

Studies of Neotropical  
Caddisflies, XXXIII:  
New Species from Austral  
South America (Trichoptera)

OLIVER S. FLINT, JR.

SMITHSONIAN CONTRIBUTIONS TO ZOOLOGY • NUMBER 377

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## ABSTRACT

Flint, Oliver S., Jr. Studies of Neotropical Caddisflies, XXXIII: New Species from Austral South America (Trichoptera). *Smithsonian Contributions to Zoology*, number 377, 100 pages, 345 figures, 1983.—One hundred ten new species and one new genus of caddisflies from southern South America are described and figured. The region covered includes all of Argentina, Chile, Paraguay, and Uruguay, as well as Brazil from the state of Santa Catarina south. The faunal divisions of Argentina, based on the evidence of the Trichoptera, are defined. A key to all the known families of South American Trichoptera is presented. The new genus *Ascotrichia* is proposed with type-species *A. frontalis*, new species, and is placed in the family Hydroptilidae, tribe Leucotrichiini; to this genus is transferred *Betrichia surinamensis* Flint (new combination). The genus *Banyallarga* Navás, type-species *B. testacea* Navás, is recognized in the Calamoceratidae, and *Loxinum* Navás, type-species *L. aequatorium* Navás, is synonymized with it (new synonymy). *Hydropsyche vicaria* Walker, *Ganonema molliculum* McLachlan, *Phylloicus loxanus* Navás, *Anisocentropus columbianus* Navás, *A. villosus* Navás, and *Loxinum aequatorium* Navás are all transferred to *Banyallarga* (all new combinations). *Banyallarga crenata* Navás is transferred to *Phylloicus* Müller (new combination). New species (numbers in parentheses) are described in the following genera: *Atopsyche* (1), *Clavichorema* (1), *Neochorema* (1), *Mexitrichia* (2), *Protoptila* (2), *Dolophilodes (Sortosa)* (5), *Chimarra (Curgia)* (8), *Pseudostenopsyche* (1), *Austrotinodes* (4), *Polycentropus* (2), *Polyplectropus* (3), *Cernotina* (4), *Cynellus* (2), *Xiphocentron* (2), *Ascotrichia* (1), *Anchitrichia* (1), *Betrichia* (2), *Nothotrichia* (1), *Ochrotichia (Metrichia)* (3), *Hydroptila* (4), *Neotrichia* (13), *Macronema* (1), *Smicridea (Smicridea)* (3), *Smicridea (Rhyacophylax)* (9), *Anomalocosmoecus* (1), *Grumichella* (1), *Brachysetodes* (1), *Oecetis* (1), *Nectopsyche* (7), *Phylloicus* (1), *Banyallarga* (2), *Marilia* (9), *Parasericostoma* (4), *Notidobiella* (1), *Microthremma* (1), *Helicopsyche* (4), and *Cochliopsyche* (1).

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# Studies of Neotropical Caddisflies, XXXIII: New Species from Austral South America (Trichoptera)

*Oliver S. Flint, Jr.*

## Introduction

In 1970 the Argentine Committee of the International Biological Program approved a program to produce a 51 volume series entitled *Fauna de Agua Dulce de la Republica Argentina* under the direction of Drs. Raul A. Ringuelet and Argentine A. Bonetto. I was invited to prepare the volume covering the Trichoptera, or caddisflies, for this series. With this project in mind, serious efforts were made to obtain collections from the different regions of Argentina and adjacent countries that could reasonably be expected to share the same fauna.

Over the last 10 years a great deal of material has been obtained, some by my field work and that of my coworkers at the National Museum of Natural History, some by purchase, and more on loan from various museums in Europe and Argentina. As could be expected, these collections contain many undescribed species. In order to make names available for the *Fauna de Agua Dulce de la Republica Argentina* and to avoid undue dispersion of descriptions into many publications, I am herein publishing in one paper descriptions of all the undescribed species at hand, except for

the species of the hydropsychid genus *Smicridea* from the Chilean Subregion, for which a separate revision is in preparation.

ZOOGEOGRAPHY.—I am herein considering primarily the fauna found south of the Tropic of Capricorn. The caddisfly fauna of Argentina, Chile, Uruguay, Paraguay, and Brazil south from the state of Santa Catarina are thus all included. As could be expected, this region does not contain one uniform fauna but rather has two major subregions, with one showing a number of divisions.

The primary division of the Neotropical Region, as far as the Trichoptera are concerned, is into the Brazilian and Chilean subregions. This division is also shown by a number of other groups of organisms and seems to be especially strong in those whose growth stages are primarily limited to fast-flowing, colder waters (for example, Ephemeroptera, Edmunds, 1972; Plecoptera, Illies, 1965; Diptera: Chironomidae, Brundin, 1966).

In the Chilean Subregion, I include all of Chile, although with increasing aridity north of Santiago, suitable habitats are very limited and virtually disappear by Coquimbo. This subregion also includes a large part of western and southern Argentina. The line here is more difficult to draw,

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but experience, coupled with older material, indicates that Mendoza and the fruit-growing regions immediately to the south are essentially Brazilian. In the middle of the province of Neuquen at Lago Aluminé, the fauna is typically Chilean. I can not say with more precision where the caddisfly fauna changes, but it may well be a gradual gradient rather than a sharp boundary. Certainly any area of *Nothofagus* forest would have a Chilean-type fauna. From a rather narrow band along the Andes in the north, then, the fauna extends eastward across the Patagonian steppe in a rather depauperate manner. Collections from the Río Negro near Neuquen show a mixed fauna that is primarily Chilean. For convenience of definition, then, I accept that the Río Negro and its northern tributary, Río Neuquen, mark the northern boundary of the Chilean Subregion in Argentina. As with all biological boundaries, one must realize that this is an area of transition in which elements of both faunas may be found.

The Brazilian Subregion covers the rest of the Neotropical Region up to the northern part of Mexico and including the West Indies. This, of course, does not contain one uniform fauna from end to end but does show a number of more or less distinct divisions generally related to topography and rainfall.

Within Argentina I find three rather well-marked divisions in the Brazilian fauna: one centered in the main river basins in the central and eastern part of the country, a second, very small division centered in the province of Misiones with its increased relief and rainfall, and the third division in the Andes in the west, again with greatly increased relief and, to the north, increased rainfall.

The first division covers a large part of the country of Argentina, and its fauna is often wide-ranging, entering the other major river basins of South America. The fauna of the southern part of the province of Buenos Aires is, although depauperate, typically part of this division. The Paraná and Uruguay rivers have the greatest diversity of fauna, and, although poorly sampled,

the flat pampas away from the rivers seem to have much less diverse fauna.

The province of Misiones is small but probably possesses the greatest diversity of fauna of any part of Argentina. There is a low sierra down the middle of the province and a much greater rainfall than in the first division. Thus there are produced many streams and small rivers, such as the Piray Mini and Piray Gauzú, that support extremely rich faunas. The fauna of this division extends into Santa Catarina, Brazil, and eastern Paraguay. A few species are found also in the wettest part of the Andean division in the west of the county.

The third division is the Andean area of northwestern Argentina. Much of this is very dry or of sufficient elevation to support only a grassland. These dry areas extend as far south as Mendoza, at least, and have a rather low diversity but seem to contain no other than a depauperate Andean fauna. This southern Andean fauna is also found farther to the east in the Sierras de Córdoba. In the northern area (at least from the region of Tucumán) is found a narrow band of wetter forest along the lower slopes of the mountains. This is the southern extension of a distinct zone best known from the Yungas of Bolivia. Unfortunately this zone has not been well collected in Argentina, and so I can only speculate as to its richness. Undoubtedly it is not so diverse in Argentina as in the Yungas of Bolivia, but it is much more so than are the adjacent zones. I doubt if it will have the richness of fauna as that of Misiones, but it may approach that division rather closely.

ACKNOWLEDGMENTS.—The largest part of the collections herein reported is comprised of specimens that I have collected during seven trips into the region. During these trips I have been able to collect five times in Argentina, four in Chile, and once in Paraguay. These trips were made possible by grants from the U.S. Antarctic Research Program (National Science Foundation), American Philosophical Society, and the Fluid Research Funds and the Director's Discretionary Funds of the Smithsonian Institution.

Collections purchased from the Chilean natu-

ralist Luis E. Peña G. have added much valuable material from Chile, Argentina, and Paraguay. Likewise purchases from Fritz Plaumann in Nova Teutonia, Santa Catarina, Brazil, have done much to add coverage from this area, which is very similar to that of Misiones, Argentina.

Other valuable additions have been made by my coworkers at the National Museum of Natural History, Smithsonian Institution, Drs. D.R. Davis and P.J. Spangler. Their work was made possible by monies granted by the National Geographic Society, the Smithsonian Research Foundation, and Fluid Research Funds of the Smithsonian Institution.

Material deposited in the Smithsonian Institution is identified by the designation USNM (collections of the former United States National Museum, deposited in the National Museum of Natural History, Smithsonian Institution). Material from numerous other museums listed below is also included.

CUI	Cornell University, Ithaca, New York, USA, Dr. L.L. Pechuman
FHCU	Facultad de Humanidades y Ciencias (Departamento de Artrópodos), Universidad de la República, Montevideo, Uruguay, Ing. C.S. Carbonell
FSCA	Florida State Collection of Arthropods, Gainesville, Florida, Dr. R.E. Woodruff
IML	Instituto Miguel Lillo, Tucumán, Argentina, Dr. A. Willink

IZAM	Instituto de Zoología Agrícola, Facultad de Agronomía, Maracay, Venezuela, Dr. C.J. Rosales
MACN	Museo Argentino de Ciencias Naturales "Bernardino Rivadavia," Buenos Aires, Argentina, Mr. M.J. Viana
MCZ	Harvard University, Cambridge, Massachusetts, USA, Ms. M. Thayer
MNM	Magyar Nemzeti Múzeum, Budapest, Hungary, Dr. Z. Kaszab
PUWL	Purdue University, W. Lafayette, Indiana, USA, Mr. R.D. Waltz
NMW	Naturhistorisches Museum Wien, Vienna, Austria, Dr. A. Kaltenbach
USP	Universidade de São Paulo, Museu de Zoologia, São Paulo, Brazil, Dr. C.G. Froehlich.
ZSZM	Zoologisches Staatsinstitut und Zoologisches Museum, Hamburg, Germany, Dr. H. Strümpel.

**TRICHOPTERA**

The following key is designed to allow family placement of all those genera and species of caddisflies known to me to occur in South America. I have relied heavily upon the keys of Ross (1944) and Wiggins (1978), but these have been extensively modified to accommodate the South American fauna. Whenever possible, I have tried to make the key simple by using easily seen, contrasting characteristics. Unfortunately I was not always able to make the characteristics as clear-cut as desired. I will appreciate being informed of any situation where specimens will not run correctly in the key.

**Key to Known Families of South American Trichoptera**

1. Mesoscutellum composed of a triangular, flat area, with a vertical posterior margin; forewing length 1.5-4 mm ..... **HYDROPTILIDAE**  
 Mesoscutellum evenly convex, without vertical posterior margin; forewing length generally over 4 mm, rarely less than 2 mm ..... 2
2. Ocelli present ..... 3  
 Ocelli absent ..... 8
3. Maxillary palpus with fifth segment 2-3 times as long as fourth segment ..... 4  
 Maxillary palpus either of less than 5 segments or with fifth segment barely longer than fourth ..... 5
4. Foreleg with a preapical spur ..... **STENOPSYCHIDAE**  
 Foreleg lacking a preapical spur ..... **PHILOPOTAMIDAE**

5. Foreleg with 2 apical spurs ..... 6  
 Foreleg with 1 apical spur or lacking all spurs ..... 7
6. Midleg lacking preapical spurs ..... **ANOMALOPSYCHIDAE**  
 Midleg with a pair of preapical spurs ..... **HYDROBIOSIDAE**
7. Foreleg with a single, well-developed apical spur; midleg with 1 or no preapical spurs ..... **LIMNEPHILIDAE**  
 Foreleg lacking or with 1 hairlike apical spur; midleg with 2 preapical spurs (*Merionoptila* lacks them but has wings reduced) .....  
 ..... **GLOSSOSOMATIDAE**
8. Maxillary palpus with terminal segment elongate and generally with suture-like cross-striae, or palpi lacking ..... 9  
 Terminal segment subequal to preceding segment, without cross-striations ..... 10
9. Mesoscutum lacking setal warts ..... **HYDROPSYCHIDAE**  
 Mesoscutum with distinct setal warts, or with a quadrangular anteromesal area delineated by sutures ..... **PSYCHOMYIIDAE**
10. Forewing with a distinct crossvein between  $M_2$  and  $M_3$  .....  
 ..... **CALAMOCERATIDAE**  
 Forewing lacking a crossvein between anterior and posterior branches of M ..... 11
11. Midtibia lacking preapical spurs ..... 12  
 Midtibia with preapical spurs ..... 15
12. Hind wing lacking conspicuously enlarged and/or hooked setae along part of the anterior margin ..... **SERICOSTOMATIDAE**  
 Hind wing with a row of conspicuously different setae along a part of the anterior margin ..... 13
13. Hind wing with anterior margin lacking specialized hooked or straight setae for basal quarter or more before a row of such hooked setae are present near midlength ..... **LEPTOCERIDAE**  
 Hind wing with anterior margin bearing either straight or hooked setae from base for a variable distance apicad ..... 14
14. Hind wing with modified setae of anterior margin straight; maxillary palpi of ♂ of 5 subequal segments ..... **HELICOPHIDAE**  
 Hind wing with modified setae of anterior margin curved or hooked; maxillary palpi of ♂ reduced to 2 or 3 segments .. **HELICOPSYCHIDAE**
15. Head with mouth parts elongated into a rostrum from the end of which the palpi are borne ..... **KOKIRIIDAE**  
 Head with mouth parts normal, palpi borne from venter of head .... 16
16. Wings with  $R_{2+3}$  undivided ..... **TASIMIIDAE**  
 Forewings, at least, with  $R_{2+3}$  forked ..... 17
17. First segment of maxillary palpus short, with an apicomesal, setiferous, enlargement or lobe ..... **PHILORHEITHRIDAE**  
 First segment of maxillary palpus long, without any apicomesal enlargement ..... **ODONTOCERIDAE**

### Family HYDROBIOSIDAE

I am following Schmid (1980) and Neboiss (1981) in recognizing the elevation of the subfamily Hydrobiosinae of the Rhyacophilidae to familial level. In the Neotropical Region there are, in addition to two currently unrecognizable genera of Navás, 19 described genera. Sixteen of these genera are restricted to the Chilean Subregion, two are restricted to the Brazilian Subregion, and one is found in both. The family is also very diverse in the Australian Region, with one genus ranging as far north as the Himalayan Mountains.

The larvae are free-living predators as far as is known. They are found in lotic situations from the smallest spring runs to large rivers, provided the water quality is not badly degraded.

### Genus *Atopsyche* Banks

The genus is found throughout all parts of the Brazilian Subregion, including the Greater Antilles (but not the Lesser Antilles), and penetrates into the southwestern United States. It is totally lacking in the Chilean Subregion. Over 50 species have been described, but many undescribed species are currently in our collection. Every area upon serious collecting produces a number of unknown species.

The larvae have been described a number of times (Flint, 1963; Wiggins, 1977, etc.). All of those known to me are remarkably similar in structure and show only a few different color patterns. The gut contents of three larvae showed arthropod remains (Wiggins, 1977).

### *Atopsyche misionensis*, new species

FIGURES 1-3

This species is closely related to *A. longipennis* (Ulmer) and *A. serica* Ross, with which it is usually collected. All three species are distinguished by the shapes and relative proportions of the clasper segments and, to a lesser degree, by the paracercus.

In *A. longipennis* the lengths of the two segments are nearly the same, but the apical segment is broadened and nearly truncate apically, whereas in *A. misionensis* the apical segment tapers to a rounded apex. In *A. serica* the apical segment tapers to a rounded apex as in *A. misionensis*, but the basal segment is longer, more angled, and the apical segment is more than twice as long as in *A. misionensis*.

**ADULT.**—Length of forewing, 6 mm. Color pale brown; forewing irregularly mottled and banded with various shades of brown. Male abdomen without internal pouches; fifth sternum lacking anterolateral processes, but with a slightly raised longitudinal swelling; process of sixth sternum as long as sternum, that of seventh sternum about half length of sternum.

**Male Genitalia:** Ninth and tenth segments typical. Paracercus short, parallel-sided, tip produced into a short dorsal point. Filicercus slightly longer than paracercus; cercus rounded. Clasper with basal segment elongate, slightly bowed, about 2½ times as long as broad, with a slender apicomeral process as long as apical segment; apical segment slightly more than a third as long as basal, tapering to a rounded apex. Aedeagus rounded and enlarged basally, with a single central spine and an elongate lateral plate.

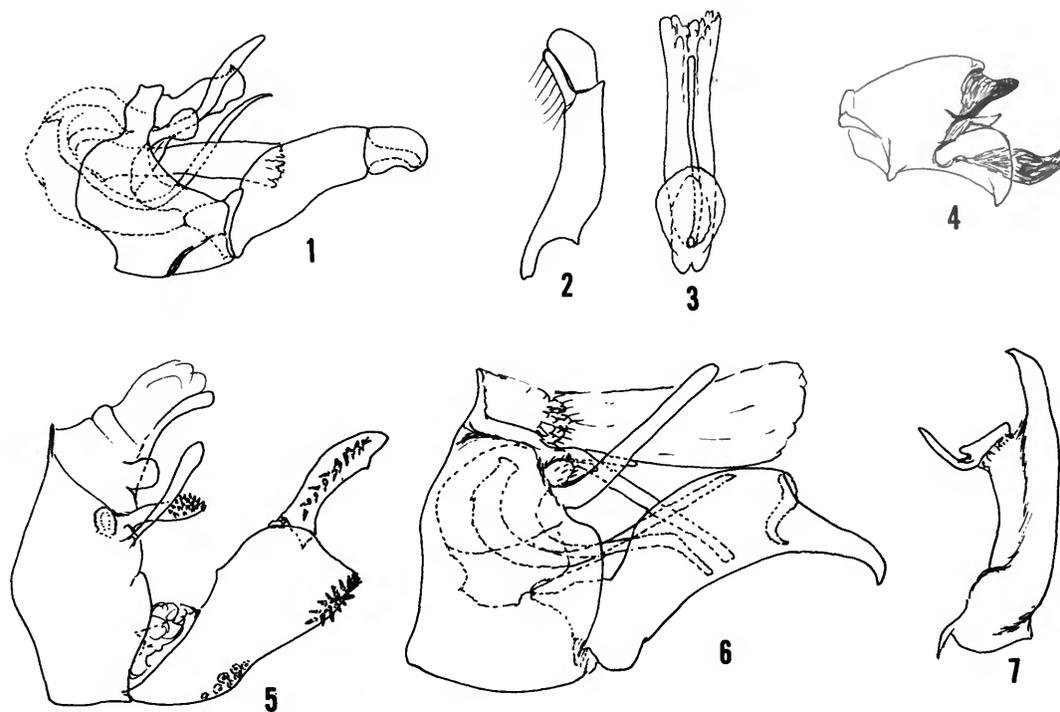
**MATERIAL.**—*Holotype* (male): ARGENTINA, PCIA. MISIONES, Arroyo Piray Mini, Rt. 17 W Dos Hermanas, 23 Nov 1973, O.S. Flint, Jr., USNM Type 100466.

**Paratypes:** Same data as holotype, 22♂; Arroyo Piray Guazú, N San Pedro, 22 Nov 1973, O.S. Flint, Jr., 7♂; Puerto Libertad, 24 Nov 1973, O.S. Flint, Jr., 2♂; Río Iguazú, Camp Nañdu, 25 Nov 1973, O.S. Flint, Jr., 2♂.

### Genus *Clavichorema* Schmid

This genus of six previously described species is restricted to the Chilean Subregion. The species are widespread and frequently collected in this region, generally near small streams and brooks.

The larvae are not described. I have metamor-



FIGURES 1-7.—*Atopsyche misionensis*, new species: 1, male genitalia, lateral; 2, clasper, ventral; 3, aedeagus, dorsal. *Clavichorema pescaderum*, new species: 4, aedeagus, lateral; 5, male genitalia, lateral. *Neochorema paradoxicum*, new species: 6, male genitalia, lateral; 7, clasper, ventral.

phototypes of one species that will be described in a forthcoming paper on the larvae of this family.

#### *Clavichorema pescaderum*, new species

FIGURES 4, 5

This species appears to be a member of the *C. truncaticum* group, closest to *C. chiloeanum* Schmid. From this species it differs in the shape of the paracercus and the claspers and even more so in the structure of the aedeagus, which lacks the long apicoventral lobes, the hirsute mesal lobe, and the elongate, apically erect, dorsal process.

**ADULT.**—Length of forewing, 6 mm. Color brown, legs slightly paler; forewing uniformly brown. Fifth sternum with an elongate anterolateral process; eighth sternum with a broad posteromesal process almost twice as long as eighth sternum.

**Male Genitalia:** Ninth sternum lacking posteromesal process. Tenth tergum mostly membranous, ventral surface sclerotized, a transverse sclerite near base dorsally, with a rounded basolateral lobe. Paracercus terete, apex slightly enlarged, bearing short, spinous setae. Filicercus terete, semi-erect. Cercus a small, button-like lobe. Clasper 2-segmented; basal segment elongate, broad, inner face with 2 areas of short, enlarged setae along ventral margin; apical segment elongate, narrow, tip somewhat hooked mesad, inner face with a row of short, enlarged setae. Aedeagus with a short, tubular base; apex dorsally with a pair of heavily sclerotized, triangular plates with a small spine between them basally, ventrolateral angles hooked ventrad, not elongate, with a ventromesal plate, the apex of which is bifid and slightly asymmetrical.

**MATERIAL.**—*Holotype* (male): CHILE, PCIA.

OSORNO, Parque Nacional Puyehue, Río Pescadero, 7 Feb 1978, C.M. and O.S. Flint, Jr., USNM Type 100467.

*Paratype:* Same data as holotype, 1♀.

### Genus *Neochorema* Schmid

To the four previously described species, the following is added with many misgivings; however, the only alternative is the establishment of another, rather weak, monotypic genus, to which I am opposed. Although the venation of *N. paradoxicum* is rather similar to *N. sinuatum* Schmid, it lacks the crossvein between  $R_3$  and  $R_4$  but instead has a depigmented line in this area and has other minor differences in the proportionate lengths of the forks and their pedicels; however, the basic manner of branching in both wings is the same throughout the genus. The adults are very rarely encountered; I have not collected any.

The immature stages are undescribed and are not known to be present in my collections.

### *Neochorema paradoxicum*, new species

FIGURES 6, 7

The genitalia are distinctive, especially the elongate, membranous tenth tergum, the slender paracercus, the tripartite aedeagus, and especially the strange, apicomically placed, second segment of the clasper.

**ADULT.**—Length of forewing, 8 mm. Color pale brown, legs and venter yellowish; forewing pale brown, with little indication of any color pattern, costal region slightly expanded and modified (but not into a typical, reflexed, costal cell). Fifth sternum with a dorsolateral, finger-like process, seventh sternum with a very small, nail-like apicomical lobe.

**Male Genitalia:** Ninth segment with a narrow, dorsolateral projection, broad and almost quadrate laterally. Tenth tergum long, narrow, membranous, with a basolateral, setate, sclerotized lobe. Paracercus long, rodlike, with a short, rodlike projection basomesally. Filicercus semi-erect, rodlike. Cercus button-like, at base of filicercus.

Clasper 2-segmented; basal segment long, slightly curved, tip drawn out into a point; apical segment borne from dorsomesal margin subapically, consisting of a flat, caplike portion bearing a slender, angled process. Aedeagus bearing a long, curved, internal spine, flanked by a pair of slender processes, the tips of which are deflexed.

**MATERIAL.**—*Holotype* (male): CHILE, PCIA. LLANQUIHUE, El Chingue, N Correntoso (S Volcán Calbuco), 300 m, 20–25 Jan 1980, L.E. Peña G., USNM Type 100468.

*Paratypes:* Same data as holotype, 1♀. PCIA. CHILOE, Puntra, 28–29 Dec 1981, L.E. Peña G., 2♂.

### Family GLOSSOSOMATIDAE

Although the family is worldwide in distribution, all the neotropical genera found south of central Mexico belong to the subfamily Protoptilinae, which is restricted to the New World with possibly a representative in northeastern Asia. Some dozen genera are described, with three found in, and restricted to, the Chilean Subregion. The generic situation, however, is not as simple as it currently seems, for I possess many peculiar, undescribed species that may require either more new genera or the synonymization of some of those currently recognized.

The larvae all construct cases made of small sand grains in the form of a turtle's shell, that is, a domed dorsal part with a flat, midventral strap that leaves anterior and posterior openings through which the larva protrudes to grasp the substrate. The larvae inhabit all types of lotic habitats, many times rather tranquil backwaters. They appear generally to feed on the periphyton, which they scrape off the substrate.

### Genus *Mexitrichia* Mosely

This is one of the larger and more widely distributed genera of the subfamily, with over 20 species currently known. They are commonly encountered from Mexico south into central Argentina but are lacking from the West Indies and

the Chilean Subregion. New species are still being found in virtually every collection coming from previously unsampled areas.

The larvae of *M. aries* Flint were described by Flint (1963). I have since made many collections with metamorphotypes of larvae of other species, and all agree closely with those described.

***Mexitrichia pocita*, new species**

FIGURES 8, 9

This species bears little resemblance to any other known species. The sharply angled middorsal process of the aedeagal complex, two pairs of lateral processes, and laterally produced apices of the ventrolateral plates are extremely distinctive.

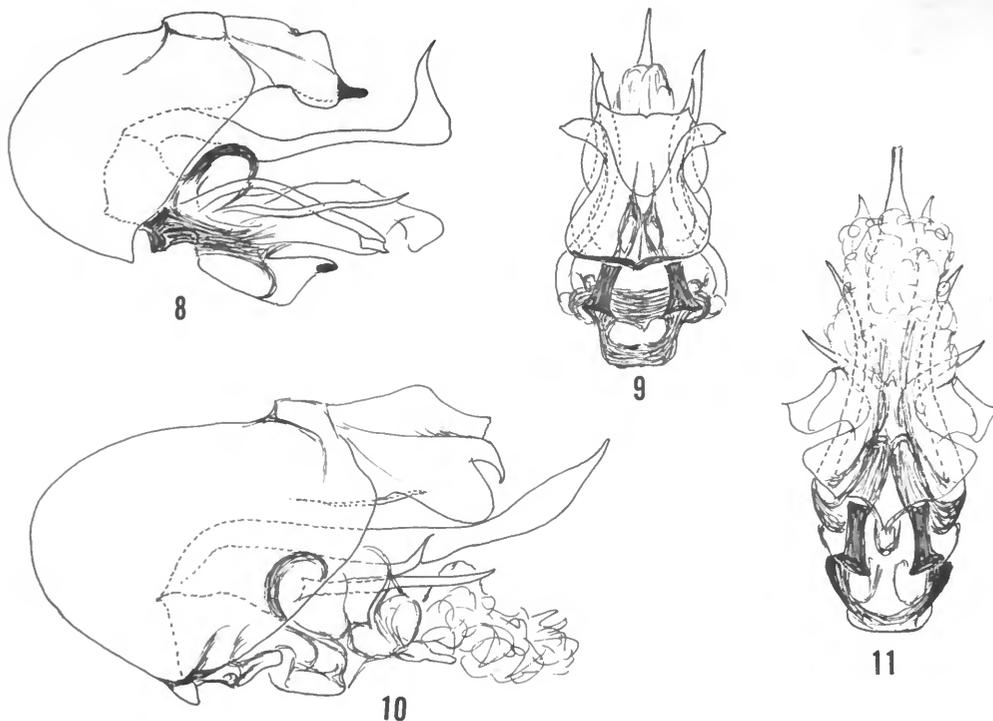
ADULT.—Length of forewing, 2.5 mm. Speci-

men cleared, in alcohol. Sixth sternum with a pointed apicomeresal process.

*Male Genitalia*: Ninth segment with anterior margin hemispherical. Tenth tergum in lateral aspect narrow, tip produced into a darkened point; in dorsal aspect with a large U-shaped apicomeresal excision. Aedeagal complex with dorsomesal process sharply angled dorsad and pointed apically; with 2 pairs of slender lateral processes; central tube sclerotized ventrally, with a membranous apicomeresal process; ventrolateral plate with apices produced and directed laterad.

*MATERIAL*.—*Holotype* (male): ARGENTINA, PCIA. SALTA, Río Pescado, W Orán, 14 Oct 1973, O.S. Flint, Jr., USNM Type 100470.

*Paratypes*: Same data as holotype, 2♂, 129♀; Río Caraparí, 8 km S Pocitos, 16 Feb 1969, Martinez and Woodruff, blacklight, 1♂ (FSCA).



FIGURES 8-11.—*Mexitrichia pocita*, new species: 8, male genitalia, lateral; 9, aedeagal complex, ventral. *Mexitrichia punensis*, new species: 10, male genitalia, lateral; 11, aedeagal complex, ventral.

***Mexitrichia punensis*, new species**

FIGURES 10, 11

This species is probably closest to *M. unota* Mosely, which is known from Misiones, Argentina, and Santa Catarina, Brazil. *Mexitrichia punensis* may be recognized by the hooked apicolateral angles of the tenth tergum, the longer, straighter middorsal process, and the lack of a large internal spine in the aedeagal complex.

**ADULT.**—Length of forewing, 4 mm. Color brown; forewing with a paler crossband at anastomosis. Male abdomen with fifth sternum bearing a transverse raised line, more strongly developed laterad; sixth sternum with a midventral process about half as long as sternum.

**Male Genitalia:** Ninth segment with anterolateral margin broadly rounded. Tenth tergum in lateral aspect with a broadly rounded apicoventral lobe and an apicolateral hook; in dorsal aspect broadly and shallowly concave between apicolateral hooks. Aedeagal complex with apex of dorsomesal process only slightly curved dorsad; with 2 pairs of lateral spines, one of which is shorter and curved laterad; membranous region with a pair of small, lightly sclerotized points.

**MATERIAL.**—*Holotype* (male): ARGENTINA, PCIA. TUCUMÁN, Rt. 307, La Angostura, 11 Oct 1973, O.S. Flint, Jr., USNM Type 100469.

*Paratype:* Same data as holotype, 1♂.

**Genus *Protoptila* Banks**

This is the largest and most widely distributed protoptiline genus. Over 65 species have been described from Canada south to northern Argentina. They have not been found in the Greater Antilles (but are in the Lesser Antilles) and are absent from the Chilean Subregion. There seems to be no end to new species in the Neotropics, even in relatively well-collected areas.

The larvae are well known (Ross, 1944; Wiggins, 1977, etc.). They generally construct cases of larger sand grains than do the larvae of *Mexitrichia*.

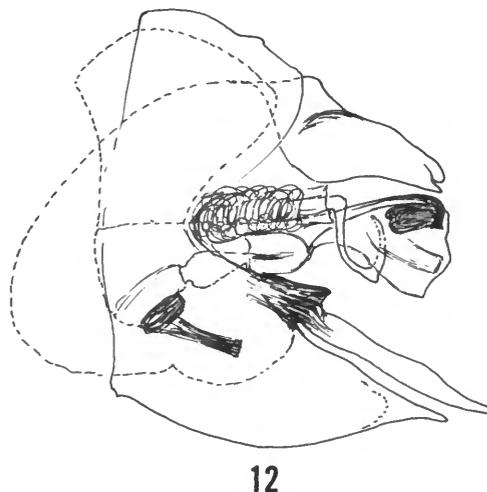
***Protoptila cora*, new species**

FIGURE 12

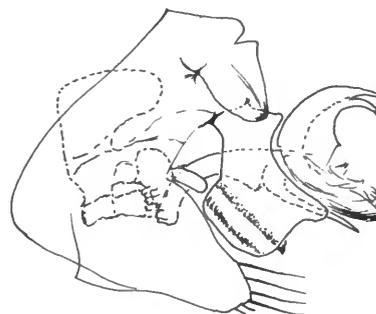
This species and *P. ensifera* Flint are closely related, although easily distinguished. In *P. cora* the eighth sternum is produced and bifid, the tenth tergum is elongate, and the apex of the central tube of the aedeagus is broadly enlarged.

**ADULT.**—Length of forewing, 3 mm. Color in alcohol brown; forewing with an indication of a pale transverse line at the chord. Sixth sternum with a central process, half length of sternum.

**Male Genitalia:** Eighth sternum broadly pro-



12



13

FIGURES 12, 13.—*Protoptila cora*, new species: 12, male genitalia, lateral. *Protoptila truncata*, new species: 13, male genitalia, lateral.

duced posteriad, with apex bifid. Ninth sternum rounded anteroventrally, produced into eighth sternum and appearing fused with it at midlength, forming a black spot from which extend 2 elongate processes overlying dorsolateral margins of eighth sternum. Tenth tergum elongate, tip slightly bifid. Aedeagus with typical basodorsal lobe and midlength complex; central tube slender, sclerotized dorsally, ending in several sclerotized plates; lateral process with membranous base, apical spine long, slender, and twisted beneath central tube.

**MATERIAL.**—*Holotype* (male): PARAGUAY, DPTO. AMAMBAY, Río Aquidabán, Cerro Corá, 29 Nov 1973, O.S. Flint, Jr., USNM Type 100471.

*Paratypes*: Same data as holotype, 17♂.

### *Protophila truncata*, new species

FIGURE 13

This species is very closely related to *P. guarani* Flint. It differs in possessing a short, truncate eighth sternum rather than an elongate, pointed one. There are small differences in the tip of the aedeagus, the most noticeable being the dorsal crest ending in three pointed processes rather than two, and in the smaller ventral spines.

**ADULT.**—Length of forewing, 2 mm. Color in alcohol, brown. Sixth sternum with a compressed central process about half as long as sternum.

**Male Genitalia:** Eighth sternum broadly truncate posteriorly; posterior face vertical, with a deep U-shaped excision mesally. Ninth sternum not produced posteriad. Tenth tergum rectangularly enlarged ventrad; mesal face with 2 bands of small, peglike setae. Aedeagus with typical basodorsal lobe and midlength complex; lacking lateral appendages; apex of central tube greatly enlarged, with a pair of spines ventrally, an arched, hoodlike sclerite dorsally produced into 3 asymmetrically developed spines.

**MATERIAL.**—*Holotype* (male): ARGENTINA, PCIA. MISIONES, Puerto Libertad, 24 Nov 1973, O.S. Flint, Jr., USNM Type 100472.

### Family PHILOPOTAMIDAE

The family is found in all regions of the world, including many oceanic islands, but generally is more depauperate in the higher latitudes. The neotropical species are placed in four genera, divided between two subfamilies. The Philopotaminae contains *Dolophilodes* and *Wormaldia*, and the Chimarrinae contains the genera *Chimarra* and *Chimarrhodella*. The last genus is restricted to the Andean areas of the Brazilian Subregion, but the other three are widespread in the New World and the Old World. In the Neotropics, however, *Wormaldia* and *Chimarra* are restricted to the Brazilian Subregion, but *Dolophilodes* inhabits the Chilean Subregion with a cluster of distinctive species in eastern Brazil.

The larvae all construct rather similar, finger-shaped, silken nets, which serve to strain their food from the passing water and to shelter the larvae. The nets are usually attached to sheltered areas beneath or between sticks and stones. The apertures of the mesh are extremely fine (Wallace and Malas, 1976) and can capture the finest suspended organic matter and algae.

### Genus *Dolophilodes* Ulmer

The genus, which is found in the Neotropical, Nearctic, Oriental, Australian, and African regions, is divided into a number of subgenera (Ross, 1956). I will continue to follow Ross's treatment until another comprehensive world study proves a better system. All the species currently known from the Chilean Subregion are placed in the subgenus *Sortosa*. A single species (several other closely related species are known from the same area) was recently described from the coastal mountains of eastern Brazil and placed in *Sortosa*, with which it agrees in key characters. The subgenus is thus the first caddisfly group found to have this disjunct pattern of distribution, which is known for a number of taxa in the Ephemeroptera and Plecoptera.

The larvae of the nominal subgenus are well known (Ross, 1944; Wiggins, 1977, etc.), but those of *Sortosa* are undescribed. Larvae with sev-

eral collections containing metamorphotypes that I possess are in general agreement with these descriptions. As far as is known, all larvae feed on fine particulate organic matter, which they filter from flowing water.

***Dolophilodes (Sortosa) spectabilis*, new species**

FIGURES 14, 15

This very different-appearing species is probably related to the species of the *D. spinigera* group, which all possess an elongate, lateral appendage between the tenth tergum and cercus; however, no species in this or any other group possess the elongate appendage from the basal clasper segment that is present in *D. spectabilis*.

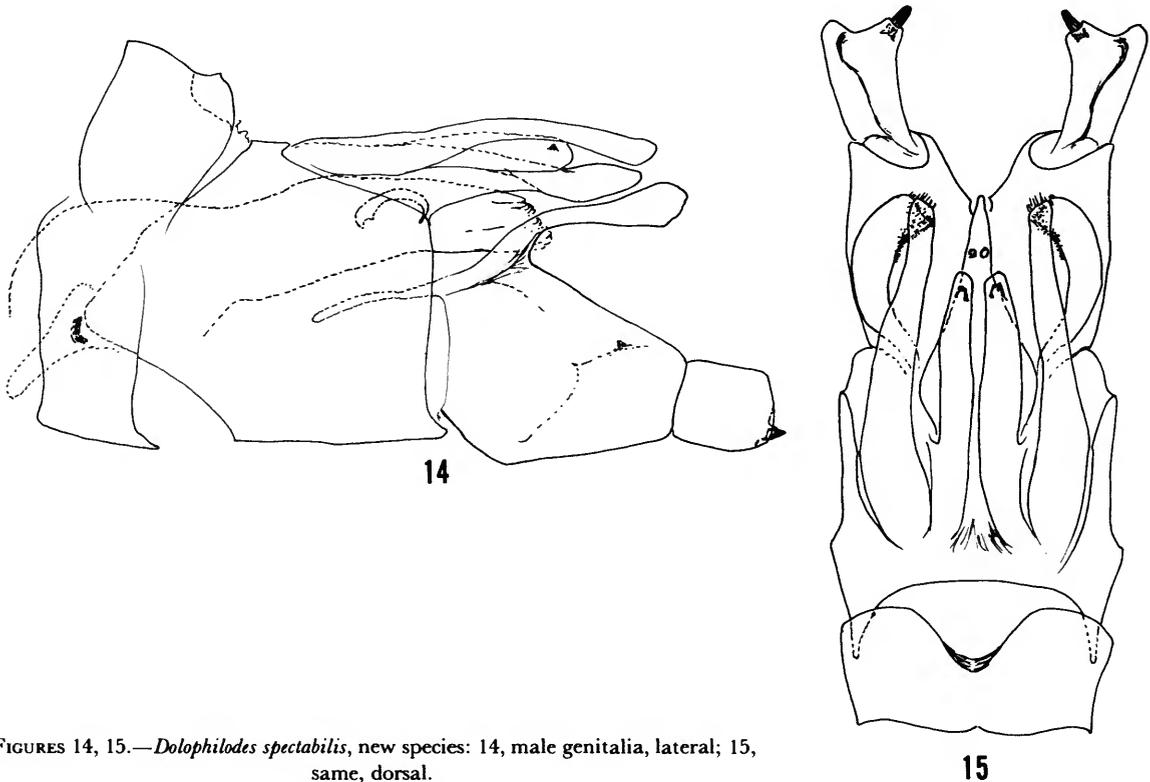
ADULT.—Length of forewing, 4.5 mm. Color brown; forewing brown with small spots of golden hair, most numerous apically. Seventh sternum slightly produced. Eighth tergum with a distinct

dorsomesal excision of posterior margin.

*Male Genitalia:* Ninth segment produced anterolaterally. Tenth tergum elongate, narrow; a distinct, straplike sclerite with a subapical point lying between the tenth tergum and cercus. Cercus slender, elongate, tapering apicad. Clasper with basal segment short, dorsal margin bearing from near base an elongate, slightly bowed appendage bearing a pad of short setae apicomesally, basal halves of basal segments of both claspers united mesoventrally; apical segment short, almost quadrate in lateral aspect, mesal face produced apically and bearing short, black, peglike setae. Aedeagus cylindrical, internally with 1 or 2 curved spines and a tubular structure basally.

MATERIAL.—*Holotype* (male): CHILE, PCIA. MALLECO, Parque Nacional Contulmo, 19 Oct 1969, Flint and Barria, USNM Type 100473.

*Paratypes:* PCIA. ARAUCO, Caramávida, 17–19 Oct 1969, Flint and Barria, 1♂, 1♀.



FIGURES 14, 15.—*Dolophilodes spectabilis*, new species: 14, male genitalia, lateral; 15, same, dorsal.

***Dolophilodes (Sortosa) ventricosta*, new species**

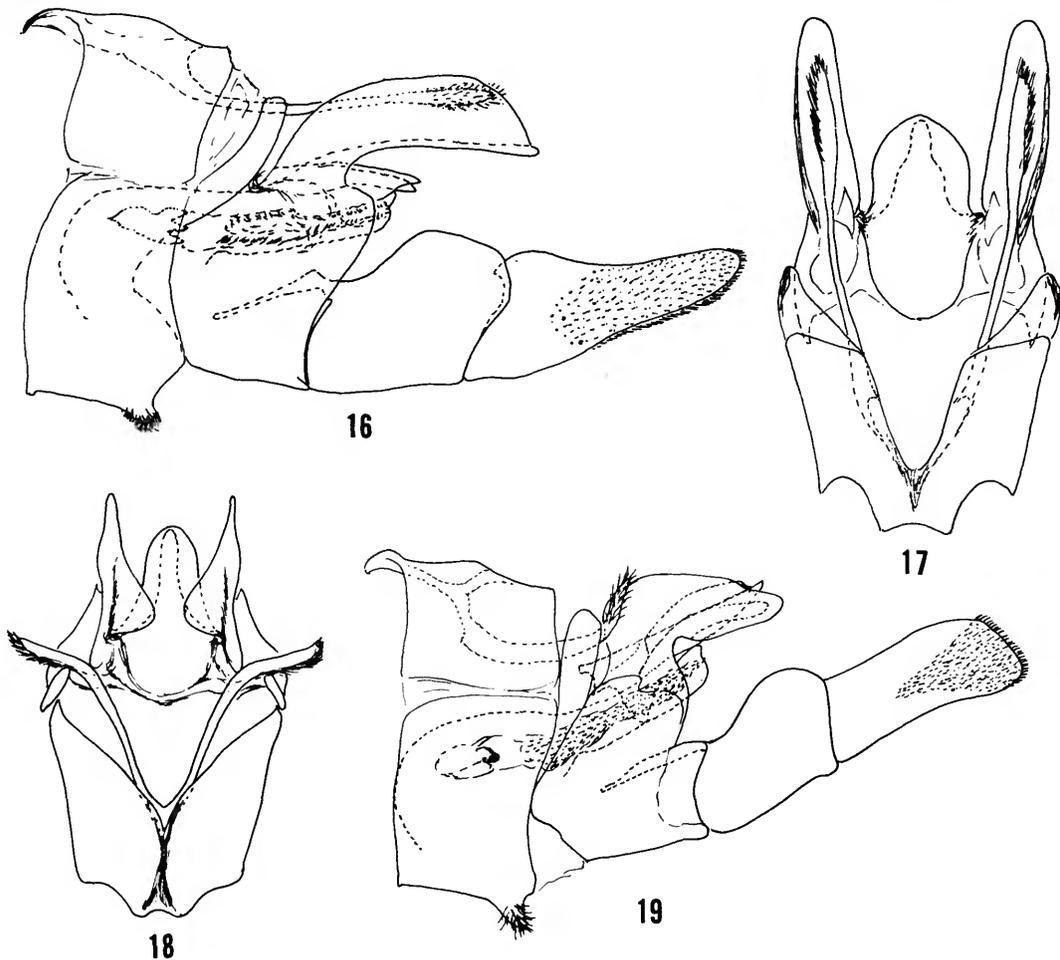
FIGURES 16, 17

The three species, *D. duplex* Schmid, *D. dupliplex*, new species, and this, form a closely related group of species. Each is recognizable by the proportional lengths and shapes of the eighth tergal processes, cerci, and claspers. In *D. ventricosta*, the eighth tergal processes are very long and arise at midlength of the tergum, the cercus is the longest of the three species and bears a ventromesal shelf, and the apical segment of the clasper

is bluntly trianguloid with a very large, dense, mesal area of peglike setae.

**ADULT.**—Length of forewing, 7.5 mm. Color in alcohol, brown. Seventh sternum with a setose, apicomasal process about 3 times as long as broad; eighth sternal process not as long as broad.

**Male Genitalia:** Eighth tergum deeply divided dorsomesally; with a pair of long, slender, apically setose processes arising at midlength. Tenth tergum consisting of a short, broad, apically rounded, dorsal flap, and beneath a narrower, more pointed flap. Cercus fused basally to ninth



FIGURES 16-19.—*Dolophilodes ventricosta*, new species: 16, male genitalia, lateral; 17, same, dorsal.  
*Dolophilodes dupliplex*, new species: 18, male genitalia, dorsal; 19, same, lateral.

segment, erect basally, angled and elongate posteriad; mesal face with a narrow, ventral shelf. Clasper with basal segment subquadrate, with apicodorsal margin slightly produced; apical segment elongate, tapering evenly to a blunt tip, mesal face with a large, densely packed area of black, peglike setae. Aedeagus internally with a small basal sclerite, beyond which is a large pouch bearing short spicules.

**MATERIAL.**—*Holotype* (male): CHILE, PCIA. NUBLE, Recinto, 800 m, 22–23 Jan 1979, D. Davis et al., USNM Type 100475.

***Dolophilodes (Sortosa) dupliplex*, new species**

FIGURES 18, 19

This species is closely related to *D. (S.) duplex* Schmid, with which it shares the long processes arising from the eighth tergum. In *D. duplex* these processes arise from the very antermost part of the tergum, but in *D. dupliplex* they arise from near the middle. There are small but noticeable differences in the cerci and tenth tergum and especially in the apical segment of the clasper. In *D. duplex* this segment tapers regularly to a narrow point, and the black, mesal, peglike setae are few in number, whereas in *D. dupliplex* the tip is broad and obliquely truncate, and the area of peglike setae is large and densely filled.

**ADULT.**—Length of forewing, 6–7 mm. Color brown, legs yellowish; forewing brown, marked with stramineous maculae with a large pale mark along anal margin. Seventh sternum with a short, setose, apicomesal process about twice as long as broad; eighth sternal process not so long as broad.

**Male Genitalia:** Eighth tergum deeply divided middorsally; with a pair of long, slender, apically setose processes arising at midlength. Ninth segment bearing a dorsolateral, thin projection. Tenth tergum consisting of a short, broad, apically rounded, dorsal flap, and beneath a narrower, more pointed flap. Cercus fused basally to ninth segment, erect basally, angled and pointed apicad; mesal face with a thin, shelflike lobe. Clasper with basal segment subquadrate, with apicodorsal margin slightly produced; apical seg-

ment elongate, tip broad and obliquely truncate, apicomesal face with a large, densely packed area of black, peglike setae. Aedeagus internally with a small basal sclerite, beyond which is a large pocket bearing short spicules.

**MATERIAL.**—*Holotype* (male): CHILE, PCIA. MAULE, Alto Tregualemu, ~20 km SE Chovellén, 500 m, 26–27 Jan 1979, D. Davis, et al., USNM Type 100474.

**Paratype:** Same data as holotype, but L.E. Peña G., 1♂.

***Dolophilodes (Sortosa) proluxa*, new species**

FIGURES 20, 21

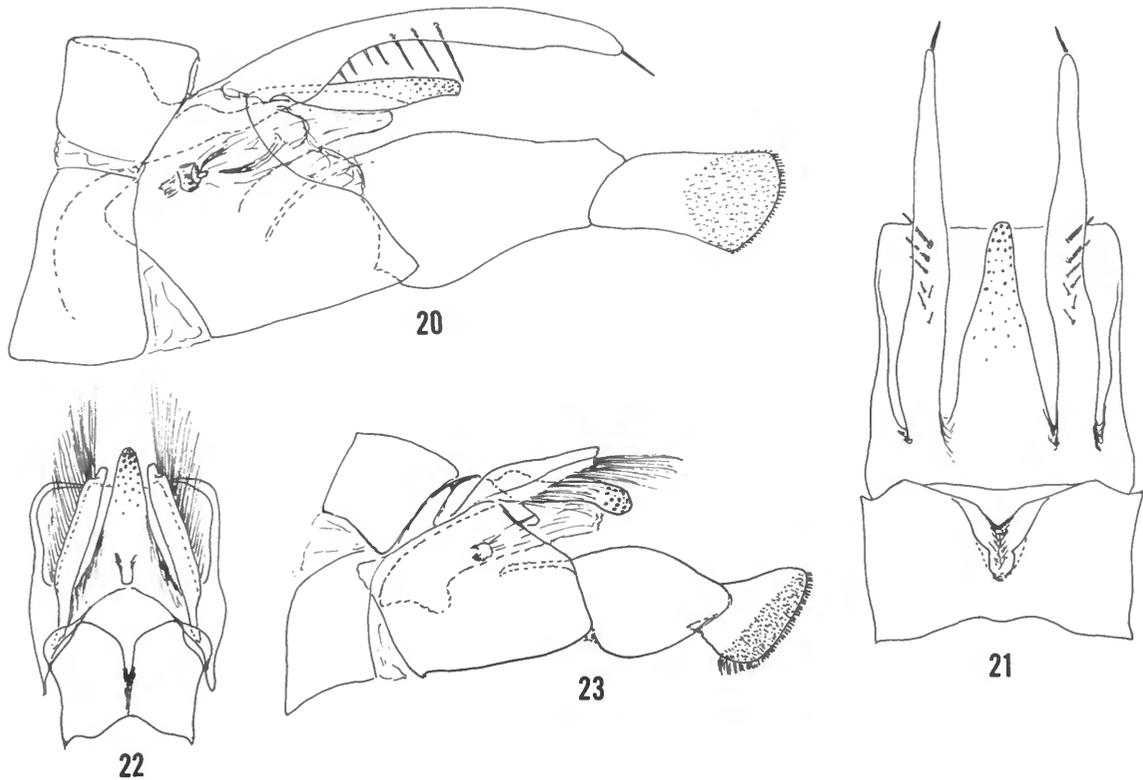
This very distinctive new species seems to be a member of the *D. elongata* group and is annectant to *D. (S.) bifida* Flint. From both it is easily distinguished by the very elongate, slender cerci, which much surpass the long tenth tergum, and by the claspers, the apical segment of which is enlarged apicad.

**ADULT.**—Length of forewing, 8.5 mm. Color dark brown, legs paler; forewing densely spotted with flecks of golden hair. No sternal process.

**Male Genitalia:** Eighth tergum with a depressed apicomesal area. Ninth segment very broad laterally. Tenth tergum very long; in dorsal aspect gradually tapering apicad, dorsal surface with many sensillae, especially apicad. Cercus almost twice as long as tenth tergum, slender, with a comb of enlarged setae mesoventrally, with a single such seta apically. Clasper elongate; apical segment 3/4 length of basal segment, enlarged apicad, apicomesally with a large, dense patch of black, peglike setae. Aedeagus with 2 internal spines, 1 twice length of other, and a darkened basal sclerite.

**MATERIAL.**—*Holotype* (male): CHILE, PCIA. MAULE, Alto Tregualemu, ~20 km SE Chovellén, 500 m, 26–27 Jan 1979, D. Davis et al., USNM Type 100476.

**Paratypes:** Same data as holotype, 3♂; Paso Garcia, ~23 km NW Cauquenes, 300 m, 29–30 Nov 1981, D.R. Davis, 1♂.



FIGURES 20-23.—*Dolophilodes prolixa*, new species: 20, male genitalia, lateral; 21, same, dorsal.  
*Dolophilodes scopula*, new species: 22, male genitalia, dorsal; 23, same, lateral.

***Dolophilodes (Sortosa) scopula*, new species**

FIGURES 22, 23

This species seems to be a highly derived relative of the preceding new species, *D. prolixa*. The cercus is more highly modified, bearing a dense brush of setae rather than a row of spines, and the apical segment of the clasper is even shorter and broader apically.

**ADULT.**—Length of forewing, 6.5 mm. Color in alcohol, brown. No sternal processes.

**Male Genitalia:** Eighth tergum deeply divided mesally but without depressed area. Ninth segment very broad laterally. Tenth tergum elongate, in dorsal aspect gradually tapering apicad, dorsal surface with many sensillae, especially apicad. Cercus a bit shorter than tenth tergum, slender, with a ventral carina bearing a brush of

long setae directed posteriad. Clasper with basal segment short, about as broad as long, almost triangular in outline; apical segment very short, much widened apicad, apicomesally with a large, dense patch of black, peglike setae. Aedeagus internally with an indistinct basal sclerite, apparently lacking spines.

**MATERIAL.**—*Holotype* (male): CHILE, PCIA. MAULE, Alto Tregualemu, ~20 km SE Chovellén, 500 m, 26-27 Jan 1979, D. Davis et al., USNM Type 100477.

**Genus *Chimarra* Stephens**

This is a tremendously large genus found in all regions of the world and is especially diverse in the hilly and mountainous tropical zones. Almost 100 species have been recorded from the Neotrop-

ics, including all the Antilles, but none have been found in the Chilean Subregion. Even so, only a small percentage of the regional species have been discovered and described.

Several subgenera have been proposed, but, lacking a worldwide revision, the systematics at this level is anything but satisfactory. I am, however, recognizing the subgenus *Curgia*, which was defined by Ross (1956) on the basis of the tenth tergum, which is undivided, sclerotized, and frequently knobbed or upturned at the apex. The typical subgenus is not further subdivided, although it too apparently contains several evolutionary lines probably deserving subgeneric status.

The larvae have been described for a number of Antillean species (Flint, 1964b, 1968b) as well as those from other regions (Wiggins, 1977, etc.). The larvae of the genus, like those of the preceding genus, construct finger-shaped, silken nets with which they secure fine particulate organic matter from the water.

### *Chimarra (Curgia) piraya*, new species

FIGURES 24-27

This species is very close to *C. brasiliiana* (Ulmer), with which it has been found. The two species may be separated with difficulty by color, *C. piraya* bearing a few or no scattered, small, silver spots on the forewing and having bright golden pubescence on the head and thorax, whereas *C. brasiliiana* has the forewing extensively marked with silver hair and a silvery-yellow pubescence of the head and thorax. The male genitalia are also very similar, *C. piraya* being recognized by the longer, more curved lateral arms and small lobate mesal brushes of the eighth tergum and by the longer apical point of the claspers.

**ADULT.**—Length of forewing, 6-8 mm. Color fuscous; head and thorax with golden pubescence; forewing with a few or no small, scattered, silver spots. Forewing without bulla in radial system; hind wing with 4 branches to Rs and 3 to M.

**Male Genitalia:** Eighth sternum narrowed ventrally; tergum with posterolateral angles produced into long, slightly curved, brush-bearing lobes, mesal face bearing a pair of low brush-bearing prominences. Ninth segment enlarged and broadly rounded anteroventrally; posteroventral keel produced as a short process. Cercus large, ovoid in outline. Tenth tergum hoodlike, slightly sigmoid in lateral aspect, tip entire. Clasper short, with a small dorsal tooth, and a longer posteroventral process. Aedeagus tubular with apicolateral margins sclerotized, apex divided middorsally; internally with a rod and ring assembly, and 2-3 black spines.

**MATERIAL.**—*Holotype* (male): ARGENTINA, PCIA. MISIONES, Arroyo Piray Mini, Rt. 17 W Dos Hermanas, 23 Nov 1973, O. S. Flint, Jr., USNM Type 100478.

*Paratypes:* Same data as holotypes, 28♂, 13♀; Arroyo Piray Guazú, N San Pedro, 22 Nov 1973, O.S. Flint, Jr., 2♂, 1♀.

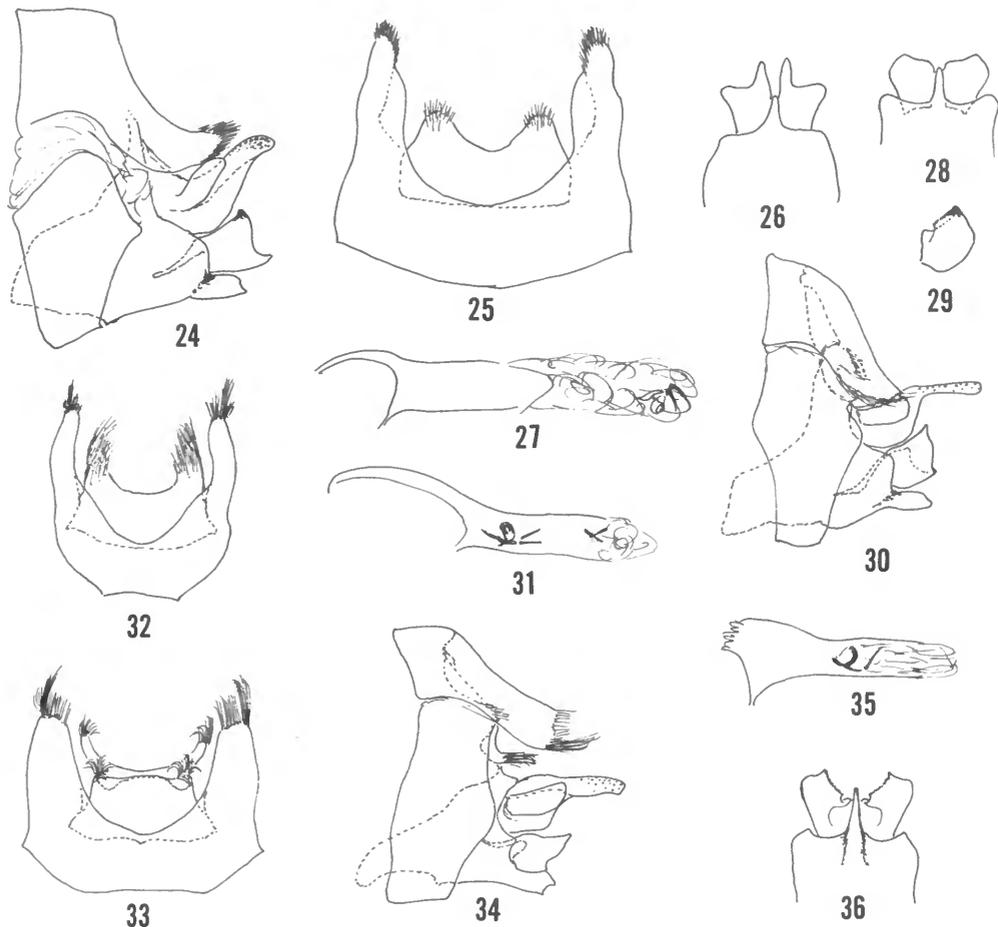
### *Chimarra (Curgia) cultellata*, new species

FIGURES 28-32

The species is another member of the *C. brasiliiana* group, probably most closely related to the preceding new species, *C. piraya*. It is quickly recognized by the tenth tergum, which, in lateral aspect, is long and slender and extends directly posteriad. In addition smaller differences are to be seen in the eighth tergum and claspers.

**ADULT.**—Length of forewing, 5 mm. Color in alcohol, brown. Forewing without a bulla in radial system; hind wing with 4 branches to Rs and 3 to M.

**Male Genitalia:** Eighth sternum narrowed ventrally; tergum with posterolateral angles produced into elongate, brush-bearing lobes, mesal face bearing a pair of small brush-bearing lobes. Ninth segment produced anteroventrally; posteroventral keel produced into short process. Cercus large, ovoid. Tenth tergum produced into a thin, posteromesal lobe that is scarcely elevated



FIGURES 24-36.—*Chimarra piraya*, new species: 24, male genitalia, lateral; 25, eighth tergum, dorsal; 26, claspers, ventral; 27, aedeagus, lateral. *Chimarra cultellata*, new species: 28, claspers, ventral; 29, clasper, posterior; 30, male genitalia, lateral; 31, aedeagus, lateral; 32, eighth tergum, dorsal. *Chimarra punctulata*, new species: 33, eighth tergum, dorsal; 34, male genitalia, lateral; 35, aedeagus, lateral; 36, claspers, ventral.

apicad. Clasper short, with a small, apicodorsal tooth; not produced posteromesally, with an oblique darkened ridge on posterior face. Aedeagus tubular, inflated basally; internally with a small rod and ring assembly, and 2 pairs of short, black spines.

**MATERIAL.**—*Holotype* (male): BRAZIL, EDO. SANTA CATARINA, Nova Teutonia (27°11'S, 52°23'W), 300-500 m, Jan 1963, F. Plaumann, USNM Type 100479.

### *Chimarra (Curgia) punctulata*, new species

FIGURES 33-36

At first sight, the genitalia of this species appears identical to that of *C. cultellata*, but closer study of the eighth tergum shows a fundamental difference. In *C. cultellata* there is only a single pair of inner brushes, but in *C. punctulata* each brush is divided into well-separated brushes as it is in *C. parana* Flint. In addition smaller differ-

ences are seen in the shapes of the lateral lobes of the eighth tergum, claspers, and posteromesal keel of the ninth sternum.

**ADULT.**—Length of forewing, 5–6.5 mm. Color dark brown; body, bases of legs, and antennae light brown; head and pronotum with stramineous hair; forewing with many scattered, mostly small, spots of stramineous hair. Forewing without bulla in radial system; hind wing with 4 branches to Rs, 3 to M.

**Male Genitalia:** Eighth sternum narrowed ventrally; tergum with posterolateral angles produced into elongate, setose lobes, truncate apically; mesal face bearing 2 pairs of setate lobes. Ninth segment narrowly produced anteroventrally; posteromesal keel produced into a truncate process. Cercus large, ovoid. Tenth tergum produced into a thin posteromesal lobe that is scarcely elevated posteriad. Clasper short, with a small apicodorsal tooth; somewhat produced posterolaterally in ventral aspect, with an oblique, darkened, ridge on posterior face. Aedeagus tubular, inflated basally; internally with a narrow rod and ring assembly, and 1 or 2 short, dark, internal spines.

**MATERIAL.**—*Holotype* (male): BRAZIL, EDO. RIO DE JANEIRO, Mun. Rio Claro, Rio Pirai, 8 Apr 1977, C.M. and O.S. Flint, Jr., USP.

*Paratypes:* Same data as holotype, 3♂, 1♀; EDO. SANTA CATARINA, Nova Teutonia (27°11'S, 52°23'W), 300–500 m, Oct 1963, F. Plaumann, 1♂.

### *Chimarra (Curgia) ypsilon*, new species

FIGURES 37–40

Although in appearance this species and *C. hyooides*, new species, are very similar, the male genitalia are quite different. In *C. ypsilon* the eighth tergum is scarcely protuberant, the tenth tergum much shorter and broader, the claspers shorter and in ventral aspect longest mesally, and the aedeagus contains a quantity of small spines.

**ADULT.**—Length of forewing, 6–8 mm. Color generally fuscous; head and thorax with golden pubescence; forewing extensively marked with

golden hair especially basally, and with a Y-shaped mark from costal margin at stigma. Forewing without bulla in radial system, hind wing with 4 branches to Rs and 3 to M.

**Male Genitalia:** Eighth sternum slightly narrowed ventrally; tergum slightly produced dorsally into a pair of low lobes submesally. Ninth segment slightly produced anteroventrally, dorsomesally produced into a small, erect dorsal process; posteroventral keel developed as a short lobe. Cercus large, ovoid in outline. Tenth tergum erect, hoodlike, broad in lateral aspect. Clasper slightly longer than broad, with a small apicomeral tooth dorsally; in ventral aspect longest mesally. Aedeagus tubular with apicolateral margins sclerotized, apex divided middorsally; internally with a rod and ring assembly, and about 22 short, black spines.

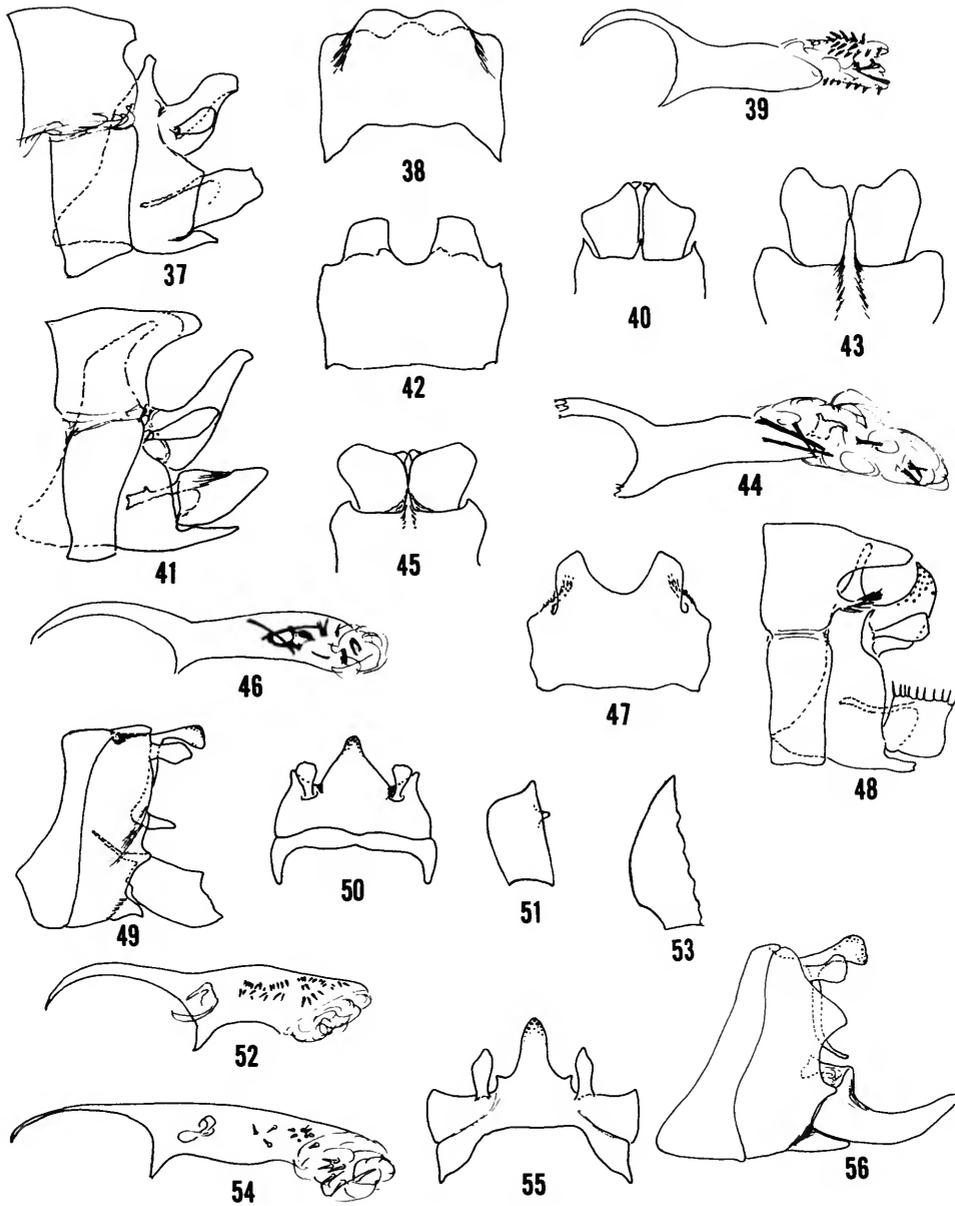
**MATERIAL.**—*Holotype* (male): ARGENTINA, PCIA. MISIONES, Puerto Libertad, 24 Nov 1973, O.S. Flint, Jr., USNM Type 100480.

*Paratypes:* Same data as holotype, 2♀; Arroyo Piray Guazú, N San Pedro, 22 Nov 1973, O.S. Flint, Jr., 3♂; Puerto Bosetti, Río Uruguay, Jan 1964, J.M. Viana, 1♂ (MACN). PARAGUAY, DPTO. ALTO PARANÁ, Salto del Monday, near Puerto Presidente Franco, 26 Nov 1973, O.S. Flint, Jr., 8♂, 5♀. BRAZIL, EDO. SANTA CATARINA, Nova Teutonia (27°11'S, 52°23'W), 300–500 m, Sep 1963, Fritz Plaumann, 1♂; same, but Oct 1963, 1♂; same, but Oct 1964, 19♂, 27♀; same, but 10 Oct 1964, 4♂, 5♀; same, but 11 Oct 1964, 3♂, 6♀; same, but Jan 1964, 1♂; same, but Feb 1964, 3♂; same, but 17 Sep 1939, 2♂ (MCZ); same, but 4 Oct 1939, 2♂ (MCZ).

### *Chimarra (Curgia) hyooides*, new species

FIGURES 41–44

This species, *C. catarinensis*, new species, and *C. ypsilon*, new species, are closely related. In appearance, *C. ypsilon* and *C. hyooides* are very similar, with *C. hyooides* usually having the golden spots much smaller with the large basal mark broken into two distinct spots. The male genitalia show



FIGURES 37-56.—*Chimarra ypsilon*, new species: 37, male genitalia, lateral; 38, eighth tergum, dorsal; 39, aedeagus, lateral; 40, claspers, ventral. *Chimarra hyooides*, new species: 41, male genitalia, lateral; 42, eighth tergum, dorsal; 43, claspers, ventral; 44, aedeagus, lateral. *Chimarra catarinensis*, new species: 45, claspers, ventral; 46, aedeagus, lateral; 47, eighth tergum, dorsal; 48, male genitalia, lateral. *Chimarra plaumanni*, new species: 49, male genitalia, lateral; 50, ninth and tenth terga, dorsal; 51, clasper, ventral; 52, aedeagus, lateral. *Chimarra conica*, new species: 53, clasper, ventral; 54, aedeagus, lateral; 55, ninth and tenth terga, dorsal; 56, male genitalia, lateral.

a closer relationship to *C. catarinensis*, however, but the eighth tergum lacks the small ventrolateral brushes, the tenth tergum is only semi-erect and not pointed, the clasper is distinctly elongate dorsally, and the apicomeral process of the ninth sternum is longer and pointed.

**ADULT.**—Length of forewing, 5–6 mm. Color generally fuscous, head and thorax with golden hair, forewing marked with golden spots, generally rather small, with basal mark divided into 2 longitudinal spots, with narrow Y-shaped mark from stigma. Forewing without bulla in radial system; hind wing with 4 branches to Rs and 3 to M.

**Male Genitalia:** Eighth sternum slightly narrowed ventrally; tergum produced posteriorly into 2 large lobes separated mesally by a deep U-shaped excision. Ninth segment produced anteroventrally; dorsomesally produced into a slender process directed posteriad; posteroventral keel produced posteriad into a long, slender process. Tenth tergum long, narrow, semi-erect. Clasper elongate, parallel-sided, apicodorsal angle longest in lateral aspect, in ventral aspect with apicolateral angle longest. Aedeagus tubular with apicolateral margin sclerotized, apex divided mid-dorsally; internally with a rod and ring assembly, and a pair of long, slender spines, and 4 short, black spines.

**MATERIAL.**—*Holotype* (male): ARGENTINA, PCIA. MISIONES, Río Iguazú, Camp Nañdu, 25 Nov 1973, O.S. Flint, Jr., USNM Type 100481.

*Paratypes:* Arroyo Piray Mini, Rt. 17 W Dos Hermanas, 23 Nov 1973, O.S. Flint, Jr., 1♂. PARAGUAY, DPTO. ALTO PARANÁ, Salto del Monday, near Puerto Presidente Franco, 26 Nov 1973, O.S. Flint, Jr., 23♂. DPTO. AMAMBAY, Río Aquidabán, Cerro Corá, 29 Nov 1973, O.S. Flint, Jr., 6♂, 5♀; 2 km S Cerro Corá, 28 Nov 1973, O.S. Flint, Jr., 1♂. BRAZIL, EDO. SANTA CATARINA, Nova Teutonia, (27°11'S, 52°23'W), 300–500 m, Oct 1964, Fritz Plaumann, 2♂; same, but Sep 1964, 1♂. URUGUAY, DPTO. ARTIGAS, Río Cuareim, Sepulturas, 15 Jan 1952, C.S. Carbonell, 1♂ (FHCU).

### *Chimarra (Curgia) catarinensis*, new species

FIGURES 45–48

This is very closely related to *C. hyooides*, with which it has been collected in Nova Teutonia. It is to be distinguished from the latter by the small ventrolateral brushes of the eighth tergum, the recurved tip of the tenth tergum, the square lateral aspect of the clasper, and the short posteromesal process of the ninth sternum.

**ADULT.**—Length of forewing, 5.5 mm. Color in alcohol, brown. Forewing without a bulla in the radial system; hind wing with 4 branches to Rs and 3 to M.

**Male Genitalia:** Eighth sternum nearly parallel-sided; tergum produced posteriad into large lobes separated mesally by a deep V-shaped mesal excision, with a small ventrolateral hirsute brush. Ninth segment produced anteroventrally; dorsomesally produced into a slender, erect, mesal process; posteroventral keel developed into a short, truncate process. Cercus large, ovoid in outline. Tenth tergum erect, with apex produced into a point anteriorly. Clasper short, square in lateral aspect; in ventral aspect with a small apicomeral lobe. Aedeagus tubular, inflated basally; internally with a short rod and ring assembly, 2 long, slender spines, and 4 groups of 1 to 3 short spines.

**MATERIAL.**—*Holotype* (male): BRAZIL, EDO. SANTA CATARINA, Nova Teutonia (27°11'S, 52°23'W), 300–500 m, Jan 1963, F. Plaumann, USNM, Type 100482.

*Paratypes:* Same data as holotype, but Feb 1964, 2♂.

### *Chimarra (Curgia) plaumanni*, new species

FIGURES 49–52

This species is somewhat intermediate between *C. moselyi* Ross and *C. conica*, new species, in that the shape of the clasper is more like that of *C. moselyi*, but the shape of the tenth tergum is more like that of *C. conica*. *Chimarra plaumanni* is distinguished from both by the tenth tergum, which in

dorsal aspect is concave laterally with a small basolateral point, and by the clasper, which is broader laterally with a dorsomesal point and obliquely truncate apically.

**ADULT.**—Length of forewing, 7 mm. Color jet black in entirety. Forewing without a bulla in radial system; hind wing with 4 branches to Rs, a closed discal cell, and 3 branches to M.

**Male Genitalia:** Eighth sternum narrowed ventrally; tergum unmodified. Ninth segment enlarged anteroventrally; posterolateral margin angled sharply mesad; posteroventral keel pointed apically. Cercus enlarged and rounded apically. Tenth tergum hoodlike, enlarged apically in lateral aspect; in dorsal aspect with lateral margins concave, with a distinct basolateral point; venter laterally developed into a long ventral projection, apex of which is angled posteriad above clasper. Clasper slightly elongate, broad in lateral aspect, with a distinct dorsomesal tooth at midlength; in ventral aspect with apex obliquely truncate. Aedeagus tubular with apicodorsal surface strongly sclerotized, ventral margin short; internally with a small rod and ring assembly and over 40 small, black spines.

**MATERIAL.**—*Holotype* (male): BRAZIL, EDO. SANTA CATARINA, Nova Teutonia (27°11'S, 52°23'W), 300–500 m, 19 Jan 1964, Fritz Plaumann, USNM Type 100483.

### *Chimarra (Curgia) conica*, new species

FIGURES 53–56

This species is clearly related to *C. moselyi* Ross and is undoubtedly the species recorded from Misiones, Argentina, by Ulmer (1913) as *C. morio* Burmeister. This and *C. plaumanni* are closely related, with the shape of the claspers offering the most distinctive differences. In *C. conica* the claspers are longer, narrower (in lateral aspect), concave upwardly, and taper to an apical point in ventral aspect.

**ADULT.**—Length of forewing, 6–7.5 mm. Color jet black in entirety. Forewing without bulla in radial system; hind wing with 4 branches to Rs, a closed discal cell, and 3 branches to M.

**Male Genitalia:** Eighth sternum narrowed ventrally; tergum slightly produced posteriad mid-dorsally. Ninth segment enlarged anteroventrally; posterolateral margin with a small lobe; posteroventral keel pointed apically. Cercus enlarged and rounded apically. Tenth tergum hoodlike, enlarged apicad in lateral aspect, in dorsal aspect evenly tapering to an acute posteromesal point; venter laterally produced into a long, slender ventral process, the apex of which is angled posteriad above clasper. Clasper elongate, concave dorsally, tapering to a pointed apex in ventral aspect. Aedeagus with apicodorsal surface strongly sclerotized; internally with a small, broad, rod and ring assembly, and 15–20 small, black spines.

**MATERIAL.**—*Holotype* (male): ARGENTINA, PCIA. MISIONES, Arroyo Piray Mini, Rt. 17 W Dos Hermanas, 23 Nov 1973, O.S. Flint, Jr., USNM Type 100484.

**Paratypes:** Same data as holotype, 4♂, 6♀; Arroyo Piray Guazú, N San Pedro, 22 Nov 1973, O.S. Flint, Jr., 2♂.

### Family STENOPSYCHIDAE

This is a family of only three genera, *Stenopsyche* being widely distributed in the Oriental Region, *Stenopsychodes* in the Australian Region, and *Pseudostenopsyche* in the Chilean Subregion. The family is thus one with an apparently gondwanan origin.

The immature stages of several species of *Stenopsyche* have been described (Swegman and Coffman, 1980; Lepneva, 1970) but are not described in the other two genera. The larval habits are unknown.

### Genus *Pseudostenopsyche* Döhler

This genus of two previously described species is limited to the Chilean Subregion, where it is very rarely encountered.

Nothing is known of the biology and habits of the immature stages of this genus.

*Pseudostenopsyche davisorum*, new species

FIGURES 57, 58, 338

The species is closely related to *P. gracilis* (Schmid) but is easily separated by the form of the male genitalia. In *P. gracilis* the clasper is inserted deeply within the ninth segment, which is very broad basally, the subapical process of the clasper is more anterior in position and is slender throughout, and the internal spines of the aedeagus are very long and slender.

ADULT.—Length of forewing, ♂ 11–12 mm, ♀ 14–15 mm. Color brown, legs and antennae more golden; forewing flecked with darker brown, with incomplete transverse dark bands, one subterminally, the other at midlength, anal region distinctly paler with dark margins; female more golden brown in general.

*Male Genitalia:* Ninth segment with anterior margin angular; posterior margin produced into a rounded lobe laterally of clasper. Tenth tergum long, tapering to a narrowly rounded tip; apex narrowly divided in dorsal aspect. Cercus long, slender. Clasper long, slender, terete, inserted on posteroventral margin of ninth sternum; with a subapical, mesal process, broad basally, tapering to a sharp mesal point. Aedeagus tubular, inter-

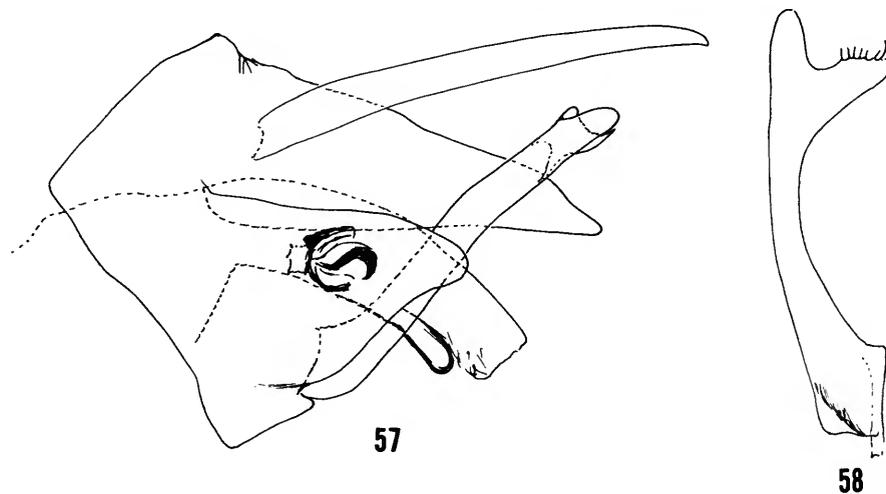
nally with a complex sclerite bearing a pair of short, hooked, lateral spines; apex with a ventral curled lip.

*MATERIAL.*—*Holotype* (male): CHILE, PCIA. MAULE, Alto Tregualemu, ~20 km SE Chovellén, 500 m, 26–27 Jan 1979, D. Davis et al., USNM Type 100485.

*Paratypes:* Same data as holotype, 5♂, 4♀; same, but 27 Jan 1979, L.E. Peña G., 2♀; same, but 27–28 Jan 1981, 1♂; same, but 1–3 Dec 1981, D.R. Davis, 2♂; La Arboleda, W Cauquenes, 200–250 m, 27–28 Jan 1981, L.E. Peña G., 1♂; Forel Carrizalillo, 250 m, 30 Jan–5 Feb 1981, L.E. Peña G., 1♂; Cayurranquil, W Cauquenes, 400 m, 23–31 Jan 1981, L.E. Peña G., 1♀. PCIA. CONCEPCIÓN, Concepción, 25 Jan 1962, 1♂.

## Family PSYCHOMYIIDAE

The family, which is being subjected to piecemeal dismemberment, is found in all regions of the world. It consists of a single phyletic line, which is divided into a series of more or less discrete units (especially so when one looks at only a limited area). As a consequence, various authors will recognize anywhere from one to six or eight families, depending on their viewpoint.



FIGURES 57, 58.—*Pseudostenopsyche davisorum*, new species: 57, male genitalia, lateral; 58, clasper, posteroventral.

Until this entire complex has been carefully analyzed on a sister-group basis using data from all life stages, I will continue to recognize only one family, which takes the oldest name, Psychomyiidae. If one were to divide the family into its smallest levels, then *Austrotinodes* would be placed in the Ecnomidae, *Polycentropus*, *Polyplectropus*, *Cyrnellus*, and *Cernotina* in the Polycentropodidae, and *Xiphocentron* in the Xiphocentronidae.

The larvae are all basically silken-retreat makers living in lotic habitats. Some produce a complex trap-net, others a rather amorphous silken tangle, and others a long silken tube or shelter. Some are apparently rather predaceous, trapping small insects and microcrustacea, but most are detritivores.

#### Genus *Austrotinodes* Schmid

The genus is restricted to the Neotropical Region. It is divided into two units, one with a reduced hind wing, which is found in the Brazilian Subregion, and the other with an unmodified hind wing, which is restricted to the Chilean Subregion (Flint, 1973). Three species were previously known from the Brazilian element, and eight in the Chilean (plus two unplaced taxa of Navás).

The immature stages of *A. recta* Schmid were described by Flint (1973). Adult collections are almost exclusively made adjacent to small, fast-flowing streams. Nothing more is known of the habits of the species.

#### *Austrotinodes paraguayensis*, new species

FIGURES 59-61

This is the first species to be described from South America outside of Chile, although several are known from Central America. The relationships are clearly with the Central American group of species and not the Chilean; in fact it is very similar to *A. panamensis* Flint. From this species it is easily differentiated by the shape of the fused

claspers and their dorsal rod, the structure of the aedeagus, and the basomesal rod of the cercus.

ADULT.—Length of forewing, 4 mm. Color brown, antennae stramineous; forewing brown with many silvery scales arranged to leave a dark margin costally and in spots around apex.

*Male Genitalia:* Ninth segment deeply divided laterally, ventral portion prolonged posteriad. Tenth tergum consisting of a pair of trianguloid lobes dorsally between bases of cerci. Cercus elongate, nearly parallel-sided and rounded apically; basomesal process long, thin, enlarged apically and bearing 3 large setae and a short process. Claspers fused mesally, darkened along posteromesal surface, with a thin, rounded lateral lobe; basodorsal rod dark, bifurcate apically. Aedeagus with a rodlike pair of basodorsal processes each tipped by an enlarged seta; with a pair of long, thin dorsomesal plates, each bearing apicolaterally an enlarged seta; ventrally with a single, black, spine, sigmoid in lateral aspect.

MATERIAL.—*Holotype* (male): PARAGUAY, DPTO. PARAGUARÍ, Colonia Piraretá, 25 Dec 1971, L.E. Peña G., USNM Type 100486.

*Paratype:* Same data as holotype, 1♀.

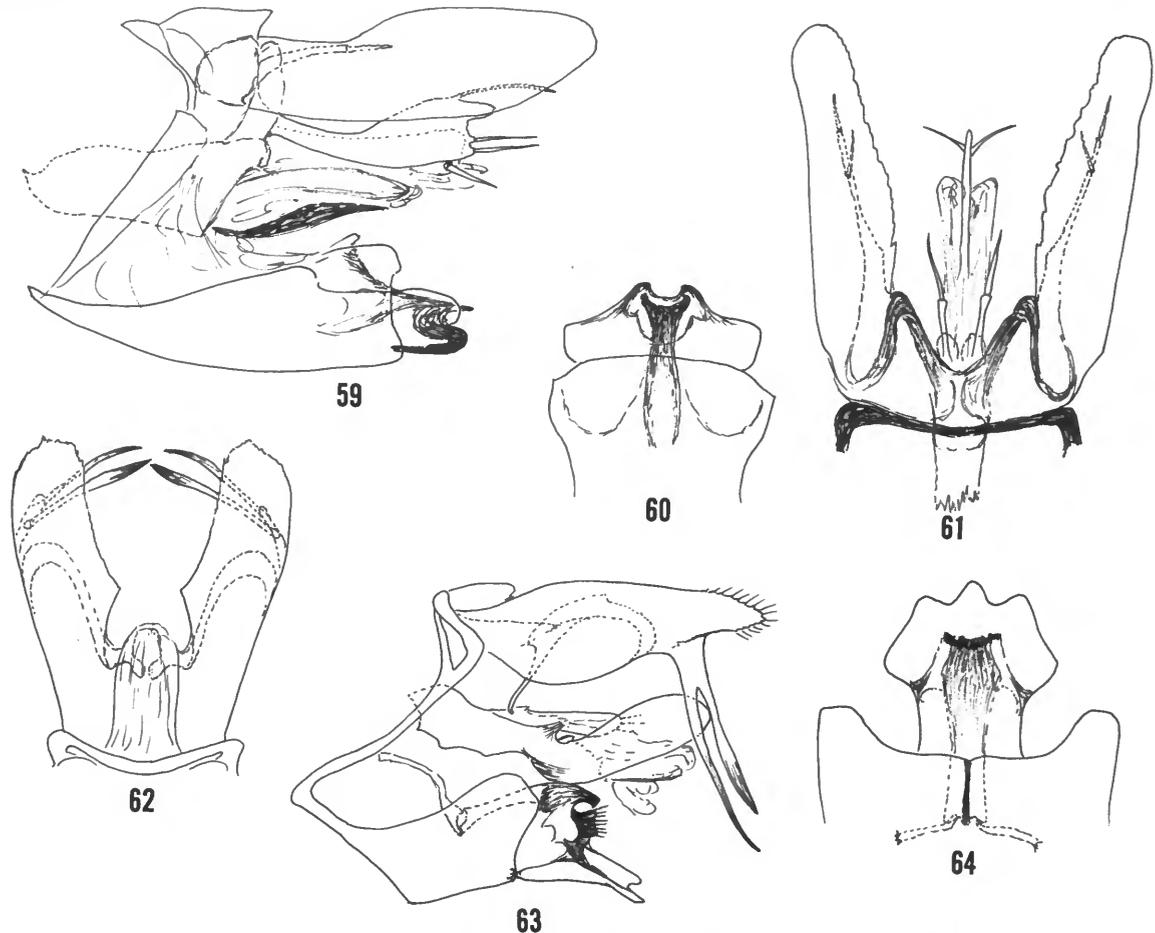
#### *Austrotinodes picada*, new species

FIGURES 62-64

This rather bizarre species bears little resemblance to any of the described species of the genus. The two very long ventral processes from each cercus and the strange configuration of the claspers are both unique.

ADULT.—Length of forewing, 6 mm. Color dark brown, legs and venter paler; forewing uniformly dark brown.

*Male Genitalia:* Ninth segment deeply divided laterally, ventral section prolonged posteriad. Tenth tergum consisting of a pair of short, semi-membranous lobes between the cerci. Cercus with dorsolateral lobe elongate, tip serrate, dorsomesal margin serrulate; with two very long subapical processes arising from a common base on ventral margin; basomesal process slender, directed ven-



FIGURES 59-64.—*Austrotinodes paraguayensis*, new species: 59, male genitalia, lateral; 60, claspers, ventral; 61, cerci and tenth tergum, dorsal. *Austrotinodes picada*, new species: 62, cerci and tenth tergum, dorsal; 63, male genitalia, lateral; 64, claspers, ventral.

trad onto dorsum of aedeagus. Claspers fused mesally; with a small mesoventral lobe and small apicolateral lobes, with a dark, truncate, dorsomesal lobe; basodorsal rod slender, apex truncate, darkened. Aedeagus with a tubular base, a pair of thin, slender, dorsomesal plates, a pair of larger, thin, basolateral plates, and a membranous central sac.

**MATERIAL.**—*Holotype* (male): CHILE, PCIA. CHILOE, Huequetrumao, 22 km N Quellon, 26-28 Dec 1981, L.E. Peña G., USNM Type 100572.

*Paratype*: PCIA. OSORNO, La Picada (W Volcán

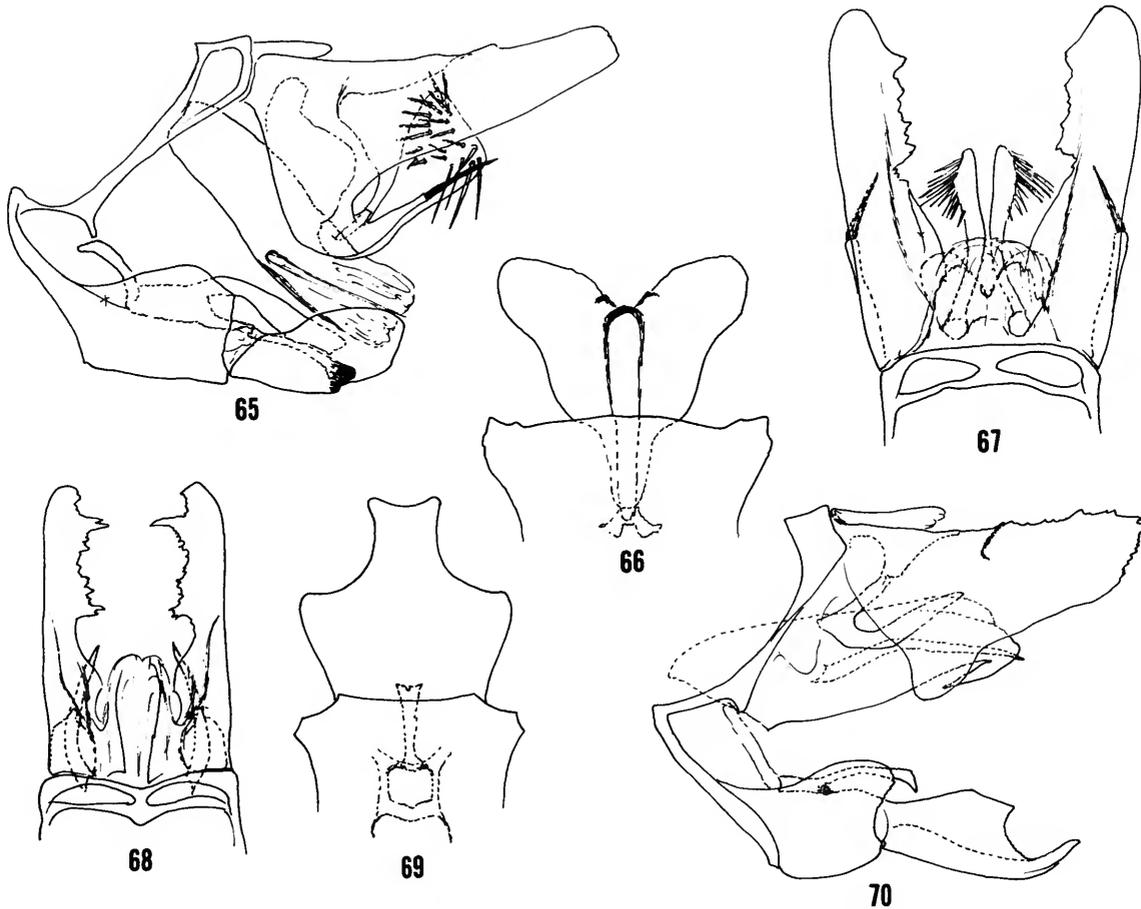
Osorno), 600 m, 12-22 Jan 1980, L.E. Peña G., 1♂.

#### *Austrotinodes armiger*, new species

FIGURES 65-67

*Austrotinodes angustior*.—Schmid, 1958:202 [not Schmid, 1955].

This species is closely related to *A. angustior* Schmid (1955), from which it differs only in the cerci. In *A. armiger* the basoventral process is short



FIGURES 65-70.—*Austrotinodes armiger*, new species: 65, male genitalia, lateral; 66, claspers, ventral; 67, cerci and tenth tergum, dorsal. *Austrotinodes recurvatus*, new species: 68, cerci and tenth tergum, dorsal; 69, claspers, ventral; 70, male genitalia, lateral.

and straight with the apical seta as long as the process, and the mesal process is broadly triangular apically and heavily armored with stout spines.

**ADULT.**—Length of forewing, 5–6 mm. Color uniformly dark brown; forewing uniformly dark brown.

**Male Genitalia:** Ninth segment deeply divided laterally, ventral section prolonged posteriad. Tenth tergum consisting of a pair of small, semi-membranous lobes between cerci. Cercus with dorsolateral lobe elongate, tip rounded, apical half of dorsomesal margin serrate; with a short,

semi-erect basoventral process bearing a stout apical seta as long as process; mesal process arising from venter, as long as basoventral process and seta, expanded apicad and bearing many stout setae on lateral face. Claspers fused mesally; darkened apicomesally with thin dorsolateral lobes; basodorsal rod long, slender, not modified apically. Aedeagus tubular, apicoventral margin sclerotized.

**MATERIAL.**—*Holotype* (male): CHILE, PCIA. MALLECO, Cabrería, Cordillera Nahuelbuta, 1100 m, 15–20 Jan 1977, L.E. Peña G., USNM Type 100487.

*Paratype:* PCIA. MAULE, Chacay, 11 Nov 1953, L.E. Peña G., 1♂. PCIA. MALLECO, near Los Gringos Camp, 1300 m, Nahuelbuta Nat. Park, 6–11 Jan 1982, D.R. Davis, 1♂.

#### *Austrotinodes recurvatus*, new species

FIGURES 68–70

Although clearly related to *A. triangularis* Schmid, this species is easily distinguished by the cerci, claspers, and aedeagus. The cercus bears a strong, basomesal hook but no convoluted lobe from the ventral margin, the claspers are much shorter with differently shaped lobes, and the lateral plate of the aedeagus bears a sharply recurved apicoventral hook.

**ADULT.**—Length of forewing, 4.5 mm. Color in alcohol, uniformly brown.

**Male Genitalia:** Ninth segment deeply divided laterally, ventral section prolonged posteriad. Tenth tergum consisting of a pair of short, semi-membranous lobes between cerci. Cercus with dorsolateral lobe elongate, broadly rounded apically, with ventral margin expanded basally; basomesal process semi-erect, rather broad, pointed apically. Claspers fused mesally, without darkened areas; elongate, produced posteromesally with small lateral lobes; basodorsal rod slender, apex decurved, shallowly bifid. Aedeagus tubular, with a pair of long, internal spines, and lateral plates ending ventrally in a sharply recurved hook.

**MATERIAL.**—*Holotype* (male): CHILE, PCIA. MAULE, Alto Tregualemu, ~20 km SE Chovellén, 500 m, 26–27 Jan 1979, D. Davis et al., USNM Type 100488.

#### Genus *Polycentropus* Curtis

Species have been referred to this genus from all regions of the world, as well as from Baltic amber. The genus is badly in need of a rigorous phylogenetic analysis to determine if some of the proposed generic segregates are truly monophyletic. Species are found in all areas of the Neotropical Region including the West Indies. The

two species here described belong to the *P. obtusus* group, which is limited to the Chilean Subregion. Other groups, however, are found in most other parts of the Neotropics, but the genus seems to be lacking from the major, lowland, river basins of South America.

Larvae of several West Indian (Flint, 1964b, 1968a), North American (Ross, 1944; Wiggins, 1977), and exotic species have been described. They generally construct silken catch nets and seem rather strongly predatory in nature, although they also ingest much detrital material.

#### *Polycentropus valdiviensis*, new species

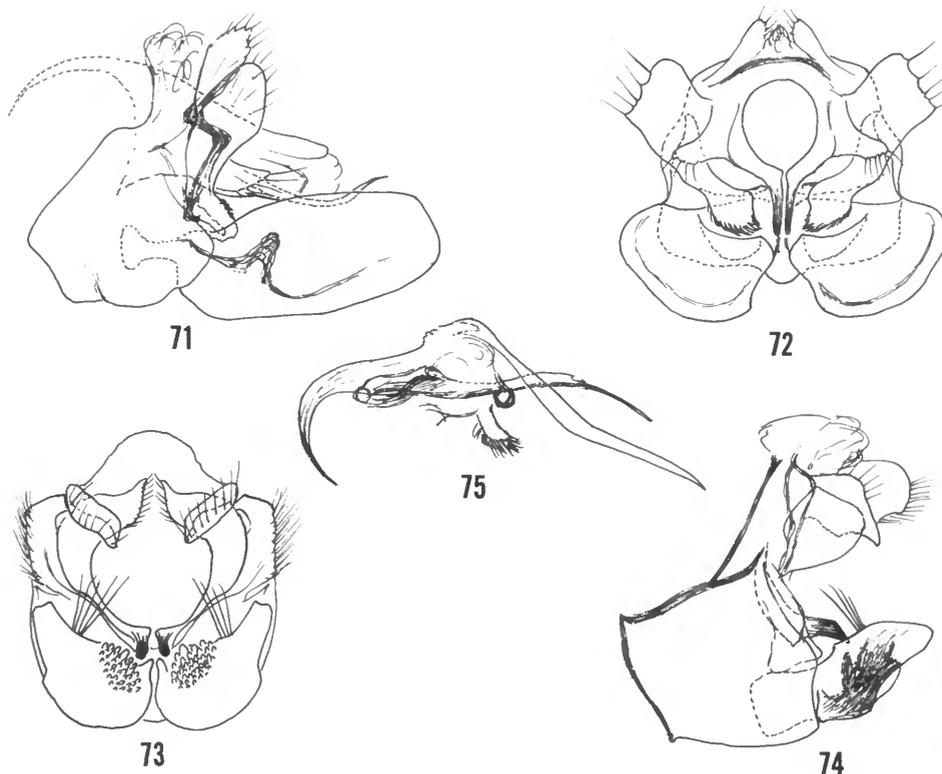
FIGURES 71, 72

This species clearly belongs to the *P. obtusus* group of species, although it should be placed in its own subgroup. The elongate, ovoid clasper with its basomesal pocket, the spinulose ventral lobe of the cercus, and the presence of only a single pair of spines in the aedeagus are all unique within the group.

**ADULT.**—Length of forewing, 7–9 mm. Color pale brown, antennae and legs stramineous, head and thorax mesally with golden and laterally with brown hair; forewing brown with many golden flecks tending to be aligned in oblique bands.

**Male Genitalia:** Ninth sternum produced and obtusely angled anterolaterally. Tenth tergum membranous mesally, with erect lateral sclerites. Cercus with dorsolateral portion forming a large, flaplike lobe; ventral lobe low, rounded apically, with many small spines. A sclerotized ring mesad of cerci encircling aedeagus, divided ventrally and produced into a pair of long slender processes. Clasper elongate, oval in outline in lateral aspect, with dorsomesal face forming a shallow pocket into which the ventral lobe of the cercus fits. Aedeagus apically bearing a pair of slender spines, which are forcipate in dorsal aspect.

**MATERIAL.**—*Holotype* (male): CHILE, PCIA. VALDIVIA, S Valdivia, 23 Oct 1969, Flint and Barria, USNM Type 100489.



FIGURES 71-75.—*Polycentropus valdiviensis*, new species: 71, male genitalia, lateral; 72, same, posterior. *Polycentropus tuberculatus*, new species: 73, male genitalia, posterior; 74, same, lateral; 75, aedeagus, lateral.

*Paratypes*: Same data as holotype, 9♂. PCIA. OSORNO, Río Rahue, 20 Oct 1969, Flint and Barria, 7♂, 1♀.

***Polycentropus tuberculatus*, new species**

FIGURES 73-75

The species is a typical member of the *P. obtusus* group, closest to *P. aspinosus* Schmid. The primary differences are in the ventral processes of the sclerotized ring surrounding the aedeagus, which are quite long and deeply divided on the midline, and in the clasper, which is semi-erect and bears a very small mesal lobe flanked laterally by a cluster of peculiar, short, spatulate setae.

ADULT.—Length of forewing, ♂ 8 mm, ♀ 10

mm. Color dark brown, legs, venter, and antennae paler, head and thorax mesally with stramineous hair; forewing dark brown, contrastingly spotted with patches of stramineous hair, with one particularly large spot on anal margin at midlength.

*Male Genitalia*: Ninth segment produced and sharply angled anterolaterally. Tenth tergum membranous mesally, with lateral sclerites densely hairy on inner face. Cercus with a rounded dorsolateral lobe, with dorsomesal lobe slightly produced apicoventrally; mesoventral lobe developed as a flat plate beneath sclerotized ring. A sclerotized ring surrounding aedeagus, produced posteriad ventromesally into an elongate lobe, the tip of which is deeply divided. Clasper short, semi-erect; mesal face with a small,

erect, basal process, flanked laterally by a cluster of short, blunt setae, and a few erect, long, spinous setae. Aedeagus with a pair of apicoventral, setose lobes, and dorsolaterally very long, slender, decurved processes; mesally with a long, slender, pointed process arising from a tubular base.

**MATERIAL.**—*Holotype* (male): CHILE, PCIA. MAULE, Alto Tregualemu, ~20 km SE Chovellén, 500 m, 26–27 Jan 1979, D. Davis et al., USNM Type 100490.

*Paratypes*: Same data as holotype, 6♂, 3♀.

### Genus *Polyplectropus* Ulmer

The genus has been recorded from the more tropical areas of the New World and the Old World. Currently I recognize about 20 species of the genus in the New World. Species are found from the southwestern United States south to northern Argentina, including the Lesser Antilles. It is lacking in the Greater Antilles and the Chilean Subregion.

Larvae of a few New World species are described (Flint, 1968b; Wiggins, 1977). The larvae make flat, silken shelters over small depressions on the upper surfaces of rocks in lotic situations. Nothing is yet reported on their food.

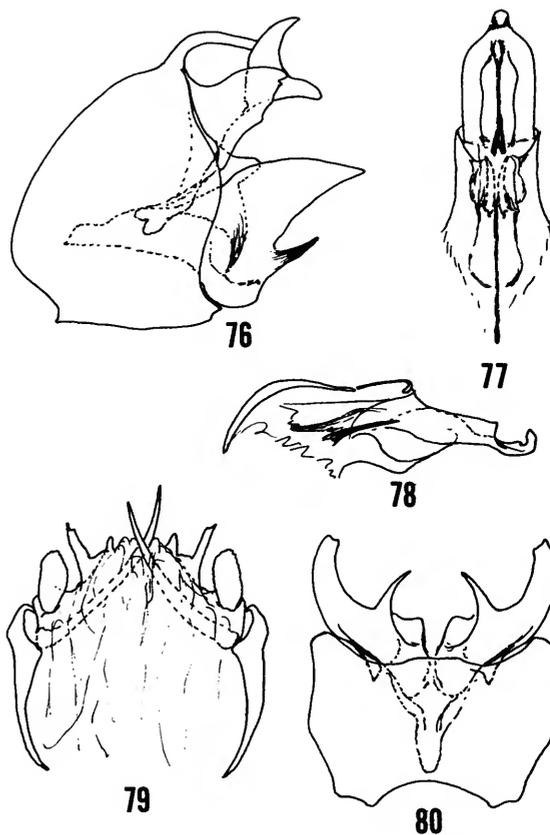
### *Polyplectropus ulmeriana*, new species

FIGURES 76–80

*Polyplectropus flavicornis* Ulmer, 1905:103 [in part].

This species is undoubtedly the one figured by Ulmer in his original description of *P. flavicornis*. The type series, however, must have been mixed, because the male in the syntypic series that I studied and designated as lectotype (Flint, 1966) was a very different species. Consequently the species here described was left without a name.

The shape of the claspers in *P. ulmeriana* is very different from that of any other known New World species. Perhaps the sharp spur from the posterior margin of the clasper represents the usual ventromesal lobe of this genus, although, if so, it is totally different from all other species. In



FIGURES 76–80.—*Polyplectropus ulmeriana*, new species: 76, male genitalia, lateral; 77, aedeagus, dorsal; 78, same, lateral; 79, ninth and tenth terga and cerci, dorsal; 80, ninth sternum and claspers, ventral.

the form of the remainder of the genitalia, the species would seem to fall into the *P. thilus* group.

**ADULT.**—Length of forewing, 5–6 mm. Color pale brown; forewing brown, costal margin distinctly darker, remainder of wing mottled with various shades of brown. Hind wing with  $R_2$  and  $R_3$  fused to wing margin.

**Male Genitalia:** Ninth sternum slightly rounded anteriorly, dorsum membranous. Tenth tergum membranous. Cercus multilobate; with a long, spurlike dorsal lobe, a roughly ovate dorso-lateral lobe, a dorsomesal lobe bearing an erect subapical process, and a hooked ventromesal lobe bearing a small flap from posterior margin. Clas-

per elongate, produced into a pointed apex in lateral aspect, bearing a pointed spur from posterior margin. Aedeagus with apex produced into a narrow mesal lobe, with a pair of short, ventrobasal spines.

**MATERIAL.**—*Holotype* (male): ARGENTINA, PCIA. MISIONES, Arroyo Piray Mini, Rt. 17 W Dos Hermanas, 23 Nov 1973, O.S. Flint, Jr., USNM Type 100491.

*Paratypes*: Same data as holotype, 2♂, 13♀. PARAGUAY, DPTO. ITAPUA, Pirapó, Jan 1972, L.E. Peña G., 1♂. BRAZIL, EDO. SANTA CATARINA, Nova Teutonia (27° 11'S, 52° 23'W), 300–500 m, Nov 1963, F. Plaumann, 2♂.

### *Polyplectropus fuscatus*, new species

FIGURES 81–85

This species is closely related to *P. inarmatus* Flint, from which it differs in small details in all parts of the genitalia. Most notable in *P. fuscatus* are the bifid dorsomesal lobe and more elongate ventromesal lobe of the cercus and the shorter, more sharply upturned tip and shorter basal spines of the aedeagus, which lacks the ventromesal point.

**ADULT.**—Length of forewing, 5–6 mm. Color fuscous; forewing fuscous with many small silvery spots. Hind wing with R<sub>2</sub> and R<sub>3</sub> fused to wing margin.

**Male Genitalia:** Ninth sternum with anterior margin rounded sublaterally. Tenth tergum membranous. Cercus multilobate; with a roughly ovate dorsolateral lobe, a bifid dorsomesal lobe, and a slender, hooked ventromesal lobe bearing a small flap from posterior margin. Clasper bilobed; with dorsolateral lobe large, enlarged apically, basomesal lobe thin, with a distinct basodorsal shelflike lobe, roughly quadrate in ventral aspect. Aedeagus with apex produced into a narrow upturned mesal lobe, with a pair of short, ventrobasal spines.

**MATERIAL.**—*Holotype* (male): ARGENTINA, PCIA. MISIONES, Arroyo Piray Guazú, N San Pedro, 22 Nov 1973, O.S. Flint, Jr., USNM Type 100492.

*Paratypes*: Same data as holotype, 2♀; Rt. 17 Arroyo Piray Mini, W Dos Hermanas, 23 Nov 1973, O.S. Flint, Jr., 1♂; Arroyo Saura, N L.N. Alem, 20 Nov 1973, O.S. Flint, Jr., 2♀; Arroyo Coatí, 15 km E San José, 18–19 Nov 1973, O.S. Flint, Jr., 1♀; Arroyo Liso, 8 km W Gral. Güemes, 19 Nov 1973, O.S. Flint, Jr., 1♀. BRAZIL, EDO. SANTA CATARINA, Nova Teutonia, 18 Oct 1963, F. Plaumann, 1♂; same, but 18 Oct 1964, 2♂, 2♀; same, but Oct 1963, 8♂, 1♀; same, but Oct 1964, 5♂, 3♀; same, but 27 Sep 1964, 1♂; same, but Sep 1964, 1♂; same, but Nov 1963, 4♂, 2♀; same, but Feb 1964, 2♂; same, but Jan 1964, 3♂. URUGUAY, DPTO. SALTO, Río Uruguay, Salto Grande, 10 Nov 1955, C.S. Carbonell, 1♂ (FHCU).

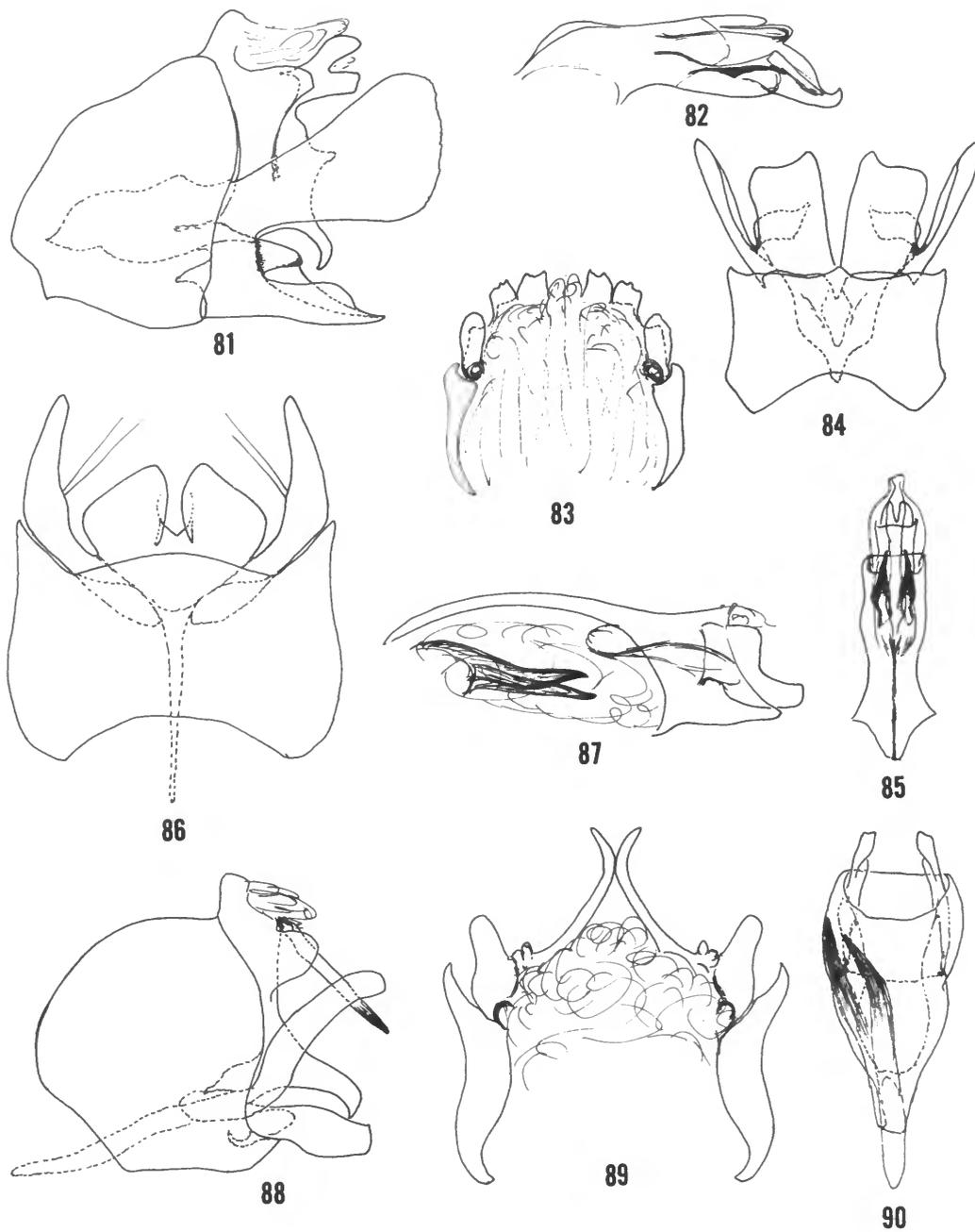
### *Polyplectropus dubitatus*, new species

FIGURES 86–90

At first sight this species seems to be intermediate between *P. elongatus* (Yamamoto) and *P. hamulus* Flint; however, the discovery of three collections from widely separated localities, all in complete agreement, has convinced me of the validity of the taxon. The narrow, hooked ventromesal lobe of the cercus is similar to that of *P. hamulus*, the more rounded, posteromesal angle of the ventral lobe of the clasper is similar that that of *P. elongatus*, but the two long, subequal spines that arise from a common base in the aedeagus are distinctive.

**ADULT.**—Length of forewing, 5–6 mm. Color brown; antennae and appendages stramineous; forewing mottled with shades of brown. Hind wing with R<sub>2</sub> and R<sub>3</sub> fused to margin.

**Male Genitalia:** Ninth sternum rounded anteriorly. Tenth tergum membranous. Cercus trilobate; a small, rounded dorsal lobe, a long, slender, pointed mesal lobe, and a ventromesal lobe that is slender, elongate, and slightly hooked apically. Clasper bilobed; a slender, terete, dorsolateral lobe and a ventromesal lobe rounded in lateral aspect, in ventral aspect with posteromesal angle not sharply angled. Aedeagus with an internal structure bearing a pair of pincer-like apicolateral



FIGURES 81-90.—*Polyplectropus fuscatus*, new species: 81, male genitalia, lateral; 82, aedeagus, lateral; 83, ninth and tenth terga and cerci, dorsal; 84, ninth sternum and claspers, ventral; 85, aedeagus, dorsal. *Polyplectropus dubitatus*, new species: 86, ninth sternum and claspers, ventral; 87, aedeagus, lateral; 88, male genitalia, lateral; 89, ninth and tenth terga and cerci, dorsal; 90, aedeagus, dorsal.

arms, and a pair of subequal, elongate spines arising from a common base.

**MATERIAL.**—*Holotype* (male): ARGENTINA, PCIA. MISIONES, Río Iguazú, Camp Nañdu, 25 Nov 1973, O.S. Flint, Jr., USNM Type 100493.

*Paratypes*: Same data as holotype, 2♂. BRAZIL, EDO. SANTA CATARINA, Nova Teutonia (27°11'S, 52°23'W), Feb 1964, F. Plaumann, 1♂. URUGUAY, DPTO. SALTO, Río Uruguay, Salto Grande, 10 Nov 1955, C.S. Carbonell, 2♂ (FHCU).

### Genus *Cernotina* Ross

*Cernotina* is a genus of small polycentropodids known only from the New World. Species are found from southern Canada south to central Argentina, including the West Indies but not the Chilean Subregion. Some three dozen species have been described from the Neotropics, with more being found all the time, especially in the lowland river basins.

No firmly associated larvae have yet been described, but it seems virtually certain that the larva described as polycentropodine species (Flint, 1964b) is an unknown species of the genus. Adult collection sites suggest that larvae are most likely to be found in slowly flowing rivers, streams, and backwaters. Their food is unknown.

### *Cernotina verna*, new species

FIGURES 91-93

This is very closely related to the following species, *C. fallaciosa*. The apicomesal lobe of the clasper is broader, shorter, and less sharply pointed. In lateral aspect the ventral margin of this lobe is more horizontal, whereas in *C. fallaciosa* it is produced as a ventrally directed point.

**ADULT.**—Length of forewing, 4 mm. Color brown, head dorsomesally and antennae with cream-colored hair, legs pale; forewing brown, with a narrow band of cream-colored hair along posterior margin.

**Male Genitalia:** Slightly depressed. Ninth segment broadly produced and rounded anteriorly.

Tenth tergum membranous, appearing slightly bilobed in dorsal aspect. Cercus 2-lobed; dorsolateral lobe tapering to a dark, mesally directed point; ventromesal lobe with a small process dorsally, with halves barely separated mesally and almost transverse. Clasper with basodorsal lobe erect, with posterior margin rounding gradually to apex of clasper, apicomesal lobe in ventral aspect boot-shaped, with toe directed basomesad. Aedeagus elongate, with an indistinct basal complex and 4 short, dark spines, apex with 2 short, dark spines.

**MATERIAL.**—*Holotype* (male): ARGENTINA, PCIA. ENTRE RÍOS, Arroyo P. Verne, 4 km N Villa San José, 15 Nov 1973, O.S. Flint, Jr., USNM Type 100494.

*Paratypes*: Same data as holotype, 4♂. PCIA. MISIONES, Arroyo Piray Guazú, N San Pedro, 22 Nov 1973, O.S. Flint, Jr., 1♂, 1♀. URUGUAY, DPTO. ARTIGAS, Arroyo de la Invernada, 21 Feb 1954, C.S. Carbonell, 1♂; Arroyo Tres Cruces, Potrero Sucio, 20 Feb 1955, C.S. Carbonell, 5♂ (FHCU). DPTO. TACUAREMBÓ, Río Tacuarembó, Tacuarembó Chico, 20 Jan 1960, C.S. Carbonell, 5♂ (FHCU).

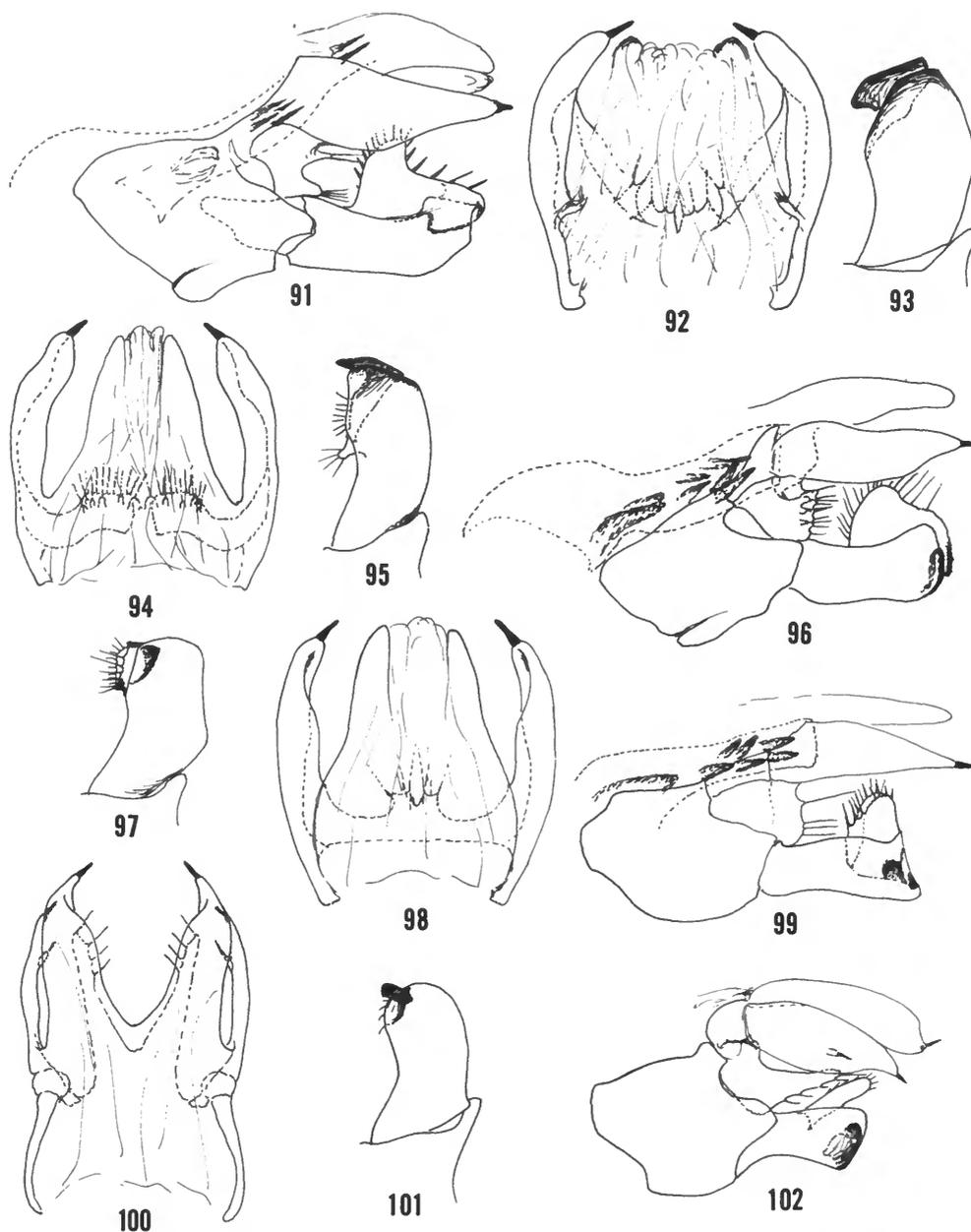
### *Cernotina fallaciosa*, new species

FIGURES 94-96

This species is very closely related to the preceding species, with which it has been found. It is to be recognized primarily by the apicomesal lobe of the clasper, which is narrower and more elongate. Smaller differences exist in the shape of the other regions of the clasper and ventromesal lobe of the cercus.

**ADULT.**—Length of forewing, 3.5 mm. Color in alcohol, pale brown.

**Male Genitalia:** Ninth segment produced and rounded anterolaterally. Tenth tergum semi-membranous, bilobed in dorsal aspect. Cercus 2-lobed; dorsolateral lobe tapering to a dark, mesally directed point; ventromesal lobe truncate, broad, with several small tubercles on posterior face. Clasper with basodorsal lobe erect, with posterior margin grading gradually into apex of



FIGURES 91-102.—*Cernotina verna*, new species: 91, male genitalia, lateral; 92, tenth tergum and cerci, dorsal; 93, clasper, ventral. *Cernotina fallaciosa*, new species: 94, tenth tergum and cerci, dorsal; 95, clasper, ventral; 96, male genitalia, lateral. *Cernotina sexspinoso*, new species: 97, clasper, ventral; 98, tenth tergum and cerci, dorsal; 99, male genitalia, lateral. *Cernotina carbonelli*, new species: 100, tenth tergum and cerci, dorsal; 101, clasper, ventral; 102, male genitalia, lateral.

clasper; apicomesal lobe in ventral aspect produced into an elongate, narrowly pointed process directed mesad. Aedeagus elongate with an indistinct basal complex and 5 darkened spines.

**MATERIAL.**—*Holotype* (male): ARGENTINA, PCIA. MISIONES, Arroyo Coatí, 15 km E San José, 18–19 Nov 1973, O.S. Flint, Jr., USNM Type 100495.

*Paratypes*: URUGUAY, DPTO. TREINTA Y TRES, Quebrada de los Cuervos, 17 Dec 1952, C.S. Carbonell, 1♂. DPTO. TACUAREMBÓ, Río Tacuarembó, Tacuarembó Chico, 20 Jan 1960, C.S. Carbonell, 11♂ (FHCU). DPTO. ARTIGAS, Arroyo de la Invernada, 21 Feb 1954, C.S. Carbonell, 1♂.

#### *Cernotina sexspinosa*, new species

FIGURES 97–99

The species is clearly related to the two preceding species but not so closely so as they are to each other. There is no hooked, apicomesal lobe to the clasper; rather, it is fused to the basodorsal lobe, which is displaced totally to an apicodorsal position.

**ADULT.**—Length of forewing, 4 mm. Color in alcohol, pale brown.

**Male Genitalia:** Ninth segment produced and rounded anterolaterally. Tenth tergum semi-membranous; slightly bilobed in dorsal aspect. Cercus 2-lobed; dorsolateral lobe tapering to a dark, mesally directed point; ventromesal lobe truncate, short, with several stout setae on posterior face. Clasper with basodorsal lobe completely displaced to apex, erect, spinose, with apicomesal lobe fused to ventral margin and withdrawn within the clasper outline. Aedeagus with 6 dark, internal spines and an indistinct basal complex.

**MATERIAL.**—*Holotype* (male): BRAZIL, EDO. SANTA CATARINA, Nova Teutonia (27°11'S, 52°23'W), 300–500 m, Oct 1963, F. Plaumann, USNM Type 100496.

*Paratypes*: Same data as holotype, 1♂; same, but Nov 1963, 1♂; same, but Feb 1964, 1♂. URUGUAY, DPTO. ARTIGAS, Río Cuareim, Sepulturas, 15 Dec 1952, C.S. Carbonell, 1♂; Arroyo Tres Cruces, Potrero Sucio, 20 Feb 1955, C.S. Carbo-

nell, 1♂; Arroyo de la Invernada, 21 Feb 1954, C.S. Carbonell, 1♂ (FHCU).

#### *Cernotina carbonelli*, new species

FIGURES 100–102

This species appears to be most closely related to *C. perpendicularis* Flint, known from Brazil and Surinam. The ventromesal lobe of the cercus is long and slender, and there is only a single, finger-like, apicomesal lobe of the clasper in *C. carbonelli*.

**ADULT.**—Length of forewing, 3.5 mm. Color in alcohol, pale brown.

**Male Genitalia:** Ninth segment with anterolateral margin produced and rounded. Tenth tergum lightly sclerotized, deeply divided middorsally, with tip of lateral lobe bearing a heavily sclerotized spine. Cercus 2-lobed; dorsolateral lobe elongate, apex bearing a short, black spine, inner surface bearing a short, black spine from a small lobe; ventromesal lobe elongate, especially dorsally, bearing a row of spinous setae. Clasper with basodorsal lobe semi-erect, arising at mid-length, with a row of spinous setae; apicomesal lobe finger-like, blackened, arising from a small, apicomesal pocket in clasper. Internal structure of aedeagus very indistinct, apparently with a few (3?) short spines.

**MATERIAL.**—*Holotype* (male): URUGUAY, DPTO. ARTIGAS, Río Cuareim, Sepulturas, 15 Dec 1952, C.S. Carbonell, USNM Type 100497.

*Paratype*: Same data as holotype, but Arroyo de la Invernada, 21 Feb 1954, 1♂ (FHCU).

#### Genus *Cyrnellus* Banks

The genus is known only from the New World, where it is widespread from southern Canada to central Argentina but not in the West Indies or the Chilean Subregion. Seven species were previously known.

The larvae of *C. fraternus* (Banks) are described (Flint, 1964a; Wiggins, 1977). The larvae construct silken covers beneath which they live on the substrate, usually rocks, in rivers or lakes. Gut contents were mostly fine organic particles with

arthropod remains in one of the three examined (Wiggins, 1977).

***Cymellus misionensis*, new species**

FIGURES 103, 104

The species is related to *C. risi* (Ulmer) on the basis of the oblique placement of the apicomesal lobe of the clasper; however, it is very distinct in appearance in that the lobe is much longer and more slender and projects below the ventral margin of the clasper in lateral aspect.

**ADULT.**—Length of forewing, 4.5 mm. Color brown, antennae and legs stramineous; forewing brown with small stramineous spots.

**Male Genitalia:** Internal process of cercus long and slender; subgenital plate short and broad in lateral aspect. Clasper in lateral aspect slightly curved and slightly enlarged apicad with apicomesal lobe projecting distinctly below ventral margin; in ventral aspect with mesal margin evenly curved, apicomesal lobe elongate, narrow, projecting posteromesally. Aedeagus with internal process indistinct, in lateral aspect with basal

portion rounded and bearing a pointed process, apex angled ventrad.

**MATERIAL.**—*Holotype* (male): ARGENTINA, PCIA. MISIONES, Arroyo Piray Mini, Rt. 17 W Dos Hermanas, 23 Nov 1973, O.S. Flint, Jr., USNM Type 100498.

*Paratype:* Same data as holotype, 1♂.

***Cymellus rianus*, new species**

FIGURES 105, 106

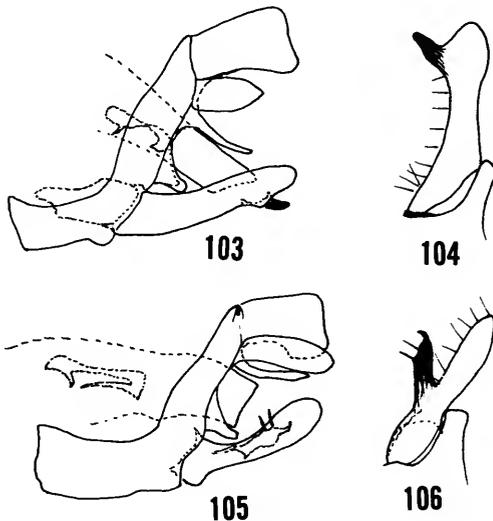
Although this is a close relative of *C. risi* (Ulmer), both species have been collected together on one occasion. It is easily recognized by the apicomesal process of the clasper, which extends posteriad from near the middle of the inner margin.

**ADULT.**—Length of forewing, 4.5 mm. Color brown, antennae and legs stramineous; forewing brown with scattered stramineous flecks.

**Male Genitalia:** Internal processes of cercus and subgenital plate long and slender. Clasper in lateral aspect evenly upcurved, in ventral aspect angled laterad, apicomesal lobe long, with an apical hook, directed posteriad. Aedeagus with internal sclerite lightly sclerotized, in lateral aspect with basal portion angled ventrad with a small process, apex angled ventrad with a long process ventrally.

**MATERIAL.**—*Holotype* (male): ARGENTINA, PCIA. ENTRE RÍOS, Arroyo P. Verne, 4 km N Villa San José, 15 Nov 1973, O.S. Flint, Jr., USNM Type 100499.

*Paratypes:* Río Uruguay, Salto Grande, 16 Nov 1973, O.S. Flint, Jr., 1♂. URUGUAY, DPTO. LAVALLEJA, Río Cebollatí, Picada de Rodriguez, 28 Feb 1958, C.S. Carbonell, 1♂. DPTO. TACUAREMBÓ, Río Tacuarembó, Tacuarembó Chico, 20 Jan 1960, 4♂ (FHCU).



FIGURES 103-106.—*Cymellus misionensis*, new species: 103, male genitalia, lateral; 104, clasper, ventral. *Cymellus rianus*, new species: 105, male genitalia, lateral; 106, clasper, ventral.

**Genus *Xiphocentron* Brauer**

The genus is widespread in the warmer part of the New World from the southwestern United States to central Argentina but not in the Chilean Subregion. It is found in the West Indies, with

one species from China also placed in the genus. There are 14 species in the genus in the New World, but a current revision by Dr. F. Schmid will greatly increase this number.

The larvae have been described by Edwards (1961), Flint (1964b), and Wiggins (1977). The larvae construct long, silken tubes on the substrate. Certain species live only on moist rocks above the waterline, but others are found under water. They are generally taken near small streams and moist rock surfaces. Their food is unknown.

***Xiphocentron cuyensis*, new species**

FIGURES 107, 108

The species is related to *X. surinamensis* Flint, as is shown by the general conformation of the genitalia and especially the angled base of the cercus; however, *X. cuyensis* differs in having the black spines of the inner surface of the clasper in an entire row and not having a darkened tip of the aedeagus.

**ADULT.**—Length of forewing, 5.5–6 mm. Color fuscous; forewing fuscous with a silver spot (sometimes elongate) over chord. Hind leg with apical spur slender, about half length of basal tarsomere. Fifth sternum of male with anterolateral region reticulate and with cuticle modified.

**Male Genitalia:** Ninth sternum with anterolateral process rodlike, rounded apically; posterior margin truncate; tergum rounded anteriorly, with a pair of small submesal knobs posteriorly. Tenth tergum short, with ventral margin arcuate, tip decurved, sclerotized laterally. Cercus long, slender, basal section in lateral aspect very distinctly angled in relation to apical section, which is almost 3 times as long as basal, tip very slightly enlarged. Clasper enlarged basally, apical section very slender with a linear cluster of short, dark, spines mesally on basal half. Aedeagus very long and slender with apex slightly enlarged and with base enlarged, bell-like.

**MATERIAL.**—*Holotype* (male): ARGENTINA, PCIA. TUCUMÁN, Rt. 307, 33.7 km W Archeral, 11 Oct 1973, O.S. Flint, Jr., USNM Type 100500.

**Paratypes:** PCIA. CATAMARCA, N Aconquija, 1–2 Oct 1968, L.E. Peña G., 7♂.

***Xiphocentron pintada*, new species**

FIGURES 109, 110

The species is somewhat related to the preceding species but differs in having the black spines of the inner surface of the clasper divided into two clusters and especially in having very short apical portions of the cerci and claspers.

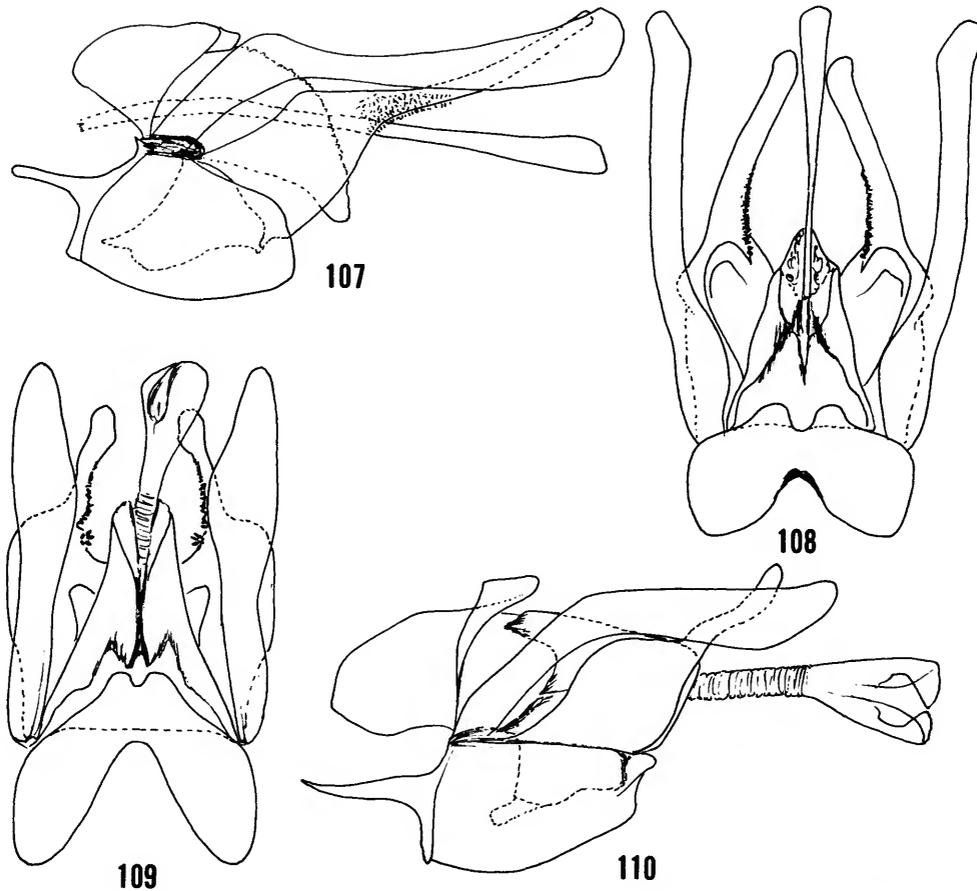
**ADULT.**—Length of forewing, 5 mm. Color fuscous, palpi and a tuft of hair on face tawny, tarsi and femora, especially the posterior pair, paler; forewing uniformly fuscous. Hind leg with apical tibial spur slender, about a third length of basal tarsomere. Fifth sternum bearing an oval, modified area of cuticle in anterolateral region.

**Male Genitalia:** Ninth sternum with anterolateral process slender, pointed anteriorly; posterior margin regularly curving dorsad in lateral aspect, in ventral with a small, mesal emargination; tergum much enlarged and irregularly rounded anteriorly, with posterior, submesal knobs small. Tenth tergum with dorsal and ventral margins in lateral aspect subparallel, apex not decurved; in dorsal aspect elongate with sclerotized lateral surfaces. Cercus long, basal section in lateral aspect distinctly angled to apical section, which is only slightly longer than basal; in dorsal aspect broadened near midlength. Clasper large basally, tip very slender, short, and directed distinctly dorsad; with mesal spines grouped in small clusters, with basal cluster on a small prominence. Aedeagus very long, enlarged apically and basally.

**MATERIAL.**—*Holotype* (male): ARGENTINA, PCIA. CATAMARCA, Arroyo El Pintado, near La Viña, 18 Oct 1973, O.S. Flint, Jr., USNM Type 100501.

**Family HYDROPTILIDAE**

The family, generally referred to as the microcaddisflies, is found commonly in all areas of the world. The family, as recently revised (Marshall, 1979), is divided into two subfamilies, of which



FIGURES 107-110.—*Xiphocentron cuyensis*, new species: 107, male genitalia, lateral; 108, same, dorsal. *Xiphocentron pintada*, new species: 109, male genitalia, dorsal; 110, same, lateral.

the Ptilocolepinae is exclusively Holarctic in distribution. The Hydroptilinae is divided into six tribes, most of which have representatives in the Neotropical Region.

The larvae are found in a great variety of habitats from small streams to large lakes. They have an unusual life history in that the first four instars are free-living and quickly passed. In the fifth instar, generally, the larvae construct a case or shelter, and most feeding and growth occurs. The tribe Leucotrichiini is unique in that their larvae only construct fixed shelters on the rocks, and in *Alisotrichia* this only occurs at the end of the fifth instar. All the other tribes construct

freely movable cases in which the larvae live until they are attached just before pupation. The larval food is generally algae or periphyton.

#### Genus *Ascotrichia*, new genus

DIAGNOSIS.—Ocelli 2. Antennae unmodified. Head with posterior warts large, open beneath; with a large sclerotized plate anteriorly, open beneath, in which is a large pocket filled with setae. Spurs 1, 3, 4. Forewing broad, apex bluntly pointed; R(?) basally enlarged and bearing a row of erect setae. Sixth and seventh sterna of male with posteromesal points. Eighth sternum broad,

with a posterolateral process. Aedeagus with broad tube and loop, and with midlength complex.

TYPE-SPECIES.—*Ascotrichia frontalis*, new species.

COMPOSITION.—*Ascotrichia frontalis*, new species; *Ascotrichia surinamensis* (Flint), new combination.

This genus is clearly another one that must be placed in the Leucotrichiini. It appears to be most closely related to *Abtrichia*, from which it differs most strikingly in the form of the head, antennae, and forewings. In *Abtrichia* the anteromesal portion of the head is produced into a hoodlike lobe that shelters the greatly modified basal segments of the antennae, and there is a reflexed costal cell in the forewing.

To this genus I must transfer *Betrichia surinamensis* Flint, 1974, which agrees in all essential points with the type-species.

#### *Ascotrichia frontalis*, new species

FIGURES 111–114

This and *A. surinamensis* (Flint) are closely related but may be easily distinguished by the structure of the genitalia. In *A. frontalis* there is only a single long process ventrolaterally from the ninth segment, and there is a large genital plate that is flared latered at the apex.

ADULT.—Length of forewing, 4.5–5 mm. Color fuscous, head and thorax with pale green and fuscous hair; forewing with mottled areas of pale green and fuscous.

*Male Genitalia:* Eighth sternum broad, with a posterolateral process ending in a black seta; posterior margin with a V-shaped excision ventromesally. Ninth segment truncate anteriorly, with a short posterolateral lobe bearing a few small setae. Subgenital plate large, most strongly sclerotized ventrolaterally, with a small, blunt point subapically on ventral margin; apex shallowly bifid, tip rounded and flared laterad. A single, long, slender, curved process arising ventrolaterally from ninth segment, ending in a black tip. Claspers fused mesally, tip narrowed in both lateral and ventral aspects. Aedeagus with typical basal and mesal structures; tip mostly membra-

nous, with more strongly sclerotized ventrolateral areas.

MATERIAL.—*Holotype* (male): PARAGUAY, DPTO. ALTO PARANA, Salto del Monday (near Puerto Presidente Franco), 26 Nov 1973, O.S. Flint, Jr., USNM Type 100502.

*Paratypes:* Same data as holotype, 4♀. BRAZIL, EDO. ESPIRITO SANTO, Fazenda Santa Clara, 15 km SE SANTA TERESA, 22 Apr 1977, C.M. and O.S. Flint, Jr., 2♂ (USP). EDO. RÍO DE JANEIRO, Nova Friburgo, municipal water supply, 20 Apr 1977, C.M. and O.S. Flint, Jr., 1♂; same, but 24 Apr 1977, 1♂.

#### Genus *Anchitrichia* Flint

With the description of a new species, this genus of Leucotrichiini is enlarged to two species, and the range extended from middle America into southern South America.

Larvae of the type-species are described (Flint, 1970). They construct a typical silken shelter with an opening at both ends on rocks in fast-flowing water; however, just prior to pupation, the shelter is modified into a torpedo-shaped cocoon, which is attached from one end by a slender thread to the rock, and which then floats in the water. The food is unknown but probably is the periphyton and detritus that they can scrape from the rock adjacent to the shelter.

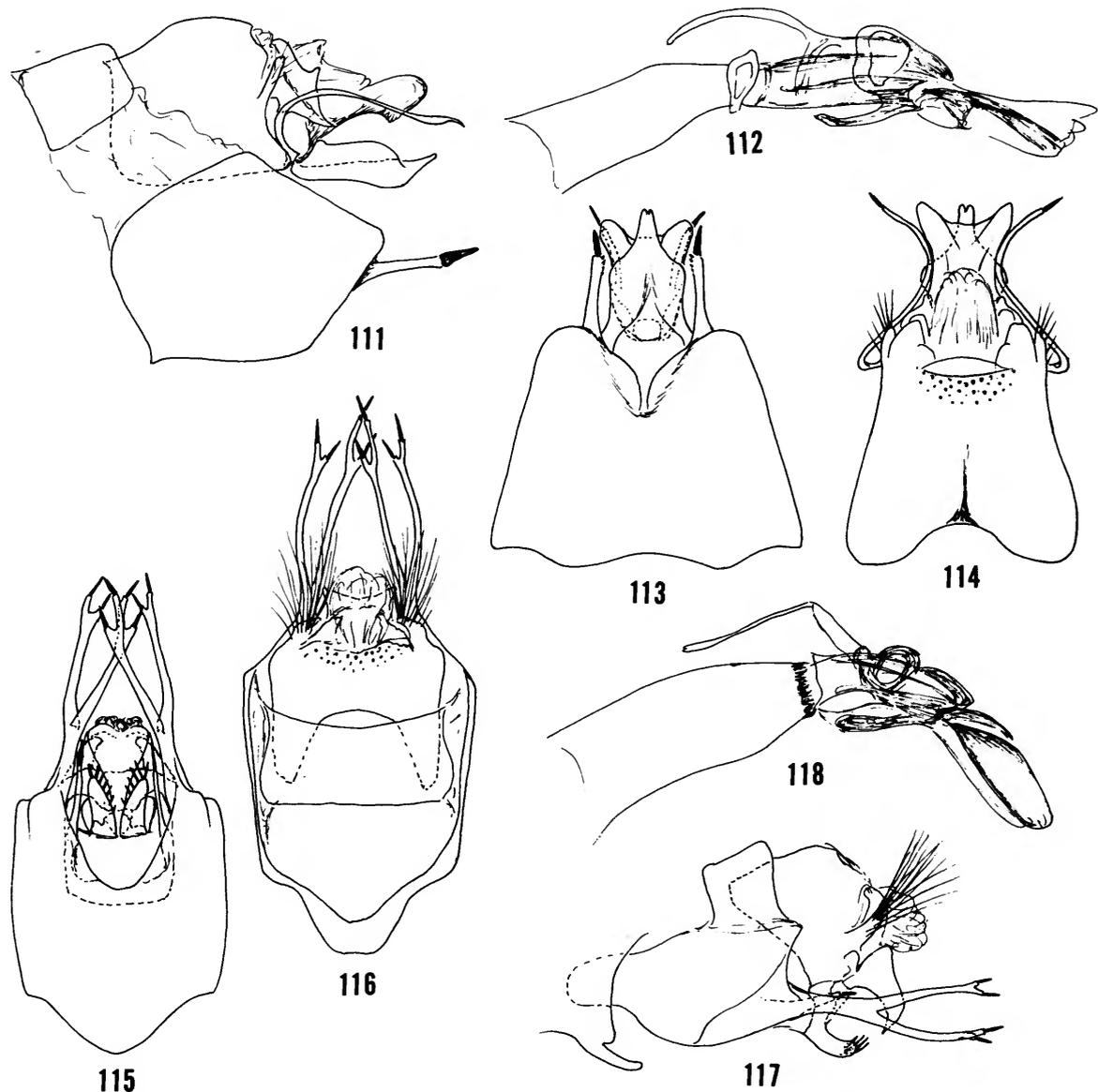
#### *Anchitrichia duplifurcata*, new species

FIGURES 115–118

This species agrees in all generic characteristics with the type-species, *A. spangleri* Flint, from Central America; however, it offers many distinctive characteristics in the genitalia, especially the doubly furcate processes of the eighth sternum.

ADULT.—Length of forewing, 5 mm. Color of body, legs, and antennae, stramineous, tarsi annulate, head and thorax with pale green hair laterally, fuscous mesally; forewing fuscous with linear pale green marks and spots.

*Male Genitalia:* Eighth sternum elongate and rounded anteriorly, with 2 pairs of posterolateral



FIGURES 111-118.—*Ascotrichia frontalis*, new genus, new species: 111, male genitalia, lateral; 112, aedeagus, lateral; 113, male genitalia, ventral; 114, same, dorsal. *Anchitrichia duplifurcata*, new species: 115, male genitalia, ventral; 116, same, dorsal; 117, same, lateral; 118, aedeagus, lateral.

processes, dorsalmost doubly furcate, each branch ending in a dark seta; ventralmost process shorter, ending with a dark setae near base of dorsal process; deeply and broadly emarginate postero-mesally. Ninth tergum with anteroventral angle

slightly produced, with a short posterolateral process bearing many setae. A slightly sclerotized plate between eighth sternum and clasper bases. Tenth tergite broadly trianguloid. Subgenital plate troughlike, decurved apically, apex broadly

bilobed. Claspers not fused mesally; simple, elongate, with a row of small, dark setae on mesal face. Aedeagus with usual basal tube, loop, and midlength complex; apical section troughlike, sclerotized ventrolaterally.

**MATERIAL.**—*Holotype* (male): PARAGUAY, DPTO. AMAMBAY, 2 km S Cerro Corá, 28 Nov 1973, O.S. Flint, Jr., USNM Type 100503.

*Paratypes*: BRAZIL, EDO. RÍO DE JANEIRO, Represa los Ciganos, Parque Tijuca, 7 Apr 1977, C.M. and O.S. Flint, Jr., 4♂ (USP).

### Genus *Betrichia* Mosely

This is another genus of Leucotrichiini, now possessing six described species and ranging from Surinam to northern Argentina in eastern South America.

The immature stages are unknown, but I expect that they will conform closely in form and habits to the other described genera. Adults are taken near fast-flowing rivers and streams.

### *Betrichia hamulifera*, new species

FIGURES 119–122

This species is closely related to *B. argentinica* Flint, from which it may be most easily distinguished by the apicolateral process of the claspers and the presence of a basal pair of hooks in the aedeagus.

**ADULT.**—Length of forewing, 3 mm. Color fuscous and pale green; antennae annulate, head with green hair anteriorly, fuscous hair from posterior warts, thorax with green hair; forewing mostly pale green, with a pale spot at apex, fringing hairs fuscous. Head and antennae unmodified; with 3 ocelli; forewing with a small basal bulla on radius. Seventh sternum with a large brush of hair and a slender apicomesal spine.

**Male Genitalia:** Eighth sternum produced into a point posterolaterally; in ventral aspect broadly and deeply excised posteromesally. Ninth segment with anterolateral margin obliquely trun-

cate; posterolateral margin with a row of enlarged setae borne on a low shoulder. Subgenital plate open dorsally, broad basally, tapering to a narrow, hooked apex. Claspers fused mesally, elongate, narrow, slightly shorter than subgenital plate, apex with a pair of short, dorsolateral processes. Aedeagus with typical basal tube, basal loop (both broken off in specimen figured), and midlength complex; apex with a basodorsal hood, a pair of basoventral hooks (lacking in some specimens), and a pair of long, straight, apical spines.

**MATERIAL.**—*Holotype* (male): ARGENTINA, PCIA. ENTRE RÍOS, Río Uruguay, Salto Grande, 16 Nov 1973, O.S. Flint, Jr., USNM Type 100504.

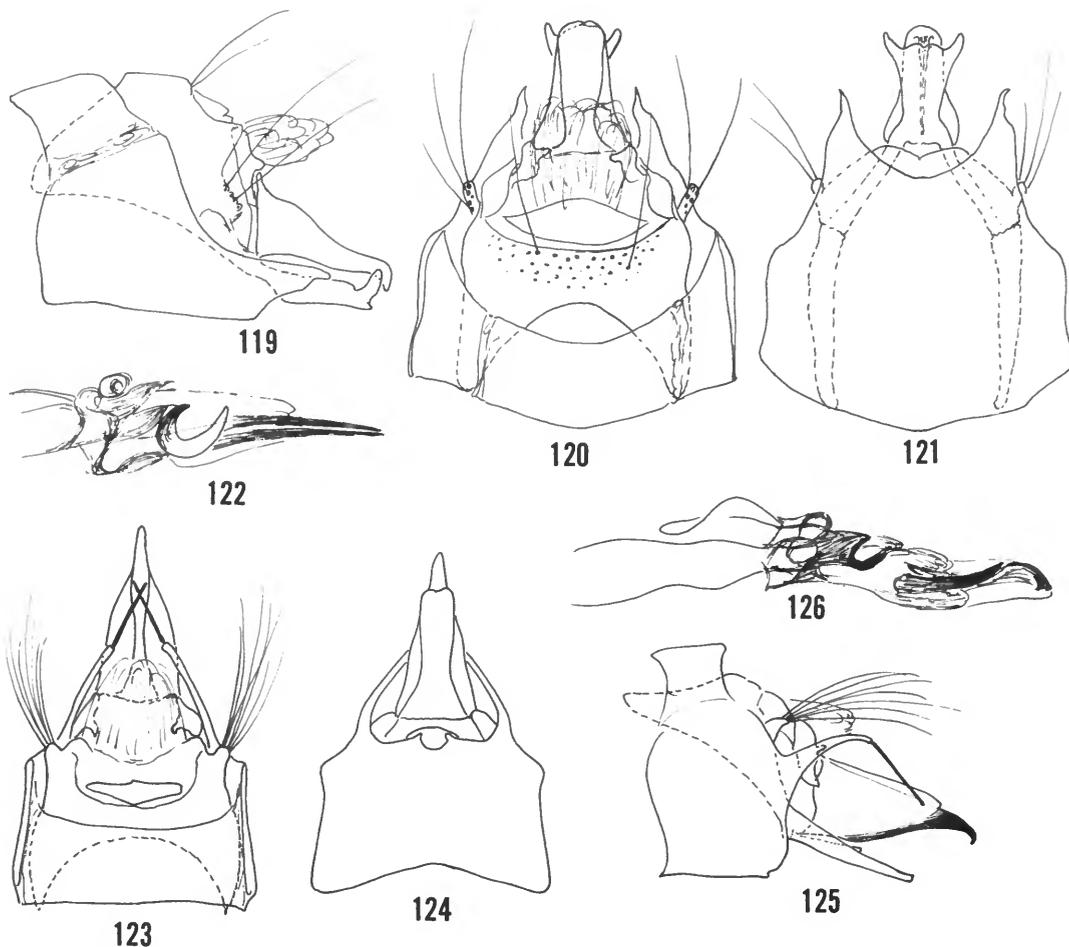
*Paratypes*: Same data as holotype, 21♂, 19♀. PCIA. CORRIENTES, Yapeyú, 17 Nov 1973, O.S. Flint, Jr., 1♂. PARAGUAY, DPTO. GUAIRÁ, 3.9 km S Villarica, 2 Dec 1973, O.S. Flint, Jr., 4♂. BRAZIL, EDO. SAO PAULO, Piracicaba, 12 Mar 1965, C.A. Triplehorn, 1♂. EDO. SANTA CATARINA, Nova Teutonia, Jan 1964, F. Plaumann, 18♂; same, but Jan 1963, 11♂; same, but Feb 1964, 162♂; same, but Oct 1963, 2♂; same, but Nov 1963, 22♂. URUGUAY, DPTO. LAVALLEJA, Río Cebollati, Picada de Rodriguez, 28 Feb 1958, C.S. Carbonell, 2♂. DPTO. ARTIGAS, San Gregorio, 29 Nov 1959, Carbonell, Mesa, and San Martin, 21♂, 5♀ (FHCU).

### *Betrichia longistyla*, new species

FIGURES 123–126

This species appears to be most closely related to *B. argentinica* Flint, with which it possesses in common three ocelli, simple head, antennae, and forewings, single apicomesal process from the seventh sternum, and general form of the genitalia. It is easily recognized by its long, seta-tipped, posterolateral process from the eighth sternum.

**ADULT.**—Length of forewing, 3 mm. Color of antennae and legs stramineous, head and thorax with pale green and fuscous hair; forewing mostly



FIGURES 119-126.—*Betrichia hamulifera*, new species: 119, male genitalia, lateral; 120, same, dorsal; 121, same, ventral; 122, aedeagus, lateral. *Betrichia longistyla*, new species: 123, male genitalia, dorsal; 124, same, ventral; 125, same, lateral; 126, aedeagus, lateral.

pale green with an oblique, fuscous band beyond midlength and with apex fuscous with scattered green spots. Forewing with a band of erect hair on basal third of R.

**Male Genitalia:** Eighth sternum short, bearing a long, slender, upcurved process tipped by a long, dark seta. Ninth segment produced antero-ventrally; posterolaterally with a small lobe bearing many setae. Tenth tergite narrowly triangular. Subgenital plate long, tapering to a narrow apex, which is hooked ventrad. Claspers fused

mesally, long and narrow. Aedeagus with usual basal tube, loop, and midlength complex; apex with a pair of basolateral plates, a pair of basal spines, and troughlike apical sclerite.

**MATERIAL.**—*Holotype* (male): BRAZIL, EDO. SANTA CATARINA, Nova Teutonia, 12 Oct 1964, F. Plaumann, USNM Type 100505.

**Paratypes:** Same data as holotype, but Jan 1963, 4♂; same, but Jan 1964, 9♂; same, but Feb 1964, 18♂; same, but Aug 1963, 10♂; same, but Oct 1963, 1♂; same, but Nov 1963, 10♂.

### Genus *Nothotrichia* Flint

This is the second species to be placed in this recently described genus, which is known only from the Chilean Subregion. It was not placed in a subfamily by Marshall (1979) but was left incertae sedis. Wells (1980) suggested a relationship with the Australian *Maydenoptila*, with which I concur.

The immature stages are unknown. Adults are taken near larger streams and rivers.

#### *Nothotrichia cautinensis*, new species

FIGURES 127–130

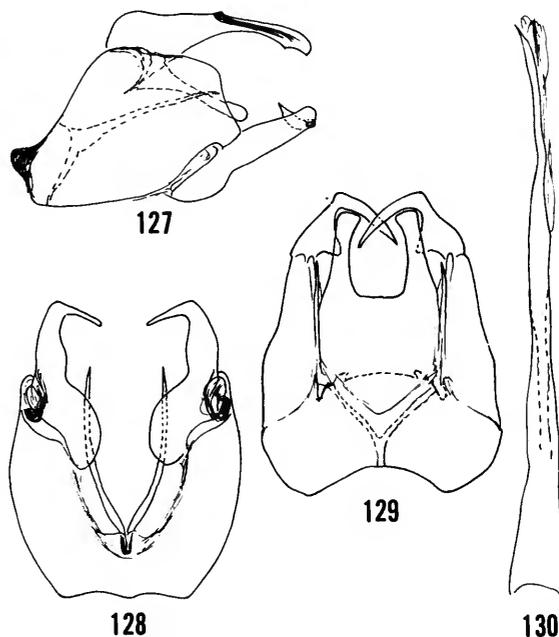
This species is placed in *Nothotrichia*, with which it agrees in structure of head, thorax, tibial spurs, venation, and possession of ocelli. Even though the genitalia seem to be of a bit different form, they are easily homologized in the two species known in the genus. From *N. illiesi*, *N. cautinensis* may be easily distinguished by the double process of the tenth tergum and very differently shaped claspers.

**ADULT.**—Length of forewing, 3 mm. Color brown (rather uniformly); forewing with a pale spot on stigma and indistinctly in several transverse bands. Seventh sternum with a small apicomasal point.

**Male Genitalia:** Ninth segment incomplete dorsally, ventrally deeply divided; bearing a small rounded lobe from posterolateral margin. Tenth tergum bearing a pair of long posterolateral arms that are widely separated mesally. Subgenital plate arising from near anteroventral angle of ninth sternum, bifurcate, with lateral arms long, slender and pointed. Clasper elongate, narrow, attached near midlength, with a basal lobe; apex narrow and sharply angled mesad. Aedeagus tubular, with a lateral spine for apical third contiguous to central tube, which appears to contain an internal tubule.

**MATERIAL.**—*Holotype* (male): CHILE, PCIA. CAUTÍN, Río Cautín, Cajon, 3 Jan 1966, Flint and Cekalovic, USNM Type 100506.

*Paratypes:* PCIA. Bío-Bío, Estero Huequecura,



FIGURES 127–130.—*Nothotrichia cautinensis*, new species: 127, male genitalia, lateral; 128, same, ventral; 129, same, dorsal; 130, aedeagus, dorsal.

25 km E Santa Barbara, 24 Jan 1978, C.M. and O.S. Flint, Jr., 8♂, 16♀.

### Genus *Ochrotrichia* Mosely

This is a large genus (~100 species), exclusively of New World distribution, that is placed in the Ochrotrichiini and is divided into two subgenera. The typical subgenus is North and Central American, West Indian, and the very northernmost South American in distribution. The second subgenus, *Metrichia*, barely reaches the southwestern United States but is generally distributed southward through Central America and the West Indies to southern South America, including the Chilean Subregion.

The larvae of North American (Edwards and Arnold, 1961) and West Indian (Flint, 1964b) *Metrichia* species are described as well as many North American *Ochrotrichia* (*O.*) species (Ross, 1944; Wiggins, 1977). Most all construct purse-

shaped cases of silk, sand, or plant matter. The larvae of the typical subgenus tend to be found more commonly in larger streams, often in very dry regions, than those of *Metrichia*, which are more often in springs and spring runs and wet rock faces, often at high elevations in the Andes. Some are reported to feed on diatoms scraped from the rock surface (Vaillant, 1965).

***Ochrotrichia (Metrichia) patagonica*, new species**

FIGURES 131, 132

This species is probably most closely related to *O. (M.) neotropicalis* Schmid, with which it shares a rather simple aedeagus. It is to be recognized by the shape of the clasper which in *O. patagonica* is evenly rounded apically, rather than bearing a small apicomeresal tooth as in *O. neotropicalis*.

**ADULT.**—Length of forewing, 2 mm. Color grayish; head frontally with white hair; forewing mottled gray and white with conspicuous pale marks at midlength and apex. Male abdomen without internal sacs; densely hairy.

**Male Genitalia:** Ninth segment not quite twice as long as high in lateral aspect; posterior margin slightly rounded dorsally. Cercus round. Dorsolateral hook long, apex curved ventromesad. Clasper slightly elongate, apex rounded; inner face with numerous spinous setae. Aedeagus with a long, dark, internal tubule two-thirds length of aedeagus; apex with a small lightly sclerotized flap.

**MATERIAL.**—*Holotype* (male): ARGENTINA, PCIA. RÍO NEGRO, 5 km S Río Villegas, 7 Feb 1974, O.S. Flint, Jr., USNM Type 100507.

**Paratypes:** Same data as holotype, 4♂, 1♀; Cascada Mallín Ahogado, El Bolsón, 9 Feb 1974, O.S. Flint, Jr., 3♂. PCIA. NEUQUEN, Río Quilquihue, Quilquihue, 26 Jan 1974, O.S. Flint, Jr., 6♂, 20♀. CHILE, PCIA. NUBLE, Río Chillán, near Recinto, 6 Mar 1968, Flint and Peña, 3♂, 16♀. PCIA. CAUTÍN, near Pucón, 4 Jan 1966, Flint and Cekalovic, 1♂, 4♀. PCIA. OSORNO, Parque Nacional Puyehue, 2 km S Aguas Calientes, 10–16 Feb 1979, D. Davis et al., 1♂.

***Ochrotrichia (Metrichia) bidentata*, new species**

FIGURES 133, 134

This is another species of the *O. neotropicalis* group related to *O. patagonica* and *O. neotropicalis*. It is to be distinguished from both species by the apical margin of the clasper, which bears two distinct, pointed, teeth.

**ADULT.**—Length of forewing, 2.5–3.5 mm. Color dark gray, head with white hair; forewing dark gray, conspicuously marked with white at midlength, subapically, and apically. Male abdomen with elongate, tubular pouches in segment 5 bearing spiral thickenings, and probably opening between segments 5 and 6.

**Male Genitalia:** Ninth segment twice as long as broad in lateral aspect, with posterior margin oblique. Cercus rounded. Dorsolateral hook long, almost straight, thin. Clasper as long as high, posterior margin truncate, with 2 small teeth; mesal face with many spinous setae. Aedeagus with a long, dark, internal tubule two-thirds length of aedeagus; apex with a well-developed apical flap almost completely encircling tubule.

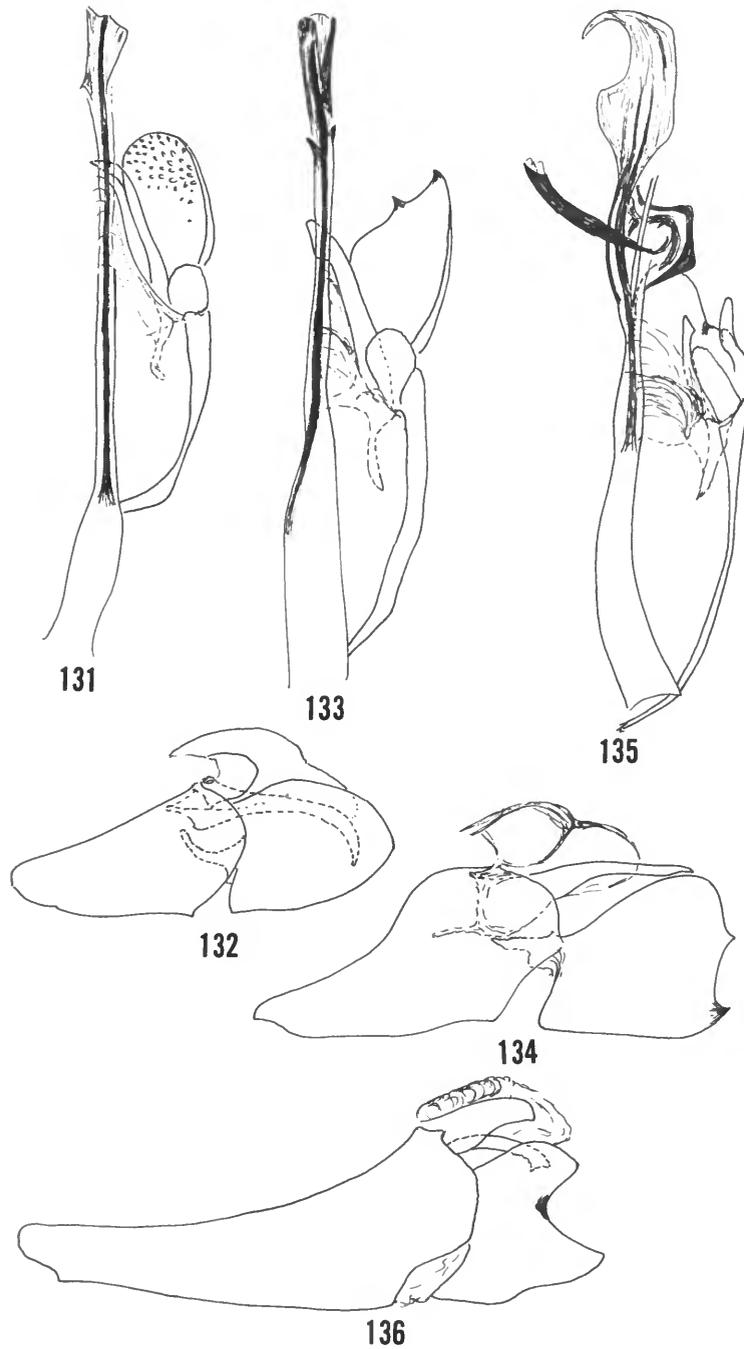
**MATERIAL.**—*Holotype* (male): ARGENTINA, PCIA. NEUQUEN, 13 km E Quila Quina, 27 Jan 1974, O.S. Flint, Jr., USNM Type 100508.

**Paratypes:** Same data as holotype, 7♂, 4♀; brooklets at Lago Meliquina, 25 Jan 1974, O.S. Flint, Jr., 1♂. CHILE, PCIA. MALLECO, Parque Nacional Contulmo, 2 Jan 1966, Flint and Cekalovic, 1♂; Cordillera de las Raices, 40 km E Curacautín, 1200 m, 6–7 Feb 1979, D. Davis et al., 1♂. PCIA. NUBLE, Las Trancas, 21 km E Recinto, near high waterfall, 1300 m, 17 Jan 1979, D. Davis et al., 1♂.

***Ochrotrichia (Metrichia) disparilis*, new species**

FIGURES 135, 136

This most peculiar species does not seem to belong to any recognized group of species. The ornamentation of the abdomen is unique within



FIGURES 131-136.—*Ochrotrichia patagonica*, new species: 131, male genitalia, dorsal; 132, same, lateral. *Ochrotrichia bidentata*, new species: 133, male genitalia, dorsal; 134, same, lateral. *Ochrotrichia disparilis*, new species: 135, male genitalia, dorsal; 136, same, lateral.

the genus, as is the strange configuration of the aedeagus. The deeply bilobed apex of the clasper is also unique among the regionally known species.

**ADULT.**—Length of forewing, 3 mm. Color fuscous; hair on front and antennae, whiter; forewing with pale transverse bands at midlength and apex. Male abdominal terga 5, 6, 7 greatly modified; each segment bearing large, paired, clusters of modified setae, between which, especially on 6, the cuticle is modified and bears short, scalelike setae.

**Male Genitalia:** Ninth segment 3 times as long as high in lateral aspect; with posterior margin rather oblique. Cercus elongate. Dorsolateral hook straight, tip directed ventrad. Clasper short, with distinct posterodorsal lobe shorter than posteroventral lobe, with indentation between lobes darkened. Aedeagus bearing from midlength a tubule that extends freely from tube, internal tubule arising from same point and extending into apical lobe; at 2/3 length a single, large, free hook arising from an enlarged, sclerotized, convoluted basal region; apex moderately sclerotized, enlarged and flattened, ending in a recurved hook.

**MATERIAL.**—*Holotype* (male): ARGENTINA, PCIA. TUCUMÁN, Rt. 307, 33.7 km W Acheral, 11 Oct 1973, O.S. Flint, Jr., USNM Type 100509.

### Genus *Hydroptila* Dalman

This is a very successful genus of over 150 species and of world-wide distribution. It is found throughout the Americas, including, very uncommonly, the Chilean Subregion. Although only five species have been described from South America, four more are added here, and many more undescribed forms are in our collections from other areas.

The larvae are well known, having been described in detail by Nielsen (1948), Ross (1944), Wiggins (1977), etc. They construct a purse-shaped case of silk covered with sand or plant fragments. The immature stages are found in all types of lentic and lotic sites, but especially in

slowly flowing backwaters. The larval food is algae, usually the filamentous type, but they also may ingest other unicellular types.

### *Hydroptila argentinica*, new species

FIGURES 137–140

This and the following new species, *H. catamarcensis*, are closely related, as attested by the close similarity in both the male and female genitalia, the most conspicuous difference between them in the male being the apical process of the aedeagus, which in *H. catamarcensis* is bent at right angles to the central tube but is spirally wound around the tube in *H. argentinica*.

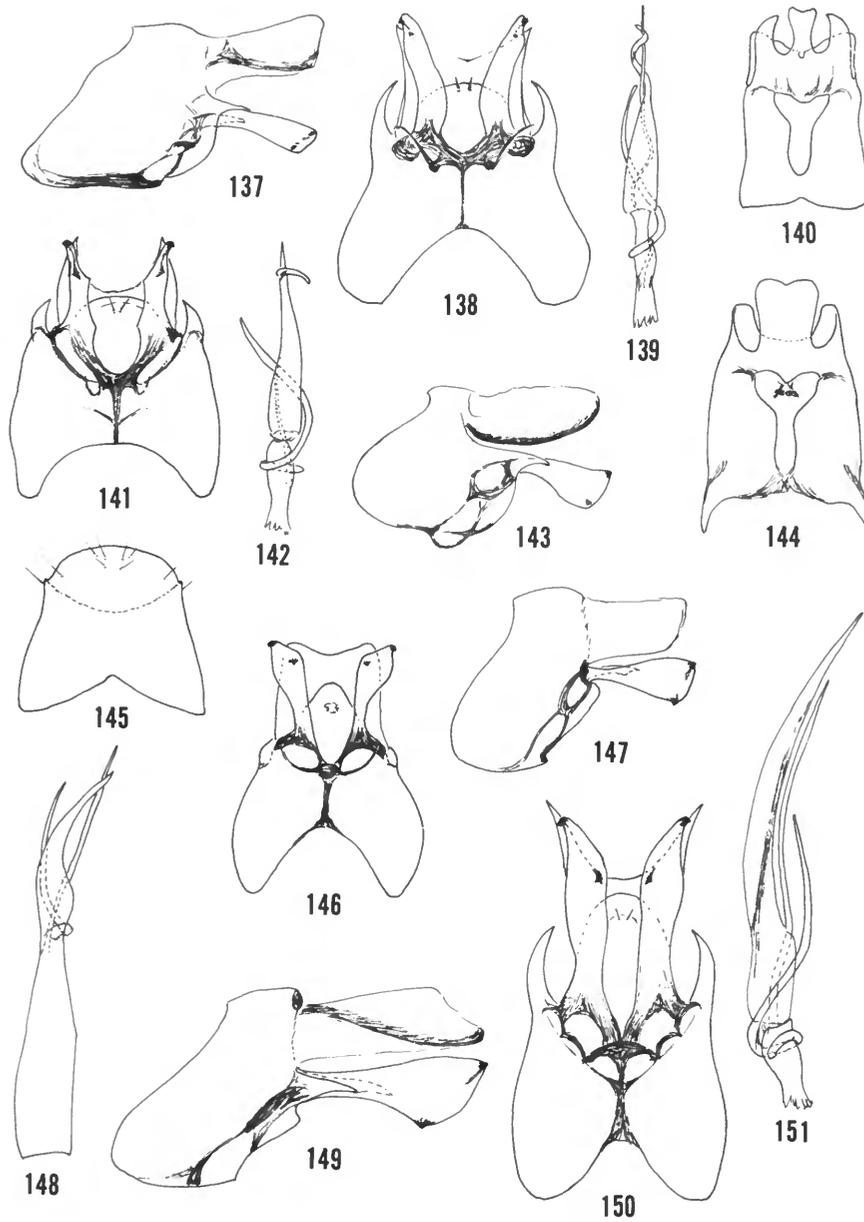
**ADULT.**—Length of forewing, 2.5–3 mm. Color gray, hair of head and legs creamy; forewing mostly gray with scattered cream-colored maculae.

**Male Genitalia:** Ninth segment with anterior margin produced ventrolaterally; with postero-lateral spur. Tenth tergum deeply divided dorsomesally, semimembranous; in lateral aspect rather broad, with ventral margin most strongly sclerotized. Subgenital plate broadly rounded and with apical margin sclerotized; with a pair of small apicomeres setae. Clasper widening evenly apicad, with a pair of apical dark points. Aedeagus with portion beyond neck slightly more than 1/4 total length; with a well-developed spiral process; apical portion widest basally, tapering to a slender process spirally wound around the central tubule.

**Female Genitalia:** Eighth sternum with a well-developed mesal goblet-like structure; posterior margin with 3 well-developed ventral lobes, dorsal margin produced, especially laterally, with a small mesal excision.

**MATERIAL.**—*Holotype* (male): ARGENTINA, PCIA. TUCUMÁN, S Concepción, 19 Feb 1970, L.E. Peña G., USNM Type 100510.

**Paratypes:** Same data as holotype, 3♂, 76♀; Río Tipas, San Pedro de Colalao, 3500', 17 Jan 1969, W.L. and J.G. Peters, 3♀; Río Calera, Asserradero, near Villa Padre Monti, 4 Feb 1969, W.L. and J.G. Peters, 1♀; Siambón, 10 Oct 1973, Ó.S.



FIGURES 137-151.—*Hydroptila argentinica*, new species: 137, male genitalia, lateral; 138, same, ventral; 139, aedeagus, dorsal; 140, female eighth sternum, ventral. *Hydroptila catamarcensis*, new species: 141, male genitalia, ventral; 142, aedeagus, dorsal; 143, male genitalia, lateral; 144, female eighth sternum, ventral. *Hydroptila bidens*, new species: 145, female eighth sternum, ventral; 146, male genitalia, ventral; 147, same, lateral; 148, aedeagus, dorsal. *Hydroptila coscaroni*, new species: 149, male genitalia, lateral; 150, same, ventral; 151, aedeagus, dorsal.

Flint, Jr., 5♀. PCIA. SALTA, Pocitos, 16 Feb 1969, Martinez and Woodruff, 2♂, 3♀; Río Caraparí, 8 km S Pocitos, 16 Feb 1969, Martinez and Woodruff, 1♂, 4♀ (FSCA); Cañada la Gotera, Rt. 59, km 23.5, 16–17 Oct, 1973, O.S. Flint, Jr., 5♀. PCIA. JUJUY, Aguas Calientes, 18–20 Oct 1968, L.E. Peña G., 4♀. PCIA. CATAMARCA, Río Sausemayo, near Dique Sumampa, 8 Sep 1975, D. Cook, 2♂, 2♀. PCIA. MISIONES, Arroyo Saura, 9 km N L.N. Alem, 20 Nov 1973, O.S. Flint, Jr., 4♀; Arroyo Coatí, 15 km E San José, 18–19 Nov 1973, O.S. Flint, Jr., 4♀; Arroyo Piray Mini, Rt. 17 W Dos Hermanas, 23 Nov 1973, O.S. Flint, Jr., 1♂, 6♀. BRAZIL, EDO. RIO DE JANEIRO, Nova Friburgo, municipal water supply, 950 m, 20 Apr 1977, C.M. and O.S. Flint, Jr., 2♂, 3♀ (USP). URUGUAY, DPTO. ARTIGAS, Río Cuareim, Sepulturas, 15 Dec 1952, C.S. Carbonell, 3♂, 14♀. DEPT. TACUAREMBÓ, Puntas Arroyo Laureles, 22 Dec 1953, C.S. Carbonell, 3♂, 67♀ (FHCU); same, but 10 Feb 1954, 1♂, 30♀.

### *Hydroptila catamarcensis*, new species

FIGURES 141–144

This and the preceding species are closely related, but *H. catamarcensis* is easily recognized by having the subapical process of the aedeagus bent at right angles to the axis of the aedeagus. The females are assigned to this species with some hesitation, as they were taken at a different locality; however, they are similar to those of *H. argentinica* but differ in possessing only a central, tonguelike process ventrally, whereas those of *H. argentinica* possess three ventral processes on the eighth sternum.

**ADULT.**—Length of forewing, 3 mm. Color gray; head with cream-colored hair, legs pale; forewing gray, with scattered cream-colored maculae. Male and female with a short, pointed apicomesal process from seventh sternum.

**Male Genitalia:** Ninth segment with anterolateral margin semicircular; produced into a posterolateral spur. Tenth tergum divided dorsomesally, semimembranous; in lateral aspect rather broad, with ventral margin most strongly sclero-

tized. Subgenital plate broadly rounded and with apical margin sclerotized; with a pair of small apicomesal setae. Clasper widest apically, with a pair of apical dark points. Aedeagus with portion beyond neck slightly more than 1/4 total length; with a well-developed spiral process; apical portion widest basally, tapering apicad, with a process at right angles to tube subapically.

**Female Genitalia:** Eighth sternum with a well-developed, mesal, goblet-like structure; posterior margin with a ventromesal, tonguelike process, lateral margins produced, middorsally with a broad, rectangular, emargination.

**MATERIAL.**—*Holotype* (male): ARGENTINA, PCIA. CATAMARCA, Arroyo El Pintado, near La Viña, 18 Oct 1973, O.S. Flint, Jr., USNM Type 100511.

**Paratype:** Río Sausemayo, near Dique Sumampa, 8 Sep 1975, D. Cook, 1♂.

**Other:** El Rodeo, 18–19 Oct 1973, O.S. Flint, Jr., 2♀.

### *Hydroptila bidens*, new species

FIGURES 145–148

This species is related to *H. producta* Mosely described from Santa Catarina, Brazil. With this species, it shares the lack of a posterolateral spur from the ninth segment and general form of the genitalia. From *H. producta*, *H. bidens* differs most noticeably in possessing two dark points apically on the clasper.

**ADULT.**—Length of forewing, 2.5 mm. Color in alcohol, pale brown. Seventh sternum with a pointed apicomesal process in both male and female.

**Male Genitalia:** Ninth segment produced and rounded anteroventrally; without posterolateral spur. Tenth tergum with a shallow dorsomesal excision; rather broad in lateral aspect with an indistinct lateral sclerotization. Subgenital plate rounded, with a pair of apicomesal setae. Clasper enlarged apicad, with a pair of apical dark points. Aedeagus with apical section as long as basal tube; a spiral process borne from neck; apical

tube narrow, tapering to an slender point, with central tubule distinct and mostly free of tube.

*Female Genitalia:* Eighth segment unmarked ventrally, short; posterior margin ventrally convex, dorsally concave, with a few small setae ventrally.

*MATERIAL.*—*Holotype* (male): ARGENTINA, PCIA. JUJUY, Aguas Calientes, 18–19 Oct 1968, L.E. Peña G., USNM Type 100512.

*Paratypes:* PCIA. TUCUMÁN, S Concepción, 19 Feb 1970, L.E. Peña G., 1♂, 4♀.

### *Hydroptila coscaroni*, new species

FIGURES 149–151

Along with the preceding species, *H. coscaroni* and *H. producta* form a closely knit group. *Hydroptila coscaroni* differs from its two congeners in possessing a well-developed posterolateral spur from the ninth segment. The other differences from *H. bidens* are rather small and consist primarily of the longer, straighter claspers.

I am unable to find any differences between the females associated with the males of this species and those with *H. bidens*.

*ADULT.*—Length of forewing, 3 mm. Color gray, head hair, legs, and antennae cream-colored; forewing mostly gray with scattered cream-colored maculae. Seventh sternum of male and female with a distinct posteromesal point.

*Male Genitalia:* Ninth segment produced and rounded anterolaterally; with a large posterolateral spur. Tenth tergum divided dorsomesally; in lateral aspect with an oblique, sclerotized band. Subgenital plate narrowly rounded, with a pair of small apicomesal setae. Clasper enlarged apicad, with a pair of dark apical points. Aedeagus with apical section slightly longer than basal tube; a spiral process borne from neck; apex long, tapering to a sharp point, with central tubule distinct and mostly free from apical tube.

*MATERIAL.*—*Holotype* (male): ARGENTINA, PCIA. SALTA, 5 km S Orán, 13 Oct 1973, O.S. Flint, Jr., USNM Type 100513.

*Paratypes:* Same data as holotype, 2♀.

### Genus *Neotrichia* Morton

This genus and *Mayatrichia* Mosely comprise the exclusively New World tribe Neotrichiini. Nearly 50 species of *Neotrichia* have been described from all areas, including the West Indies and now for the first time the Chilean Subregion. The genus contains some of the smallest Trichoptera described, some species being less than 2 mm long. This small size in relation to the rather complex genitalia makes accurate illustration of the genitalia very difficult. It is quite probable that the illustrations contain various inaccuracies. During the preparation of the figures, it became clear that the shape of the anterior margin of the ninth segment is constant within the species and often differs greatly between closely related species and is always easily seen.

The larvae have been described a number of times (Flint, 1964b; Ross, 1944; Wiggins, 1977). They construct very small cases, slightly tapered and curved, from small sand grains. They are frequently collected in flowing water, generally on rocks in riffles. Larval food preferences are unknown.

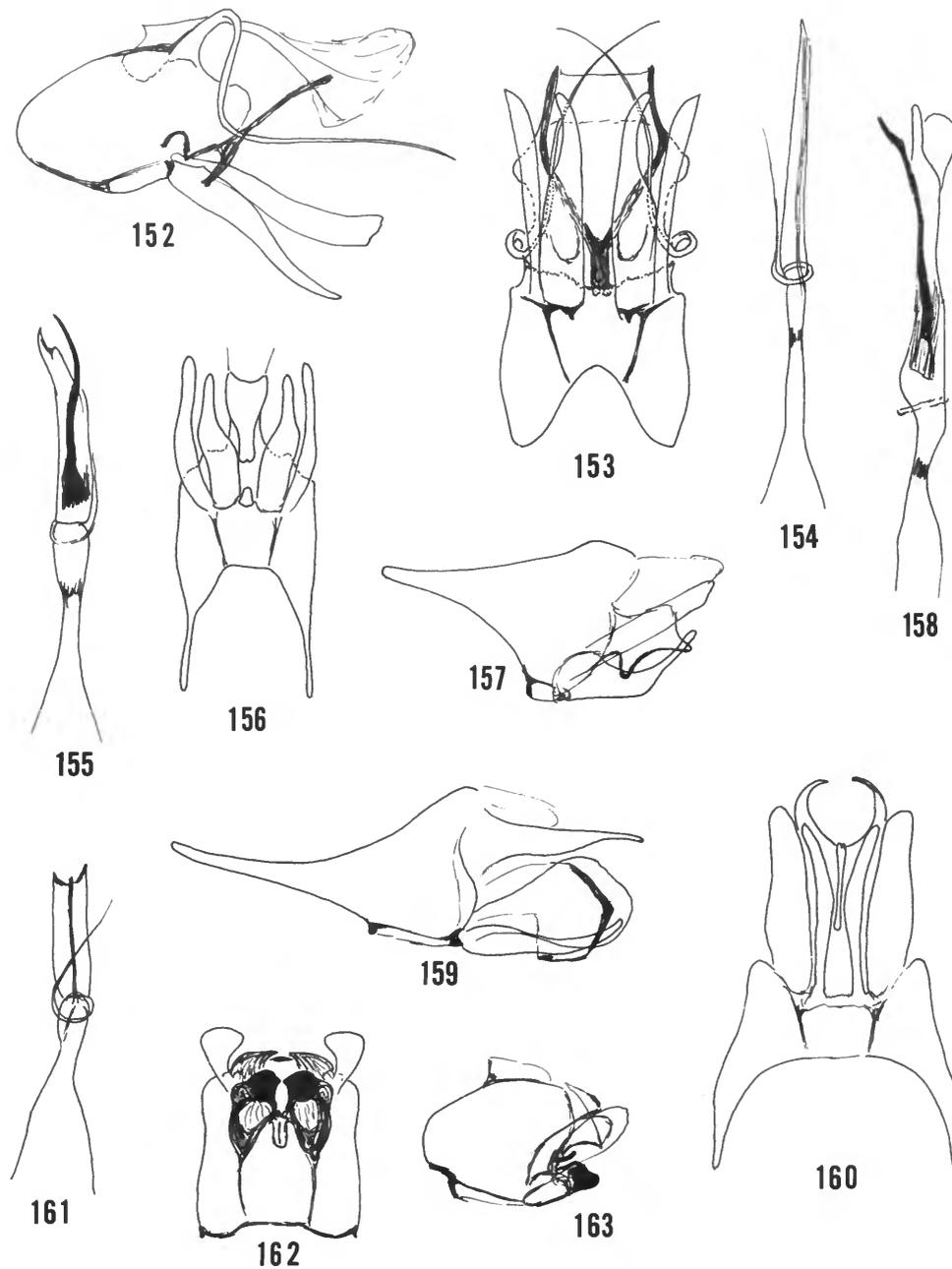
### *Neotrichia filifera*, new species

FIGURES 152–154

Although clearly related to the *N. tertia* group, this species does not have any clear relationships. The very long, slender, whiplike appendage from the dorsolateral angle of the ninth segment is unique in the genus as is the subgenital plate-tenth tergum assemblage (although unclear in detail).

*ADULT.*—Length of forewing, 2 mm. Color in alcohol, brown.

*Male Genitalia:* Ninth segment with anterior margin rounded; posterodorsal angle bearing a very long, slender appendage, arising from a convoluted base. Tenth tergum long, expanded apicad, with a narrow, lateral, sclerotized band. Subgenital plate with a ventromesal process, darkened apicad, often held between clasper bases (paratype, Figure 153) or with tip free



FIGURES 152-163.—*Neotrichia filifera*, new species: 152, male genitalia, lateral; 153, same, ventral; 154, aedeagus, dorsal. *Neotrichia angulata*, new species: 155, aedeagus, dorsal; 156, male genitalia, ventral; 157, same, lateral. *Neotrichia dikeros*, new species: 158, aedeagus, dorsal; 159, male genitalia, lateral; 160, same, ventral. *Neotrichia abbreviata*, new species: 161, aedeagus, dorsal; 162, male genitalia, ventral; 163, same, lateral.

(holotype, Figure 152), process connected to venter of tenth tergum by lateral, sclerotized bands. Bracteole membranous, long and slender. Clasper long, slender, tapering apicad in lateral and ventral aspects. Aedeagus with a spiral process; apical section long, slender, with an internal tubule.

**MATERIAL.**—*Holotype* (male): URUGUAY, DPTO. LAVALLEJA, Río Cebollati, Picada de Rodriguez, 28 Feb 1958, C.S. Carbonell, USNM Type 100514.

*Paratypes*: Same data as holotype, 2♂ (FHCU).

### *Neotrichia angulata*, new species

FIGURES 155–157

This species would seem to be most closely related to *N. teutonia*, new species. It is easily distinguished by the long anterolateral lobe of the ninth segment and angulate claspers.

**ADULT.**—Length of forewing, 2 mm. Color in alcohol, brown.

**Male Genitalia:** Ninth segment with anterior margin produced laterally into a long, narrow lobe. Tenth tergum membranous (in certain aspects it appears to be produced as lateral plates, rounded apically). Subgenital plate bearing a very distinct midventral lobe. Bracteole membranous and very indistinct. Clasper elongate, apical half sharply angled dorsad at midlength; in ventral aspect clasper is narrowed at midlength. Aedeagus with spiral process; apex elongate with 1 long, stout spine, tip produced on 1 side into a short, pointed process.

**MATERIAL.**—*Holotype* (male): URUGUAY, DPTO. ARTIGAS, Arroyo de la Invernada, 21 Feb 1954, C.S. Carbonell, USNM Type 100515.

*Paratypes*: Same data as holotype, 6♂ (FHCU).

### *Neotrichia dikeros*, new species

FIGURES 158–160

This species is closely related to *N. palma* Flint. It is easily distinguished by the sclerotized tenth

tergum, which is produced posteriad into a pair of slender, hooked processes.

**ADULT.**—Length of forewing, 2 mm. Color in alcohol, brown.

**Male Genitalia:** Ninth segment with anterior margin produced into a very long, narrow lobe. Tenth tergum produced posteriad into a slender, mesally curved process on each side. Subgenital plate bearing a terminal, ventrally-directed lobe from apex. Bracteole membranous, enlarged apicad. Clasper elongate, very slender in both lateral and ventral aspects. Aedeagus with a spiral process; with a single, long spine next to apical section; apical section elongate, apex troughlike, internal tubule indistinct.

**MATERIAL.**—*Holotype* (male): ARGENTINA, PCIA. ENTRE RÍOS, Arroyo P. Verne, 4 km N Villa San José, 15 Nov 1973, O.S. Flint, Jr., USNM Type 100516.

*Paratypes*: URUGUAY, DPTO. LAVALLEJA, Río Cebollati, Picada de Rodriguez, 28 Feb 1958, C.S. Carbonell, 29♂ (FHCU). DPTO. DURAZNO, Arroyo del Cordobés, Paso de la Cruz, 5 Feb 1953, C.S. Carbonell, 6♂ (FHCU).

### *Neotrichia abbreviata*, new species

FIGURES 161–163

This species appears to be most closely related to *N. bifida* Flint from Surinam. It is easily distinguished because the clasper is not bilobed as it is in *N. bifida*.

**ADULT.**—Length of forewing, 2 mm. Color in alcohol, brown.

**Male Genitalia:** Ninth segment with anterior margin evenly rounded; posterior margin with a sclerotized, pointed lobe dorsally. Tenth tergum membranous. Subgenital plate truncate apically; apparently with a long appendage tucked between bases of claspers. Bracteole membranous, enlarged apicad. Claspers short, apical half black, virtually truncate in lateral and ventral aspects. Aedeagus with a spiral process; apical portion long, with a long internal tubule ending in a shallow U-shaped cup.

**MATERIAL.**—*Holotype* (male): BRAZIL, EDO.

SANTA CATARINA, Nova Teutonia (27°11'S, 52°23'W), 300–500 m, Nov 1963, F. Plaumann, USNM Type 100517.

*Paratypes:* URUGUAY, DPTO. ARTIGAS, Arroyo de la Invernada, 21 Feb 1954, C.S. Carbonell, 4♂ (FHCU).

### *Neotrichia teutonia*, new species

FIGURES 164–166

This species is closely related to *N. noteuna* (Mosely). In the latter the anterolateral angle of the ninth segment is not produced into a short process, the claspers are broad and narrowed near their apices rather than near their bases, and the subgenital plate bears a distinct midventral process at midlength.

**ADULT.**—Length of forewing, 2 mm. Color in alcohol, brown.

**Male Genitalia:** Ninth segment with anterior margin bearing a short lateral process. Tenth tergum membranous. Subgenital plate apparently bearing a long appendage tucked between bases of claspers. Bracteole membranous, enlarged apicad. Clasper elongate, tapering apicad in both lateral and ventral aspects. Aedeagus with a spiral process; with a single, long spine; internal tubule indistinct basally, ending in a U-shaped cup; apical portion long with distinct, darkened areas on sides at midlength.

**MATERIAL.**—*Holotype* (male): BRAZIL, EDO. SANTA CATARINA, Nova Teutonia (27°11'S, 52°23'W), 300–500 m, Aug 1963, F. Plaumann, USNM Type 100518.

*Paratypes:* Same data as holotype, 3♂; same, but Sep 1963, 3♂; same, but Jan 1964, 6♂; same, but Aug 1964, 1♂.

### *Neotrichia durior*, new species

FIGURES 167–169

This species seems to combine in the structure of the aedeagus certain characteristics of the *tertia* and *noteuna* groups of *Neotrichia*. The heavily sclerotized and apically pointed bracteoles and

pointed posterolateral process of the ninth segment are distinctive.

**ADULT.**—Length of forewing, 1.5 mm. Color in alcohol, brown.

**Male Genitalia:** Ninth segment with a very short anterolateral process; posterior margin with a strongly sclerotized pointed lobe dorsolaterally. Tenth tergum membranous. Subgenital plate truncate apically; apparently with a long process folded anteriorly between bases of claspers. Bracteole heavily sclerotized, apex produced into a point. Clasper much shorter than bracteole, tip produced into a sharp point. Aedeagus with a spiral process; with 2 spines, one long and slender, other short and curved; apical section long, tubular, with a dark internal tubule ending in a U-shaped cup.

**MATERIAL.**—*Holotype* (male): BRAZIL, EDO. SANTA CATARINA, Nova Teutonia (27°11'S, 52°23'W), 300–500 m, Jan 1964, F. Plaumann, USNM Type 100519.

*Paratypes:* Same data as holotype, 17♂; same, but Jan 1963, 1♂; same, but Sep 1963, 7♂; same, but Oct 1963, 1♂; same, but Nov 1963, 2♂; same, but Feb 1964, 2♂; same, but May 1964, 6♂.

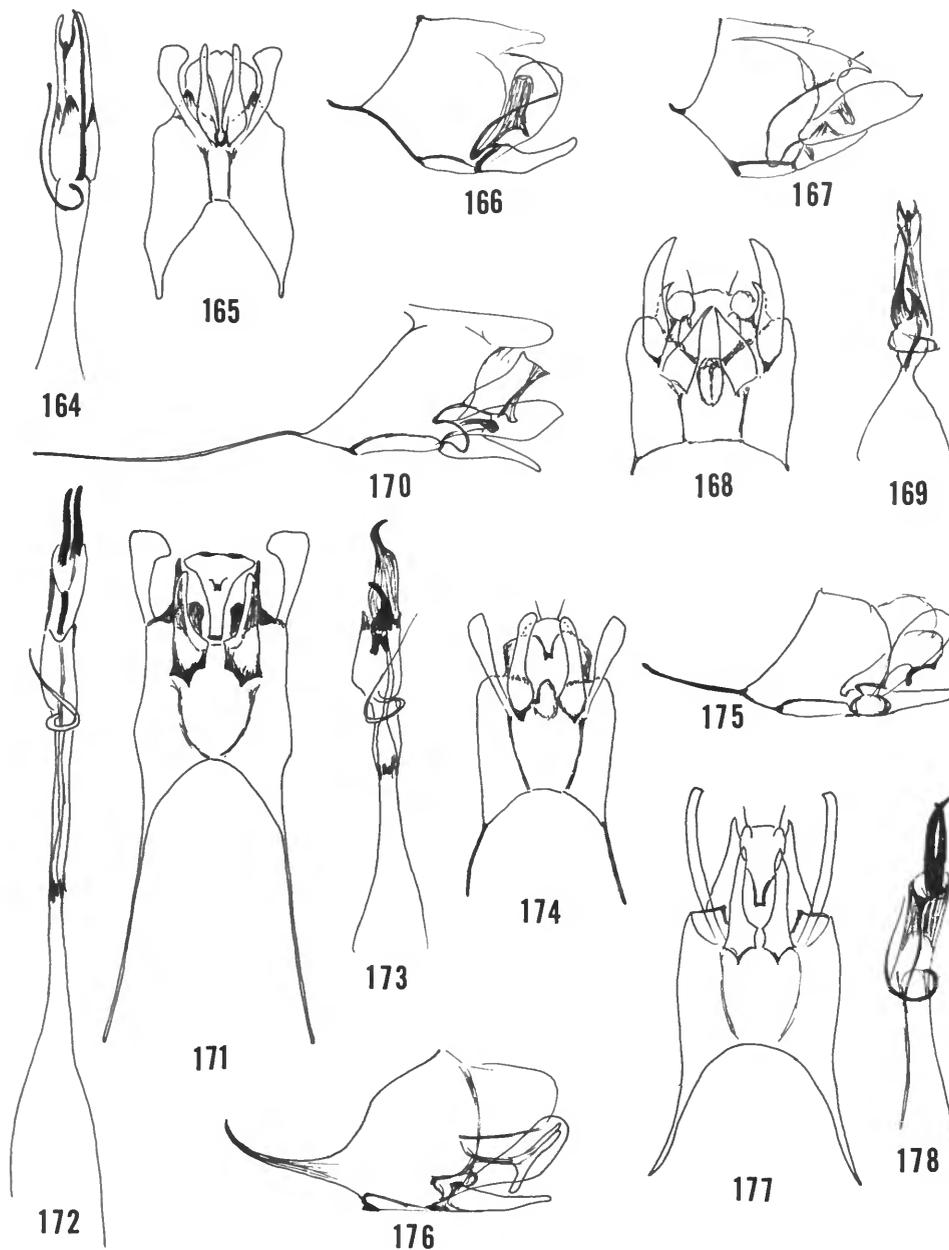
### *Neotrichia longissima*, new species

FIGURES 170–172

This species belongs to the *N. tertia* group as shown by the two spines in the aedeagus; however, it is quickly distinguished from the other described species by the extremely long anterolateral processes of the ninth segment and very long, slender midregion of the aedeagus.

**ADULT.**—Length of forewing, 2 mm. Color in alcohol, pale brown.

**Male Genitalia:** Ninth segment with an extremely long, rodlike anterolateral process. Tenth tergum membranous. Subgenital plate with a short, midventral process. Bracteole membranous, enlarged apicad. Clasper elongate, tapered in lateral and ventral aspects. Aedeagus with a spiral process arising from apex of a very long, slender midregion, with an internal tubule, apex with 2 slender, equal spines.



FIGURES 164–178.—*Neotrichia teutonia*, new species: 164, aedeagus, dorsal; 165, male genitalia, ventral; 166, same, lateral. *Neotrichia durior*, new species: 167, male genitalia, lateral; 168, same, ventral; 169, aedeagus, dorsal. *Neotrichia longissima*, new species: 170, male genitalia, lateral; 171, same, ventral; 172, aedeagus, lateral. *Neotrichia sicilicula*, new species: 173, aedeagus, lateral; 174, male genitalia, ventral; 175, same, lateral. *Neotrichia gotera*, new species: 176, male genitalia, lateral; 177, same, ventral; 178, aedeagus, dorsal.

**MATERIAL.**—*Holotype* (male): BRAZIL, EDO. SANTA CATARINA, Nova Teutonia (27°11'S, 52°23'W), 300–500 m, Sep 1963, F. Plaumann, USNM Type 100520.

***Neotrichia sicilicula*, new species**

FIGURES 173–175

The species is clearly related to both *N. gotera* and *N. brevispina*. The long, anterolateral process of the ninth segment immediately distinguishes it from *N. brevispina*, with the shapes of the spines of the aedeagus providing additional differences from both. The unequal size of these spines distinguishes it from *N. gotera*, and the hooked tip and broadened midsection of the larger spine is unique to *N. sicilicula*.

**ADULT.**—Length of forewing, 1.5 mm. Color in alcohol, brown.

**Male Genitalia:** Ninth segment with anterior margin produced into a long, slender process. Tenth tergum membranous. Subgenital plate bearing a distinct, ventromesal appendage at midlength. Bracteole membranous, enlarged apicad. Clasper elongate, tapering in both lateral and ventral aspects; with a distinct, rounded lobe basomesally between claspers. Aedeagus with a distinct spiral process; a short, tubular apical portion with an internal tubule; with a pair of sclerotized internal spines, shorter one half the length of the other, very heavily sclerotized and evenly curved, longer one more lightly sclerotized, enlarged for basal 2/3 and with tip distinctly crooked.

**MATERIAL.**—*Holotype* (male): BRAZIL, EDO. SANTA CATARINA, Nova Teutonia (27°11'S, 52°23'W), 300–500 m, Jan 1964, F. Plaumann, USNM Type 100521.

**Paratypes:** Same data as holotype, 4♂; same, but Jan 1963, 3♂; same, but Aug 1963, 1♂; same, but Sep 1963, 1♂; same, but Oct 1963, 3♂; same, but Nov 1963, 2♂; same, but May 1964, 1♂; same, but Aug 1964, 2♂.

***Neotrichia gotera*, new species**

FIGURES 176–178

This appears to be related to *N. noteuna* (Mosely) on the basis of the general form of the genitalia; however, *N. noteuna* bears only one long spine in the aedeagus and a long, heavily sclerotized internal tubule, which in lateral aspect appears to be a second spine. Actually, *N. gotera* and *N. brevispina* are much more closely related, as both bear two spines in the aedeagus. In *N. gotera* these spines are subequal in length and evenly tapering.

**ADULT.**—Length of forewing, 2.5 mm. Completely cleared, in alcohol.

**Male Genitalia:** Ninth segment with anterolateral angle produced into a long, slender process slightly upcurved. Tenth tergum membranous. Subgenital plate bearing a distinct ventromesal appendage at midlength. Bracteole membranous, slender. Clasper elongate, tapering in both lateral and ventral aspects. Aedeagus with a distinct spiral process; apical portion short, tubular with a distinct internal tubule and a pair of dark spines, subequal in length and evenly tapered.

**MATERIAL.**—*Holotype* (male): ARGENTINA, PCIA. SALTA, Cañada la Gotera, Rt. 59, km 23.5, 16–17 Oct 1973, O.S. Flint, Jr., USNM Type 100522.

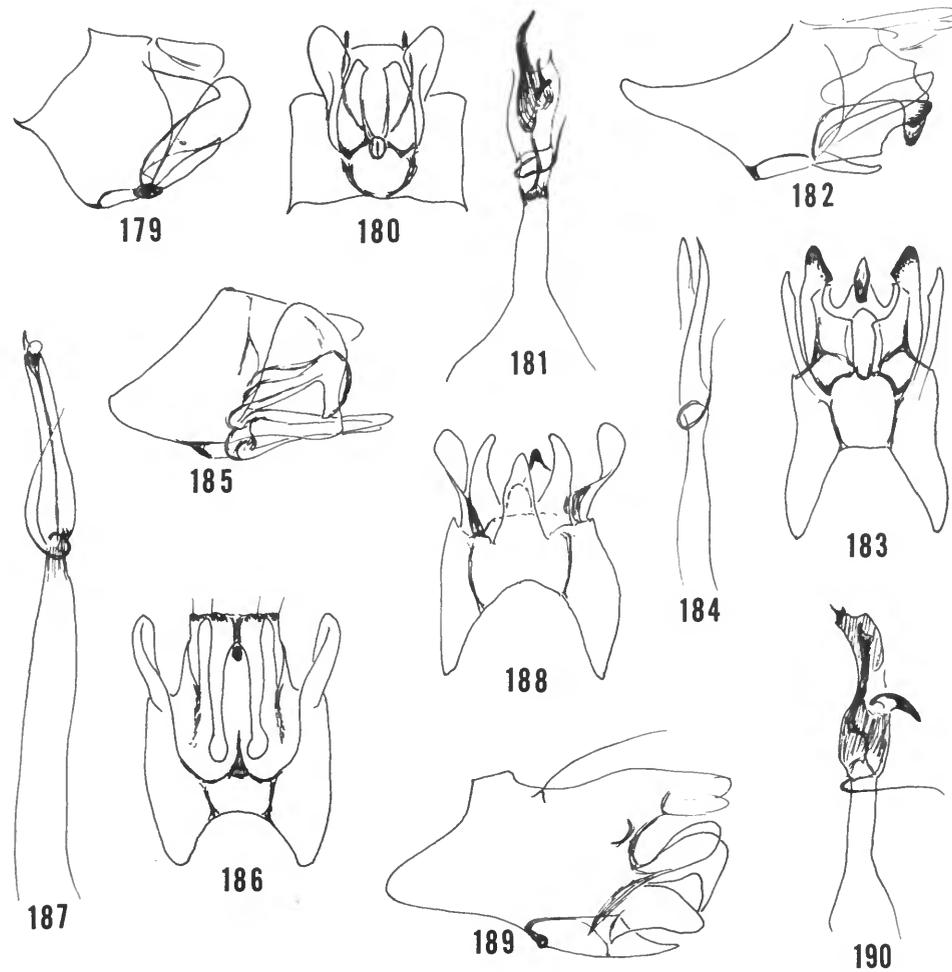
***Neotrichia brevispina*, new species**

FIGURES 179–181

This species is clearly related to both *N. gotera* and *N. tertia* (Mosely). From *N. gotera* it is distinguished by the short anterolateral process of the ninth segment and the generally shorter spines of the aedeagus. From *N. tertia* it is recognized by the claspers being shorter than the bracteole and by lacking the distinct posterolateral process of the ninth segment.

**ADULT.**—Length of forewing, 1.5 mm. Color silvery gray.

**Male Genitalia:** Ninth segment with a short, pointed anterolateral process. Tenth tergum



FIGURES 179-190.—*Neotrichia brevispina*, new species: 179, male genitalia, lateral; 180, same, ventral; 181, aedeagus, dorsal. *Neotrichia picada*, new species: 182, male genitalia, lateral; 183, same, ventral; 184, aedeagus, dorsal. *Neotrichia elongata*, new species: 185, male genitalia, lateral; 186, same, ventral; 187, aedeagus, dorsal. *Neotrichia chilensis*, new species: 188, male genitalia, ventral (somewhat skewed); 189, same, lateral; 190, aedeagus, dorsal.

membranous. Subgenital plate in ventral aspect almost truncate apically with a small lateral process; probably with a ventral process folded back between bases of clasper. Bracteole membranous, enlarged apicad. Clasper tapered in lateral and ventral aspects, shorter than bracteole. Aedeagus with a spiral process; apical portion enlarged, cylindrical, often with apicolateral margins produced, with a distinct internal tubule, with a pair

of short, dark spines, somewhat (variably) unequal in length.

**MATERIAL.**—*Holotype* (male): ARGENTINA, PCIA. MISIONES, Arroyo Coatí, 13 km E San José, 18-19 Nov 1973, O.S. Flint, Jr., USNM Type 100523.

*Paratypes*: Arroyo Liso, 8 km W General Güemes, 19 Nov 1973, O.S. Flint, Jr., 1♂. URUGUAY, DPTO. ARTIGAS, Río Cuareim, Sepulturas,

15 Dec 1952, C.S. Carbonell, 116♂ (FHCU); same, but Picada del Negro Muerto, 15 Dec 1957, 1♂; Arroyo de la Invernada, 21 Feb 1954, C.S. Carbonell, 83♂ (FHCU).

***Neotrichia picada*, new species**

FIGURES 182-184

This distinctive species appears to be somewhat related to *N. elongata*, new species. From this and other regional species, *N. picada* is distinguished by the claspers, which are constricted at mid-length but with the apex enlarged and darkened, and by the lobe between the claspers.

**ADULT.**—Length of forewing, 2 mm. Color in alcohol, brown.

**Male Genitalia:** Ninth segment with anterior margin produced into a long, tapered lobe. Tenth tergum membranous. Subgenital plate with a ventral process from apex. Bracteole membranous, elongate. Claspers with a pale lobe between their bases; with a semicircular excision just beyond midlength in both lateral and ventral aspects, tip enlarged and darkened in both aspects. Aedeagus pale with a spiral process; apical portion with a long, pointed lateral process.

**MATERIAL.**—*Holotype* (male): URUGUAY, DPTO. LAVALLEJA, Río Cebollati, Picada de Rodriguez, 28 Feb 1958, C.S. Carbonell, USNM Type 100524.

**Paratypes:** Same data as holotype, 5♂ (FHCU). DPTO. ARTIGAS, Arroyo de la Invernada, 21 Feb 1954, C.S. Carbonell, 1♂.

***Neotrichia elongata*, new species**

FIGURES 185-187

Both this species and *N. chilensis* have very long ventromesal processes from the ninth sternum, but I can not tell if they are truly homologous. The claspers are more pointed apically in this species, and the aedeagus is totally different in construction, lacking the black spine.

**ADULT.**—Length of forewing, 3 mm. Color in

alcohol, pale brown.

**Male Genitalia:** Ninth segment with anterior margin produced into a rounded lobe. Tenth tergum membranous. Subgenital plate bearing apically a mesoventral process. Bracteole membranous, very broad. Claspers elongate, slender; with an elongate, slender mesoventral process between them. Aedeagus with a spiral process; apex elongate, tubular, with a darkened internal tubule.

**MATERIAL.**—*Holotype* (male): ARGENTINA, PCIA. SALTA, Cañada la Gotera, Rt. 59, km 23.5, 16-17 Oct 1973, O.S. Flint, Jr., USNM Type 100525.

**Paratypes:** Same data as holotype, 2♂.

***Neotrichia chilensis*, new species**

FIGURES 188-190

This species is very distinctive, although clearly a member of the "Exitrichia" group. This and the preceding species are the only ones in this area where the posteromesal process of the ninth sternum is almost as long as the claspers. The aedeagus with its short, lateral spine, apical point, internal tubule, and convoluted process is also distinctive.

**ADULT.**—Length of forewing, 3 mm. Color silvery gray with a pale spot near midlength of forewing.

**Male Genitalia:** Ninth segment produced into a rounded lateral lobe; with a pair of ventrolateral, sclerotized rods and a long, pointed process posteromesally; with a small dorsolateral process bearing a long, stout seta. Subgenital plate with an elongate apex directed ventrad. Bracteole elongate, enlarged apicad. Clasper in lateral aspect a bit longer than broad, with a rounded apex; in ventral aspect slender, slightly bowed. Aedeagus inflated basally, narrowing to a slender neck, around which is wrapped a spiral process; apical portion enlarged and darkened, bearing at midlength a small lateral spine, apex with a short, dark point, with a darkened internal tubule.

**MATERIAL.**—*Holotype* (male): CHILE, PCIA. LINARES, Puente Malcho, Río Longaví, 600 m, 13–15 Jan 1979, D. Davis et al., USNM Type 100526.

*Paratypes*: Same data as holotype, 1♂, 2♀. ARGENTINA, PCIA. NEUQUEN, Río Alumine, 9 km N Alumine, 27 Feb 1978, C.M. and O.S. Flint, Jr., 1♂, 1♀.

### Family HYDROPSYCHIDAE

This is a common and often abundant family found in lotic waters in all regions of the world. It is divided into four subfamilies. The Arctopsychinae does not enter the Neotropics at all, and the Diplectroninae reaches only as far south as northern Guatemala. The Macronematinae is well represented with eight genera of a composite range from southern Canada to central Argentina, but not the Chilean Subregion. The Hydropsychinae is represented in both subregions by one genus, but an additional three or more genera are present in middle America.

The larvae construct trap-nets and retreats, in general. The nets are often very regular and in the Macronematinae of very small mesh openings (Sattler, 1963; Flint and Wallace, 1980). The larvae need moving water to bring their food into

the net. Most feed upon suspended organic matter, and a few larger forms are distinctly predatory.

### Genus *Macronema* Pictet

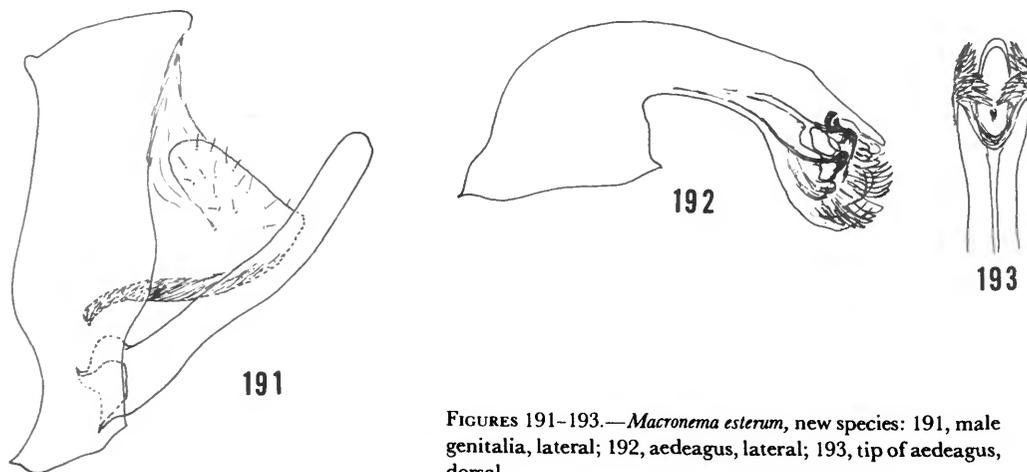
The genus, as recently redefined (Flint and Bueno, 1982), is exclusively neotropical in distribution, being found from Mexico to central Argentina and the Greater Antilles. About 25 species are currently placed in the genus.

The larvae are known but have been generally ascribed to *Centromacronema* (Marlier, 1964, etc.). Flint and Bueno (1982) described the larva, pupa, and habits of *M. variipenne*. These construct rather irregular retreats without well-defined trap-nets on plants and roots in flowing water. The stomach contents were evenly sized pieces of plant matter, apparently bitten from the substrate.

### *Macronema esterum*, new species

FIGURES 191–193

This species, *M. reinburgi* Navás, and *M. exophthalmum* Flint are easily recognized by the very large, bulging eyes in the male (at least). It is most closely related to *M. reinburgi*, which also bears a mass of appressed spines at the tip of the aedeagus but differs slightly in the details of this



FIGURES 191–193.—*Macronema esterum*, new species: 191, male genitalia, lateral; 192, aedeagus, lateral; 193, tip of aedeagus, dorsal.

area. Unfortunately the specimens were in envelopes for years and now are so badly rubbed that the color pattern is unrecognizable and cannot be compared to related species.

**ADULTS.**—Length of forewing, 11 mm. Color brown (but see above). Eyes very large, almost touching dorsally; facets ventrally smaller than those dorsally, 2 areas separated by a distinct difference in curvature. Fifth sternum of male abdomen laterally with a narrow, raised boss.

**Male Genitalia:** Ninth segment annular, slightly produced dorsomesally. Tenth tergum sclerotized ventrolaterally, apex truncate. Clasper long, slender, parallel-sided; in ventral aspect curved, but not semicircular. Aedeagus enlarged basally, apex sharply angled ventrad; tip laterally bearing many appressed spines, with a midventral tonguelike sclerite; internally with a complex of sclerites.

**MATERIAL.**—*Holotype* (male): ARGENTINA, PCIA. CORRIENTES, C. Pellegrini, Oct 1966, I. Apostol. (MACN).

*Paratypes:* Same data as holotype, 4♂.

### Genus *Smicridea* McLachan

This is the only genus of Hydropsychinae known to occur in South America. Species are found from the southwestern United States to the tip of South America and in Australia. The genus is divided into two subgenera, the typical one in the male sex bearing two pairs of reticulate sacs in the abdomen, and the subgenus *Rhyacophylax* lacking these sacs. It is the dominant genus in most parts of Latin America, both in terms of numbers of species and individuals. Currently about 60 species of *Smicridea* (*Smicridea*) and 40 of *Rhyacophylax* are described, but this is only a fraction of the species in the Neotropics. Every collection from a different area in South America produces more previously unknown forms.

Larvae of species in both subgenera are described (Flint, 1974a; Ulmer, 1909; Wiggins 1977). They construct a rather typical retreat with trap-nets in flowing water. Apparently they feed on suspended organic matter trapped by the nets.

### *Smicridea* (*Smicridea*) *paranensis*, new species

FIGURES 194–197

Although this species clearly belongs to the *S. fasciatella* group, it differs greatly from all other known species in the group. The four elongate rows of small spines within the apex of the aedeagus are unique. The broad and obliquely truncate tip of the clasper and dorsolaterally produced tenth tergite are rarely encountered within the subgenus.

**ADULT.**—Length of forewing, 5 mm. Color generally fuscous; head with white hair anteriorly, femora stramineous; forewing with a white spot at third length from base to apex, with a crescentic white band at two-thirds length, with some white hairs in apical fringe. Male abdomen with anterolateral process of fifth sternum as long as sternum; with 2 pairs of large, internal, reticulate sacs.

**Male Genitalia:** Ninth segment with anterior margin nearly vertical. Tenth tergite with a small dorsal point in lateral aspect; in dorsal aspect with a distinct apicolateral protuberance. Clasper with basal segment long and parallel-sided; apical segment with apex broad and obliquely truncate. Aedeagus tubular, with basal and apical portions meeting at an angle of about 110°; apex with a small dorsal hood and a striated appearance ventrolaterally; internally with 4 elongate rows of fine spines directed toward apex, with internal sclerites.

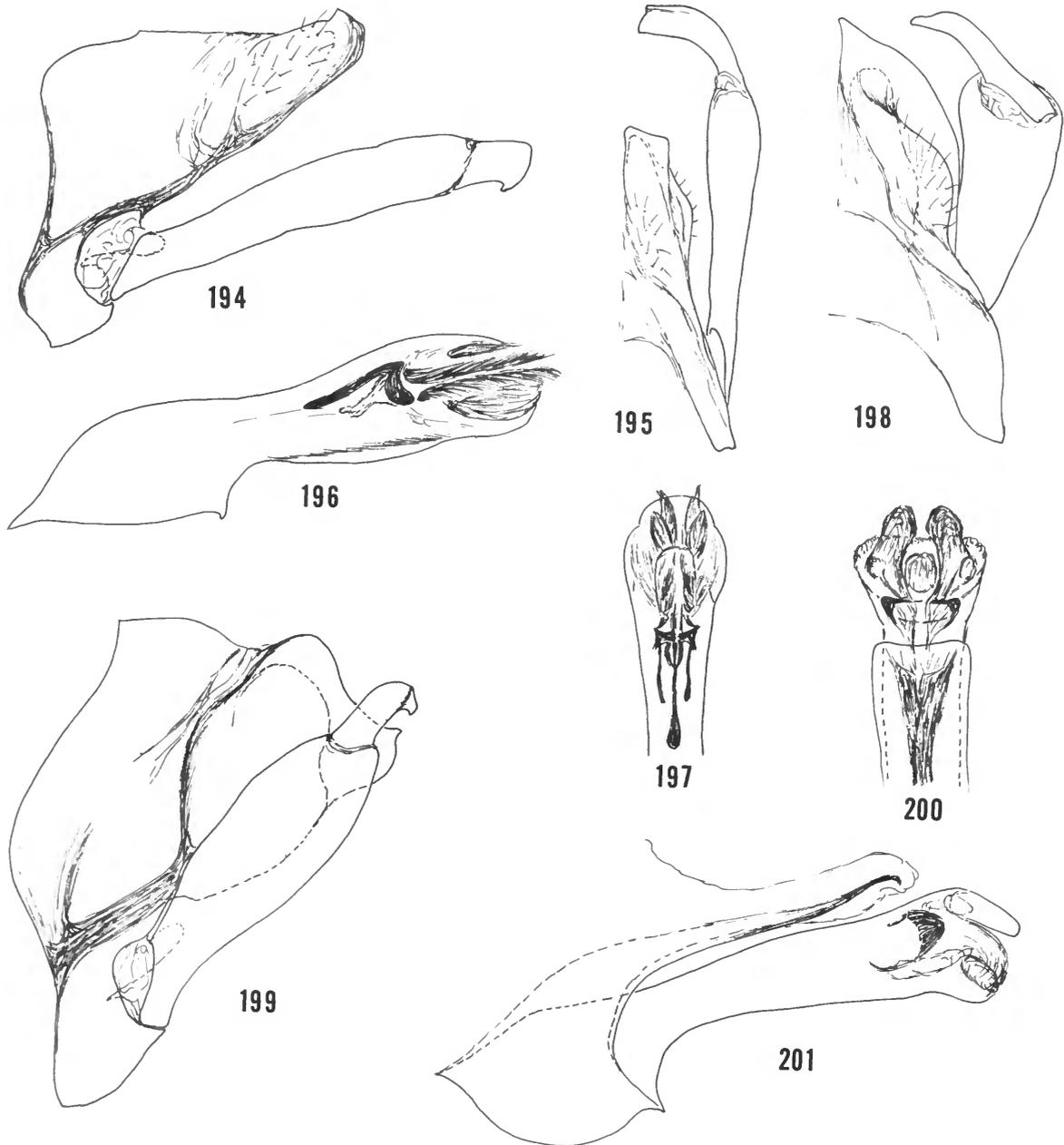
**MATERIAL.**—*Holotype* (male): ARGENTINA, PCIA. MISIONES, 7 km E El Dorado, 22 Nov 1973, O.S. Flint, Jr., USNM Type 100527.

*Paratypes:* PARAGUAY, DPTO. ITAPUA, Pirapó, 28–31 Dec 1971, L.E. Peña G., 5♂, 7♀; same, but Jan 1972, 9♂, 7♀. DPTO. PARAGUARÍ, Col. Piraretá, 25 Dec 1971, L.E. Peña G., 1 ♀.

### *Smicridea* (*Smicridea*) *nigerrima*, new species

FIGURES 198–201

This species is closely related to *S. bidentata* Martynov, which has a deeply bifid apex of the



FIGURES 194-201.—*Smicridea paranensis*, new species: 194, male genitalia, lateral; 195, same, dorsal; 196, aedeagus, lateral; 197, tip of aedeagus, dorsal. *Smicridea nigerrima*, new species: 198, male genitalia, dorsal; 199, same, lateral; 200, tip of aedeagus, dorsal; 201, aedeagus, lateral.

clasper, a more elongate tenth tergum, and a more bulbous apex of the aedeagus.

**ADULT.**—Length of forewing, 6–7 mm. Color uniformly fuscous. Male abdomen with anterolateral process of fifth sternum about as long as sternum; with 2 pairs of large, internal, reticulate sacs.

**Male Genitalia:** Ninth segment narrow, anterior margin with a small rounded lobe. Tenth tergite very broad in lateral aspect, dorsal margin convex, deeply concave laterally, with anterior margin produced into a sharp carina. Clasper with basal segment inflated, short; apical segment directed sharply mesad, tip attenuate. Aedeagus tubular, apex slightly enlarged, with a pair of dorsolateral sclerites, and an internal complex; with an elongate structure arising from base and overlaying dorsum, with a slightly sclerotized band mesally.

**MATERIAL.**—*Holotype* (male): ARGENTINA, PCIA. TUCUMÁN, Horco Molle, near Tucumán, 12 Oct 1973, L. Stange, USNM Type 100528.

*Paratypes:* PCIA. CATAMARCA, El Rodeo, 28 Jan 1959, R. Goldbach, 2♂ (IML); Arroyo El Pintado, near La Viña, 18 Oct 1973, O.S. Flint, Jr., 2♀. PCIA. SALTA, Cañada La Gotera, Rt. 59, km 23.5, 16–17 Oct 1973, O.S. Flint, Jr., 1♀.

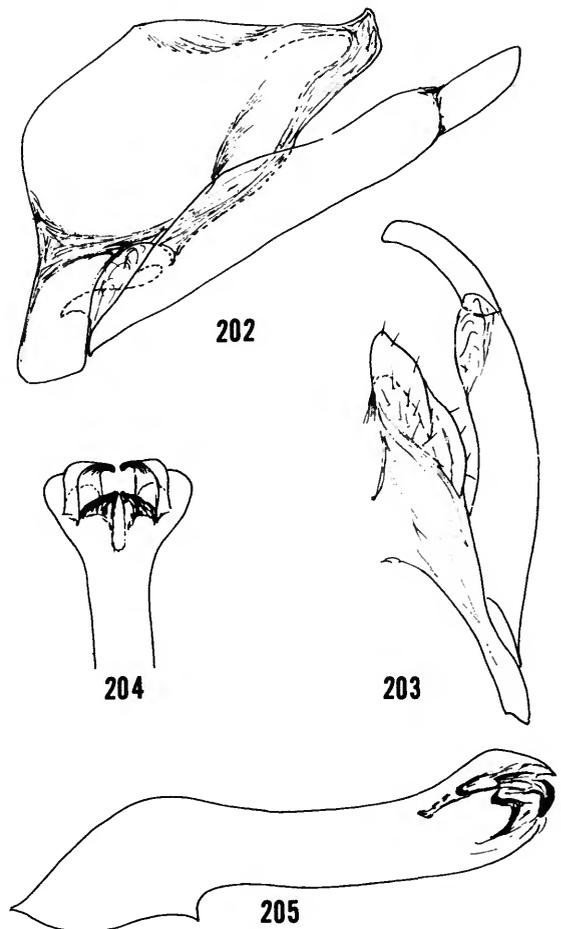
***Smicridea (Smicridea) olivacea*, new species**

FIGURES 202–205

This species is very closely related to *S. aterrima* Ulmer, but the tip of the tenth tergite is narrower in dorsal aspect, and the shape of the aedeagus is quite different, especially the tips of the dorsal sclerites, which are decurved in *S. olivacea*.

**ADULT.**—Length of forewing, 5–6 mm. Color a nearly uniform olive brown; forewing with 2 slightly paler spots at the level of the stigma. Male abdomen with anterolateral process of fifth sternum barely attaining posterior margin of segment; with 2 pairs of very large, flattened, reticulate, internal pouches.

**Male Genitalia:** Ninth segment nearly vertical anteriorly, wide dorsally. Tenth tergite ending in an upturned point in lateral aspect; tapering to a mesal point, rounded laterally in dorsal aspect.



FIGURES 202–205.—*Smicridea olivacea*, new species: 202, male genitalia, lateral; 203, same, dorsal; 204, tip of aedeagus, dorsal; 205, aedeagus, lateral.

Clasper with basal segment long, parallel-sided; apical segment parallel-sided, apex obliquely truncate. Aedeagus angled from base, apical third directed slightly dorsad; tip rounded dorsally, with a pair of dorsal lobes, the apices of which are angled sharply ventrad, with an internal complex.

**MATERIAL.**—*Holotype* (male): ARGENTINA, PCIA. CATAMARCA, Arroyo El Pintado, near La Viña, 18 Oct 1973, O.S. Flint, Jr., USNM Type 100529.

*Paratypes:* PCIA. SALTA, Payogasta, 13 Oct

1973, O.S. Flint, Jr., 2♀; Río Brealito, 12 Oct 1973, O.S. Flint, Jr., 1♂.

*Smicridea (Rhyacophylax) chicoana*, new species

FIGURES 206–209

This appears to be another species of the *S. peruana* group, but one that is quite distinct from the other known species. The elongate, narrow apices of the tenth tergites, the small, basolateral flap of the tenth tergum, and simple form of the aedeagus are all distinctive.

**ADULT.**—Length of forewing, ♂ 8 mm, ♀ 10 mm. Width of eye of male in dorsal aspect 1/3 that of interocular distance. Color stramineous, thorax and head dorsally nearly black; forewing with a dark mark along chord, apical fourth grayish, with a dark spot in cell M; female with generally grayer ground color. Male abdomen with anterolateral process of fifth sternum length of sternum; without internal reticulate sacs.

**Male Genitalia:** Ninth segment with a broadly rounded anterolateral lobe; with anterolateral sclerotized bar strongly curved. Tenth tergum deeply divided apicomeresally, with tergites elongate and tapering; lateral margin strongly sclerotized, especially basally, with a small, sclerotized lateral flap. Clasper with basal segment long and irregularly enlarged apicad; apical segment with pointed apex. Aedeagus enlarged basally, curved into axis of stem; internal sclerite long and slender.

**MATERIAL.**—*Holotype* (male): ARGENTINA, PCIA. SALTA, Chicoana, S Salta, 8–9 Oct 1968, L.E. Peña G., USNM Type 100530.

**Paratypes:** Same data as holotype, 31♂, 6♀; Peña Baya, Rt. 59, km 22.5, 16–17 Oct 1973, O.S. Flint, Jr., 2♂, 7♀; Cañada la Gotera, Rt. 59, km 23.5, 16–17 Oct 1973, 2♀; 20 km S Salta, 9 Oct 1968, L.E. Peña G., 1♀. PCIA. JUJUY, Dec 1911, P. Jørgensen, 2♂, 1♀ (ZSZM).

*Smicridea (Rhyacophylax) piraya*, new species

FIGURES 210–213

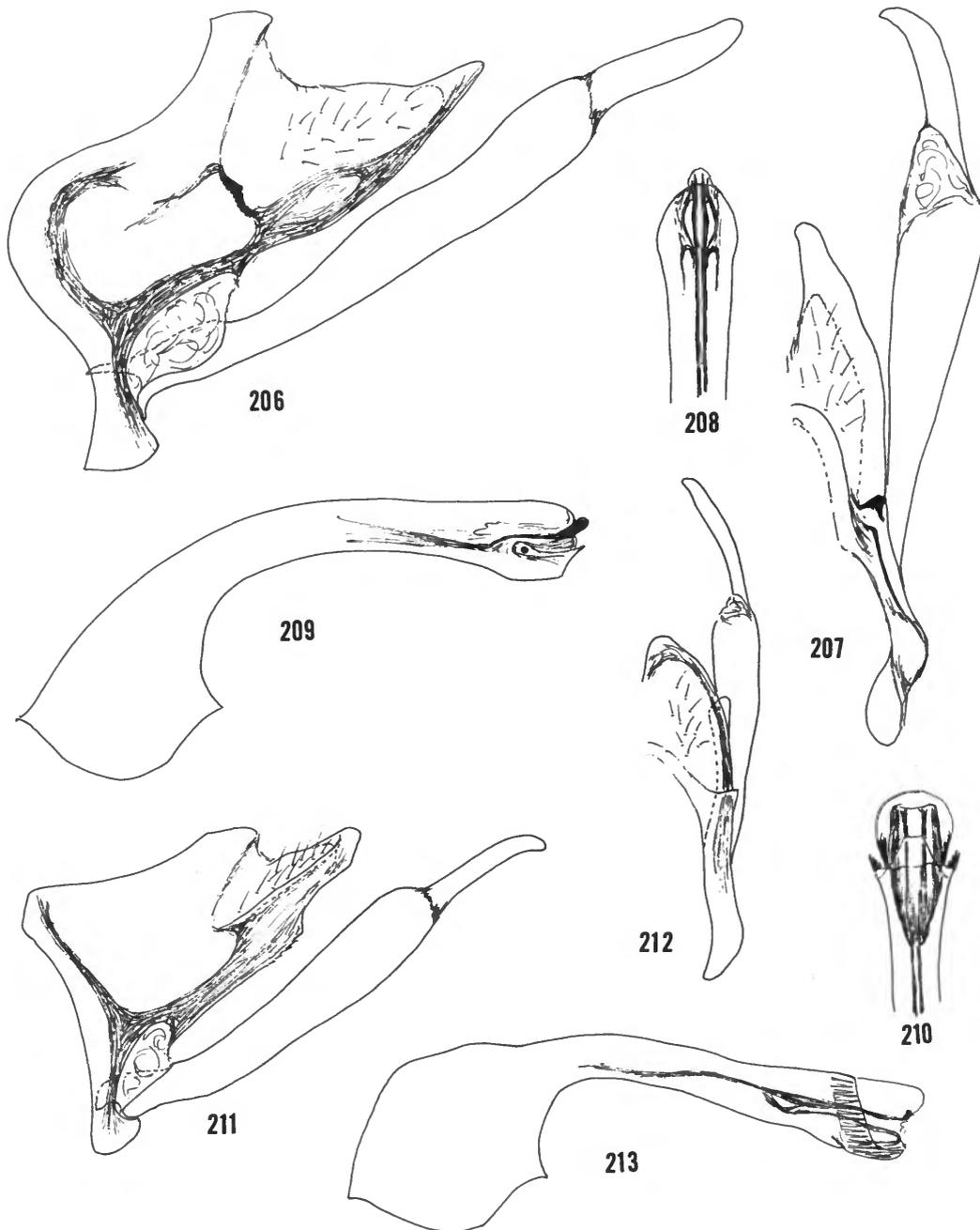
This species seems to be a member of the *S. peruana* group, closest to *S. (R.) caligata* Flint. From *S. caligata*, it is easily distinguished by the structure of the tenth tergum, which lacks the boot-shaped, spicule-covered sclerite, and in details of the structure of the tip of the aedeagus.

**ADULT.**—Length of forewing, 5–6 mm. Width of eye of male in dorsal aspect 1/2 that of interocular distance. Color stramineous; forewing with dark marks along chord, in a subterminal, scalloped band, in spots on cells M and 3A, and in a trianguloid mark on base of costa. Male abdomen with anterolateral processes of fifth sternum length of sternum; without internal reticulate sacs.

**Male Genitalia:** Ninth segment with anterolateral lobe moderately produced. Tenth tergum narrowly divided apicomeresally, with dorsolateral membranous area very distinctly delimited; tergite with tip broadly rounded, with ventrolateral margin heavily sclerotized and developed into a distinct carina. Clasper with basal segment long, inflated apicad; apical segment bluntly pointed. Aedeagus with base enlarged, angled to axis of stem, which is long and angled slightly ventrad; apex encircled by an oblique spiculate band, with 2 rounded apical lobes and elongate internal sclerites.

**MATERIAL.**—*Holotype* (male): ARGENTINA, PCIA. MISIONES, Arroyo Piray Guazú, N San Pedro, 22 Nov 1973, O.S. Flint, Jr., USNM Type 100531.

**Paratypes:** Same data as holotype, 5♂, 2♀. BRAZIL, EDO. SANTA CATARINA, Nova Teutonia, Jan 1963, F. Plaumann, 1♂; same, but Nov 1963, 1♂; same, but Jan 1964, 3♂, 2♀; same, but Oct 1964, 1♂, 1♀; same, but Sep 1964, 2♀. EDO. SÃO PAULO, Piracicaba, 20 Jan 1965, C.A. Triplehorn, 2♂; same, but 8 Mar 1965, 1♂; same, but 12 Mar 1965, 1♂; same, but 2 Dec 1965, 1♂.



FIGURES 206-213.—*Smicridea chicoana*, new species: 206, male genitalia, lateral; 207, same, dorsal; 208, tip of aedeagus, dorsal; 209, aedeagus, lateral. *Smicridea piraya*, new species: 210, tip of aedeagus, dorsal; 211, male genitalia, lateral; 212, same, dorsal; 213, aedeagus, lateral.

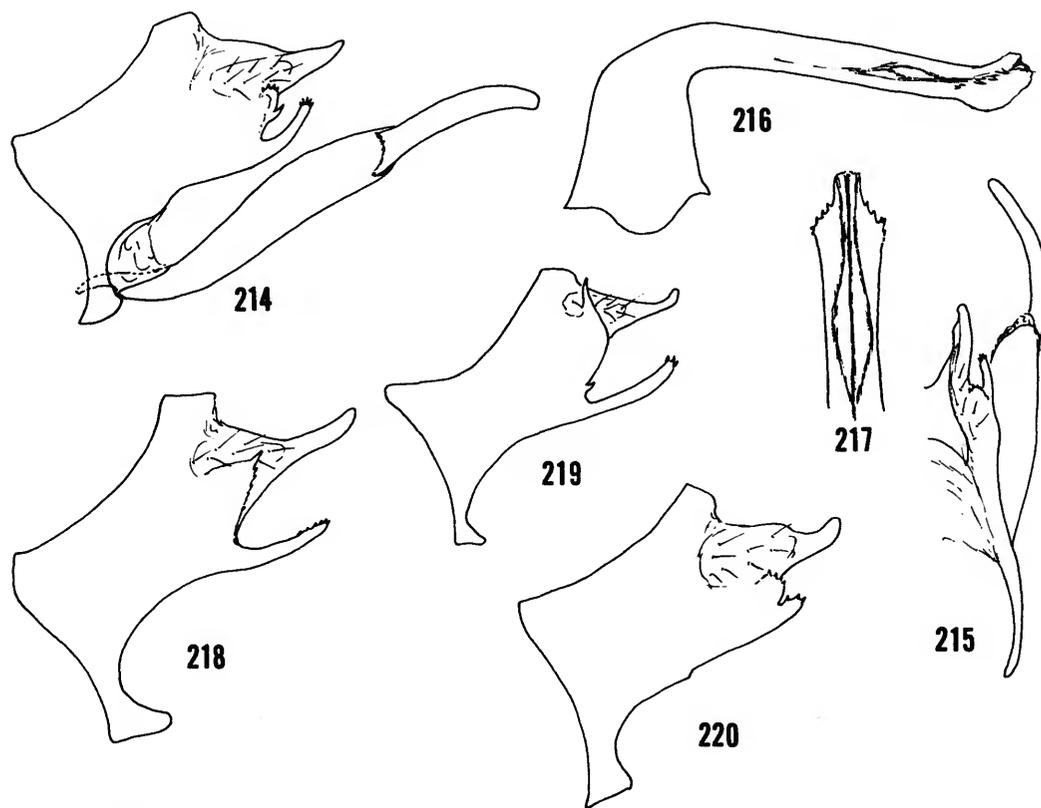
***Smicridea (Rhyacophylax) iguazu*, new species**

FIGURES 214-220

This species does not seem to have any clear relationships within the genus. No other species known to me has such a bizarre modification of the tenth tergites. Although I consider all the males here recorded as belonging to the same species, it is by no means absolutely certain, because all differ in the shape of the modifications of the tenth tergite. Variability in the spinous processes of the tenth tergites, however, is found in other species of the genus, and some of the examples of *S. iguazu* are even bilaterally asymmetrical.

ADULT.—Length of forewing, 4.5–5.5 mm. Width of eyes of male in dorsal aspect 1/2 that of interocular distance. Color brown, head and thorax dorsally fuscous; forewing dark brown, faintly darker along chord and terminally, which area is bordered inwardly by a white band (of the pinned males, 2 are dark brown, 1 stramineous, and 1 almost white, but all show the same pattern). Male abdomen with anterolateral process of fifth sternum length of sternum; without internal reticulate sacs.

*Male Genitalia:* Ninth segment with anterolateral process angulate. Tenth tergum with apex divided in dorsal aspect, tergite produced into a narrow process; ventrolateral margin greatly



FIGURES 214-220.—*Smicridea iguazu*, new species: 214, male genitalia, lateral; 215, same, dorsal; 216, aedeagus, lateral; 217, tip of aedeagus, dorsal; 218, dark paratype, Río Iguazú, ninth and tenth segments, lateral; 219, paratype, Nova Teutonia, same; 220, white paratype, Río Iguazú, same.

modified, with a ventral process of varying length bearing apical spinules, above which is a very variable lobe bearing spinules. Clasper with basal segment moderately long, parallel-sided; apical segment bluntly pointed. Aedeagus with inflated basal portion very high, stem very long and angled slightly ventrad; tip slightly upturned, usually with a few lateral spicules, internal sclerite long and threadlike.

**MATERIAL.**—*Holotype* (male): ARGENTINA, PCIA. MISIONES, Río Iguazú, Camp Nañdu, 25 Nov 1973, O.S. Flint, Jr., USNM Type 100532.

*Paratypes*: Same data as holotype, 15♂, 7♀; Arroyo Piray Guazú, N San Pedro, 22 Nov 1973, O.S. Flint, Jr., 2♂. BRAZIL, EDO. SANTA CATARINA, Nova Teutonia, Oct 1964, F. Plaumann, 1♂. EDO. RIO DE JANEIRO, Rio Pirai, Mun. Rio Claro, 8 Apr 1979, C.M. and O.S. Flint, Jr., 6♂, 5♀ (USP).

***Smicridea (Rhyacophylax) villarricensis*, new species**

FIGURES 221–223

This species is clearly a member of the *S. signata* group and is the first member of the group known from south of the Amazon. The species is closest to *S. lobata* Ulmer but differs in possessing a broadly rounded apex to the tenth tergite and a shorter, broader ventral lip on the aedeagus.

**ADULT.**—Length of forewing, 4.5 mm. Width of eyes of male middorsally 1/2 that of interocular distance. Color yellowish brown; forewing with a distinct, transverse pale band subapically, bordered outwardly by a narrow, darker band. Fifth sternum with anterolateral process slightly longer than sternum; without internal sacs.

**Male Genitalia:** Ninth segment with anterolateral process narrow; posterior margin middorsally produced into a narrow keel, with lateral surface concave below this keel. Tenth tergum with tip narrowly divided dorsally, tergites broadly rounded apically in dorsal aspect (often with these lobes partially overlapping); ventrolateral

margin strongly sclerotized and produced into a rounded lobe ventromesally, the inner margin of which bears small denticles. Clasper with basal segment long, slightly expanded apicad; apical segment tapering to apex. Aedeagus with basal portion enlarged, apical portion at right angles to base; apex with dorsolateral margin slightly darkened, with a ventromesal process strongly expanded apically, internal sclerite long and slender, with a pair of small dark spots near mid-length.

**MATERIAL.**—*Holotype* (male): PARAGUAY, DPTO. GUAIRÁ, 3.9 km S Villarrica, 2 Dec 1973, O.S. Flint, Jr., USNM Type 100533.

*Paratypes*: Same data as holotype, 1♂, 13♀.

***Smicridea (Rhyacophylax) forcipata*, new species**

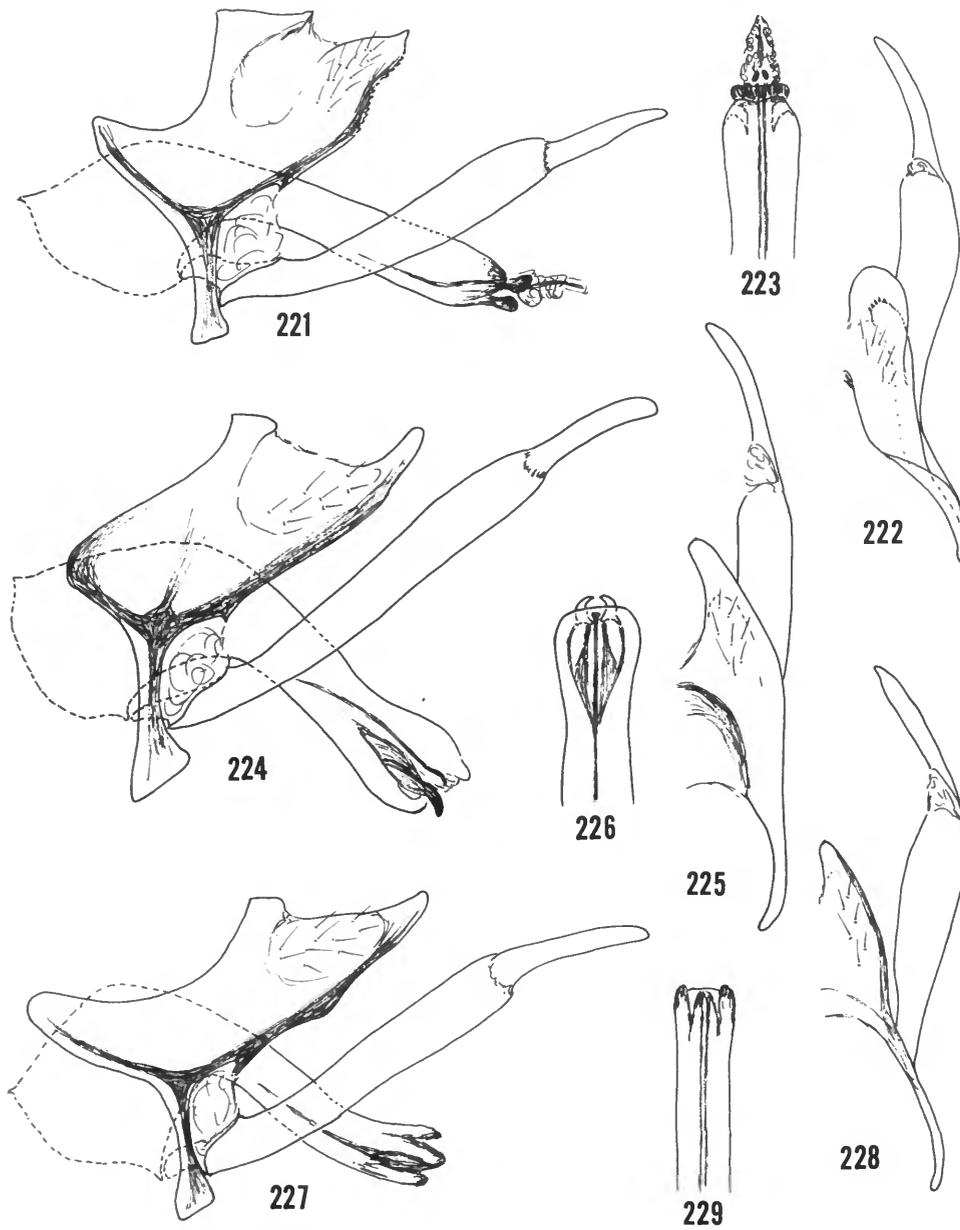
FIGURES 224–226

This species and *S. pallidivittata* Flint are closely related. They hardly differ in color or in the form of most of the male genitalia. *Smicridea forcipata* is slightly larger and bears very different internal sclerites within the apex of the aedeagus.

**ADULT.**—Length of forewing, 5.5–7 mm. Width of eye of male middorsally 1/3 that of interocular distance. Color dark brown; forewing dark brown, with obscurely darker bands, a conspicuous narrow, pale transverse band subapically. Anterolateral process of fifth sternum of male slightly longer than sternum; without internal sacs.

**Male Genitalia:** Ninth tergum with anterolateral lobe rounded. Tenth tergum deeply divided apicomesally; tergite with apex elongate in dorsal and lateral aspects. Clasper with basal segment very long and parallel-sided; apical segment bluntly pointed. Aedeagus with base enlarged and angled to axis of stem, which is broad and slightly inflated apically; with a simple threadlike internal sclerite and ventrolaterally a pair of elongate plates the apices of which are caliper-like.

**MATERIAL.**—*Holotype* (male): ARGENTINA, PROV. MISIONES, Arroyo Piray Mini, Rt. 17 W



FIGURES 221-229.—*Smicridea villarricensis*, new species: 221, male genitalia, lateral; 222, same, dorsal; 223, tip of aedeagus, dorsal. *Smicridea forcipata*, new species: 224, male genitalia, lateral; 225, same, dorsal; 226, tip of aedeagus, dorsal. *Smicridea atrobasis*, new species: 227, male genitalia, lateral; 228, same, dorsal; 229, tip of aedeagus, dorsal.

Dos Hermanas, 23 Nov 1973, O.S. Flint, Jr., USNM Type 100534.

*Paratypes:* Same data as holotype, 1♂, 4♀; Arroyo Coatí, 15 km E San José, 18–19 Nov 1973, O.S. Flint, Jr., 9♂, 10♀; Misiones (no further data), 13 Nov 1909, P. Jørgensen, 3♂ (ZSZM).

***Smicridea (Rhyacophylax) atrobasis*, new species**

FIGURES 227–229

In coloration, this species at first sight appears to be the same as *S. (R.) appendiculata* Flint; however, the dark marks on the forewings are more extensive in *S. atrobasis*. The genitalia of the two species are totally different, and *S. atrobasis* shows its closest relationship to species of the *S. brasiliiana* group. From all known species in this group, *S. atrobasis* is easily distinguished on the basis of color and presence of apicolateral lobes on the aedeagus.

**ADULT.**—Length of forewing, 5 mm. Eye of male very large, middorsally width of eye 1½ times that of interocular distance. Color stramineous; head and thorax dorsally dark purplish black; forewing dark purplish black in basal quarter and in 2 transverse bands apicad, otherwise covered with golden hair. Anterolateral process of fifth sternum of male about as long as sternum; without internal sacs.

**Male Genitalia:** Ninth segment with anterior margin produced into a long, narrowly rounded lobe. Tenth tergum divided apicomeresally; tergite in lateral and dorsal aspects with tip produced and rounded. Clasper with basal segment long and parallel-sided; apical segment bluntly pointed. Aedeagus with base enlarged, angled to axis of stem, which is long and slightly upturned apically; apex with a long, slender internal sclerite, and apicolateral lobes that progressively become directed basad as the internal sclerite is exerted.

**MATERIAL.**—*Holotype* (male): ARGENTINA, PCIA. ENTRE RÍOS, Salto Grande, Río Uruguay, 16 Nov 1973, O.S. Flint, Jr., USNM Type 100535.

*Paratypes:* Same data as holotype, 7♂, 13♀. PROV. MISIONES, Camp Nañdu, Río Iguazú, 25 Nov 1973, O.S. Flint, Jr., 52♂, 2♀. BRAZIL, EDO. SANTA CATARINA, Nova Teutonia, Nov 1963, F. Plaumann, 3♂, 1♀; same, but Jan 1964, 2♂; same, but Oct 1964, 4♂, 51♀. URUGUAY, DPTO. ARTIGAS, San Gregorio, 29 Nov 1959, Carbonell, Mesa, and San Martin, 1♂; Río Uruguay, Barra Arroyo Guaviyú, 28 Dec 1954, C.S. Carbonell, 1♂. DPTO. PAYSANDÚ, Puerto Pepe-Ají, 8 Nov 1955, C.S. Carbonell, 25♂ (FHCU). DPTO. SALTO, Salto Grande, 10 Nov 1955, C.S. Carbonell, 52♂, 72♀ (FHCU).

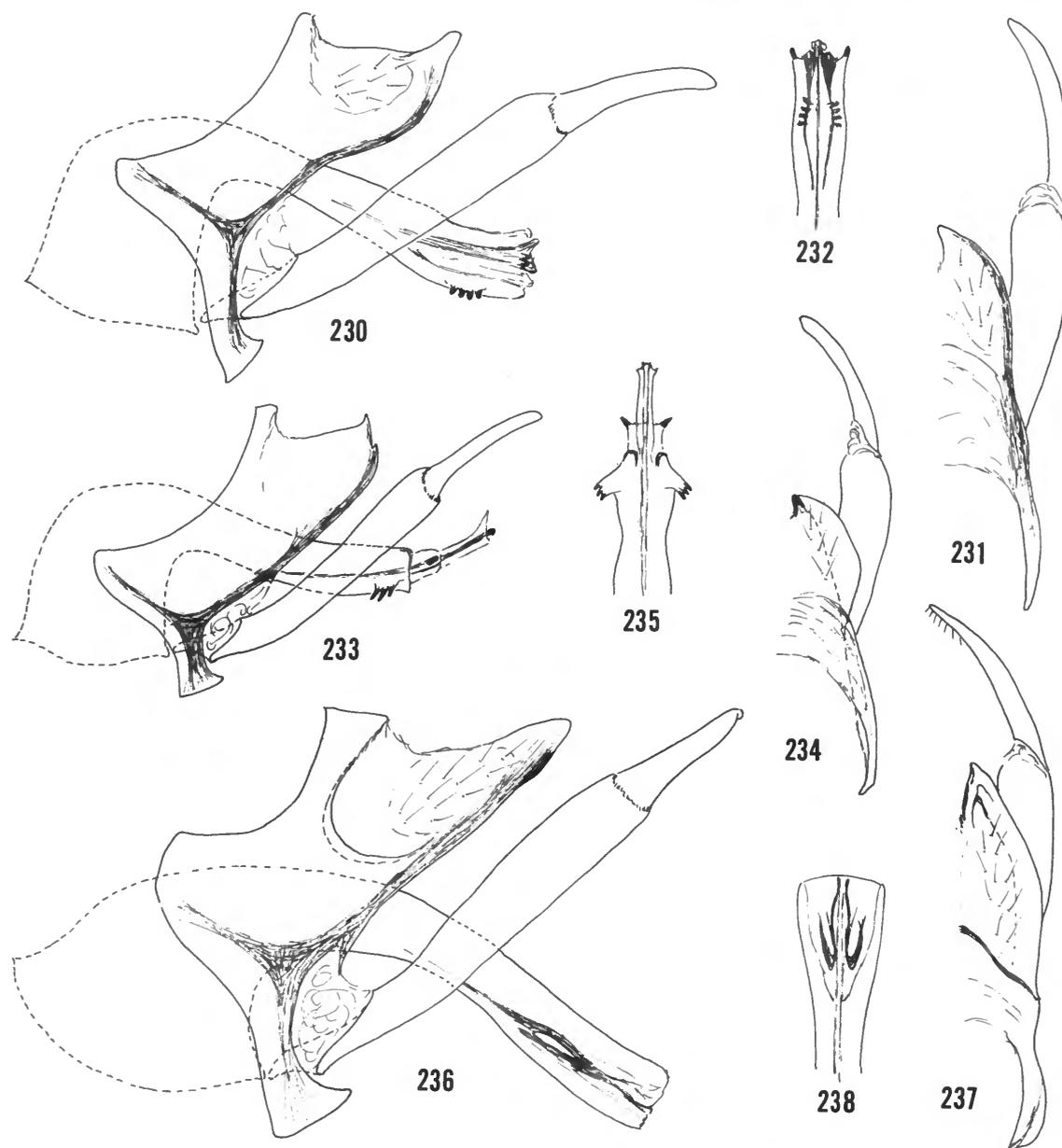
***Smicridea (Rhyacophylax) dentifera*, new species**

FIGURES 230–232

This species is extremely close to *S. unguiculata*, new species. It differs in being slightly larger and by being fuscous with cream-colored markings. In the male genitalia, the main difference is in the tenth tergum, which is apically produced into a rounded lobe and in the apex of the aedeagus, which bears its spinules directly from the surface.

**ADULT.**—Length of forewing, 6–7.5 mm. Width of eye of male middorsally almost 1/2 that of interocular distance. Color fuscous with cream-colored maculae; forewing with pale maculae, 1 basally, in a transverse Y-shaped mark at mid-length (these 2 pale marks may coalesce), a narrow transverse band subterminally, and at tip (female more obscurely marked). Anterolateral process of fifth sternum of male about 1½ times as long as sternum; without internal sacs.

**Male Genitalia:** Ninth segment with anterolateral margin produced into a rounded lobe. Tenth tergum divided dorsomesally; tergite apically produced in a narrow process both in dorsal and lateral aspects. Clasper with basal segment very long, parallel-sided; apical segment bluntly pointed. Aedeagus with base enlarged, high, stem angled slightly ventrad; apex with ventrolateral rows of 3–5 and an apicolateral group of 1–2 small spinules, internal sclerite long, threadlike, tip with distinct dorsolateral crests.



FIGURES 230-238.—*Smicridea dentifera*, new species: 230, male genitalia, lateral; 231, same, dorsal; 232, tip of aedeagus, dorsal. *Smicridea unguiculata*, new species: 233, male genitalia, lateral; 234, same, dorsal; 235, tip of aedeagus, dorsal. *Smicridea nanda*, new species: 236, male genitalia, lateral; 237, same, dorsal; 238, tip of aedeagus, dorsal.

**MATERIAL.**—*Holotype* (male): ARGENTINA, PROV. MISIONES, Río Iguazú, Camp Nañdu, 25 Nov 1973, O.S. Flint, Jr., USNM Type 100536.

*Paratypes*: Same data as holotype, 3♂, 3♀; Arroyo Piray Mini, Rt. 17, W of Dos Hermanas, 23 Nov 1973, O.S. Flint, Jr., 1♂, 4♀. PROV. ENTRE RÍOS, Río Uruguay, Salto Grande, 16 Nov 1973, O.S. Flint, Jr., 1♂, 2♀. URUGUAY, DPTO. ARTIGAS, confluencia Arroyo Guaviyú-Río Uruguay, 22 Dec 1954, C.S. Carbonell, 5♂ (FHCU); San Gregorio, 29 Nov 1959, Carbonell, Mesa, and San Martin, 21♂ (FHCU); Río Cuareim, Sepulturas, 15 Jan 1952, C.S. Carbonell, 1♂; same, but 15 Dec 1952, 1♂.

***Smicridea (Rhyacophylax) unguiculata, new species***

FIGURES 233-235

In basic appearance this species is very similar to *S. (R.) abrupta* Flint, which is known from Surinam; however, the structure of the apex of the aedeagus is very different. In *S. abrupta* there is only a simple internal sclerite, whereas in *unguiculata* there is, in addition, lateral spinous processes.

**ADULT.**—Length of forewing, 4.5 mm. Width of eye of male middorsally 1/2 that of interocular distance. Color brown, marked with stramineous; forewing with basal half irregularly mottled brown and stramineous, with a broad dark band at level of stigma bounded apical by a narrow stramineous band, a dark band, and with apex stramineous (female with pale areas more obscurely colored). Anterolateral processes of fifth sternum of male about length of sternum; without internal sacs.

**Male Genitalia:** Ninth segment with anterior margin produced and angled. Tenth tergum barely divided apicomally in dorsal aspect with tips of tergites touching; in lateral aspect with tergite about as high as long, with tip produced into a dorsally directed point. Claspers with basal segment long and parallel-sided; apical segment ending in a blunt point. Aedeagus enlarged basally, with stem angled slightly ventrad with tip

curved slightly up; apex with a short, ventrolateral, spinous process, a pair of lateral spines on an extensile lobe, with a long, single, internal sclerite.

**MATERIAL.**—*Holotype* (male): ARGENTINA, PROV. MISIONES, Río Iguazú, Camp Nañdu, 25 Nov 1971, O.S. Flint, Jr., USNM Type 100537.

*Paratypes*: Same data as holotype, 20♂, 6♀; Puerto Libertad, 24 Nov 1973, O.S. Flint, Jr., 3♂; Arroyo Saura, 9 km N of L.N. Alem, 20 Nov 1973, O.S. Flint, Jr., 1♂, 2♀. PARAGUAY, DPTO. ALTO PARANÁ, Salto del Monday, near Puerto Presidente Franco, 26 Nov 1973, O.S. Flint, Jr., 10♂, 4♀; Puerto Presidente Stroessner, 26-29 Dec 1965, Hungarian Soil Zoology Expedition II, 14♂, 39♀ (MNM). DPTO. AMAMBAY, Río Aquidabán, Cerro Corá, 29 Nov 1973, O.S. Flint, Jr., 18♂, 4♀; 2 km S Cerro Corá, 28 Nov 1973, O.S. Flint, Jr., 10♂, 3♀. BRAZIL, EDO. SANTA CATARINA, Nova Teutonia, Sep 1963, F. Plaumann, 1♂; same, but Jan 1964, 1♂; same, but Oct 1964, 1♂. EDO. SÃO PAULO, Piracicaba, 20 Jan 1965, C.A. Triplehorn, 12♂; same, but 8 Mar 1965, 4♂; same, but 12 Mar 1965, 75♂; same, but 15 Mar 1966, 1♂. EDO. GOIÁS, Goiania, CNPAF, 7 Oct 1976, 1♂, 25♀ (PUWL); same, but 26 Feb 1976, 1♂, 10♀ (PUWL).

***Smicridea (Rhyacophylax) nanda, new species***

FIGURES 236-238

In many characteristics of the male genitalia, this species appears to be closely related to *S. (R.) weidneri* Flint; however it may be easily recognized by the structure of the apex of the tenth tergite, the tip of which is strongly sclerotized mesoventrally, and by the apical segment of the clasper, the tip of which in dorsal aspect is evenly acuminate.

**ADULT.**—Length of forewing, 5-6 mm. Width of eye of male middorsally 1/2 that of interocular distance. Color brown; forewing with faint darkening around crossveins and in an obscurely paler band subapically. Anterolateral process of fifth sternum 3/4 as long as sternum; without internal sacs.

*Male Genitalia:* Ninth segment with anterolateral process broadly expanded. Tenth tergum basolaterally with a well-marked carina; tergite pointed, heavily sclerotized on mesal face; ventrolateral margin developed into a strong ridge. Clasper with basal segment long; apical segment in dorsal aspect evenly acuminate, mesal face slightly concave with a few specialized setae. Aedeagus enlarged basad, stem angled slightly ventrad; apex with rather simple internal sclerites.

**MATERIAL.**—*Holotype* (male): ARGENTINA, PCIA. MISIONES, Río Iguazú, Camp Nañdu, 25 Nov 1973, O.S. Flint, Jr., USNM Type 100538.

*Paratype:* Same data as holotype, 1♂.

#### Family LIMNEPHILIDAE

This is a large family of caddisflies, which is primarily Holarctic in distribution. Very few representatives are known from the African and Australian regions. A small North American element exists in Mexico and in the mountains as far south as Panama. Another distinctive element exists in the Chilean Subregion, with a few outlying species found as far north in the Andes as southern Colombia. All the South American genera are placed in the subfamily Dicosmoecinae, which is also found in Australia and the Holarctic Realm, with large concentrations of species in northeastern Asia and northwestern North America.

The larvae are all case makers and live in all manner of waters from springs to rivers and lakes, both permanent and temporary, and a few even terrestrial. They are primarily consumers of organic matter, either scraping organic ooze off the substrate or, more commonly, shredding large pieces of organic matter in their surroundings.

#### Genus *Anomalocosmoecus* Schmid

This genus is the only one found outside the Chilean Subregion in South America. The other three, rather poorly differentiated, species are found from Lake Titicaca north into southern Colombia.

The larvae of the genus were first described by Marlier (1963) and more recently by Flint (1982) in his treatment of the larvae of the South American genera. Most species live in small, fast, mountain streams, with one found in the littoral of Lake Titicaca. The untoothed mandibles suggest that they feed by scraping organic ooze off the substrate.

#### *Anomalocosmoecus argentinicus*, new species

FIGURES 239–245

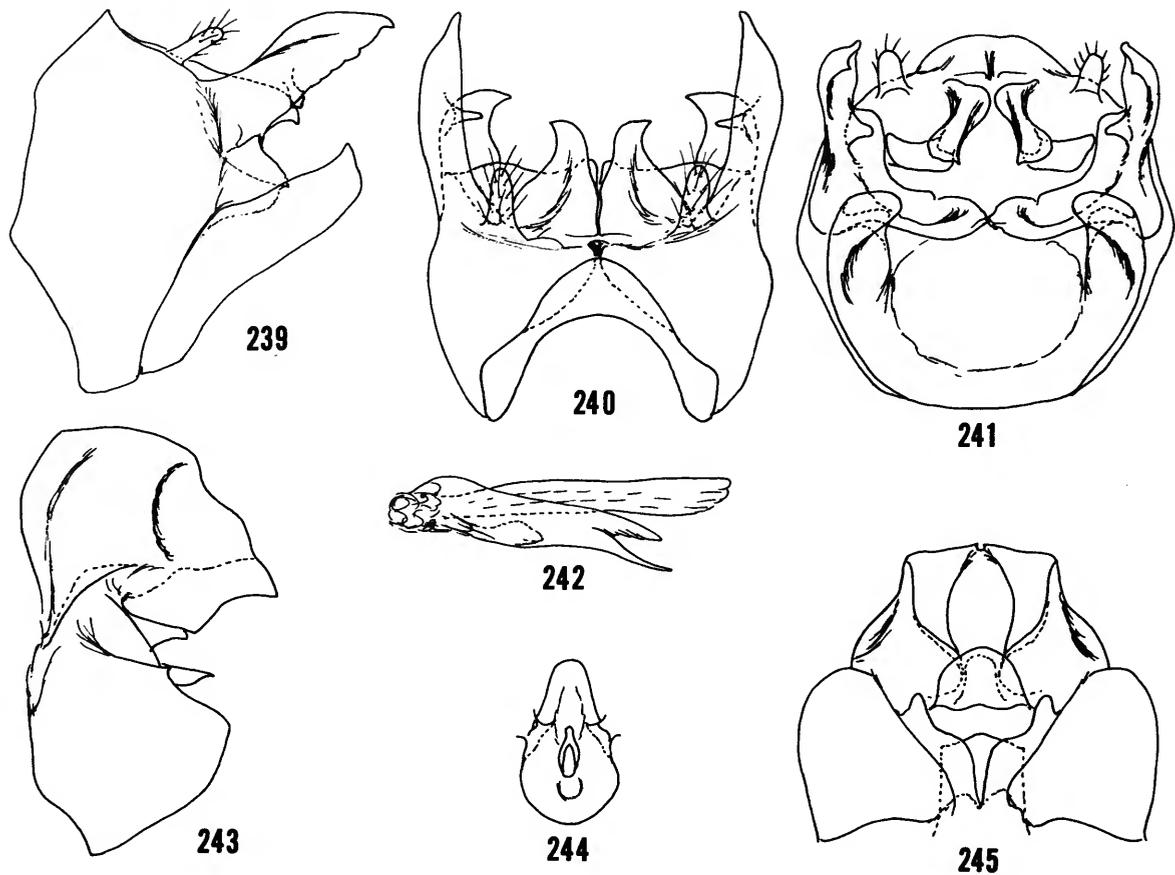
I am placing this species in *Anomalocosmoecus* on the basis of the male genitalia, which are readily homologized with those of the type-species, and certain characters of the larva, especially the edentate mandibles, setae on the membrane of the metanotum, double row of setae on the tibiae, and lack of setae on the membranous venter of the anal prolegs. The larval head, however, does not bear any lateral ridge or carina as is found in the other species of *Anomalocosmoecus*.

The male genitalia of *A. argentinicus* are to be recognized by the reduction of the cercus to a small lobe, the great enlargement of the external branch of the tenth tergum, which bears a small internal tooth, and the division of the parameres.

**ADULT.**—Length of forewing unknown but probably about 15 mm. Color unknown.

*Male Genitalia:* Ninth segment narrow dorsally, broadened laterally. Tenth tergum divided into 3 parts: internal branch low, in dorsal aspect with tip angled laterad; external branch long, platelike, with a small mesal tooth at midlength; inferior branch low, produced mesad. Cercus a short, hirsute lobe above external branch of tenth tergum. Clasper 1-segmented, elongate, tip slightly produced dorsomesad. Aedeagus ending in a lightly sclerotized central tube; parameres each divided into shorter, broader, dorsal and longer, thinner, ventral arms.

*Female Genitalia:* Ninth sternum a large, rounded lobe. Tenth tergum not elongate, dorsum nearly straight, with thin lateral margins, open ventrally. Supragenital plate in ventral aspect nearly semicircular. With a small pointed



FIGURES 239-245.—*Anomalocosmoecus argentinicus*, new species: 239, male genitalia, lateral; 240, same, dorsal; 241, same, posterior; 242, aedeagus, lateral; 243, female genitalia, lateral; 244, vaginal sclerite, ventral; 245, female genitalia, ventral.

plate between ninth sternite and vulvar scale, which is broad and not produced mesally. Vaginal sclerite slightly produced posteriad with a central opening and midlateral supports.

**MATERIAL.**—*Holotype* (pharate male): ARGENTINA, PCIA. SALTA, Malcante, Rt. 59, km 32, W Chicoana, 13 Oct 1973, O.S. Flint, Jr., USNM Type 100539.

*Paratypes*: Same data as holotype, 3♂, 5♀ pupae; La Zanja, Rt. 59, W Chicoana, 13 Oct 1973, O.S. Flint, Jr., 3♂, 3♀ pupae; Cachí Adentro, 12 Oct 1973, O.S. Flint, Jr., 4♀ pupae.

*Other*: Cachí Adentro, 12 Oct 1973, 1 prepupa; Malcante, 13 Oct 1973, 1 prepupa. PCIA.

TUCUMÁN, irrigation ditch, Rt. 307, km 76, W Tafí del Valle, 11 Oct 1973, O.S. Flint, Jr., 2 larvae, 25 pupae and prepupae; "Los Cardones," Rt. 307, km 97.5, W Tafí del Valle, 11 Oct 1973, O.S. Flint, Jr., 86 larvae, 8 prepupae.

#### Family LEPTOCERIDAE

As with the preceding family, this is a very large group but of a much wider distribution, which is equally diverse in the Southern and Northern hemispheres. The higher classification has recently been revised (Morse, 1981), with the resulting recognition of two subfamilies: the Tri-

plectidinae with three tribes, and the Leptocerinae with eight tribes. Members of both subfamilies and many of the tribes are found in South America, including the Chilean Subregion.

All the larvae construct portable cases, basically tubular in nature. They inhabit all types of waters, the family being one of the most frequently found in lentic habitats, with some even found out of water on moist rock faces. They are mostly detritivorous, but some lines have rather strong predatory tendencies.

### Genus *Grumichella* Müller

This is a rather small genus exclusively of South American distribution, which is placed in the tribe Grumichellini of the Triplectidinae. I am following the synonymy of *Leptocellodes* with *Grumichella* as accepted by Morse (1981).

The cases have been described by Müller (1880), and the larvae by Thienemann (1909). All collections have been made in or near fast-flowing rivers and streams. The larval food is unknown.

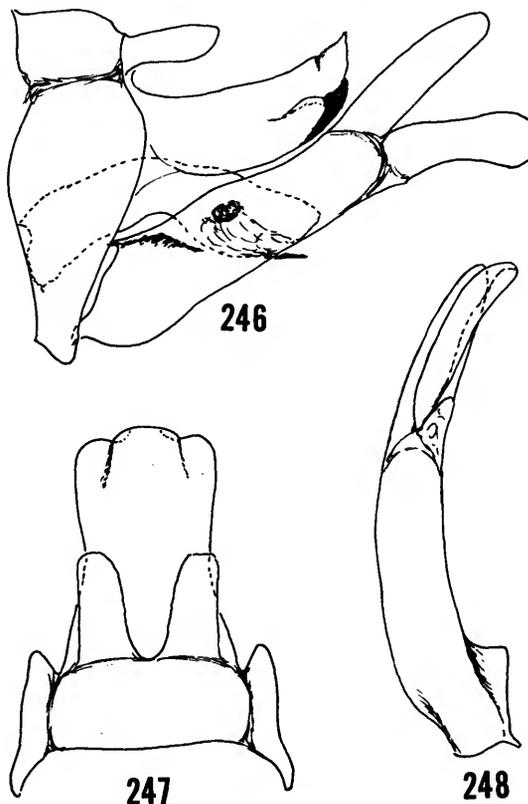
### *Grumichella aequiunguis*, new species

FIGURES 246-248

The species is a close relative of *G. flaveola* (Ulmer). It differs in lacking the dark spots at the apex and on the crossveins of the forewing and in the male genitalia. The tenth tergum is not so wide basolaterally, and the apex is developed into three lobes, and the apical segment of the clasper is broader, especially apicad, and is as long as the dorsal process.

**ADULT.**—Length of forewing, ♂ 8 mm. Color yellowish; forewing with 2 small spots of fuscous hair, 1 at midlength, other at apex of anal area.

**Male Genitalia:** Ninth segment annular, slightly expanded dorsolaterally. Tenth tergum elongate, apex in dorsal aspect trilobate; in lateral aspect not greatly widened basally and with apicolateral area distinctly darkened. Cercus ovoid, less than half as long as tenth tergum. Clasper



FIGURES 246-248.—*Grumichella aequiunguis*, new species: 246, male genitalia, lateral; 247, same, dorsal; 248, clasper, ventral.

with a distinct basomesal shelf, apicodorsal section membranous, terete; apical segment as long as apicodorsal section, not tapered apicad, concave mesally. Aedeagus cylindrical, slightly angled, with a small internal sclerite.

**MATERIAL.**—*Holotype* (male): ARGENTINA, PCIA. MISIONES, Arroyo Piray Mini, Rt. 17 W Dos Hermanas, 23 Nov 1973, O.S. Flint, Jr., USNM Type 100540.

*Paratypes:* Same data as holotype, 5♂, 1♀; Arroyo Piray Guazú, N San Pedro, 22 Nov 1973, O.S. Flint, Jr., 2♂.

### Genus *Brachysetodes* Schmid

The genus is known only from South America and the Lesser Antilles. It is divided into two

groups of species, one limited to the Chilean Subregion, the other to the Brazilian Subregion of South America and the Lesser Antilles. It is of obscure affinities and placed in the Leptocerinae but not assigned to any tribe (Morse, 1981),

The larva of the Antillean species is described (Flint, 1968b), but none of the Chilean group are described. The larvae have been taken in flowing water, often small springs and spring runs. The food is unknown.

***Brachysetodes bifurcatus*, new species**

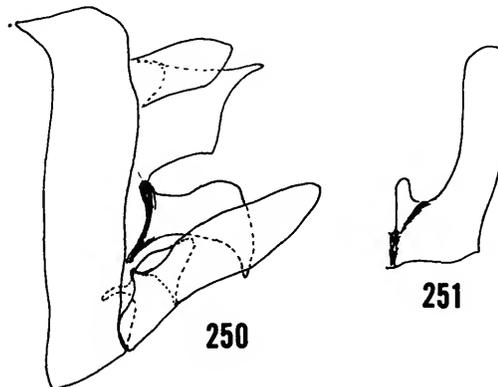
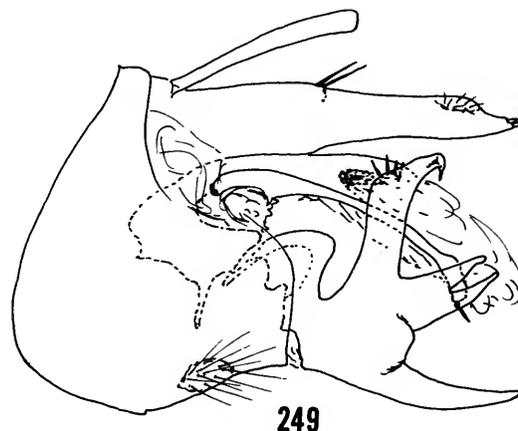
FIGURE 249

This and *B. nublensis* Flint are closely related and are clearly members of the group limited to the Chilean Subregion. The primary differences are in the clasper, the central, posterior branch of which is deeply divided in *B. bifurcatus* and the aedeagus, which bears a long, slender, lateral process.

**ADULT.**—Length of forewing, 4.5 mm. Color uniformly fuscous, including forewing.

**Male Genitalia:** Ninth segment rounded anterolaterally, produced posterolaterally, with a distinct lateroventral setiferous wart. Tenth tergum long, tapering posteriad; with a pair of spines dorsally from which point the tergum is narrowly divided, tips divergent with a small spine. Cercus slender, about half length of tenth tergum. Clasper divided into 3 subequal process from posterior: dorsalmost erect, tip hooked mesad; central process with apex deeply divided; ventralmost process directed posteriad, tapering; with a mesobasal lobe, hooked anteriorly. Aedeagus with a sclerotized base; a long, membranous central region which bears basolaterally a long, slender process ending in a short spine, internally with a C-shaped sclerite.

**MATERIAL.**—*Holotype* (male): CHILE, PCIA. CAUTÍN, Fundo El Coigüe, 27 km NE Villarrica, 500 m, 28 Feb–3 Mar 1979, D. Davis et al., USNM Type 100541.



FIGURES 249–251.—*Brachysetodes bifurcatus*, new species: 249, male genitalia, lateral. *Oecetis iguazu*, new species: 250, male genitalia, lateral; 251, clasper, ventral.

**Genus *Oecetis* McLachlan**

*Oecetis* is widespread over the world and generally most diverse in the tropical zones, although a few species are found as far as the subarctic regions. No great numbers of species have been described from South America, but collections at hand indicate that the fauna is much more diverse than is apparent. No species have yet been found in the Chilean Subregion. The genus is placed in the leptocerine tribe Oecetini.

Although larvae from many regions of the world are known (Ross, 1944; Flint 1968b; Wiggins, 1977, etc.), none from South America are described. They construct cases in a great variety

plectidinae with three tribes, and the Leptocerinae with eight tribes. Members of both subfamilies and many of the tribes are found in South America, including the Chilean Subregion.

All the larvae construct portable cases, basically tubular in nature. They inhabit all types of waters, the family being one of the most frequently found in lentic habitats, with some even found out of water on moist rock faces. They are mostly detritivorous, but some lines have rather strong predatory tendencies.

### Genus *Grumichella* Müller

This is a rather small genus exclusively of South American distribution, which is placed in the tribe Grumichellini of the Triplectidinae. I am following the synonymy of *Leptocellodes* with *Grumichella* as accepted by Morse (1981).

The cases have been described by Müller (1880), and the larvae by Thienemann (1909). All collections have been made in or near fast-flowing rivers and streams. The larval food is unknown.

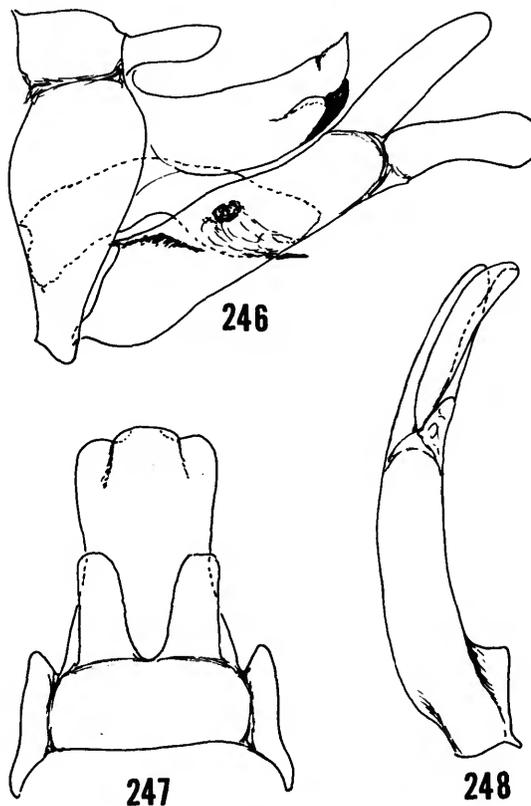
#### *Grumichella aequiunguis*, new species

FIGURES 246–248

The species is a close relative of *G. flaveola* (Ulmer). It differs in lacking the dark spots at the apex and on the crossveins of the forewing and in the male genitalia. The tenth tergum is not so wide basolaterally, and the apex is developed into three lobes, and the apical segment of the clasper is broader, especially apicad, and is as long as the dorsal process.

**ADULT.**—Length of forewing, ♂ 8 mm. Color yellowish; forewing with 2 small spots of fuscous hair, 1 at midlength, other at apex of anal area.

**Male Genitalia:** Ninth segment annular, slightly expanded dorsolaterally. Tenth tergum elongate, apex in dorsal aspect trilobate; in lateral aspect not greatly widened basally and with apicolateral area distinctly darkened. Cercus ovoid, less than half as long as tenth tergum. Clasper



FIGURES 246–248.—*Grumichella aequiunguis*, new species: 246, male genitalia, lateral; 247, same, dorsal; 248, clasper, ventral.

with a distinct basomesal shelf, apicodorsal section membranous, terete; apical segment as long as apicodorsal section, not tapered apicad, concave mesally. Aedeagus cylindrical, slightly angled, with a small internal sclerite.

**MATERIAL.**—*Holotype* (male): ARGENTINA, PCIA. MISIONES, Arroyo Piray Mini, Rt. 17 W Dos Hermanas, 23 Nov 1973, O.S. FLint, Jr., USNM Type 100540.

*Paratypes:* Same data as holotype, 5♂, 1♀; Arroyo Piray Guazú, N San Pedro, 22 Nov 1973, O.S. Flint, Jr., 2♂.

### Genus *Brachysetodes* Schmid

The genus is known only from South America and the Lesser Antilles. It is divided into two

groups of species, one limited to the Chilean Subregion, the other to the Brazilian Subregion of South America and the Lesser Antilles. It is of obscure affinities and placed in the Leptocerinae but not assigned to any tribe (Morse, 1981),

The larva of the Antillean species is described (Flint, 1968b), but none of the Chilean group are described. The larvae have been taken in flowing water, often small springs and spring runs. The food is unknown.

***Brachysetodes bifurcatus*, new species**

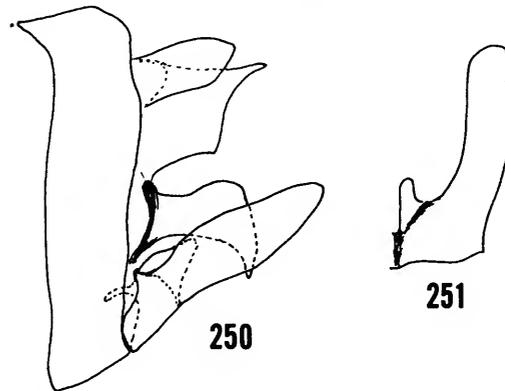
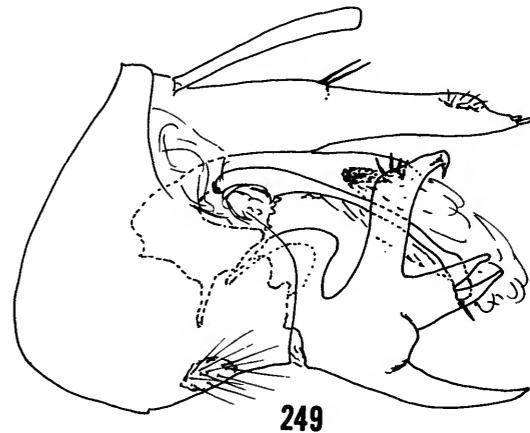
FIGURE 249

This and *B. nublensis* Flint are closely related and are clearly members of the group limited to the Chilean Subregion. The primary differences are in the clasper, the central, posterior branch of which is deeply divided in *B. bifurcatus* and the aedeagus, which bears a long, slender, lateral process.

**ADULT.**—Length of forewing, 4.5 mm. Color uniformly fuscous, including forewing.

**Male Genitalia:** Ninth segment rounded anterolaterally, produced posterolaterally, with a distinct lateroventral setiferous wart. Tenth tergum long, tapering posteriad; with a pair of spines dorsally from which point the tergum is narrowly divided, tips divergent with a small spine. Cercus slender, about half length of tenth tergum. Clasper divided into 3 subequal process from posterior: dorsalmost erect, tip hooked mesad; central process with apex deeply divided; ventralmost process directed posteriad, tapering; with a mesobasal lobe, hooked anteriad. Aedeagus with a sclerotized base; a long, membranous central region which bears basolaterally a long, slender process ending in a short spine, internally with a C-shaped sclerite.

**MATERIAL.**—*Holotype* (male): CHILE, PCIA. CAUTÍN, Fundo El Coigüe, 27 km NE Villarrica, 500 m, 28 Feb–3 Mar 1979, D. Davis et al., USNM Type 100541.



FIGURES 249–251.—*Brachysetodes bifurcatus*, new species: 249, male genitalia, lateral. *Oecetis iguazu*, new species: 250, male genitalia, lateral; 251, clasper, ventral.

**Genus *Oecetis* McLachlan**

*Oecetis* is widespread over the world and generally most diverse in the tropical zones, although a few species are found as far as the subarctic regions. No great numbers of species have been described from South America, but collections at hand indicate that the fauna is much more diverse than is apparent. No species have yet been found in the Chilean Subregion. The genus is placed in the leptocerine tribe Oecetini.

Although larvae from many regions of the world are known (Ross, 1944; Flint 1968b; Wiggins, 1977, etc.), none from South America are described. They construct cases in a great variety

of forms and materials. They are found in both lotic and lentic sites, often hidden in accumulations of organic trash. In contrast to most other genera of leptocerids, *Oecetis* larvae are strongly predatory.

***Oecetis iguazu*, new species**

FIGURES 250, 251

This species, *O. punctipennis* (Ulmer), and *O. connata* Flint form a closely related complex of species. *Oecetis connata* is easily distinguished by the almost complete fusion of the cerci and tenth tergum and elongate, slender claspers. From its closest relative, *O. punctipennis*, *O. iguazu* is to be distinguished by its almost parallel-sided clasper with a large basomesal lobe. The forewings lack the white marks along the apex which are so conspicuous in *O. punctipennis*.

**ADULT.**—Length of forewing, 8 mm. Color pale yellowish brown; forewing with tufts of dark hair at the forks of veins, at junctions with crossveins and longitudinal veins, and along wing margin where veins end. Forewing with  $R_{2+3}$  branched at about a third of distance to margin beyond  $s$ ; hindwing with  $R_{2+3}$ ,  $M$ , and  $Cu_1$ , all with small marginal forks, anal area reduced.

**Male Genitalia:** Ninth segment annular. Cercus about twice as long as broad. Tenth tergum with apicodorsal margin drawn out into a small point. Clasper elongate, almost parallel-sided, apex broadly rounded; with a distinct basomesal lobe. Aedeagus short, shaped like a bird's head, apicoventral margin produced.

**MATERIAL.**—*Holotype* (male): ARGENTINA, PCIA. MISIONES, Río Iguazú, Camp Nañdu, 25 Nov 1973, O.S. Flint, Jr., USNM Type 100542.

**Paratypes:** PARAGUAY, DEPTO. SAN PEDRO, Arroyo Tapiracuay, San Estanislao, 27 Nov 1973, O.S. Flint, Jr., 1♂. DEPTO. ITAPUA, Pirapó, Jan 1972, L.E. Peña G., 1♂. BRAZIL, EDO. SANTA CATARINA, Nova Teutonia, 15 Sep 1963, F. Plauermann, 2♂; same, but 27 Sep 1964, 1♀; same, but Sep 1963, 1♀; same, but Oct 1964, 1♀; same, but 31 Oct 1931, 1♂ (MCZ); same, but 29 Oct 1934, 1♀ (MCZ). EDO. RIO DE JANEIRO, Mun. Rio Claro,

Rio Pirai, 8 Apr 1977, C.M. and O.S. Flint, Jr., 1♂, 3♀. EDO. ESPÍRITO SANTO, Fazenda Santa Clara, 15 km SE Santa Teresa, 22 Apr 1977, C.M. and O.S. Flint, Jr., 2♂, 3♀ (USP).

**Genus *Nectopsyche* Müller**

This genus, which is distributed from Canada southward through North, Central, and South America including the Greater Antilles and the Chilean Subregion, is placed in the tribe Nectopsychini of the Leptocerinae. The adults are brightly colored, and the color patterns are very necessary for classification; therefore, they should be kept dry and preserved on pins.

In many cases I find the recognition and definition of species in this genus very confusing. In general, the male genitalia are very similar throughout the genus and much given to small differences both within and between populations. The wing coloration seems to be rather stable, at least within populations, but sometimes does vary between populations. I have decided to recognize species in this genus based primarily on what seems to me to be distinctive differences in color pattern as well as major differences in male genitalia. Thus I will recognize groups of species, each group with very similar, but not specifically differentiated, male genitalia. The species in these groups will be distinguished by coloration. I realize that this splitting will occasionally result in the division of a true species if there is extreme variation, especially of a clinal nature, but I believe this to be of a less serious nature than the confounding of several species under one name. Hopefully, further study of the male genitalia will reveal which parts are of greatest stability and use in defining the species and which are of little use. At this time I note that setae and setae-bearing lobes and processes are extremely variable, often differing on the two sides of the same specimen.

The larvae of a number of North American species have been described (Ross, 1944; Haddock, 1977; Wiggins, 1977). All construct basically tubular cases in a great number of forms.

Some are nearly cylindrical sand cases, others are of mixed sand and long plant pieces, and a few cases are of leaf fragments. They inhabit many sites from small mountain brooks to large rivers, marshes and lakes. They are apparently detritivores.

***Nectopsyche brunneofascia*, new species**

FIGURES 252, 339

Considering both color and structure, this species is clearly a member of the *N. bruchi* group. There are not any clear differences in the male genitalia between *N. bruchi* (Navás) and *N. brunneofascia*; however, the coloration appears to be distinctly different. The distinct dark spots on the veins, both basally and apically, in *N. bruchi* are totally lacking in this species, and instead the wing is marked by a series of transverse brown bands separated only by flecks of white hair on the veins.

**ADULT.**—Length of forewing, ♂ 9–11 mm, ♀ 7–8 mm. Color brown, banded; antennae strongly annulate basally, unicolorous apically; body and appendages pale brown, head more golden, head and thorax dorsally with white hair; forewing brown, veins with large flecks of white hair arranged in transverse rows, thus breaking the brown into broad bands. Eyes of male small; eye in ventral aspect about 2/5 as wide as interocular distance.

**Male Genitalia:** Ninth segment erect, posterolateral margin slightly oblique, barely produced dorsomesally; dorsolateral arms long, enlarged apically. Tenth tergites elongate, tips surpassing apices of claspers. Clasper with basodorsal lobe long, apex much enlarged and produced laterad; clasper with ventral margin distinctly, but not greatly, enlarged basally, with a distinct apicomésal lobe; basoventral lobe in ventral aspect about as broad basally as long, multisetate. Aedeagus with a large ventral plate and a small C-shaped internal sclerite.

**MATERIAL.**—*Holotype* (male): ARGENTINA, PCIA. MISIONES, Puerto Libertad, 24 Nov 1973, O.S. Flint, Jr., USNM Type 100543.

**Paratypes:** Same data as holotype, 5♂, 3♀; Arroyo Saura, 9 km N L.N. Alem, 20 Nov 1973, O.S. Flint, Jr., 1♀; Arroyo Coatí, 15 km E San José, 18–19 Nov 1973, O.S. Flint, Jr., 2♀.

***Nectopsyche pantosticta*, new species**

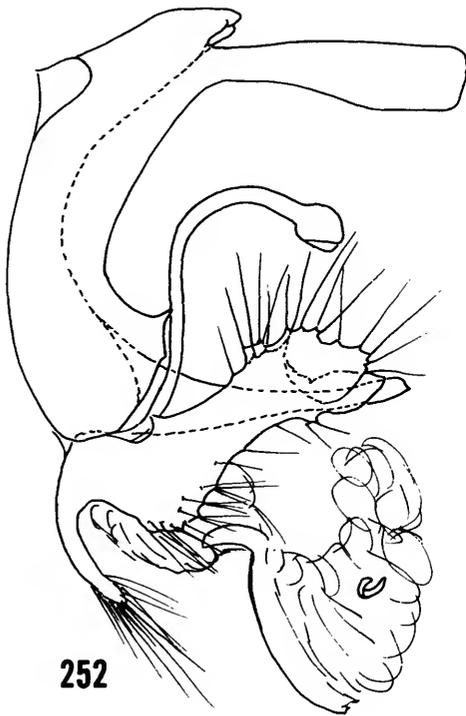
FIGURES 253, 340

This species is closely related to *N. bruchi* (Navás) on the basis of male genitalia and general appearance, although in the latter it is more similar to *N. muelleri* (Ulmer). The clasper of *N. muelleri* has the basoventral margin expanded into a large flap, quite different from the clasper of the *N. bruchi* group. There do not appear to be any really significant differences in the male genitalia between the species of the *N. bruchi* group, except perhaps the corrugations near the tip of the basal sclerite of the aedeagus in *N. pantosticta*. In coloration, however, *N. pantosticta* has a uniformly buff-colored wing with all the veins evenly spotted with small, dark flecks of hair. In *N. bruchi* the wings are not so uniformly colored, and the dark spots on the veins are more elongate and darker and are limited to a basal and an apical area.

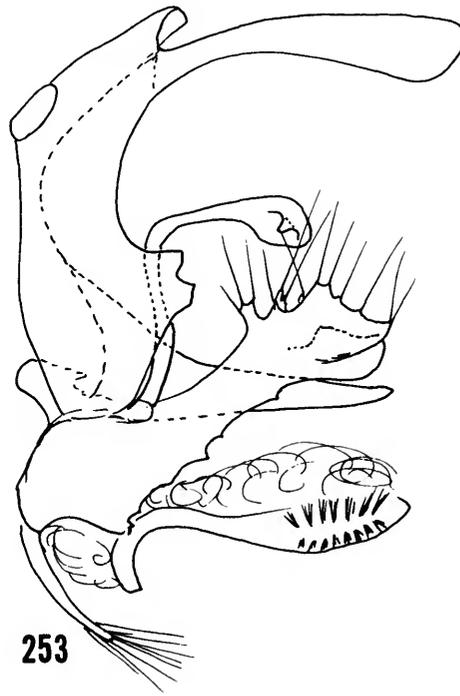
**ADULT.**—Length of forewing, ♂ 11–12 mm, ♀ 9–10 mm. Color stramineous; antennae indistinctly annulate basally; body and appendages, stramineous; forewing uniformly stramineous, all veins regularly marked from base to apex with small flecks of darker hair. Eyes of male small; eye in ventral aspect about 2/5 as wide as interocular distance.

**Male Genitalia:** Ninth segment erect, posterior margin slightly produced dorsomesally; dorsolateral arms long, slightly enlarged apicad. Tenth tergite elongate, tapering to a bluntly pointed tip. Clasper with basodorsal lobe much enlarged apically; clasper with ventral margin bearing a small basal lobe, with a distinct apicomésal lobe; basoventral lobe elongate, slightly flattened, with several setae apically. Aedeagus with large ventral plate that shows apically an internal series of corrugations, and a small internal sclerite.

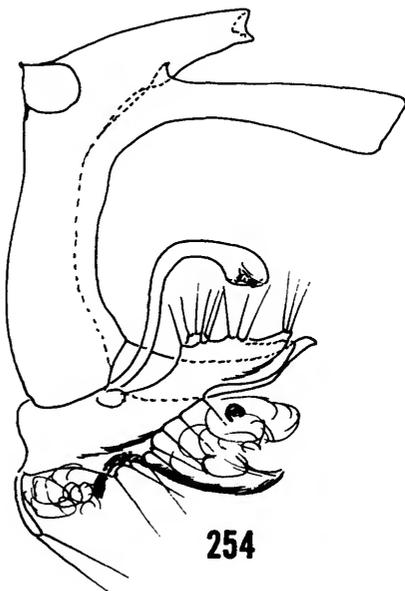
**MATERIAL.**—*Holotype* (male): ARGENTINA,



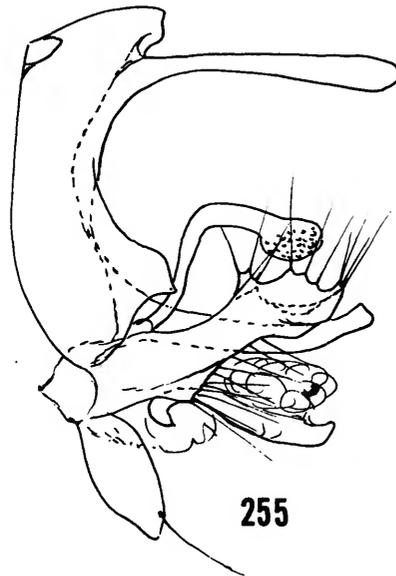
252



253



254



255

FIGURES 252-255.—*Nectopsyche brunneofascia*, new species: 252, male genitalia, lateral. *Nectopsyche pantosticta*, new species: 253, same, lateral. *Nectopsyche fuscomaculata*, new species: 254, same, lateral. *Nectopsyche multilineata*, new species: 255, same, lateral.

PCIA. MISIONES, Arroyo Coatí, 15 km E San José, 18–19 Nov. 1973, O.S. Flint, Jr., USNM Type 100694.

*Paratypes*: Same data as holotype, 1♂, 5♀; Arroyo Saura, 9 km N L.N. Alem, 20 Nov 1973, O.S. Flint, Jr., 2♀. BRAZIL, EDO. RIO GRANDE DO SUL (no further data), Stiegelmayr, 1♂ (NMW).

***Nectopsyche fuscomaculata*, new species**

FIGURES 254, 341

This is a snow-white species with numerous fuscous or dark brown spots, especially along the veins. The only other species in the region that might look like this is *N. nivea* (Navás), of which I only know a few fragmentary examples, all lacking forewings. Their male genitalia lack the basodorsal lobe of the clasper but otherwise are similar. The other species, such as *N. bruchi* (Navás) or *N. muelleri* (Ulmer), are marked quite differently and have a buff-colored tone to the wings. *Nectopsyche punctata* (Ulmer), although white and brown, is marked in a totally different manner, and the wings are scale-covered not hairy.

**ADULT**.—Length of forewing, ♂ 8.5–10 mm, ♀ 7 mm. Color snow-white with fuscous markings; antennae annulate basally, brown apically; head and thorax dorsally with snow-white hair, body (especially of females) often green; forewing with snow-white hair marked with fuscous or brown spots along veins, with some incomplete transverse bands from anterior margin apically, and with dark spots along posterior and apical margins, wings of female less strongly marked along margins. Eyes of male small; eye in ventral aspect about 2/5 as wide as interocular distance.

**Male Genitalia**: Ninth segment with posterior margin strongly produced dorsomesally; dorsolateral arm gradually widening apicad, apex obliquely truncate. Tenth tergite elongate, with tip angled dorsad. Clasper with basodorsal lobe enlarged at tip; clasper with ventral margin not enlarged basally, tip with a distinct apicomesal lobe; basoventral lobe terete, with 2 or 3 apical

setae. Aedeagus with large ventral plate and a small internal sclerite.

**MATERIAL**.—*Holotype* (male): ARGENTINA, PCIA. MISIONES, Arroyo Liso, 8 km W General Güemes, 19 Nov 1973, O.S. Flint, Jr., USNM Type 100544.

*Paratypes*: Same data as holotype, 1♀; Arroyo Saura, 9 km N L.N. Alem, 20 Nov 1973, O.S. Flint, Jr., 1♂; Puerto Libertad, 24 Nov 1973, O.S. Flint, Jr., 1♀; Arroyo Coatí, 15 km E San José, 18–19 Nov 1973, O.S. Flint, Jr., 4♀. PCIA. CHACO, Riacho Barranqueras, Puerto Vilelas, 5 Dec 1973, O.S. Flint, Jr., 2♀. PARAGUAY, DPTO. GUAIRÁ, 3.9 km S Villarrica, 2 Dec 1973, O.S., Flint, Jr., 4♀. DPTO. AMAMBAY, Río Aquidabán, Cerro Corá, 29 Nov 1973, O.S. Flint, Jr., 2♂; 2 km S Cerro Corá, 28 Nov 1973, O.S. Flint, Jr., 9♂, 5♀. DPTO. SAN PEDRO, Arroyo Tapiracuay, San Estanislao, 27 Nov. 1973, O.S. Flint, Jr., 13♂, 10♀. BRAZIL, EDO. SANTA CATARINA, Nova Teutonia (27°11'S, 52°23'W), Oct 1964, F. Plaumann, 2♀. EDO. RIO DE JANEIRO, Mun. Rio Claro, Rio Pirai, 8 Apr 1977, C.M. and O.S. Flint, Jr., 10♂, 15♀ (USP).

***Nectopsyche multilineata*, new species**

FIGURES 255, 342

This very distinctively marked species is unlike any other species known to me from South America. In some aspects its coloration is reminiscent of the North American *N. exquisita*, but it lacks the black anal spots present in the latter. The large, scooplike, basoventral lobe of the clasper would ally this species to the *N. pavidata* group, yet no other species of this group has a color pattern in any way similar to *N. multilineata*.

**ADULT**.—Length of forewing, ♂ 8.5 mm, ♀ 5.5–6 mm. Color white, with fuscous markings; antennae annulate basally, dark apically; palpi fuscous, head and thorax dorsally with white hairs and scales overlaying an almost fuscous exoskeleton; forewing with snow-white hair with many transverse bands of fuscous hair, apical bands wavy, with 2 large, round, dark spots basally and another over stigma. Eyes of male small; eye in

ventral aspect about 2/5 as wide as interocular distance.

*Male Genitalia:* Ninth segment with posterior margin strongly produced ventrally, only slightly produced dorsomesally; dorsolateral arm slightly inflated apicad, tip rounded. Tenth tergite elongate, tip angled dorsad. Clasper with basodorsal lobe enlarged apically; clasper with ventral margin not enlarged ventrally, tip with a distinct apicomesal lobe; basoventral lobes fused mesally, scooplike, with a pair of large marginal setae, divided apicomesally for 1/4 length of lobe. Aedeagus with a large ventral plate and a small internal sclerite.

*MATERIAL.*—*Holotype* (male): ARGENTINA, PCIA. ENTRE RÍOS, Río Uruguay, Salto Grande, 16 Nov. 1973, O.S. Flint, Jr., USNM Type 100545.

*Paratypes:* VENEZUELA, EDO. BOLÍVAR, Río Caroní at Paso Caruchi, 9 Feb 1976, C.M. and O.S. Flint, Jr., 1♀; 5 km E Tumeremo, 12 Feb 1976, C.M. and O.S. Flint, Jr., 2♀. EDO. COJEDES, Galeras del Pao, 29 Jul 1967, Rosales and Poole, 3♀ (IZAM).

### *Nectopsyche adusta*, new species

FIGURES 256, 343

In appearance this species is easily confused with the smaller, darker examples of *N. muhni* (Navás), but the male genitalia indicate that it is clearly a member of the *N. quatuorguttata* group.

The coloration is rather uniformly tawny, with the wings crossed by darker bands. In many specimens of *N. muhni*, the spots become larger and coalesce, forming bands across the wings; however, these bands are much more numerous, especially in the apical area in *N. muhni*. The male genitalia of *N. muhni* have the ninth segment higher and more erect, the apicomesal lobe of the clasper is borne distinctly below the apex of the clasper, and the basoventral margin of the clasper is much produced. The coloration alone separates this species readily from the other known species of the *N. quatuorguttata* group.

*ADULT.*—Length of forewing, 6–7 mm. Color

tawny; antennae indistinctly banded basally, tawny apically; forewing uniformly tawny with fuscous, chevron-shaped, cross-bands. Eyes of male small; eye in ventral aspect about 1/3 width of interocular distance.

*Male Genitalia:* Ninth segment in lateral aspect slightly shortened, distinctly prolonged posterodorsally, with virtually no dorsomesal lobe; dorsolateral arms short, slightly enlarged apicad. Tenth tergite with tip rounded. Clasper with basodorsal lobe long and slender, tip slightly enlarged; with ventral margin slightly produced basally and with several irregular processes, apicomesal lobe well developed, not surpassing tip of clasper; basoventral lobes broad, scooplike. Aedeagus with a large ventral plate and a small internal sclerite.

*MATERIAL.*—*Holotype* (male): ARGENTINA, PCIA. ENTRE RÍOS, Salto Grande, Río Uruguay, 16 Nov 1973, O.S. Flint, Jr., USNM Type 100546.

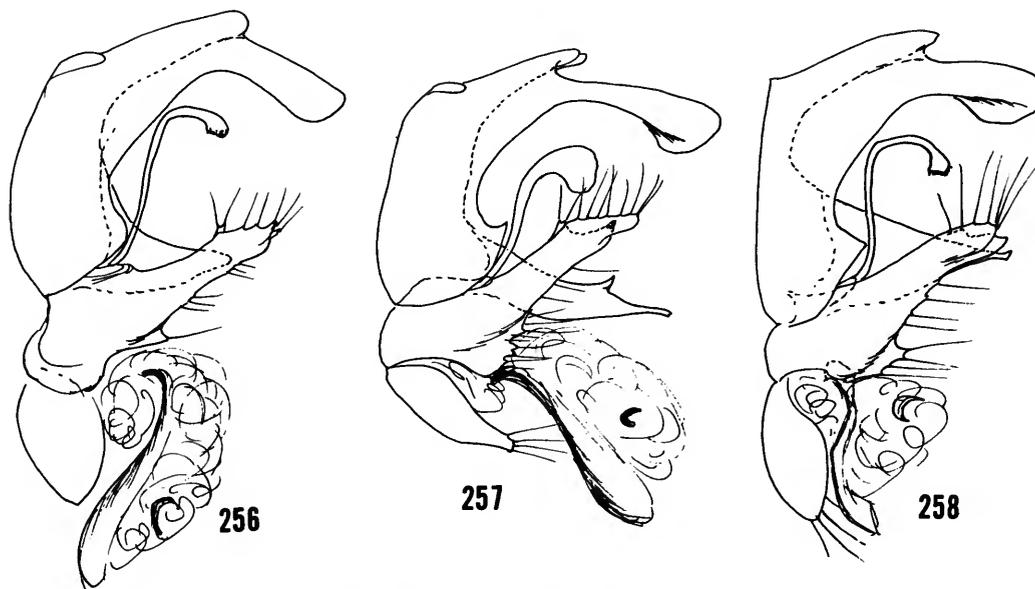
*Paratypes:* PCIA. CORRIENTES, Yapeyú, 17 Nov 1973, O.S. Flint, Jr., 1♂. PCIA. MISIONES, Arroyo Saura, 8 km N L.N. Alem, 20 Nov 1973, O.S. Flint, Jr., 7♂; Arroyo Coatí, 15 km E San José, 18–19 Nov 1973, O.S. Flint, Jr., 18♂; Río Iguazú, Camp Nañdu, 25 Nov 1973, O.S. Flint, Jr., 9♂.

### *Nectopsyche aureovittata*, new species

FIGURES 257, 344

This species appears to be a member of the *N. quatuorguttata* group, related to the following described species, *N. maculipennis*. It is most easily differentiated by the coloration of the forewing, especially the pale, golden band along the posterior margin. In *N. maculipennis*, this is the darkest area of the wing.

*ADULT.*—Length of forewing, ♂ 6.5 mm, ♀ 5.5 mm. Color dark brown, maculate; antennae annulate basally, brown apically; body brown, legs, head, and thorax dorsally with white hair; forewing with chevron-shaped, transverse, brown marks, broadest basally and at center of wing, broken into spots apically, marks separated by silvery white hair, anal and apical margins with



FIGURES 256-258.—*Nectopsyche adusta*, new species: 256, male genitalia, lateral. *Nectopsyche aureovittata*, new species: 257, same, lateral. *Nectopsyche maculipennis*, new species: 258, same, lateral.

golden-yellow hair. Eyes of male small; eye in ventral aspect about 1/3 width of interocular distance.

**Male Genitalia:** Ninth segment in lateral aspect slightly oblique and shortened, with a small dorsomesal process; dorsolateral arms short and widened apically. Tenth tergite elongate, with a small dorsal tooth and elongate apex. Clasper with basodorsal lobe enlarged apically; clasper without ventral margin enlarged basally, although slightly produced here; apicomesal lobe small, not reaching tip of clasper; basoventral lobes separate, broad, scooplike. Aedeagus with large ventral plate and small internal sclerite.

**MATERIAL.**—*Holotype* (male): ARGENTINA, PCIA. MISIONES, Río Iguazú, Camp Nañdu, 25 Nov 1973, O.S. Flint, Jr., USNM Type 100547.

*Paratypes:* Same data as holotype, 7♂, 1♀; Arroyo Saura, 9 km N L.N. Alem, 20 Nov 1973, O.S. Flint, Jr., 1♀. PARAGUAY, DPTO. AMAMBAY, 2 km S Cerro Corá, 28 Nov 1973, O.S. Flint, Jr., 5♂. DPTO. SAN PEDRO, Arroyo Tapiracuay, San Estanislao, 27 Nov 1973, O.S. Flint, Jr., 1♀.

#### *Nectopsyche maculipennis*, new species

FIGURES 258, 345

Together with *N. aureovittata* and *N. quatuorguttata*, this species forms a cluster of closely related species, primarily distinguished by coloration. In this species the wings are strongly spotted, with the marks tending to form chevron-like transverse bands, with many smaller dark spots apically and along the posterior margin.

**ADULT.**—Length of forewing, ♂ 6.5 mm. Color fuscous, maculate; antennae annulate basally, light brown apically; body and legs light brown; forewing with chevron-shaped, transverse, fuscous marks, separated by whitish or stramineous hair, with many intercalary small dark spots in apical area and along posterior margin. Eyes of male small; eye in ventral aspect about 1/3 width of interocular distance.

**Male Genitalia:** Ninth segment in lateral aspect erect and slightly shortened, with a small dorsomesal process; dorsolateral arms very short and rounded apically. Tenth tergite with tip developed into a short process. Clasper with ba-

sodorsal lobe long and slender; ventral margin without a basal lobe but with several irregular processes; apicomeral lobe surpassing tip of clasper; basoventral lobes broad, scooplike. Aedeagus with a large ventral plate and a small internal sclerite.

**MATERIAL.**—*Holotype* (male): PARAGUAY, DPTO. AMAMBAY, 2 km S Cerro Corá, 28 Nov 1973, O.S. Flint, Jr., USNM Type 100548.

#### Family CALAMOCERATIDAE

The calamoceratids are a small family with representatives scattered over most regions of the world. They are, however, predominantly tropical, with very few species penetrating far into temperate regions. They tend to be fairly large and often have the forewings brightly colored. They should be kept dry and preserved on pins.

The immature stages all construct some type of movable shelter. They are primarily inhabitants of flowing waters, although they often concentrate in masses of organic trash in backwaters. They appear to be consumers of plant detritus.

#### Genus *Phylloicus* Müller

This genus is neotropical in distribution, being found from the southwestern United States southwardly to southern South America, including the West Indies and the Chilean Subregion.

Larvae and their cases are well known (Müller, 1880; Flint, 1968a; Wiggins, 1977). Most species are found in accumulations of organic debris in backwaters of brooks and streams. One species inhabits the water found between the leaves in the base of arboreal bromeliads. All construct flat cases of leaf fragments, arranged in dorsal and ventral rows. They consume all types of organic detritus in the environment.

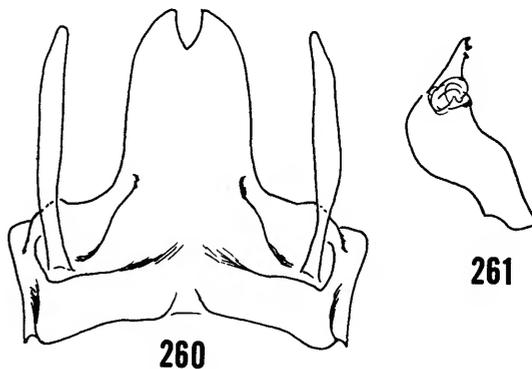
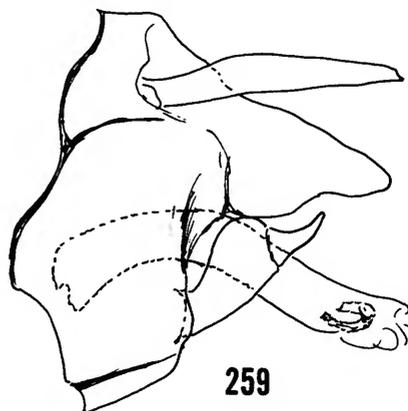
#### *Phylloicus plaumanni*, new species

FIGURES 259–261

The species is similar in appearance to *P. angustior* Ulmer but is smaller, without any marking

on the wings, and has different male genitalia. In *P. plaumanni* there are no dorsomesal lobes from the ninth or tenth terga, the basal clasper segment is inflated distally, and the apical clasper segment is pointed in both lateral and posterior aspects.

**ADULT.**—Length of forewing, 8–9 mm. Color fuscous, abdominal segments usually yellowish as are the prothorax, tibia, and tarsus of the foreleg and tarsus of the midleg; wings uniformly fuscous with metallic reflections. Spurs 2,4,4; outer spurs about half length of inner spurs. Male abdomen with terga of segments 1 and 2 (and to a lesser degree 3) darkened, with oblique lateral depressions bearing specialized cuticle; fifth tergum and eighth sternum unmodified.



FIGURES 259–261.—*Phylloicus plaumanni*, new species: 259, male genitalia, lateral; 260, same, dorsal; 261, clasper, ventral.

*Male Genitalia:* Ninth segment with anterior margin irregular, slightly produced laterally. Tenth tergum evenly tapered distad in lateral aspect; in dorsal aspect with tip bearing a U-shaped excision (in some specimens excision is twice as deep as in holotype); no dorsal process. Cercus as long as tenth tergum, narrow. Clasper with basal segment short, inflated apicad; apical segment pointed in lateral and posterior aspects with a few small mesal teeth. Aedeagus long, tubular, with a C-shaped internal sclerite.

*MATERIAL.*—*Holotype* (male): BRAZIL, EDO. SANTA CATARINA, Seara (27°09'S, 52°15'W), 25 Apr 1965, F. Plaumann, USNM Type 100549.

*Paratypes:* Same data as holotype, 16♂; Nova Teutonia (27°11'S, 52°23'W), 300–500 m, 6 Oct 1964, F. Plaumann, 6♂; same, but Feb 1963, 5♂, 3♀; same, but Apr 1963, 5♂, 3♀; same, but 10 Sep 1939, 1♂ (MCZ). ARGENTINA, PCIA. MISIONES (Haute-Parana), San Ignacio, Apr, Wagner, 1♂ (MCZ); same, but Feb, 1♂.

### Genus *Banyallarga* Navás

*Banyallarga* Navás, 1916.

*Loxinum* Navás, 1934 [new synonymy].

This genus, as here recognized, is limited to western South America from Venezuela to Argentina. Navás created the genus, which he placed in the Macronematinae, in 1916 for two species from Colombia. Unfortunately no type material exists in Navás's collections, and, in fact, the types were said to be in "coll. F. Apollinaris" (in other material he is identified as Frater Apollinaris Maria, who collected in Colombia around Choachi and Muzo in 1915); the whereabouts of the Apollinaris collection is unknown.

It is clear from the figures (Navás, 1916) of the venation and genitalia (which are rather good), that neither are macronematines, but are Calamoceratidae. *Banyallarga testacea* was designated type-species. The venation shown for this species is that of the species placed in *Ganonema* in South America, as is the appearance of the genitalia. Although I cannot study the type, I am certain that it is a member of the generic unit here

treated. The second species included in *Banyallarga*, *B. crenata* Navás, 1916, is clearly a member of *Phylloicus* (as suggested by Lestage, 1925), to which it is here transferred (new combination).

At a later date Navás (1934) created a second genus in the Calamoceratidae, *Loxinum*, from Ecuador, which he placed close to the genus *Heteroplectron*. The type of this genus is *L. aequatorium* Navás, the type of which is missing from its stated depository in Paris. The figures and descriptions, especially under the generic discussion, lead me to believe that this too applies to the same generic entity. Fork 4 of the forewing is not shown in the figure and is not mentioned in the discussion of the forks present, but I expect that this omission is a lapsus on his part. Everything else in the descriptions could only apply to a species of this genus; therefore, I am synonymizing *Loxinum* Navás, 1934, under *Banyallarga* Navás, 1916 (new synonymy).

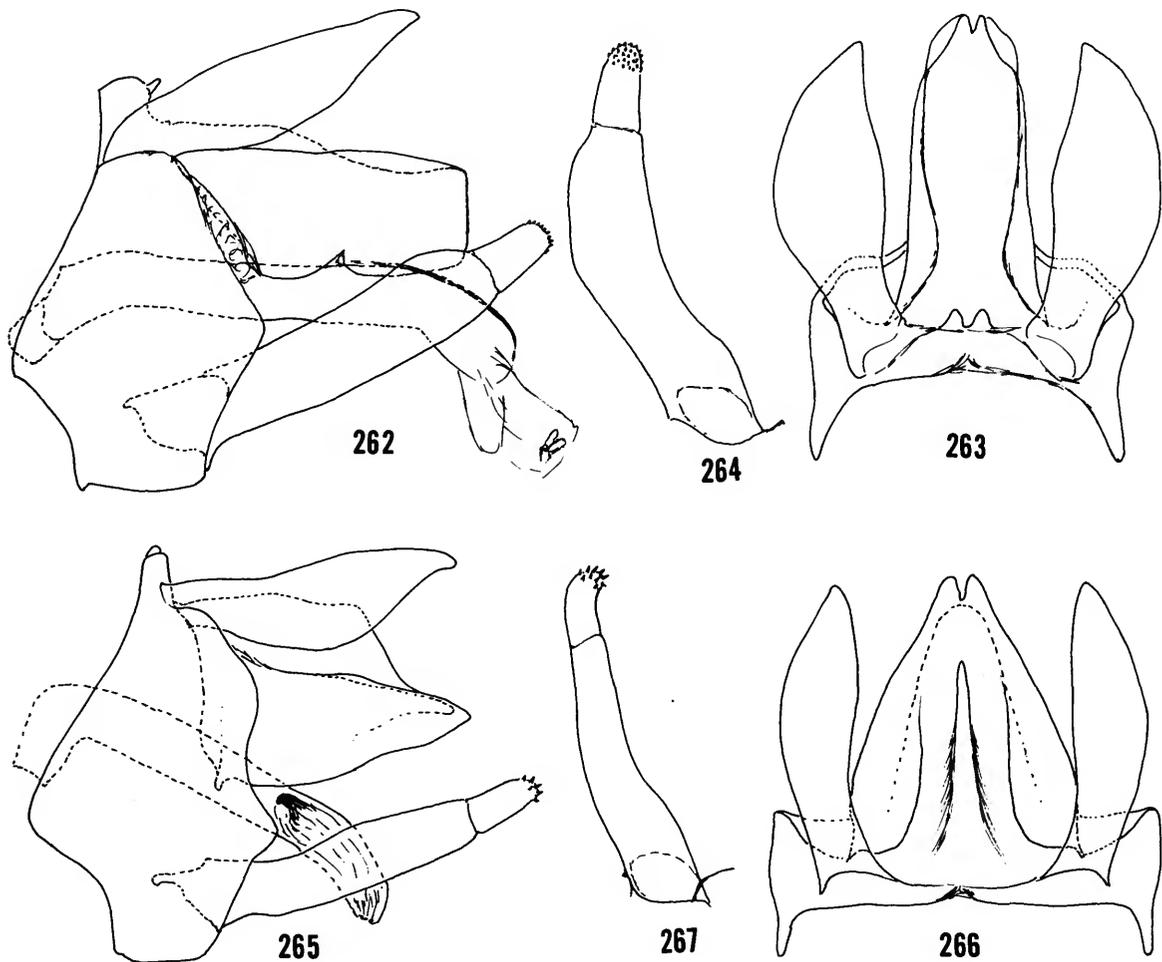
Most species of the genus *Banyallarga* have been placed in *Ganonema* or *Anisocentropus*, neither of which, I believe, exist in South America (both of which are valid Oriental genera, however). In addition to *B. testacea* Navás, 1916, the genus contains the following nominal taxa (as evidenced by examination of types and/or original descriptions or figures): *Hydropsyche vicaria* Walker, 1852, *Ganonema molliculum* McLachlan, 1871, *Phylloicus loxanus* Navás, 1934, *Anisocentropus columbianus* Navás, 1934, *A. villosus* Navás, 1934, and *Loxinum aequatorium* Navás, 1934 (all new combinations).

I do have larvae of several species in the genus, and they will be described elsewhere. They are found in small seeps and streams, where they construct cases, oval in cross-section, of leaves or sand.

### *Banyallarga argentinica*, new species

FIGURES 262–264

Although most of the other species of the genus are poorly described, making comparison difficult, this species from northwestern Argentina differs from all the types and other material I have seen. The distinctive parts of the genitalia



FIGURES 262-267.—*Banyallarga argentinica*, new species: 262, male genitalia, lateral; 263, same, dorsal; 264, clasper, ventral. *Banyallarga yungensis*, new species: 265, male genitalia, lateral; 266, same, dorsal; 267, clasper, ventral.

are the cerci, the aedeagus, and especially the tenth tergum. The cerci are very much widened near the middle, the aedeagus is very long and nearly straight, and the tenth tergum has no dorsal crest, the sides are nearly vertical, and the tip is very broad and vertical in lateral aspect.

**ADULT.**—Length of forewing, 9–12 mm. Color of male brown, legs paler, integument almost fuscous; forewing brown with a slightly paler spot on posterior margin at midlength, some speci-

mens indistinctly flecked with paler brown; female uniformly fuscous.

**Male Genitalia:** Ninth segment laterally slightly produced both anteriorly and posteriorly. Tenth tergum in lateral aspect with apex broad and vertical, ventral margin with a notch; in dorsal aspect with lateral margins nearly vertical, tapering apicad, tip with a distinct mesal notch. Cercus slightly shorter than tenth tergum, distinctly widened at midlength. Clasper with basal

segment long, slightly inflated apicad; apical segment short, straight, with a cluster of small apical teeth. Aedeagus long, slender, and straight, slightly curved basally and apically; apical membrane with a small C-shaped sclerite.

**MATERIAL.**—*Holotype* (male): ARGENTINA, PCIA. SALTA, Cañada la Gotera, Rt. 59, km 23.5, 16–17 Oct 1973, O.S. Flint, Jr., USNM Type 100550.

*Paratypes*: Same data as holotype, 1♂, 1♀; Peña Baya, Rt. 59, km 22.5, 16–17 Oct 1973, O.S. Flint, Jr., 5♂; Payogasta, 13 Oct 1973, O.S. Flint, Jr., 2♂; Salta, 17–18 May 1969, P. and P. Spangler, 5♂, 1♀; Pampa Grande, 6 Feb 1912, P. Joergensen, 6♂ (ZSZM); Toldos, 2400 m, 19–21 Feb 1960, R. Golbach, 2♂ (IML). PCIA. JUJUY, Jujuy, 29 Feb 1920, Cornell Univ. Exped., 1♂ (CUI). PCIA. CATAMARCA, Arroyo El Pintado, near La Viña, 18 Oct 1973, O.S. Flint, Jr., 2♂, 1♀; El Rodeo, 18–19 Oct 1973, O.S. Flint, Jr., 1♂; same, but 28 Jan 1959, R. Golbach, 3♂, 2♀ (IML); Dpto. El Alto, Súcuma, 900 m, 2–5 Dec 1958, 4♂ (IML). PCIA. TUCUMÁN, Siambón, 10 Oct 1973, O.S. Flint, Jr., 1♂; same, but Feb 1933, 1♂ (IML); Las Criollas, 1400 m, “3.6 1913,” P. Joergensen, 4♂, 1♀ (ZSZM); Parque Aconquija, 6 Apr 1929, H.A. Jaynes, 1♂; Dept. Burruyacú, Villa P. Monti, Feb 1948, R. Golbach, 1♂ (IML).

### ***Banyallarga yungensis*, new species**

FIGURES 265–267

*Ganonema vicarium*.—Martynov, 1912:7–9 [not Walker, 1852].

This is the species recorded by Martynov (1912) from Callanga, Peru, which is not *G. vicaria* of Walker. The species differs from all others known to me by the presence of a middorsal crest on the tenth tergum. It differs from *B. argentinica*, in addition, by the apically tapered tenth tergum in lateral aspect, the narrower basal segment of the clasper, the slightly inturned apex of the apical clasper segment, and by the sharply angled base of the aedeagus.

**ADULT.**—Length of forewing, 12 mm. Color brown; material mostly denuded, but few remaining hairs on forewing suggest that it is flecked with yellow.

*Male Genitalia*: Ninth segment laterally with small anterior and posterior projections. Tenth tergum in lateral aspect broad basally, tapering to an apical point, lateral plates nearly vertical; in dorsal aspect tapering to apex, which is narrowly notched, with a strong middorsal crest. Cercus slightly shorter than tenth tergum, widened at midlength. Clasper with basal segment elongate, slender, parallel-sided; apical segment in posterior aspect with tip slightly inturned and denticulate. Aedeagus very long, slender, base sharply angled ventrad; with a small C-shaped internal sclerite.

**MATERIAL.**—*Holotype* (male): ARGENTINA, PCIA. TUCUMÁN, Horco Molle, near Tucumán, 19 Jan 1966, L.S. Stange, USNM Type 100551.

*Paratypes*: Same data as holotype, 2♂ (IML); same, but 3–10 Apr 1966, 8♂, 7♀; same, but 7–13 Mar 1966, 9♂, 19♀. Unknown (labelled “Iguazu, Misiones, 30 Jan–13 Mar 1965, Hayward, Willink & Golbach”; this locality is clearly erroneous), 1♂ (IML). PERU, Machu Picchu, 2450 m, 16–18 Oct 1981, D. and M. Davis, 1♂.

### **Family ODONTOCERIDAE**

This family is, like the preceding family, a rather small one but with representatives in all parts of the world except Africa. There does not seem to be any great concentration of species in the Tropics, however.

The larvae all construct tubular cases, most generally of sand grains. The family is limited almost exclusively to flowing water. Larval food seems to be a mixture of organic detritus and arthropods, suggesting a predatory tendency on the part of the larvae of certain genera.

### **Genus *Marilia* Müller**

This is the most widespread genus of the family, with species known from southern Asia, Australia,

and the New World. Species occur in the Greater Antilles, but not in the Lesser Antilles or in the Chilean Subregion.

The species of the genus may be easily divided into two sections, one with a pair of preapical spurs on the hind legs, the other without. This character appears to hold for the females as well as the males and to be independent of the size of the species. Because the phylogeny of the genus has not been studied, I can not say if this reduction of spurs is monophyletic. I suspect it may not be.

The larvae of several species have been described (Flint, 1968a; Wiggins, 1977). They construct very regular, cylindrical, cases of sand grains, slightly tapered and curved. They are inhabitants of flowing waters, from small brooks to large rivers, and generally live buried in sand. Food has been reported to be mostly arthropod remains with pieces of filamentous algae and vascular plants (Wiggins, 1977).

#### *Marilia cleutheria*, new species

FIGURES 268-271

This is the largest of the species here described with spurs 2,4,2. In addition, the genitalia of the male, especially the apicolateral flap of the tenth tergum, the shape in dorsal aspect of the cercus, and the strong mesobasal shoulder of the clasper, are distinctive.

**ADULT.**—Length of forewing, 9.5 mm. Color brownish gray; body and appendages with white hairs, antennae indistinctly annulate; forewing brownish-gray, darker markings along chord. Eyes of male virtually touching middorsally. Spurs 2,4,2.

**Male Genitalia:** Ninth segment with anterior margin slightly expanded laterally; dorsal and ventral braces slightly oblique, almost parallel. Cercus longer than tenth tergum, in dorsal aspect evenly curved, parallel-sided. Tenth tergum with apex oblique, dorsum longest, with a narrow apicolateral flap; in dorsal aspect membranous apicomesally, with a small, subapical, lateral angle. Clasper with basal segment almost parallel-

sided, in posterior aspect with a distinct mesobasal shoulder; apical segment elongate, tapering apicad. Aedeagus barely curved basally; phallosomal sclerite with a curled, dorsomesal process and a ventral funnel-like sclerite.

**MATERIAL.**—*Holotype* (male): ARGENTINA, PCIA. MISIONES, Río Iguazú, Camp Nañdu, 25 Nov 1973, O.S. Flint, Jr., USNM Type 100552.

*Paratypes:* Puerto Libertad, 24 Nov 1973, O.S. Flint, Jr., 1♂. PARAGUAY, DPTO. ALTO PARANÁ, Salto de Guaira, 4 Dec 1971, L.E. Peña G., 3♂. URUGUAY, DPTO. ARTIGAS, costa Río Uruguay, Barra Arroyo Guaviyú, 22 Dec 1954, C.S. Carbonell, 1♂; San Gregorio, 29 Nov 1959, Carbonell, Mesa, and San Martin, 3♂ (FHCU).

#### *Marilia truncata*, new species

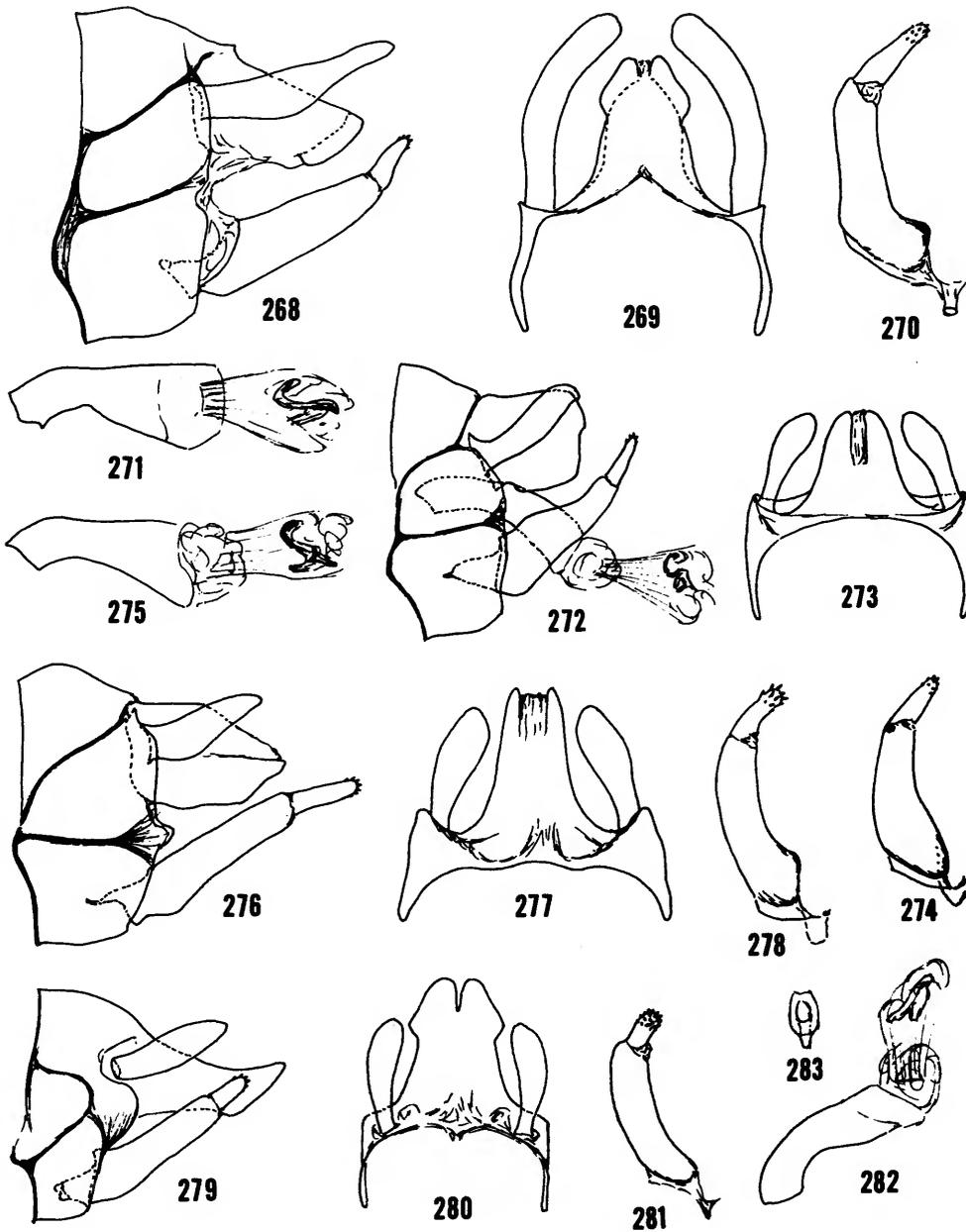
FIGURES 272-274

This species belongs to the section having only two spurs on the posterior tibia. The very short and broad tenth tergum is distinctly different from the other species here described, as is the shape of the claspers and phallosomal sclerite.

**ADULT.**—Length of forewing, 8 mm. Color grayish; body and appendages with white hair, antennae indistinctly annulate; forewing grayish with many white hairs, with a darker area over chord and along apex. Eyes of male narrowly separated middorsally. Spurs 2,4,2.

**Male Genitalia:** Ninth segment with a very small, rounded, anterolateral lobe; dorsal brace curved ventrad at both ends and united to ventral brace. Cercus elongate, slightly enlarged subapically. Tenth tergum short, broad, and truncate in lateral aspect; in dorsal aspect membranous mesally, sides gradually diverging basally. Clasper with basal segment inflated basally; apical segment slightly elongate, slender in lateral aspect. Aedeagus very slightly curved basally; phallosomal sclerite with a curled dorsal process, and a ventral funnel-like complex.

**MATERIAL.**—*Holotype* (male): PARAGUAY, DPTO. AMAMBAY, Río Aquidabán, Cerro Corá, 29 Nov 1973, O.S. Flint, Jr., USNM Type 100553.



FIGURES 268-283.—*Marilia eleutheria*, new species: 268, male genitalia, lateral; 269, same, dorsal; 270, clasper, ventral; 271, aedeagus, lateral. *Marilia truncata*, new species: 272, male genitalia, lateral; 273, same, dorsal; 274, clasper, ventral. *Marilia triangularis*, new species: 275, aedeagus, lateral; 276, male genitalia, lateral; 277, same, dorsal; 278, clasper, ventral. *Marilia infundibulum*, new species: 279, male genitalia, lateral; 280, same, dorsal; 281, clasper, ventral; 282, aedeagus, lateral; 283, phallotremal sclerite of aedeagus, dorsal.

***Marilia triangularis*, new species**

FIGURES 275–278

The spur count places this species in the 2,4,2 section of the genus, where it is the smallest species here described. The oblique dorsal brace and produced dorsolateral shoulder of the ninth tergum, sclerotized ventral half of the tenth tergum, and nearly parallel-sided basal segment of the clasper, which bears a distinct basomesal angle, are distinctive features of the male genitalia.

**ADULT.**—Length of forewing, 7 mm. Color grayish; body and appendages with white hair, antennae indistinctly annulate; forewing with many white hairs, dark marks very indistinct. Eyes of male narrowly separated middorsally. Spurs 2,4,2.

**Male Genitalia:** Ninth segment with anterior margin nearly straight; dorsolateral brace oblique, anterior end sloped ventrad and attached to ventral brace; posterolateral margin slightly produced over base of cercus and tenth tergum. Cercus elongate, widened basad in lateral aspect. Tenth tergum in lateral aspect sclerotized for ventral half, especially so at apex, which is pointed; in dorsal aspect membranous apicomically, sides gradually diverging basad. Clasper nearly parallel-sided, in posterior aspect with a distinct basomesal angle; apical segment slightly elongate, slightly curved in posterior aspect. Aedeagus curved basad; phallotremal sclerite with a curled anterodorsal process and a ventral funnel-like complex.

**MATERIAL.**—*Holotype* (male): PARAGUAY, DPTO. AMAMBAY, 2 km S Cerro Corá, 28 Nov 1973, O.S. Flint, Jr., USNM Type 100554.

***Marilia infundibulum*, new species**

FIGURES 279–283

This species belongs to the section of the genus with spur count of 2,4,2. It is one of the small species and as such is readily distinguished from *M. eleuthera*, which is distinctly larger and has

differently shaped genitalia. In general it is more like *M. truncata* in size and clasper shape but has a much longer, more pointed tenth tergum as well as differences in the size of the apical clasper segment and shape of the phallotremal sclerite.

**ADULT.**—Length of forewing, 8 mm. Color grayish brown; body and appendages covered with white hairs, antennae annulate; forewing with grayish-brown and white hair intermingled, with 2 darker areas, one at midlength of posterior margin, other over chord. Eyes of male not quite touching middorsally. Spurs 2,4,2.

**Male Genitalia:** Ninth segment with a small anterolateral projection; dorsal brace confluent with ventral brace posteriorly. Cercus elongate, slightly widened subapically. Tenth tergum long, tip projecting dorsally; in dorsal aspect with apex narrowly divided, with a low, subapical angle laterally. Clasper with basal segment parallel-sided; apical segment short, terete. Aedeagus curved basally; phallotremal sclerite with a ventral, tubular opening surrounded by a flat plate.

**MATERIAL.**—*Holotype* (male): BRAZIL, EDO. SANTA CATARINA, Nova Teutonia (27°11'S, 52°23'W), 300–500 m, 15 Oct 1963, F. Plaumann, USNM Type 100555.

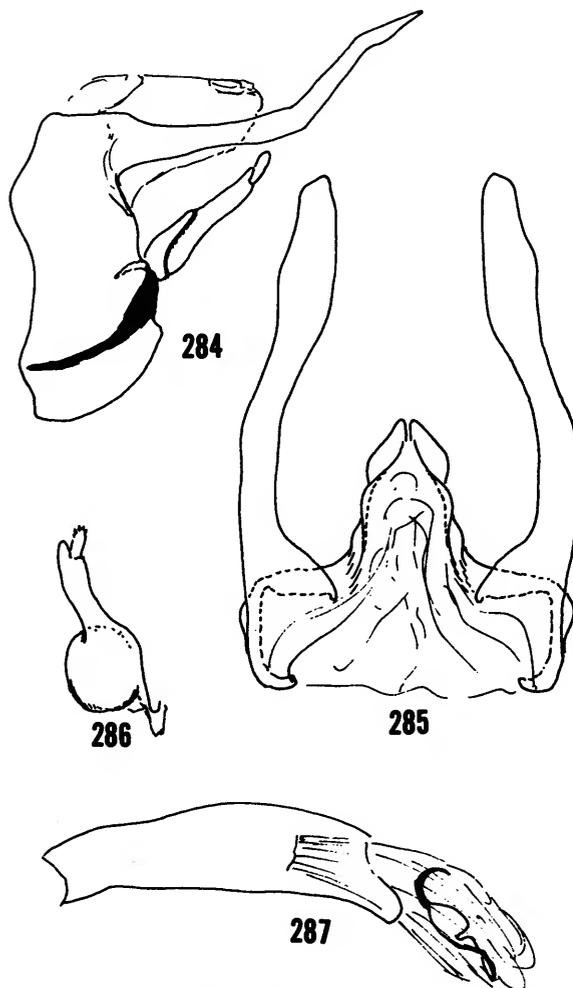
**Paratypes:** Same data as holotype, 1♀; same, but 11 Oct 1963, 1♀. ARGENTINA, PCIA. MISSIONES, Arroyo Piray Mini, Rt. 17 W Dos Hermanas, 21 Nov 1973, O.S. Flint, Jr., 7♀.

***Marilia guaira*, new species**

FIGURES 284–287

This species is closely related to *M. fasciculata* Banks as shown by the elongate cerci totally fused to the dorsolateral angles of the ninth segment in both species. From *M. fasciculata*, *M. guaira* is most easily recognized by the claspers, which are almost round basally and have a small apicolateral lobe from the basal segment and a very short apical segment.

**ADULT.**—Length of forewing, unknown (broken off beyond basal third), perhaps about 8 mm. Color in alcohol, brown. Eyes of male separated middorsally by diameter of an eye. Spurs 2,4,2.



FIGURES 284-287.—*Marilia guaira*, new species: 284, male genitalia, lateral; 285, same, dorsal; 286, clasper, ventral; 287, aedeagus, lateral.

**Male Genitalia:** Ninth segment with dorsolateral angles produced laterad, with strong ventrolateral braces. Cercus fused basally to ninth segment, very long, angled in lateral aspect, slightly expanded apicad in dorsal aspect. Tenth tergum mostly membranous mesally, sclerotized laterally, apex obliquely angled. Clasper with basal segment very narrow in lateral aspect, in ventral aspect, basal half almost round in outline, apex with a small lateral lobe; apical segment small,

terete. Aedeagus elongate, nearly straight; phallotremal sclerite with a curled anterodorsal process and a ventral disklike sclerite produced posteriorly.

**MATERIAL.**—*Holotype* (male): PARAGUAY, DPTO. ALTO PARANÁ, Salto de Guaira, 4 Dec 1971, L.E. Peña G., USNM Type 100556.

*Paratype:* BRAZIL, EDO. GOIÁS, Goiania, CNPAF, 8 Oct 1976, 1♂ (PUWL).

### *Marilia misionensis*, new species

FIGURES 288-291

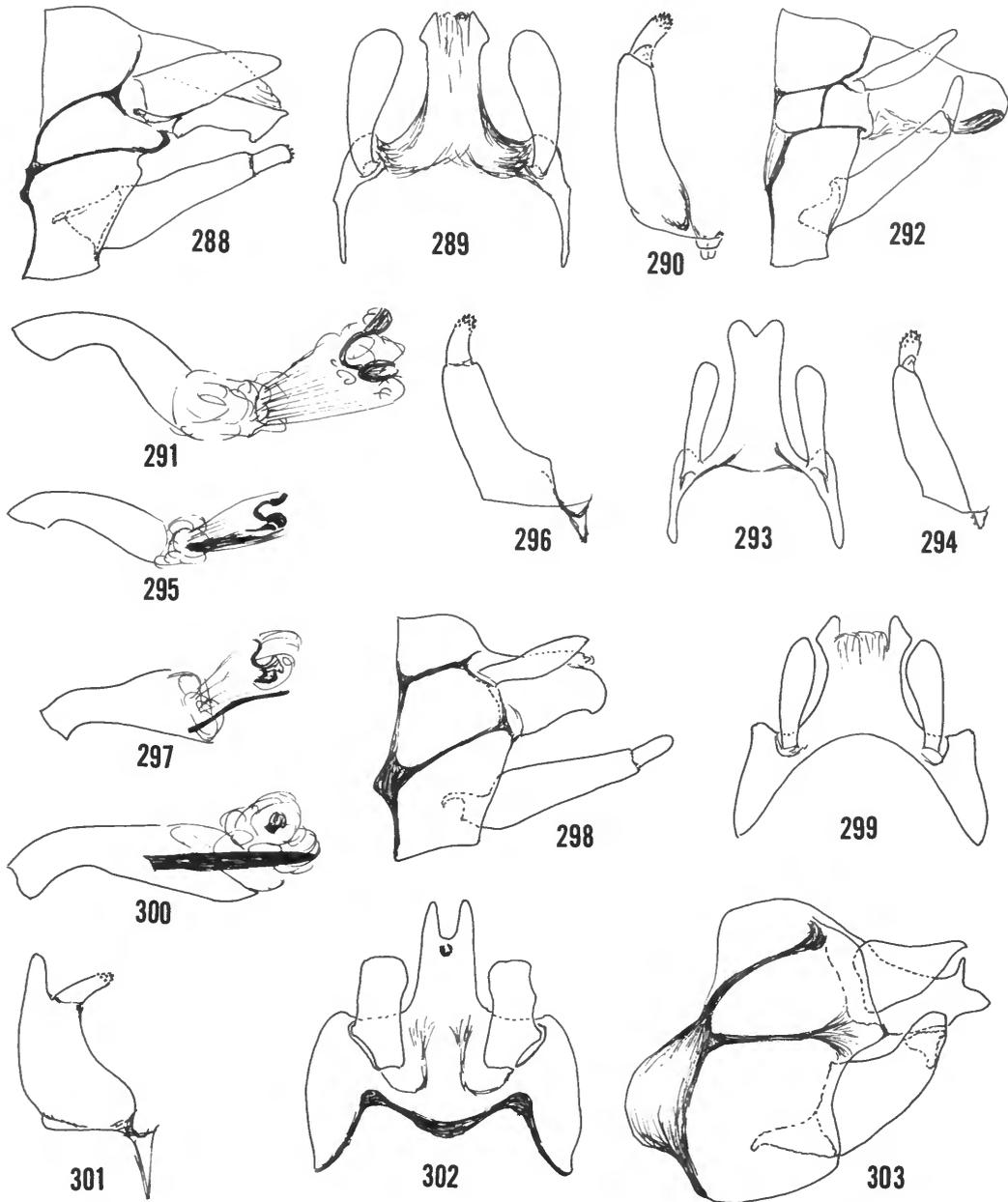
This species belongs to the 2,4,4 section and is most closely related to *M. lateralis*, new species, based on the phallotremal sclerite. It is to be recognized by the angulate apex of the tenth tergum, which bears a subapical angle in dorsal aspect, by the rather straight clasper, and by the shape of the phallotremal sclerite.

**ADULT.**—Length of forewing, 9-10.5 mm. Color grayish; body and appendages with white hair, antennae with narrow annulations; forewing with white and gray hair, an indistinctly darker mark over chord. Eyes of male touching middorsally. Spurs 2,4,4.

**Male Genitalia:** Ninth segment nearly vertical anteriorly; with dorsal brace curved ventrad anteriorly. Cercus in lateral aspect widest basally, in dorsal, widest subapically. Tenth tergum with a ventrolateral plate longest dorsally, with a distinct apicoventral angle; in dorsal aspect membranous mesally, with a lateral subapical angle. Clasper slightly inflated basally, nearly straight; apical segment short, slightly curved mesad. Aedeagus distinctly curved; phallotremal sclerite C-shaped in lateral aspect with both ends widened, in ventral aspect with ventral arm divided mesally.

**MATERIAL.**—*Holotype* (male): ARGENTINA, PCIA. MISIONES, Arroyo Piray Mini, Rt. 17 W Dos Hermanas, 23 Nov 1973, O.S. Flint, Jr., USNM Type 100557.

*Paratypes:* Same data as holotype, 5♂, 8♀; Arroyo Saura, W L.N. Alem, 20 Nov 1973, O.S.



FIGURES 288-303.—*Marilia misionensis*, new species: 288, male genitalia, lateral; 289, same, dorsal; 290, clasper, ventral; 291, aedeagus, lateral. *Marilia lateralis*, new species: 292, male genitalia, lateral; 293, same, dorsal; 294, clasper, ventral; 295, aedeagus, lateral. *Marilia humerosa*, new species: 296, clasper, ventral; 297, aedeagus, lateral; 298, male genitalia, lateral; 299, same, dorsal. *Marilia salta*, new species: 300, aedeagus, lateral; 301, clasper, ventral; 302, male genitalia, dorsal; 303, same, lateral.

Flint, Jr., 3♂, 4♀; Arroyo Piray Guazú, N San Pedro, 22 Nov 1973, O.S. Flint, Jr., 13♂, 12♀.

***Marilia lateralis*, new species**

FIGURES 292–295

This species is also a member of the 2,4,4 section. From the other species of the group, it differs in the nearly parallel-sided claspers with a very short apical segment, in the rounded apex of the tenth tergum, which is slightly sclerotized ventrally and nearly parallel-sided in dorsal aspect, and in the very distinctive phallotremal sclerite.

**ADULT.**—Length of forewing, 7–8 mm. Color brownish gray; body and appendages with white hair, antennae annulate; forewing with white and grayish hair, indistinctly darker over chord. Eyes of male meeting middorsally. Spurs 2,4,4.

**Male Genitalia:** Ninth segment with vertical anterior margin; lateral braces parallel, often with a thin vertical rod between them. Cercus short, narrow. Tenth tergum with apex rounded in lateral aspect, with ventrolateral area lightly sclerotized; in dorsal aspect parallel-sided, apex with a V-shaped excision. Clasper with basal segment parallel-sided, straight; apical segment short, straight. Aedeagus curved basally; phallotremal sclerite C-shaped in lateral aspect with ends enlarged (ventral arm divided mesally in ventral aspect), ventrally subtended by a small sclerite.

**MATERIAL.**—*Holotype* (male): PARAGUAY, DPTO. SAN PEDRO, Arroyo Tapiracuay, San Estanislao, 27 Nov 1973, O.S. Flint, Jr., USNM Type 100558.

**Paratypes:** Same data as holotype, 3♂, 2♀. BRAZIL, EDO. MATO GROSSO, Corumbá, 14–23 Dec 1919, Cornell Univ. Exp., 2♂ (CUI); same, but 1♂ (MCZ). COLOMBIA, DPTO. META, La Macarena, 26–27 Jan 1969, R.E. Dietz, IV, 2♂. URUGUAY, DPTO. ARTIGAS, San Gregorio, 29 Nov 1959, Carbonell, Mesa, and San Martin, 1♂ (FHCU).

***Marilia humerosa*, new species**

FIGURES 296–299

This is a rather distinctive species of the 2,4,4 section. The lateral margin of the tenth tergum is produced subapically, the basomesal area of the clasper is produced into a sharp shoulder, and the apical segment is longer than in most other species and curved, and the phallotremal sclerite is distinctively shaped, and there is a ventral rod.

**ADULT.**—Length of forewing, 7.5 mm. Color brownish gray; body and appendages with white hair, antennae annulate; forewing with intermingled white and brownish gray hair, dark marks very indistinct. Eyes of male broadly touching middorsally. Spurs 2,4,4.

**Male Genitalia:** Ninth segment with a small anterolateral lobe; dorsal and ventral braces oblique, parallel. Cercus short, enlarged subapically. Tenth tergum rounded apically, with an apicoventral angle; in dorsal aspect with a membranous apicomesal lobe, with a lateral, subapical angle. Clasper inflated basally, with a strong mesobasal angle; apical segment slightly lengthened, slightly curved. Aedeagus with base curved; with a sclerotized rod beneath phallotremal sclerite, which has a curled, dorsal appendage and a ventral, funnel-like structure.

**MATERIAL.**—*Holotype* (male): ARGENTINA, PCIA. MISIONES, Río Iguazú, Camp Nañdu, 25 Nov 1973, O.S. Flint, Jr., USNM Type 100559.

**Paratypes:** Same data as holotype, 7♂.

***Marilia salta*, new species**

FIGURES 300–303

This is a very distinctive member of the section, with two pairs of spurs on the hind leg. The tenth tergum, which tapers to a point and bears a dorsal, subapical point, is unique, as is the clasper, the basal segment of which is produced laterally beyond the apical segment.

**ADULT.**—Length of forewing, 9 mm. Color grayish brown; body and appendages with white hair, antennae annulate; forewing with intermin-

gled gray and white hairs, pattern very indistinct. Eyes of male almost touching middorsally. Spurs 2,4,4.

*Male Genitalia:* Ninth segment with a large, broad, anterolateral lobe; dorsal brace curving ventrad anteriorly. Cercus almost triangular in outline in lateral aspect, in dorsal, massive, almost rectangular. Tenth tergum tapering to a rounded point in lateral aspect with a vertical, subapical, pointed process; in dorsal aspect with sides subparallel, apex with a U-shaped excision. Clasper with basal segment broad basally, evenly curved dorsad, apex produced beyond insertion of apical segment; in posterior aspect with a rounded basomesal shoulder and an apicolateral lobe; apical segment terete, short, inserted subapically and hidden from view in lateral aspect. Aedeagus curved basally; with a strong basal rod, phallosomal sclerite a small, ringlike structure.

*MATERIAL.*—*Holotype* (male): ARGENTINA, PCIA. ENTRE RÍOS, Río Uruguay, Salto Grande, 16 Nov 1973, O.S. Flint, Jr., USNM Type 100560.

*Paratypes:* Same data as holotype, 10♂, 4♀.

#### Family SERICOSTOMATIDAE

This is a family that has classically contained the "odd" limnephiloid genera. As a result it was a very heterogeneous assemblage, often of rather unrelated genera. In it were originally placed a few Holarctic genera and a rather large number of genera from Australia, South Africa, and Chile. The Australian component has been completely dismembered (Neboiss, 1977), the South African component is greatly reduced (Scott, in litt.), and the Chilean component is being reduced (Flint, 1979, 1981). At the present, then, the family is primarily Holarctic in distribution with a few remnants in southern Africa and Chile.

In my key to the families herein presented, I have used certain characteristics of the wing-coupling mechanism to differentiate certain sericostomatoid families, primarily the Sericostomatidae and Helicophidae. As a result, *Grumicha* from Brazil and three genera from the Chilean Subre-

gion, *Notidobiella*, *Parasericostoma*, and *Myotrichia*, remain in the South American Sericostomatidae. The first three genera also have modified male maxillary palpi, but the last has a simple, unmodified series of segments. The family Helicophidae will contain five genera, all of which have, in the male, five-segmented, unmodified palpi. I believe this to be an improvement in the classification, but there may yet be more shifts as more data are accumulated.

The immature stages of all the sericostomatoids construct portable cases. They are generally inhabitants of lotic waters, often springs and seeps. They appear to be, in general, detritivores.

#### Genus *Parasericostoma* Schmid

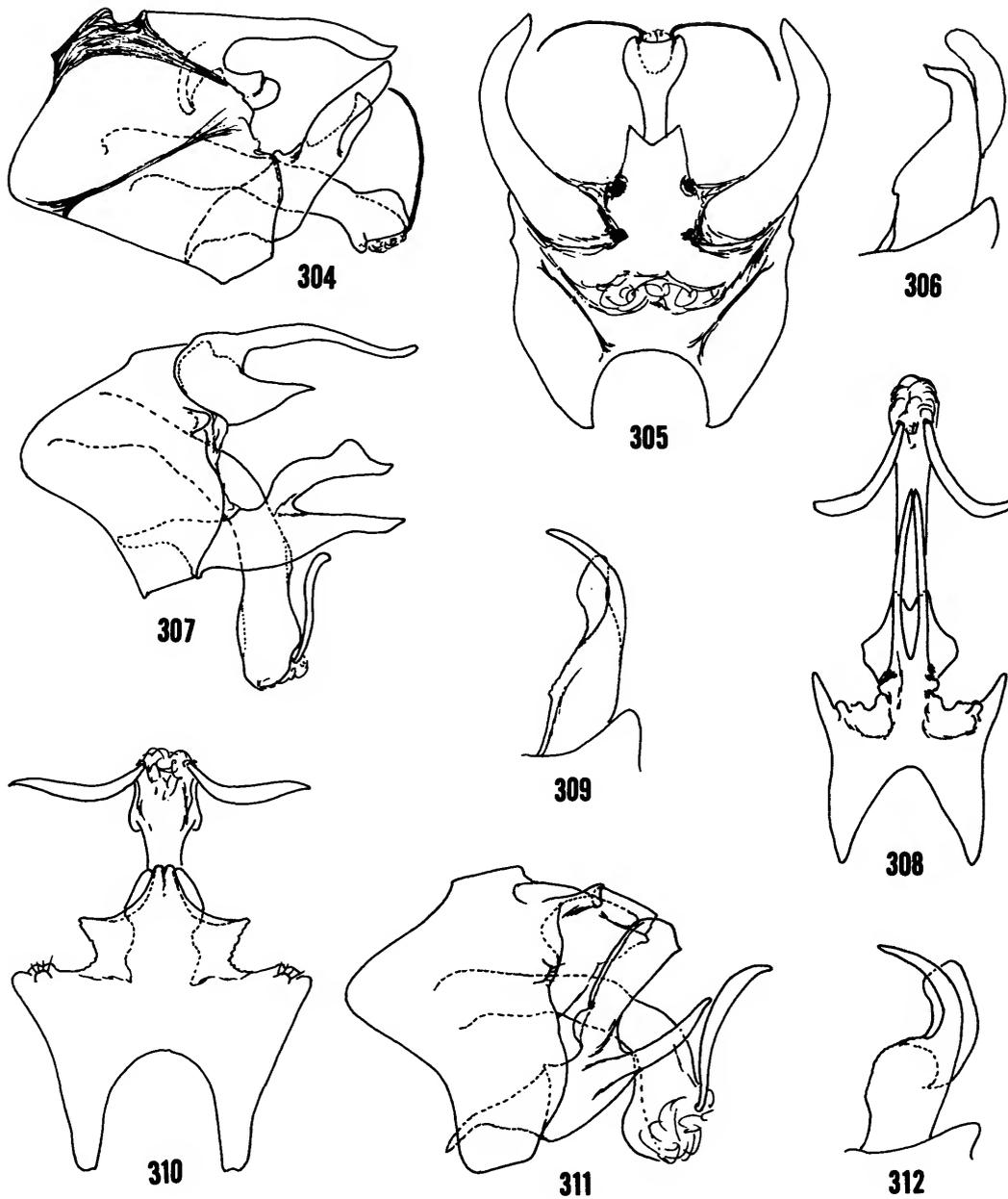
This genus is limited to the Chilean Subregion. Six species have been placed in the genus previously. On the basis of male genitalia, it would appear to contain three distinct groups, but I can not find any significant differences in the head structures or wing venation to warrant raising these to generic level.

The larva and pupa of *P. laterale* Schmid were described by Flint (1967). It inhabits tapered, slightly curved cases constructed totally of silk. Larvae are found in small brooks and streams, where they probably consume dead organic matter.

#### *Parasericostoma drepanigerum*, new species

FIGURES 304–306

This distinctive species clearly belongs to the *P. dinocephalum* group, as do the following two described species, and is closest to *P. corniculatum*, new species. In *P. drepanigerum*, the dorsolateral arms of the tenth tergum are curved and widely separated mesally, whereas these arms in *P. corniculatum* are parallel and approximate. The shapes of the claspers and aedeagi are also distinctive. There are a number of females from the type-locality, but, because three species have been taken together there, I am unable to assign them with surety to any species.



FIGURES 304-312.—*Parasericostoma drepanigerum*, new species: 304, male genitalia, lateral; 305, same, dorsal; 306, clasper, ventral. *Parasericostoma corniculatum*, new species: 307, male genitalia, lateral; 308, same, dorsal; 309, clasper, ventral. *Parasericostoma cristatum*, new species: 310, male genitalia, dorsal; 311, same, lateral; 312, clasper, ventral.

**ADULT.**—Length of forewing, 8–9 mm. Color uniformly fuscous. Seventh sternum with a posteromesal, nail-like process.

**Male Genitalia:** Ninth segment with anterior margin produced into an angled lobe laterally. Tenth tergum divided into a pair of long, curved lateral arms and a small rectanguloid ventromesal lobe. Cercus indistinguishable. Clasper divided into a membranous, decumbent, dorsal arm and a heavily sclerotized ventral arm, the tip of which is sharply angled mesad. Aedeagus long and tubular, apex produced dorsolaterally, with a pair of long, slender, filaments.

**MATERIAL.**—*Holotype* (male): CHILE, PCIA. MALLECO, Cabrería, Cordillera Nahuelbuta, 1100 m, 9–15 Jan 1977, L.E. Peña G., USNM Type 100561.

**Paratypes:** Same data as holotype, 7♂; same, but 15–20 Jan 1977, 7♂; Los Gringos Camp, Cordillera Nahuelbuta, 1300 m, 6–12 Jan 1982, L.E. Peña G., 1♂; E Lonquimay, 1000 m, 21–23 Dec 1976, L.E. Peña G., 1♂.

***Parasericostoma corniculatum*, new species**

FIGURES 307–309

This and the preceding species, *P. drepanigerum*, are closely related but easily separated by the shapes of the tenth terga, claspers, and aedeagi as noted thereunder.

**ADULT.**—Length of forewing, 7 mm. Color uniformly fuscous, nearly black. Seventh sternum with a posteromesal, nail-like process.

**Male Genitalia:** Ninth segment with anterior margin produced into a broadly rounded lobe. Tenth tergum divided into a pair of long, nearly straight, narrowly separated, dorsal arms, and a ventromesal plate pointed in lateral aspect, in dorsal aspect with apex bifid and expanded laterally. Cercus a small, heavily sclerotized lobe. Clasper divided into a membranous dorsal arm, erect basally, enlarged subapically, and a heavily sclerotized ventral arm evenly curved mesad in ventral aspect. Aedeagus long, tubular, apex only slightly inflated, with a pair of apical filaments, broadened apicad.

**MATERIAL.**—*Holotype* (male): CHILE, PCIA. MALLECO, Cabrería, Cordillera Nahuelbuta, 1100 m, 9–15 Jan 1977, L.E. Peña G., USNM Type 100562.

***Parasericostoma cristatum*, new species**

FIGURES 310–312

This species is probably most closely related to *P. dinocephalum* Schmid, in that both lack the distinctive dorsal processes of the tenth tergum; however, the tenth tergum of *P. cristatum* possesses a pair of elongate, dorsomesal ridges, which are produced basolaterally, whereas *P. dinocephalum* lacks these ridges, and the ventrolateral plates are produced into apicolateral lobes. There are other differences in the claspers and aedeagi as well.

**ADULT.**—Length of forewing, 8–10 mm. Color uniformly fuscous. Seventh sternum with a nail-like posteromesal lobe.

**Male Genitalia:** Ninth segment with anterior margin produced into a broadly rounded lobe. Tenth tergum dorsomesally with a pair of low ridges apically that are produced into thin, trianguloid, basolateral lobes; ventrally with a narrow plate subtending the dorsal ridges. Cercus very small, sclerotized. Clasper divided into a membranous, semi-erect, flattened arm and a heavily sclerotized ventral arm, the tip of which arises from a wide base and is curved mesally. Aedeagus long and tubular, apex produced ventrolaterally, with a pair of apical filaments broadest at mid-length.

**MATERIAL.**—*Holotype* (male): CHILE, PCIA. NUBLE, Las Trancas, Cordillera Chillán, 14–15 Dec 1976, L.E. Peña G., USNM Type 100563.

**Paratypes:** Same data as holotype, 1♂. PCIA. ARAUCO, Pichinahuel, 23 Dec 1976, L.E. Peña G., 1♂. PCIA. MALLECO, Cabrería, Cordillera Nahuelbuta, 1100 m, 15–20 Jan 1977, L.E. Peña G., 1♂; near Los Gringos Camp, Cordillera Nahuelbuta, 1300 m, 6–11 Jan 1981, D.R. Davis, 1♂. PCIA. OSORNO, Tril-Tril, S Pucatrihue, 1–10 Feb 1980, L.E. Peña G., 2♂; Aguas Calientes, Puyehue, 400 m, 12–17 Dec 1981, L.E. Peña G., 2♂. PCIA.

LLANQUIHUE, Hornohuenco, 11 km SW Lago Chapo, 29–31 Dec 1981, D.R. Davis, 1♂, 1♀.

***Parasericostoma acutum*, new species**

FIGURES 313, 314

This species is a typical member of the *P. penai* group and, on the basis of the structure of the tenth tergum, most closely related to *P. penai* Schmid. The tenth terga are quite similar in both species, although there are differences in the dorsal rods and ventral plate. The most striking difference, immediately distinguishing *P. acutum* from all other species, is the pointed apicoventral lobe of the clasper, the outline of which is confluent with the body of the clasper.

**ADULT.**—Length of forewing, 9–11 mm. Color uniformly dark brown. Seventh sternum with a distinct, posteromesal, nail-like lobe.

**Male Genitalia:** Ninth segment with a rounded anterolateral lobe. Tenth tergum divided into a pair of long, almost straight, dorsal rods and a ventral sclerotized plate, the tip of which bears a subapical, lateral, trianguloid expansion and a dorsal lobe that forms a trough in which lies the

tip of the dorsal rod. Cercus a small process. Clasper developed into an angled dorsal lobe the apex of which is angled posteriad and truncate and a pointed posteroventral lobe the outline of which is confluent with the body of the clasper. Aedeagus tubular, membranous apically.

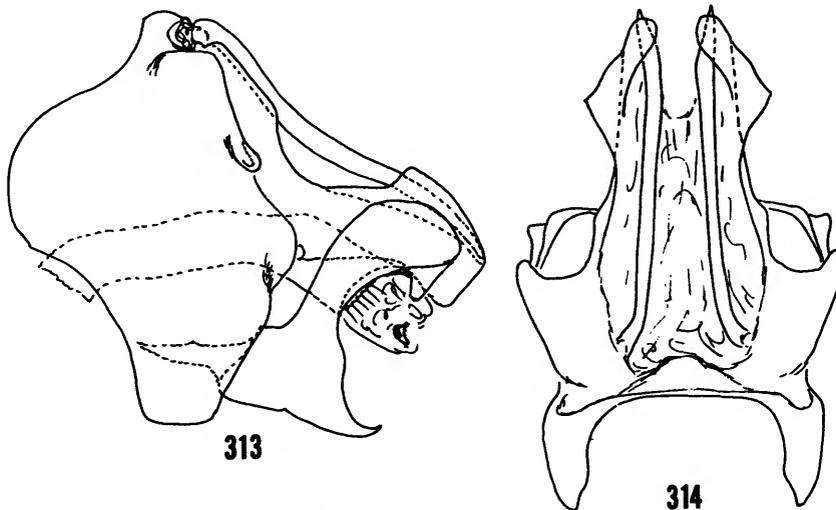
**MATERIAL.**—*Holotype* (male): CHILE, PCIA. MAULE, Alto Tregualemu, ~20 km SE Chovellén, 500 m, 26–27 Jan 1979, D. Davis et al., USNM Type 100564.

*Paratypes:* Same data as holotype, 20♂, 9♀; same, but L.E. Peña G., 2♀; same, but 27–28 Jan 1981, 1♂; same, but 1–3 Dec 1981, D.R. Davis, 69♂, 25♀; same, but L.E. Peña G., 30♂, 20♀; La Arboleda, W Cauquenes, 200–250 m, 27–28 Jan 1981, L.E. Peña G., 1♂, 1♀; Paso Garcia, ~23 km NW Cauquenes, 300 m, 29–30 Nov 1981, D.R. Davis, 1♂.

**Genus *Notidobiella* Schmid**

To the two previously described species, a third is here added. All are known from the Chilean Subregion.

The larva and pupa of *N. chacayana* Schmid were described by Flint (1967). They inhabit very



FIGURES 313, 314.—*Parasericostoma acutum*, new species: 313, male genitalia, lateral; 314, same, dorsal.

slightly tapered and curved cases constructed of sand held together by silk. They are found in brooks and streams and are probably detritivores.

*Notidobiella inermis*, new species

FIGURES 315, 316

This, the third species in the genus, is easily distinguished from the other two by the almost total loss of the mesal process of the clasper. In *N. chacayana* Schmid, which has a virtually identical outline to the clasper, the process is very long, slender, and borne from the ventromesal margin of the clasper. In the type species, *N. parallelipipeda* Schmid, the outline of the clasper is more angular, and the process is borne from the inner margin of a large mesal shelf and is also much longer than broad.

**ADULT.**—Length of forewing, 6–7 mm. Color grayish brown, legs slightly paler; forewing uniformly grayish brown. Seventh sternum with a nail-like, posteromesal process.

**Male Genitalia:** Ninth segment with anterior margin produced lateroventrally; posteromesally with a pair of small ventral lobes. Tenth tergum tapering to a blunt apex, which is shallowly divided dorsomesally. Cercus short, ovate. Clasper greatly widened apically, almost circular in outline; posterior margin with a small ventrome-

sal lobe, barely as long as wide. Aedeagus long, cylindrical; apex sclerotized ventrally, scooplike, membranous dorsally.

**MATERIAL.**—*Holotype* (male): CHILE, PCIA. CAUTÍN, near Pucón, 4 Jan 1966, Flint and Cekalovic, USNM Type 100565.

**Paratypes:** Same data as holotype, 6♂. PCIA. VALDIVIA, Río Las Cruces, Lanco, 5 Jan 1966, Flint and Cekalovic, 1♂. PCIA. LLANQUIHUE, El Chingue, N Correntoso (S Volcán Cabuco), 300 m, 20–25 Jan 1980, L.E. Peña G., 3♂. PCIA. LINARES, Puente Malcho, near Río Longaví, 600 m, 13–15 Feb 1979, D. Davis et al., 1♂, 2♀.

Family HELICOPHIDAE

This family, also known from Australia and New Zealand, was recently recorded from the Chilean Subregion (Flint, 1979). As defined in the key in this study, it contains a number of genera (*Allocentrellodes*, *Austrocentrus*, *Eosericoctoma*, *Microthremma*, and *Pseudosericoctoma*) that all agree by having a reduced venation, a simple, five-segmented male maxillary palpus, and a similar wing-coupling mechanism.

The immature stages of a few New Zealand species are described (Cowley, 1975, 1978), but none from South America are. They are case makers and apparently live in lotic situations.

Genus *Microthremma* Schmid

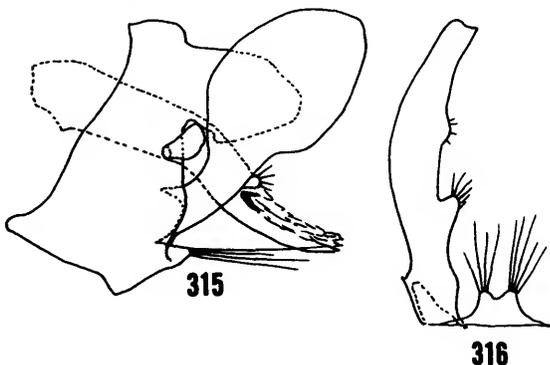
With the inclusion of the fifth species, this becomes the largest genus in the family in the New World. All species are found in the Chilean Subregion.

The immature stages are undescribed, but I expect that I have unassociated larvae of some species. The adults are not commonly taken, but the few collections I have made have been near small brooks and spring runs.

*Microthremma bipartitum*, new species

FIGURES 317–319

This species belongs to the *M. griseum* section of the genus but is strikingly different from all



FIGURES 315, 316.—*Notidobiella inermis*, new species: 315, male genitalia, lateral; 316, clasper and portion of ninth sternum, ventral.

other known species in the structure of the claspers and aedeagus. The division of the clasper into two elongate lobes is unique within the genus, as is the long, dorsomesal, rodlike process of the aedeagus.

**ADULT.**—Length of forewing, 6 mm. Color fuscous; legs paler, head and basal antennal segment with golden hair; forewing fuscous, with a spot and fringe of golden hair at midlength of posterior margin. Abdominal segments with large, clear spots around setal bases; eighth tergum with a pair of large, pale, dorsal, setal warts; seventh sternum with a nail-like posteromesal process 2/3 length of sternum and bearing a dense brush of very short setae.

**Male Genitalia:** Ninth segment rounded anterolaterally. Tenth tergum deeply divided dorsomesally, each side slightly produced basodorsally, elongate apically with tip developed into a rounded dorsolateral flap. Cercus small, low,

elongate. Clasper bearing an erect basal lobe; apical lobe elongate, tip angled dorsad and bearing 2 teeth in ventral aspect. Aedeagus with a long, arched, terete, dorsomesal process, a pair of ventromesal spines, and a sharply angled ventral sclerite.

**MATERIAL.**—*Holotype* (male): CHILE, PCIA, CHILOÉ, Dalcahue, 21–23 Oct 1969, Flint and Barria, USNM Type 100566.

#### Family HELICOPSYCHIDAE

The family is widely distributed over the world, reaching its greatest diversity in the tropical zone. Two genera are known from the Neotropical Region, one of which, *Cochliopsyche* (= *Tetanomena*), is restricted to the Neotropics, but *Helicopsyche* is widespread over the world.

Larvae of a number of species are known. All construct cases, most in the form of a coiled snail's shell. They are principally inhabitants of lotic waters but may be found on lake margins.

#### Genus *Helicopsyche* Siebold

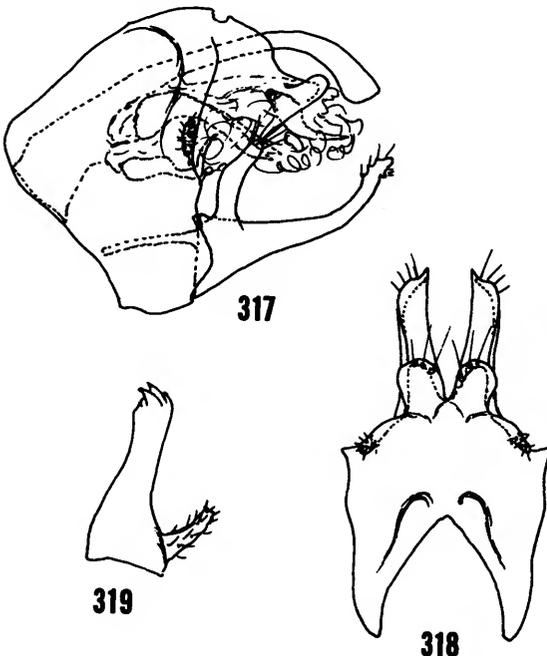
This genus is almost worldwide in distribution but rather restricted in occurrence in the Palearctic and Ethiopian regions. It is common in the Neotropics, being found in both subregions, and contains many undescribed species.

The larvae of a number of West Indian (Flint, 1968a,b) and North American (Wiggins, 1977) species are described. The larvae construct cases, generally of sand grains, but occasionally of silk, in the form of a snail's shell, often being excellent mimics of certain snails (Machado, 1957). They are primarily inhabitants of lotic sites but in the temperate regions, at least, may be found in the littoral zone of lakes. Food appears to be a mixture of algal, detrital, and animal materials (Wiggins, 1977).

#### *Helicopsyche chilensis*, new species

FIGURES 320–323

This, the second species of *Helicopsyche* to be discovered in Chile, is closely related to *H. turbida*



FIGURES 317–319.—*Microthremma bipartitum*, new species: 317, male genitalia, lateral; 318, same, dorsal; 319, clasper, ventral.

Navás. The possession of a process on the sixth sternum of the male in *H. chilensis* immediately distinguishes the two species. In addition, the tenth tergum tapers to a shallowly notched tip, and the clasper is considerably expanded dorsally in *H. chilensis*.

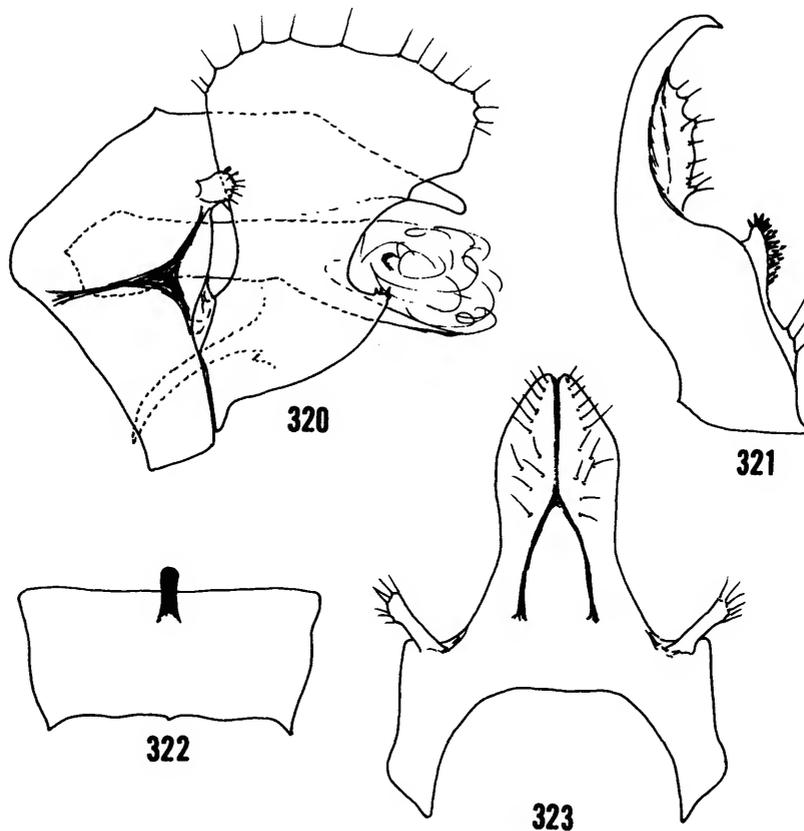
**ADULT.**—Length of forewing, ♂ 4.5 mm, ♀ 7 mm. Color dark brown, legs paler; forewing dark brown with 2 golden spots near center. Male with scape elongate, bearing yellow hair mesally. Male with third and fourth sterna reticulate; fifth sternum with anterior third reticulate; sixth sternum with a posteromesal process 1/3 length of sternum.

**Male Genitalia:** Ninth segment expanded an-

terolaterally. Tenth tergum long, in dorsal aspect tapering to a narrow, shallowly notched apex, with a distinct Y-shaped dark mark. Cercus elongate. Clasper broadened dorsally, with dorsal margin rounded, serrate, bearing a small apico-mesal point; mesobasal lobe short, in posterior aspect appearing like a small lobe, densely spinose. Aedeagus tubular, with apicoventral lip sclerotized.

**MATERIAL.**—*Holotype* (male): CHILE, PCIA. Bío-Bío, Estero Huequecura, 25 km E Santa Bárbara, 24 Jan 1978, C.M. and O.S. Flint, Jr., USNM Type 100567.

*Paratypes:* Same data as holotype, 1♂, 2♀.



FIGURES 320–323.—*Helicopsyche chilensis*, new species: 320, male genitalia, lateral; 321, clasper, posteroventral; 322, sixth sternum, ventral; 323, ninth and tenth terga, dorsal.

*Helicopsyche velligera*, new species

FIGURES 324-326

This and the two following species, *H. lambda* and *H. monda*, are all rather closely related as shown by the pointed tip of the clasper. In *H. velligera* the dorsal part of the clasper is prolonged posteriad, the basal area of the clasper is broadest, the posterior margin just above the mesobasal lobe bears a comb of spinous setae, and the mesobasal lobe, although clearly present, is, in posterior aspect, very poorly developed.

**ADULT.**—Length of forewing, 4.5–5.5 mm. Color almost uniformly dark brown with golden reflections. Sterna of abdominal segments 3–5 reticulate; sixth sternum with a process about 3/4 length of sternum.

**Male Genitalia:** Ninth segment with anterior margin angulate; with lateral sclerotized support forked. Tenth tergum with a row of setae on each side, apex shallowly bifid, with a distinct Y-shaped dark mark. Clasper with posteroapical angle produced into a distinct point in both lateral and posterior aspects; mesobasal lobe poorly developed, not extending posteriad of clasper, with a row of short spines along upper margin; with a row of spiniform setae along posterior margin just above mesobasal lobe. Aedeagus slightly angled, longer than ninth and tenth segments combined, membranous apicodorsally with a darkened, C-shaped sclerite internally.

**MATERIAL.**—*Holotype* (male): ARGENTINA, PCIA. MISIONES, Arroyo Coatí, 15 mi E San José, 18–19 Nov 1973, O.S. Flint, Jr., USNM Type 100568.

**Paratypes:** Same data as holotype, 1♂, 8♀; Arroyo Piay Mini, Rt. 17 W Dos Hermanas, 23 Nov 1973, O.S. Flint, Jr., 1♂. BRAZIL, EDO. SANTA CATARINA, Nova Teutonia (27°11'S, 52°23'W), 300–500 m, Sep 1963, F. Plaumann, 3♂; same, but Jan 1964, 1♂.

*Helicopsyche lambda*, new species

FIGURES 327-330

In relation to the accompanying two Argentine species described herein, *H. lambda* has an expanded dorsal area of the clasper, the apical process of the clasper is displaced mesad, the basal area is intermediate in size, but the mesobasal lobe is produced and distinct in both lateral and posterior aspects.

**ADULT.**—Length of forewing, 4.5 mm. Color uniformly brown. Scape elongate, not specially modified. Sterna 3 and 4 reticulate, sternum 5 very indistinctly reticulate; sternum 6 with a posteromesal process about as long as sternum.

**Male Genitalia:** Ninth segment produced anterolaterally. Tenth tergum broad apically, apex truncate; with a basal V-shaped mark. Cercus an elongate lobe. Clasper broadened dorsally, dorsal margin curved, serrate, apex produced into a mesal point; mesobasal lobe barely produced posteriad in lateral aspect, in posteroventral aspect pointed apically, spinose, well defined. Aedeagus tubular, enlarged basally, membranous apically, with a small internal sclerite.

**MATERIAL.**—*Holotype* (male): ARGENTINA, PCIA. MISIONES, Arroyo Piray Mini, Rt. 17 W Dos Hermanas, 23 Nov 1973, O.S. Flint, Jr., USNM Type 100569.

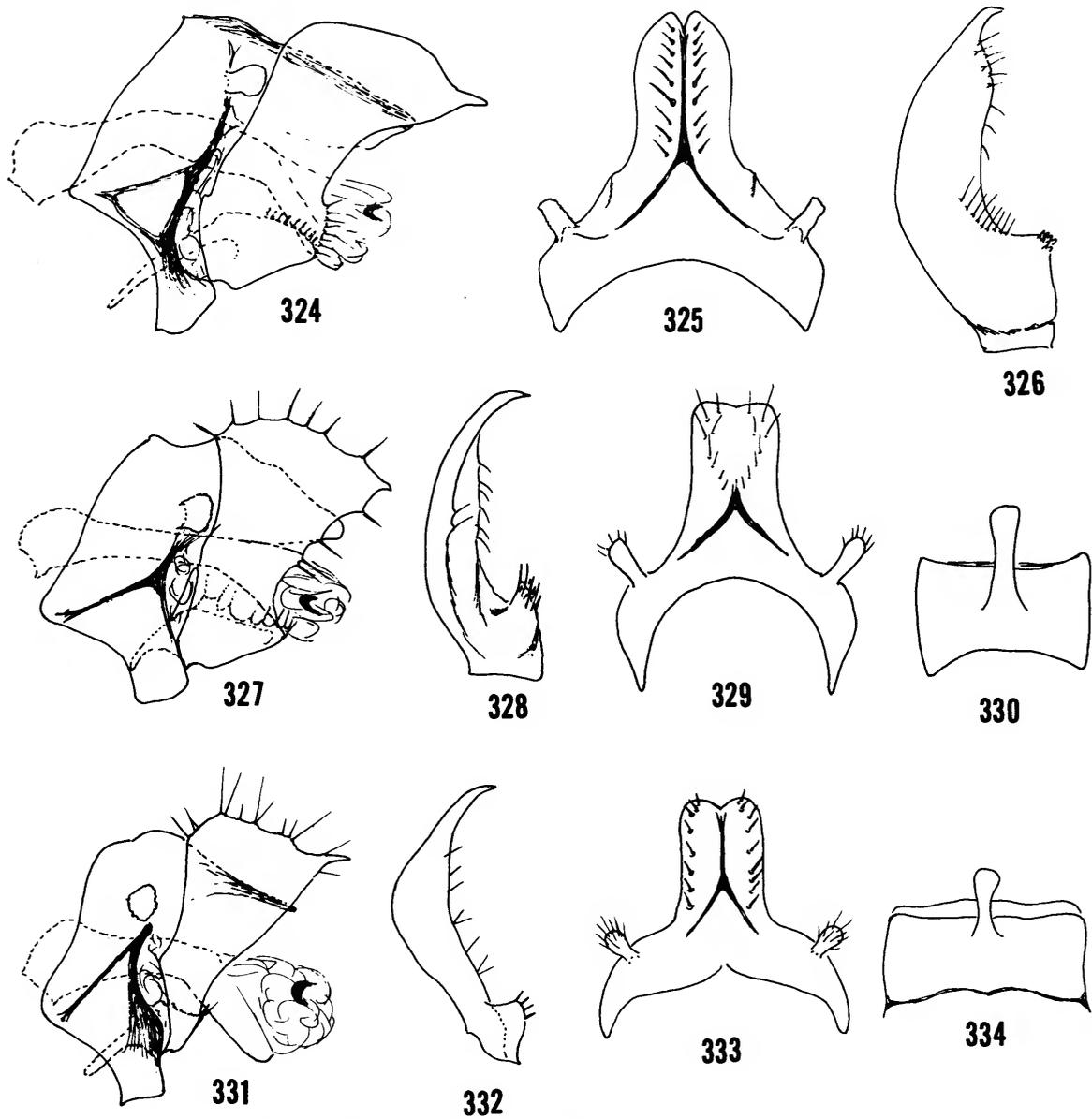
**Paratype:** Arroyo Piray Guazú, N San Pedro, 22 Nov 1973, O.S. Flint, Jr., 1♂.

*Helicopsyche monda*, new species

FIGURES 331-334

This, the third species from northeastern Argentina, has a clasper widening regularly dorsad, the apical process is longest of all and distinct in both lateral and posterior aspects, the clasper is very narrow basally, and the mesobasal lobe barely noticeable laterally but distinct although small in posterior aspect.

**ADULT.**—Length of forewing, 3.5 mm. Color uniformly brown. Scape slightly elongate, un-



FIGURES 324-334.—*Helicopsyche valligera*, new species: 324, male genitalia, lateral; 325, ninth and tenth terga, dorsal; 326, clasper, posteroventral. *Helicopsyche lambda*, new species: 327, male genitalia, lateral; 328, clasper, posteroventral; 329, ninth and tenth terga, dorsal; 330, sixth sternum, ventral. *Helicopsyche monda*, new species: 331, male genitalia, lateral; 332, clasper, posteroventral; 333, ninth and tenth terga, dorsal; 334, sixth sternum, ventral.

modified. Sterna 3 and 4 reticulate, sternum 5 with a few reticulations anteriorly; sternum 6 with posteromesal process about 2/3 length of sternum.

*Male Genitalia:* Ninth segment produced anterolaterally. Tenth tergum broad apically, tip distinctly notched mesally; with a slightly darkened Y-shaped mark. Cercus ovoid. Clasper evenly widening dorsally, dorsal margin serrate, apex developed into a point in both lateral and posterior aspects; mesobasal lobe very small, not projecting in lateral aspect, a small trianguloid lobe in posteroventral aspect with a few spines. Aedeagus tubular, enlarged basally, membranous apicodorsally with a small internal sclerite.

*MATERIAL.*—*Holotype* (male): PARAGUAY, DEPTO. ALTO PARANÁ, Salto del Monday, near Puerto Presidente Franco, 26 Nov 1973, O.S. Flint, Jr., USNM Type 100570.

*Paratypes:* ARGENTINA, PCIA. MISIONES, Arroyo Coatí, 15 km E San José, 18–19 Nov 1973, O.S. Flint, Jr., 1♂; Arroyo Piray Guazú, N San Pedro, 22 Nov 1973, O.S. Flint, Jr., 1♂. BRAZIL, EDO. SANTA CATARINA, Nova Teutonia (27° 11'S, 52° 23'W), 300–500 m, Sep 1963, F. Plaumann, 3♂.

### Genus *Cochliopsyche* Müller

This genus is exclusively neotropical in distribution. I have examples from as far south as Salto Grande, Río Uruguay in Argentina, and as far north as southern Mexico, but none from the West Indies or the Chilean Subregion. The species here added brings to three the number of described species, but I have adults of several more undescribed ones.

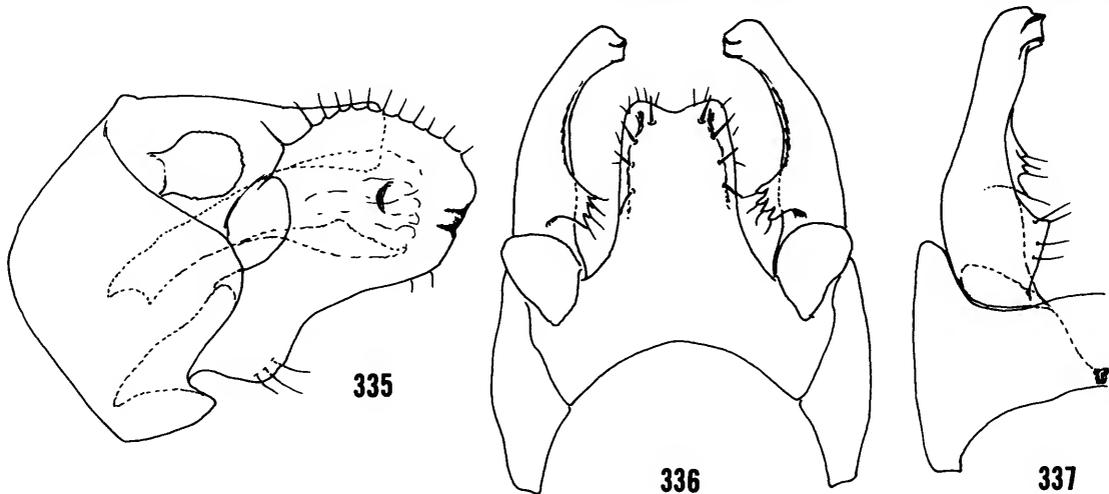
The larvae are unknown. Müller (1921), however, states that it inhabits a snail-like case and shows a typically curled pupal abdomen. Adults are commonly taken at lights near large rivers and streams.

### *Cochliopsyche lobata*, new species

FIGURES 335–337

This species is most closely related to *C. opalescens* Flint on the basis of the sixth sternal process. From this species it is easily distinguished by the basodorsal, multidentate lobe and the narrow, trianguloid, basal flap of the claspers.

*ADULT.*—Length of forewing, ♂ 8–9 mm, ♀ 5–6 mm. Color light brown; forewing with scattered, small, silvery flecks in a pale brown background. Abdomen of male with sterna 2–5 with large,



FIGURES 335–337.—*Cochliopsyche lobata*, new species: 335, male genitalia, lateral; 336, same, dorsal; 337, clasper and ninth sternum, ventral.

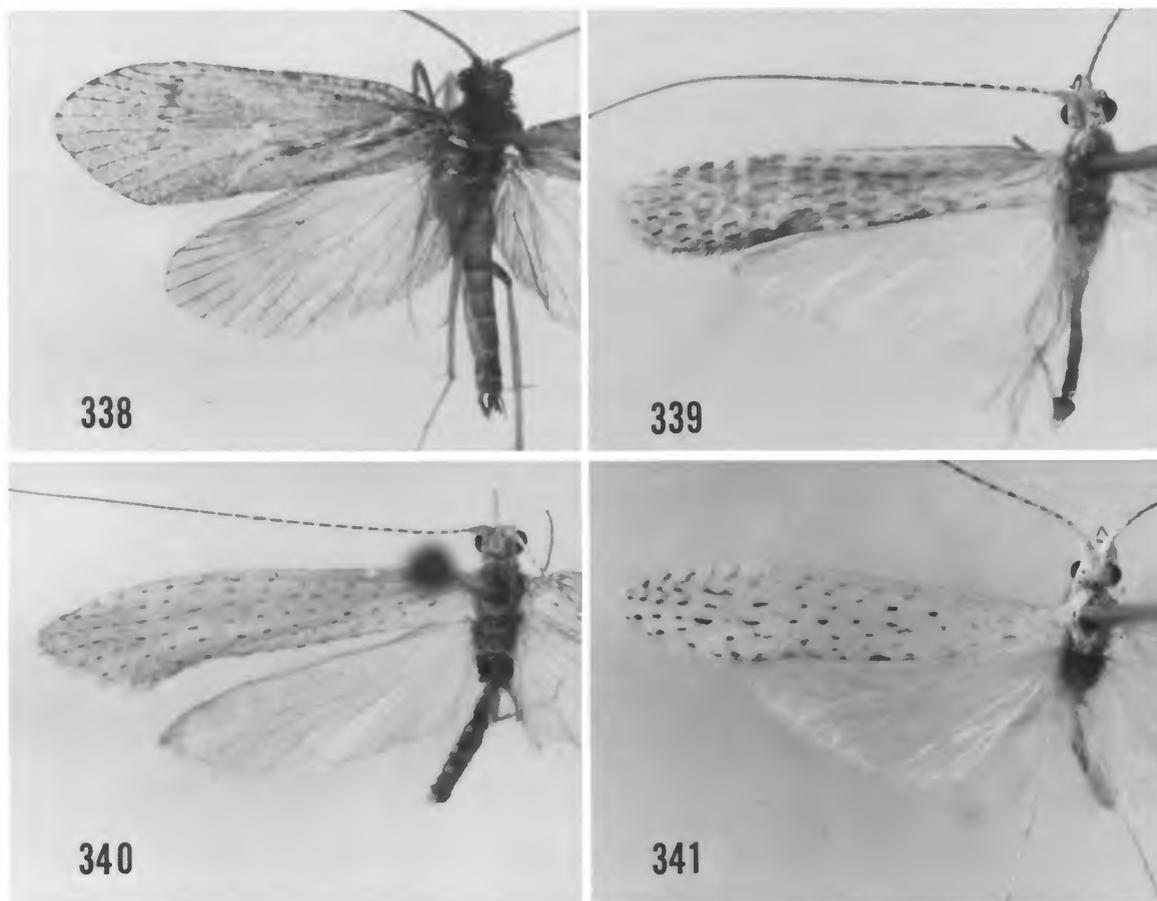
clear, lateral areas surrounded by dark margins, second and third segments with darkened posterolateral areas, hairs on sterna 3-5 arising from large clear spots; sixth sternum with a midventral process about half as long as sternum.

*Male Genitalia:* Ninth segment slightly narrowed ventrally, widened laterally from both anterior and posterior margins, dorsally grading into tenth tergum. Tenth tergum elongate, quadrate; in dorsal aspect slightly emarginate apically, with several enlarged dorsolateral setae. Cercus large, ovate. Clasper with dorsal margin rounded,

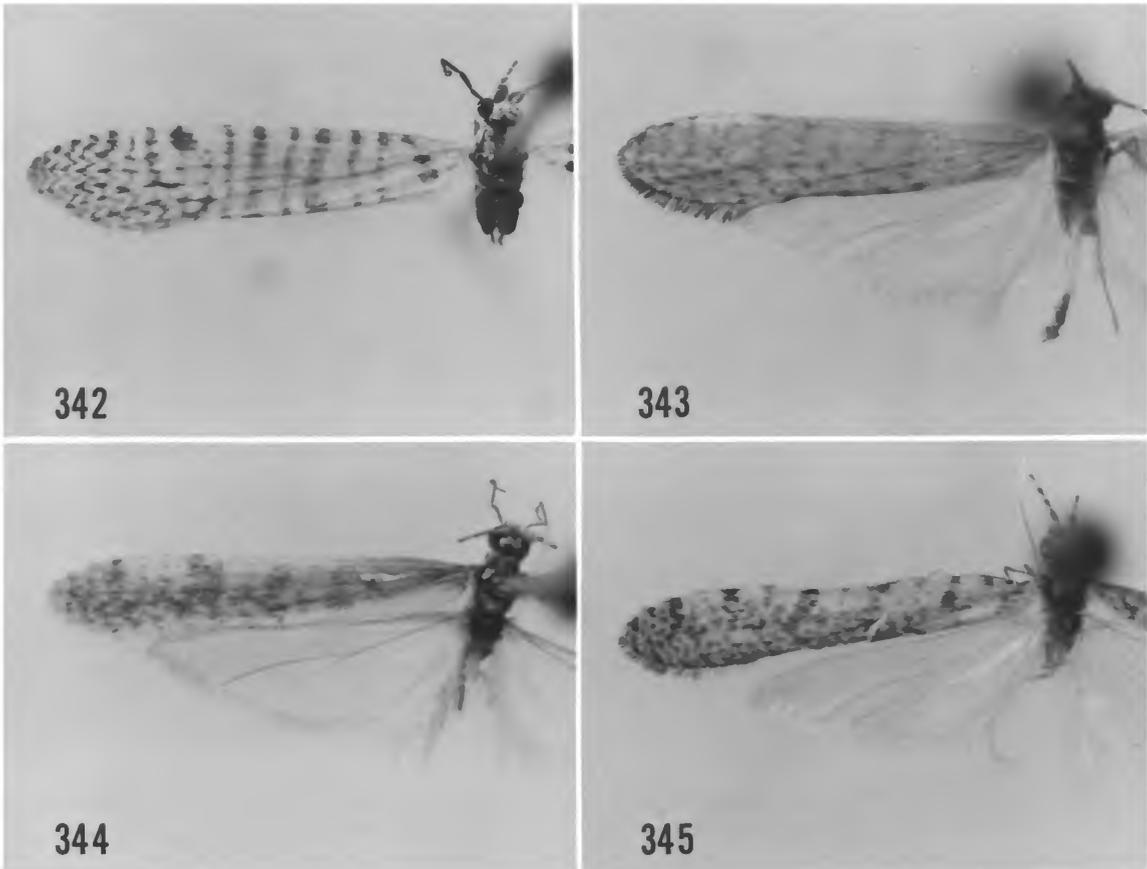
produced into a basodorsal point in lateral and a distinct, multidentate lobe in dorsal aspect; basoventral lobe a narrow, trianguloid flap in ventral aspect; apex with 2 teeth broadly joined. Aedeagus tubular, elongate, membranous apically, with a small internal sclerite.

*MATERIAL.*—*Holotype* (male): ARGENTINA, PCIA. MISIONES, Arroyo Piray Guazú, N San Pedro, 22 Nov 1973, O.S. Flint, Jr., USNM Type 100571.

*Paratypes:* Same data as holotype, 6♂, 19♀.



FIGURES 338-341.—Wings: 338, *Pseudostenopsyche davisorum*, new species; 339, *Nectopsyche brunneofascia*, new species; 340, *N. pantosticta*, new species; 341, *N. fuscomaculata*, new species.



FIGURES 342-345.—Wings: 342, *Nectopsyche multilineata*, new species; 343, *N. adusta*, new species; 344, *N. aureovittata*, new species; 345, *N. maculipennis*, new species.

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