AMAZONIANA	III	I	1 — 67	Kiel, Sept. 71

(From : Department of Entomology, National Museum of Natural History, Washington, U.S.A.)

Studies of Neotropical Caddisflies, XII: Rhyacophilidae, Glossosomatidae, Philopotamidae, and Psychomyiidae from the Amazon Basin (Trichoptera)

by Oliver S. Flint, Jr.

Summary

Based primarily on collections of FITTKAU and MARLIER, adults of the Amazonian species in four families of Trichoptera are described and figured. Keys are provided to the Latin American families (except those exclusively Chilean), potentially Amazonian genera, and described species. Fifty-five species (of which 52 are described as new) are placed in the genera : *Atopsyche* (1 species), *Antoptila* (1 species), *Protoptila* (10 species), *Wormaldia* (1 species), *Dolophilodes* (1 species), *Chimarra* (8 species), *Polyplectropus* (4 species), *Nyctiophylax* (1 species), *Cyrnellus* (7 species), and *Cernotina* (21 species).

Resumo

Baseado primeiramente em colecões feitas for FITTKAU & MARLIER , adultos das especiés amazônicas em quatro famílias de Trichoptera são descritos e representados por desenhos. Providenciam-se chaves às famílias Latino-americanas (com exceção daquelas exclusivamente chilenas), aos geñeros potencialmente amazôncos, e às espécies descritas. 55 especies das quais 52 são descritas como novas, são colocadas nos geñeros : *Atopsyche* (1 espécie), *Antoptila* (1 espécie), *Protoptila* (10 espécies), *Wormaldia* (1 espécie), *Dolophilodes* (1 espécie), *Chimarra* (8 espécies), *Polyplectrophus* (4 espécies), *Nyctiophylax* (1 espécie), *Cyrnellus* (7 espécies) et *Cernotina* (21 espécies).

The Amazon River is second in length to the Nile, but by other criteria is by far the largest in the world. It drains a basin of 2.3 million square miles (6.5 million ms^2). It discharges 3 billion gallons of water per minute, and flows at an average of 5.5 million cubic feet per second at Obidos (400 miles from its mouth) and may rise during flood periods to 12.5 mill. cfs (Anon. 1967).

The waters of the region fall easily into three general categories (SIOLI 1964, MARLIER 1967). The white waters of the Solimões and certain other tributaries arising in the Andes carry a rather heavy silt load, and are richest in nutrients. The clear waters of many tributaries of the lower Amazon which have lost their silt load are, in many cases, nutrient poor. Finally, the black waters of the Rio Negro are quite acid and contain much dissolved humic matter.

Starting in earnest in the early fifties, considerable progress has been made studying the limnology of the Amazon waters (BRAUN 1952, SIOLI 1954, 1964, MARLIER 1967, KLINGE & OHLE 1964, etc.). Most of the lakes of the region are found along the river margins and primarily are of two types. The várzea lakes are in continuous or interrupted liaison with the river and generally lie in the flood plain. The terra firme lakes are not in direct contact with the Amazon, but their level fluctuates with that of the river. MARLIER (1967) has shown the white water lakes are the only ones with significant autochthonous production of organic matter and also have a high total biomass. In the lakes of clear and black water origin, the primary productivity and total biomass are very low.

The collections

During the years 1960 — 1963, E. J. FITTKAU traveled widely over the Amazon in the region of Manaus, up the Rio Negro, Rio Solimões, and many other regional tributaries of the Amazon. During this period he made many collections of aquatic insects, including Trichoptera. G. MARLIER followed FITTKAU and continued collecting for a year during 1963 — 1964. He worked especially in the region of Manaus and downstream. I am fortunate to have been able to study the adult Trichoptera of both these collections at the same time. I have also included other scattered materials when they have come from within the basin, or been additional records for species that do occur there.

The map (Figure 1) shows the general area in which collections were made. It is reproduced here because frequently the data with the individual collections is such that it would be impossible to locate the site without detailed topographic maps. For convenience, the numbered collections of FITTKAU are apportioned to certain lettered regions which will permit a rapid approximate placement of each collection site. The lettered regions and collection numbers of FITTKAU are as follows :

A : Area of Belém; A1—(A 10), A34—A35, A390—A392.
B : Rio Madeira and left side tributaries; A10—A30, A311—A312, A328.
C : Lower Rio Negro, its tributaries, and area of Manaus; A31—A32, A56—A86, A115—125, A145—182, A185—220, A265—267, A275—A310, A381—389, A393—A443.
D : Lower Tocantins near Marabá; A36—A55.
E : Lower Tapajós, area of Santarém; A87.
F : Rio Cururú, right tributary of the upper Tapajós; A88—A114.
G : Rio Solimões; A229—A264.
G_1 : Lower Rio Solimões, transitional region to the Rio Amazon; A126—A144, A 183—A184, A221—228.
H : Rio Aripuanã, right tributary to the lower Rio Madeira; A313—A327.
I : Middle section of the Rio Negro, above the mouth of the Rio Branco, and left side tributaries; A329—A353.
K : Upper section of the Rio Parú de Oeste, border region of Surinam; A354—A380.
L : Rio Marauiá, a left side tributary of the upper Rio Negro, border region of Venezuela; A444—A511.
M : Atlantic coastal region north of Capanema and Braganca; A512—A537.
No letter : South Brazil; A270—A274.

The MARLIER collecting sites are much fewer in number and most lie roughly in region G_1 (Lago Redondo is in the Paraná do Careiro, 25 km southwest of Manaus; Lago Jarí is a lateral lake of the Rio Purús and is traversed by Rio Jarí); C (Rio Preto da Eva is a north bank tributary of the Amazon downstream of the mouth of the Rio Negro, and in its midcourse forms a lake); and E (Santarém).

Most of the holotypes are deposited in the National Museum of Natural History, paratypes will be placed in Brazil, Plön, and Brussels.

The trichoptera

Although caddis flies have been described from the Amazon Basin from time to time, and thus quite a few species are known from the area, there has been only one comprehensive report. MARLIER (1964b) described the immature stages of numerous caddis flies from the basin that had been collected by Prof. H. SIOLI. Unfortunately, only two of the species could be identified beyond the generic level, but this report does indicate the potential diversity of the fauna, although it is strongly biased toward the case makers. Therefore, the large collections now before me provide the first opportunity to inventory the fauna. The present paper (two more are contemplated) reports on the first four families : Rhyacophilidae, Glossosomatidae, Philopotamidae, and Psychomyiidae. Fifty-five species are described in these four families. As a gauge of our ignorance of this fauna, only three of these fifty-five species had been previously described.

At this time it is impossible to be certain of any detailed patterns of distribution, either within or outside the basin. Beyond the apparently high specific endemism, few generalities can be made, because most species are known from only one or a few nearby localities, and the adjacent regions are also mostly unknown.

The Rio Marauiá, adjacent to the Venezuelan highlands, has a disproportionate number of species of these four families. The large central rivers do not have the same

Terminal segment of maxillary palpus subequal to preceding segment, without cross-striae 8

7. Foretibia often with preapical spur, or if without, then with R_{2+3} of forewing unbranched . . . . . *Psychomyiidae*
   Foretibia never with preapical spur, forewing with R_{2+3} branched before wing margin . . . . . *Hydropsychidae*
8. Midtibia with preapical spur 9
   Midtibia without preapical spur 10
9. Mesoscutellum small and rectangular . . . . . *Calamoceratidae*
   Mesoscutellum large, elongate, obliquely angulate anteriorly . *Odontoceridae*
10. Hindwing with anterior margin bearing a row of hooked hamuli basally . . . . . *Helicopsychidae*
    Hindwing without hamuli 11
11. Forewing long and slender, at least 4 times as long as broad, barely widened subapically; antennae longer than forewing . . . . . *Leptoceridae*
    Forewing shorter and broader, 2 or3 times as long as broad, much widened subapically; antennae generally subequal in length to forewing 12
12. Mesonotum with distinct pairs of warts on scutum and scutellum, both bearing long, erect setae . . . . . *Odontoceridae*
    Mesonotum without warts on scutum, but with a pair of lateral clusters of erect setae on scutellum . . . . . *Sericostomatidae*

Family Rhyacophilidae

The family is divided into two subfamilies, the Rhyacophilinae and the Hydrobiosinae. The rhyacophilines are typically north temperate in distribution, extending no further south in the New World than possibly the border states of Mexico. The hydrobiosines are typically southern hemisphere in distribution, extending northward in the New World into the southwestern United States.

The genus *Atopsyche*, which is found in the mountainous areas from the United States south to Argentina, is the only genus encountered in this study. There are, however, a great number of genera found in the Chilean subregion, several of which have peripheral species found along the margins of the Amazon Basin.

Key to Genera of Rhyacophilidae

1. R_{2+3} of forewing branched at r, cell R_2 long . . . . . *Iguazu*
   R_{2+3} of forewing branched near wing margin, cell R_2 short 2
2. R_{4+5} of hindwing branched . . . . . *Cailloma*
   R_{4+5} of hindwing unbranched 3
3. M_{3+4} of forewing bowed sharply toward Cu, M_4 and Cu_{1a} thus nearly touching . . . . . *Atopsyche*
   M_{3+4} of forewing not sharply bowed, M_4 and Cu_{1a} well separated . . . . . *Dolochorema*

Genus *Iguazu* ROSS

This genus contains two species : one Chilean, the other from Missiones, Argentina. It may well have a larger range into southeastern Brazil.

The immature stages are undescribed.

diversity. This is probably due to the lack of suitable substrate in the large rivers, as species of these families utilize rocks and stones in fast-flowing, rather shallow water for larval development.

The fauna revealed up to now is, at the generic level, one that is absolutely typical of the Neotropical Region. As expected, it does not show any relationship to the Chilean Subregion, as is found in the Coastal mountains of southeastern Brazil, nor to the true Holarctic elements in North America, as is seen in the mountains of Central America. Most of the genera, however, are shared with the warmer sections of North America : *Atopsyche, Protoptila, Chimarra, Polyplectropus, Cyrnellus, and Cernotina,* etc.

Chimarra is worldwide in distribution, but far more diversified in the tropical than in the temperate regions. ROSS (1956) believes that the genus arose in South America, spread throughout the world, and then more advanced elements reinvaded South America.

The genera *Atopsyche, Protoptila, Cyrnellus,* and *Cernotina* now appear to have their greatest diversity in Latin America and the species occuring north of Mexico represent only the outliers. Only the genus *Atopsyche* has been analyzed biogeographically (ROSS & KING 1952, ROSS 1953). *Atopsyche* has been postulated to have arisen in the Central American Region and subsequently spread back and forth of South America and the West Indies on several occasions. Quite possibly a similar pattern will be discovered to hold for *Protoptila.* The genera *Cyrnellus* and *Cernotina* now are discovered to have their greatest diversity of form and greatest number of species around the Amazon, suggesting that these genera may have originated in this region.

Polyplectropus at first sight would seem to have a distribution similar to that of *Chimarra.* However, the genus has been defined primarily on the loss of one crossvein, and such a reduction might well happen independently on several occasions. A cursory review of the illustrations of the genitalia of the exotic species also suggests several phylogenetic lines. If, then, the non-American species of *Polyplectropus* are not truly congeneric, this genus emerges as another one with a distribution similar to that of *Protoptila,* etc.

The Amazon fauna of these four families thus appears to be one of potentially high specific endemism, but of generic elements originating and diversifying greatly in the American Tropics.

The following key to the families in the adult stage is designed to place all the genera known to me to occur south of the United States, through the West Indies and South America, except those families restricted to the Chilean Subregion.

Key to Families

1. Mesoscutellum with posterior portion forming a triangular, flat area with a vertical posterior margin; forewing length 4 mm. or less. *Hydroptilidae*
   Mesoscutellum rounded, without vertical margins; forewing length 3 mm or more 2
2. Ocelli present 3
   Ocelli absent 6
3. Maxillary palpi with fifth segment 2 or 3 times as long as fourth *Philopotamidae*
   Maxillary palpi with fewer than five segments, or fifth segment barely longer than fourth 4
4. Maxillary palpus with second segment longer than first *Limnephilidae*
   Maxillary palpus with second segment short, subequal to first 5
5. Foretibia with apical spurs large and conspicuous *Rhyacophilidae*
   Foretibia with apical spurs lacking, or small and hairlike *Glossosomatidae*
6. Terminal segment of maxillary palpus elongate and generally with suturelike cross-striae 7

Genus *Cailloma* ROSS

This genus, of some five species, is known from Chile northward into Peru and probably Ecuador.

On the basis of metamorphotypes of a Chilean species, I believe that the larvae described (FLINT, 1963, p. 463) as Hydrobiosinae genus A pertain to a species of this genus.

Genus *Dolochorema* BANKS

This genus is known from only the holotype of the type species, *D. irregularis* BANKS. This specimen from Cuzco, Peru has many peculiar characteristics in its venation. It is clearly related to *Atopsyche*, but the structure of the claspers in the male is quite different from anything known elsewhere in *Atopsyche*.

The immature stages are unknown.

Genus *Atopsyche* BANKS

The only collection of a species of the genus was made in the Rio Marauia, an area adjacent to Venezuela and undoubtedly an outlying section of the Venezuelan Highlands. The genus is known from the mountainous regions surrounding the Amazon Basin and in Brazil from the mountains of Sao Paulo and Santa Catarina.

The immature stages of the genus have been described a number of times, with probably the most complete description by FLINT, 1963, p. 458.

Atopsyche siolii n. sp.
Figures 2—3

This species in clearly a member of the *longipennis* group, perhaps closest to *A. iana* MOS. From this and the other known species of the group, it differs in the very broad, rather short paracercus; the shape of the apical lobes of the aedeagus; and the broader apical segment of the clasper.

The immature stages of this species are very similar to those of *A. alconura* ROSS (FLINT, 1963, p. 458) or *A. plancki* MARLIER (MARLIER, 1964a, p. 2). The larvae of *A.* sp. 3 (FLINT, 1963, p. 463), from the adjacent Venezuelan Highlands, seem inseparable from those here described any may well be the same species.

Adult.- Length of body, 5 mm. Color unknown; unexpanded wing pads mostly pale brown with numerous dark brown spots. Fifth sternum with smooth, anterolateral, embossed area. Sixth sternum with an elongate apicomesal process, about as long as sternum; process of seventh sternum only about half as long as process of sixth sternum. Male genitalia : Ninth and tenth segments of typical shape. Paracercus broad, platelike, tip upturned and produced into a small point. Filicercus very short; cercus buttonlike. Clasper with basal segment elongate, about 3 1/2 times as long as broad, with a slender apicomesal process as long as apical segment and bearing spinous setae mesally; apical segment broad, twice as long as broad. Aedeagus with basal portion rounded, rather short and broad; with a midventral process articulating with clasper bases, and a middorsal hood; apical portion divided into lateral halves, in lateral view with two short processes apically, in ventral view with apex expanded, spoonlike; a long slender central spine.

Prepupa.- Length 7 mm. (including head, straightened out). Head pale yellowish marked with light brown, muscle scars conspicuous, pale; no dark marking ventrally. Pronotum yellowish, with light brown blotches, muscle scars not differently colored; posterior margin black. Prosternum large; yellowish with blackish posterior and lateral margins. General structure typical of genus. Apicoventral seta of the basal section of the

anal claw long, pale, and enlarged, extending to tip of claw.

Pupa.- Length 5 mm. ♂, 7 mm. ♀. Mandibles with basal 2/3 of inner margin bearing large and irregular teeth, apical third with fine serrations. Hook plates anteriorly on segment 2 through 7, posteriorly on 4 and 5; each plate with many small hooks. Dorsal abdominal lobes with 3 long setae apicolaterally.

Material.- Holotype, pharate male : Brazil, Rio Marauiá, Cachoeira Pora Comeschie, dicht oberhalb Endstation, Benthos aus der Strömung, 28 Jan. 1963, E.J.FITTKAU. (A—501). Other : Same data, prepupa, 3♂and 1♀ immature pupae.

Family Glossosomatidae

The typical subfamily is, in the New World, restricted to North America with one species known as far south as Mexico City. The American Tropics, however, is the home of the subfamily Protoptilinae which is found northward into southern Canada.

There are a number of genera and many species described from the Neotropical Region. It is clear from this study, however, that we have only begun to catalog the great variety of species that exist. The following key includes all those genera known to occur in Brazil and immediately surrounding regions. The southern Andes, Central America, and the West Indies contain a number of other genera.

The genus *Itauara* MÜLLER was described from some curious larval cases found in Santa Catarina. MARLIER (1964b) described a number of larvae from the Amazon which he placed in this genus. These larvae agree in all key characters with those of *Protoptila*. There is still no proof of what species will be found to construct the *Itauara* type case. Until this is found, consider *Itauara* to be a nomen dubium.

Key to Genera of Glossosomatidae

1. Two branches to M in forewing 2
   Three branches to M in forewing 3
2. Cu_1 branched apically in hindwing . . . . . *Mortoniella*
   Cu_1 unbranched . . . . . *Mexitrichia*
3. R_{4+5} branching nearer to forewing margin than R_{2+3} . . . . . *Canoptila*
   R_{4+5} and R_{2+3} branching at nearly the same level 4
4. R_{2+3} and R_{4+5} branching slightly beyond anastomosis in forewing *Antoptila*
   R_{2+3} and R_{4+5} branching at anastomosis in forewing . . . . . *Protoptila*

Genus *Antoptila* MOSELY

The genus has heretofore included only the type species *A. brasiliana* MOSELY from Santa Catarina. Although the venation is very obscure in the following species, what little can be determined is compatible with the genus *Antoptila*, as is the general form of the genitalia.

The immature stages of the genus are unknown.

Antoptila amazonica n. sp.
Figures 4 — 6

The structure of the ninth and tenth segments, aedeagus, and presence of a sixth sternal process serve to unite this species with *A. brasiliana* MOS . Differences between the species also exist in the genitalia : *amazonica* has a bifid tenth tergum and the aedeagus bears a pair of lateral and a single mesal process ventrally, and a pair of processes dorsally.

Adult. — Length of forewing, 1.5 mm. Specimens in alcohol; now uniformly brown. Sixth sternum with a pointed apicomesal process. Male genitalia : Eighth segment simple and undeveloped. Ninth segment semicircular anteriorly. Tenth tergum divided apicome-

sally, each half developed into a posteriorly directed point. Aedeagus without a large broad internal portion; bearing dorsally a pair of pointed processes; centrally membranous, apex bearing an internal plate with a bifid apex; ventrally with a slender, mesal rod, flanked by a pair of slender, pointed processes.

Material.— Holotype, male : Brazil, Rio Marauiá, Endstation langer Cachoeira, Fluß tritt hier aus dem Gebirge mit starkem Gefälle, 28 Jan. 1963, E.J. FITTKAU, Lichtfang. (A-502). Paratypes : Same data, 7♂.

Genus *Canoptila* MOSELY

This genus is still known only from the type species *C. bifida* MOSELY from Santa Catarina, Brazil.

The immature stages are unknown.

Genus *Mexitrichia* MOSELY

This genus is widely distributed in the neotropics being found from Mexico to Argentina and in southeastern Brazil. It is found in the more mountainous regions throughout, and probably for this reason has not been found in the Amazon Basin.

The immature stages of *M. aries* FLINT are described. (FLINT, 1963, p. 470).

Genus *Mortoniella* ULMER

Up to now, the genus is known from only a few species from Ecuador, but I expect it will be found more generally in the Andean Region. As is the situation with *Mexitrichia*, the genus seems to be restricted to more mountains regions than the lower Amazon Basin.

FLINT (1963, p. 467) described the immature stages of *M. apiculata* FLINT.

Genus *Protoptila* BANKS

This is the largest genus in the subfamily, not only in the total number of species, but also in its distribution. The genus contains a great number of species in North and Central America with at least one representative in the Lesser Antilles. Only a single species has been discovered in southeastern Brazil so far, even though a numer of large collections are available for the region. No less than ten species, however, were discovered in the material collected in the Amazon Basin by this survey.

The larvae are well known and have been described a number of times. They construct a portable case of small sand grains shaped like the shell of a turtle; i.e. with a dorsal domed portion with a transverse midventral strap. Undoubtedly the larvae described by MARLIER (1964b) as *Itauara* sp., pertain to a species of *Protoptila.*

Key to Species of *Protoptila*

1. Aedeagus with a membranous lateral process bearing a small apical sclerite . . 2
   Aedeagus without such a process 4
2. Tenth tergite produced into a sharp lateral point, directed posteriad; aedeagus with a small basodorsal lobe . . . . . *simplex*
   Tenth tergite not produced into an apicolateral point; aedeagus with a large, basodorsal lobe 3
3. Tenth tergite a simple trianguloid lobe in lateral aspect . . . . . *ensifera*
   Tenth tergite large and complex, with a basolateral process . . . . . *mara*
4. Eighth sternum produced into a long slender process with a bifid tip . . . . . *condylifera*
   Eighth sternum shorter and scooplike, often with apicolateral lobes 5

5. Tenth tergite produced apically into pointed processes, without modified setae; aedeagus with basodorsal lobe reduced to a small scale 6
Tenth tergite no more than barely lobed apically, with internal surface bearing greatly modified setae; basodorsal lobe of aedeagus large 7
6. Tenth tergite directed ventrad, apex with a deep U-shaped excision . . . . . *tetravittata*
Tenth tergite directed more posteriad, apex with 3 pointed processes . . . . . *trispicata*
7. Aedeagus ending in a large multilobed structure without long spines; tenth tergite with two divergent bands of short, modified setae . . . . . *ternatia*
Aedeagus bearing apically at least one pair of long, slender spines tenth tergite with two subparallel rows of short, black, peglike setae 8
8. Aedeagus with, in addition to a pair of long slender apical spines, a long pointed mesal process . . . . . *disticha*
Aedeagus with a pair of long apical spines and a central tube 9
9. Aedeagus with a pair of curved apical spines; tenth tergite with a large rectangular apical section clearly separated from basal portion . . *flexispina*
Aedeagus with a pair of nearly straight spines and an elongated central tube; tenth tergite with apical section not clearly separated from basal portion . . . . . *macilenta*

Protoptila simplex n. sp.
Figure 7

This species is probably most closely related to *P. dubitans* MOS., known from southeastern Brazil. It may be easily recognized by the totally different shape of the tenth tergite, the broader eighth sternum with a larger apical excision, and by many other smaller differences in the genitalia.

Adult.— Length of forewing, 1.5 — 2 mm. Color brown; forewing with a silvery transverse band at midlength, a triangular spot on anterior margin at three fourths length, and small spots along posterior margin and at apex. Sixth sternum with an elongate, pointed apicomesal process. Male genitalia : Eighth sternum produced into a broad, scooplike process, with a large apicomesal U-shaped excision. Ninth segment not produced posteroventrally, posterior margin very indistinct. Tenth tergite fused to ninth segment dorsomesally, producing a broad dorsal roof, posterolaterally produced into a sharp point which curves slightly mesad apically. Aedeagus with narrow basodorsal lobe and a broad, transverse ventral plate; with membranous tubular lateral arms, bearing an apical, twisted spine; central portion with apex troughlike, at midlength with paired round lobes bearing an apicomesal process.

Material.— Holotype, male : Brazil, Rio Tocantins, im Hause des Ingenieurs von Rio Impex, 5. Nov. 1960, E.J. FITTKAU, Lichtfang (A-50-2). Paratypes : Same data, 1♂. Rio Cuieiras, oberhalb des Igarapé Tukanari, 19 Dec. 1961, 12♂ (A-304-1). Rio Aripuanã, Beneficente, 15 Jan. 1962, Lichtfang, 2♂ (A-318). Rio Parú, Mission Tiriyós, 22 March 1962, Lichtfang, 15♂ (A-361-1, 361-2); same, but 26 March 1962, 1♂ (A-361-3); same, but 27 March 1962, 2♂ (A-361-4); same but 28 March 1962, 6♂ (A-361-5); same, but 29 March 1962, 2♂ (A-361-6); same, but 31 March 1962, 3♂ (A-361-7); same, but 3 April 1962, 3♂ (A-361-8); same, but 9 April 1962, 5♂ (A-361-9); same but 21 April 1962, 5♂ (A-361-10). Rio Parú, an Podostemonaceen-Stelle 4 April 1962, Lichtfang, 43♂ (A-364-1); same, but 7 April 1962, 14♂ (A-364-2). Rio Parú, Malloca Apicó, 14 April 1962, Lichtfang, 3♂ (A-366); same, but 20 April 1962, 32♂ (A-366-1). Igarapé Kumadueni, Onça-Stelle, 19 April 1962, Lichtfang, 1♂ (A-377). Rio Marauiá, Cachoeira Bicho-Açũ, 31 Dec. 1962, Lichtfang, 8♂ (A-449).

Protoptila ensifera n. sp.
Figure 8

This species bears little resemblance to any other described species in the genus. The shape of the tenth tergites and the processes lying on the dorsolateral margin of the eighth sternum are unique.

Adult.— Length of forewing, 2 mm. Coloration of partially denuded specimens in alcohol, pale brown. Sixth sternum with a compressed, pointed central process. Male genitalia : Eighth sternum produced as a broad, scooplike lobe, tip slightly bifid. Ninth segment rounded anteroventrally, narrow, produced into eighth sternum, ending in a contiguous pair of black knobs from which articulates a pair of slender sclerites resting on dorsolateral margins of eighth sternum. Tenth tergites trianguloid in lateral aspect. Aedeagus with large basodorsal lobe; with a complex at midlength, from which arises a U-shaped, slender apical tube whose tip is thin, but in posterior aspect very broad; lateral process with membranous base, ending in a long, twisted spine.

Material.— Holotype, male : Brazil, Rio Cuieiras, Cachoeira da Traira, 18 Dec. 1960, E.J. FITTKAU, Lichtfang (A-74).

Protoptila mara n. sp.
Figure 9

This species is clearly very closely related to *P. dubitans* MOS. It may be recognized by the male genitalia which, in *mara*, has a broader eighth sternum with a larger apical excision; by the differently shaped tenth tergum, especially its basolateral process; and by the differently shaped apical tube of the aedeagus.

Adult.— Length of forewing, 3 mm. Color in alcohol, brown. Sixth sternum with a pointed apicomesal process. Male genitalia : Eighth sternum produced posteriad as a broad scooplike lobe bearing apically a row of enlarged setae, apex with a broad U-shaped excision; eighth tergum produced posteriad as a broad dorsolateral lobe. Ninth segment with anterior margin semicircular. Tenth tergum with a V-shaped apicomesal excision, with a short, black ventral lobe subapically; basolaterally with a long process whose ventroapical angle is prolonged into an obliquely truncate lobe. Aedeagus with a large mesal, basodorsal lobe; mid length complex bearing a posterolateral spine and a pair of mesal, dorsally directed lobes; with a membranous lateral process terminating in a twisted spine; apical tube slender with a pair of thin ventrolateral sclerites and a dorsomesal C-shaped sclerite.

Material.— Holotype, male : Brazil, Rio Marauiá, Endstation vor langer Cachoeira, Fluß tritt hier aus dem Gebirge mit starkem Gefälle, 28 Jan. 1963, E.J. FITTKAU, Lichtfang (A-502). Paratypes : Same data, 2♂; same, but 24 Jan. 1963, 3♂ (A-496). Gebiet Endstation Rio Marauiá, Bergbach II, etwa 350 m über dem Meeresspiegel, schattig, starkes Gefälle über Granitblöcke, 26 Jan. 1963, Lichtfang, 1♂ (A-498).

Protoptila condylifera n.sp.
Figure 10

This species seems to be closest to the Central American *P. bicornuta* FLINT. It differs most strongly in the shape of the tenth tergite and apical part of the aedeagus.

Adult. — Length of forewing, 3 mm. Color pale brown, apparently unmarked (in alcohol). Sixth sternum with a pointed central process. Male genitalia : Eighth sternum produced into a long, slender process, tip bifurcate. Ninth segment rounded anteriorly, produced posteroventrally beneath aedeagus. Tenth tergite with a roughly quadrate basal section, apical section broadest basally, slightly narrowed, and decurved, apex with a dorsomesal tooth. Aedeagus with a large mesal, basodorsal lobe. complex at midlength with a pair of lateral spines and an upcurved mesal structure produced into a pointed

apex; apical portion tubular, lighthly sclerotized with a C-chaped internal sclerite dorsally with a pair of heavily sclerotized, twisted spines.

Material.— Holotype, male : Brazil. Rio Marauiá, Endstation vor langer Cachoeira, Fluss tritt hier aus dem Gebirge mit starkem Gefälle, 24. Jan. 1963, E. J. FITTKAU (A—496). Paratype : Same, but 28. Jan. 1963, 1♂(A—502).

Protoptila tetravittata n. sp.
Figure 11

On several characteristics, this and the following species are unique within the genus. No other known species of the genus lacks the basodorsal structure of the aedeagus, although it is much smaller in many of the other Brazilian species herein described than in any of the North and Central American species. The structure of the eighth sternum, tenth tergites, and especially the aedeagus are all very different from those found in other species.

Adult.— Length of forewing, 2 — 2.5 mm. Color in alcohol, brown; forewing with faint indication of transverse, pale band at midlength ending in more conspicuous spot on posterior margin. Sixth sternum with a compressed, pointed, central process. Male genitalia : Eighth sternum produced into a broad, scooplike process, slightly divided apicomesally with a pair of apicolateral lobes. Ninth segment oblique, produced posteroventrally into eighth sternum. Tenth tergite short, pendant, apex with a U—shaped excision. Aedeagus lacking basodorsal process; produced posteriad within the eighth and ninth sterna, ending in an upcurved pointed process; apically with two pairs of long pointed processes and a central tube that is short with a vertical lip that appears sharply pointed in lateral aspect.

Material.— Holotype, male : Brazil, Rio Cuieiras, Igarapé Cachoeira, bei dem Wasserfall Pedra dos Indios, 15 April 1961, E. J. FITTKAU, Lichtfang, (A—151—1). Paratypes : Same data, 1♂; same, but 16 April 1961, 1♂(A—151—2). Rio Branquinho, bei Cachoeira, 21 Juli 1961, 18:30 uhr, Lichtfang, 4♀ (A—209—a); same but 19:30 uhr — 22:00 uhr, 3♀ (A—209—b).

Protoptila trispicata n. sp.
Figure 12

This species is very closely related to *Protoptila tetravittata* n. sp. It is especially distrinctive in the structure of the tenth tergite which is not pendant, but is tripartite with the dorsolateral process long and hooked mesad at its apex.

Adult.— Length of forewing, 2.5 mm. Color in alcohol brown; possibly a few white hairs along anastamosis. Sixth sternum with a pointed central process. Male genitalia : Eigth sternum produced into a broad, scooplike structure with slender, apicolateral processes. Ninth segment oblique, produced posteroventrally into eighth sternum. Tenth tergite directed posteriad, tripartite, with dorsolateral process longest and with its tip hooked mesad. Aedeagus without a mesal basodorsal lobe; midlength complex lying mostly in eighth and ninth sterna, ending in an upturned, pointed process; apically with two pairs of long, pointed processes barely extending beyond tenth tergites, with a central sclerotized tube ending in a membranous lobe.

Material.— Holotype, male : Cachoeira do Gigante, 3 July 1961, E. J. FITTKAU, Lichtfang (A—200). Paratypes : Same data, 2♂.

Protopila ternatia n. sp.
Figure 13

This species seems to belong to the *disticha* group, but is quite different from the other species in this group. The shape of the tenth tergite with bands of mesal spicules,

and above all the structure of the apical portion of the aedeagus are distinctive.

Adult.– Length of forewing, 2 mm. Color brown in alcohol; pattern indistinct but apparently identical to the other species of the group (See *P. macilenta*). Sixth sternum with a pointed central process. Male genitalia : Eighth sternum produced posteriad as a scooplike lobe, in ventral aspect narrowed apically, with tip rounded. Ninth segment with anterior margin oblique, rounded ventrally; not produced posteroventrally. Tenth tergite rather quadrate in lateral aspect, dorsal margin bearing a small tooth; mesal face with a transverse band of small pegs subapically, and a partial band apicoventrally. Aedeagus with typical mesal basodorsal lobe; midlength complex with a small lateral process, between which passes a slender, curved sclerite, and with a heavily sclerotized lateral sclerite whose tip is produced laterad; apex with a pair of curved ventrolateral spines, a lightly sclerotized, curved dorsomesal tube, and a central tube with a small, apical spine.

Material. — Holotype, male : Brazil, Rio Solimões Igarape U arini, 20 km oberhalb, 4 Sept. 1961, E.J. FITTKAU , Lichtfang. (A—256). Paratype : Rio Solimões, Ilha Juçara, etwa 300 m. entfernt eine Bachmündung (schwarzes Wasser), 3. Sept. 1961, Lichtfang 1♂ (A—255).

Protoptila disticha n. sp.
Figure 14

This and P. *macilenta* n. sp. are clearly related but may be separated by many differences in the male genitalia, especially in the structure of the apex of the aedeagus, the tenth tergite, and ninth segment dorsolaterally.

Adult.–Length of forewing, 2 mm, Coloration as in *P. macilenta*. Sixth sternum with a small pointed central process. Male genitalis : Eighth sternum produced posteriad as a broad scooplike structure with posterior margin shallowly concave. Ninth segment not produced posteroventrally, dorsolateral angle barely produced as a broad shoulder. Tenth tergite pendulous, elongate, apical section bearing two short rows of enlarged setae mesally. Aedeagus with mesal, basodorsal structure barely expanded dorsally; with a complex of midlength structures; apex with a pair of long, slender, sinuous spines, central portion with lateral sclerites free, sclerotized apically, tip pointed and decurved, membranous portion with a central C-shaped sclerite internally.

Material.– Holotype, male : Brazil, Rio Solimões, bei der Mündung Ipixuna, 12 Sept. 1961, E.J.FITTKAU, Lichtfang (A—260). Paratypes : Same data, 1♂. Rio Tupani, am 2. Vermessungspunkt, 14—15 Sept. 1960, Lichtfang, 1♂ (A—15—2). Cachoeira do Gigante, 3 Aug. 1961, Lichtfang, 1♂ (A-200). Rio Branquinho, Abschaum aus Bambuszone, 22 July 1961, 1♂ (A—212). Rio Solimões, Ilha Juçara, etwa 300 m. entfernt eine Bachmündung (schwarzes Wasser), 3 Sept. 1961, Lichtfang, 3♂ (A—255). Rio Solimões, etwa 15 km unterhalb Coarí, 13 Sept. 1961, Lichtfang, 6♂ (A—261). Rio Negro, Ponta Negra, 6 June 1962, Lichtfang, 1♂ (A—385). Reserve Ducke (Manaus), 20 Oct. 1963, G. MARLIER, 3♂ (96). Santarém (FAO), 7 Dec. 1963, UV, 1♂ (120). Santarém, Diamantina, 15 Dec. 1963, UV, 1♂ (121).

Protoptila flexispina n. sp.
Figure 16

This is clearly a member of the *disticha* group, somewhat related to *P. macilenta*. The long, scimitar shaped apical spine of the aedeagus, and the large, rectangular apical section of the tenth tergite are diagnostic.

Adult. — Length of forewing, 2 mm. Color as in *P. macilenta*. Sixth sternum with compressed central process. Male genitalia : Eighth sternum produced as a broad, scooplike structure with a broad V-shaped apicomesal excision, and small, apicolateral

lobes. Ninth segment not produced posteroventrally, with posterior margin very indistinct, without dorsolateral lobes. Tenth tergite decurved with large rectanguloid apical portion bearing two irregular rows of large peglike setae on mesal face. Aedeagus with mesal, basodorsal structure expanded dorsally; with a complex series of structures at midlength; apex with a pair of long, upcurved lateral spines, centrally membranous with a central opening surrounded by several small sclerites.

Material. — Holotype, male : Brazil, Rio Solimoes Igarapé U arini, 20 km oberhalb, 4 Sept. 1961, E.J. FITTKAU , Lichtfang (A-256). Paratypes : Rio Solimões, 1 Stunde von S. Antônio do Içá entfernt, kein Nebengewässer in der Nähe, 28 Aug. 1961, Lichtfang, 1♂ (A-242). Rio Solimões, Ilha Juçara, etwa 300 m. entfernt eine Bachmündung (schwarzes Wasser), 3 Sept. 1961, Lichtfang, 7♂ (A-255). Rio Solimões, etwa 15 km unterhalb Coarí, 13 Sept. 1961, Lichtfang, 1♂ (A-261).

Protoptila macilenta n. sp.
Figure 15

This species is another number of the *disticha* group, probably closest to *disticha* itself. However, the dorsolateral lobe of the ninth segment, the shape of the tenth tergite with its very heavy mesal setae, and the structure of the aedeagus, especially its pair of very long apical spines are diagnostic.

Adult.— Length of forewing, 2 mm. Color generally brown with silvery white marks centrally on mesonotum and head; forewing brown with silvery spot near posterior margin at fourth length, a transverse band at midlength, spots on anterior and posterior margin at three-fourths and at apex. Sixth sternum with a small, pointed central process. Male genitalia : Eighth sternum produced into a broad, truncate, scooplike, apical structure. Ninth segment not produced posteriad ventrally, posterior margin very indistinct, produced into rounded dorsolateral lobes. Tenth tergite decurved, elongate, apical portion bearing on mesal face many heavy dark setae. Aedeagus with mesal, basodorsal structure only slightly expanded dorsally; with a complicated series of structures at midlength, dorsally with a pair of very long, slender, free spines beneath membranous apex which is broad but thin, and sclerotized laterally with a central opening surrounded by several small sclerites.

Material.— Holotype, male : Brazil, Rio Tocantins, im Hause des Ingenieurs von Rio Impex, 5 Nov. 1960, E.J. FITTKAU, Lichtfang (A-50-2).

Family Philopotamidae

The philopotamids are known from all the regions of the world and may be found in all those areas with flowing water. Although their generic diversity is greatest in the colder and more mountainous sections, certain genera, notably *Chimarra*, are common in the lower warmer regions as well.

There are four genera in South America; three predominantly in the more mountainous sections, and the fourth, *Chimarra*, more nearly ubiquitous.

Key to Genera

1. Forewing with three branches to M 2
   Forewing with four branches to M 3
2. Foretibia with 1 small apical spur . . . . . *Chimarra*
   Foretibia with 2 conspicuous apical spurs, one almost twice as long as the other . . . . . *Chimarrhodella*
3. Hindwing with 2A atrophied beyond the crossvein . . . . . *Wormaldia*
   Hindwing with 2A extending beyond the crossvein, generally reaching wing margin . . . . . *Dolophilodes*

Genus *Chimarrhodella* LESTAGE

Chimarrhodella LESTAGE, 1925, p. 37.

Protarra ROSS, 1956, p. 49. (New Synonymy)

LESTAGE established the genus *Chimarrhodella* in a footnote in his 1925 paper for the species *Chimarra galeata* MART. ROSS'S genus *Protarra* is clearly a synonym for he placed in it, not only his three new species, but also *galeata* MART. The described species are known from the mountainous regions of Peru and Bolivia. I have seen additional specimens from Venezuela and Panama, indicating a rather wide distribution throughout South America, although none were encountered in this collection.

The immature stages are unknown.

Genus *Wormaldia* McLACHLAN

The genus is very widespread, being known from Europe, Africa, Asia, and the Americas. It is found throughout the mountainous and hilly regions of North and Central America, Grenadà in the Lesser Antilles, and northern and western South America.

The immature stages of several European and North American species have been described (LEPNEVA 1964, and ROSS 1944).

Wormaldia planae ROSS & KING
Figures 17 — 18

Wormaldia planae ROSS & KING , in ROSS , 1956, p. 64. — FLINT , 1968, p. 9.

This species, originally described from southern Mexico, has since been recorded from Panama, Columbia, Trinidad, and Grenada. It is now recorded from near the Venezuelan border in northern Brazil : Gebiet Endstation Rio Marauiá, Bergbach II etwa 350 m über der Meeresspiegel, schattig, starkes Gefälle über Granitblöcke, 26 Jan. 1963, E. J. FITTKAU , Lichtfang, 1♂2♀ (A—498).

Genus *Dolophilodes* ULMER

This genus is widely distributed over the world with species known from South Africa, Asia, Australia, New Zealand, North America and Chile. In the New World, species have been known from the United States and Canada, with a distinct group limited to Chile. The discovery of a species in southeastern Brazil represents a considerable increase in range.

Larvae and pupae of South African, Asian and North American species have been described (BARNARD 1934; ROSS 1944, etc.)

Dolophilodes (Sortosa) sanctipauli n. sp.
Figures 19 — 20

This is the first species of *Dolophilodes* to be found in South America outside of the Chilean Subregion. I am placing it in the subgenus *Sortosa* with which it agrees in all details of venation, in spite of a rather different appearance of the tenth tergum and cerci. The long lateral processes and the shape of the median lobe of the tenth tergum are similar to those of the South African subgenus *Thylakion*. However, *sanctipauli* is excluded from this subgenus by the different conformation of the anal veins in the forewing. *D. (Sortosa) sanctipauli*, then, forms a very distinctive group tentatively placed in the subgenus *Sortosa*.

The species is easily recognized by the deflexed, filamentous cercus, the basally broad

tenth tergum with basolateral spiculate depressions, and long lateral filaments, the short aedeagus with small, lateral spines, and very long claspers.

Adult. — Length of forewing, 6 mm. Color in alcohol, pale brown. Venation as in ROSS, 1956, fig. 23. Male genitalia: No sternal processes. Eighth tergum with a triangular, posteromesal, deeply depressed indentation. Ninth segment with a dorsolateral flaplike process. Tenth tergum long, broad basolaterally, apex produced into a hood, with a long, slender basolateral process reaching almost to apex of tergum; basolateral lobe with a spinulose concavity. Cercus slender, filamentous, deflexed, arising basolaterally of tenth tergum. Claspers not fused basally; long, slender and straight, apical segment subequal in length to basal segment and with a small apicomesal patch of spicules. Aedeagus short, with a ventral scoopshaped sclerite, apicodorsally membranous with many hairlike spines.

Material. — Holotype, male: Brazil, São Paulo, 3 Nov. 1961, E. J. FITTKAU (A—273).

Genus *Chimarra* STEPHENS

Species of this genus are known from all the faunal realms, although the species are fewer in the higher latitudes. In Latin America, no species are known from the Chilean subregion, and only a single one from western Argentina; but to the north, the fauna becomes extremely large and complex before tapering out in the northern United States.

The immature stages live in flowing water, but are more tolerant of warmer conditions than those of other genera of this family. The larvae live in silken tubes attached to the undersurface of rocks or logs where the flowing water keeps the nets distended. At pupation, a domelike shelter of debris lined with silk is constructed. Most larvae, many of which are known, have the anterior margin of the frontoclypeus emarginate, often asymetrically so. (ROSS, 1944; FLINT, 1968, etc.).

Key to Species

1. Tenth tergum a simple hoodlike sclerite; eight tergum with hirsute posterolateral lobes . . . . . *C. fittkaui*
   Tenth tergum divided middorsally, variously shaped; eight tergum often with processes, but these not hirsute 2
2. Claspers broadly fused mesally, in posterior aspect semicircular with an apicolateral process . . . . . *C. aurivittata*
   Claspers not fused mesally, variously shaped 3
3. Eighth tergum with posterior margin bearing one or more processes 4
   Eighth tergum without processes from posterior margin 6
4. Eighth tergum with a single elongate mesal process . . . . . *C. medioloba*
   Eighth tergum differently developed 5
5. Eighth tergum with a pair of long, slender processes . . . . . *C. diakis*
   Eighth tergum with posterior margin broadly produced, and bearing 2 pairs of short points . . . . . *C. quaternaria*
6. Clasper long and straplike, apex bifid in lateral and ventral aspects . . . . . *C. simpliciforma*
   Clasper shorter and broader, apex with a single process 7
7. Clasper as long as high in lateral aspect, dorsomesal angle produced into a slender mesally directed process . . . . . *C. uara*
   Clasper distinctly elongate, apicodorsal angle produced posteriad . . . . . *C. usitatissima*

Chimarra (Curgia) fittkaui n. sp.
Figures 21 — 24

This species is closely related to *C. brasiliana* (ULM.). It differs primarily in the ornamentation of the eighth tergum, and to a lesser degree, in the shape of the tenth tergum and claspers.

Adult. — Length of forewing, 5.5 mm. Color in alcohol, pale brown. Forewing without bulla; hindwing with 4 branches to R_s, a closed discoidal cell, and 3 branches to M. Fifth sternum with a round, dark anterolateral mark. Male genitalia : Eighth sternum narrow ventrally; tergum deeply concave posteromesally, with ventrolateral angle bearing a large hirsute brush. Ninth segment moderately developed anteroventrally; with a large posteroventral keel; developed in a strongly sclerotized, scabrous, dorsomesal lobe. Cercus large and auriculate. Tenth tergum hoodlike, apically erect. Clasper short and broad with small dorsal and posteroventral points in lateral aspect, with a dark mesal ridge in posterior aspect. Aedeagus with 3 strong apical spines, a pair of more slender, curved spines, and a small basal ring and rod.

Material. — Holotype, male : Brazil, Rio Marauiá, Endstation vor langer Cachoeira, Fluß tritt hier aus dem Gebirge mit starkem Gefälle, 28 Jan. 1963, E. J. FITTKAU , Lichtfang (A—502). Paratypes : Same data, 1♂; same, but 24 Jan. 1963, 1♂ (A—496).

Chimarra (Curgia) aurivittata n. sp.
Figures 25 — 28

This species is clearly a member of the subgenus *Curgia*, but differs from all other known species in the divided tenth tergum and the fusion of the claspers.

Adult. — Length of forewing, 5.5 mm. Color dark brown, leg bases yellower; with a large, oval patch of golden hairs centered on anastamosis of forewing. Forewing without a bulla; hindwing with 4 branches to R_s, a closed discal cell, and three branches to M. Fifth sternum with an anterolateral darkened callus. Male genitalia : Eighth sternum narrow; tergum submesally produced posteriad as two short, darkened lobes. Ninth segment rounded anteriorly; apicoventral keel small. Tenth tergum hoodlike in lateral aspect, with a deep dorsomesal cleft. Cercus a small lobe laterally on tenth tergum. Claspers broadly fused mesally; in ventral aspect rounded with a strong, mesally directed spine. Aedeagus short, with a well developed rod and ring, and about 12 short, black spines.

Material. — Holotype, male : Guyana, Essequibo, Mazaruni River, 39 miles southwest of Wineperu, 17—18 Mar. 1969, DUCKWORTH and DIETZ . Paratypes : Same data, 1♂; Brazil, Rio Marauia Igarapé S. Antônio (Cachoeira), 8 Jan. 1963, E. J. FITTKAU , Lichtfang, 5♂ 2♀ (A—470).

Chimarra (C.) mediloba n.sp.
Figures 29 — 31

This species, clearly related to *C. quaternaria*, differs in details in all parts of the male genitalia. The greatest differences are in the shape of the eighth and tenth terga, and in the spines of the aedeagus.

Adult.— Length of forewing, 4.5 mm. Color in alcohol dark brown. Forewing without a bulla on R_s; hindwing with 4 branches to R_s, a closed discal cell, M with 3 branches. Male genitalia : Eighth sternum narrow; tergum developed into an concial, mesal lobe over ninth segment. Ninth segment with a small, rounded anterolateral lobe; posterolateral margin produced into a lobe over clasper bases; middorsally produced into a straplike lobe with a U—shaped mesal excision; with a small apicoventral keel. Tenth tergum divided into a lateral plate with a slightly produced apex, and a more lateral bilobed plate whose dorsal lobe incorporates the cercus. Clasper long and narrow, tip produced into a dorsally directed point. Aedeagus long, slender, and slightly angulate;

with 3 pairs of long slender spines, a basal ring and rod with a yoke whose apicolateral angles are produced into black, spiculate processes.

Material.— Holotype, male : Brazil, Gebiet Endstation Rio Marauiá, Bergbach II, etwa 350 m. über dem Meeresspiegel, schattig, starkes Gefälle über Granitblöcken, 26 Jan. 1963, E. J. FITTKAU, Lichtfang (A—498).

Chimarra (C.) quaternaria n. sp.
Figures 32 — 34

This species is a member of the *patosa* group, probably closest to *C. medioloba* n. sp. Distinctive specific characters are found in the eighth tergum, the dorsolateral process of the ninth segment, the very small tenth tergites, and the shape of the aedeagus.

Adult.— Length of forewing, 5 mm. Color in alcohol dark brown. Forewing without bulla; hindwing with 4 branches to R_s, a closed discoidal cell, and three branches to M. Male genitalia : Eight segment narrow vertrally: dorsum concave centrally, posterior margin produced, with 2 pairs of small teeth. Ninth segment with anterior margin produced into dorso- and ventrolateral lobes; with a small apicoventral keel; posterior margin produced into a point at base of clasper, with a thin, trianguloid, dorsolateral process (cercus ?). Tenth tergum smaller than dorsolateral process of ninth segment; developed into a small, bilobed plate, produced ventrad as a thin sclerite in lateral aspect. Clasper long, rectanguloid, tip produced into a small dorsomesal point. Aedeagus long and thin; internally (everted in type) with 3 small apical spines, a large midventral spine, a pair of large lateral spines, a pair of basal spines divided into 4—5 apically directed filaments; and a lightly sclerotized Y-shaped structure.

Material.— Holotype, male : Brazil, Gebiet Endstation Rio Marauiá, Bergbach II, etwa 350 m. über dem Meeresspiegel, schattig, starkes Gefälle über Granitblöcke, 26 Jan. 1963, E. J. FITTKAU, Lichtfang (A—498). Paratypes : Same data, 13♂.

Chimarra (C.) diakis n. sp
Figures 35 — 37

This species is a member of the *patosa* group, closest to *C. dominicana* FLINT. It differs from the latter species in possessing very long processes from the eighth tergum, and in the structure of the tenth tergum, the claspers, and the aedeagus.

Adult.— Length of forewing, 4 mm. Color in alcohol, pale brown. Forewing without a bulla; hindwing with 3 branches to R_s, 2 to M. Male genitalia : Eighth segment narrow ventrally; dorsally with a pair of long, scabrous, submesal processes from posterior margin. Ninth segment with anterior margin nearly vertical; ventrally with a short, terete, central process. Cercus large and ovate. Tenth tergum divided into a pair of heavily sclerotized lateral plates produced apically into a short process; mesally with a single conical structure bearing at midlength a blackened dorsal hood, apically developed into a rounded dorsal knob. Clasper very long and slender. Aedeagus short; internally with a basal ring and ventral rods bearing subapically a dorsal ring, apically with a pair of large decurved, contiguous spines.

Material.— Holotype, male : Brazil, Gebiet Endstation Rio Marauiá, Bergbach II, etwa 350 m. über dem Meeresspiegel, schattig, starkes Gefälle über Granitblöcke, 26 Jan. 1963, E. J. FITTKAU, Lichtfang (A—498). Paratype : Same data, 1♂.

Chimarra (C.) simpliciforma n. sp.
Figures 38 — 39

This species is, in its genital structure, most remarkable in appearance. The male with its concave dorsomesal lobe of the ninth segment bearing apicolaterally small trianguloid

tenth tergites, the very long, straplike claspers bifid at their apices, and the long apicomesal process of the ninth sternum is very distinctive.

Adult.— Length of forewing, 3 mm. Color pale brown (in alcohol). Forewing without bulla between R_1 and R_S; hindwing with 3 branches to R_S, 2 to M. Male genitalia : Ninth segment with anterior margin developed into a scooplike lobe ventrally, posteroventral process very long and slender; dorsally with lateral region inflated, with a dorsomesal structure extending posteriad, concave dorsally with lateral margins flange-like. Tenth tergite extending from posteroventral region of ninth tergum and connected thereto by a membranous region; tips sclerotized, trianguloid, separated mesally. Claspers long, straplike, bifid. Aedeagus lightly sclerotized, apparently with a single long dorsal spine, an indistinct basoventral structure, apex with a pair of rounded lateral lobes.

Material.— Holotype, male : Brazil, Reserva Ducke, (Manaus), 20 Oct. 1963, G. MARLIER (96).

Chimarra (C.) uara n. sp.
Figures 40 — 42

This species belongs to the *aterrima* group, and is perhaps closest to *C. emima* ROSS. The dorsolateral process of the ninth segment is distinctive, though much like that found in *usitatissima* n. sp., but the dorsolateral process from the tenth tergite is unique.

Adult.— Length of forewing 4 mm. Coloration in alcohol, dark brown. Forewing with a bulla involing R_S; hindwing with 3 branches to R_S, and 3 to M. Male genitalia : Eighth segment mostly destroyed dorsally in type. Ninth segment rounded anteroventrally; with a posteroventral keel; dorsolaterally with a slender process directed dorsomesally. Cercus small, oval. Tenth tergum with a lightly sclerotized dorsemesal lobe: lateral plates elongate, rather quadrate, with a strong dorsolateral process. Clasper short and broad, with a thin mesal process apicodorsally, apicoventral margin with a series of small, dark dents. Aedeagus with apex produced into a pointed ventral tip, with two internal spines, a large scabrous pouch, and a lightly sclerotized basal rod and ring.

Material.— Holotype, male : Brazil, Rio Marauiá, Endstation vor langer Cachoeira, Fluss tritt hier aus dem Gebirge mit starkem Gefälle, 28 Jan. 1963, E. J. FITTKAU, Lichtfang (A—502).

Chimarra (C.) usitatissima n. sp.
Figures 43 — 45

This species is a member of the *aterrima* group although rather different from most other described species of the group. The broad, decurved, platelike lateral lobes of the tenth tergum, are distinctive, as are the elongate, pointed claspers.

Adult.— Length of forewing, 4 mm. Color in alcohol, pale brown. Forewing without bulla; hindwing with 3 branches to R_S, no discoidal cell,and 2 branches to M. Male genitalia : Eighth segment broad, unmodified. Ninth segment with anterior margin produced into a broad ventral scoop; posterior margin produced into a small flap above clasper base; with an elongate apicoventral process; dorsolaterally produced into an elongate pointed process. Cercus short and broad. Tenth tergum divided into broad, apically decurved, lateral plates with many sensillae. Clasper elongated apically with an elongate, shelflike projection on mesal face apically. Aedeagus lightly sclerotized, internally with a basal ring and rod connected to a trough-shaped apical structure produced into a long, slender apex.

Material.— Holotype, male : Brazil, Rio Branquinho, bei Cachoeira, 21 July 1961, E. J. FITTKAU, Lichtfang, 19.30 Uhr — 22.00 Uhr (A—209—b). Paratypes : Same, but 18.30 Uhr — 19.30 Uhr, 2♂ (A—209—a); same, but Lager Tapiri, 22 July 1961, 20.00 Uhr — 21.00 Uhr, 1♂ (A—213—3). Rio Parú, Malloca Apicó, 20 April 1962,

Lichtfang, 1♂ (A—366—1). Rio Marauiá, etwa 20 km oberhalb der Mündung, 30 Dec. 1962, Lichtfang, 1♂ (A—445). Rio Marauiá, Cachoeira Bicho-Aqú, 31 Dec. 1962, Lichtfang, 4♂ (A—449). Rio Marauiá, Cachoeira Tucumã bei Regenwetter, 1 Jan. 1963, Lichtfang, 29♂ (A—450). Rio Marauiá, Cachoeira Rio Irapirapí, 4 Jan. 1963, 1♂ (A—456). Rio Marauiá, Cachoeira Santo Antônio, 10 Jan. 1963, Lichtfang, 16♂ (A—475). Rio Irapirapí, Cachoeira, 11 Jan. 1961, Lichtfang, 1♂ (A—479). Rio Irapirapí, Ponte Inhira, eine Tagesreise oberhalb Mündung, stark fließendes Wasser, Wasseranstieg etwa 50 cm in 3 Stunden, 13 Jan. 1963, Lichtfang, 12♂ (A—481). Rio Marauiá, eine Tagesreise oberhalb Mission (Antônio), große Sandpraia, flaches Flußbett mit Blätterpackung an Sandbänken, 22 Jan. 1963, Lichtfang, 2♂ (A—486). Rio Marauiá, im Bereich von A—489 (A—489 : a days' journey above A—486), 24 Jan. 1963, Abschaum, 2♂ (A—490). Rio Marauiá, eine Tagesreise oberhalb A—490, 24 Jan. 1963, Lichtfang, 1♂ (A—492). Rio Negro, 2 km unterhalb Tapuruquara, Bucht bei einer Insel im Fluß, 6 Feb. 1963, Abschaum, 1♂ (A—511).

Family Psychomyiidae

The classification of this „family" is not at all satisfactory. The difficulty starts in whether one should recognize its division into one, two, or more families, and extends to the definition of the genera. Until the life history is known for species in all genera, I do not believe that we can develope a stable, widley accepted classification. For this reason, I am here recognizing a broadly defined family and no categories between this and the generic level.

The family is equally well developed in both the temperate and tropical regions. Although certain genera are found in both regions, there tends to be a replacement of genera. For instance, *Polycentropus* is primarily a temperate or montane genus, that is generally replaced by *Polyplectropus* in the warmer, lowland tropics.

The larvae of the family all construct silken retreats or nets of some sort. Some of the larger forms are predaceous on smaller organisms that are trapped in these nets, but most feed on organic matter strained from the current.

Key to Genera

1. Foretibia with a preapical spur 2
   Foretibia without any preapical spur 5
2. Forewing with R_2 present 3
   Forewing with R_2 and R_3 fused to wing margin 4
3. Hindwing with R_2 present . . . . . *Polycentropus*
   Hindwing with R_2 and R_3 fused to wing margin . . . . . *Polyplectropus*
4. Maxillary palpus with second segment long, third very slightly longer than second . . . . . *Cymellus*
   Maxillary palpus with second segment short, third three times as long as second . . . . . *Nyctiophylax*
5. Forewing with Cu_1 branched . . . . . *Cernotina*
   Forewing with Cu_1 unbranched . . . . . *Xiphocentron*

Genus *Xiphocentron* BRAUER

This very distinctive genus is found from the southwestern United States southward into Argentina. Although no species were collected in this survey of the Amazon Basin, they doubtless do occur in the region (i.e. *Tinodes* of FITTKAU, 1964, p. 1096) They were probably not collected due to the adults' habits of being active only in the bright sun, and not being attracted to lights at night.

The larvae construct long, silken tubes over the substrate, often on moist rocks quite far from the water level (STURM 1960). The larval morphology is distinctive and has been described (FLINT 1964b, and EDWARDS 1961).

Genus *Polycentropus* CURTIS

Polycentropus is a large and rather heterogenous genus, primarily north temperate in distribution. In Latin America, species are found throughout Central America, the West Indies, the Andean areas of South America, and especially Chile. No species were found in the lowland Amazon Basin in this study.

The larvae of many north temperate and West Indian species have been described (ROSS 1944; FLINT 1968). They construct silken nets by which they enmesh their food, either small animals or organic matter.

Genus *Polyplectropus* ULMER

This is a rather large and comparatively homogeneous genus in the New World, and is found from the southwestern United States south into northern Argentina. There are also species placed in the genus in the Old World tropics, but many of these may not be truly congeneric.

The larvae are very similar to those of *Polycentropus* but may be distinguished by the large ventral teeth on the anal claw (FLINT 1968, p. 23).

Key to Species

1. Clasper with dorsolateral lobe wide, ventromesal lobe in ventral aspect rectangular . . . . . *P. inarmatus*
   Clasper with dorsolateral lobe slender, fingerlike, ventromesal lobe distinctly produced apicomesally 2
2. Cercus with two elongate processes from dorsal region . . . . . *P. spiculifer*
   Cercus with a single elongate process from dorsal region 3
3. Aedeagus with a pair of long, pointed ventral spines . . . . . *P. banksianus*
   Adeagus with a pair of short, blunt ventral spines . . . . . *P. brachyscolus*

Polyplectropus inarmatus n. sp.
Figures 46 — 48

This species is perhaps most closely related to *P. laminatus* (YAM.), from which it is easily distinguished by the much broader dorsolateral lobe of the claspers and rather different structure of the aedeagus.

Adult.—Length of forewing, 4 mm. Color in alcohol, pale brown; forewing membrane with darker spots. Male genitalia : Ninth sternum large, rather quadrate in lateral aspect. Tenth tergum membranous, with membranous lateral lobes. Cercus with dorsomesal and dorsolateral lobes small, rounded; ventromesal lobe large, bearing sclerotized apex directed ventrad, in posterior aspect with tip tripartite. Clasper with dorsolateral lobe large, enlarged apicad; basomesal lobe thin, in ventral aspect quadrate. Aedeagus with basal tube indistinct; with apicodorsal process bearing a dorsomesal opening, apex hoodlike with a mesal carina, beneath this two long, slender spines, between which is a small, triangular point.

Material.— Holotype, male : Brazil, Rio Marauiá, Endstation vor langer Cachoeira, Fluß tritt hier aus dem Gebirge mit starkem Gefälle, 24 Jan. 1963, E. J. FITTKAU, Lichtfang (A—496). Paratypes : Same data, 3♂. Rio Irapirapí, Pont Inhira, eine Tagesreise oberhalb Mündung, stark fließendes Wasser, Wasseranstieg etwa 50 cm. in 3 Stunden, 13 Jan. 1963, Lichtfang, 1♂ (A—481).

Polyplectropus spiculifer n. sp.
Figures 49 — 51

This species is allied to the type-species. *P. flavicornis* ULM., from Santa Catarina. It differs from *flavicornis* in lacking the third dorsal process from the cercus, in having a shorter ventral lobe of the clasper, and apparently in possessing a pair of long slender spines in the aedeagus.

Adult.— Length of forewing, 4.5 mm. Color in alcohol, brown, forewing membrane marked with brown patches. Male genitalia : Ninth sternum slightly produced anteriorly. Tenth tergum a conical, membranous lobe. Cercus with a curved, pointed dorsal process with a small basal point and a slender, twisted and pointed process arising from a small lobe just basomesal of this process, dorsolateral shoulder slightly produced; with a ventromesal beaklike process. Clasper with a long, slender dorsal lobe; basomesal lobe short, with a slight apicomesal point. Aedeagus with a short, basal tube, and long basodorsal strap; apically with a dorsal heavily sclerotized structure bearing elongate lateral lobes and a basodorsal bridge, ventrally with a pair of longer slender spines.

Material.— Holotype, male : Brazil, Rio Marauiá, Endstation vor langer Cachoeira, Fluß tritt hier aus dem Gebirge mit starkem Gefälle, 28 Jan. 1963, E. J. FITTKAU, Lichtfang (A—502).

Polyplectropus brachyscolus n. sp.
Figures 52 — 54

This species, together with *P. banksianus* n. sp. and *P. elongatus* (YAM.), form a very distinctive subgroup in the *santiago* group. From the other most closely related species, it may be distinguished by the two rather short and blunt ventral spines and the shape of the apicodorsal structure of the aedeagus.

Adult.—Length of forewing, 4.5 mm. Color in alcohol pale brown, forewing membrane appearing to have darker spots. Male genitalia : Ninth sternum large, rounded anteriorly. Tenth tergum a short, semimembranous lobe. Cercus composed of a long, slender, arcuate dorsomesal lobe; dorsolateral lobe but barely developed, ventromesal lobe elongate, apex developed into a heavy hook. Clasper composed of 2 parts; a long, slender dorsal lobe and a basomesal lobe with a small dorsolateral flap and an elongate apicomesal point. Aedeagus with a tubular collar, bearing dorsally a heavily sclerotized structure with thin lateral arms, and a dorsomesal bridge, and ventrally with a pair of heavily sclerotized rather short, blunt spines.

Material.— Holotype, male : Brazil, Rio Marauiá, Endstation vor langer Cachoeira, Fluß tritt hier aus dem Gebirge mit starkem Gefälle, 28 Jan. 1963, E. J. FITTKAU, Lichtfang (A—502). Paratypes : Same, but 24 Jan. 1963, 1♂ (A—496). Rio Marauiá, eine Tagesreise oberhalb A—490 (A—490 : 3 days' journey above Mission Santo Antônio), 24 Jan. 1963, 1♂ (A—492).

Polyplectropus banksianus n. sp.
Figures 55 — 57

Ecnomodes buchwaldi ULM.—BANKS, 1913, p. 88.

This species is being described from that material BANKS recorded as *Ecnomodes buchwaldi* ULM. Unfortunately, the types of the latter are reported to be lacking their abdomens, and considering the large number of superficially similar species of restricted range in the genus, it seems unlikeley that we will ever known the specific identity of *buchwaldi*, or that these example are actually the latter which was from Ecuador.

P. banksianus is very closely related to both *elongatus* (YAM.) and *brachyscolus* n. sp. From both, it is most easily separated by the structure of the aedeagus, the two very long, bowed spines ventrally and the apical pincerlike structure are diagnostic. In addition,

there are lesser differences between all three species in the shape of the cercus and ventral lobe of the claspers.

Adult.— Length of forewing, 4.5 mm. Color pale brown, forewing with costal margin darker, membrane with irregular hyaline and brown blotches. Male genitalia : Ninth sternum broad, anterior margin nearly vertical. Tenth tergum a short, membranous lobe. Cercus composed of a long, arcuate, spinelike dorsomesal lobe; dorsolateral lobe barely developed; ventromesal lobe large, apex developed into a ventrally directed hook. Clasper composed of 2 parts; dorsolateral lobe long and slender; ventromesal lobe small and scoopshaped developed into an apicomesal point. Aedeagus with a tubular collar and long basodorsal straps; apiconventrally with a pair of long, curved, heavily sclerotized spines, apicodorsally with a sclerotized structure terminating in lateral arms whose tips are pointed mesad.

Material.— Holotype, male : Brazil, Manaus, MANN Type M.C.Z.

Genus *Nyctiophylax* BRAUER

Nyctiophylax was originally established for a Chinese species, but has since been enlarged to include other Asian, African, and North American species. The genus is well represented in the Baltic Amber. Navas described a species from Argentina, but this may well be a species of *Cyrnellus*.

The larvae live under a silken shelter on rocks in slowly flowing water. They were described in detail by FLINT 1964a, p. 471.

Nyctiophylax neotropicalis n. sp.
Figures 58 — 60

The genitalia of this species bear little resemblance to any of the described North American species. The cerci, claspers, and especially the aedeagus are very distinctive.

Adult.— Length of forewing, 3.5 mm. Color brown, head and thorax with intermixed brown and whitish hairs, wings with golden brown hairs. Male genitalia : Ninth segment narrow, produced anteroventrally, very oblique. Tenth tergite a small rounded lateral lobe. Cercus a slender, fingerlike process. Claspers rather quadrate in lateral aspect, apically with a dorsomesal process, which in posterior aspect bears 3 mesal lobes. Aedeagus with a central tubular portion bearing apically an internal structure with short lateral spines and an apicoventral lip; with a pair of long, slender asymmetrical lateral spines arising at base of tubular portion, and crossing near its apex.

Material.— Holotype, male : Columbia, Cundinamarca, Rio Sumapaz Gorge, east of Melgar, 1000 m., 5 Jan. 1959, J.F.G. CLARKE. Paratypes : Same data, 7♂. Brazil, Igarapé Cachoeira, bei dem Wasserfall Pedra dos Indios, 16 April 1961, E.J. FITTKAU, Lichtfang, 4♂(A-151-2); same, but 18 April 1961, 2♂(A-151-3).

Genus *Cyrnellus* BANKS

This genus is known only from the New World, where it is widely distributed over North, Central and South America. In fact, one species, *C. fraternus* (BKS.), is found in all the Americas. The discovery of a number of previously unknown species in the Amazon Basin was unexpected considering the very wide distribution of *fraternus*.

The larvae of *C. fraternus* (BKS.), were discribed by FLINT (1964a, p. 469). They apparently live under silken shelters on rocks and wood in slowly flowing or lentic waters.

Key to Species

1. Clasper with a single, dark, mesal point 2
   Clasper with 2 dark, mesal points 5

2. Aedeagus with a distinct internal sclerite whose apicoventral margin is heavily sclerotized and upturned dorsally . . . . . *C. collaris*
Aedeagus with internal sclerite lightly sclerotized without dark apical margin 3
3. Clasper in lateral aspect upcurved apically, in ventral aspect with apicomesal lobe bearing a point that is produced posteromesad . . . . . *C. risi* (ULM.)
Clasper in lateral aspect upcurved at midlength, but with apex angled more nearly parallel to basal portion, in ventral aspect with apicomesal lobe pointed almost directly mesad 4
4. Clasper in lateral aspect with darkened part of apicomesal lobe lying primarily ventrad of lobe; in ventral aspect with point of apicomesal lobe arising from a broad base . . . . . *C. mammillatus*
Clasper in lateral aspect with darkened part of apicomesal lobe lying primarily apicad of lobe, in ventral aspect with point tapering gradually from base to apex . . . . . *C. fraternus* (BKS.)
5. Aedeagus with a large, very heavily sclerotized internal structure; clasper in ventral aspect with points well before apex, and with basal point longest . . . . . *C. arotron*
Aedeagus with internal structure small and rather indistinct; clasper in ventral aspect with two points apically or with apical point longest 6
6. Clasper in ventral aspect with apicomesal lobe almost at apex, and with basal point longest . . . . . *C. bifidus*
Clasper in ventral aspect with apicomesal lobe well before apex, and with apical point longest . . . . . *C. ulmeri*

Cyrnellus fraternus (BANKS)
Figures 61 — 64

Cyrnus fraternus BANKS, 1905, p. 17.
Nyctiophylax fraternus (BKS.).— BANKS, 1907, p. 131.— ROSS, 1938, p. 12.— FISCHER, 1962, p. 120.
Cyrnellus minimus BANKS, 1913, p. 88.— FISCHER, 1962, p. 143.— FLINT, 1967, p. 5 (New synonymy)
Nyctiophylax marginalis BANKS, 1930, p. 231.— ROSS, 1938, P. 12.— FISCHER, 1962, p. 121.
Cyrnellus zernyi MOSELY, 1934, p. 142.— ROSS, 1938, p. 13.
Cyrnellus marginalis (BKS.).— ROSS, 1944, p. 71.— FLINT, 1964a, p. 469.
Cyrnellus fraternus (BKS.).— FLINT, 1964a, p. 469.

This species is very widespread, being found over much of the United States, south throughout Central America, northern South America, and into the Amazon Basin. The development of the apex of the clasper beyond the mesal lobe is extremely variable in this species. The type of *minimus* has essentially no lobe beyond the mesal point, while in other specimens the apex of the clasper is more extended so that ultimately the lobe lies only at midlength of the clasper.

The species is closely related to the following species, *C. mammillatus* n. sp. From this species it differs in having the apicomesal lobe of the clasper triangularly shaped in ventral aspect and in lateral aspect with the darkened part lying apicad of the lobe.

Adult.— Length of forewing, 3 — 4.5 mm. Color pale brown. Male genitalia : Internal process of cercus and subgenital plate comparatively long and slender. Clasper in lateral view slightly angulate, with apicomesal lobe bearing dark portion apically; in ventral aspect with inner margin concave basad of apicomesal lobe which is triangular but varies rather greatly in placement along inner face. Aedeagus with internal sclerite very indistinct, in lateral aspect with angled basal process and a broad apical lobe.

Material.— Brazil, Camp 41, 360 km from Porto Velho, MANN, 1♂ (Lectotype of *minimus* BKS.). Unterer Rio Madeira, etwa 20 km vor der Mündung des Madeira in den Amazonas, 10 Sept. 1960, E.J.FITTKAU, Lichtfang an Bord eines Motorbootes, 1♂ (A-11). Rio Tupaní in einem seeartigen Gebiet bei Station A-27 (Rio Luna Açú), 21 Sept. 1960, Lichtfang, 4♂ (A-20). Rio Luna Açú bei A-23 (Lago Castanha Sinia-Igapó Açú), linkes Ufer, 26 Sept. 1960, Lichtfang, 1♂ (A-26). Cachoeira Castanha (Igarapé Castanha, about 80 km above Manaus on right bank of the Rio Negro), 29 Dec. 1960, Lichtfang, 5♂ (A-81). Paraná da Terra Nova, etwa 2 km. entfernt von der Mündung, 14 March 1961, Lichtfang, 4♂ (A-127); same, but etwa 100 m. oberhalb von A-127, 15 March 1961, 1♂ (A-135). Solimões-Amazonas, Rechtes Ufer, Prallhang in Höhe von A-135, 16 March 1961, Lichtfang, Uhrzeit 19.00 — 20.00, 1♂ (A-139-1). Paraná do Careiro, Divinopolis, 29 Juli 1961, Lichtfang, 1♂ (A-223-2). Paranádo Careiro, Mündung des Paraná Cambixe, 31 July 1961, Lichtfang, 3♂ (A-227). Rio Solimões, bei Mission St. Rita, 24 Aug. 1961, Lichtfang, 1♂ (A-234). Igarapé Amataurá, Benthos, Schlammboden mit Blättern durchsetzt, 28 Aug. 1961, 1♂ with pupal skin (A-241). Rio Solimões, Ponta Periquitos, 15 Sept. 1961, Lichtfang, 1♂ (A-264). Rio Aripuanã, 7 Stunden oberhalb der Mündung, Fluß etwa 800 m breit, schwache Strömung, Material durchgesehen, 14 Jan. 1962, 2♂ (A-313). Unterhalb des Rio Demini, Igapó-Curitiaú, Wasser fast klar, nicht braun, viele Fische, etwa 4 m. unter Hochwasser, Holz mit vielen minierenden Ephemeroptera, 6 Febr. 1962, 2♂ with pupal skins (A-332-2a). Rio Itaú, 10 Febr. 1962, Lichtfang, 1♂ (A-344). Igarapé Banja Luiz, Mündung des Igapó, Wasser kristall klar, Uferbereich Holz, Blätter, 15 Febr. 1962, 1♂ (A-353-1). Rio Negro, Ponta Negra, 6 June 1962, Lichtfang, 2♂ (A-385); same, but 18 July 1962, 1♂ (A-397). Rio Preto Tiririca, 7 July 1962, Lichtfang, 1♂ (A-396). Rio Tarumã, Lancha-Endpunkt, einige km. unterhalb Sucuuba, 17 Nov. 1962, Lichtfang, 1♂ (A-407). Rio Cuieiras, etwa 1 Stunde unterhalb der Mündung des Igarapé Cachoeira, 22 Nov. 1967, Lichtfang, 2♂ (A-411). Rio Marauiá, etwa 20 km oberhalb der Mündung, 30 Dec. 1962, Lichtfang, 1♂ (A-445).

Paraná Careiro, 6 Oct. 1963, G. MARLIER, 1♂ (89). Santarém (FAO), 8 Dec. 1963, u.v. light, 23♂ (120). Lago Redondo (Careiro), 11 Feb. 1964, at light, 1♂ (179). Lago Rio Preto da Eva, 21 April 1964, light, 21♂ (243). Lago Jarí, 25 Mar. 1964, light, 1♂.

Cyrnellus mammillatus n. sp.
Figures 65 — 67

This species is close to *C. collaris* n.sp. in general structure, especially the shape of the clasper and its apicomesal lobe. It differs, however, in the straighter claspers, broader subgenital plate, and especially in the degree of sclerotization and lack of apicoventral collar to the internal sclerite of the aedeagus.

Adult.— Length of forewing, 3 mm. Color in alcohol, pale brownish. Male genitalia : Internal process of cercus comparatively short; subgenitali plate short and broad in lateral aspect. Clasper rather straight in lateral aspect, slightly enlarged apically, apicomesal lobe with dark portion apicomesad in position; in ventral aspect with mesal margin slightly curved, apicomesal lobe with a small, mesal point arising from a narrow, shelf-like base (rarely deeper and more rounded). Aedeagus with internal sclerite very indistinct, in lateral aspect with an angled basal process and a broad apical area.

Material.— Holotype, male : Brazil, Lago des Rio Luna am oberen Teil, nicht weit von der Einmündung des Flusses, 23 Sept. 1960, E.J. FITTKAU, Lichtfang (A-22-2). Paratypes : Same data, 3♂. Rio Tupaní, in einem seeartigen Gebiet bei Station A-27, 21 Sept. 1960, Lichtfang, 1♂ (A-20). Rio Negro, etwa 20-30 km oberhalb von A-31 (A-31 : about 80 km. above Manaus), 7 Oct. 1960, Lichtfang, 1♂ (A-32). Rio Tocantins, im Hause des Ingenieurs von Rio Impex, 5 Nov. 1960, Lichtfang, 54♂ (A-50-2). Igarapé da Cachoeira, bei Cachoeira, 16 Dec. 1960, Lichtfang, 25♂ (A-68). Rio Branquinho, bei der Mündung des Rio Cuieiras, 23 July 1961, Lichtfang, 1♂ (A-218). Rio Preto Tiririca,

7 July 1962, Lichtfang, 1♂ (A-396). Rio Negro, Ponta Negra, 18 July 1962, Lichtfang, 1♂ (A-397).

Santarém (FAO), 8 Dec. 1963, G. MARLIER, u.v. light, 3♂ (120). Lago Rio Preto da Eva, 21 April 1964, light, 1♂ (243). Lago Jarí, 25 March 1964, light, 6♂.

Cyrnellus collaris n. sp.
Figures 68 — 70

This species seems most closely related to *C. mammillatus* n. sp. It is most easily recognized by the more heavily sclerotized internal structure of the aedeagus with its dark apicoventral collar. The rather bulbous base of the apicomesal lobe of the clasper is generally distinctive, but is approached by some examples of *mammillatus.*

Adult.— Length of forewing, 3.5 mm. Color in alcohol pale brown. Male genitalia : Internal process of cercus and subgenital plate comparatively long. Clasper in lateral view slightly sigmoid, with apicomesal lobe bearing dark portion primarily apicad; in ventral aspect clasper evenly curved, with apicomesal lobe subapicad consisting of a small mesal point arising from a broad, rounded base. Aedeagus with well sclerotized internal sclerite with apicoventral margin heavily sclerotized and produced into apicodorsal point.

Material.– Holotype, male : Brazil, Rio Solomões, bei Mission S. Rita, 24 Aug. 1961, E.J. FITTKAU, Lichtfang (A-234). Paratypes : Paraná do Careiro, Divinopolis, 29 July 1961, Lichtfang, 1♂ (A-233-3). Careiro, 8 April 1964, G. MARLIER, 4♂ (240).

Cyrnellus risi (ULMER)
Figures 71 - 74

Cyrnus risi ULMER, 1907, p. 40; 1913, p. 386.

Cyrnellus risi (ULM.).— BANKS, 1913, p. 13.— FISCHER, 1962, p. 143.— WEIDNER, 1964, p. 71.

Through the kindness of Prof. Dr. WEIDNER, I have had the opportunity to examine the type series of this species. One lectoparatype was cleared and compared to the others in the type series confirming the identity of the species, and resulting in the discovery of a single specimen of *ulmeri* n. sp. in the series. The ventral aspect of the claspers of the cleared exemple is figured.

This species may be placed in the group of species with a single process to the apicomesal lobe of the clasper. It differs from all the other species in the group in that the point of this lobe is directed more strongly posteriad, and that the clasper is rather evenly upcurved in lateral aspect.

Adult. — Length of forewing 4—5 mm. Color light brown. Male genitalia : Internal process of cercus and subgenital plate long and slender. Clasper in lateral aspect evenly upcurved, apicomesal lobe with dark portion apicad in position and sinate dorsally; in ventral aspect angled laterad, often with apical portion rather strongly so, apicomesal lobe variable in shape, but with apical point slightly hooked and directed posteriad. Aedeagus with internal sclerite lightly sclerotized, in lateral aspect with a long angled basal portion, and a widened apical portion more strongly sclerotized apically and ventrally.

Material. — Argentina, Buenos Aires, Dec. 1890, RIS , 1♂ lectotype, 4♂ lectoparatypes. Brazil, Santarém, Hotel Oriental, 5—11 Jan. 1961, E. J. FITTKAU , 1♂ (A—87—1). Paraná da Terra Nova, etwa 2 km entfernt von der Mündung, 14 March 1961, Lichtfang, 1♂ (A—127). Rio Solimões, Ilha Juçara, etwa 300 m entfernt eine Bachmündung (schwarzes Wasser), 3 Sept. 1961, Lichtfang, 2♂ (A—255). Rio Solimões, Ponta Periquitos, 15 Sept. 1961, Lichtfang, 1♂ (A—264). Rio Aripuanã, 7 Stunden oberhalb der Mündung, Fluß etwa 800 m breit, schwache Strömung, 14 Jan. 1962, 1♂ (A—313). Rio Paru, Mission Tiriyós, 23 March 1962, Lichtfang, 2♂ (A—361—2); same, but 31 March 1962, 1♂ (A—361—7); same, but 21 April 1962, 1♂ (A—361—10).

Santarém (F.A.O.), 8 Dec. 1963, G. MARLIER, 2♂ (120); same, but 5 Dec. 1963, 1♂ (156).

Cyrnellus arotron n. sp.
Figures 75—78

Although this species may be placed in the section containing those species with two points from the apicomesal lobe of the clasper, it is immediately recognizable by the large, dark complex sclerite in the aedeagus.

Adult. — Length of forewing, 3.5 mm. Color in alcohol, pale brownish. Male genitalia : Internal process of cercus and subgenital plate, long and slender. Clasper in lateral aspect, long and straight, apicomesal lobe with dark area basoventrally in position; in ventral aspect evenly curved, with apicomesal lobe bearing two points, basal one being longest. Aedeagus with a large, complex, heavily sclerotized internal sclerite.

Material.- Holotype, male : Brazil, Rio Tocantins im Hause des Ingenieurs von Rio Impex, 5 Nov. 1960, E.J.FITTKAU, Lichtfang, (A—50—2). Paratypes : Same data, 3♂. Igarapé da Cachoeira, bei Cachoeira, 16 Dec. 1960, Lichtfang, 5♂ (A—68).

Cyrnellus ulmeri n. sp.
Figures 79—80

This species is very similar in general to *Cyrnellus arotron*, however it differs in having a small, indistinct internal sclerite in the aedeagus, and in the slightly different shape of the apicomesal lobe of the claspers.

Adult. — Length of forewing, 3.5 mm. Color in alcohol, very pale brown. Male genitalia : Internal process of the cercus long and slender; subgenital plate broader than usual. Clasper in lateral aspect almost straight, apicomesal lobe with black portion ventrad in position, in ventral aspect with claspers slightly curved, apicomesal lobe bearing two sharp points, apical one being longest. Aedeagus with internal sclerite indistinct; in lateral aspect with an angled basal process and enlarged apical lobe with sclerotized apical and ventral margins.

Material.- Holotype, male : Brazil, Rio Tocantins im Hause des Ingenieurs von Rio Impex, 5 Nov. 1960, Lichtfang, E.J.FITTKAU (A—50—2). Paratypes : Same data, 9♂. Rio Negro, etwa 20—30 km. oberhalb von A—31 (A—31 : about 80 km. above Manaus), 7 Oct. 1960, Lichtfang, 1♂ (A—32). Igarapé da Cachoeira, bei Cachoeira, 16 Dec. 1960, Lichtfang, 4♂ (A—68).

Other : Argentina, Buenos Aires, Dec. 1890, RIS, 1♂ (Mus. Hamburg, from type series of *C. risi).*

Cyrnellus bifidus n. sp.
Figures 81 — 82

Although I place this species with the others bearing two processes from the apicomesal lobe of the claspers, it stands apart, not only in the shape and position of this lobe, but also in the structure of the internal sclerite of the aedeagus.

Adult.- Length of forewing, 3.5 mm. Color in alcohol, very pale brownish. Male genitalia : Internal process of cercus and subgenital plate both long, subgenital plate a bit broader. Clasper in lateral aspect angled slightly dorsad, apicomesal lobe bearing two dark points, at apex; in ventral aspect rather straight, apicomesal lobe with two large points, ventralmost longest, displaced to apical position. Aedeagus with internal sclerite lightly sclerotized, with bulbous apical and slender basal portions, with base hooked ventrad.

Material.- Holotype, male : Brazil, Paraná do Careiro, Divinopolis, 29 July 1961, E.J.FITTKAU, Lichtfang (A—223). Paratypes : Paraná da Terra Nova, etwa 100 m. oberhalb von A—127 (A—127 : about 2 km. from its mouth), 15 March 1961, Lichtfang,

1♂ (A—135). Rio Solimões, Ilha Juçara, etwa 300 m. entfernt eine Bachmündung (schwarzes Wasser), 3 Sept. 1961, Lichtfang, 3♂ (A—255). Igarapé Uarini, 20 km. oberhalb, 4 Sept. 1961, Lichtfang, 1♂ (A—256). Rio Solimões, etwa 15 km. unterhalb Coarí, 13 Sept. 1961, Lichtfang, 5♂ (A—261).

Lago Rio Preto Tiririca, 14 July 1963, G. MARLIER , 1♂ (33). Lago Jarí, 25 March 1964, 2♂.

Genus *Cernotina* ROSS

Originally described from North America, this genus has since been recorded from Central America and the West Indies, but has not been recorded from South America. The bewildering variety of species discovered in the Amazon Basin was therefore completely unexpected. It would seem that this region has been the center of an explosive evolution within the genus.

We still do not have unequivocably associated larval material for any species in *Cernotina*. It seems quite probable, however, that the larvae described (FLINT, 1964b, p. 34) from Puerto Rico as Polycentropodinae species belong to a species of *Cernotina*.

Key to Species

1. Dorsolateral lobe of cercus united with lateral lobe of tenth tergum to form a single large semimembranous lobe 2
   Dorsolateral lobe of cercus variously formed, but never completely united to tenth tergal lobe 4
2. Apicomesal lobe of clasper in ventral aspect roughly rectangular, broad; ventromesal lobe of cercus with a row of 4 or 5 setae; aedeagus without internal sac 3
   Apicomesal lobe of clasper roughly triangular, small and pointed; ventromesal lobe of cercus with two setae; aedeagus internally with an internal sac lined with hairs . . . . . *cystophora*
3. Apicomesal lobe of clasper in ventral aspect longer than wide, retracted into a pocket, and with axis parallel to that of clasper . . . . . *encrypta*
   Apicomesal lobe of clasper wider than long, not fully retracted into a pocket, and with axis oblique to that of clasper . . . . . *acalypta*
4. Lateral lobe of tenth tergum membranous, apex sometimes bearing a few enlarged setae, but otherwise unmodified 5
   Lateral lobe of tenth tergum heavily sclerotized apically and otherwise modified in shape 18
5. Clasper with a distinct erect basodorsal lobe bearing a row of enlarged setae and a platelike apicomesal lobe 6
   Clasper so modified that either basodorsal lobe or apicomesal lobe or both appear to be lacking 14
6. Dorsolateral lobe of cercus simple, elongate, apex often bearing enlarged setae 7
   Dorsolateral lobe of cercus bifurcate with apices of both arms either blackened or bearing short stout setae 9
7. Dorsolateral lobe of cercus ending in a pair of spines; basodorsal lobe of clasper displaced to a subapical position . . . . . *subapicalis*
   Dorsolateral lobe of cercus either without specialized setae, or these are only slightly enlarged; basodorsal lobe of clasper arising in usual subbasal position 8
8. Both dorsolateral lobe of cercus and apex of clasper pointed . . . . . *cacha*
   Both dorsolateral lobe of cercus and apex of clasper blunt . . . . . *uara*
9. Both arms of dorsolateral lobe of cercus attenuate and ending in a blackened tip not capped by enlarged setae 10

Both arms of dorsolateral lobe of cercus truncate and bearing from apex a specialized, enlarged, often black seta 11

10. Dorsolateral arms of cercus sloping apicodorsally; mesoventral lobe of cercus produced into 2 slender processes . . . . . *attenuata*
Dorsolateral arms of cercus sloping apicoventrally; mesoventral lobe of cercus moderately produced apicolaterally . . . . . *declinata*

11. Dorsolateral lobe of cercus divided subapically to form short internal and external arms of subequal length . . . . . *bibrachiata*
Dorsolateral lobe of cercus divided subbasally, external arms considerably longer than internal arm 12

12. External arm of dorsolateral lobe of cercus curving mesad apically . *cygnea*
External arm of dorsolateral lobe of cercus directed posteriad 13

13. Ventromesal lobe of cercus in lateral aspect narrow and fingerlike *decembens*
Ventromesal lobe of cercus in lateral aspect very broad basally; apicolateral angle slightly produced . . . . . *trispina*

14. Dorsolateral lobe of cercus with a well developed basomesal arm . *spinigera*
Dorsolateral lobe of cercus undivided 15

15. Dorsolateral lobe of cercus ending in a heavily sclerotized point 16
Dorsolateral lobe of cercus ending in an unmodified, rounded apex 17

16. Clasper with only a vertical apicomesal lobe . . . . . *verticalis*
Clasper with only a basodorsal lobe which is appressed to dorsum of clasper . . . . . *compressa*

17. Ventromesal lobe of cercus produced into a long, attenuate process *filiformis*
Ventromesal lobe of cercus obliquely truncate . . . . . *obliqua*

18. Dorsolateral lobe of cercus higher than long . . . . . *abbreviata*
Dorsolateral lobe of cercus several times longer than high 19

19. Clasper with basodorsal lobe long and erect . . . . . *perpendicularis*
Clasper with basodorsal lobe short an appressed to clasper 20

20. Ventromesal lobe of cercus a thin, transverse, ventral shelf . . . . *cingulata*
Ventromesal lobe of cercus broad and produced dorsolaterally . *unguiculata*

Cernotina acalyptra n. sp.
Figures 83 — 85

This species, *C. cystophora* n. sp., and *C. encrypta* n. sp., form a very distinctive group. It is extremely close to *encrypta*, from which it differs only in the shape of the claspers. In *acalyptra*, the clasper has its mesal margin curved in ventral aspect, and the apicomesal lobe is shorter than broad and is set at an angle to the long axis of the clasper.

Adult.- Length of forewing, 3 mm. Color in alcohol pale brown; hairs of head and thorax darker laterally. Male genitalia : Ninth sternum produced both anteriorly and posteriorly. Cercus composed of two lobes; lateral lobe (apparently including lateral lobe of tenth tergum) large and auriculate with stout setae on mesal face along apicoventral margin; mesal lobe a thin transverse plate bearing a series of short setae apically. Clasper without basodorsal lobe, enlarged subapically; in ventral aspect with mesal margin curved, apicomesal lobe broader than long and set at an oblique angle to axis of clasper. Aedeagus directed dorsomesad with paired long dorsal rods, semimembranous.

Material.- Holotype, male : Brazil, Rio Marauiá, Cachoeira Rio Irapirapí, 4 Jan. 1963, E.J.FITTKAU (A—456). Paratypes : Same data, 1♂. Rio Marauiá, Cachoeira Tucumã bei Regenwetter, 1 Jan. 1963, Lichtfang, 1♂ (A—450).

Cernotina encrypta n. sp.
Figure 86

This species is extremely close to the preceding, *C. acalyptra*. In lateral aspect, they seem indistinguishable. Indeed, I can find no differences between the two except in the claspers in ventral aspect. In *encrypta*, the mesal margin of the claspers is straight, not concave, and the apicomesal lobe is distinctly longer than broad, is set in the same axis as the claspers, and is mostly withdrawn into a deep pocket.

Material.- Holotype, male : Brazil, Rio Negro, Ponta Negra, 18 July 1962, E.J.FITTKAU, Lichtfang (A—397). Paratypes : Same data, 6♂; same, but 6 June 1962, 1♂ (A—385).

Cernotina cystophora n. sp.
Figures 87 — 89

This species is closely related to the preceding two, but differs in the shape of the mesal lobe of the cerci, the shape of the clasper expecially the apicomesal lobe, and the possession of a spiculate internal sac in the aedeagus.

Adult.- Length of forewing, 3 mm. Color in alcohol, pale brown; hairs laterally on head and thorax slightly darker. Male genitalia : Ninth segment produced both antero- and posterolaterally. Cercus composed of two lobes; lateral lobe large and auriculate with stout setae on mesal face apicoventrally; mesal lobe small with two or three larger setae. Clasper without basodorsal lobe, narrowed apically; apicomesal lobe small, bluntly pointed. Aedeagus with a pair of long dorsal rods, and an internal sac with many hairlike spicules.

Material. — Holotype, male : Brazil, Rio Branquinho, etwa 2 1/2 Stunden oberhalb Tapirí-Lager, 23 April 1961, E.J. FITTKAU, Zucht der Larven aus dem Abschaum (A—169—1). Paratype : Rio Branquinho, 1♂ (A—433).

Cernotina subapicalis n. sp.
Figures 90 — 92

This species is related to the following two species, *C. cacha* n. sp. and *C. uara* n. sp. From both of these it may be immediately recognized by the small basodorsal lobe of the claspers which has been displaced rather far apicad, and by the two short spines at the apex of the dorsolateral lobe of the cercus.

Adult.- Length of forewing, 3 mm. Color in alcohol, pale yellowish-brown. Male genitalia : Ninth segment produced anteriorly as ventrolateral lobes. Tenth tergum membranous, bilobed, in dorsal aspect each lobe with several stout setae apicomesally. Cercus 2 lobed : dorsolateral lobe elongate, parttally fused to tenth tergum, ending in 2 stout spines; ventromesal lobe broad, halves united ventromesally, produced apicolaterally, with a row of stout setae along posterior margins. Clasper with basodorsal lobe displaced apicad, rather low with a row of short, stout setae; apicomesal lobe small. Aedeagus tubular, with 3 internal spines.

Material.- Holotype, male : Brazil, Rio Marauiá, Endstation vor langer Cachoeira, Fluß tritt hier aus dem Gebirge mit starkem Gefälle, 24 Jan. 1963, E.J.FITTKAU, Lichtfang (A—496). Paratypes : Same data, 2♂. Igarapé Okumeima, Lager II, Bach mit ruhiger Strömung, 17—18 April 1962, Lichtfang, 1♂ (A—371). Rio Marauiá, Cachoeira S. Antônio, 7 Jan. 1963, Lichtfang, 1♂ (A—469). With uncertain data, 1♂.

Cernotina cacha n. sp.
Figures 93 - 94

This species is very close to the following, *C. uara* n. sp., and differs in possessing a more attenuate dorsolateral lobe of the cercus, and a narrower apex to the clasper which surpasses the apicomesal lobe.

Adult.— Lenght of forewing, 2.5 mm. Color in alcohol, brown. Male genitalia : Ninth segment barely produced anterolaterally. Tenth tergum membranous, bilobed in dorsal aspect, each lobe with several stout setae apicomesally. Cercus 2 lobed : dorsolateral lobe elongate, tip attenuate, with several long, stout setae apically; ventromesal lobe broad, halves united ventromesally, barely produced apicolaterally with a row of spines posteriorly. Clasper with a large basodorsal lobe, bearing a row of short, stout setae mesally; apicomesal lobe elongate with a row of spines mesally, surpassed by apex of claspers. Aedeagus tubular, without having sclerotized internal spines.

Material.— Holotype, male : Brazil, Rio Marauiá, Endstation vor langer Cachoeira, Fluß tritt hier aus dem Gebirge mit starkem Gefälle, 24 Jan. 1963, E.J. FITTKAU, Lichtfang (A-496).

Cernotina uara n. sp.
Figures 95–96

C. uara n. sp. and *C. cacha* n. sp. are extremely close and additional material may disclose intergrades. However, the degree of difference as seen between these two forms has proven to delineate valid species in North America. From *cacha*, *uara* differs in having a blunter dorsolateral lobe of the cercus, in the blunter apex to the clasper, and in slightly different shape to the apicomesal lobe of clasper.

Adult.— Length of forewing, 2.5 mm. Color uniformly dark brown. Male genitalia : Ninth sternum short, barely produced basoventrally. Tenth tergum semimembranous, deeply divided dorsomesally. Cercus with dorsolateral lobe elongate, blunt apically; mesoventral lobe broad, short, halves united ventromesally, posterior margin with a row of spines. Clasper with a long basodorsal lobe, apex of clasper blunt, apicomesal lobe elongate with a row of mesal spines. Aedeagus with indistinct internal spines.

Material.— Holotype, male : Brazil, Rio Marauiá, eine Tagesreise oberhalb A-490 (A-490 : 2 days' journey above Mission S. Antônio), in der Nähe der Grenzgebirge, Fluß mit Sandboden, 24. Jan. 1963, E.J. FITTKAU, Lichtfang (A-492). Paratype : Same data, 1♂.

Cernotina attenuata n. sp.
Figures 97—99

This distinctive species is perhaps closest to *C. declinata* n. sp., but is abundantly distinct. The shape of both the dorsolateral and ventromesal lobes of the cerci are distinctive, as is the shape of the apicomesal lobe of the claspers.

Adult. — Length of forewing, 3 mm. Color in alcohol, pale yellowish-brown. Male genitalia : Ninth segment produced both antero-sand posterolaterally. Tenth tergum membranous, deeply divided middorsally. Cercus consisting of a slender dorsolateral lobe with a dark tip, and which bears ventromesally a shorter, slender, dark tipped process; ventromesal lobe fused midventrally to other half, developed into a long, slender process dorsolaterally and a shorter process submesally with stout setae along posterior. Clasper with basodorsal lobe long, bearing a row of enlarged setae mesally; apicomesal lobe well developed, with inner margin long and bearing a row of enlarged setae. Aedeagus internally with 2 longer spines apically and 4 short spines basad.

Material.— Holotype, male : Brazil, Igarapé, Barro branco, 8—9 May 1961, E.J.FITTKAU (A—175—1). Paratypes : Rio Branquinho, bei Cachoeira, 21 July 1961, Lichtfang 18.30 Uhr — 19.30 Uhr, 1♂(A—209—a). Rio Branquinho, Lager Tapirí, 22 July 1961, Lichtfang, 6♂(A—213).

Cernotina declinata n. sp.
Figures 100 — 102

This distinctive species shows some relationship to *C. attenuata* n. sp. It differs markedly in the shape of the cercus and claspers, as well as in the unusually long and curved lobes of the tenth tergum.

Adult.— Length of forewing, 3.5 mm. Color in alcohol, pale yellowish-brown. Male genitalia : Ninth segment produced anterolaterally. Tenth tergum membranous, deeply divided on midline, apices elongated and curved ventrad with several enlarged setae. Cercus with dorsolateral lobe slender, with a dark point and giving rise to a similar, but shorter, mesoventral process; ventromesal lobe produced dorsolaterally with a row of enlarged setae along posterior margin. Clasper quadrate, basodorsal lobe as long as main body, with a row of enlarged setae mesally; with a narrow apicomesal lobe. Aedeagus indistinct internally.

Material.— Holotype, male : Brazil, Rio Parú, Mission Tiriyós, 23 Mar. 1962, E. J. FITTKAU, Lichtfang (A—361—2).

Cernotina bibrachiata n. sp.
Figures 103 — 105

This species is rather distinctive and seems to be intermediate between the last species and the following group of species. The shape of the bifurcate dorsolateral lobe of the cercus, and the proportions and shapes of the various parts of the claspers are distinctive.

Adult.— Length of forewing, 3.5 mm. Color in alcohol, pale brown. Male genitalia : Ninth segment produced anterolaterally. Tenth tergum membranous, deeply divided dorsomesally, apices with a few enlarged setae. Cercus with dorsolateral lobe elongate, tip bifid, each arm capped by a short spine; ventromesal lobe produced dorsolaterally, with a row of enlarged setae along posterior margin, broadly joined to opposite side ventromesally. Clasper with basodorsal lobe erect, with a row of stout setae along posterior margin, apicomesal lobe elongate. Aedeagus with 3 internal spines.

Material.— Holotype, male : Brazil, Manaus, Cachoeira do Gigante, 3 July 1961, E. J. FITTKAU, Lichtfang (A—200).

Cernotina cygnea n. sp.
Figures 106 — 108

This and the following two species form a distinctive group within the genus. From the other species, *cygnea* may be recognized by the longer and more arched dorsolateral lobe of the cercus, and more pointed clasper in ventral aspect.

Adult. — Length of forewing, 3 mm. Color in alcohol, pale yellowish-brown. Male genitalia : Ninth sternum produced anterolaterally. Tenth tergum membranous, divided middorsally. Cercus with dorsolateral lobe bipartite, each arm ending in a dark spine, outer arm much longer, arched and curving mesad; ventromesal lobe developed dorsolaterally with this portion set off by a mesal shelf. Clasper elongate and rectangular, basodorsal lobe low, with a long row of spines on inner face, apicomesal lobe narrow and pointed. Aedeagus very long and slender, internal structures very obscure but possibly with two very short spines.

Material.— Holotype, male : Brazil, Rio Solimões, Ilha Juçara, etwa 300 m. entfernt eine Bachmündung (schwarzes Wasser), 3 Sept. 1961, E. J. FITTKAU, Lichtfang (A—255). Paratype : Rio Solimões, etwa 15 km unterhalb Coarí, 13 Sept. 1961, Lichtfang, 1♂ (A—261).

Cernotina decembens n. sp.
Figures 109 — 111

This species is clearly a member of the *cynea* group. It differs from the others in the long, narrow, ventromesal lobe of the cercus, and the extremely long basodorsal lobe of the claspers.

Adult.— Length of forewing, 3 mm. Color in alcohol, pale yellowish-brown. Male genitalia : Ninth segment greatly produced anterolaterally. Tenth tergum membranous, deeply divided middorsally, lateral lobe with several enlarged setae apically. Cercus with a ribbonlike dorsolateral lobe ending in a short dark spine, giving rise mesally to a shorter

lobe also ending in a short, dark spine; mesoventral lobe with lateral angle greatly prolonged, posterior margin with a few enlarged setae; middorsally with a pocket lined with hairs. Clasper quadrate apically, with basodorsal lobe very long and slender; apicomesal lobe very slender. Aedeagus very long, slender and angulate; with 2 short internal spines.

Material.— Holotype, male : Brazil, Rio Aripuanã, Beneficente, 15 Jan. 1962, E. J. FITTKAU, Lichtfang (A—318). Paratypes : Rio Negro, Ponta Negra, 6 June 1962, Lichtfang, 4♂ (A—385). Rio Tarumã, wie A—403 (A—403 : Lancha Endpunkt, einige km. unterhalt Sucüuba), 17 Nov. 1962, Lichtfang, 4♂ (A—407). Rio Marauiá, etwa 20 km. oberhalb der Mündung, 30 Dec. 1962, Lichtfang, 1♂ (A—445). Rio Marauiá, etwa unter dem Äquator, Seringueiro Tapirí an Schwarzwasserbach, rechtes Ufer, 2 Jan. 1962, Lichtfang, 1♂ (A—452).

Cernotina trispina n. sp.
Figures 112 — 114

This, the last species of the *cygnea* group, is quite distinctive. The short dorsolateral lobes of the cercus, the median scabrous patch of the tenth tergum, and shape of the lobes of the claspers render the species easily recognizable.

Adult.— Length of forewing, 3 mm. Color in alcohol, pale yellowish-brown. Male genitalia : Ninth segment slightly produced anterolaterally. Tenth tergum short and broad, indistinctly divided middorsally, ventrolateral margin more strongly sclerotized with several enlarged setae, midventrally with a scabrous patch near base. Cercus with dorsolateral lobe short, tipped by a short, black, blunt seta, a second such seta midventrally on mesal face; ventrolateral lobe moderately produced dorsolaterally with a row of stout setae from posterior. Clasper rather quadrate, with basodorsal lobe shorter than tip of clasper, with a long row of enlarged setae mesally; ventral body with apicomesal lobe small and fingerlike. Aedeagus very long and slender with 3 short internal spines.

Material.— Holotype, male : Brazil, Rio Marauiá, Cachoeira, Rio Irapirapí, 4 Jan. 1963, E. J. FITTKAU (A—456).

Cernotina spinigera n. sp.
Figures 115 — 117

This is a very distinctive species with little relationship to any other known species. The shape of the cercus, and especially the structure of the claspers with its loss of the apicomesal lobe and greatly modified basodorsal lobe are very distinctive.

Adult.— Length of forewing, 2.5 mm. Color in alcohol, pale yellowish brown. Male genitalia : Ninth segment narrowly produced anterolaterally. Tenth tergum membranous, deeply divided on midline, apices with several enlarged setae. Cercus with dorsolateral lobe elongate, tip directed mesad with basomesal process tipped by a dark spine; ventromesal lobe narrow, with a few apical setae. Clasper with basodorsal lobe large, with a large patch of greatly modified apicomesal setae; ventral body upturned apically, apicomesal lobe either lost or possibly forming the upturned apical portion. Aedeagus with three short, heavily sclerotized internal spines and a small pouch lined with a small number of rather large spicules.

Material.— Holotype, male : Brazil, Tapajós, dicht unterhalb des Zusammenflusses von Rio Juruena mit Rio São Manuel, 13 Jan. 1961, E. J. FITTKAU, Lichtfang bei dem Ort Barra (A—89). Paratypes : Same data, 2♂. Santarém (F.A.O.), 7 Dec. 1963, G. MARLIER, UV light, 51♂ (120). Santarém, Diamantina, 15 Dec. 1963, UV light, 1♂ (121). Rio Preto da Eva, superior, 27 Febr. 1964, 1♂ (183). Rio Preto da Eva, inferieur, 27 Feb. 1964, 1♂ (184).

Cernotina verticalis n. sp.
Figures 118 — 121

Like so many other Brazilian species of *Cernotina*, this one shows little relationship to any other known species. The structure of the cercus, clasper, and aedeagus is completely diagnostic and wholly unique.

Adult.— Length of forewing, 3.5 mm. Color in alcohol, pale yellowish-brown. Male genitalia : Ninth segment slightly produced anterolaterally. Tenth tergum membranous, bilobed, deeply divided dorsomesally. Cercus with dorsolateral lobe produced into a dark, mesally directed point, bearing basally a small mesal spine; ventromesal lobe platelike, barely produced dorsolaterally. Clasper short and broad, lacking basodorsal lobe, with a thin apicolateral lobe, apicomesal lobe borne in a vertical plane. Aedeagus with basal Y-shaped structure, a pair of heavily sclerotized spines, and a pouch lined with short spines.

Material.— Holotype, male : Brazil, Gebiet Endstation Rio Marauiá, Bergbach II, etwa 350 m. über dem Meeresspiegel, schattig, starkes Gefälle über Granitblöcke, 26 Jan. 1963, E. J. FITTKAU, Lichtfang (A—498).

Cernotina compressa n. sp.
Figures 122 — 125

This species is very distinctive and not clearly related to any other species. The structure of the claspers and the aedeagus is very different from that of any other species.

Adult. — Length of forewing 3 mm. Color in alcohol, pale brown. Male genitalia : Ninth segment produced anteroventrally. Tenth tergum membranous, divided dorsomesally. Cercus composed of only a single long pointed lobe whose base almost meets that of other side on midline. Clasper angled dorsad, basodorsal lobe appressed to ventral lobe, heavily sclerotized; without apicomesal lobe. Aedeagus with a single heavily sclerotized internal spine. Apex with a pair of short spines arising inside apex from a short straplike sclerite.

Material.— Holotype, male : Brazil, Rio Marauiá, eine Tagesreise unterhalb der Mission S. Antônio, linkes Ufer, Hütte an einem Schwarzwasserbach, 2 Feb. 1963, E. J. FITTKAU (A—506). Paratype : Igarapé S. Antônio (Cachoeira), 8 Jan. 1963, Lichtfang, 1♂ (A—470).

Cernotino filiformiss, n. sp.
Figures 126 — 128

Although this species may have some relationship to the previous species, it is very distinctive. The shape of the claspers, the extremely long ventromesal lobe of the cercus, and the spines in the aedeagus are diagnostic.

Adult.— Length of forewing, 2.5 mm. Color in alcohol, pale yellowish-brown. Male genitalia : Ninth segment produced anterolaterally. Tenth tergum membranous, deeply divided dorsomesally. Cercus with dorsolateral lobe short, broad basally; vertromesal lobe produced into a long, slender pointed process with several stout setae ventromesally. Clasper short and broad, basodorsal process appressed to surface of ventral body, apex black and hooked mesad, with several stout setae mesally; ventral body rather quadrate with apicomesal lobe completely fused to apex. Aedeagus with a pair of heavily sclerotized, hornlike spines apically, and a ring and rod assembly more basad.

Material.— Holotype, male : Brazil, Rio Branquinho, Lager Tapiri, 22 July 1961, E. J. FITTKAU, Lichtfang 19.00 Uhr — 20.00 Uhr (A—213—2). Paratypes : Same data, 1♂; same, but 20.00 Uhr — 21.00, Uhr, 2♂ (A—213—3).

Cernotina obliqua n. sp.
Figures 129 — 131

This species is one of the most aberrant yet seen in the genus. It may be immediately recognized by the widley divergent process of the clasper, and the lack of apicomesal lobe on the ventral process, although one of the small dark lobes on the dorsal process may be the remains of this structure.

Adult. — Lenght of forewing, 3.5 mm. Color in alcohol, pale yellowish-brown. Male genitalia : Ninth segment barely produced either antero- or posterolaterally. Tenth tergum membranous, deeply divided mesally. Cercus semimembranous, bilobed; dorsolateral lobe elongate, tip rounded; ventromesal lobe a single, broad, rounded process. Clasper with a dorsal process ended in pair of small, dark lobes, mesal face with a row of stout setae, ventral process pointed and slightly angled mesad, widely separated from dorsal process. Aedeagus internally with a pair of small lightly sclerotized spines and a basal complex.

Material.— Holotype, male : Brazil , Rio Branquinho bei der Mündung des Rio Cuieiras, 23 July 1961, E. J. FITTKAU, Lichtfang, 19.00 Uhr (A—218—1).

Cernotina abbreviata n. sp.
Figures 132 — 134

Although this species belongs to that group of species with the modified apices to the tenth tergites. it has little resemlance to any other in the group. The extremely short dorsolateral lobes of the cerci are unique as is the shape of the apicomesal lobe of the clasper.

Adult.— Length of forewing, 3.5 mm. Color in alcohol, pale yellowish-brown. Male genitalia : Ninth sternum produced anteromesally and posterolaterally. Tenth tergum deeply divided mesally, lateral lobes heavily sclerotized apically and with this portion directed mesad. Cercus with dorsolateral lobe obliquely truncate with 2 short dark teeth ventrally; ventromesal lobe produced at its dorsolateral angle with a row of stout setae along mesal face. Clasper with a thin basodorsal lobe bearing a row of stout setae along mesal margin, apicomesal lobe sharply decurved apically, elongate and rounded, with a basal lobe bearing stout setae. Aedeagus elongate with a basal Y-shaped sclerite and a pair of subapical spines.

Material.— Holotype, male : Brazil, Igarapé Aepuku Aku, bei A—367 (A—367 : Bach ausgetrocknet 2—3 m. breit, grobsandiger Boden. Vereinzelt Pfützen mit Blättern am Boden z.T. auch mit Wasserpflanzen), 15—16 April 1962, E. J. FITTKAU, Lichtfang (A—368).

Cernotina perpendicularis n. sp.
Figures 135 — 137

This species shows a slight resemblance to the preceding, but has differently shaped lobes from the cerci and claspers.

Adult.— Length of forewing, 3 mm. Color in alcohol, pale brown. Male genitalia : Ninth segment produced both antero- and posterolaterally. Tenth tergum deeply divided mesally, lateral arms sclerotized basoventrally and each ending in a sclerotized process. Cercus with dorsolateral lobe half length of tenth tergum, ending in a dark point, and with a similar point on mesal face, subapically (these two points lacking in paratype); ventromesal lobe fused on midline to other half, produced into dorsolateral and ventromesal points, each bearing several stout setae. Clasper with basodorsal lobe erect, arising at midlength, with a row of stout setae mesally; apex of clasper slightly produced dorsolaterally, apicomesal lobe produced into 2 points. Aedeagus tubular, with 3 internal spines.

Material.— Holotype, male : Brazil, Rio Negro, etwa 20—30 km. oberhalb von A—31 (A—31 : etwa 80 km. oberhalb von Manaus), 7 Oct. 1960, E. J. FITTKAU, Lichtfang (A—32). Paratype : Santarém (F.A.O.), 7 Dec. 1963, G. MARLIER, U.V., 1♂ (120).

Cernotina cingulata n. sp.
Figures 138 — 140

This species bears considerable similarity to the following, *C. unguiculata* n. sp., but differs in details in all parts of the genitalia. As is usual, the lobes of the cerci and claspers are the most striklingly distinctive.

Adult.— Length of forewing, 2.5 mm. Color in alcohol, pale yellowish-brown. Male genitalia : Ninth segment greatly prolonged anterolaterally. Tenth tergum developed into 2 strongly sclerotized arms (except mesally where they are membranous) which cross each other apically, tips pointed, dark and decurved, with a small point ventromesally. Cercus with a long, ribbonlike dorsolateral lobe ending in 1 or 2 heavy black points; ventromesal lobe fused on midline with other half, developed as a thin vertical shelf produced at lateral angle, with a row of enlarged setae along posterior margin. Clasper with basodorsal arm small, and low; apex of clasper slightly produced dorsolaterally; apicomesal lobe small. Aedeagus internally with a pair of short spines.

Material.— Holotype, male : Brazil, Rio Branquinho, Lager Tapirí, 22 July 1961, E. J. FITTKAU, Lichtfang 21.00 Uhr — 21.20 Uhr (A—213—4). Paratypes : Same, but 19.00 Uhr — 20.00 Uhr, 2♂ (A—213—2); same, but 20.00 Uhr, 1♂ (A—213—3). Rio Branquinho, etwa 4 Stunden oberhalb der Mündung, 19 July 1961, Lichtfang, 1♂ (A—206). Rio Cuieiras, bei der Siedlung Cabeça do Porco, 24 April 1961, Lichtfang, 1♂ (A—171). Rio Negro, 2 km unterhalb Tapuruquara, Bucht einer Insel im Fluß, 6 Feb. 1963, 1♂ (A—511).

Cernotina unguiculata n. sp.
Figures 141 — 143

This species is related to the preceding, but may be easily recognized by the different shapes of cerci and claspers. The drawings may not be exactly correct as the genital capsule is extremely pale, and with many parts difficult to make out.

Adult. — Length of forewing, 3.5 mm. Color in alcohol, pale yellowish-brown. Male genitalia : Ninth segment moderately produced antero- and posterolaterally. Tenth tergum deeply divided on midline, halves produced into sclerotized, decurved points. Cercus with dorsolateral lobe slightly expanded apicad, apicoventral angle produced mesad and bearing two stout setae; ventromesal lobe slightly produced dorsolaterally with enlarged setae on each posterior margin. Clasper elongate and rectagular, basodorsal arm short, low, and displaced apicad, apicomesal lobe small and fingerlike. Aedeagus with 2 (or possibly 3) internal spines.

Material. — Holotype, male : Brazil, Gebäude der Mission Cururú, 3—5 Feb. 1961, E. J. FITTKAU, Lichtfang (A—88—10).

Literature Cited

ANONYMOUS, 1967 : The Amazon — measuring a mighty river. — U.S. Geological Survey : 1—15.

BANKS, N., 1905 : Descriptions of new Nearctic neuropteroid insects. — Trans. Amer. Ent. Soc. 32 : 1—20.

BANKS, N., 1907 : Descriptions of new Trichoptera. — Proc. Ent. Soc. Wash. 8 : 117—133.

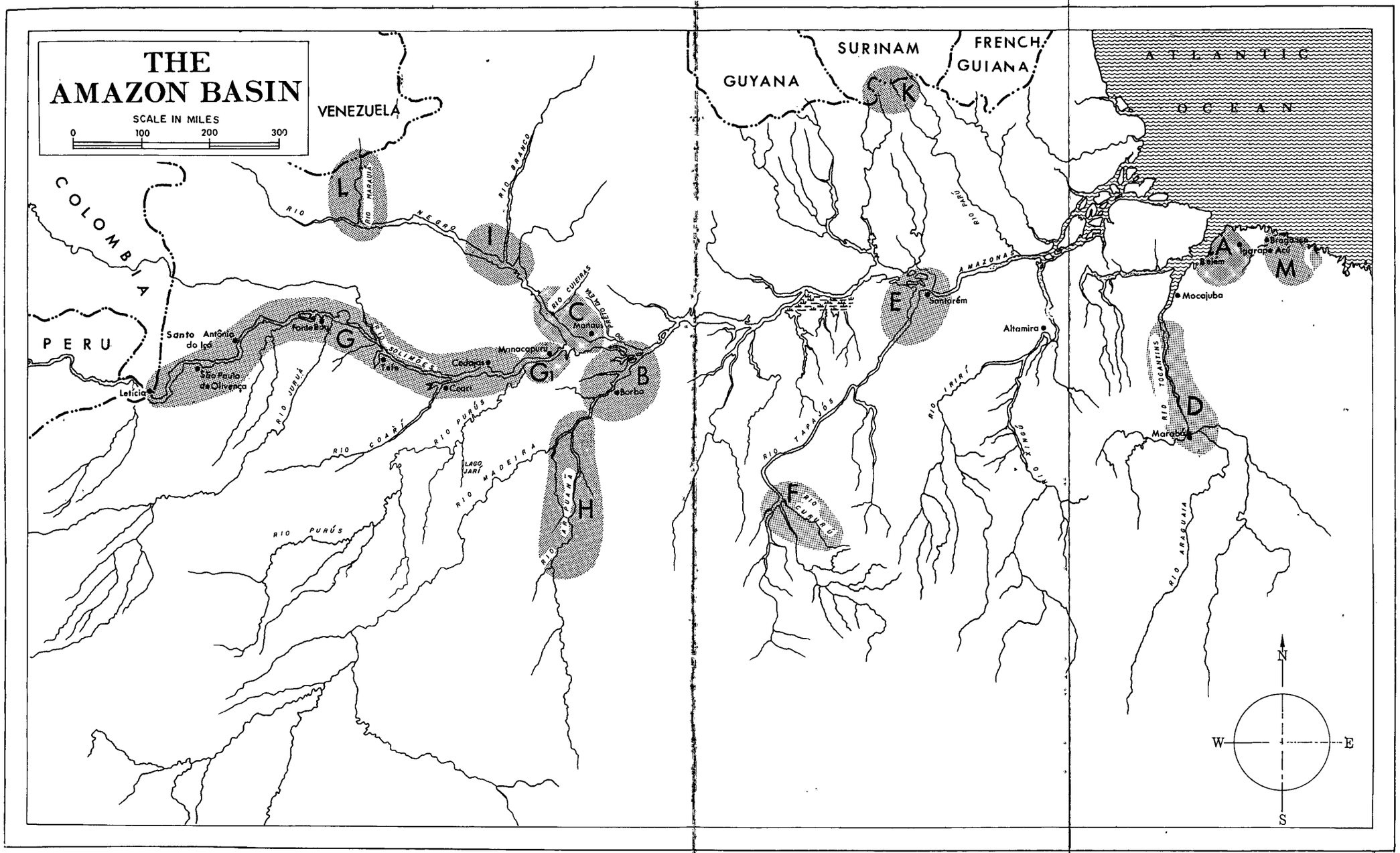
BANKS, N., 1913 : Neuropteroid insects from Brazil. — Psyche 20 : 83—89.

BANKS , N., 1930 : New neuropteroid insects from the United States. — Psyche 37 : 223—233.
BARNARD , K. H., 1934 : South African Caddis-flies (Trichoptera). — Trans. Roy. Soc. South Africa 21 (4) : 291—394.
BRAUN , R., 1952 : Limnologische Untersuchungen an einigen Seen im Amazonasgebiet. — Schweiz. Z. Hydrol. 14 : 1—128.
EDWARDS, S.W., 1961 : The immature stages of *Xiphocentron mexico* (Trichoptera).— Texas Jour.Sci. 13 : 51—56.
FISCHER , F. C. J., 1962 : Polycentropodidae, Psychomyiidae. — Trichopterorum Catalogus 3 : 1—234.
FITTKAU , E. J., 1964 : Remarks on limnology of central-Amazon rain-forest streams. — Verh. Internat. Verein. Limnol. 15 : 1092—1096.
FLINT , O. S., Jr., 1963 : Studies of Neotropical caddis flies, I : Rhyacophilidae and Glossosomatidae (Trichoptera). — Proc. U.S. Nat. Mus. 114 (3473) : 453—478.
FLINT , O. S., Jr., 1964 a : Notes on some Nearctic Psychomyiidae with special reference to their larvae (Trichoptera). — Proc. U.S. Nat. Mus. 115 (3491) : 467—481.
FLINT , O. S., Jr., 1964 b : The caddisflies (Trichoptera) of Puerto Rico. — Univ. Puerto Rico Agric. Exp. Sta., Tech. Paper 40 : 1—80.
FLINT , O. S., Jr., 1967 : Studies of Neotropical Caddis Flies, V : Types of the species described by Banks and Hagen. — Proc. U.S. Nat. Mus. 123 (3619) : 1—37.
FLINT , O. S., Jr., 1968 : Bredin-Archbold-Smithsonian biological survey of Dominica, 9. The Trichoptera (caddisflies) of the Lesser Antilles. — Proc. U.S. Nat. Mus. 125 (3665) : 1—86.
KLINGE, H. & W. OHLE, 1964 : Chemical properties of rivers in the Amazonian area in relation to soil conditions.— Verh. Internat. Verein. Limnol. 15 : 1067—1076.
LEPNEVA , S. G., 1964 : Caddisflies, vol. II, no. 1 : Larvae and pupae of the trichopterous suborder Annulipalpia. — Fauna U.S.S.R. 88 (new series) : 1—562.
LESTAGE , J. A., 1925 : Notes trichopterologiques (7me note). — Bull. & Ann. Soc. Ent. Belg. 65 : 35—44.
MARLIER , G., 1964 a : Sur trois trichopteres nouveaux recueillis en Amerique du Sud par le Professeur J. Illies. — Bull. Inst. roy. Sci. nat. Belg. 40 (6) : 1—15.
MARLIER , G., 1964 b : Trichopteres de l'Amazonie recueillis par le Professeur H. Sioli. — Mem. Inst. roy. Sci. nat. Belg. 76 (2nd series) : 1—167.
MARLIER , G., 1967 : Ecological studies on some lakes of the Amazon Valley.,— Amazoniana 1 : 91—115.
MOSELY , M. E., 1934 : Some new exotic Trichoptera. — Stylops 3 : 139—142.
ROSS , H. H., 1938 : Lectotypes of North American caddis flies in the Museum of Comparative Zoology.— Psyche 45 : 1—61.
ROSS , H. H., 1944 : The Caddis flies, or Trichoptera, of Illionois.— Ill. Nat. Hist. Surv. Bull. 23(1) : 1—326.
ROSS , H. H., 1953 : Additional material on the phylogeny and diespersal of *Atopsyche* (Trichoptera : Rhyacophilidae). — Jour. Wash. Acad. Sci. 43 : 287—293.
ROSS , H. H., 1956 : Evolution and classification of the mountain caddisflies.— Univ. Ill. Press, Urbana, 213 pp.
ROSS , H. H. & E. W. KING, 1952 : Biogeographic and taxonomic studies in *Atopsyche* (Trichoptera, Rhyacophilidae).— Ann. Ent. Soc. Amer. 45 : 177—204.
SIOLI , H., 1954 : Gewässerchemie und Vorgänge in den Böden im Amazonasgebiet.— Naturwiss. 41 : 456—457.
SIOLI , H., 1964 : General features of the limnology of Amazonia.— Verh. Internat. Verein. Limnol. 15 : 1053—1058.
STURM , H., 1960 : Die Terrestrischen Puppengehause von *Xiphocentron sturmi* ROSS (Xiphocentronidae, Trichoptera).— Zool. Jb. Syst. 87 : 387—394.
ULMER , G., 1907 : Neue Trichopteren.— Notes Leyden Mus. 29 : 1—53.

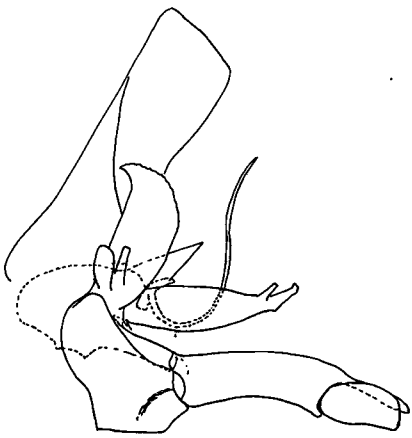
ULMER , G., 1913 : Verzeichnis der südamerikanischen Trichopteren, mit Bemerkungen über einzelne Arten.— Deutsch. Ent. Zeitschr. (1913) : 383—414.
WEIDNER , H., 1964 : Die Entomologischen Sammlungen des Zoologischen Staatsinstituts und Zoologischen Museums Hamburg, X. Teil, Insecta VII.— Mitt. Hamburg. Zool. Mus. Inst. 62 : 55—100.

Author's adress :
Dr. Oliver S. Flint, Jr.
Division of Neuropteroids
Department of Entomology
National Museum of Natural History
Washington, D.C. 20560
U.S.A.

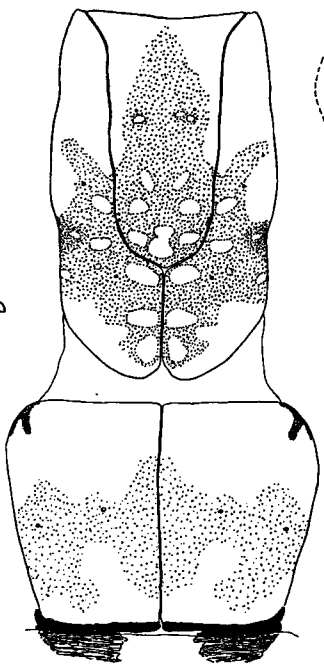
Fig. 1. — The Central Amazon Basin, showing collecting regions.

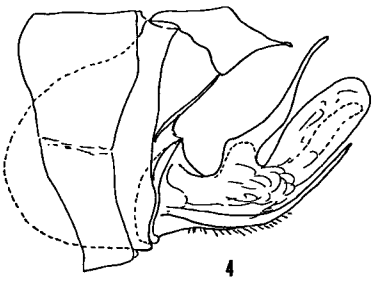

THE AMAZON BASIN
SCALE IN MILES
0 100 200 300
VENEZUELA
COLOMBIA
PERU
GUYANA
SURINAM
FRENCH GUIANA
ATLANTIC OCEAN
RIO NEGRO
RIO BRANCO
RIO MARAUIÁ
RIO CUEIRAS
RIO PARÁ
RIO AMAZONAS
RIO SOLIMÕES
RIO JURUÁ
RIO COARÍ
RIO PURÚS
RIO MADEIRA
RIO TAPAJÓS
RIO IRIRÍ
RIO TOCANTINS
RIO ARAGUAIA
LAGO JARÍ
Leticia
São Paulo de Olivença
Santo Antônio do Içá
Fonte Boa
Tefé
Codajás
Coari
Manacapuru
Manaus
Borba
Santarém
Altamira
Mocajuba
Marabá
Belém
Igarapé Açú
Bragança
L
I
C
K
G
G1
B
H
F
E
A
M
D
N
W
E
S

Figs. 2 — 10. — *Atopsyche siolii* n. sp. : 2, male genitalia, lateral; 3, larval head and pronotum, dorsal. — *Antoptila amazonica* n. sp. : 4, male genitalia, lateral; 5, tenth tergum, dorsal; 6, aedeagus, ventral. — *Protoptila simplex* n. sp. : 7, male genitalia, lateral. — *P. ensifera* n. sp. : 8, male genitalia, lateral. — *P. mara* n. sp. : 9, male genitalia, lateral. — *P. condylifera* n. sp. : 10, male genitalia, lateral.



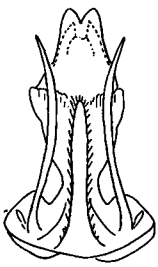
2

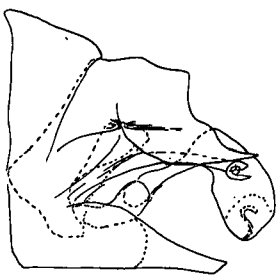




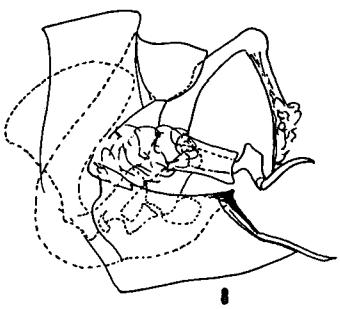
4

5

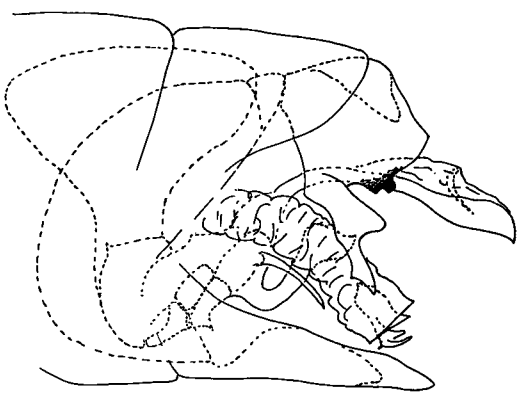




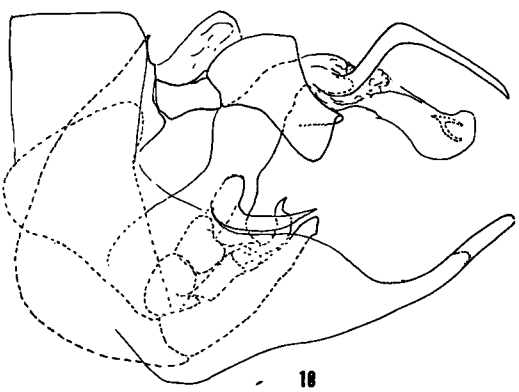
7



8

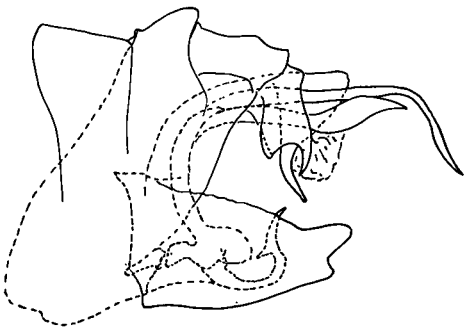


9

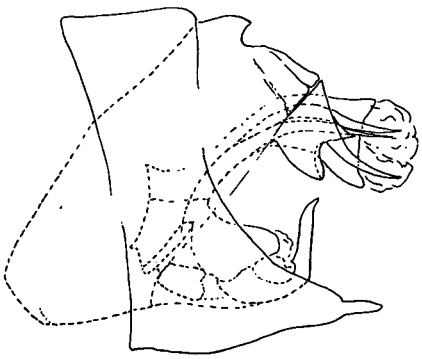


10

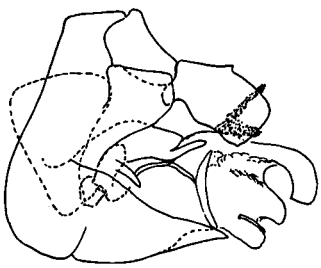
Figs. 11 — 16. — *Protoptila tetravittata* n. sp. : 11, male genitalia, lateral. — *P. trispicata* n. sp. : 12, male genitalia, lateral. — *P. ternatia* n. sp. : 13, male genitalia, lateral. — *P. disticha* n. sp. : 14, male genitalia, lateral. — *P. macilenta* n. sp. : 15, male genitalia, lateral. — *P. flexispina* n. sp. : 16, male genitalia, lateral.



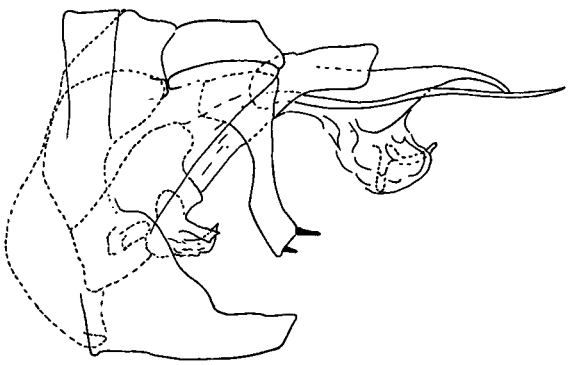
11



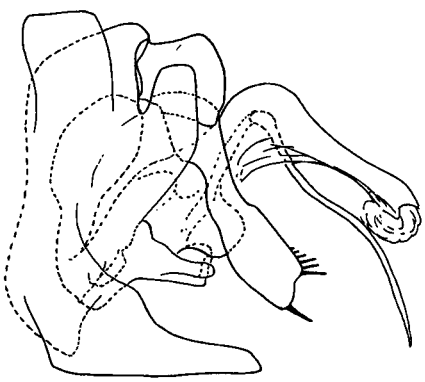
12



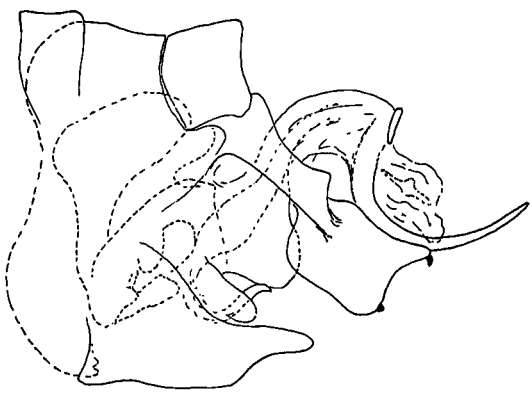
13



14

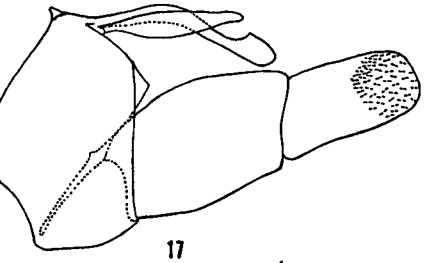


15

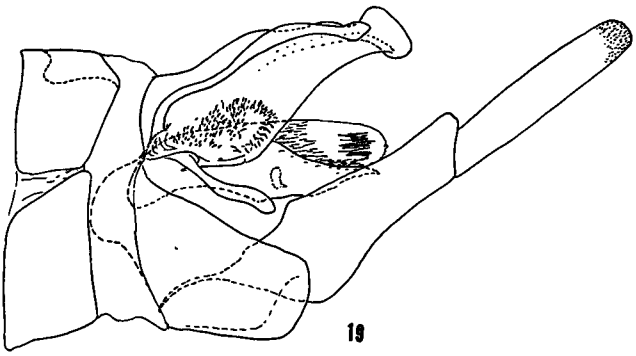


16

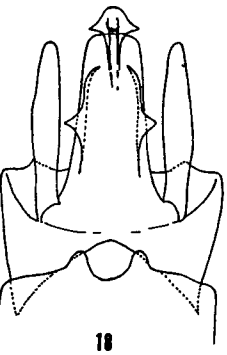
Figs. 17 — 31. — *Wormaldia planae* ROSS & KING : 17, male genitalia, lateral; 18, eighth, ninth and tenth terga and cerci, dorsal. — *Dolophilodes (Sortosa) sanctipauli* n. sp. : 19, male genitalia, lateral; 20, tenth tergum and cerci, dorsal. — *Chimarra (Curgia) fittkaui* n. sp. : 21, male genitalia, lateral; 22, eighth tergum, dorsal; 23, clasper, posterior; 24, aedeagus, lateral. — *C. (C.) aurivittata* n. sp. : 25, eighth, ninth and tenth terga and cerci, dorsal; 26, claspers, posteroventral; 27, male genitalia, lateral; 28, aedeagus lateral. — *Chimarra (Chimarra) medioloba* n. sp. : 29, male genitalia, lateral; 30, same, dorsal; 31. aedeagus, lateral.



17

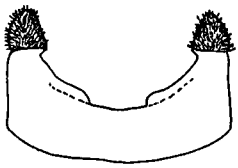


19

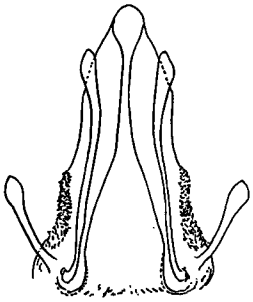


18

21



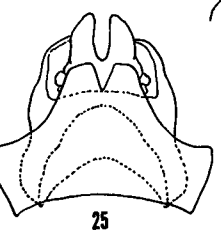
22



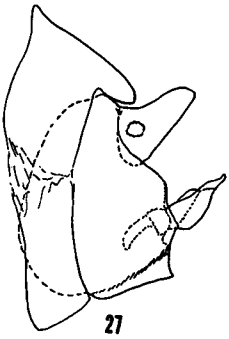
20

24

23

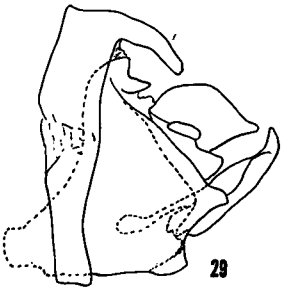


25

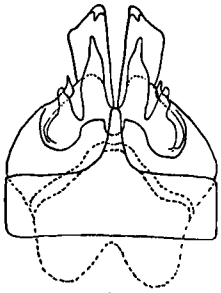


27

26

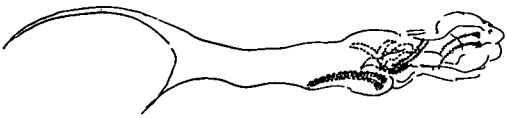


29



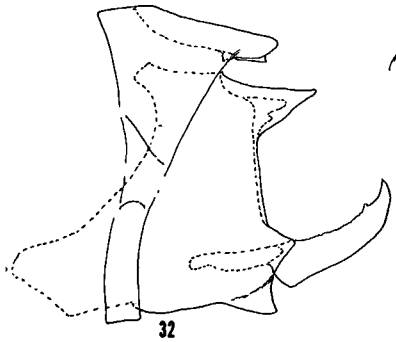
30

28

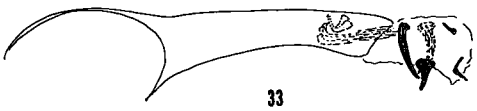


31

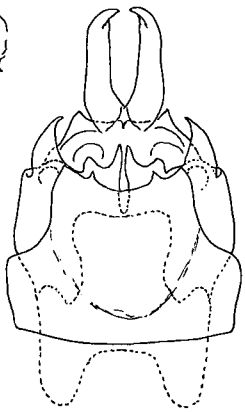
Figs. 32 — 45. — *Chimarra (C.) quaternaria* n. sp. : 32, male genitalia, lateral; 33, aedeagus, lateral; 34, male genitalia, dorsal. — *C. (C.) diakis* n. sp. : 35, male genitalia, lateral; 36, same, dorsal; 37, aedeagus, lateral. — *C. (C.) simpliciforma* n. sp. : 38, male genitalia, lateral; 39, same, dorsal. — *C. (C.) uara* n. sp. : 40, male genitalia, lateral; 41, clasper, posterior; 42, aedeagus, lateral. — *C. (C.) usitatissima* n. sp. : 43, male genitalia, lateral; 44, clasper, posteroventral; 45, aedegus, lateral.



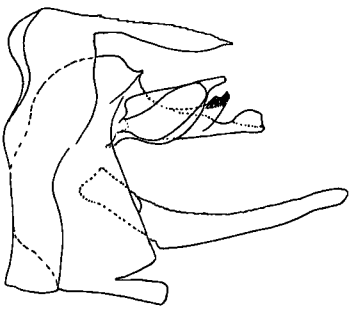
32



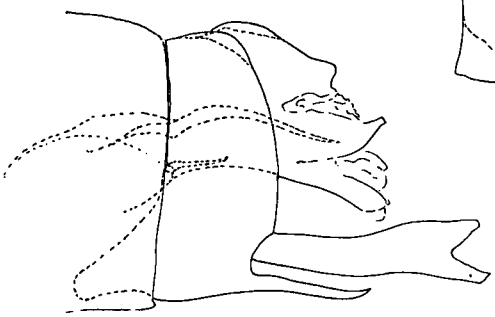
33



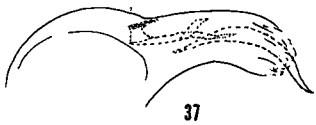
34



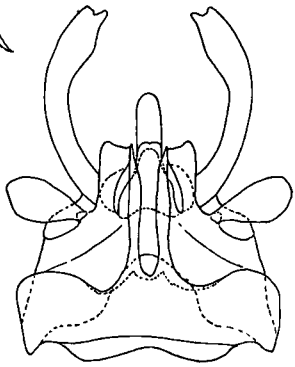
35



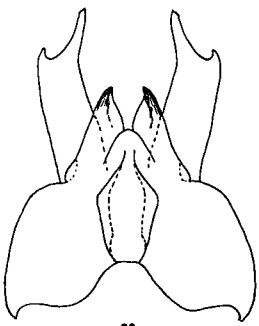
38



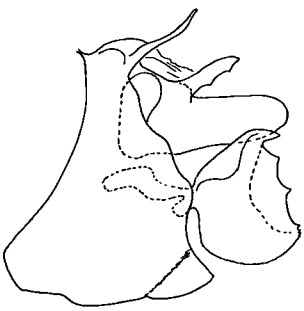
37



36

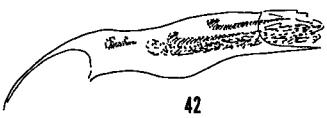


39

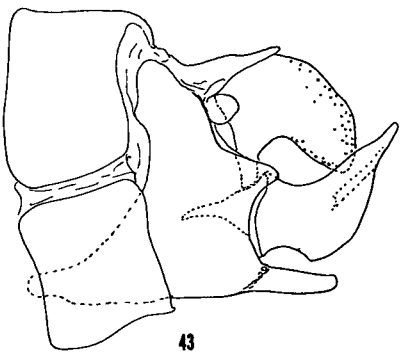


40

41

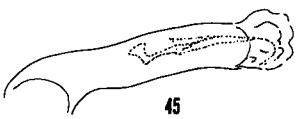


42



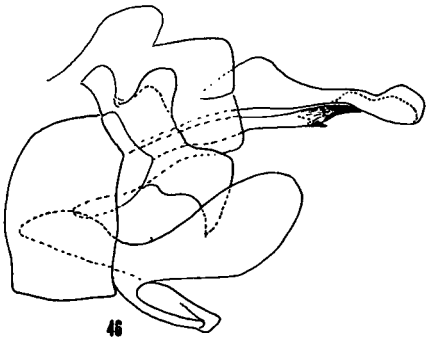
43

44

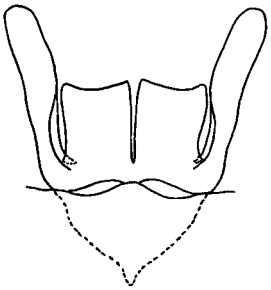


45

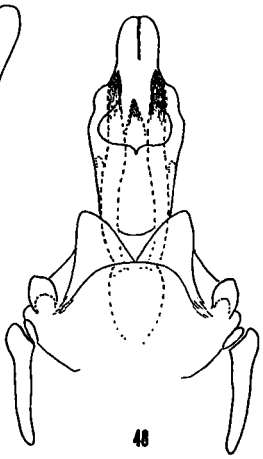
Figs. 46 — 57. — *Polyplectropus inarmatus* n. sp. : 46, male genitalia, lateral; 47, claspers, ventral; 48, ninth and tenth terga, cerci and aedeagus, dorsal. — *P. spiculifer* n. sp. : 49, male genitalia, lateral; 50, ninth and tenth terga, cerci and aedeagus, dorsal; 51, claspers, ventral. — *P. brachyscolus* n. sp. : 52, male genitalia, lateral; 53, claspers, ventral; 54; ninth and tenth terga, cerci and aedeagus, dorsal. — *P. banksianus* n. sp. : 55, male genitalia, lateral; 56, ninth and tenth terga, cerci and aedeagus, dorsal; 57, claspers, ventral.



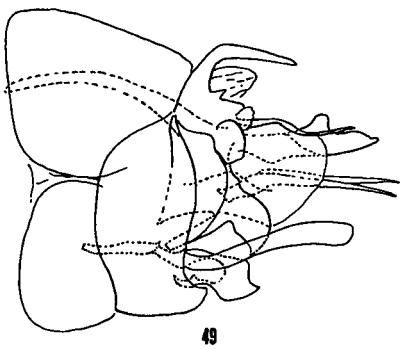
46



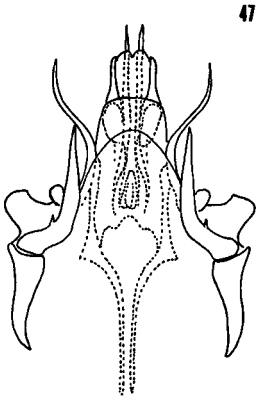
47



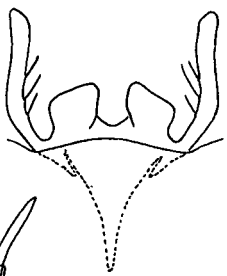
48



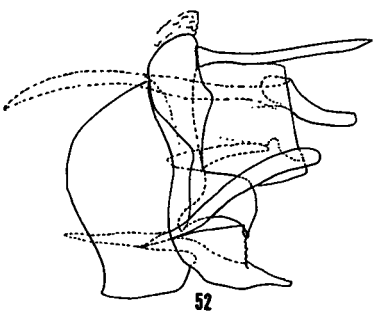
49



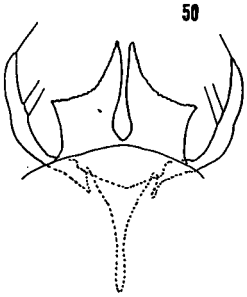
50



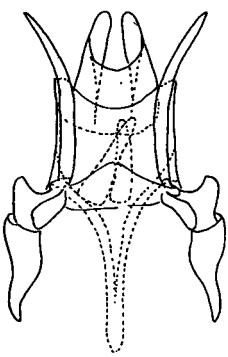
51



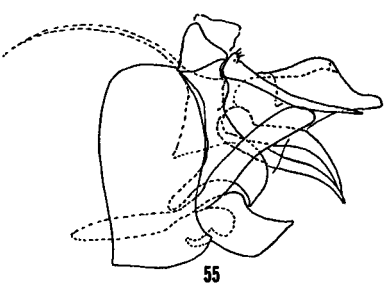
52



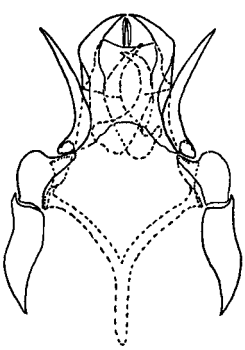
53



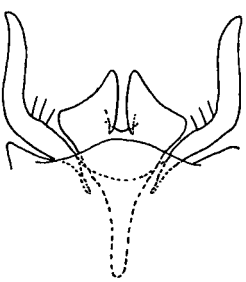
54



55

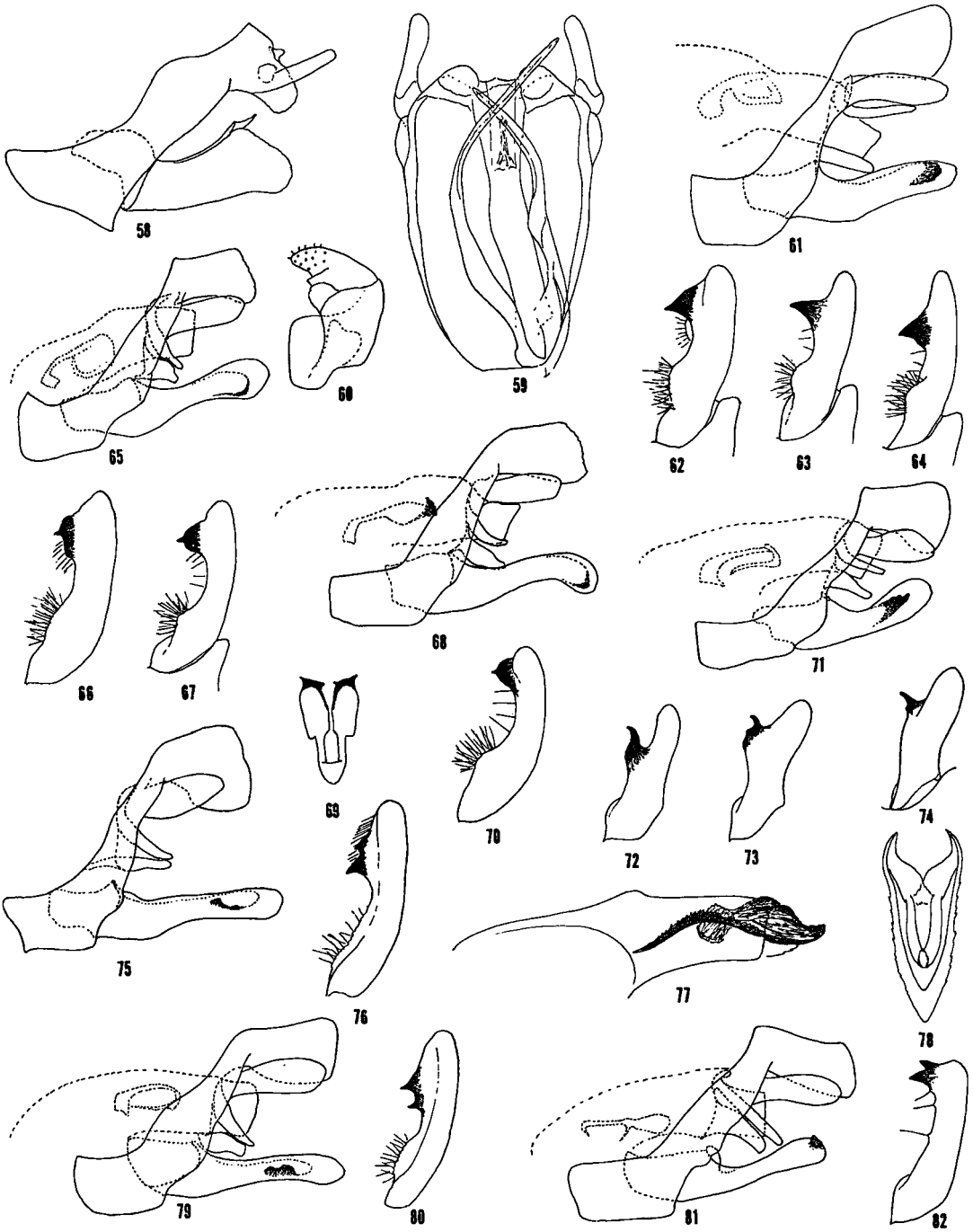


56

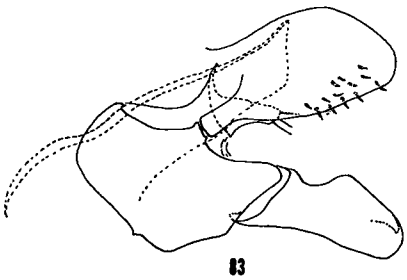


57

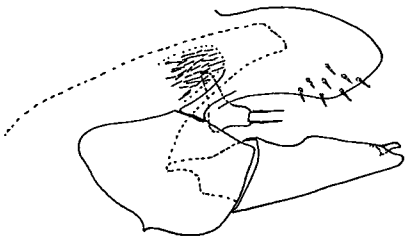
Figs. 58 — 82. — *Nyctiophylax neotropicalis* n. sp. : 58, male genitalia, lateral (less aedeagus); 59, same, dorsal (with aedeagus); 60, clasper, posterior. — *Cyrnellus fraternus* (Bks.) : 61, male genitalia, lateral (drawn from MARLIER, 243); 62, clasper of same, ventral; 63, clasper from FITTKAU, A 234; 64, clasper from MARLIER, 120. — *C. mammillatus* n. sp. : 65, male genitalia of type, lateral; 66, clasper of same, ventral; 67, clasper from MARLIER, 120. — *C. collaris* n. sp. : 68, male genitalia, lateral; 69, internal sclerite of aedeagus, dorsal; 70, clasper, ventral. — *C. risi* (ULM.) : 71, male genitalia, lateral (drawn from FITTKAU, A 264); 72, clasper of same, ventral; 73, clasper from MARLIER. 120; 74, clasper from lectoparatype, Buenos Aires. — *C. arotron* n. sp. : 75, male genitalia, lateral; 76, clasper, ventral; 77, aedeagus, lateral; 78, internal sclerite of aedeagus, dorsal. — *C. ulmeri* n. sp. : 79, male genitalia, lateral; 80, clasper, ventral. — *C. bifida* n. sp. : 81, male genitalia, lateral; 82, clasper, ventral.


58
59
61
65
60
62
63
64
66
67
68
71
69
70
72
73
74
75
76
77
78
79
80
81
82

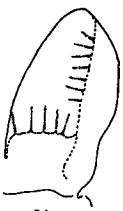
Figs. 83 — 96. — *Cernotina acalyptra* n. sp. : 83, male genitalia, lateral; 84, lobe of tenth tergum and cercus. dorsal; 85, clasper, ventral. — *C. encrypta* n. sp. : 86, clasper, ventral. — *C. cystophora* n. sp. : 87, male genitalia, lateral; 88, lobe of tenth tergum and cercus, dorsal; 89, clasper ventral. *C. subapicalis* n. sp. : 90, male genitalia, lateral; 91, lobe of tenth tergum and cercus, dorsal; 92, clasper, ventral. — *C. cacha* n. sp. : 93, male genitalia, lateral; 94, clasper, ventral. — *C. uara* n. sp. : 95, clasper, ventral; 96, male genitalia, lateral.



83

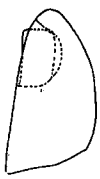


87



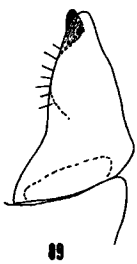
84

85

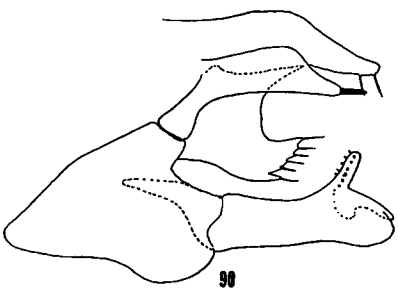


86

88



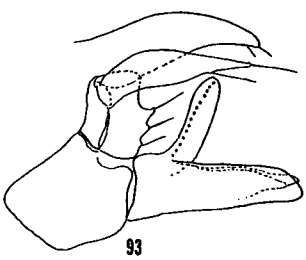
89



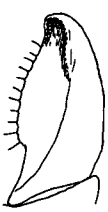
90

91

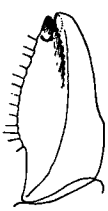
92



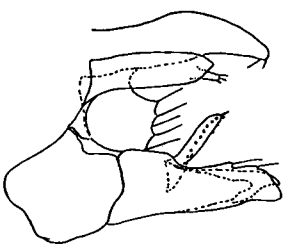
93



94

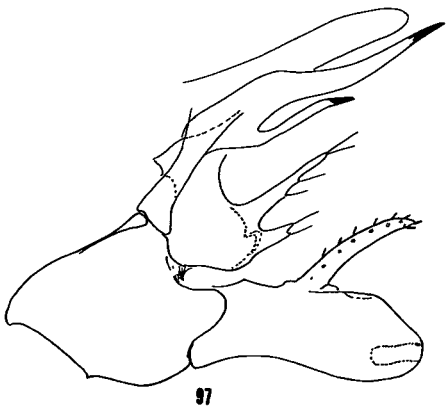


95



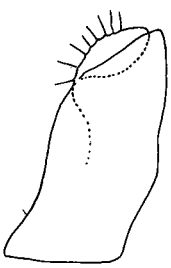
96

Figs. 97 — 105. — *Cernotina attenuata* n. sp. : 97, male genitalia, lateral; 98, lobe of tenth tergum and cercus, dorsal; 99, clasper, ventral. — *C. declinata* n. sp. : 100, male genitalia, lateral; 101, lobe of tenth tergum and cercus, dorsal; 102, clasper, ventral. — *C. bibrachiata* n. sp. : 103, male genitalia, lateral; 104, lobe of tenth tergum and cercus, dorsal; 105, clasper, ventral.

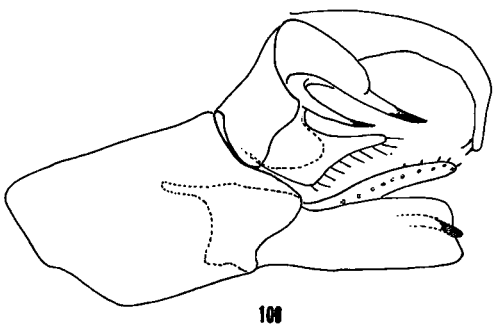


97

98

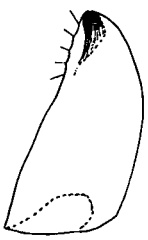


99

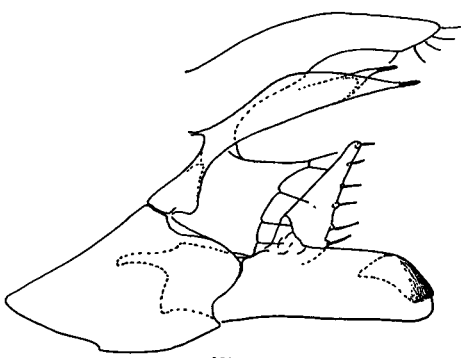


100

101

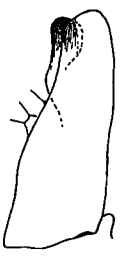


102



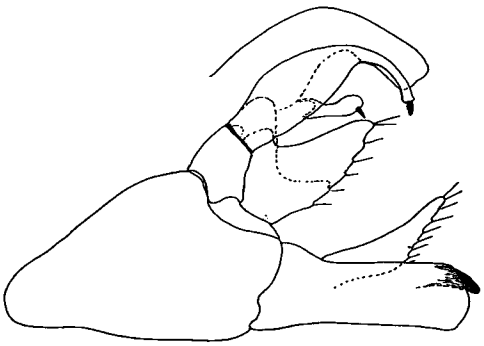
103

104

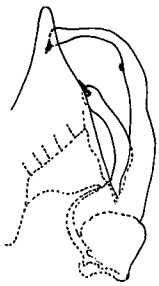


105

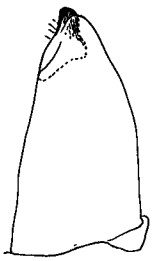
Figs. 106 — 114. — *Cernotina cygnea* n. sp. : 106, male genitalia, lateral; 107, lobe of tenth tergum and cercus, dorsal; 108, clasper; ventral. — *C. decumbens* n. sp. : 109, male genitalia, lateral; 110, lobe of tenth tergum and cercus, dorsal; 111, clasper, ventral. — *C. trispina* n. sp. : 112, male genitalia, lateral; 113, lobe of tenth tergum and cercus, dorsal; 114, clasper, ventral.



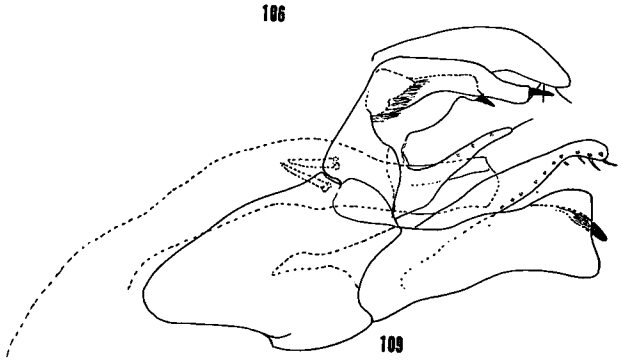
106



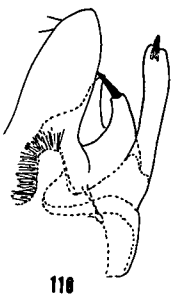
107



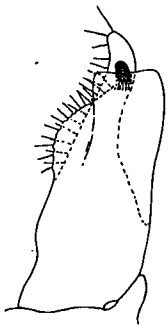
108



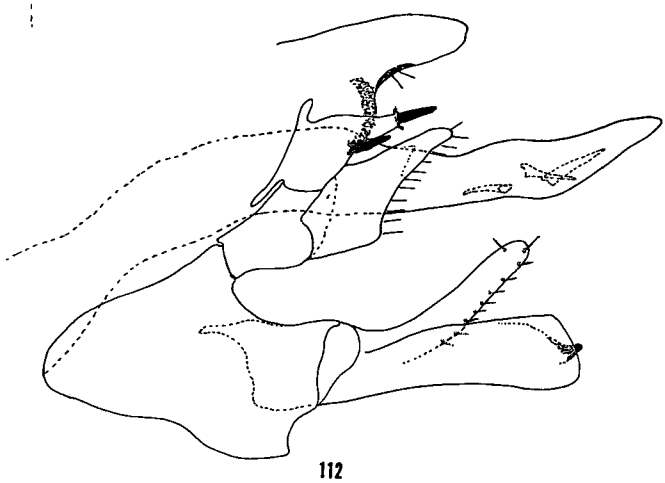
109



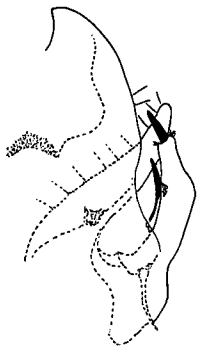
110



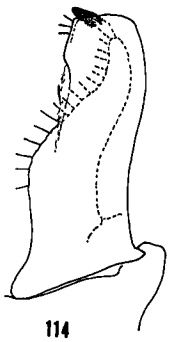
111



112

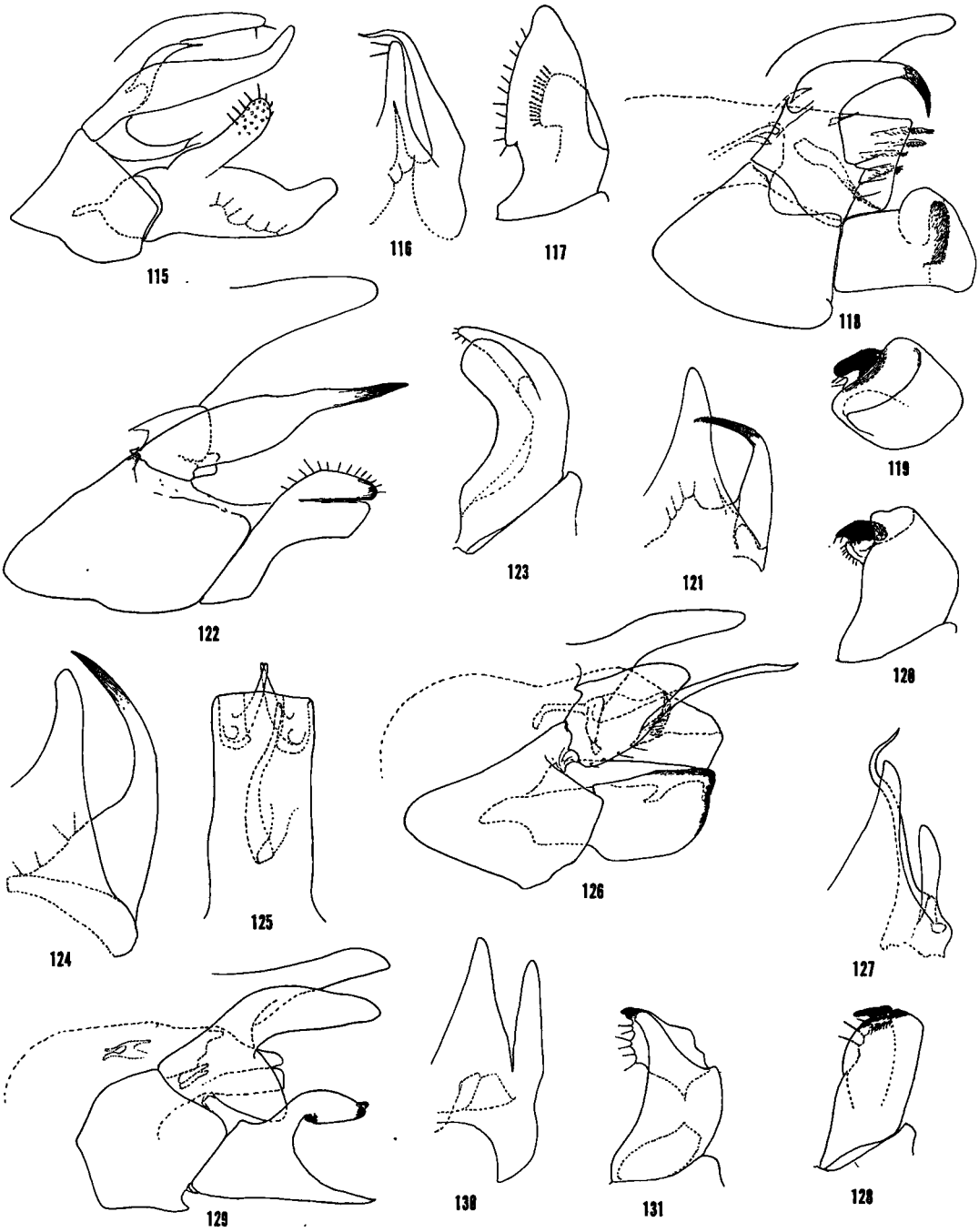


113

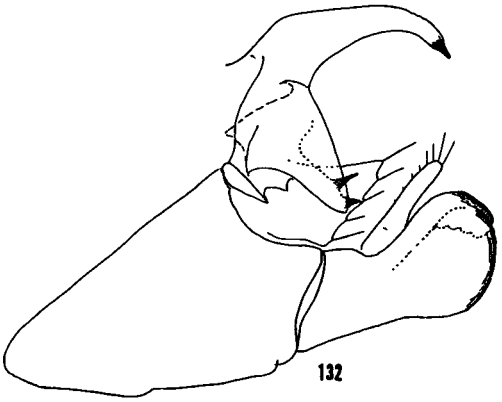


114

Figs. 115 — 131. — *Cernotina spinigera* n. sp. : 115, male genitalia, lateral; 116, lobe of tenth tergum and cercus, dorsal; 117, clasper, ventral. — *C. verticalis* n. sp. : 118, male genitalia, lateral; 119, clasper, posterior; 120, clasper, ventral; 121, lobe of tenth tergum and cercus, dorsal. — *C. compressa* n. sp. : 122, male genitalia, lateral; 123, clasper, ventral; 124, lobe of tenth tergum and cercus, dorsal; 125, aedeagus, dorsal. — *C. filiformis* n. sp. : 126, male genitalia, lateral; 127, lobe of tenth tergum and cercus, dorsal; 128, clasper, ventral. — *C. obliqua* n. sp. : 129, male genitalia, lateral; 130, lobe of tenth tergum and cercus, dorsal; 131, clasper, ventral.

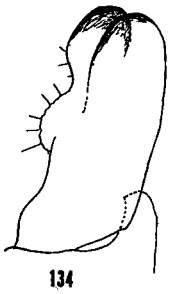

115
116
117
118
119
120
121
122
123
124
125
126
127
128
129
130
131

Figs. 132 — 143. — *Cernotina abbreviata* n. sp. : 132, male genitalia, lateral; 133, lobe of tenth tergum and cercus, dorsal; 134, clasper, ventral. — *C. perpendicularis* n. sp. : 135, male genitalia, lateral; 136, clasper, ventral; 137, lobe of tenth tergum and cercus, dorsal. — *C. cingulata* n. sp. : 138, male genitalia, lateral; 139, lobe of tenth tergum and cercus, dorsal; 140, clasper, ventral. — *C. unguiculata* n. sp. : 141, male genitalia, lateral; 142, clasper, ventral; 143, lobe of tenth tergum and cercus, dorsal.

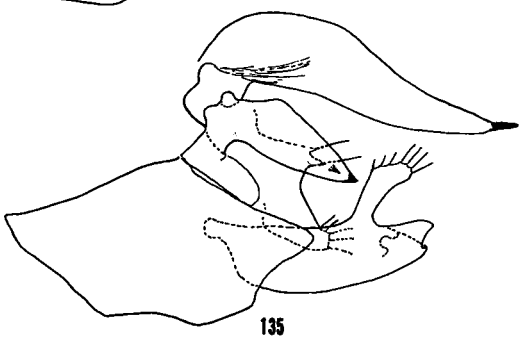


132

133

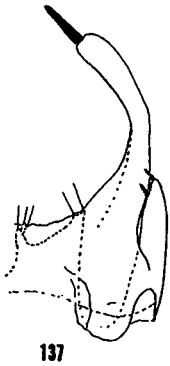


134

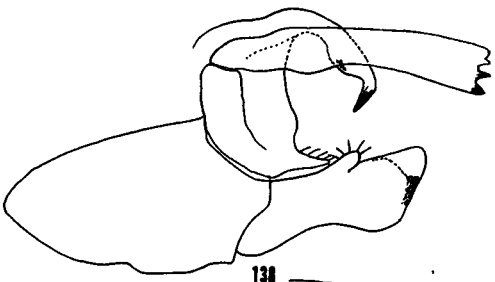


135

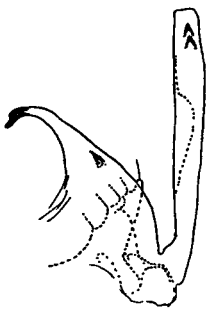
136



137

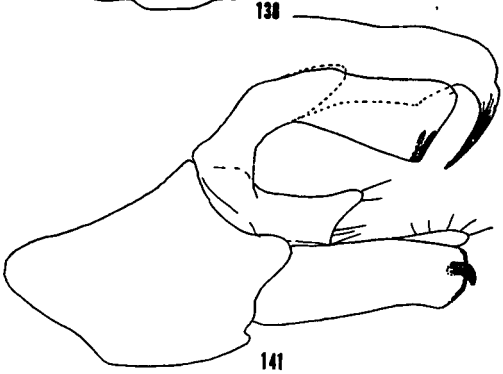


138

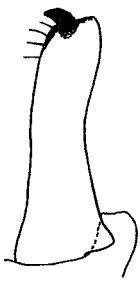


139

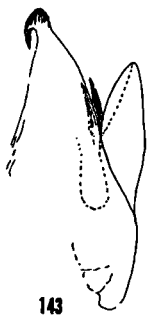
140



141



142



143