STUDIES ON THE FAUNA OF SURINAME
AND OTHER GUYANAS: No. 36.

THE DERMAPTERA OF SURINAM AND OTHER GUYANAS

by

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The Dermaptera of the northern part of South America have been little studied. The Dermaptera fauna of Columbia and Ecuador to the east of this region has been investigated to some extent, but records of this order from the western countries are very sparse indeed.

Prior to BOESEMAN (1954) only two species were known from Surinam, whilst 10 species have been recorded from Guyana, and 13 species from French Guiana. These totals obviously represent only a very small proportion of the true fauna, and BOESEMAN (1954) recorded a further 9 species from Surinam, so bringing the total known species from all the Guyanas to 26.

It was with very great pleasure therefore, that through the kindness of Dr. D. C. GEIJSKES, of the Rijksmuseum van Natuurlijke Historie, Leiden, I have been able to examine a large and very interesting collection of Dermaptera from Surinam, most of the specimens having been collected by Dr. GEIJSKES during the years 1938 to 1964. The collection contains 237 specimens of 33 species, 7 of which are new and are described in the present paper. Including these new species the collection includes 15 species not previously known from the Guyanas, and the present total of Dermaptera from these countries is now 41.

Although the present paper is mainly a report of the collection from Surinam, all previous records from Surinam and the other Guyanas are included, so that it presents a complete survey of the Dermaptera of the Guyanas as far as this is yet known.

Check List

+ = represented in collection
○ = new to the Guyanas
— = new to Surinam

		Guyana	Surinam	Fr. Guiana
Diplatyidae				
1. *Cylindrogaster velox* Hincks		×		
Pygidicranidae (Pygidicraninae)				
2. *Pygidicrana bivittata* Erichson	+	×	×	×
(Pyragrinae)				
3. *Pyragropsis thoracica* (Serville)	+		×	×
4. *P. emarginata* Rehn	+	×	×	×
5. *P. geijskesi* sp. n.	+		⊗	
6. *Pyragra fuscata* Serville	+	×	×	×
7. *P. paraguayensis* Borelli	+	×	×	
Carcinophoridae (Carcinophorinae)				
8. *Anisolabis maritima* (Gene)	+		×	
9. *A. surinamensis* Boeseman	+		×	
10. *Carcinophora percheron* (Guérin & Percheron)	+	×	×	×
11. *Metalabis saramaccensis* (Zacher)	+	×	×	
12. *M. carinata* sp. n.	+		⊗	
13. *M. ecarinata* sp. n.	+		⊗	
14. *Euborellia janeirensis* (Dohrn)	+		⊗	
15. *E. scudderi* (Bormans)	+		×	×
16. *E. peregrina* (Mjöberg)				×
Labiduridae				
17. *Labidura riparia* (Pallas)			×	
18. *L. xanthopus* (Stål)	+		⊗	
19. *Forcipula quelchi* Burr	+	×	×	
Labiidae (Sparattinae)				
20. *Parasparatta nigrina* (Stål)	+		×	×
21. *Sparatta pygidiata* Kirby		×		
22. *S. semirufa* Kirby	+		×	×
(Labiinae)				
23. *Spongiphora croceipennis* (Serville)	+		⊗	
24. *Purex formosus* Hebard				×
25. *Vostox brunneipennis* (Serville)	+		⊗	
26. *Larex surinamensis* sp. n.	+		⊗	

		Guyana	Surinam	Fr. Guiana
27. *Marava arachidis* (Yersin)	+		×	
28. *Labia curvicauda* (Motschulsky)	+		⊗	
29. *L. dorsalis* (Burmeister)	+		×	×
30. *L. arcuata* Scudder	+		×	×
31. *Microvostox alter* (Burr)	+		⊗	
32. *M. parvus* (Burr)		×	×	
33. *M. equatoria* (Burr)	+		×	×
34. *M. lucida* sp. n.	+		⊗	
35. *M. ghiliana* (Dohrn)	+		⊗	
36. *M. chopardi* Hebard	+		×	×
FORFICULIDAE (Forficulinae)				
37. *Doru lineare* (Eschscholtz)			×	
38. *D. taeniata* (Dohrn)	+		⊗	
— *D. taeniata* var. *californica* (Dohrn)			⊗	
(Opisthocosmiinae)				
39. *Dinex americana* (Bormans)	+		⊗	
40. *D. geijskesi* sp. n.	+		⊗	
41. *D. boesemani* sp. n.			×	
Totals	33	10	37	14

A Check List is included, and Keys are given to all the species, together with notes on some other common Neotropical species which may occur in the area. The present paper therefore should form a basis for any future study on the Dermaptera of the Guyanas, since there is little doubt that more species will be found by future collectors.

The original reference to each species is given, but the locality of the original material is only stated if this is one of the Guyanas. Subsequent references to a species are similarly only given if the Guyanas are concerned.

The determinations in the present paper correspond to specimens in the Burr Collection, in the British Museum (Natural History), and in the Hincks Collection, in the Manchester Museum, except for certain species which are known from single or few specimens and which are not represented in the collections mentioned.

All the types of the new species described will be deposited in the Rijksmuseum van Natuurlijke Historie, Leiden.

I wish to express my gratitude to Dr. D. C. GEIJSKES for the opportunity to study this most interesting collection, the size and variety of which is a tribute to his work in Surinam, of which the Dermaptera only formed a comparatively small part.

Composition of fauna and biological notes

The Dermaptera are largely tropical or semi-tropical in distribution, and the fauna of the Guyanas is typical of the Neotropical Region in being richest in the Labiidae.

The more primitive families of the Dermaptera are the Diplatyidae, Pygidicranidae, Carcinophoridae, and the Labiduridae, none of which are particularly well represented in the Region. Only one tenth of the species of the Diplatyidae are Neotropical, but one of these is recorded from the Guyanas. Of the eight subfamilies of the Pygidicranidae, three contain Neotropical species. The small genus *Pygidicrana* (Pygidicraninae) is entirely Neotropical, and one of these species occurs in the Guyanas; of the nine known species of the Pyragrinae, five are recorded from the area. The third subfamily, the Esphalmeninae, which includes one genus only, *Esphalmenus*, is more eastern or southern in distribution, and none are recorded from the Guyanas.

The Carcinophoridae is mainly represented by a small number of the subfamily Carcinophorinae, which includes all the known Guyana species, although some of the small number of species of the Parisolabiinae and Brachylabiinae which are Neotropical, may well occur.

Of the Labiduridae, only four species are Neotropical, but three of these occur in the area.

In the higher Dermaptera, the Chelisochidae is entirely Old World in distribution, and the majority of the Neotropical fauna belongs to the Labiidae. The Forficulidae are almost entirely represented in the Neotropical Region by a small number of genera of the Opisthocosmiinae and Ancistrogastrinae; only one other genus, *Doru* (Forficulinae) occurs in the Region.

The fauna of the Guyanas includes four cosmopolitan species, the rest being entirely Neotropical. It is notable that these four species

occur along the coast, which might be expected of introduced species. *Anisolabis maritima* appears to have occupied an unusual habitat in the holes of whipworm in wood. *Labidura riparia* is also probably coastal, and its exact relationship to *L. xanthopus*, which is entirely Neotropical, is still in some doubt, and a short discussion on this problem is given under the latter species. *Marava arachidis* appears to be represented in the Neotropical Region by the form with short elytra and without visible wings. *Labia curvicauda* does not appear to be widely distributed in the Neotropical Region.

The endemic fauna of the Guyanas is worthy of more study. One pleasing feature of the present collection is that some information is often given of the actual habitat from which the specimens were taken.

Since earwigs tend to be nocturnal, and hide by day in dark places, they often occur under bark of trees, though whether this is their actual habitat or merely a shelter is not always clear. The greatly flattened bodies of the Sparattinae appear to be associated with life under bark, and this may be true of *Pyragra fuscata* and possibly *Vostox brunneipennis*. *Pygidicrana bivittata*, however, does not appear to be adapted for such a life, and probably only seeks shelter.

Most of the specimens of *Euborellia janeirensis* were taken in gardens, suggesting a close association of this species with human communities, whilst *Forcipula quelchi* appears to have a habitat similar to other species of the genus, and is restricted to the margins of streams and rivers.

Although a number of the Dermaptera are carnivorous it seems likely that many are omnivorous to some extent. The species living under bark may well be carnivorous, as are other primitive Dermaptera, but most of the specimens of *Pyragropsis* were taken on the fruits of maripa palm, either feeding on the fruit or possibly on insects attracted to the fruit. The records of *Doru* on flowers suggests a similarity to the habit of the common European earwig, *Forficula auricularia*, which from its depredations on garden flowers tends to be a garden pest.

The flight of earwigs has not been studied to any extent. It is known that *Labia minor*, a widely distributed almost cosmopolitan species, flies readily under certain conditions. Some species are also

known to be attracted to light, and this usually implies well developed powers of flight. Five of the species of the Surinam collection have been taken at light, four of these having well developed elytra and wings; the occurrence of *Euborellia janeirensis*, with reduced elytra and without visible wings, may be due to the position of the light near the ground.

Genitalia

It is an unfortunate circumstance that the subfamilies or families of the Dermaptera can be separated satisfactorily only on characters of the male genitalia. This may be altered by further study but the external characters given by BURR (1911b) for this purpose are subject to considerable misinterpretation, and the key given by POPHAM (1965) although an improvement on the former key, tends to give difficulty when dried specimens are involved. It was this difficulty which led the late Dr. W. D. HINCKS (1959) to key out the superfamilies by characters of the male genitalia.

There is a characteristic general appearance of most species of various families or subfamilies, so that an examination of the male genitalia may not be necessary once a reference collection has been established. Species of such genera as *Diplatys* and *Pygidicrana* are still only separable on the male genitalia, whilst it is most useful in almost all other families. The female genitalia has not yet been fully investigated, so that usually whilst the males can be determined, females are much more difficult.

The male genitalia is usually situated medially on the inner surface of the penultimate sternite, which is the last free segment ventrally. This sternite is larger than the others, and the genitalia can be extracted if the free margin of this sternite is raised. In dried specimens the abdomen is removed and softened in caustic potash solution. It is better to remove only the last two or three segments and place these in warm caustic solution for a short time, after which the genitalia can be extracted. Both this and the abdomen are then placed in glacial acetic acid. The abdomen is then dried and replaced on the specimen whilst the genitalia is removed to absolute alcohol, then to Euparal essence, and mounted in Euparal. Since it is essential that the genitalia should remain with the specimen, the geni-

talia may be mounted on a small piece of celluloid and covered with a small cover-glass, so that the pin of the specimen can be pushed through the celluloid.

This is not ideal, since there is a slight tendency for the celluloid to curl, but it appears to be satisfactory in general. If the genitalia are too thick for successful mounting they should be placed in alcohol and glycerine in a small tube, securely corked, and the pin of the specimen pushed through the cork.

The male genitalia consists of two arms, united basally and more or less free distally. On each distal end is a paramere (Fig. 1, P), and from each arm arises, in the more primitive Dermaptera, a distal lobe (Fig. 1, DL), in which is a tubular virga (Fig. 1, V). In the Labiidae, Chelisochidae, and Forficulidae, only one distal lobe is present (Figs. 27, 28, 50, 63–66, 68–70). The distal lobes may not be distinct but the virga and associated structures are usually prominent. If these are paired then there are two distal lobes; if only one virga is present, then only one distal lobe is present, even if this cannot be seen.

In the Diplatyidae and Pygidicranidae, both distal lobes are directed backwards (Figs. 1, 3, 7) but in both the Carcinophoridae and Labiduridae, one distal lobe is directed backwards, and one directed forwards (Figs. 23–25). The position of the virga and associated structures varies in different mounts of the genitalia of the same species, and a much different appearance of the distal lobes in the same genitalia can result. If a distal lobe is everted it is much longer than the parameres (Fig. 24).

Young specimens, or nymphs, cannot in general be determined except by association with the adults. In species which are fully winged and have elytra the nymphs can be easily recognised by the absence of these organs, but in species which are apterous as adults the nymphs are less easily recognised. In practice nymphs usually shrivel when dried whilst adults do not. HINCKS (1947) gave a provisional method of distinguishing the instars of the nymphs of *Euborellia annulipes*, and showed that the number of antennal segments is a guide to the particular instar. However, the antennae of dried specimens are often broken so that this method of recognising nymphs is not generally possible. There are other features of nymphs

which can be useful, but since the present taxonomy is based on adult characters, and these characters may only develop in the adults, there is no certain way of associating nymphs with adults except by the data labels.

Key to families and subfamilies

The Key to subfamilies includes all those recorded from the Neotropical Region; the three subfamilies not yet known from the Guyanas are indicated by means of asterisks.

KEY TO FAMILIES OR SUBFAMILIES

1. Male genitalia with paired distal lobes (figs. 1, 3, 7, 23–25) . . 2
– Male genitalia with a single median distal lobe (Figs. 27, 28, 50, 63–66, 68–70) 9

2. Both distal lobes directed backwards (Figs. 1, 3, 7) 3
– One distal lobe directed backwards, one directed forwards (Figs. 23–25) 6

3. Femora without, or with only indistinct longitudinal ridges . 4
– Femora with well marked longitudinal ridges 5

4. Elytra and wings normally developed; claws with a large arolium . . . . . Pygidicranidae (Pyragrinae)
– Elytra and wings absent; claws without an arolium . . . . . Pygidicranidae (Esphalmeninae)*

5. Small slender earwigs, 15 mm or less in total length . . . . . Diplatyidae
– Large broad earwigs, 20–30 mm in total length . . . . . Pygidicranidae (Pygidicraninae)

6. Mesosternum rounded posteriorly . . . . . Carcinophoridae (Carcinophorinae)
– Mesosternum truncate posteriorly 7

7. Antennae with 25–35 segments; elytra always present, wings often present . . . . . Labiduridae
– Antennae with 10–15 segments; elytra absent or rudimentary; wings absent 8

8. Last dorsal segment truncate . . . . . Carcinophoridae (Parisolabiinae)*
– Last dorsal segment bifid . . . . . Carcinophoridae (Brachylabiinae)*

9. Second tarsal segment simple . . . . . Labiidae
– Second tarsal segment bilobed . . . . . Forficulidae

DIPLATYIDAE

1. **Cylindrogaster velox** Hincks

Cylindrogaster velox Hincks 1955, Syst. Mon. Derm. *1*: 23 (Guyana).

Slender; brown; antennae and legs yellow, the latter with brown markings. Male genitalia Fig. 1. Male and female forceps more or less straight and contiguous.

Length: (total) 15 mm.

Only known from Guyana; not represented in the present collection.

This is the only species of the family known from the area. Of the other five species of this genus, one occurs in Central America, whilst four occur in Brazil or Peru.

Three species of the genus *Diplatys* are Neotropical, with an additional species mentioned but not named by Hincks (1955, p. 31), but all are found in Central America, extending as far south as Panama. *Cylindrogaster* is only distinguished from *Diplatys* by the former having a single virgal orifice to each distal lobe whilst the species of *Diplatys* have two.

PYGIDICRANIDAE

PYGIDICRANINAE

2. **Pygidicrana bivittata** Erichson

Pygidicrana bivittata Erichson 1848, in Schomburgk, Reisen in Brit. Guiana *3*: 579 (Guyana); Hebard, 1920, Proc. Acad. nat. Sci. Philad. *1920*: 337 (French Guiana).

Blackish; elytra brown; wings and legs yellow, the latter with blackish marks; male forceps arched (Fig. 2). Male genitalia Fig. 3. Female similar but forceps straight and contiguous.

* Not yet recorded from the Guyanas.

SURINAM: Republiek, forest, at light (1 ♂) 3.IX.1948; under bark, 4.IX.1948 (1 ♂); at light 4.IX.1946 (1 ♀, rather immature); under wood, 20.XII.1946 (1 nymph); 25.VIII.1945 (1 ♂). All coll. D. C. Geijskes.

Length: The present specimens measure 18–20 mm in body length, with forceps 3.5–4.5 mm, whilst HINCKS (1959, p. 49) gives a total length of 30 mm. The male genitalia however agrees exactly with the figure in HINCKS (1. c.) and with specimens in the Manchester Museum.

The present series represent the first record from Surinam; the species is now known to occur in all the Guyanas. HINCKS (1959, p. 49) also records this species from Peru and possibly Brazil.

The other species of this Neotropical genus occur in Brazil, Paraguay, and Bolivia.

PYRAGRINAE

The three genera of this Neotropical subfamily may be separated as follows (after HINCKS, 1959):

1. Sides of distal abdominal tergites not ridged . . . . . *Pyragra*
– Sides of distal abdominal tergites ridged 2

2. Penultimate sternite of both sexes convex distally; male parameres short and broad . . . . . *Echinopsalis*
– Penultimate sternite of male concave mesad; male parameres slender and curved . . . . . *Pyragropsis*

Echinopsalis guttata (Bormans), the sole member of this genus, is not recorded from the area, but since it occurs from Central America southwards to the Amazon, it should occur in the area. Similar to *Pyragropsis* in general appearance, but is distinguished by the large triangular spot on the elytra. The wings are yellow laterally, and the legs mainly yellow. The male parameres are short and rather triangular, not curved as in *Pyragropsis*.

Pyragropsis Borelli

Two species of this genus have been recorded from the area, and these, together with a third new species described below, may be separated as follows:

1. Pronotum blackish medially (Fig. 5) . . . . *emarginata* Rehn
– Pronotum mainly yellow (Figs. 4, 6) 2

2. Posterior margin of pronotum entire, and with a dark spot (Fig. 6) . . . . . *thoracica* (Serville)
– Posterior margin of pronotum with a median notch; pronotum unicolorous (Fig. 4) . . . . . *geijskesi* sp. n.

3. **Pyragropsis thoracica** (Serville)

Forficesila thoracica SERVILLE 1839, Hist. nat. Ins. Orth.: 22 (French Guiana).
Pyragropsis thoracica (Serville) HINCKS 1959, Syst. Mon. Derm. 2: 186 (French Guiana).

Blackish; pronotum yellow with dark spot on posterior margin (Fig. 6); wings yellow laterally; legs mainly or partially yellow. Male forceps rather narrow, strongly curved; those of female narrow, more or less straight.

SURINAME: Paramaribo, Combé, between luggage, 20.II.1944 (1 ♀, slightly immature); Republiek, on fruits of maripa palm, 7.VI.1954 (1 ♂, 1 ♀); District Nickerie, Sipaliwini, camp in forest near savanna, 6.II.1961 (1 ♂). All coll. D. C. Geijskes.

Length: body 8–9 mm, forceps 1–1.5 mm (present material, but Hincks (1959, p. 187) gives a total length of from 9–15 mm).

Previously only known from French Guiana and from Panama.

One interesting feature of both female specimens is that each elytron has a small yellow spot towards the shoulder. This spot is also found in *emarginata*, and is used as a character to separate *emarginata* from *thoracica* in the key in HINCKS (1. c., p. 185). The presence of this spot therefore appears to be variable in this species, and may be present or absent.

4. **Pyragropsis emarginata** Rehn

Pyragropsis emarginata REHN 1916, Trans. Amer. ent. Soc. *42*: 216. BOESEMAN 1954, Verh. Zool. Leiden *21*: 19 (Surinam); HINCKS 1959, Syst. Mon. Derm. *2*: 187 (French Guiana, Guyana).

Very similar to the last species, except that the pronotum is dark medially, and the legs are usually lighter in colour.

SURINAM: Republiek, on fruits of maripa palm. 7.VI.1954 (1 ♂); District Nickerie, Sipaliwini, camp in forest near savanna, 5.II.1961 (1 ♂). All coll. D. C. Geijskes.

Length: body 7–8 mm, forceps 1–1.5 mm.

All the Guyanas, and recorded also from Brazil and Peru.

The parameres of the male genitalia of species of this genus are extremely similar to each other, a feature which is unusual in the more primitive Dermaptera, since the shape of the parameres is often extremely useful in the separation of closely allied species. All the species of *Pyragropsis* can, however, be separated on colour characters, which suggests that the similar parameres are due to the genus including only one or two polymorphic species, and not the five species as now recognised. On the other hand the structures of the distal lobes of the male genitalia have not been investigated, and these may show specific differences.

Amongst the material in the collection from Surinam is a single male specimen of this genus which differs strikingly from the rest by having a median notch on the posterior margin of the pronotum. In general colouration it is similar to *thoracica*, and the male genitalia does not show very distinctive features. The shape of the pronotum however suggests that it is clearly distinct, and it is regarded here as a distinct species. I have much pleasure in naming it after Dr. D. C. GEIJSKES, in recognition of his entomological work in Surinam.

5. **Pyragropsis geijskesi** sp. n.

Dark brown, almost blackish, except for the yellowish pronotum and the partly yellow legs. General appearance characteristic of the genus.

Male (Fig. 4): Head dull, rather depressed; eyes not greatly protruding, about as long as post-ocular part of head: only the first segment of each antenna is present in the type.

Pronotum yellowish, transverse, lateral margin rather rounded, posterior margin with a median notch; surface with scattered short yellow setae. Elytra dull, dark brown, with scattered short yellow and black setae and denser hairs, most conspicuous laterally; length of elytra about twice as long as pronotum; posterior margin gently

curved. Wings rather longer than half length of pronotum, dull brown except for whitish yellow band along lateral margins; scattered yellow setae on the surface of the wings. Legs yellowish-brown, anterior and posterior femora with dark transverse band of uneven width, situated towards the apices on anterior femora but situated medially on posterior femora.

Abdomen more shining than anterior parts, strongly punctured, parallel-sided. Ultimate tergite transverse, less strongly punctured than previous segments, shining, with a prominent large triangular depression, the base of the triangle forming part of the posterior margin of the tergite, the sides of the depression aligned with the dorsal ridges of the branches of the forceps. Penultimate sternite brown, shining, punctured, with an apical notch on posterior margin as in *thoracica*. Forceps broader basally, narrowed distally, remote at base, and straight, but curved mesad on apical third; triangular in cross section at base, with a dorsal ridge but cylindrical distally. Genitalia Fig. 7.

Length: body 9 mm, forceps 1.5 mm.
Female: unknown.
SURINAM: Republiek, on fruits of maripa palm, 7.VI.1954 (♂ holotype), coll. D. C. Geijskes.

Pyragra Serville

Both species of this genus are now known to occur in the area, and they may be distinguished as follows:

1. Larger, 20–28 mm in total length; pronotum in front with sides more strongly and evenly rounded, and more or less unicolorous . . . . . *fuscata* Serville
– Smaller, 12–18 mm in total length; pronotum in front with sides less strongly evenly rounded, and conspicuously variegated with yellow . . . . . *paraguayensis* Borelli

6. **Pyragra fuscata** Serville

Pyragra fuscata SERVILLE 1838, Annls. Sci. nat. *22*: 34 (French Guiana); BOESEMAN 1954, Verh. Zool. Leiden *21*: 19 (Surinam); HINCKS 1959, Syst. Mon. Derm. *2*: 192 (French Guiana, Guyana).

Blackish; elytra brown; wings yellow, darkened on lateral margins. Male forceps rather broader, more curved, and separated wider basally than those of female.

SURINAME: Zanderij, savanna, 4.V.1961 (1 ♀); District Suriname, Sectie O, under bark of dead trunk, 23.III.1959 (1 ♀, 1 nymph); District Brokopondo, Brownsberg, forest in rotten wood, 1.III.1959 (1 ♀). All coll. P. H. van Doesburg, Jr. District Brokopondo, Afobaka-Brownsweg, under stone, 18.IV.1965 (1 nymph) G. F. Mees. District Saramacca, Toekoemoetoe Creek, trail to Table Mountain, Km. 3, 7.VII.1944, (2 ♂) L. Schmidt. District Surinam, Republiek, forest in fire wood, 12.II.1963 (1 ♂); N.W. Suriname Exp., Moengotapoe, Wia Wia, trail 1 Km. 14.9, between firewood, 24.X.1948 (1 ♂); Corantijn, Coeroeni eiland, 12.VIII.1959 (1 ♂). All coll. D. C. Geijskes.

Length: body 15–17 mm, forceps 3–4 mm.

This species occurs in three subspecies according to HINCKS (1959). The subspecies *fuscata*, which is the one represented in the present collection, is the northern subspecies, and occurs from Mexico southwards to Ecuador. *P. fuscata brasiliensis* (Gray) distinguished by having the wings entirely yellow, occurs in Brazil, Paraguay, and Argentine, whilst *P. fuscata dohrni* (Scudder) which has a lighter longitudinal stripe along each elytron, is recorded from Bolivia and Peru.

7. **Pyragra paraguayensis** Borelli

Pyragra paraguayensis BORELLI 1904, Boll. Mus. Zool. Anat. comp. Torino *19*: 1.
Pyragra brunnea Burr, HEBARD 1917a, Proc. Acad. nat. Sci. Philad. *1917*: 231 (Guyana).

Brown to dark brown, variegated with yellow on pronotum, wings and abdomen; legs mainly yellow. Male forceps strongly curved, those of female almost straight.

SURINAM, Left Coppename, Bakhuis Mts., trail 2, Km 16, 22.IX.1943 (1 ♂) D. C. Geijskes.

Length: body 9 mm, forceps 2 mm (of specimen above).

Distribution: The present specimen is the first recorded from Surinam; it is known from Guyana but not yet from French Guiana. It is widely distributed in the Neotropical Region, extending from Nicaragua southwards to Argentine and Peru.

ESPHALMENINAE

These are blackish or dark coloured earwigs, in which the abdomen is widened posteriorly. It contains one genus only, *Esphalmenus*, which appears to be mainly montane and centred in the Andes, from Ecuador to Patagonia, though one species is known from the east coast of Brazil. Two species of this genus occur in South Africa, otherwise the genus is entirely Neotropical.

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CARCINOPHORIDAE

PARISOLABIINAE

Only one genus, *Idolopsalis* Borelli, is Neotropical, and includes a number of blackish apterous earwigs. Most of the species occur in countries to the south of the Guyanas but one species, *azteca* Dohrn, was described from Mexico. The genus may, therefore, be found in the area.

BRACHYLABIINAE

Brachylabis chilensis (Blanchard) was described from Chile, but others, such as *aliena* Borelli from Costa Rica, and *howardi* Burr from Guatemala, indicate that this subfamily is of wide occurrence in Central and Southern America. None have yet been recorded from the area.

CARCINOPHORINAE

Most of the species of this subfamily are blackish or dark coloured earwigs, which have comparatively few prominent external taxonomic characters. Whilst most are apterous, some have elytra only, and others have fully developed elytra and wings. In consequence of the lack of suitable external characters, the male genitalia is usually accepted as the basis for the separation of the species, and indeed, the genera. Females of this subfamily are consequently difficult to name with any accuracy.

MJÖBERG (1904) described a new species, *Anisolabis peregrina*, from Brazil, on one female specimen. Subsequently HEBARD (1920) recorded two more females of this species from French Guiana under the name of *Euborellia peregrina*. The difficulty lies in recognising this species without knowledge of the male, and of the male genitalia.

If *peregrina* is a true *Euborellia* the parameres of the male should be short and broad (as Fig. 16), but a male of this species has not apparently been recorded. The abdomen has been assumed to be punctured in the key since this feature occurs in the other apterous Guyana Carcinophorinae, but it is not known if this is correct.

The type of *Anisolabis surinamensis* has a very weakly punctured abdomen, but it seems possible that in fully adult specimens of this species the punctures may be deeper, and a discussion on this is given under this species. The other characters separating this species from *Metalabis saramaccensis*, are probably more reliable.

Two new species are described under *Metalabis* since they are closely related to *saramaccensis*.

KEY TO SPECIES

1. Elytra present, much longer than pronotum; wings present . 2
– Elytra absent or very short, shorter than pronotum; wings absent or concealed 3

2. Blackish species, with a large yellow spot on each elytron; wings visible, yellow; larger, body length 14–16 mm . . . . . *Carcinophora percheron* (Guérin & Percheron)
– Almost uniformly dark brown or blackish species; legs partially yellow; smaller, body length 9–10 mm . . . . . *Euborellia scudderi* (Bormans)

3. Elytra present, shorter than pronotum; (Fig. 19); paramere of male genitalia short and broad (Fig. 16) . . . . . *Euborellia janeirensis* (Dohrn)
– Elytra absent. 4

4. Surface of abdomen coriaceous, with only a very few widely scattered punctures; legs entirely yellow; male forceps strongly curved and asymmetrical (Fig. 8); male parameres long, bluntly pointed (Fig. 15) . *Anisolabis maritima* (Géné)
– Surface of abdomen closely punctured, even if punctures are shallow; male forceps symmetrical. 5

5. Larger, total length 20 mm, or more; antennae with three basal segments yellow; anterior tibiae with numerous spines ventrallv. . . . . *Euborellia peregrina* (Mjöberg)
– Smaller, total length less than 18 mm; antennae more or less unicolorous; anterior tibiae without, or with few spines ventrally 6

6. Pronotum not greatly widened posteriorly, lateral margins not strongly sinuate (Fig. 17) 7
– Pronotum greatly widened posteriorly, lateral margins strongly sinuate (Figs. 18, 20) 8

7. Surface of abdomen less strongly punctured; ultimate tergite of male without longitudinal dorsal ridges; reddish-brown or darker in colour. . . . *Anisolabis surinamensis* Boeseman
– Surface of abdomen strongly and closely punctured; ultimate tergite of male with longitudinal ridges dorsally (Figs. 9, 10); blackish in colour. . . . *Metalabis saramaccensis* (Zacher)

8. Smaller, body length 11 mm; pronotum more transverse (Fig. 20); ultimate tergite of male without longitudinal dorsal ridges (Fig. 22); paramere of male genitalia narrowed distally and rounded at tip (Fig. 14) . . . . . *M. ecarinata* sp. n.
– Larger, body length 15 mm; pronotum less transverse (Fig. 18); ultimate tergite of male with longitudinal dorsal ridges (Fig. 21); paramere of male genitalia acuminate distally (Fig. 11). . . . . *M. carinata* sp. n.

8. **Anisolabis maritima** (Géné)

Forficula maritima GÉNÉ 1832, Monogr. Forficul.: 9.
Anisolabis maritima (Géné), BOESEMAN 1954, Verh. Zool. Leiden *21*: 38 (Surinam).

Shining blackish or dark brown, lighter when immature, rather broad; legs entirely yellow; male forceps strongly curved (Fig. 8); those of female almost straight and contiguous. Male paramere Fig. 15.

SURINAME: Marowijne, Bigisanti, 12.VII.1955 (1 ♂, 1 nymph); Surinam, coast between Surinam river and Coppename river, Toniholo beach, in holes of whipworm in parva-wood (*Avicenna*), 10.VI.1959 (2 ♂, 1 ♀): all coll. D. C. Geijskes.

Length: body 16–18 mm, forceps 2.5–3.5 mm.

Almost cosmopolitan in semi-tropical and tropical countries. In the Neotropical Region recorded from Haiti, Antilles, Columbia, Venezuela, Argentine, and Guatemala. Not yet recorded from Guyana or French Guiana.
Evidently confined to the beach in Surinam.

9. **Anisolabis surinamensis** Boeseman

Anisolabis surinamensis BOESEMAN 1954, Verh. Zool. Leiden *21*: 41 (Surinam).

Reddish-brown or darker; male and female forceps symmetrical,

contiguous, rather similar to each other; body much more slender than *maritima*.

SURINAME: Zanderij, 13.II.1949 (1 ♂); Corantijn, Fred. Willem IV Falls, 5.VIII.1959, in luggage (1 ♂); Carolina Creek, 7.IV.1962 (1 ♀); all coll. D. C. Geijskes. Table mountain, IX.1944 (1 ♀) L. Schmidt.

Length: body 11–12 mm, forceps 1.5–2 mm.

Known only from Surinam.

The abdomen of the male type has been kindly loaned by Mr. C. A. W. JEEKEL, of the Zoölogisch Museum, Amsterdam. The most striking features of this are the very shallow punctures, and the lack of lateral ridges on the distal abdominal tergites, features which agree exactly with the second male quoted above. The genitalia of the holotype is not developed, nor is that of the second male above, which would suggest that these specimens are not fully mature. The first male quoted above is apparently identical except for the much deeper abdominal puncturation and the presence of lateral ridges on tergites 7–9 of the abdomen.

It is suggested therefore that both the holotype and the second male of the present material may be immature, whilst the first male of the present material represents the fully developed male of this species. If this is so then the stronger puncturation and the development of the lateral ridges would be features developed only in the fully adult male. The puncturation of the holotype consists of small and slightly depressed areas around the bases of the abdominal hairs which may well show development in later stages. At least in some *Euborellia* species it appears that immature specimens have the abdomen much less strongly punctured than in fully adult specimens, but it is not known if the lateral ridges appear only in the adult.

Pending further study on this feature, *surinamensis* is retained in *Anisolabis*, but if the first male of the present material does represent this species, the shape of the paramere (Fig. 13) suggests it is closely related to *Metalabis*. However the genera of the Carcinophorinae as a whole need revision and *Metalabis* may prove to be merely a subgenus of *Anisolabis* or possibly be synonymous with this latter genus.

10. **Carcinophora percheron** (Guérin Ménéville & Percheron)

Forficula percheron Guérin Ménéville & Percheron, 1838, Gen. Ins.: 7 (French Guiana).
Psalis pulchra REHN 1903, Proc. Acad. nat. Sci. Philad. *1903*: 303.
Spandex percheron HEBARD 1917, Proc. Acad. nat. Sci. Philad. *1917*: 232 (Guyana).

Head and pronotum yellow; elytra dark brown or shining black, with a large quadrangular yellow spot on each elytron; wings and legs yellow; abdomen black; male forceps broad, curved only at base; those of female similar.

SURINAME: Litani river, Waremapan Creek, 1.VIII.1939 (1 ♂) D. C. Geijskes.
Length: body 14–16 mm, forceps 2–3 mm.
The present specimen is the first recorded from Surinam, and the species is now known to occur in all the Guyanas. It is widely distributed in Central and South America, extending from Costa Rica and Trinidad southwards to Brasil.
The genitalia of *percheron* and *pulchra* appear to be identical.

11. **Metalabis saramaccensis** (Zacher)

Eulabis saramaccensis ZACHER 1911, Zool. Jb. *30*: 378 (Surinam).
Metalabis saramaccensis (Zacher) HEBARD 1917, Proc. Acad. nat. Sci. Philad. *1917*: 233 (Guyana, Surinam).

Shining blackish, rather slender; legs yellow; pronotum nearly parallel-sided (Fig. 17); ultimate tergite of male with two longitudinal ridges dorsally, extending to posterior margin (Figs. 9, 10); forceps broad in male, flattened laterally, trigonal basally; those of female similar but straighter. Male genitalia Fig. 23; enlarged figure of paramere Fig. 12.

SURINAME: Saramacca, Plantation Dirkshoop, forest IIIa, 3.V.1959 (8 ♂, 7 ♀, 3 nymphs) Van der Drift.
Two other females are provisionally associated with this species – Poeloegoedoe, 30.VII.1939; Zanderij, 5.VI.1949, D. C. Geijskes.

Length: body 8–10 mm, forceps 1.5–2 mm.

Only recorded from Surinam, Guyana, and Brazil.

12. **Metalabis carinata** sp. n.

Blackish, shining, legs yellow; abdomen gradually dilated to segment 8.

Male: Head tumid, depressed along sutures, the latter distinct, blackish posteriorly, dark reddish anteriorly. Eyes about as long as postorbital region of genae. Antennae 16-segmented in type; first segment short, broad, shorter than distance between antennal bases; second segment transverse; third segment about one and three-quarter times as long as broad; fourth quadrate; fifth slightly longer; sixth one and half times as long as broad; seventh equal in length to third; rest of segments elongated, about three times as long as broad; all segments brown.

Pronotum quadrate, smooth, widened posteriorly, lateral margins strongly sinuate (Fig. 18), blackish, narrowly yellow laterally; a median shallow longitudinal furrow along entire length; mesonotum transverse, broad, more than half length of pronotum, similar in colour and with a median longitudinal furrow; metanotum narrow, concave posteriorly, without a median furrow. Legs yellowish, femora, especially those of anterior pair, strongly dilated; anterior tibiae with numerous ventral hairs but without spines.

Abdomen blackish, segments 1–2 impunctate, rest closely and strongly punctured except on actual posterior margin; segments 6–9 with lateral ridges, each ridge beginning about middle of tergite and extending to and beyond posterior margin, so that the apex forms a pointed projection. A slight lateral ridge visible on tergite 5. Ultimate tergite transverse, smooth, with short median longitudinal furrow; posterior margin thickened; two longitudinal ridges dorsally each curved, and beginning on anterior third of tergite, becoming larger medially, ending before posterior margin (Fig. 21); the median part of the ridge forms a large flattened expansion.

Forceps almost symmetrical, trigonal basally with a strong and prominent dorsal ridge extending for basal two-thirds; cylindrical on distal third (Fig. 21). Genitalia (Fig. 24) shown with one distal lobe everted, apex with two spinous lobes; virga broadened and with accessory sclerites. Paramere (Fig. 11) long, acuminate, pointed apically, inner membrane with sinuous margin, ending at tip of paramere.

SURINAM: Brownsberg, 20.IX.1938 (♂ holotype) D. C. Geijskes.
Length: body 15 mm, forceps 2.5 mm.

The present species appears to be closely related to *saramaccensis* on the structure of the genitalia, but is distinguished externally by the different shape of the pronotum and by the stronger development of the dorsal ridges on the ultimate tergite. The parameres of the genitalia are longer, and the virga broader and much more prominent.

There is one female in the present collection which is provisionally associated with the male, on external characters. There are no lateral ridges on the abdomen nor ridges on the ultimate tergite, which are male characters.

SURINAM: Carolina Creek, 7.IV.1962, in rotten leaves of maripa palm (1 ♂) D. C. Geijskes.

13. **Metalabis ecarinata** sp. n.

Closely similar in general appearance to *carinata*, but with a distinctive genitalia. Very dark reddish-brown, shining, legs reddish-brown; abdomen gradually dilated to segment 8.

Male: Head tumid, depressed along sutures, the latter distinct, dark reddish. Eyes about equal in length to postorbital part of genae. Antennae 13-segmented in left antenna, 12-segmented in right; proportions of segments as in *carinata*, but the fourth is not quadrate being rather longer than broad; fifth longer than fourth, and seventh equal to third; all segments brown.

Pronotum transverse, smooth, widened posteriorly, lateral margins strongly sinuate (Fig. 20), blackish, narrowly yellow laterally; a median longitudinal furrow is present but much less strongly marked than in *carinata*, and is almost absent in parts. Mesonotum broad, transverse, with a very slight median longitudinal furrow; blackish; metanotum short, transverse, concave posteriorly. Legs reddish-brown, femora strongly dilated, especially those of anterior pair; anterior tibiae with numerous ventral hairs and with a row of spines on ventro-anterior and ventro-posterior margins, on distal half.

Abdomen very dark reddish-brown, segments 1–2 impunctate, other strongly and closely punctured; segments 6–9 with lateral

ridges; ultimate tergite similar to *carinata* but without the dorsal longitudinal ridges, these only being indicated by a small raised portion of the cuticle (Fig. 22). Forceps almost symmetrical, less strongly trigonal than in *carinata*, the dorsal ridge only present near base (Fig. 22). Genitalia (Fig. 25) with two long spiny lobes in each distal lobe; virga short, narrow, and associated with sclerites; paramere (enlarged in Fig. 14) broad basally, narrowed distally, inner membrane broad and extending beyond tip of paramere.

SURINAM: Marowijne River, Poeloegoedoe, in forest, 30.VIII.1939 (♂ holotype) D. C. Geijskes.

Length: body 11 mm, forceps 2 mm.

The parameres of the genitalia show a distinct difference to those of the other species of *Metalabis*: the general characters however are suggestive of its close relationship to this genus.

14. **Euborellia janeirensis** (Dohrn)

Forcinella janeirensis DOHRN 1864, Stettin. ent. Ztg. *25*: 285.

Shining dark brown or blackish; legs yellow, sometimes with a darker band on femora; elytra shorter than pronotum, scarcely meeting along sutures; metanotum concave posteriorly (fig. 19); male and female forceps curved only at apices, rather similar to each other, but those of the males are more strongly curved.

SURINAME: Paramaribo, Combé, in garden on fruits of Guava, 20.I.1960 (1 ♀); in garden between plants, 7.V.1959 (1 ♀); at light, 24.VIII.1963 (1 ♀); 20.IV.1948 (1 ♂); 18.VI.1954 (1 ♀); 26.II.1950 (1 ♀); all coll. D. C. Geijskes.

Length: body 8–10 mm, forceps 1.5–2 mm.

Previously only known from Brazil.

15. **Euborellia scudderi** (Bormans)

Psalis scudderi BORMANS 1900, Annali Mus. civ. Stor. nat. Giacoma Doria *20*: 449.
Euborellia scudderi (Bormans) HEBARD 1920, Proc. Acad. nat. Sci. Philad. *1920*: 339 (French Guiana).

A small fully winged dark brown or blackish species, brightly shining; basal two segments of each antenna yellow, rest brown;

pronotum broad, widened posteriorly; elytra longer than pronotum; wings as long as pronotum; legs lighter brown with darker marks on femora.

SURINAM: District Brokopondo, Phedra, 1/7.IX.1964, in Malaise trap, (1 ♀): coll. D. C. Geijskes.

Length: body 8–10 mm, forceps 1–1.75 mm.

Recorded from French Guiana, Brazil, Peru, and Bolivia; the present specimen is the first known from Surinam.

The present specimen has the pronotum rather more transverse and is slightly smaller than other specimens of this species examined; these differences may not be significant.

16. **Euborellia peregrina** (Mjöberg)

Anisolabis peregrina MJÖBERG 1904, Ent. Tijds. *1904*: 131.
Euborellia peregrina (Mjöberg), HEBARD, 1920, Proc. Acad. nat. Sci. Philad. *1920*: 339 (French Guiana).

Dark brown to reddish-brown; pronotum widened posteriorly; antennae 19-segmented, rather thin and hairy; three basal segments yellow, base of 16 and all 17 yellow, rest brown; anterior tibiae with "chaetiform spines" ventrally according to HEBARD (1920), possibly as in *ecarinata*. Hebard also reports "these, due to the size of this species being more conspicuous than in specimens of the other species of *Euborellia* at hand."

Length: body 16–18 mm (HEBARD), 20 mm (type); forceps 3–4 mm (HEBARD), 3 mm (type).

Originally recorded from Sweden, imported in orchids from Brazil. If HEBARD is correct this species may be widely distributed in the Guyanas.

The systematic position of this species cannot be satisfactory solved until a male can be found. It has not been found in Surinam nor in Guyana, and the two records quoted above appear to be the only references to this species.

LABIDURIDAE

LABIDURINAE

This is the only subfamily of the Labiduridae represented in the Neotropical Region, and three of the four species known from this Region are recorded from the area.

1. Yellowish, variegated with dark brown or reddish-brown; male forceps gently arcuate and stout, not greatly elongated; sides of distal abdominal segments in male without spines; forceps of female short, without a well developed dorsal basal ridge; body broader, less pubescent (*Labidura*) 2
- Blackish-brown; male forceps long and slender; sides of distal abdominal segments in male usually with spines; forceps of female short, with a well developed dorsal ridge; body more slender and pubescent . . . . . *Forcipula quelchi* Burr

2. Distal abdominal segments of male with short longitudinal ridges on posterior margins, resembling the milling of a coin; male parameres club-shaped . . . . . *Labidura xanthopus* (Stal)
- Distal abdominal segments of male without such ridges; male parameres parallel-sided . . . . . *Labidura riparia* (Pallas)

17. **Labidura riparia** (Pallas)

Forficula riparia PALLAS 1773, Reise Russ. Reichs. *2*: 727.
Labidura riparia (Pallas) BOESEMAN 1954, Verh. Zool., Leiden *21*: 48 (Surinam).

Yellowish, variegated with reddish or blackish brown; male forceps widely separated basally, gently curved; forceps of female more or less straight, contiguous.

Length: body 14–26 mm (male), 12–22 mm (female); forceps 5–10 mm (male), 3.5–5 mm (female).

Almost cosmopolitan. The record given by BOESEMAN (1954) appears to be the first for Surinam.

18. **Labidura xanthopus** (Stål)

Forficesila xanthopus STÅL 1855, Öfvers. K. Vetensk. Akad. Förh. *12*: 348.

Very similar to *riparia*: elytra usually short and wings concealed beneath elytra.

SURINAME: Christiankondre, 12.VI.1945 (1 ♂); N.W. Suriname Exp. 1948–9, Galibi, on beach, 7.II.1948 (1 ♂); District Saramacca, seacoast, Toniholo, 9/10.VI.1959, (6 ♂, 12 ♀, 2 nymphs); District Saramacca, Popogaimama, beach, 10.VI.1959 (1 ♂); District Marowijne, sea coast, Bank Lubin, on

beach at night, 9.VII.1959 (3 ♂, 4 ♀, 1 nymph); District Marowijne, Bigisanti, on beach at night, 12.VII.1955 (2 ♂, 1 ♀); District Commewijne, Kat Creek, on beach at night, 6/12.VIII.1957 (4 ♂, 3 ♀). All coll. D. C. Geijskes.

Length: body 18–25 mm (male), 14–21 mm (female); forceps 6–9 mm (male), 3.5–5 mm (female).

Brazil, Argentine, Bolivia, and probably many other Neotropical countries. The above specimens are the first recorded from Surinam.

This species is only distinguished from *riparia* externally, by the presence of the short ridges on the posterior margins of the distal abdominal tergites. This is a male character, and females cannot be satisfactorily separated. The females above are associated with the males.

In a recent revision of the Labidurinae (BRINDLE 1966a), *xanthopus* was given specific rank because the shape of the male parameres of this species are club-shaped and appear to show a constant difference in shape to those of *riparia*. Further study on the specific status of *xanthopus* is being undertaken.

From the records of the specimens collected by Dr. GEIJSKES, the species appears to be common along the beaches and is active at night. This is a close similarity to the habitat and habit of *riparia* in Europe, the paler forms of which usually occur on the sandy shores of lakes, rivers, and on beaches by the sea. The species however is not restricted to such habitats, and the darker forms of the species seem to occur in more sheltered habitats.

The present specimens all have short elytra and have no visible wings, features which are usual in *xanthopus*. All are yellowish, variegated with reddish or dark brown.

19. **Forcipula quelchi** Burr

Forcipula quelchi BURR 1904, Trans. ent. Soc. Lond. *1904*: 289 (Guyana).

Blackish-brown, elytra sometimes slightly lighter towards shoulders; male forceps very long and slender as a rule and widely separated at the base; female forceps shorter, broader, and contiguous.

SURINAME: Lawa River, Benzdorp, in boat, 6.VII.1939 (1 ♂); Coppename River, Sidonkroetoe-Falls, 30.VII.1943 (1 ♀); District Saramacca, Coppename River, Raleigh Falls, in boat, 20.VII.1957 (1 nymph); Afobaka 25.VIII.1964 (1 ♂); Marowijne, Abetredjoeka, 26.III.1952 (2 ♂, 1 ♀); Plantation De Maasstroom, in boat, 8.IX.1940 (1 ♂); Coeroeni eil., Corantijn, 25.IX.1959 (1 ♂). All coll. D. C. Geijskes.

Length: the present specimens show some variation in length, both of the body and of the male forceps. Most of the males measure between 17–20 mm in body length, with the forceps measuring between 13–16 mm in length. The last listed male, from Corantijn, however, has a body length of only 15 mm, and the forceps are only 5.5 mm in length, although the shape is more or less typical. Little variation appears to occur in the shape of the forceps. The females measure 16.5 mm in body length, with the forceps 5.5 mm.

Previously only known from Guyana; these are the first recorded specimens from Surinam.

The species of this genus appear to occur along the banks of streams and rivers, a habitat which is confirmed by the records above.

The only other species of the Labidurinae which is Neotropical in distribution is *Forcipula americana* which is distinguished from *quelchi* by having the elytra almost wholly yellowish-red. The male forceps of *americana* are usually strongly sinuate near the base and the abdomen has raised serrated crests. It appears to be more southern in distribution and so far is known to occur in Bolivia and Peru.

LABIIDAE

In general the Labiidae includes the smaller species of the higher Dermaptera, although such species as *Spongiphora croceipennis* Serville are quite as large as most of the Forficulidae. The elytra are almost always present, and wings often present. With the exception of two cosmopolitan species, *M. arachidis* and *L. curvicauda*, all the Neotropical Labiidae are endemic and form a very interesting group.

The species of the family found in the Guyanas fall into two groups – the Sparattinae, with strongly flattened bodies, and the Labiinae and Spongiphorinae, which have the body normal in shape. One subfamily, the Strongylopsalinae, with one genus *Strongylopsalis*, is peculiar, and the species resemble small specimens of the Carcinophoridae, but these aberrant Labiids are apparently restricted to the more southern or eastern parts of South America. The Labiinae and the Spongiphorinae are not clearly separable, since the

main characters separating these have been the size of the eyes and the shape of the head, both of which show a gradation which makes a division difficult to define. BOESEMAN (1954) has also shown that in *Marava arachidis*, the size of the eyes tends to vary, and a similar variation exists in *Vostox brunneipennis*.

The five specimens of this species in the present collection are of two types. In two specimens, both females, the eyes are small and the pronotum more quadrate (Fig. 49), whilst in the other three specimens (1 ♂, 2 ♀), the eyes are much larger and the pronotum more transverse (Fig. 48). A similar variation occurs in the specimens of this species in the Manchester Museum, but the male genitalia of specimens of both types appear to be identical (Fig. 50). The difference in the size of the eyes seems to be also associated with a difference in the length and shape of the male forceps (Figs. 51, 52).

There is some confusion regarding the synonymy of some of the Neotropical Labiinae and Spongophorinae, and a revision of these subfamilies is in preparation by the present author. Two species of the present collection appear to be new, and are described and figured. One, described as *Microvostox lucida* cannot be correlated with any species known to the author; the second species, described as *Larex surinamensis*, is very similar to *Larex rogersi* (Bormans), but the male forceps and pygidium of the latter species (Fig. 36) are so different from those of the new species (Fig. 29) that they must be regarded as specifically distinct.

An examination of *rogersi*, however, shows that BURR (1911a, 1911b) was mistaken in including it in the Labiinae.

Spongophora rogersi was described from Costa Rica by BORMANS (1893) who showed clearly that the eyes of this species were unusually large (BORMANS 1893, pl. 2 fig. 6), and this is confirmed by a study of one of BORMANS' specimens (the type has not yet been located). BURR (1911a, p. 60) however included it in the subfamily Labiinae, which he characterised, amongst other features, by the very small eyes, and erected a new genus *Larex* for this species. The genus and species is retained in the Labiinae in BURR (1911b) but it should be placed in the Spongiphorinae, which is characterised by "eyes large and prominent". In this subfamily it keys to *Vostox*.

Larex is mainly distinguished from *Vostox brunneipennis* by

having the antennal segments moniliform and not cylindrical, and by having smooth elytra, not punctured. *V. similis*, however also has smooth elytra.

Although the Labiinae and Spongiphorinae are not now clearly defined, *Larex* appears to be closely related to *Vostox* and should be placed near to this genus. Pending the revision of these subfamilies, *Larex* is retained as a separate genus.

HEBARD (1917b) separated some Neotropical Labiidae from *Labia* to a new genus *Microvostox*. Although this genus is not distinctly characterised, it is retained in the present paper, and for convenience *Labia equatoria* has been transferred to *Microvostox*.

The Key to species includes all those known from the Guyanas, together with two other common Neotropical species which may be found in the area, these being indicated by means of asterisks. The key is arranged irrespective of genera or subfamilies, except for the Sparattinae, which are clearly separable. The species are later dealt with in systematic order, but the subfamilies Labiinae and Spongiphorinae are considered as one subfamily, the Labiinae.

KEY TO SPECIES

1. Body very strongly flattened (Sparattinae) 2
– Body not strongly flattened (Labiinae, Spongiphorinae) . . 4

2. Almost entirely black, or with abdomen partly reddish; smaller and more slender; male pygidium longer (Fig. 30); female forceps with an internal notch (Fig. 31) . . . . . *Parasparatta nigrina* (Stål)
– Abdomen entirely reddish; broader and larger 3

3. Head and pronotum black; male forceps strongly curved apically (Fig. 32); female forceps Fig. 33 . . . . . *Sparatta pygidiata* Kirby
– Head and pronotum reddish-yellow; male forceps not strongly curved (Fig. 34); female forceps Fig. 35 . . . . . *Sparatta semirufa* Kirby

4. Larger species, body length 14 mm or more; forceps from 4–18 mm in length; wings entirely yellow. . . . . *Spongiphora croceipennis* Serville
– Smaller, body length 10 mm or less 5

5. Antennal segments strongly pyriform, each segment gradually widening distally, almost truncate distally; elytra short, wings absent or concealed; abdomen gradually widened posteriorly, rather depressed, and longer than head, pronotum, and elytra together. . . . . *Marava arachidis* (Yersin)
– Antennal segments not strongly pyriform, either more or less cylindrical or moniliform; abdomen either not widened and depressed, or much shorter than head, pronotum, and elytra together 6

6. Head broad, rather depressed; postorbital part of genae rather swollen, or with longitudinal furrows extending from eyes to posterior margin of head; antennal segments more or less cylindrical; body length 8–10 mm 7
– Head less broad and depressed; postorbital part of genae not swollen, nor with longitudinal furrows; antennal segments moniliform or cylindrical; body length 7 mm or less. 8

7. Antennal segments broad, unicolorous; wings yellow medially; male forceps Figs. 51, 52. . . . . *Vostox brunneipennis* (Serville)
– Antennal segments narrow, segments 3–5 lighter in colour than rest; wings yellow at base only; male forceps Fig. 54 . . . . . *Purex formosus* Hebard

8. Pronotum gradually widened posteriorly, posterior angles prominent; posterior margin not strongly convex (Fig. 29). 9
– Pronotum not widened posteriorly; or posterior angles not present, the posterior and lateral margins being strongly convex (Fig. 26) 10

9. Larger, body length 7 mm; eyes very large, much longer than genae (Fig. 29); elytra unicolorous, brown . . . . . *Larex surinamensis* sp. n.

– Smaller, body length 3.5 mm; eyes smaller than genae; elytra dark brown or lighter, each elytron with a yellow longitudinal stripe . . . . . *Microvostox equatoria* (Burr)

10. Male and female forceps strongly widened basally (Figs. 41, 42); small, body length 3–4 mm, blackish, with reddish abdomen . . . . . *Labia curvicauda* (Motschulsky)
– Male and female forceps not strongly widened basally. . . 11

11. Pronotum dull black, with numerous short yellow setae; male forceps long (Fig. 44) . . . . . *Microvostox ghiliani* (Dohrn)
– Pronotum not dull black with numerous short yellow setae 12

12. Wings yellow or white, at least at base; body more slender, not widened or depressed 13
– Wings dark or absent; body broad and depressed 16

13. Larger, body length 5–6 mm; elytra more or less unicolorous. 14
– Smaller, body length 3.5 mm; elytra unicolorous or with lighter longitudinal stripes 15

14. Black or dark brown; shining; pronotum dark with broad yellow or white lateral and posterior borders; male forceps without inner teeth (Fig. 43) . . . . . *Microvostox chopardi* Hebard
– Reddish or reddish-brown; shining; pronotum reddish or yellow; male forceps with inner teeth (Fig. 26). . . . . *Microvostox lucida* sp. n.

15. Black or dark brown, each elytron with a yellow longitudinal stripe; male forceps longer, with inner teeth (Fig. 45) . . . . . *Microvostox alter* (Burr)
– Reddish-brown; elytra unicolorous; male forceps shorter, without inner teeth (Fig. 46) . . . . . *Microvostox parvus* (Burr)

16. Elytra and wings with short hairs; male abdomen with tergites 8–9 produced and with weak lateral ridges 17

– Elytra and wings smooth, without hairs; male abdomen with tergites 5–9 produced or with lateral ridges 18

17. Male forceps simple, without inner teeth; male pygidium with posterior angles bluntly rounded; female pygidium convex, as broad as long . . . . . *Labia annulata* (F.)*
– Male forceps with inner teeth; male pygidium with posterior angles sharp (Fig. 37); female pygidium concave, as broad as long (Fig. 38) . . . . . *Labia arcuata* Scudder

18. Elytra and wings reduced, without a metallic sheen; male abdomen with tergites produced but without lateral ridges; male forceps without inner teeth; male pygidium with posterior angles bluntly rounded; female pygidium elongated, apex truncate . . . . . *Labia rotundata* Scudder*
– Elytra and wings fully developed, with metallic sheen; male abdomen with tergites 5–9 produced and with lateral ridges; male forceps with inner teeth; male pygidium with posterior angles produced (Fig. 40); female pygidium triangular (Fig. 39) . . . . . *Labia dorsalis* (Burmeister)

SPARATTINAE

20. **Parasparatta nigrina** (Stål)

Sparatta nigrina STÅL 1855, Öfv. K. Vetensk. Akad. Förh. *12*: 350.
Sparatta bolivari BORMANS 1880, Ann. Soc. Esp. Hist. nat. *9*: 510.
Sparatta dentifera REHN 1901, Trans. Amer. ent. Soc. *27*: 218.
Parasparatta guyanensis HEBARD 1920, Proc. Acad. nat. Sci. Philad. *1920*: 349 (French Guiana), nov. syn.

Blackish, slender, and very flat; abdomen often partly reddish, especially ultimate tergite; male forceps slender with inner teeth, and pygidium elongate with lateral teeth (Fig. 30); female forceps broader, without internal teeth, pygidium shorter and broad (Fig. 31).

SURINAME: Brownsberg, in dead trunk, 1.III.1959 (1 ♂) P. H. van Doesburg, Jr.; Corantijn, Coeroeni eiland, 11.VIII.1959 (1 ♂); Paramaribo, Charlesburg, N. Swamp, 12.II.1940 (1 ♀); Right Coppename, Upper part, trail 3, Km. O, 19.X.1943 (1 ♀); 2.X.1943 (1 ♀); Right Coppename, Table Mt. base, trail 3,

* Not yet recorded from the Guyanas.

Km. 27, 5.XI.1943 (1 ♀); Left Coppename, Wilhelmina Mts., trail 1, Km. 3, 16.VIII.1943 (1 ♂); N.W. Surinam Exp., Marowijne River, Nassau Mts., Km. 11, 12.III.1949 (1 ♀); all, except first specimen, coll. D. C. Geijskes.

Length: body 6–7 mm; forceps 1.5–2.5 mm.

Only previously known from French Guiana in the Guyanas. The distribution extends southwards from Mexico to Brazil and Peru.

The length of the pygidium varies, especially in the male, and the smaller specimens may be entirely blackish, which is probably the form described by STÅL. The variation in the length, but not the shape, of the pygidium appears to have led to the synonymy quoted above. The original description by Stål does not mention the pygidium, and the synonymy of *nigrina* with *bolivari* follows the views of the late Dr. W. D. HINCKS.

21. **Sparatta pygidiata** Kirby

Sparatta pygidiata KIRBY 1896, J. Linn. Soc. *25*: 527.
Sparatta pygidiata Kirby, HEBARD 1917, Proc. Acad. nat. Sci. Philad. *1917*: 245 (Guyana).

Head, pronotum, elytra and wings blackish; abdomen reddish-brown or reddish; male forceps strongly curved (Fig. 32); those of female straight with an inner tooth on each branch (Fig. 33).

Length: body 8 mm, forceps 2–2.5 mm.
Only known from Guyana and Brazil.
Not represented in the present collection. HEBARD (1917a) referred his specimens to this species with some doubt.

22. **Sparatta semirufa** Kirby

Sparatta semirufa KIRBY 1896, J. Linn. Soc. *25*: 528.
Sparatta semirufa Kirby, HEBARD 1920, Proc. Acad. nat. Sci. Philad. *1920*: 349 (French Guiana).

Head, pronotum, legs yellowish-red or reddish; abdomen reddish; elytra and wings black, or with anterior part of elytra yellow; male forceps not strongly curved (Fig. 34); female forceps straight, broad (Fig. 35).

SURINAME: District Commewijne, Mapane area, camp 8 (Forestry Sta.) 27.V.1963 (1 ♂); Surinam, Sectie 0, under bark of dead trunk, 23.III.1959 (1 ♂); District Suriname, Carolina Creek, under bark, 24.IV.1962 (1 ♂); 18.XI.1962 (1 ♂). All coll. P. H. van Doesburg, Jr.

Length: body 8 mm; forceps 2–2.5 mm.

Only previously known from Brazil and French Guiana.

LABIINAE

23. **Spongiphora croceipennis** Serville

Spongiphora croceipennis SERVILLE 1831, Annls. Sci. nat. *22*: 34.

Head and pronotum dark brown; elytra lighter brown; wings yellow, darkened apically and sometimes on sutural margin; legs brown, long, more or less unicolorous; male forceps almost straight, long, rather depressed basally, with a small inner tooth one third from apex; female forceps long, rather dilated at base, gently curved.

SURINAME: Paramaribo, 4.VII.1951 (1 ♂, 1 ♀) D. C. Geijskes.

Length: body 12–15 mm; forceps 6–7.5 mm.

Not previously known from the Guyanas, but is recorded from Mexico southwards to Brazil and Peru.

24. **Purex formosus** Hebard

Purex formosus HEBARD 1920, Proc. Acad. nat. Sci. Philad. *1920*: 340 (French Guiana).

Head blackish-brown; pronotum and legs yellowish-brown; elytra reddish-brown, slightly paler at shoulders and with an oval light area distally, not sharply defined, half on elytra and half on wings, wings otherwise reddish-brown; abdomen dark brown; male forceps Fig. 54, pygidium Fig. 53.

Length: body 8 mm; forceps 2.8 mm.

Only known from the single type male; the pygidium is not unlike that of *Vostox*, but the forceps are distinctive. The genus *Purex* however is characterised by having the occiput strongly depressed, a feature which does not appear to be true of the present species from the original description.

25. **Vostox brunneipennis** (Serville)

Psalidophora brunneipennis SERVILLE 1839, Hist. nat. Ins. Orth.: 30.
Psalidophora insignis STÅL 1855, Öfv. K. Vetensk. Akad. Förh. *12*: 349.
Psalidophora punctipennis STÅL 1880, Eug. Resa Ins.: 304.

Head and pronotum blackish or dark reddish-brown; elytra brown or dark brown, rather flattened; wings yellow, darker on all margins; legs reddish-yellow; abdomen very dark reddish-brown; male forceps Figs. 51, 52; female forceps straight, contiguous, each branch with a small rounded inner tooth at base.

SURINAME: Paloemeu, Apetina, in luggage, 22.III.1952 (1 ♀); 23.III.1952 (1 ♀); Surinam, Sectie 0, bush, 23.III.1959 (1 ♀); Surinam Republiek, forest 8.VIII.1963 (1 ♂); Surinam, Saramacca under bark of fallen tree, 12.II.1958 (1 ♀): all coll. D. C. Geijskes.

Length: body 8–10 mm, forceps 2–4 mm.

The above specimens represent the first record from the Guyanas; the species is widely distributed, extending from U.S.A. (Pennsylvania) southwards to Brazil, Peru, and Argentine.

The first two females recorded above have small eyes (Fig. 49) whilst the three other specimens have large eyes (Fig. 48). The last specimen recorded is very dark, the wings scarcely yellow even at base, but the characteristic internal tooth on the female forceps is present.

The variation in the size of the eyes and of the male forceps, discussed previously, has probably led to the synonymy quoted above, which is partly based on BURR (1911b) but also on the notes of the late Dr. W. D. HINCKS.

26. **Larex surinamensis** sp. n.

Brown, lighter on elytra; legs yellow; eyes unusually large, head rather short.

Male (Fig. 29): head tumid, smooth, short, dark brown; mouthparts lighter in colour; palpi yellow. Posterior angles of head well rounded, posterior margin concave. Eyes large, much longer than postorbital part of genae. Antennae yellowish-brown, 17-segmented

(right) (first segment only remaining of left); first segment dilated, shorter than distance between antennal bases; second segment quadrate; proportions of segments 3–7 as follows: 3rd–7 (as long as first): 4th–4.5: 5th–5: 6th–6: 7th–7. Succeeding segments more elongate, strongly moniliform. Pronotum large, coriaceous, prozona raised, dark brown, lateral and posterior part yellowish; widened posteriorly, lateral margins straight; posterior margin weakly convex. Elytra light brown, coriaceous, long, apex concave; wings similarly coloured but with base yellow; legs yellow. Abdomen dark brown, darker than head; coriaceous, parallel-sided; ultimate tergite transverse, posterior margin slightly produced on each side; posterior margin with ten very small pointed tubercles in a row between the bases of the forceps. Forceps trigonal basally, dorsal ridge pronounced; cylindrical distally; internal margin with small ventromedian teeth in a widely spaced row; pygidium small, rounded, but with two small lateral teeth on the posterior margin, the teeth being directed dorso-posteriorly. Genitalia (Fig. 28) with very narrow parameres, otherwise of a type similar to *Vostox*.

SURINAME: Waremapan, 1.VIII.1939 (♂ holotype, 1 ♂ paratype) D. C. Geijskes.
Length: body 8 mm; forceps 2 mm.

Extremely closely related to *Larex rogersi*, from which it is distinguished by the form of the male forceps and pygidium; the pronotum of *rogersi* is more quadrate and the posterior angles less rounded. The shape of the pronotum appears to be the most suitable character to separate females when these are collected; both *rogersi* and *surinamensis* are only known from males.

27. **Marava arachidis** (Yersin)

Forficula arachidis YERSIN 1860, Ann. Soc. ent. Fr. *8*: 509.
Prolabia arachidis (Yersin) BOESEMAN 1954, Verh. Zool. Leiden, *21*: 83 (Surinam).

Reddish-brown or darker, sometimes with the lateral margins of the pronotum, elytra, and abdomen darker than the rest; pronotum rectangular, transverse; elytra short, equal in length to pronotum,

meeting along sutures; wings absent or concealed; abdomen rather dilated and depressed; male forceps short, evenly curved; pygidium large, transverse; female forceps short, contiguous.

SURINAME: Paramaribo, Combé, in house, 4.IV.1954 (1 ♂); 4.VII.1964 (1 ♀) D. C. Geijskes.

Length: body 6.5–8 mm, forceps 1.25–1.75 mm.

Almost cosmopolitan. Only known from Surinam in the Guyanas; otherwise recorded from Texas.

Although this species appears to have a fully winged form in which the elytra are longer, and the wings are visible, this does not appear to occur in the Neotropical Region.

HINCKS (1954) gave the synonymy of this species, but incorrectly synonymized *Labia nigroflavida* Rehn with the present species. *L. nigroflavida* has recently been examined and it is quite distinct.

28. **Labia curvicauda** (Motschulsky)

Forficesila curvicauda MOTSCHULSKY 1863, Bull. Soc. nat. Moscou *36*: 2.

Head, pronotum, elytra, and wings blackish, but the pronotum may be lighter in colour; abdomen reddish or reddish-brown, narrow and long; legs short, yellow, femora darkened basally; male forceps short curved, broad; pygidium large, transverse (Fig. 41); female forceps broad, contiguous (Fig. 42).

SURINAME: Coronie, in dead trunk of cocos palm, 1.V.1959 (1 ♂, 1 ♀) P. H. van Doesburg, Jr.

Length: body 3–4 mm; forceps 0.75–1 mm.

Almost cosmopolitan; not previously recorded from the Guyanas, but it has been recorded from the West Indies and Panama.

29. **Labia dorsalis** (Burmeister)

Forficula dorsalis BURMEISTER 1838, Handb. Ent. *2*: 754.

Labia dorsalis (Burmeister) HEBARD 1920, Proc. Acad. nat. Sci. Philad. *1920*: 348 (French Guiana).

A short broad species; blackish or very dark brown, shining; elytra with a metallic sheen; legs brown, bases of femora black; male forceps strongly curved, each branch with a small inner tooth, py-

gidium bidentate (Fig. 40); female forceps slender, widely separated, pygidium produced at apex (Fig. 39).

SURINAME: Paramaribo, Cultuurtuin, VII.1957 (1 ♂); 13.VI.1957 (1 ♂, 1 ♀); D. C. Geijskes.

Length: body 4.5–5.5 mm; forceps 0.5–0.75 mm.

These specimens are the first recorded from Surinam, and it is not yet known from Guyana. Elsewhere in the Neotropical Region it occurs from Mexico southwards to Brazil, including the West Indies.

30. **Labia arcuata** Scudder

Labia arcuata SCUDDER 1876, Proc. Boston Soc. nat. Hist. *18*: 257.
Labia arcuata Scudder, HEBARD 1920, Proc. Acad. nat. Sci. Philad. *1920*: 348 (French Guiana).
Labia annulata (F.), BOESEMAN 1954, Verh. Zool. Leiden *21*: 78 (Surinam).

Similar to *dorsalis* in general shape and size but lacks the brilliant sheen of the elytra and wings; blackish or dark brown, abdomen strongly broadened and often lighter in colour than anterior parts; legs brown; forceps of male with inner teeth; pygidium short and broad (Fig. 37); female forceps slender, widely separated at base; pygidium emarginate apically with two sharp teeth (fig. 38).

SURINAME: Fred. Willem IV Falls, Corantyn, 5.VIII.1959 (1 ♀); Coppename, Tonckens Falls camp, 3.VIII.1943 (1 ♂); Waremapan, Waterfall, between luggage, 30.VII.1939 (2 ♂); Left Coppename, Bakhuis Mts., trail 2, Km 11, 30.IX.1943 (1 ♂); Brownsberg, 20.IX.1938 (1 ♂); 9.VIII.1958 (1 ♂); 17.IX. 1938 (1 ♀). All coll. D. C. Geijskes.

Length: body 4–5 mm; forceps 0.5–0.75 mm.

Not yet recorded from Guyana. It is widely distributed in the Neotropical Region, from Guatemala southwards to Brazil and Peru, including the West Indies.

BOESEMAN (1954) recorded this as *annulata*, and gave *arcuata* as a synonym, thus following BURR (1911). This may be correct when the types are examined. HEBARD (1917b) however, was quite certain that these species were distinct and the Key of the *dorsalis-arcuata-rotundata-annulata* group given in the present paper is based on the key given by HEBARD (1. c.). HEBARD worked on the Neotropical Dermaptera and certainly knew the species, so it is certain that as keyed out *annulata* and *arcuata* are distinct. Whether these are forms of one variable species will only be settled with much more material available.

31. Microvostox alter (Burr)

Spongovostox alter BURR 1912, Ann. naturh. Hofmus. Wien *26*: 336.

A rather slender, small species, shining black, each elytron with a yellow longitudinal stripe; wings partially yellow; femora blackish, legs otherwise yellow; male forceps long, only slightly curved and with inner teeth, pygidium long, tapered distally (Fig. 45); forceps of female slender, much closer together, and without inner teeth.

SURINAM: Paramaribo, Combé, at light, May 1961 (1 ♀) D. C. Geijskes.

Length: body 3.25 mm, forceps 0.75 mm.

Recorded from Panama, Bolivia, and Brazil. The present specimen is the first known from the Guyanas.

Although the present specimen is a female and is not as distinctive as the male, it agrees very well with specimens of this species in the British Museum, and in the Manchester Museum.

32. Microvostox parvus (Burr)

Spongovostox parvus BURR 1912, Ann. naturh. Hofmus. Wien *26*: 336 (Surinam, Guyana).

Microvostox parvus (Burr) HEBARD, 1920, Proc. Acad. nat. Sci. Philad. *1920*: 346 (Guyana).

A small, rather stout species, brightly shining; head black, pronotum dark brown, elytra and wings dark brown or brown, the latter with a triangular yellow spot basally; legs yellowish-brown; abdomen dark brown or reddish; male forceps gently curved, without inner teeth, pygidium large, rather broad (Fig. 46); female forceps slender, not so widely separated as those of the male.

Length: body 3.5 mm; forceps 1.5 mm.

Apart from Surinam and Guyana, this species is apparently only recorded from Costa Rica.

33. Microvostox equatoria (Burr)

Labia equatoria BURR 1899, Ann. Mag. nat. Hist. (7) *4*: 254.

A small slender, brightly shining species; head black, pronotum yellow, shaped as Fig. 29; elytra and wings dark brown or lighter, the disc of elytra and base of wings yellow; abdomen reddish-brown; legs yellow; male forceps Fig. 47.

SURINAME: Paramaribo, Cultuurtuin, 8.VIII.1938 (1 ♀); coll. D. C. Geijskes. Length: body 3–3.5 mm; forceps 0.5–0.75 mm.

Originally described from Ecuador. One male of this species from St. Laurent du Maroni, French Guiana, has been found in the Burr Collection.

The present specimen is referred to this species provisionally; it agrees very well with specimens examined in the Burr collection, and is identical in colour, but the pronotum of the present specimen is more transverse and the posterior angles more rounded.

34. **Microvostox lucida** sp. n.

A small slender, brightly shining species.

Male (Fig. 26): Head tumid, coriaceous, reddish-yellow, narrowing posteriorly, posterior margin straight, posterior angles rounded; eyes small, much shorter than postorbital part of genae. Antennae 10-segmented in type; 1–6 brown, apex of 6, all segment 7, and most of 8 blackish-brown; segment 9 white; 10 blackish. First segment dilated, not quite as long as distance between antennal bases; second quadrate; proportions of segments 3–7 as follows: – 3rd–6.5: 4th–6: 5th–8: 6th–9: 7th–10. Distal segments more elongated, moniliform.

Pronotum smooth, prozona reddish-yellow, yellowish laterally and posteriorly, lateral and posterior margins strongly rounded. Elytra yellowish-brown, vaguely darker along sutures, lighter at sides and on shoulders; closely punctured, the punctures shallow. Wings similar to elytra in colour and texture, darker apically and lighter basally. There is a vague lighter patch which extends from the posterior margin of the elytra on to the base of the wings. Abdomen dark reddish-brown, coriaceous, slightly widened to segments 6–7; lateral tubercles small, blackish, placed well laterad; lateral setae prominent and rather isolated. Legs yellowish-brown, femora dilated.

Ultimate tergite transverse, smooth; median triangular depression near posterior margin small; one small tubercle above the base of each branch of the forceps close to posterior margin of tergite. Forceps arcuate, with a ventro-median tooth near base on each branch, reaching to the apex of the pygidium; a median tooth on each branch just beyond mid-point; forceps more or less cylindrical, dorsal surface flattened at extreme base: pygidium transverse, apex slightly

concave, angles prominent. Genitalia Fig. 27, with rather broad parameres and a long virga.

SURINAM: Wia-wia, camp 2, 26.XI.1949 (♂ holotype) D. C. Geijskes.
Length: body 6 mm; forceps 1.5 mm.

Female: As male; pronotum with sides rather more parellel; head rather less tumid; forceps slender, contiguous, pygidium triangular, truncate at apex; abdomen darker at sides near base.

SURINAME: North-East Surinam, Moengotapoe, Wia-wia, 25.VI.1948 (♀ allotype) D. C. Geijskes.
Length: body 6 mm; forceps 1.25 mm.
This appears to be distinctive, but it is closely related to other species of *Microvostox*.

35. **Microvostox ghiliani** (Dohrn)

Labia ghiliani DOHRN 1864, Stettin. ent. Ztg. *25*: 424.

A dull species, except for abdomen which is shining; head, pronotum, abdomen blackish or dark brown; elytra brown or darker, usually with a yellow longitudinal stripe, but this may be indistinct; wings dark brown; legs yellow; male forceps long (Fig. 44) with two internal teeth on each branch; female forceps short, slender, and more or less straight.

SURINAM: Paramaribo, Combé, at light, 7.VIII.1942 (1 ♂); 3.II.1944 (1 ♂); 3.XI.1952 (1 ♀); 20.IX.1940 (1 ♀); 2.VI.1941 (1 ♂); 11.VIII.1946 (1 ♀); Corantyn, Coeroeni eil., 11.VIII.1959 (1 ♀); Koffiekamisa, Lawa, 28.VIII. 1959 (1 ♀); District Nickerie, Corantyn River, Coeroeni isle, VIII.1959 (1 ♀). All coll. D. C. Geijskes.
Length: body 4.5–5.5 mm; forceps 2–2.5 mm (male), 1–1.25 mm (female).
These specimens are the first known from the Guyanas. Elsewhere it has been recorded from Panama, Guatemala, Venezuela, Brazil, and Ecuador.

36. **Microvostox chopardi** Hebard

Microvostox chopardi HEBARD 1920, Proc. Acad. nat. Sci. Philad. *1920*: 346 (French Guiana).

Head dull black, pronotum brownish-black, with a wide lateral and posterior white margin; elytra blackish-brown, lighter on

shoulders; wings blackish-brown on sutural margin rest yellow or white; abdomen blackish, reddish mesad; legs brown.

SURINAM: Paloemeu, Apetina, in luggage, 22.III.1952 (1 ♀) D. C. Geijskes.

This specimen is provisionally referred to this species, which previously was known only from the single type male. The present specimen agrees well with the original description and in shape corresponds with the figure given by HEBARD (1920).

FORFICULIDAE

Specimens of this family are usually recognised by the bilobed second tarsal segment. The species in the present collection belong to either the genus *Doru* (Forficulinae) or the genus *Dinex* (Opisthocosmiinae), and have proved to be most interesting. Two new species of *Dinex* are described and figured.

The Keys to species are given under each of the genera and each key includes some species not yet known from the Guyanas, but which may occur in the area. These species are indicated by means of asterisks.

KEY TO SUBFAMILIES

1. First antennal segment short, strongly dilated distally, shorter than the distance between the antennal bases . . Forficulinae
– First antennal segment long, not strongly dilated, as long as or longer than the distance between the antennal bases. . . . . Opisthocosmiinae

FORFICULINAE

Doru Burr

24 specimens belonging to this genus are amongst the collection made by Dr. GEIJSKES, and these specimens consist of two types. In one type the specimens have short elytra, no visible wings, and the male forceps have a ventro-median tooth on each branch towards the apex (Fig. 67). In the other type the specimens have normal elytra and wings, and the male forceps lack the ventro-median tooth

(Fig. 71). All the specimens are similar in general colouration, being blackish, with the elytra yellow and the sutures darkened.

The general blackish colouration suggested that these specimens were *Doru lineare*, but an examination of the male genitalia of both groups showed that they were nearer to *D. luteipenne*. The parameres of *lineare*, as understood by Burr (1916) are very wide (Fig. 68) whilst those of the present specimens are much more slender (Fig. 69), being rather similar to those of *luteipenne* (Fig. 70).

The specimens without teeth on the male forceps are referable to *D. californica* (Dohrn), first described from California, which BURR (1911, p. 79) synonymized with *lineare*. The male genitalia, however, shows that *californica* is specifically distinct.

The Surinam specimens with teeth on the male forceps, which, from the male genitalia, appear to be identical with *californica*, are provisionally referred to *D. taeniata* Dohrn, although BORMANS (1893) figured this species as being fully winged. The presence or absence of wings is not necessarily significant, as the present specimens show, and until an examination can be made of the type of *taeniata*, if this is possible, the identity of this species cannot be settled entirely.

Accordingly the present specimens are referred to *taeniata*: the specimens without visible wings and with teeth on the male forceps are considered as typical *taeniata*, whilst the specimens with normal elytra and wings but without teeth on the male forceps are referred to *taeniata* var. *californica*.

KEY TO *Doru*

1. Almost entirely blackish or dark brown; elytra unicolorous dark brown; wings yellow or whitish (Venezuela) . . . . . *leucopteryx* Burr*
– Elytra reddish-yellow, darkened along sutures; abdomen blackish or reddish-brown 2

2. Head and abdomen black; abdomen strongly punctured; pronotum transverse, all margins almost straight (Fig. 72); male parameres wide (Fig. 68). . . . . *lineare* Eschscholtz

- Head reddish-brown, or darker, but rarely black; abdomen black or reddish-brown; abdomen less strongly punctured; pronotum less transverse or with posterior margins strongly rounded; male parameres slender 3

3. Head, pronotum, elytral sutures, and abdomen reddish-brown; posterior margin of pronotum strongly rounded (Fig. 74); male parameres shorter, more evenly curved (Fig. 70) (widely distributed in Neotropical Region) . . . . . *luteipenne* Serville*
- Head, pronotum, elytral sutures darker, abdomen black; posterior margin of pronotum almost straight (Fig. 73); male parameres less evenly curved and longer (Fig. 69) 4

4. More slender; male forceps without a tooth on inner margin of each branch (Fig. 71) . . *taeniata*, var. *californica* Dohrn
- Broader in shape; male forceps with a tooth on inner margin of each branch (Fig. 67). . . . . *taeniata* Dohrn

37. **Doru lineare** (Eschscholtz)

Forficula linearis Eschscholtz 1822, Entomogr.: 81.
Doru lineare (Eschscholtz) Boeseman 1954, Verh. Zool. Leiden, 21: 104 (Surinam).

Elytra, and wings when present, yellow; legs yellow; head, pronotum, a broad band along wing and elytral sutures, and abdomen black; male forceps similar to Fig. 67; female forceps contiguous, without teeth; pronotum fig. 72. Male genitalia with very wide parameres (Fig. 68).

Length: body 10–12 mm; forceps 2.5–4 mm.

The above record appears to be the first from the Guyanas, but it is a widely distributed Neotropical species, extending southwards from the southern part of the United States to Brazil and Argentine.

*) Not yet recorded from the Guyanas.

38. **Doru taeniata** (Dohrn)

Forficula taeniata DOHRN 1862, Stettin. ent. Ztg. *23*: 230.

Similar to *D. lineare* but rather lighter in colour on the head and pronotum; the abdomen is much less strongly punctured and the pronotum longer and less broad (Fig. 73).

SURINAM: Plantation Pieterszorg, on flowers of rice, 1.IX.1940 (1 ♀); Paramaribo, Cultuurtuin, 19.VIII.1957 (1 ♂); Plantation Rust en Werk, on flowers of grasses, 5.I.1941 (2 ♂); Lelydorp, Bergenshoopweg, on flowers of *Paspalum*, 17.I.1941 (1 ♀); all coll. D. C. Geijskes. District Suriname, Paramaribo, Combé, in orchard garden 16.I.1965 (1 ♂) Mrs. E. Geijskes.

Length: body 9–12 mm; forceps 2.5–4 mm.

This species has apparently been confused with *lineare* in the past so its distribution is not exactly known.

38a. **Doru taeniata** var. **californica** (Dohrn)

Forficula californica DOHRN 1865, Stettin. ent. Ztg. *26*: 85.

Similar to typical *taeniata* but more slender, apparently always with normal elytra and wings and without a tooth on the male forceps.

SURINAME: Brokopondo, 9.IV.1966 (1 ♂); 11–20.III.1966 (1 ♂); in forest, 5.IX.1965 (1 ♀) G. F. Mees. Plantation Morgenstond, at light, 25.V.1959 (1 ♀) P. H. van Doesburg, Jr.; Sara-creek, May 1941 (1 ♀) A. Hermans. Paramaribo, Combé, at light, 24.V.1941 (1 ♂); 26.VII.1957 (1 ♀); 14.VII.1964 (1 ♀); 13.III.1966 (1 ♀); Republiek, 24.II.1963 (1 ♂, 1 ♀); N.W. Suriname Expedition, Coronie, in flowers along fresh-water canal, 22.XII.1948 (1 ♂); Paramaribo, Rainville, on flowers of grass, 13.III.1965 (1 ♂, 3 ♀, 1 nymph); all coll. D. C. Geijskes.

Length: body 9–10 mm; forceps 2.25–3.5 mm.

OPISTHOCOSMIINAE

Dinex BURR

Several couplets in the key to the subfamilies of the Forficulidae in BURR (1911b, p. 68–69) tend to be misleading. The subfamily Neolobophorinae has already been discarded and the species transferred to the Opisthocosmiinae (BRINDLE, 1966b). In particular the

couplets separating the Opisthocosmiinae from the Ancistrogastrinae are unsatisfactory, as a study of the genera contained in each will show.

BURR (1907, p. 105) erected the Ancistrogastrinae for a number of American species and genera originally placed in the Opisthocosmiinae, and which he thought should be more widely separated. As the name suggests the subfamily was based on the genus *Ancistrogaster*, in which the abdomen is usually greatly widened, rather depressed, and in the males has lateral spine-like projections. BURR (1. c.) stated that the essential character of the Ancistrogastrinae was the wide transverse ultimate tergite of the species as contrasted with the narrower ultimate tergite of the species in the Opisthocosmiinae. It is doubtful however if a division can be made on such a character.

The Ancistrogastrinae therefore included the genera in which the species had a broader, depressed body, whilst those in which the abdomen was more or less cylindrical were included in the Opisthocosmiinae.

The inclusion by BURR (1911b) however, of such a genus as *Sarcinatrix*, with a narrow cylindrical body, in the Ancistrogastrinae, meant that this subfamily was very indistinctly separable. This genus was originally described and placed in the Opisthocosmiinae and remained in this subfamily in BURR (1907). In consequence HEBARD (1917b, p. 332) transferred this genus from the Ancistrogastrinae to the Opisthocosmiinae, giving detailed reasons for doing so. He also in the same paper, synonymized *Vlax* Burr with *Praos* Burr.

The male genitalia of few species are yet known, but there does appear to be some significant difference. In some species the virga has no definite vesicle, whilst in others a conspicuous vesicle is present. As far as this work has proceeded, it appears that if there are only two types of genitalia in these two subfamilies, the two types of genitalia will not correspond with the present arrangement. Until this study is completed, however, external characters must be employed. The characters of the wide abdomen cannot be satisfactorily used to separate the Opisthocosmiinae from the Ancistrogastrinae, and it appears better at present to regard these as consisting of one subfamily, the Opisthocosmiinae.

The unsatisfactory distinctions of these subfamilies have been shown in the study of the Surinam material. BOESEMAN (1954) named a specimen from Surinam as ?*Sarakas borellii*, but pointed out that owing to the lack of comparative material, this determination was only provisional. Dr. GEIJSKES has kindly loaned the specimen, which proves to be very closely related to *Dinex rehni* Burr. It is, however, specifically distinct and appears to represent a new species.

As a check, specimens of *Sarakas devians* (Dohrn) and *S. borellii* Burr in the Burr Collection were examined, and this showed that these two species were not congeneric. The former has a well marked lateral longitudinal ridge on each elytron whilst the latter species has none. In the generic characters given for *Sarakas* by BURR (1907, 1911b), it is stated that the lateral ridges of the elytra are absent, but since *devians* is designated as the type species, this statement must be in error. The absence of the lateral ridge in *borellii* means that this species must be transferred to another genus, and the only Neotropical genera of the Opisthocosmiinae (including the Ancistrogastrinae) without such ridges are *Dinex*, *Kleter*, *Osteulcus*, *Neolobophora*, and *Metresura*.

The latter three genera have very short elytra and no visible wings; only *Dinex* and *Kleter* have normally developed elytra and wings.

It should be noted that although BURR (1911b, p. 88) keys out *Kleter* as having an entire lateral longitudinal ridge on the elytra, he also states (1911b, p. 90) that this ridge is only developed in this genus at the shoulders. An examination of *Kleter* shows that this ridge is very weakly developed, and consists of a fold, not a distinct ridge, and this fold is confined to the shoulders. *Kleter* is evidently closely related to *Dinex*.

Sarakas borellii, both on external characters, and on the male genitalia, must be placed in *Dinex*.

An examination of the male genitalia of *Sarakas devians* shows this to be remarkably like that of *Tristanella tuberculata* Borelli, as figured by BURR (1916, figs. 8–9), and also like that of a *Mixocosmia* species in the Hincks Collection. *Tristanella* has short elytra which consist of mere flaps, whilst *Mixocosmia* has normally developed

elytra and wings. It is clear that *Tristanella*, *Mixocosmia*, and *Sarakas devians* are, from the structure of the male genitalia, congeneric, but further study on these genera is being undertaken. Both the former two genera were placed in the Ancistrogastrinae, even though *Mixocosmia* has a cylindrical abdomen.

At present it is proposed to synonymize *Mixocosmia* Borelli 1909, with *Sarakas* Burr 1907, the type species remaining as *devians* Dohrn. *Sarakas borellii* is hereby transferred to the genus *Dinex* Burr 1910.

The following Key includes all the Neotropical genera of the Opisthocosmiinae (including the Ancistrogastrinae) without a well defined and entire lateral longitudinal ridge. When present this ridge extends down the elytra and consists of a distinct margin, separated from the dorsal surface of the elytra by an impressed line.

The genera not yet recorded from the Guyanas are indicated by means of asterisks, and the country or countries from which they are recorded are given. A key to species is given for *Dinex*.

KEY TO ALL NEOTROPICAL GENERA OF OPISTHOCOSMIINAE AND TO *Dinex*

1. Elytra short, hardly longer than pronotum; wings absent or concealed 2
– Elytra and wings normally developed 4

2. Abdomen greatly widened, short and depressed; male forceps strongly curved, apices crossed; almost entirely black (Venezuela) (one species only, *kervillei* Burr) . . *Osteulcus* Burr*
– Abdomen cylindrical, not widened or depressed 3

3. Elytra rugose (Central America) (two species) . . . . . *Metresura* Rehn*
– Elytra smooth (Central and Southern America) (four species) . . . . . *Neolobophora* Scudder*

4. Almost entirely black; male forceps with a strong dorsomedian tooth (Brazil, Bolivia) (one species, *aterrimus* Bormans) . . . . . *Kleter* Burr*

– General colour reddish-brown or slightly darker; male forceps either with a dorsal tooth or without such a tooth . . . . . *Dinex* Burr 5

5. Wings with a large triangular yellow spot 6
– Wings entirely brown or darker, at most yellow at extreme base or apex 7

6. Antennae more slender, fourth segment longer than third; male forceps slender, almost straight (Fig. 59); male genitalia with parameres broader at tip (Fig. 64) (Mexico, Venezuela) . . . . . *D. rehni* Burr*
– Antennae broader, fourth segment slightly shorter than third; male forceps broad at base, strongly curved distally (Fig. 55); male genitalia with parameres narrower at apex . . . . . *D. geijskesi* sp. n.

7. Pronotum quadrate, with lateral and posterior margins strongly rounded (Fig. 61); male forceps Fig. 58; male genitalia Fig. 66 . . . . . *D. boesemani* sp. n.
– Pronotum quadrate or longer than broad, but with lateral margins almost straight, and posterior margin not strongly rounded (Fig. 62) 8

8. Pronotum slightly longer than broad (Fig. 62); head and pronotum dark brown; male forceps Fig. 57; male genitalia Fig. 65 . . . . . *D. americana* (Bormans)
– Pronotum quadrate or slightly transverse; head and pronotum black; male forceps Fig. 56; male genitalia as *americana* (Fig. 65) but with virga much more strongly dilated (Peru) . . . . . *D. borellii* Burr*

*) Not yet recorded from the Guyanas.

39. **Dinex americana** (Bormans)

Opisthocosmia americana BORMANS 1893, Biologia Centrali-Americana Orth. (Dermaptera) *1*: 8.

Dark brown, elytra rather lighter in colour; wings slightly yellow basally; slender, body cylindrical; male forceps with dorsal tooth (Fig. 57); those of female simple, contiguous, slender, and long. Male genitalia with wide parameres and short virga (Fig. 65).

SURINAM: Paramaribo, Cultuurtuin, IX.1949 (1 ♀); VII.1957 (1 ♂); Brownsberg, in kitchen box, 20.IX.1938 (1 ♂); Left Coppename, Zuidkreek, base camp, 14.VIII.1943 (1 ♂); Left Coppename, Wilhelmina Mts., trail I, Km. 11, 23.VIII.1943 (3 ♀). All coll. D. C. Geijskes.

Length: body 8–10 mm; forceps 4–5 mm.

These appear to be the first specimens from the Guyanas. The species is widely distributed, extending from Mexico southwards to Brazil and Peru.

40. **Dinex geijskesi** sp. n.

Dark reddish-brown, elytra lighter in colour, wings partially yellow; male forceps strongly curved laterally.

Male (Fig. 55): head tumid, broad, reddish-brown, narrowing posteriorly, posterior margin straight. Eyes equal in length to postorbital part of genae. Antennae 10-segmented in type (broken); first two segments black, segments 3–6 yellow, rest dark brown. First segment longer than distance between antennal bases; second quadrate; third about half the length of first; fourth slightly shorter than third but broader; fifth a little longer than third; sixth and succeeding segments becoming narrower and more elongated.

Pronotum transverse, smooth, lateral and posterior margins well rounded, blackish, but with wide lateral and posterior whitish borders.

Elytra smooth, twice as long as pronotum laterally, brown; lateral ridge absent; posterior margin concave; wings longer than pronotum, yellow, with wide brown margins. Legs yellow, short, tibiae as long as femora; tarsi much shorter than tibiae.

Abdomen dilated to segments 6–7 thence narrowed, cylindrical or almost so; lateral tubercles on fourth segment prominent and black;

surface punctured on segments 1–3, remainder smooth; ultimate tergite transverse, smooth, slightly depressed medially on posterior margin, and with a short longitudinal median furrow. At each side of the ultimate tergite is a short projection; penultimate sternite with posterior margin evenly rounded. Forceps cylindrical and widely separated at base, diverging; this basal part ending in an internal tooth, and with small teeth on ventro-median margin; distal part of each branch sharply curved mesally, and of unequal thickness; male genitalia with narrow parameres, virga simple, curved basally (Fig. 63).

SURINAME: Tafelberg, camp on East Ridge, 1.IV.1958 (♂ holotype) D. C. Geijskes.
Length: body 8 mm; forceps 3 mm.
Female: unknown.
I have much pleasure in naming this species after Dr. D. C. GEIJSKES.

This species appears to be closely related to *Dinex rehni*, according to the structure of the male genitalia: the male forceps are of an unusual shape for this genus, and the species could well be a mountain species, possibly localised in the areas to the south-west in the Guyanas.

41. **Dinex boesemani** sp. n.

? *Sarakas borellii* Burr, BOESEMAN 1954, Verh. Zool. Leiden *21*: 108.

Similar to *americana*, but with the pronotum different in shape. General shape as for *D. geijskesi* (Fig. 55) but forceps much different in shape (Fig. 58).

Male: head tumid, dark brown, narrowing posteriorly; posterior margin concave; surface slightly depressed along sutures. Eyes large, larger than length of postorbital part of genae. Antennae broken, 6-segmented (left), 5-segmented (right); brown, segments 3–4 yellow. First segment longer than distance between antennal bases, hardly dilated distally; second segment quadrate; third about two-thirds as long as first; fourth equal in length to third; fifth and sixth longer, more moniliform.

Pronotum dark brown, smooth, dull, lateral and posterior mar-

gins rounded (Fig. 61). Elytra twice as long as pronotum, smooth, without a lateral ridge, dull, brown, posterior margin truncate. Wings dark brown, lighter at extreme apices; equal in length to pronotum. Legs yellowish-brown, short, especially tarsi, which are much shorter than the tibiae.

Abdomen dilated to segments 7–8, thence slightly narrowed; dark reddish-brown; segments 1–4 punctured on anterior half, rest of segments smooth; ultimate tergite transverse, posterior margin angular, the part between the bases of the forceps projecting in the form of a horizontal ridge; on each side is a triangular projection, rounded apically, as in *geijskesi*, but rather less prominent.

Forceps remote at base, arcuate basally, straight and parallel distally, the former part with a strong dorsal tooth on each branch, the latter part with small rounded teeth (fig. 58).

Genitalia (fig. 66) with wide parameres; virga large dilated as in *americana*, but much longer; and with associated sclerites or denticulations. The genitalia has been mounted and attached to the specimen, in this one of the parameres is missing.

SURINAME: Saramacca, second Surinam Expedition, (det. *S. devians*? Dohrn, M. Boeseman) (holotype).

Length: body 7 mm; forceps 3 mm.

Female: unknown.

It is a pleasure to be able to name this species after Dr. M. BOESEMAN, in recognition of his work in Entomology.

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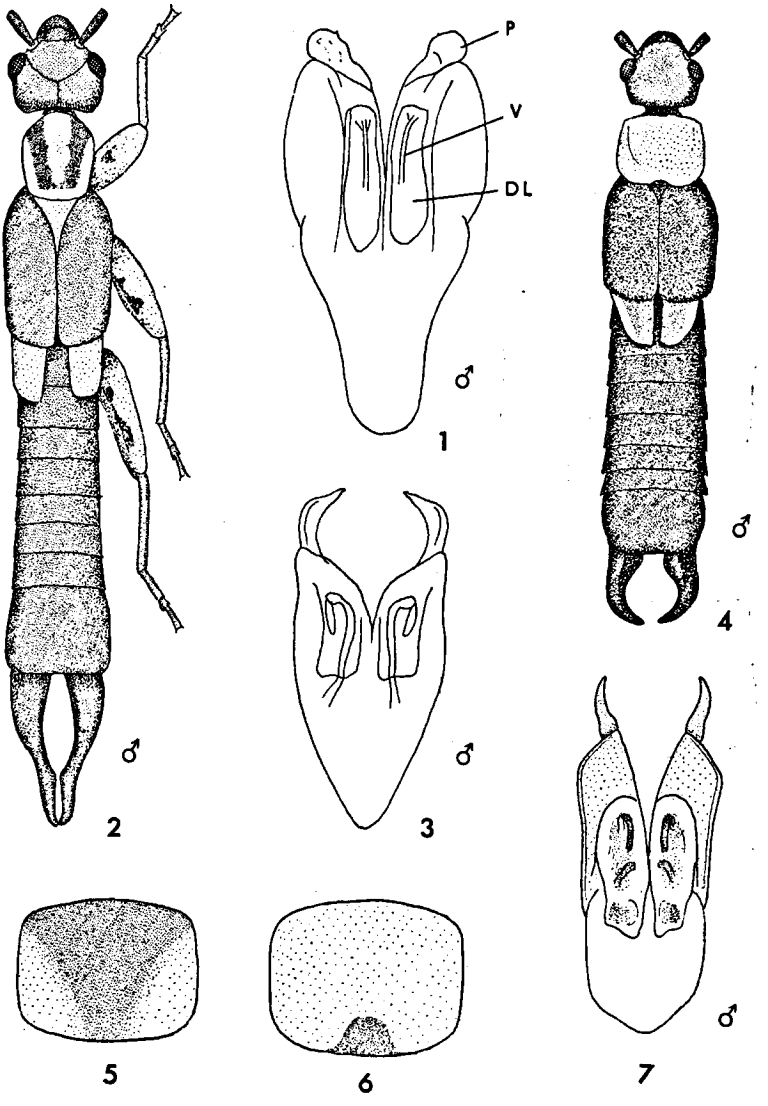
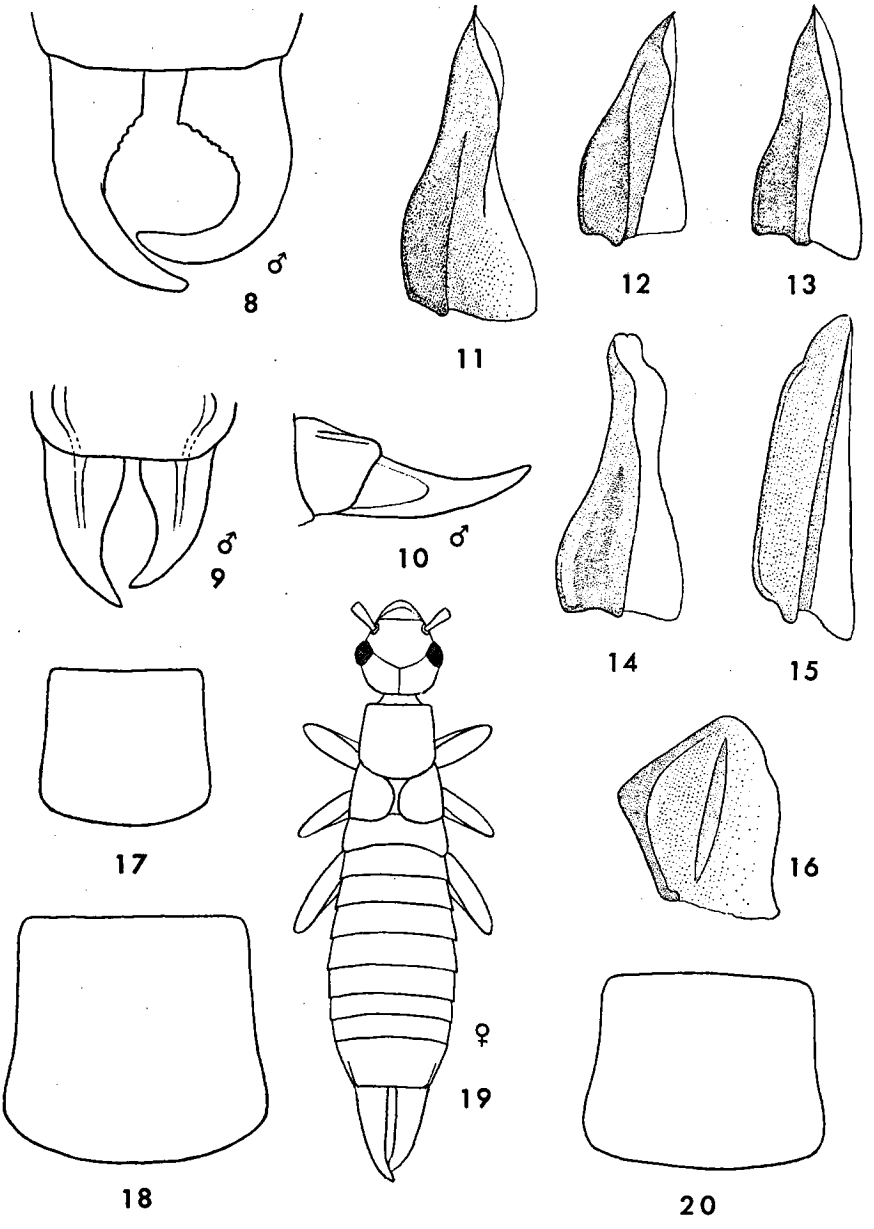
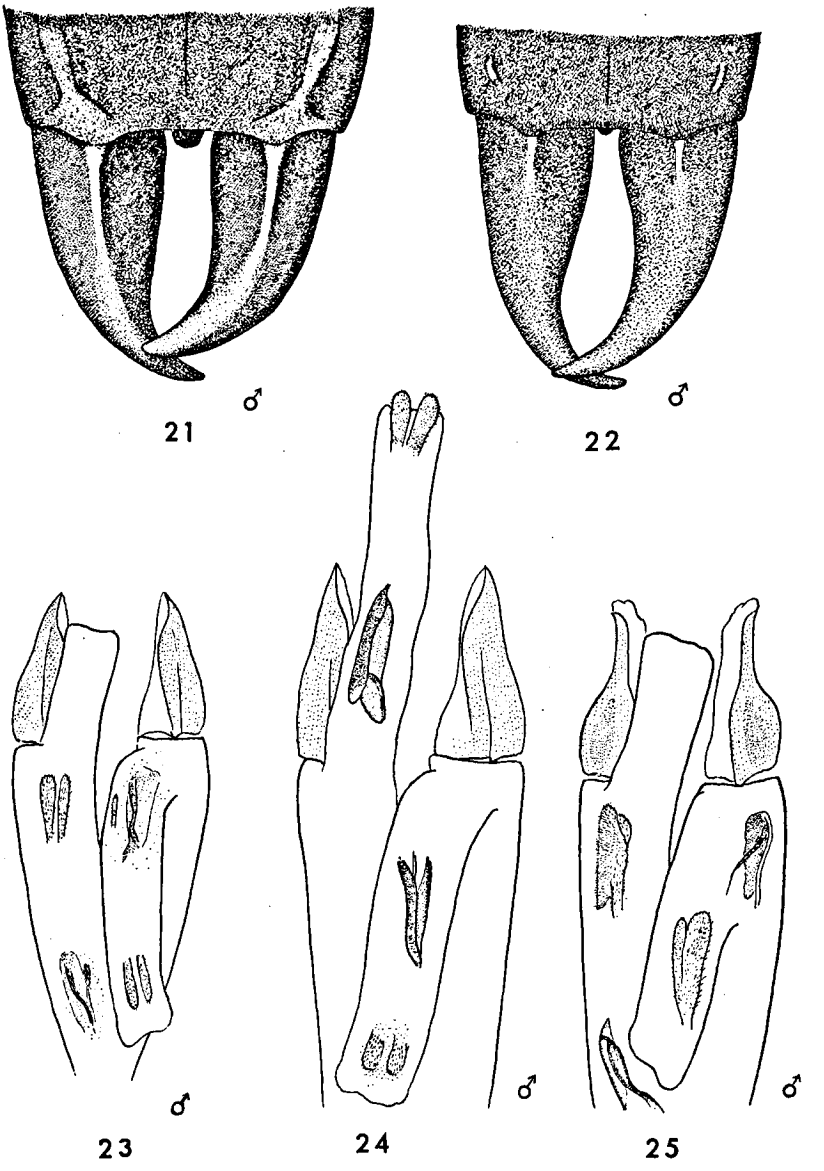
Since the above paper was written, the author has completed a revision of the subfamily Sparattinae (Labiidae) (BRINDLE, *J. nat. Hist.*, in press). This affects the nomenclature of *Parasparatta nigrina* (Stål), and *Sparatta pygidiata* Kirby in the present paper. *Parasparatta nigrina* (Stål) and *P. bolivari* (Bormans) are both distinct from *dentifera* Rehn; *guyanensis* Hebard is a subspecies of *dentifera*. The specimens from Surinam are referable to *Parasparatta dentifera* Rehn ssp. *guyanensis* Hebard, as are all specimens of this type from the Guyanas. *Sparatta pygidiata* Kirby 1896, is a synonym of *Sparatta rufina* Stål, 1855, the latter name having priority.



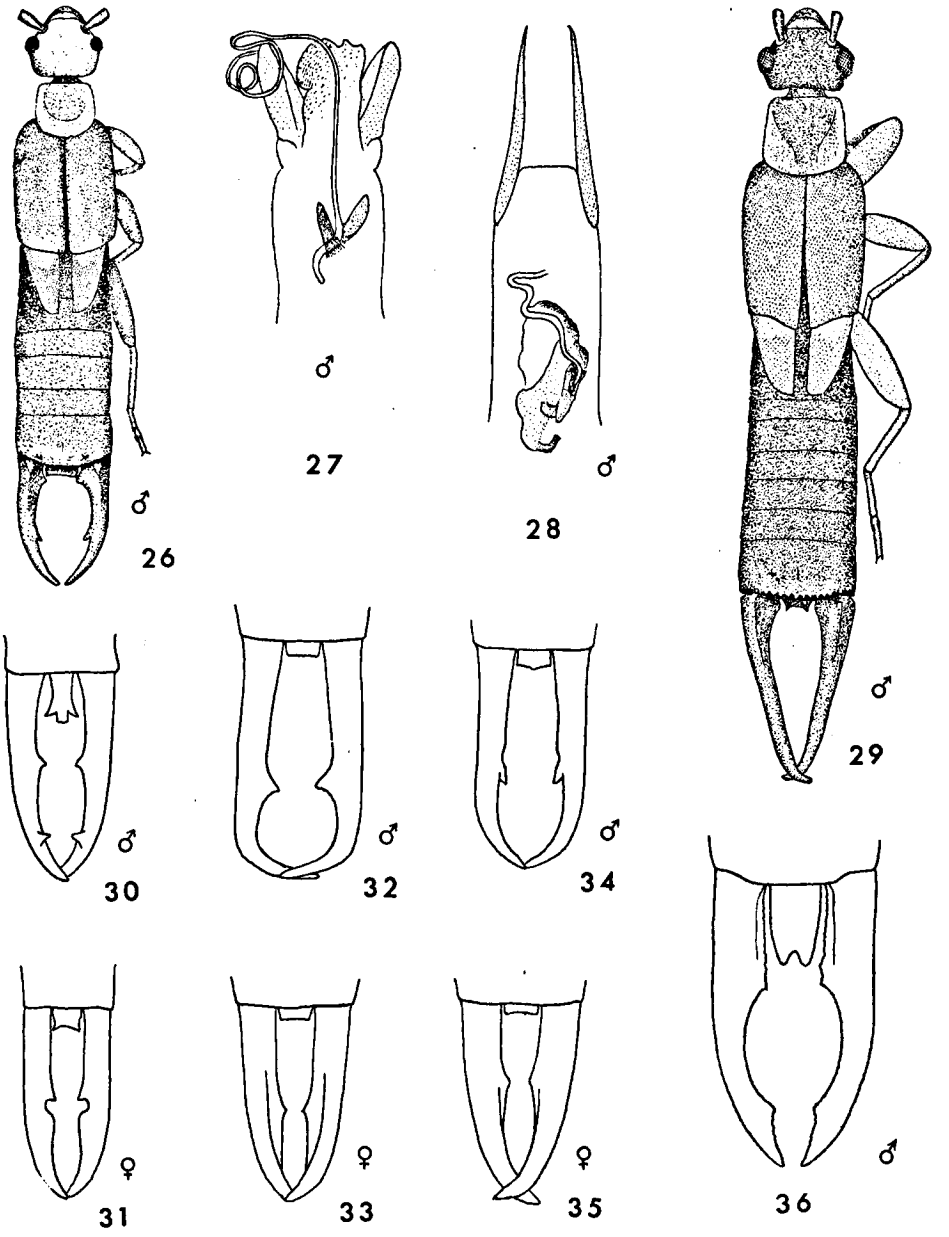
Diplatys velox – 1, genitalia. *Pygidicrana bivittata* – 2, dorsal view; 3, genitalia. *Pyragropsis geijskesi* – 4, dorsal view; 7, genitalia. Pronota – 5, *Pyragropsis emarginata*; 6, *P. thoracica* (P = paramere; V = virga; DL = distal lobe).



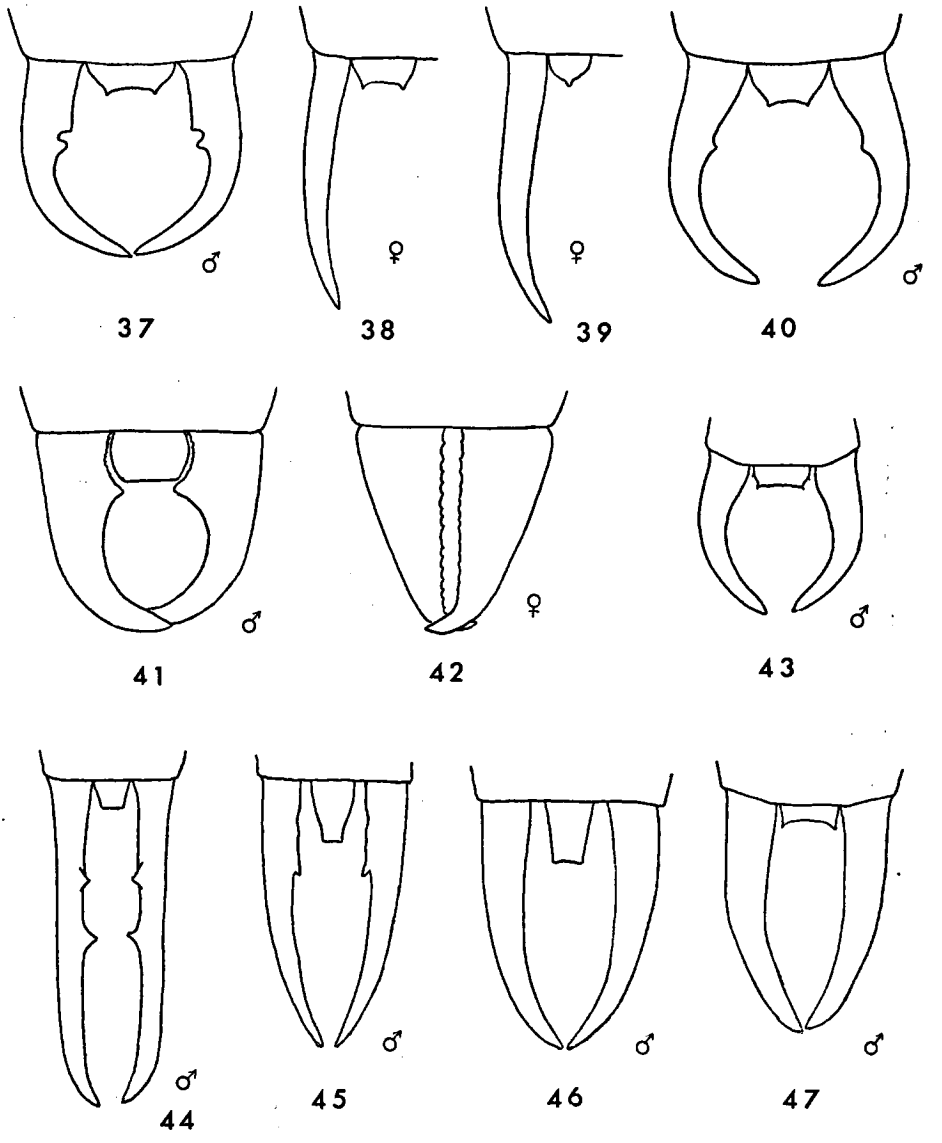
Anisolabis maritima – 8, forceps; 15, male paramere. *Metalabis saramaccensis* – 9, 10, forceps, dorsal and lateral; 12, male paramere; 17, pronotum. *M. carinata* – 11, male paramere; 18, pronotum. *M. ecarinata* – 14, male paramere; 20, pronotum. *Anisolabis surinamensis* – 13, male paramere. *Euborellia janeirensis* – 16, male paramere; 19, dorsal view.



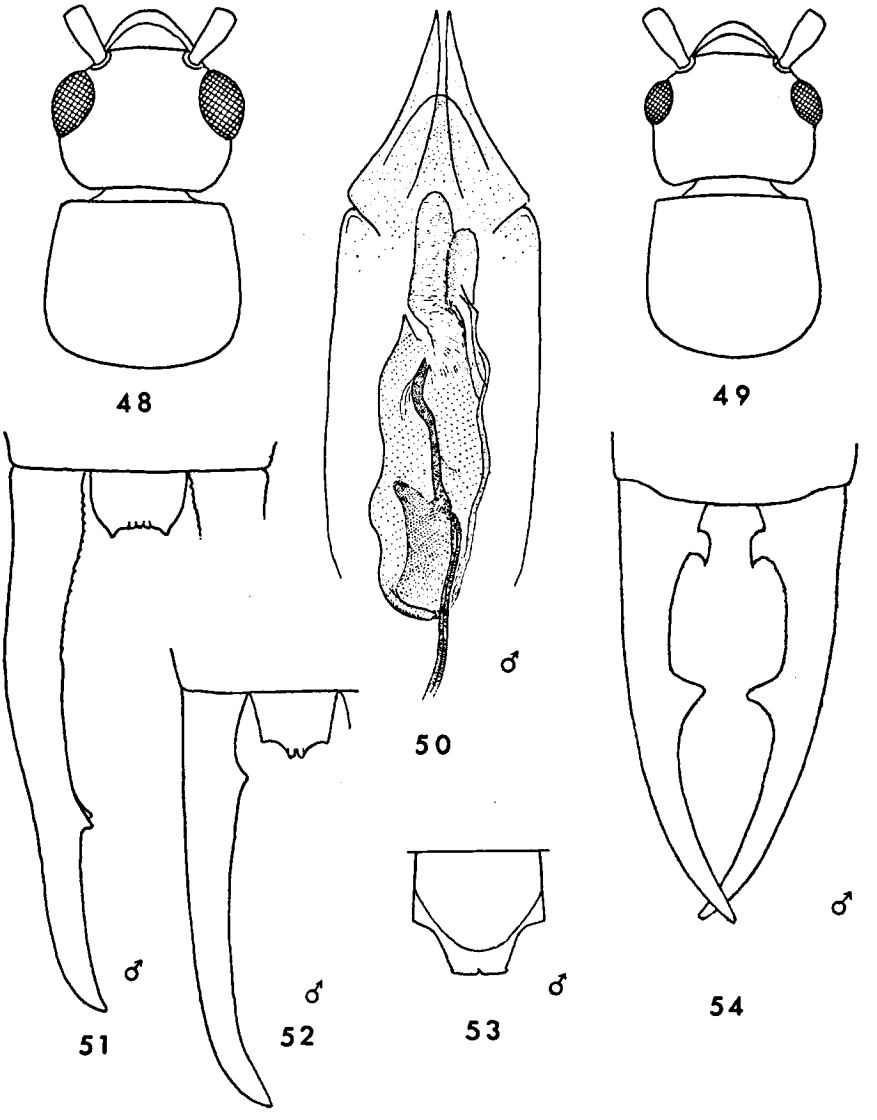
Metalabis saramaccensis – 23, genitalia. *M. carinata* – 21, forceps; 24, genitalia. *M. ecarinata* – 22, forceps; 25, genitalia.



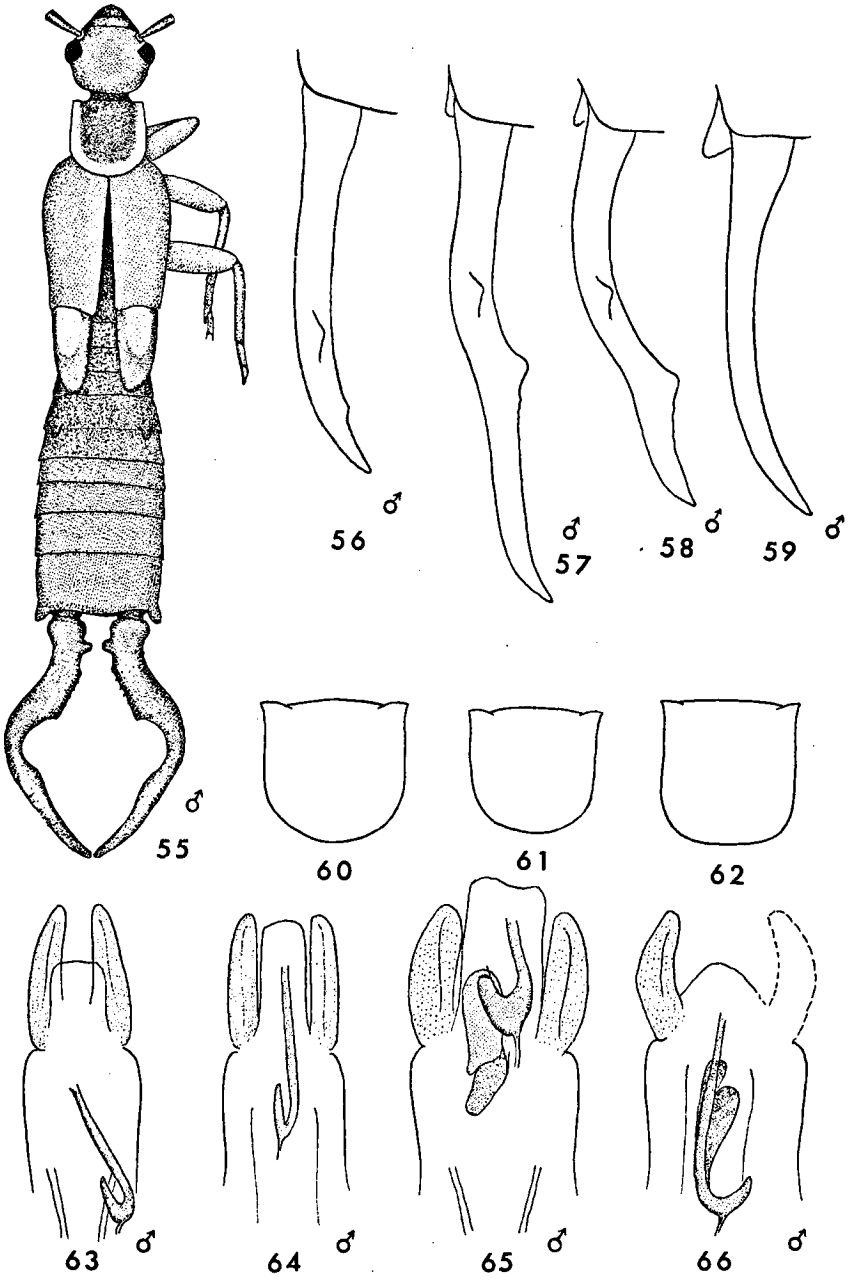
Microvostox lucida – 26, dorsal view; 27, genitalia. *Larex surinamensis* – 28, genitalia; 29, dorsal view. *Parasparatta nigrina* – 30, 31, forceps. *Sparatta pygidiata* – 32, 33, forceps. *S. semirufa* – 34, 35, forceps. *Larex rogersi* – 36, forceps.



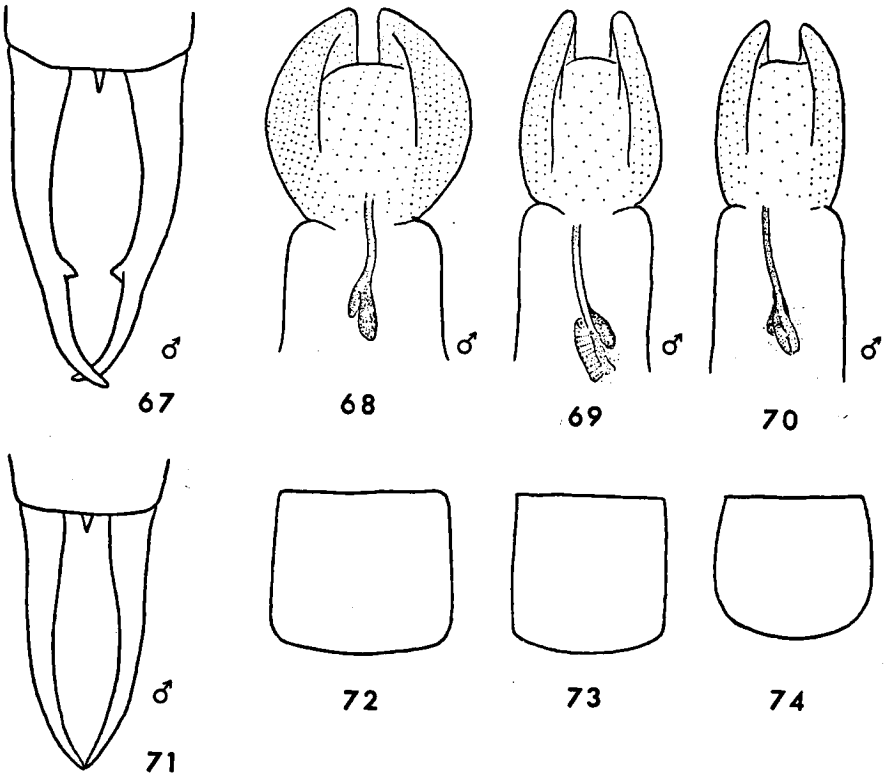
Forceps – 37, 38, *Labia arcuata*; 39, 40, *L. dorsalis*; 41, 42 *L. curvicauda*; 43, *Microvostox chopardi*; 44, *M. ghiliani*; 45, *M. alter*; 46, *M. parvus*; 47, *M. equatoria*.



Vostox brunneipennis – 48, 49, head and pronotum; 50, genitalia; 51, 52, forceps.
Purex formosus – 53, pygidium; 54, forceps (after HEBARD 1920).



Dinex geijskesi – 55, dorsal view; 63, genitalia. *D. borellii* – 56, forceps. *D. americana* – 57, forceps; 62, pronotum; 65, genitalia. *D. boesemani* – 58, forceps; 61, pronotum; 66, genitalia. *D. rehni* – 59, forceps; 60, pronotum; 64, genitalia. [right half only of forceps shown in 56–59]



Doru lineare – 68, genitalia; 72, pronotum. *D. taeniata* – 67, forceps; 69, genitalia; 73, pronotum. *D. taeniata* var. *californica* – 71, forceps. *D. luteipenne* – 70, genitalia; 74, pronotum.