egleri Sattler

Fig. 285

Triplectides egleri SATTLER, 1963, p. 20.

These specimens agree with the Brazilian *T. egleri* in spur count (2, 2, 3) and in having the posteroapical angle of the discoidal cell straight. The genitalia of the species do not seem to differ in any significant way from those of *T. gracilis* (Burm.).

Material. – Surinam, Kaboeri Creek, first camp, 25 Mar. 1971, at light, 3♂ 2♀. Coppename River, Wilhelmina Mountains, trail I, km 8.7, 19 Aug. 1943, 1 (without abdomen). Zanderij, Coropina Creek, 29 Nov. 1953, 1♂. Zanderij, forest creek, 22 May 1957, 1♂. Commewijne River, on small creek in forest between Sapenda and Copie, 14 July 1953, 1♀. Nassau Mountains, trail, km 2, mountain creek, 22 Feb. 1949, 1♂.

Triplectides gracilis (Burmeister)

Mystacides gracilis BURMEISTER, 1839, p. 921.
Triplectides gracilis (Burmeister). – KOLENATI, 1859, p. 248. – ULMER, 1905a, p. 27; 1913, p. 402. – MOSELY, 1936, p. 96. – FISCHER, 1965, p. 63.

The species is widely distributed over Latin America: Guatemala, Panama, Brazil, and Argentina. There is one example in these collections which agrees with Mosely's diagnosis in spur count (2, 2, 4) and in having a distinct projection at the posteroapical angle of the discoidal cell. The genitalia of this specimen are not figured as

Figs. 281–290. — *Nectopsyche diminuta* (Banks): 281, ♂ genitalia, lateral. *N. taleola* n. sp.: 282, ♂ genitalia, lateral; 283, ninth tergum, dorsal; 284, claspers and aedeagus, ventral. *Triplectides egleri* Sattler: 285, ♂ genitalia, lateral. *Phylloicus fenestratus* n. sp.: 286, ♂ genitalia, lateral; 287, clasper, ventral; 288, ninth and tenth terga and cerci, dorsal. *P. brevior* Banks: 289, ♂ genitalia, lateral; 290, clasper, ventral.

there seems to be no difference between it and those figured of *T. egleri.*

Material. – Surinam, Saramacca River, Kappelsavanne N. trail, first forest creek, 21 March 1958, 1♂.

Family CALAMOCERATIDAE

This family, like the two following ones, is rather small, containing only a few genera and a correspondingly small number of species. They are generally more prevalent in the tropics than in the temperate regions, although they are rarely abundant anywhere. Their larvae live in flowing water but they often favor almost lentic backwaters with accumulations of leaves and sticks in which their cases are well camouflaged.

Genus **Phylloicus** Müller

The genus *Phylloicus* is found over all of South and Central America, the West Indies and Southwestern United States. The adults are generally brightly colored, and like those of *Nectopsyche*, should be pinned for easy indentification. In conjunction with their bright color adults of many species are active in the day, and rarely come to lights. The larvae of a number of species, especially those from the West Indies, are known. They all construct flat cases composed of pieces of leaves.

KEY TO SPECIES OF *Phylloicus*

1. Forewing brown . . . . . *brevior*
   Forewing fuscous, with 2 transverse, cream-colored bands, and several longitudinal clear streaks basally. . . . . *fenestratus*

Phylloicus brevior Banks

Fig. 289–290

Phylloicus brevior BANKS, 1915, p. 632. – FISCHER, 1965, p. 21. – FLINT, 1967, p. 18.

Originally described from Bartica, Guyana, *P. brevior* is here recorded from Surinam for the first time. The figures of the genitalia are prepared from the type, as they are similar to those of the Surinam examples. The abdomen of the male is considerably modified, a condition overlooked in this species previously. The eighth sternum is rather strongly sclerotized and weakly emarginate posteriorly, segments 4–7 are considerably flattened, terga 6–8 are slightly expanded laterally and darkened, segment 5 is unmodified, segment 4 is considerably expanded posterolaterally with the expansion pale.

Material. – Surinam, Kabalebo River, Avanavero, 10 April 1971, malaise trap, 1♂; same, but Avanavero Falls, 7 April 1971, 1♂. Brokopondo, 4 July 1963, 1♀. Zanderij I, 23 April 1927, Cornell Univ. Exp., 1♂ (CU).

Phylloicus fenestratus n. sp.

Fig. 286–288, Pl. 4F

This is a very distinctive species, both on the basis of coloration and male genitalia. The clear areas at the base of the forewing are unique. The genitalia are also quite distinctive, especially the elongated, pointed tenth tergum, and crooked aedeagus.

Adult. – Length of forewing, 8 mm. Color generally black, ventrally generally yellowish; antennae beyond basal segment, maxillary palpi, and mid and hind tibiae with fuscous hairs; forewing mostly covered with fuscous hairs, except three longitudinal cells at base of forewing which are clear, a narrow longitudinal cream-colored band in anal cell, a narrow, obliquely transverse band at midlength, and a short transverse band from stigma of cream-colored hairs. Hindlegs with 2 subapical spurs; but each

only about half length of respective apical spur. Male abdomen without modifications. Male genitalia: Eighth sternum simple. Ninth segment annular, not prolonged anteroventrally. Tenth tergum long, tapering to an obtuse apical point, without processes. Clasper with basal segment short, in ventral aspect inflated subapically; apical segment half length of basal segment, rather slender, with scattered mesal peglike spines. Aedeagus tubular, crooked basally.

Material. – Holotype, male: Surinam, Nickerie River, Stondansi, at night in malaise trap 2, forest path, 31 Jan. 1971, D. C. Geijskes. Paratype: Nickerie River, Blanche Marie, 12 Feb. 1971, malaise trap, 1♀.

Family ODONTOCERIDAE

Odontocerids are found in most areas of the world. With the exception of *Marilia*, most genera occupy a very small geographic region with a correspondingly small number of species. There is also the appearance of great diversity among the genera, suggesting a rather ancient group with several surviving relict lines. The larvae in their cylindrical cases generally inhabit rather small, fast-flowing streams.

Genus **Marilia** Müller

This genus has a distribution much like that of *Phylloicus*, except that it is found in the old world, further northwardly in the new world, but not in Chile. The delineation of most species in this genus is often quite difficult. Fortunately the two species collected in Surinam are quite distinctive and very different from all others I have seen. The larvae of a number of species have been described. All construct cylindrical cases of small sand grains.

KEY TO SPECIES OF *Marilia*

1. Cercus short and distinctly bilobed . . . . . *biloba*
   Cercus long and slender . . . . . *alata*

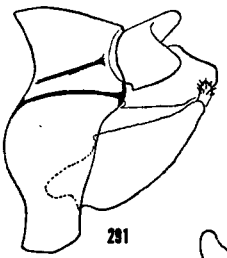
Marilia biloba n. sp.

Fig. 291–292

The genitalia of this species bear little resemblance to those of any other described species. The short, bilobed cerci are unique, as is the short truncate tenth tergum.

Adult. – Length of forewing, 10.5 mm. Eyes enlarged, but not touching dorsally, being separated dorsally by a width half that of eye. Brown, covered with white hairs; antennae with basal segments covered by white, gradually becoming brown beyond 3 or 4 segments; head, thorax, and appendages with white hair; forewing with white hair basally, with patches of brown hair apically. Male genitalia: Ninth segment broad, slightly flattened dorsally. Tenth tergum short, rather broad and truncate in lateral aspect, divided middorsally for about a third of its length. Cercus short, bilobed, covered with short spicules. Clasper with basal segment broad basally, tapering to apex, apical segment short, terete and covered with black spicules. Aedeagus tubular, apex with a large membranous lobe.

Material. – Holotype, male: Surinam, Suriname River, Botopasie, 16 May 1955, D. C. Geijskes.



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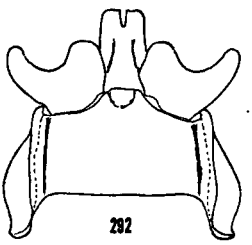

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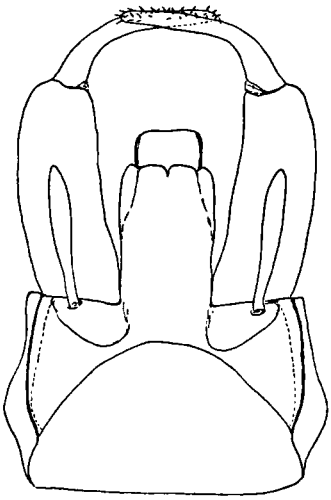

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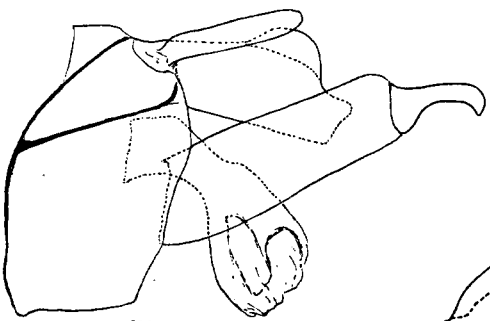

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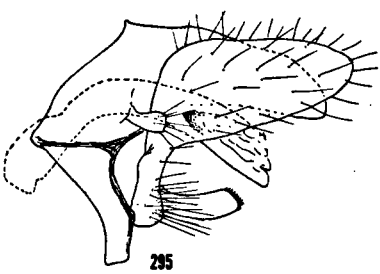

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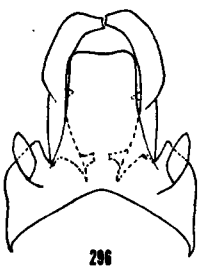

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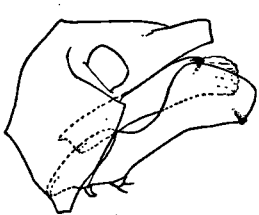

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Marilia alata n. sp.

Fig. 293–294

This species is very distinctive, and also quite different from the other described species. The winglike dorsal lobes of the tenth tergum are unique, and the long, almost parallel-sided claspers are very different from the other species.

Adult. – Length of forewing, 6 mm. Specimen in alcohol, now nearly white. Eyes of male very large, nearly contiguous dorsally. Male genitalia: Ninth segment annular, narrowed dorsally. Cercus long, slender. Tenth tergum elongate, truncate apically, dorsolateral margins with an erect flange at midlength. Clasper with basal segment broad, barely tapering apicad; apical segment long, terete, curved mesad, with scattered spicules. Aedeagus short, expanded apicad, apex with an internal plate ventrally and a narrow, s-shaped sclerite.

Material. – Holotype, male: Surinam, Coeroeni-eiland, Aug. 1959, D. C. Geijskes.

Family HELICOPSYCHIDAE

The helicopsychids are found in most regions of the world, although absent over most of Europe. The peculiar, coiled larval cases were known for a considerable time before it was discovered that they were of insectan origin and not molluscan. They are generally inhabitants of rather rapidly flowing water.

Figs. 291–298. — *Marilia biloba* n. sp.: 291, ♂ genitalia, lateral; 292, ninth and tenth terga and cerci, dorsal. *M. alata* n. sp.: 293, ♂ genitalia, dorsal; 294, ♂ genitalia, lateral. *Helicopsyche vergelana* Ross: 295, ♂ genitalia, lateral. *Cochliopsyche opalescens* Flint: 296, ♂ genitalia, dorsal; 297, clasper, ventral; 298, ♂ genitalia, lateral.

KEY TO GENERA OF HELICOPSYCHIDAE

1. Antennae short, thick, hardly as long as forewing . . . . . *Helicopsyche*
   Antennae long, slender, several times as long as forewing . . . . . *Cochliopsyche*

Genus **Helicopsyche** von Siebold

The genus is found in many scattered localities throughout the world, but is most strongly developed toward the tropics. The larvae construct cases of small sand grains which are shaped like the shells of snails.

Helicopsyche vergelana Ross

Fig. 295

Helicopsyche vergelana Ross, 1956, p. 400.

These examples agree with material from Mexico, the type locality, in all respects. The species is widespread in Central America, and is somewhat variable in the shape of the basomesal process of the clasper. Apparently it must be distributed along the northern mountain regions of South America.

Material. – Surinam, Nickerie River, Blanche Marie, falls in creek, 15 Feb. 1971, 2♂ 1♀; same, but falls behind camp, 15 Feb. 1971, at light, 1♂; same, but 14 Feb. 1971, 2♂. Wilhelmina Mountains, Kwatta camp, trail I, km 3, 3 Sept. 1943, at light, 1♂.

Genus **Cochliopsyche** Müller

This is the only other helicopsychid genus known to occur in the New World. Up to now species have been found only in the lowlands of eastern South America. The larvae are still unknown. However, the description of the genus is based on pupal structures which show that it must inhabit a coiled type of case.

Cochliopsyche opalescens Flint

Fig. 296–298

Cochliopsyche opalescens FLINT, 1972, p. 245.

This species was recently described from the upper Paraná River in Argentina, and is now recorded from Surinam.

Material. – Surinam, Nickerie River, Blanche Marie, 14 Feb. 1971, 1♂; same, but 12 Feb. 1971, 1♂. Coeroeni-eiland, 30 Aug. 1959, at light, 2♂. Coeroeni Expedition, Zuid River, 10 Sept. 1959, 4♂. Tafelberg Expedition, Boven Saramacca River, base camp near DeKockberg, 25 Mar. 1958, at light, 1♂. Suriname River, Botopasie, 21 May 1955, at light, 1♂. Paloemeu River, Pepejoe, 16 May 1952, at light, 2♂.

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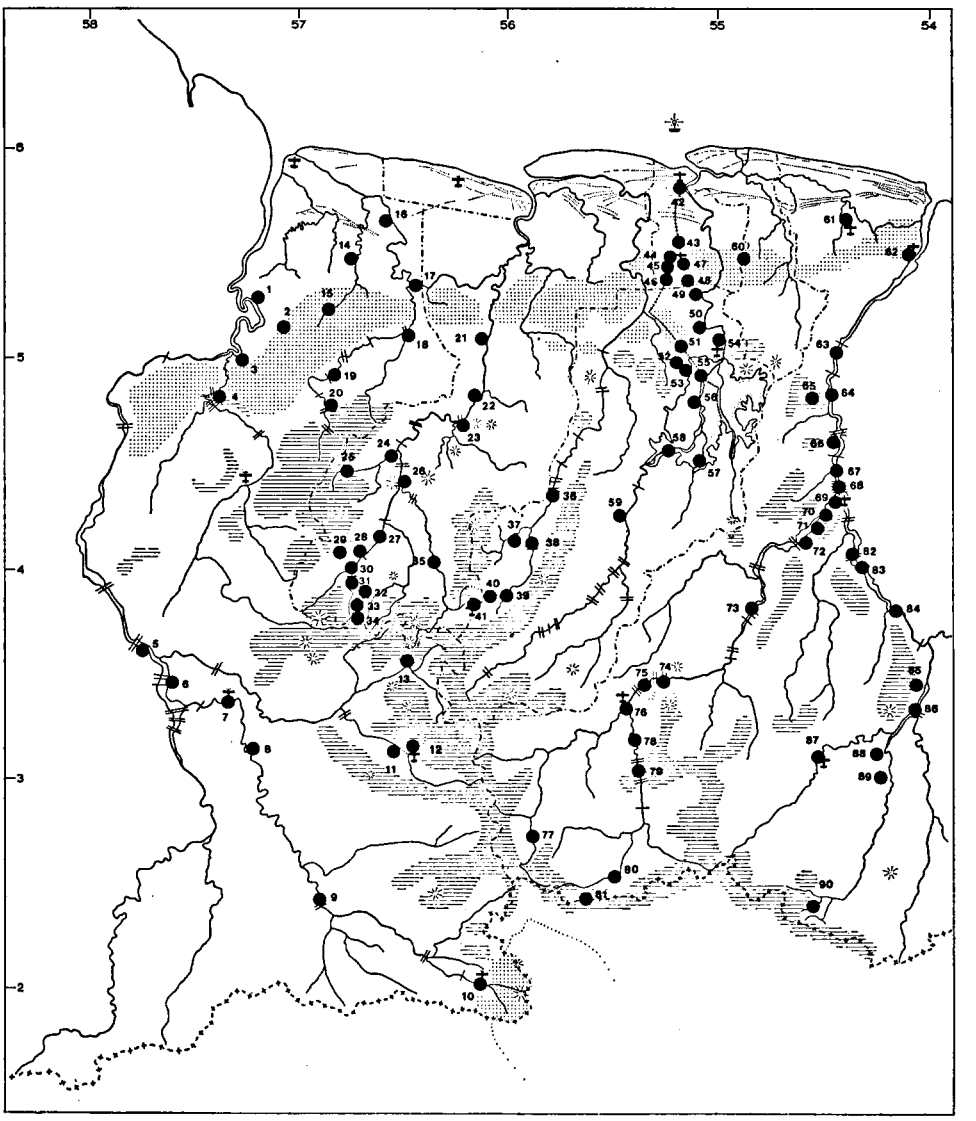


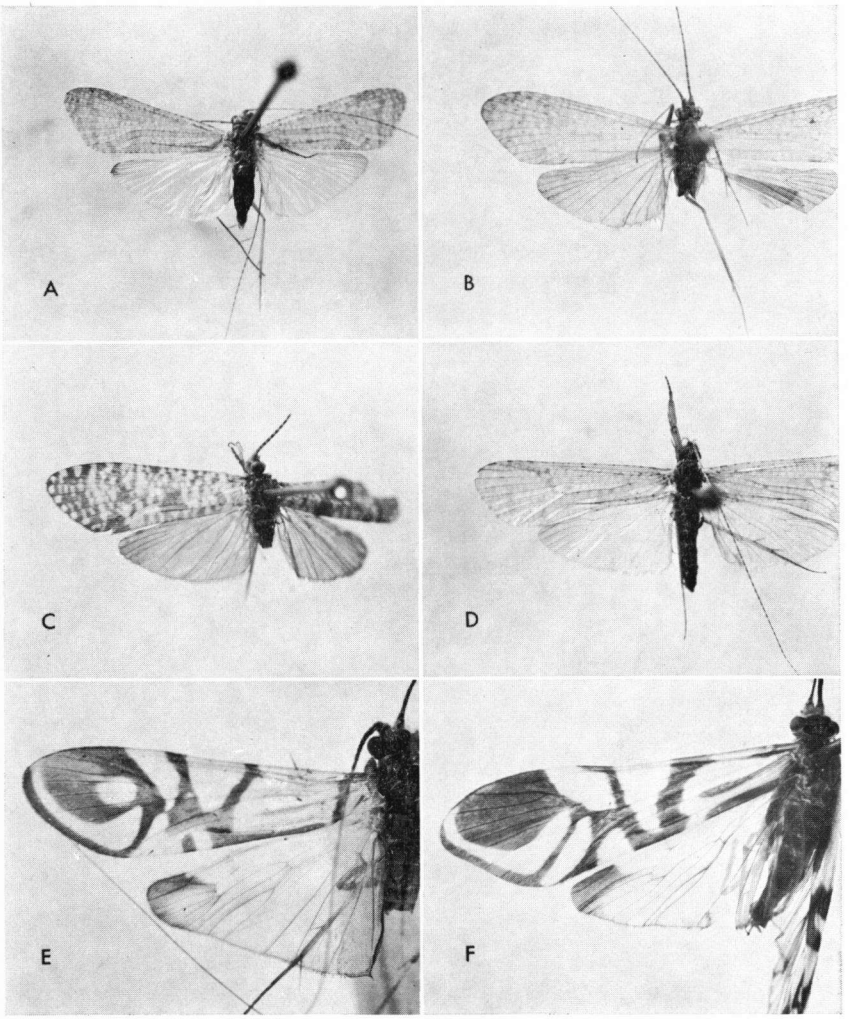
Fig. 299. — Sketch map of Surinam, showing localities where Trichoptera were collected according to the following list.

LOCALITIES

LOCALITIES 1–90 WHERE TRICHOPTERA WERE COLLECTED IN SURINAM UP TO 1971 INCLUSIVE.

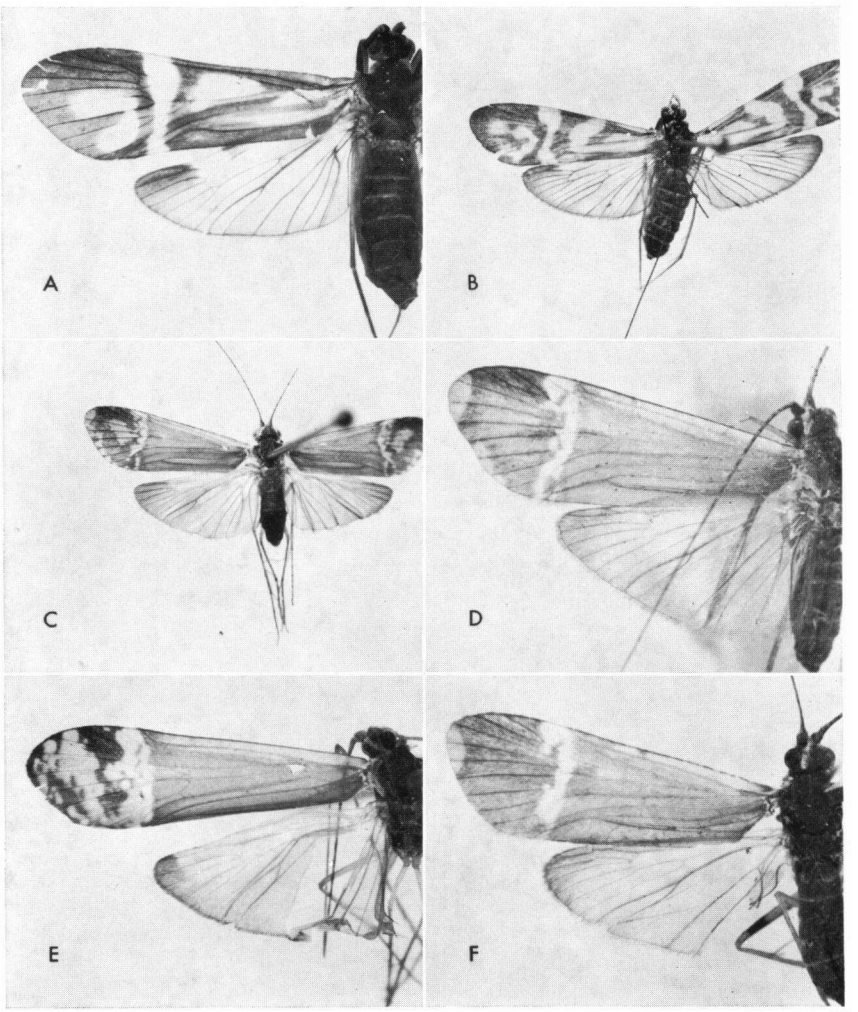
1. Corantijn River, Wakay.
2. Corantijn River, Kaboeri Creek, camp near Winanna Creek.
3. Corantijn River, Matapi.
4. Kabalebo River, Avanavero Falls.
5. Corantijn River, in falls near mouth of Lucie River.
6. Corantijn River, Frederik Willem IV Falls.
7. Coeroeni River, Coeroeni Eiland (airstrip).
8. Coeroeni River, lower course.
9. Coeroeni River, falls near mouth of Sipaliwini River.
10. Sipaliwini River, near savanne camp loc. 4.
11. Lucie River, Zuid River near Käyser airstrip.
12. Lucie River, Zuid River creek near Käyser airstrip.
13. Lucie River, basecamp of trail to Wilhelmina Mts.
14. Marataka River, creek in Awarra savanne.
15. Marataka River, upper course.
16. Nickerie River, lower course near Wageningen.
17. Nickerie River, Arawarra Creek.
18. Nickerie River, Stondansi Falls.
19. Nickerie River, near Lombok Falls.
20. Nickerie River, Blanche Marie Falls and creek at Meteostation.
21. Coppename River, Kaaimanston.
22. Coppename River, mouth Bari Creek.
23. Coppename River, Raleigh Falls.
24. Coppename River, Adampada Creek near mouth.
25. Coppename River, Adampada Creek upper course, final camp G.M.D.
26. Coppename River, Tonckens Falls.
27. Linker Coppename River, fourth camp (Hevea Exp.).
28. Linker Coppename River, fifth camp (Hevea Exp.).
29. Linker Coppename River, trail II km 12 mountain creek, camp III F. & M.
30. Linker Coppename River, basecamp F. & M.
31. Linker Coppename River, Zuid Creek, in falls.
32. Linker Coppename River, trail I km 3, Kwatta camp.
33. Linker Coppename River, trail I km 8, Stone creek.
34. Linker Coppename River, trail I km 15.6, small creek in Wilhelmina Mts.
35. Rechter Coppename River, fourth camp (Hevea Exp.).
36. Saramacca River, Wedeboh Falls.
37. Saramacca River, Toekoemoetoe Creek.
38. Saramacca River, Lawaaidam.
39. Saramacca River, upper course near De Kock Mt.
40. Saramacca River, trail to Tafelberg (Table Mt.), first camp near falls.
41. Kappelsavanne, airstrip Table Mt., N. trail in first forest creek.
42. Paramaribo (capital) on the Surinam River, Charlesburg Krepi at sandridge.
43. Republiek, Coropina Creek.

44. Zanderij, near airport in savanne creek.
45. Zanderij, Bosbivak.
46. Zanderij, Berlijn on savanne creek.
47. Para River, Carolina Creek.
48. Kraka, small creek in savanne forest.
49. Phedra, small creek in forest.
50. Suriname River, Berg en Dal.
51. Brownsweg, small creek in savanne forest.
52. Brownsberg, Waktibasoe Creek near golddiggers camp.
53. Suriname River, Makambi Creek.
54. Suriname River, Brokopondo.
55. Suriname River, Kabelstation.
56. Suriname River, Gansee.
57. Suriname River, Marowijne Creek, Grandam Falls.
58. Suriname River, Mamadam Falls.
59. Suriname River, Botopasi.
60. Commewijne River, Sapenda-Copie, on small creek in forest.
61. Cottica River, Moengo.
62. Marowijne River, Albina.
63. Marowijne River, Langatabbetje.
64. Marowijne River, Nason.
65. Marowijne River, Nassau Mt.
66. Marowijne River, Bonaparte.
67. Marowijne River, Toetoe-ondro.
68. Marowijne River, Stoelmanseiland.
69. Tapanahoni River, Acoté.
70. Tapanahoni River, Gwé Falls.
71. Tapanahoni River, Manlobbi.
72. Tapanahoni River, Granholo Falls near Poeketi.
73. Tapanahoni River, Granbori.
74. Tapanahoni River, Grandafoetoe Falls.
75. Tapanahoni River, Mankodebakoe Falls.
76. Tapanahoni River, Pepejoe in mouth of Paloemeu River.
77. Tapanahoni River, upper Tapanahoni (Tapanani) River near Aloepi.
78. Paloemeu River, Apetina kondre.
79. Palomeu River, Sawaniboto Falls.
80. Paloemeu River, final camp in upper course.
81. Brazilian border, Apisiké (Indian village).
82. Lawa River, Dagohède Falls.
83. Lawa River, Aboenasoengoe Falls.
84. Lawa River, Magdafien.
85. Lawa River, Anapaike (Indian village).
86. Lawa River, Gransoela.
87. Litani River, Oelemari River.
88. Litani River, Feti Creek.
89. Litani River, Loë Creek.
90. Litani River, Waremapan Creek, falls.

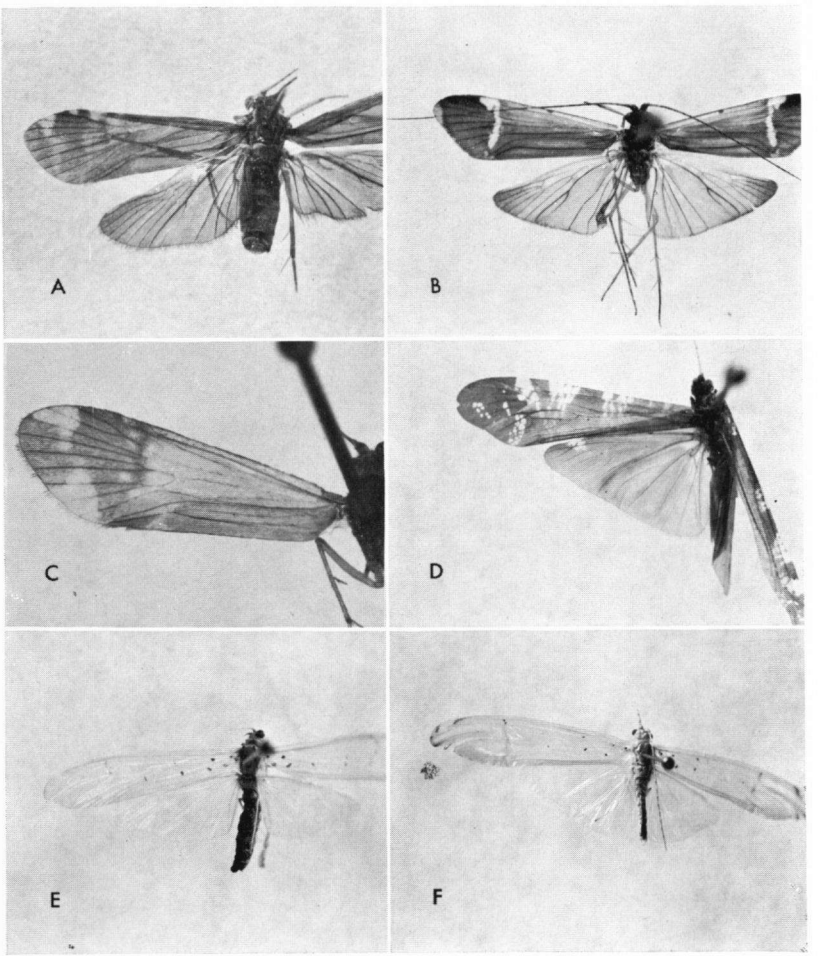


Pl. I. — A, *Leptonema sparsum* Ulmer. – B, *L. irroratum* n.sp. – C, *L. maculatum* Mosely. – D, *Neoleptonema aspersum* Ulmer. – E, *Macronema arcuatum* Erichson. – F, *M. ulmeri* Banks.

Plate II

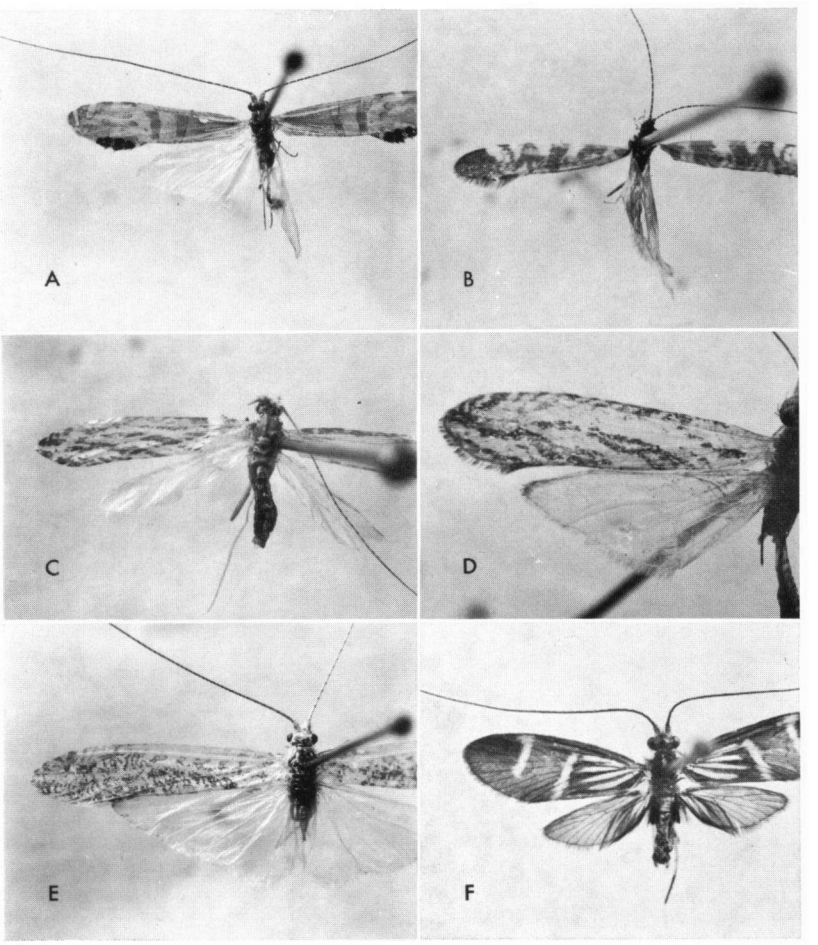


Pl. II. — A, *Macronema erichsoni* Banks. – B, *M. surinamense* n.sp. – C, *M. hageni* Banks. – D, *M. picteli* Banks. – E, *M. percitans* Walker. – F, *M. fraternum* Banks.



Pl. III. — A, *Macronema fragile* Banks. – B, *M. argentilineatum* Ulmer. – C, *M. parvum* Ulmer. – D, *Plectromacronema comptum* Ulmer. – E. *Synoestropsis grisoli* Navás. – F, *S. furcata* n.sp.

Plate IV



Pl. IV. — A, *Nectopsyche gemma* (Müller). – B, *N. quatuorguttata* (Navás). – C, *N. acutiloba* n.sp. – D, *N. diminuta* (Banks). – E, *N. punctata* (Ulmer). – F, *Phylloicus fenestratus* n.sp.