

INSECTS OF MICRONESIA  
DIPTERA: NERIIDAE  
AND MICROPEZIDAE

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# INSECTS OF MICRONESIA

## Diptera: Neriidae and Micropezidae (Tylidae)<sup>1</sup>

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### INTRODUCTION

The United States Office of Naval Research, the Pacific Science Board (National Research Council), the National Science Foundation, Chicago Natural History Museum, and Bernice P. Bishop Museum have made this survey and publication of the results possible. Field research was aided by a contract between the Office of Naval Research, Department of the Navy, and the National Academy of Sciences, NR 160-175.

I am indebted to J. Linsley Gressitt for material from Bishop Museum, Kyushu University, and the National Institute of Agricultural Sciences, Tokyo, to Curtis W. Sabrosky for the material from the United States National Museum, and to Marshall Wheeler for material from his collection. I did not receive Micropezidae material from the United States National Museum because the Micronesian Tylidae material preserved there has been studied and published by Steyskal [1952, U. S. Nat. Mus., Proc. 102 (3294)].

The following symbols indicate the museums in which specimens are stored: US (United States National Museum), CM (Chicago Natural History Museum), BISHOP (Bernice P. Bishop Museum), KU (Kyushu University), NIAS (National Institute of Agricultural Sciences, Tokyo), and MCZ (Museum of Comparative Zoölogy).

The line drawings, except those of the wings, were made by the author: 5× ocular and the 8× objective of a Zeiss binocular microscope, and camera lucida were used. The wing drawings were made by Dorothy Rainwater.

Abbreviations used throughout this report are as follows. Cephalic bristles: *orsa*, anterior upper orbitals; *orss*, superior upper orbitals; *occe*, outer occipital cilia; *vti*, inner vertical; *vte*, outer vertical; *pvt*, postverticals; and *ge*, genal bristle. Thoracic bristles: *npl*, notopleural; *prpl*, propleural; *pp*, propleural

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<sup>1</sup> This represents, in part, Results of Professor T. Esaki's Micronesian Expeditions (1936-1940), No. 97.

\* Deceased April 28, 1958.

hairs; *mpl*, mesopleural; *st*, sternopleural; *sa*, supraalar; *pa*, postalar; *ia*, intralar; *sc*, scutellar; and *dc*, dorsocentral. Wing veins:  $R_{2+3}$ , second vein;  $R_{4+5}$ , third vein;  $M_1$ , fourth vein; *Ta*, anterior cross vein; *Tp*, cross vein; and  $Cu_2$ , anal cross vein.

This report covers relatively abundant material on the Neriidae from the Mariana Islands and the principal high islands, and many of the atolls of the Caroline and the Marshall Islands. No material was available from the Volcano and Gilbert Islands, Marcus, Wake, Ocean, or Nauru, and as yet no Neriidae are known from these islands. Approximately 300 specimens of this small family of acalyptrate flies were studied from Micronesia.

The first attempt to bring together the published information on the genera and species of the Neriidae was made in the revision by Hennig (1937, Stett. Ent. Zeitung 98). He listed only two species described from Micronesia as follows: *Telostylinus longicoxa* (C. G. Thomson) from "Insula Ascension" and *T. luridus* Enderlein from Jaluit Atoll, Marshall Islands. Without doubt, *T. luridus* is a synonym of *T. longicoxa*. The family is rather poorly represented in the Micronesian area by a single genus, *Telostylinus* Enderlein of the tribe Neriini, and by four endemic species, of which three are new to science.

As far as I know, there are only four genera of the tribe Neriini in the Australian Region (1954, Aczél, Treubia 22: 507). *Gymnonerius* Hendel with a single species (*angusticollis* Enderlein, Cape York, Queensland), *Paranerius* Bigot with a single species (*fibulatus* Enderlein, New Guinea), and *Rhoptrum* Enderlein with two species endemic to New Guinea, are very restricted in their distribution. Only the genus *Telostylinus* Enderlein is widespread. Species of this genus are dispersed throughout the Oriental and Australian Regions. In the Pacific islands, the family Neriidae is represented only by *Telostylinus*.

The geographical distribution of the four Micronesian species is most peculiar. *Telostylinus yapensis*, restricted to Yap, is the only species known from this island. *T. ponapensis* is restricted to Ponape, where it lives together with *T. longicoxa*. Incidentally, Ponape is the only known Micronesian island with two *Telostylinus* species. *T. gressitti* and *T. longicoxa* are widespread, with well-separated areas of distribution. *T. gressitti* is the only species found on the Micronesian islands from Palau to the central Caroline Islands, excluding Yap, whereas *T. longicoxa* is the only species found on the islands from the northern Marianas to the eastern Caroline Atolls, Truk, Kusaie, and the Marshall Islands.

Morphologically, *T. yapensis* seems to be as closely related to *T. ponapensis* as *T. gressitti* is to *T. longicoxa* (and both to *T. lineolatus*). However, I do not wish to propose any apparently obvious, and most probably inaccurate, explanation for this phenomenon without first studying more profoundly the distributional patterns of this family in the neighboring areas.

Flies of the Micropezidae (Tylidae) are well represented in the collection from the Bonin Islands, the southern Mariana Islands, and the principal high islands and several of the atolls of the Caroline Islands. No material is at hand from the Volcano, Gilbert, and Marshall Islands, Marcus, Wake, Ocean, or Nauru, and so far, no Tylidae are known from these islands. Approximately 200 specimens of this family of flies were studied from Micronesia.

The first attempt to bring together the published information on the genera and species of Micropezidae was made in the revision by Enderlein (1922), who lists a single species for Micronesia (Palau) under the name of *Calobata stabilis* Walker (1861), which doubtless is but a synonym of *Mimegralla albimana* (Doleschall). Hennig in the second part of his large monograph (1935, Konowia 14) lists two species as follows: the same species as that of Enderlein under the new name *Mimegralla albimana palauensis*, and *M. longiventris* (C. G. Thomson) from "Insula Ascension," and described two new species, *M. ponapensis* from Ponape and *Rainieria boninensis* from the Bonin Islands, of which *Mimegralla ponapensis* is only a synonym of *M. contraria* (Walker). In 1952 Steyskal [U. S. Nat. Mus., Proc. 102 (3294)] described a new genus (*Townesa*) and three new species (*M. perfulva*, *Townesa spinosa*, and *Crosa yapensis*) from Micronesia. In the relatively abundant material, only these six species represented the family in this area, and I think it unlikely that more species will be discovered in Micronesia.

In the Oriental and Australian Regions, only three genera of the subfamily Taenipterinae are known at present: *Grammicomyia* Bigot, *Mimegralla* Rondani, and *Mimomyrmecia* Frey, all belonging to the Rainieriini Steyskal (1947; syn. Grallipezini Aczél, 1953). *Mimomyrmecia*, with a single species (*tesselata* Frey), is endemic to the Philippines, whereas *Grammicomyia* and *Mimegralla* are widespread in both regions. However, in Micronesia, only four species of *Mimegralla* have been found, and a single species of a fourth genus of the apomorph tribe Rainieriini, *Rainieria* Rondani, which is widespread in the Neotropical, Nearctic, and Palearctic Regions. This genus, represented on the Bonin Islands by the species *R. boninensis*, here attains the eastern limits of its distribution; and on Formosa, by *R. leucochira* Czerny, attains the southern limits of its distribution. The Bonin and Volcano Islands are part of Micronesia, but their zoogeographical situation is as yet uncertain. It may be significant, however, that the only species of this family known from the Bonin Islands represents a Palearctic element.

In the Oriental and Australian Regions, seven genera of the tribe Trepidariini of the subfamily Tylinae are known, but until now only one species of a single genus, *Crosa* Steyskal, has been found in Micronesia. The species *C. yapensis* is endemic to the Palau Islands and Yap, where it occurs with *Mimegralla albimana*.

The geographical dispersion of the four Micronesian species of *Mimegralla* is remarkable. Two species, each of which represents a monotypic subgenus with an unusual morphological character, have a very reduced area of dispersal. *M. (Steyskalia) perfulva* is restricted to Ponape and *M. (Townesa) spinosa*, to Kusaie, where each lives together with *M. (Mimegralla) contraria*.

On the other hand, both species of the typical subgenus, *albimana* and *contraria*, are widespread in the Oriental and Australian Regions, though they have well separated areas of distribution in Micronesia. *M. (M.) albimana* is the only Rainieriini species found on the Mariana and Palau Islands, Yap, Truk, and the western and central Caroline Atolls. On the Palau Islands and Yap it lives together with *Crosa yapensis* (Tylineae, Trepidariini). *M. (M.) contraria* is distributed on Ponape, Kusaie, and the eastern Caroline Atolls. In Ponape, it occurs with *M. (Steyskalia) perfulva* and in Kusaie, with *M. (Townesa) spinosa*; but on the atolls it is the only known species of this family.

Table 1.—Distribution of Micronesian Neriidae and Micropezidae

	MICRONESIAN ISLAND GROUPS										Other Localities	
	Bonin	N. Mariana	S. Mariana	Caroline						Marshall		
				Palau	Yap	Caroline Atolls	Truk	Ponape	Kusaie			
<b>Neriidae</b>												
1. <i>Telostylinus gressitti</i> *				×		×						
2. <i>T. longicoxa</i>		×		?		×	×	×	×	×		
3. <i>T. ponapensis</i> *								×				
4. <i>T. yapensis</i> *					×							
<b>Micropezidae</b>												
1. <i>Mimegralla (M.) albimana</i>			×	×	×	×	×					Oriental and Australian Regions
2. <i>M. (M.) contraria</i>						×		×	×			Oriental and Australian Regions
3. <i>M. (Steyskalia) perfulva</i>								×				
4. <i>M. (Townesa) spinosa</i>									×			
5. <i>Rainieria boninensis</i>	×											Neotropical, Nearctic, Palearctic Regions
6. <i>Crosa yapensis</i>			×	×								

\* Described as new.

## SYSTEMATICS

## NERIIDAE

## KEY TO AUSTRALIAN GENERA OF NERIINI

1. Projected base of antenna not polished, dull or feebly lustrous (*Rhoptrum* group); pedicel with conspicuous inner keel..... 2
- Projected base of antenna polished and shining (*Nerius* group)..... 3
- 2(1). Postpedicel short oval, tapering into pointed apex; apical region of fore tibiae of male strikingly thickened; larger species.....**Rhoptrum**
- Postpedicel oval to long oval, terminating in a rather wide, rounded apex; fore tibiae of male normal; smaller species.....**Telostylinus**
- 3(1). Postcranium and prothorax considerably elongate, postcranium narrowing toward posterior margin of head; pedicel compressed, without inner keel; anal cell closed by a straight and perpendicular cross vein.....**Gymnonerius**
- Postcranium and prothorax only slightly elongate, postcranium never narrowing toward posterior margin of head; pedicel with conspicuous inner keel; anal cell closed by a convex and receding transverse vein.....**Paranerius**

All of these four genera have a single pair of strong notopleural bristles; only *Gymnonerius* has a weak, hair-like, fore pair.

## TRIBE NERIINI

Genus **Telostylinus** Enderlein

*Telostylinus* Enderlein, 1922, Archiv Naturgesch. A, Jahrgang 88, 5: 141, 142 (type: *Nerius lineolatus* Wiedemann; Ceylon, Siam, Indonesia, New Guinea, Queensland).—Hennig, 1937, Stett. Ent. Zeitung 98: 277.—Aczél, 1954, Treubia 22: 521.

Head (without antennae) always more or less longer than wide or high, and slightly wider than high. Frontal stripe between genovertical plates (frontal orbits) longitudinally impressed. Cephalic and thoracic bristles long and bristle-like, considerably longer than in other Neriini and in *Rhoptrum*. One to three pairs of *orsa* are represented by microscopically short and fine hairs. *Vti* always shorter and weaker than *orss*, *pvt*, and *vte* pairs; in several species *vti* pair only as long and fine as the strongest of *orsa* pairs.

Pedicel of antennae always with inner keel (*Telostyliini* keel). Postpedicel compressed, oval to long oval, narrowing into a wide, rounded apex. Arista short pubescent.

Thorax longer than wide or high, and considerably higher than wide. Mesonotum mostly vittate. Pleurae in some species entirely or mostly dark brown, bordered with a yellow vitta from superior region of postpronotum (humeral lobe) to wing base, which nearly always turns downward, sometimes reaching mesocoxa; in other species, pale, testaceous-yellow pleurae are marked with two dark-brown bands. Oblique anterior band extends from inferior region of postpronotum to procoxa, posterior band transverse, extending usually from mediotergite to metacoxa. Bands may be abbreviated or disrupted and represented only by isolated dark markings. Only one *npl*, one *sc* apical, and one *dc*, prescutellar, pair of thoracic bristles are present in all known species; there are also a *prpl*, a *sa*, and *pa* pair present. *Ia*, *mpl*, and *st* bristles always absent.

On fore legs, tibiae approximately as long as femora (table 2). On mid-legs, femora always slightly longer than tibiae. On hind legs, femora conspicuously longer than tibiae. No variability in number of tibial spurs; spur of fore tibiae absent in all four examined species (0:1:1). Tibiae always considerably longer than corresponding tarsi. Basitarsi usually slightly longer than rest of corresponding tarsi.



Table 2.—Length of Leg (mm.) in Micronesian *Telostylinus*

	FORE LEG		MID LEG		HIND LEG	
	Femur	Tibia (Basitarsus)	Femur	Tibia (Basitarsus)	Femur	Tibia (Basitarsus)
<i>Telostylinus gressitti</i>						
Male	2.98-4.23	3.02-4.09 (1.27-2.23)	3.00-4.04	2.77-3.86 (1.23-1.88)	3.11-4.34	2.86-3.86 (1.04-1.54)
Female	1.93-3.00	1.95-3.04 (0.82-1.34)	2.23-3.09	1.95-2.91 (0.66-1.25)	2.20-3.41	1.98-2.98 (0.68-1.16)
<i>T. longicoxa</i>						
Male	2.27-5.27	2.41-5.18 (1.07-2.07)	2.38-5.00	2.32-4.88 (1.04-2.07)	2.63-5.27	2.30-4.68 (0.95-1.73)
Female	2.68-3.43	2.63-3.45 (1.13-2.07)	2.85-3.62	2.66-3.45 (1.11-1.38)	2.93-3.86	2.66-3.52 (1.02-1.25)
<i>T. ponapensis</i>						
Male	2.73-3.34	3.09-3.36 (1.41-1.66)	3.30-3.63	3.20-3.52 (1.36-1.57)	3.43-3.88	3.11-3.48 (1.18-1.36)
Female	2.34-3.82	2.43-3.73 (1.16-1.70)	2.77-3.93	2.52-3.86 (1.13-1.75)	2.93-4.09	2.61-3.70 (1.00-1.61)
<i>T. speculator</i>						
Female	3.30	3.30 (1.54)	3.34	3.16 (1.54)	3.66	3.32 (1.34)
<i>T. yapensis</i>						
Female	2.32-3.09	2.41-3.23 <sup>*</sup> (1.09-1.50)	2.50-3.59	2.43-3.43 (1.09-1.41)	2.77-3.91	2.47-3.45 (0.95-1.23)

Wings considerably shorter than body. Preabdomen depressed, long oval in shape, with first and second tergites coalesced, but with first sternite separated from the second by intersegmental membrane. Male postabdomen and ovipositor of female in general as in other Neriidae.

The genus is widespread in the Oriental and Australian Regions.

#### KEY TO MICRONESIAN SPECIES OF *TELOSTYLINUS*

1. Anterior oblique dark-brown pleural band complete..... 2  
Both dark-brown pleural bands disrupted, and in place of these only scattered dark-brown markings; procoxae with one to five short, erect, spine-like, black, dorsal bristles; fore femora with a complete row of short, black obliquely placed, posteroventral spinules..... 4
- 2(1). Posterior dark-brown pleural band complete, extending from mediotergite to metacoxa..... Extralimital species: *T. lineolatus* Wiedemann; *T. dahliei* Enderlein, Bismarck Archipelago; *T. longipennis* Aczél, *T. papuanus* de Meijere, and *T. spinicoxa* Aczél, New Guinea; *T. speculator* Hennig, New Hebrides, Fiji, and Tahiti Is.  
Posterior dark-brown pleural band abbreviated (always absent on metapleuron) or interrupted, never complete..... 3
- 3(2). Both pleurotergites dark brown, mediotergite paler brown. Legs of male: Fore and mid-femora yellowish brown to brown, fore femora at middle and mid-femora distomedially may be indistinctly paler; hind femora testaceous yellow, only narrow dorsal vitta yellowish brown to brown. Legs of female: Femora brown, fore femora with a nearly median, yellow ring, mid- and hind femora each with broad, distomedian, yellow ring. Procoxae of both sexes without dorsal row of spinules, fore femora without posteroventral row of spinules or spines. Male postabdomen relatively large, cerci unusually long, nearly two-thirds as long as epandrium. Oviscape only 1.5-1.7 times longer than wide (male, female)..... *ponapensis*  
In place of posterior dark-brown band, only an isolated dark-brown spot, occupying convex inferior pleurotergite, sometimes extending over narrow adjacent region of superior pleurotergite. Legs of female: Femora testaceous yellow; apex and a narrow distomedian ring of each femur dark brown. Oviscape 1.9-2.1 times longer than wide (female)..... *yapensis*
- 4(1). Inferior region of inferior pleurotergite dark brown; whitish-yellow median vitta of mesonotum linear and usually interrupted at transverse suture. No dark-brown triangular dot at wing base (male, female)..... *gressitti*  
Inferior pleurotergite always entirely yellow, without dark spot; whitish-yellow median vitta of mesonotum never interrupted and nearly as wide as bordering dark-brown vittae. Triangle-shaped subalifer always dark brown (male, female)..... *longicoxa*

#### 1. *Telostylinus gressitti* Aczél, n. sp. (figs. 1, a; 2, a; 3).

*Male*: Body 5.3-7.4 mm. long; wing 4.1-5.1 mm. wide, 4.2-4.3 times longer than wide.

*Head*: More elongate than in *T. ponapensis* and *T. yapensis*, but much shorter than in *T. longicoxa*, 1.20-1.70 mm. long, 0.85-1.13 mm. wide, and 0.73-1.00 mm. high. Pale, testaceous yellow in profile below eyes, brown to blackish brown before and behind eyes, more or less wide, median, testaceous-yellow vitta in brown behind eye. Frons at vertex 0.30-0.43 mm. wide, frontal stripe dark testaceous yellow to yellowish or reddish brown, usually darkened on both sides along pale genovertical plates. Vertex around ocellar plate with faint whitish dusting. Eyes in profile 0.75-1.07 mm. long and 0.64-0.80 mm. high, 1.2-1.3 times longer than high and 3-4 times longer than postcranium (0.23 mm.). Mouthparts testaceous yellow, labella yellowish brown.

*Antenna*: Scape usually testaceous yellow to yellowish brown with dark-brown to blackish-brown, roundish, apicodorsal spot; pedicel mostly brownish yellow, postpedicel reddish yellow with dorsal and apical margins infuscate but, in some dark specimens from Palau Is., almost entirely blackish brown, with only the basal region of its inner side reddish yellow. Scape 0.18-0.25 mm., pedicel 0.34-0.57 (body 0.16-0.38, "inner process" 0.18-0.19) mm. long. Postpedicel elongate oval, 0.34-0.57 mm. long and 0.20-0.30 mm. wide, 1.7-1.9 times as long as wide. Thickened basal joints of arista yellowish brown to blackish brown; arista white and rather densely white pubescent, only its apical one-fourth to one-third dark brown and sparsely dark brown pubescent; pubescence short and shining.

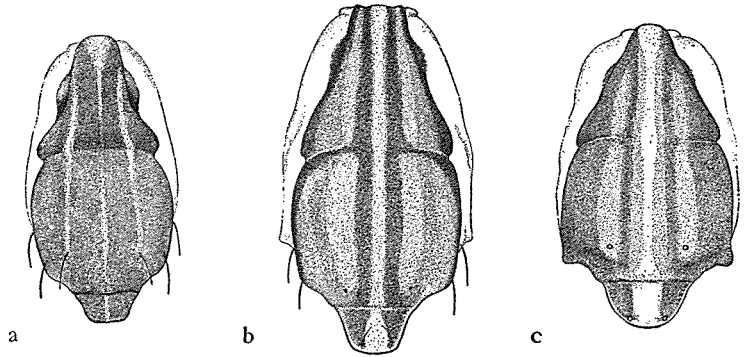


FIGURE 1.—Dorsal view of mesonotum: a, *Telostylinus gressitti*; b, *T. longicoxa*; c, *T. ponapensis*.

*Head bristles*: Shining black, one or two short, fine, erect, hair-like *orsa*, posterior pair and *vti* pair subequal, anterior pair, if present, microscopically small; one erect and slightly divergent *orss*; one erect, convergent, and crossing *pvti*; and one divergent *vte*, all nearly equal in length. Some short and inconspicuous *occe* bristles present.

*Thorax*: 1.6-2.2 mm. long, 0.93-1.18 mm. wide, and 1.36-1.77 mm. high. Mesonotum usually dark brown (except for lateral sides, which are as testaceous yellow as pleura) with three, fine, linear, yellowish vittae: a median one mostly interrupted at transverse suture and inconspicuous or absent behind suture; and a pair of lateral vittae on dorso-central line which do not reach anterior margin of mesonotum. In some specimens, the mesonotum is paler in color, yellowish brown, with two pairs of narrow, dark-brown vittae as well as the mentioned yellowish ones, the closely placed, nearly coherent, median pair, and a less conspicuous and less dark lateral pair on both sides of mesonotum. Pleurae pale testaceous yellow; the usual two dark-brown pleural bands in this species and in *T. longicoxa* disrupted and represented only by some brown to dark-brown markings. It is characteristic of this species that the inferior region of the inferior pleurotergite is always brown to blackish brown and that the subalifer sclerite on the pteropleuron (anepimeron) at the wing base and superior pleurotergite are pale yellow; however, in some dark specimens from Palau, the dark-brown spot of the inferior pleurotergite may extend over a narrow adjacent region of the superior pleurotergite. Mediotergite brown to dark brown.

*Legs*: Coxae pale testaceous yellow as pleurae. Coloration of femora unusually variable in this species; femora generally testaceous yellow to yellowish brown, each with dark-brown to blackish-brown tip and a narrow distomedian ring. Dark specimens from the Palau Is. have mostly brown femora with a broad, yellow subapical ring, situated between the blackish-brown tip and distomedian ring. Specimens from Faraulep and Ifaluk Atolls have testaceous-yellow femora with dark-brown, distomedian ring pale and

inconspicuous or entirely absent and with tip slightly infusate. (Palau specimens are generally darker colored, with larger and darker pleural markings, than the specimens from other islands, but the structural characters do not vary.) Tibiae yellowish brown to dark brown with darker tip, tarsi blackish brown. Tibial spurs as in all Micronesian species 0:1:1. Fore coxa in some specimens with the usual two dorsoapical bristles, in other specimens with one to five short, spine-like, black, dorsal bristles. Fore femora as

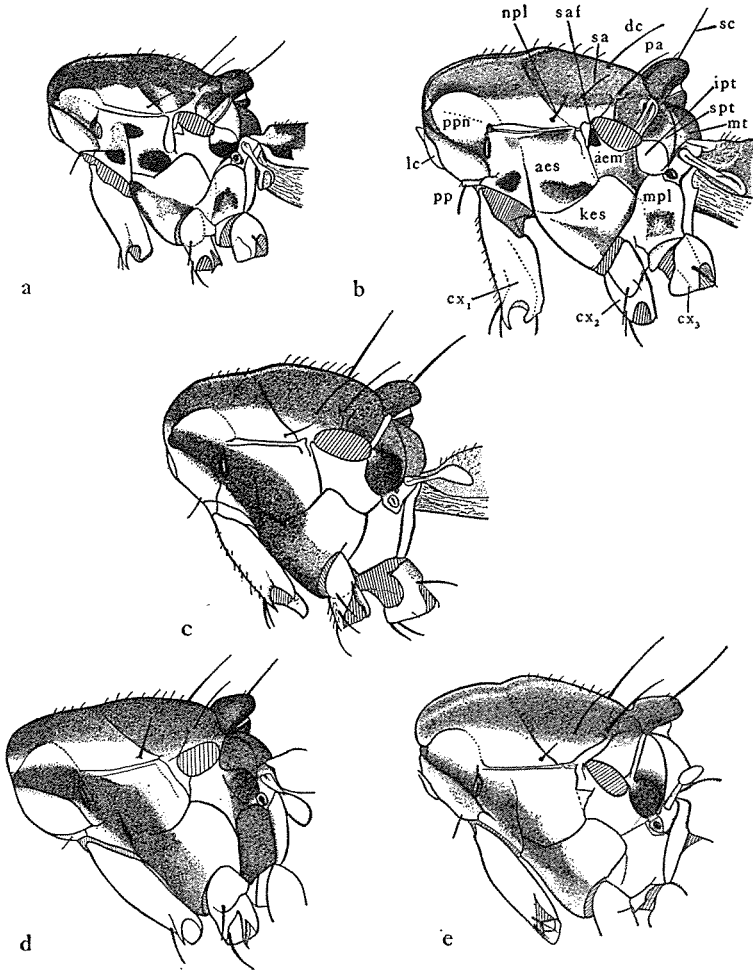


FIGURE 2.—Lateral view of thorax: a, *Telostylus gressitti*; b, *T. longicoxa*; c, *T. ponapensis*; d, *T. specularis*; e, *T. yapensis*. Abbreviations not previously defined: aem = anepimeron (pteropleuron), aes = anepisternum (mesopleuron), kes = katepisternum (sternopleuron), mpl = meropleurite ("Hypopleuron" part), cx<sub>1</sub> = procoxa, cx<sub>2</sub> = mesocoxa, cx<sub>3</sub> = metacoxa, ipt = inferior pleurotergite, lc = lateral cervical, mt = medio-tergite ("metanotum"), ppt = postpronotum (humeral callus), spt = superior pleurotergite, saf = subalifer sclerite.

in *T. longicoxa* with a complete row of short, black, obliquely placed, posteroventral spinules; mid- and hind femora each with a complete posteroventral row of short bristle-like hairs. Fore and mid-femora widest at basal third; hind femora widest near middle.

*Wing*: Slightly brownish tinged, becoming gradually darker toward costa and wing apex. On tip of  $R_{2+3}$ , there is a small but conspicuous dark cloud. First costal section 0.14 mm., second 2.25-2.66 mm., third 0.50-0.73 mm., and fourth 0.14-0.18 mm. long. Prebasal section of  $M_1$  is 0.75-0.98 mm., median 0.68-0.91 mm., and ultimate 1.93-2.27 mm. long. *Ta* situated slightly distad to middle of discoidal cell.

*Preabdomen*: 1.9-2.3 mm. long and 0.9-1.2 mm. wide; tergites testaceous yellow to reddish yellow, with a linear median and two broad, lateral vittae which in this species are rather indistinct. Some dark specimens from Palau Is. have the tergites nearly entirely blackish brown, and some light-colored specimens from Faraulep and Ifaluk Atolls have these almost entirely yellow. Lateral membranes yellowish brown to reddish brown; sternites linear with some erect hairs, paler in color.

*Postabdomen*: Shining testaceous yellow to yellowish brown, sometimes reddish, relatively small. 7+8 syntergite 0.38-0.41 mm. long; epandrium slender, 0.50 mm. long, 0.16-0.20 mm. wide at apex, 0.25-0.27 mm. wide at base; cerci relatively small, only one-third to shorter than one-half as long as epandrium; small surstyli almost linear, slightly club-shaped, and completely free as in *T. longicoxa*.

*Female*: Like male. Body 4.2-6.3 mm. long; wing 3.1-4.75 mm. long, and 0.95-1.25 mm. wide, 3.3-3.8 times longer than wide, relatively wider than in male. *Head*: 0.91-1.38 mm. long, 0.70-1.04 mm. wide, and 0.88-0.93 mm. high. Frons at vertex 0.27-0.37 mm. wide. Eyes in profile 0.61-0.88 mm. long and 0.50-0.75 mm. high, approximately 1.2 times longer than high, and 3-4 times longer than postcranium (0.18-0.25 mm.). *Antenna*: Scape 0.14-0.20 mm., pedicel 0.20-0.34 (body 0.11-0.18, "inner process" 0.09-0.16) mm. long. Postpedicel 0.27-0.38 mm. long and 0.16-0.23 mm. wide, 1.6-1.7 times longer than wide. Arista brown, except its basal one-eighth to one-seventh, which is pale brownish; pubescence on basal half of arista sparser than in male. *Thorax*: 1.25-1.8 mm. long, 0.85-1.16 mm. wide and 1.13-1.63 mm. high. *Legs*: As in male, but procoxa with only usual two dorsoapical bristles, other spine-like dorsal bristles absent in all examined specimens. All femora wear a posteroventral row of short, bristle-like hairs. *Wing*: As in male; first costal section 0.09-0.14 mm., second 1.85-2.61 mm., third 0.41-0.63 mm., and fourth 0.14-0.19 mm. long; prebasal section of  $M_1$  is 0.57-0.93 mm., median 0.54-0.80 mm., and ultimate 1.52-2.13 mm. long. *Preabdomen*: 1.5-2.2 mm. long and 0.75-1.2 mm. wide. *Oviscape*: Shining brownish yellow to reddish brown, tip testaceous yellow; a narrow median vitta dark brown; adjoining basal region of median part of ovipositor blackish brown. *Oviscape* 1.16-1.30 mm. long and 0.73-0.86 mm. wide, 1.5-1.6 times longer than wide.

Holotype, male (US 64072), Iwang, 8 m., Babelthuap, Palau Is., Dec. 19, 1952, Gressitt; allotype, female (BISHOP 2715), Fais I., Ulithi Atoll, Oct. 5, 1952, Krauss. One hundred and five paratypes (BISHOP, KU, US, CM, MCZ, seven deposited in Instituto Lillo).

PALAU. NGAANGEL (Kayangel): Dec. 15, 1952, Gressitt; May 9, 1957, Sabrosky. BABELTHUAP: Ngerehelong, May 6, 1957, Sabrosky; Ulimang, Dec. 9, 10, 14, and 19, 1947, Dybas; Emertao, Feb. 13, 1938, Esaki; Ngiwal, May 19-21, 1957, Sabrosky; Ngaremlengui, June 3, 4, 1957, Sabrosky; Melekeiok, May 23, 24, 1957, Sabrosky; Imeliik, Netkeng, June 6, 1957, Sabrosky; Ngar-dok, May 22, 1957, Sabrosky; Iwang, 8 m., Dec. 12, 1952, Gressitt; East Ngat-pang, 65 m., Dec. 9, 1952, Gressitt. KOROR: Apr. 6, 14, 18, May 31, 1953, Beardsley; Apr. 29, May 2, 1957, Sabrosky. ULEBSEHEL: 25 m., Dec. 13, 1952, Gressitt. NGURUKDABEL: Ngaremediu, May 14, 1957, Sabrosky. PELELIU: East coast, Aug. 1, 1945, Dybas; Jan. 26, 29, 1948, Dybas; north central, July

31, 1945, Dybas; Mt. Amiangel, Dec. 22, 1952, Gressitt. ANGAUR: Feb. 4, 1948, Dybas.

CAROLINE ATOLLS. NGULU: Ngulu I., Oct. 3, 1952, Krauss. ULITHI (US, BISHOP): Fassarai I., July 10, 1946, Townes; Aug. 31, 1945, Oct. 5, 1952, Krauss; Fais I., Oct. 5, 1952, Krauss; Mogmog I., July 11, 1946, Townes; Falalop, Sept. 21, 1956, B. McDaniel. SOROL: Sorol I., Oct. 4, 1952, Krauss. WOLEAI (US, BISHOP): Utage I., July 28, 1946, Townes; Sept. 30, 1952, Krauss; Falalis I., Sept. 20, 1952, Krauss. FARAULEP (BISHOP): Faraulep (Falaulep) I., Sept. 21, 1952, Krauss; Feb. 4, 1953, Beardsley. İFALUK (BISHOP): Ifaluk (Ifalik) I., July 30, Aug. 2, 4, and Sept. 4, 1953, Bates. ELATO (BISHOP): Elato I., Feb. 5, 1953, Beardsley.

DISTRIBUTION. Palau Island and western Caroline Atolls.

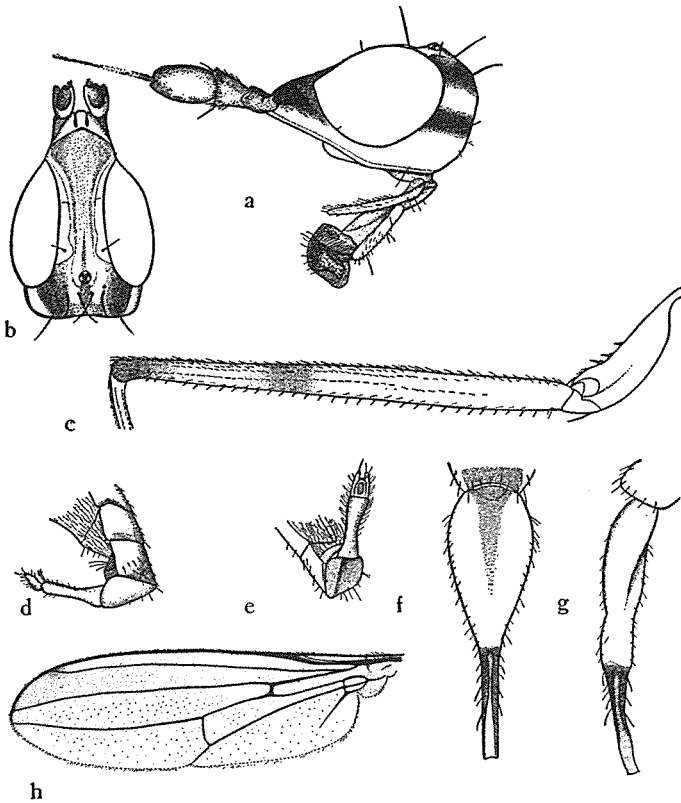


FIGURE 3.—*Telostylimus gressitti*: a, lateral view of head; b, dorsal view of head; c, posterior view of link fore femur; d, lateral view of male postabdomen; e, dorsal view of male postabdomen; f, dorsal view of oviscap; g, lateral view of oviscap; h, wing.

It was interesting to find that, within the area of distribution from west to east, the specimens of this species became lighter colored.

2. *Telostylinus longicoxa* (Thomson). (Figures 1, *b*; 2, *b*; 4.)

*Nerius longicoxa* C. G. Thomson, 1870, Freg. Eugenies Resa, Dipt., 590.

*Telostylinus luridus* Enderlein, 1922, Archiv Naturgesch. A, Jahrgang 88, 5: 144 (Jaluit, Marshall Is.).

*Telostylinus longicoxa* Hennig, 1937, Stett. Ent. Zeitung 98: 277.

*Male*: Body 5.0-9.7 mm. long; wing 3.6-6.1 mm. long and 0.90-1.56 mm. wide, 3.9-4 times longer than wide.

*Head*: 1.11-2.20 mm. long, 0.75-1.25 mm. wide and 0.63-1.09 mm. high. Male with most elongate head of all the Micronesian forms. Coloration of the head as in *T. gressitti*. Frons at vertex 0.28-0.44 mm. wide. Vertex around ocellar plate covered with faint whitish dusting. Eyes in profile 0.70-1.20 mm. long and 0.51-0.88 mm. high, approximately 1.3 times longer than high, and 3.5 times longer than postcranium (0.20-0.36 mm.). Mouthparts testaceous yellow, labella darker in color.

*Antenna*: Scape yellowish brown to dark brown; pedicel testaceous yellow to yellowish brown; postpedicel reddish yellow with apical and dorsal margins infusate. Scape 0.16-0.41 mm. long; body of pedicel in this species usually considerably elongate, 0.28-0.93 (body 0.15-0.66, "inner process" 0.13-0.27) mm. long. Postpedicel 0.34-0.63 mm. long and 0.20-0.36 mm. wide, about 1.7 times as long as broad. Arista white, except for its dark-brown to blackish-brown, shining, basal segments; basal two-thirds densely, apical third sparsely, white pubescent.

*Head bristles*: Shining black, three or four very short, fine, erect, hair-like *orsa*; *vti* pairs slightly longer and more bristle-like than hind pair of *orsa*; one erect and divergent *orss*, one convergent and crossing *pvt*, one divergent *vte* and *ge*, all subequal in length. Some short and inconspicuous *occe* present.

*Thorax*: 1.43-2.57 mm. long, 0.82-1.43 mm. wide, and 1.16-1.88 mm. high. Mesonotum yellowish brown to brown with two pairs of darker, brown to dark-brown vittae: One distinct median pair, separated by a whitish-yellow to testaceous-yellow vitta which may be as wide as a dark, bordering vitta, but mostly linear on prescutum and broader on scutum, and never interrupted; lateral pair of dark vittae more indistinct, bordering mesonotum on both sides. Also on mesonotum three narrow, light-colored vittae, the aforementioned median vitta and a testaceous-yellow to yellowish-brown lateral pair, each bordering outer side of median pair of dark vittae. Pleurae pale, testaceous yellow; in place of two usual dark-brown bands, there are only isolated dark markings, similar to those of *T. gressitti*. Characteristic that inferior pleurotergite is always entirely yellow, never marked with a dark spot; conversely, the triangular subalifer sclerite at the wing base on the anepimeron (pteropleuron), and at least superior margin of the superior pleurotergite, brown to dark brown. Mediotergite brown to dark brown, sometimes brown with a dark-brown, median vitta.

*Legs*: Coxae testaceous yellow; femora testaceous yellow to yellowish brown with darker tips and always without any dark rings. Tibiae dark brown, apices of tibiae and tarsi blackish brown. Fore coxa with the usual two dorsoapical bristles and with one to four short, black, dorsal bristles; fore femora as in *T. gressitti*, with a complete posteroventral row of short, black, obliquely placed spinules. Characteristic that posteroventral hairs in the basal one-third of the hind femora are unusually long; basal third of hind femora in both sexes with conspicuous posteroventral ciliae. Broadest are fore and mid-femora in basal one-third and hind femora near middle.

*Wing*: Slightly brownish tinged, becoming gradually darker toward costa and wing apex. Dark cloud on tip of  $R_{2+3}$  inconspicuous. First costal section 0.09-0.22 mm., second 1.98-3.43 mm., third 0.52-0.75 mm., and fourth 0.11-0.15 mm. long. Prebasal section of  $M_1$  is 0.63-1.25 mm., median (between both cross veins) 0.68-1.04 mm., and ultimate 1.68-2.95 mm. long. *Ta* situated approximately in middle of discoidal cell.

*Preabdomen*: 1.95-3.48 mm. long and 0.54-1.03 mm. wide; tergites testaceous yellow to reddish yellow, with a narrow median, and two broader lateral, dark-brown vittae; linear posterior margins of second to fifth tergites blackish brown. Lateral membranes and linear sternites yellowish brown.

*Postabdomen*: Shining testaceous yellow to reddish yellow or yellowish brown, relatively more robust than in *T. gressitti*. 7+8 syntergite 0.57-0.61 mm. long; epandrium 0.70-0.75 mm. long, 0.19-0.25 mm. wide at apex, 0.20-0.31 mm. wide at base; cerci relatively small, slightly shorter than one-half as long as epandrium. Small and linear surstyli relatively long, slightly club-shaped, and completely free.

*Female*: Like male. Body 5.6-7.3 mm. long; wing 4.1-5.3 mm. long, and 1.2-1.4 mm. wide, 3.4-3.8 times longer than wide.

*Head*: Considerably shorter than in male, 1.27-1.61 mm. long, 0.95-1.18 mm. wide, and 0.85-1.04 mm. high. Frons at vertex 0.36-0.43 mm. wide. Eyes in profile 0.85-1.03 mm.

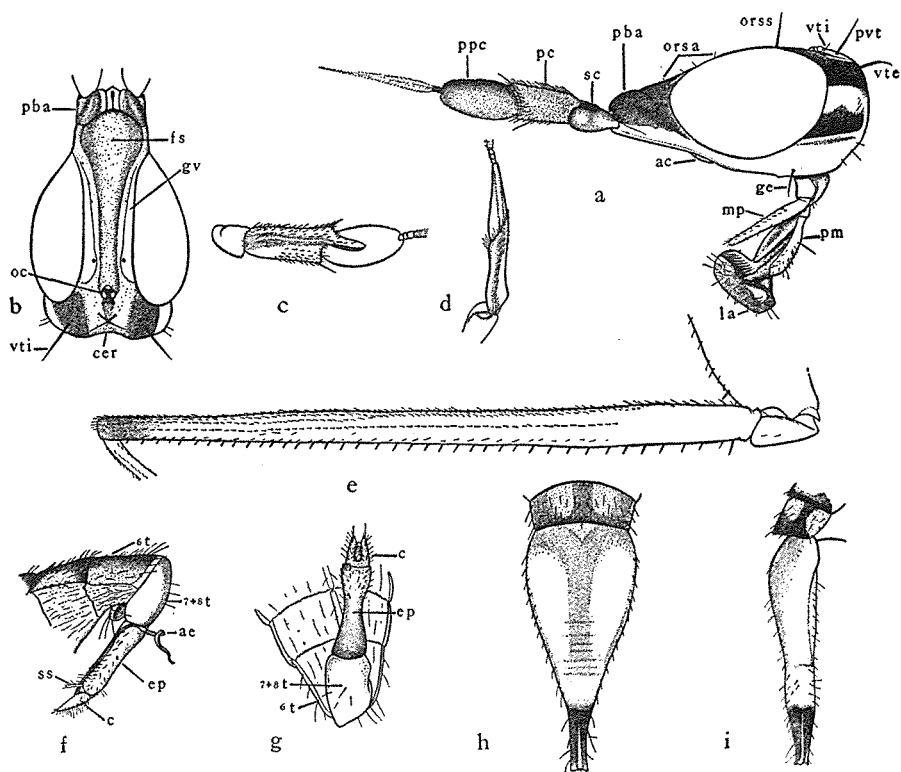


FIGURE 4.—*Telostylinus longicoxa*: a, lateral view of head; b, dorsal view of head; c, interior view of left antenna; d, dorsal view of left antenna (pedicel with *Telostylini* keel); e, posterior view of link fore femur; f, lateral view of male postabdomen; g, dorsal view of male postabdomen; h, dorsal view of oviscape; i, lateral view of oviscape. Abbreviations not previously defined: Head, cer = cerebral plate, fs = frontal stripe, gv = genovergital plate, pba = projected base of antennae (part of mf), mp = maxillary palpus, pm = postmentum, la = labella, oc = ocelli. Antennae, pc = pedicel, ppc = postpedicel with arista, sc = scape. Postabdomen, ae = aedeagus (penis + appendages), c = cerci, ep = epandrium, ss = surstyli, 6 t = sixth tergite, 7+8 t = 7+8 syntergite.



long and 0.66-0.85 mm. high, 1.2-1.3 times longer than high, and 3-4 times longer than postcranium (0.18-0.24 mm.). *Antenna*: Scape 0.18-0.23 mm. long; pedicel of female never elongate, 0.34-0.43 (body 0.18-0.25, "inner process" 0.16-0.18) mm. long; postpedicel 0.36-0.43 mm. long and 0.23-0.25 mm. wide, 1.6-1.7 times longer than wide. Arista brown with short, sparse, brown pubescence; thickened basal segments dark brown to blackish brown, basal one-fourth to one-fifth of arista pale brown to whitish. *Thorax*: 1.6-2.3 mm. long, 1.04-1.36 mm. wide, and 1.43-1.77 mm. high. *Legs*: As in male, but only procoxa with usual two dorsoapical bristles. Basal third of hind femora posteroventrally conspicuously ciliate, ciliae slightly shorter than in male. *Wing*: As in male; first costal section 0.14-0.16 mm., second 2.36-2.93 mm., third 0.57-0.73 mm., and fourth 0.11-0.20 mm. long. Prebasal section of  $M_1$  is 0.82-1.04 mm., median 0.70-0.88 mm., and ultimate 1.93-2.43 mm. long. *Preabdomen*: 2.0-2.3 mm. long and 0.9-1.1 mm. wide. *Oviscape*: Shining brownish yellow to reddish brown, tip testaceous yellow; narrow dark median vitta inconspicuous or absent; adjoining basal region of mid-part of ovipositor blackish brown. Oviscape 1.48-1.63 mm. long and 0.82-0.91 mm. wide, approximately 1.8 times as long as wide.

**HOSTS.** Adults were found on leaves in fields, in lower native forest, on coconut-palm trunks, on *Pandanus* fruit, on rotting papaya logs, on *Morinda citrifolia*, and around slightly rotten breadfruit on the ground. Many adults were taken in light traps, or swept from human feces, from rotten wood or logs. Many adults were found congregating on rotten fruit of *Artocarpus altilis* by Townes. Other labels say, "ex leaves of breadfruit" (Potts), "ex *Vigna* and *Ipomoea*" (Niering), "ex *Ipomoea*" (Potts), and "ex papaya log" (Potts); the meaning of "ex" is probably "reared from," but it may also be "swept from."

**DISTRIBUTION.** Mariana Is., eastern Caroline Atolls, Truk, Ponape, Kusaie, Marshall Is., probably introduced recently to Palau Is.

**S. MARIANA IS. SAIPAN**, 10 specimens (BISHOP, KU, US): Aug. 1951, R. Bohart; June-Aug. 1945, Hagen; Tanapag, Jan. 1949, Maehler; Matansa (Calabera), May 1940, and Garapan (Sadog Tasi), May 1940, Yasumatsu and Yoshimura; As Mahetog area, April 1945, Dybas.

**PALAU. BABELTHUAP**: Female, Melekeiok, Apr. 1936, Ono.

**CAROLINE ATOLLS. SATAWAL**: Four, Sept. 1952, Krauss, Beardsley. **EAST FAYU**: One, Oct. 1952, Beardsley. **NOMWIN**: Eight, May 1946, Oakley; Nomwin I., Feb. 1954, Beardsley. **LOSAP**: One, Oct. 1952, Beardsley. **NAMA**: One, Oct. 1952, Beardsley. **SATAWAN**: One, Satawan I., Nov. 1952, Beardsley. **NUKUORO**: One, Nukuoro I., Aug. 1946, Townes. **KAPINGAMARANGI**: Two, Hare I., Aug. 1946, Townes; Aug. 1954, Niering. **MOKIL**: Three, Jan. 1953, Gressitt. **PINGELAP**: Twelve, Jan. 1953, Gressitt.

**TRUK.** Fifty-nine (BISHOP, KU, US), Feb. 1948, Maehler. **TON (Tol)**: Mt. Unibot, 25-50 m., Dec. 1952, 32 m., Jan. 1953, and 390 m., Jan. 1953, Gressitt; Olej, Apr. 1940, and Pata (Sabote-Epin), Apr. 1940, Yasumatsu and Yoshimura; Jan. 1949, Langford. **PIS**: July 1946, Townes. **WENA (Moen)**: Feb. 1948, Maehler; Mar. 1949, Langford; 30 m., July 1946, 120 m., May 1946, 180 m., July 1946, Townes; north basin, Mt. Chukumong, Feb. 1949, Potts; south valley, Mt. Tonaachau, Apr. 1949, Potts; Mar., Apr. 1949, Potts;

Mt. Chukumong (Teroken), Dec. 1952, Feb. 1953, Gressitt; Wela, July 1939, Esaki. TONOAS (Dublon): Feb. 1948, Maehler; 300-360 m., May 1946, Townes; Jan. 1936, Ono; July 1939, Esaki; Toloas Erin, Nov. 1936, Esaki.

PONAPE. Sixteen specimens (BISHOP, KU, US): Colonia, Aug. 1946, Townes; Lehdau (Reitao-Ona-U), July 1939, Nanipil (Nampir), Jan. 1938, and Sokehs (Jokaji), July 1939, Esaki; June-Sept. 1950, Adams; Agric. Exper. Sta., Jan. 1953, Gressitt; July 1949, Owen; near sea level, Feb. 1948, Dybas; Aug. 1956, Wheeler.

KUSAIE. Thirty-five specimens (BISHOP, KU, US): Kusaie, Mt. Matante, 580 m., Feb. 1953, Clarke; Funaunpes, 1 m., Jan. 1953, Clarke; Mutunlik (Metanluk), 22 m., Jan.-Feb. 1953, Clarke; 16 m., Jan. 1953, Gressitt; "Hill 541," 165 m., Apr. 1953, Clarke; Malem, Dec. 1937, Esaki; Lele, Aug. 1946, Oakley; 100 m., Feb. 1953, Clarke; Jan. 1936, Ono; Nov., Dec. 1937, Esaki.

MARSHALL IS. (BISHOP, US). WOTHO: Four, Wotho I., Feb. 1952, Fosberg, no. 806. LAE: Ten, Lae I., Oct. 1953, Beardsley; Loj I., June 1955, Fosberg, no. 599. LIB: One, Oct. 1953, Beardsley. NAMU: Five, Namu I., Oct. 1953, Beardsley. AILINGLAPALAP: Three, Woja (Wotje) I., and Wats I., Oct. 1953, Beardsley. NAMORIK: One female, Namorik I., Sept. 1953, Beardsley. JALUIT: Three, Imroj I., Aug. 1946, Townes. KILI: One, Oct. 1953, Beardsley. EBON: One, Ebon I., Sept. 1953, Beardsley. MAJURO: Seventeen specimens, Aug. 1946, Townes; Uliga, Aug.-Sept. 1955, and Aug. 1956, Wheeler; Roguron I., Apr. 1949, Maehler; Majuro I., July 1947, Spoehr. ARNO: Twenty-five, Ine I., June 1950, Usinger; Ine I., June, Aug. 1950, La Rivers; Bikarej I., July 1950, La Rivers. MILI: One, Alu I., Oct. 1953, Beardsley.

This species was described from "Insula Ascension" by C. G. Thomson, which most probably is the same as the Asuncion Island of the northern Mariana Islands. The description of *Telostylinus luridus* Enderlein (1922), found on Jaluit Atoll, Marshall Islands, corresponds completely to this species, the unique of the examined *Telostylinus* species, represented in abundant Micronesian material from both island groups. I have no doubt that *T. luridus* Enderlein is only a synonym for *T. longicoxa* (C. G. Thomson). This species has the greatest area of dispersion of all known Micronesian species and is closely related to *T. gressitti*. The occurrence of a single specimen on Babelthuap, Palau Islands, collected by Mr. Ono so far from the area of dispersion of this species may indicate that it has been introduced to Babelthuap rather recently.

It is interesting to note that the head, the pedicel of antennae, and the thorax are considerably more elongate in the larger specimens than in the smaller specimens.

### 3. *Telostylinus ponapensis* Aczél, n. sp. (figs. 1, c; 2, c; 5).

*Male*: Body 5.9-7.2 mm. long; wing 5.1-5.2 mm. long and 1.4 mm. wide, 3.6-3.7 times longer than wide.

*Head*: Most globose of all Micronesian species, 1.27-1.50 mm. long, 1.16-1.32 mm. wide, and 0.98-1.09 mm. high; pale, testaceous yellow below eye, yellowish to dark brown before eye, continuing behind eye in form of short vitta; between this vitta and the upper, short, broad, dark-brown to blackish-brown vitta, postcranium is dark testaceous yellow. Frons at vertex 0.43-0.52 mm. wide, frontal stripe rich, reddish yellow around ocellar plate, and in most specimens brownish on both sides along wide genovertical plates. Only upper part of postcranium and genovertical plates faintly shining. Vertex around ocellar plate with brownish-white dusting. Eyes in profile 0.85-1.00 mm. long and 0.80-0.86 mm. high, only 1.1 times as long as wide, and 4-5 times longer than postcranium (0.20-0.21 mm.). Mouthparts testaceous yellow; distal half of maxillary palpi more or less conspicuously infusate; labella brown.

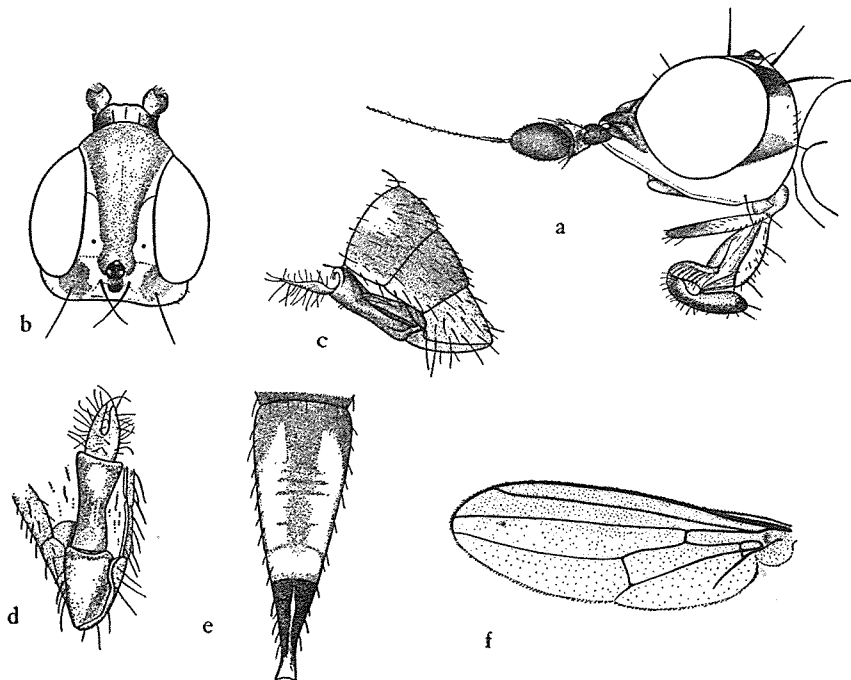


FIGURE 5.—*Telostylimus ponapensis*: a, lateral view of head; b, dorsal view of head; c, lateral view of male postabdomen; d, dorsal view of male postabdomen; e, dorsal view of oviscap; f, wing.

*Antenna*: Outer side of scape and pedicel brown to dark brown, inner side testaceous yellow; postpedicel oval, dark brown, in some specimens with yellowish basal region. Scape 0.20-0.22 mm., pedicel 0.34-0.36 (body 0.18, "inner process" 0.16-0.18) mm. long; postpedicel 0.41-0.45 mm. long and 0.25-0.30 mm. wide, 1.5-1.6 times longer than wide. Arista dark brown, with short, shining, dark-brown pubescence; thickened basal joints shiny, distad to these short basal section of arista conspicuously paler in color.

*Head bristles*: Shining black; usually two pairs of short, fine, erect *orsa*, fore pair much weaker, hair-like, hind pair only slightly shorter and weaker than *vti* pair, represented by small but conspicuous bristles; one pair of erect *orss*, one considerably divergent *vte* and a convergent and crossing *pvt*, all subequal in length. Some short *occe* bristles behind eye; *ge* conspicuous.

*Thorax*: 1.9-2.3 mm. long, 1.25-1.38 mm. wide, and 1.73-1.93 mm. high. Mesonotum laterally dark brown to blackish brown, dorsally yellowish brown with a pair of dark-brown vittae; in median yellowish-brown vitta, testaceous-yellow to whitish-yellow, linear, median vitta which is absent in *T. yapensis*. Scutellum dark to blackish brown, its median third pale yellow. Pleurae pale testaceous yellow, anterior band dark to blackish brown, in this species broader than in *T. yapensis*; posterior dark band abbreviated, not reaching metapleuron; mediotergite yellowish brown to brown, and both pleurotergites dark brown (in some specimens upper half of superior pleurotergite paler, with same coloration as mediotergite). Thoracic bristles shining black.

*Legs*: Coxae as pale testaceous yellow as pleurae; fore and mid-femora yellowish brown to brown, fore femora at middle and mid-femora distomedianly sometimes slightly and indistinctly paler; tibiae slightly darker than these femora, fore and mid-tibiae and tarsi blackish brown; hind femur in all males examined demonstrate interesting sexual dimorphism, since it is unusually widened and testaceous yellow in color; only a narrow dorsal vitta is yellowish brown to brown like the other femora. Broadest are fore femora at basal fourth, mid-femora at basal third, and hind femora near middle. Fore coxa with usual two dorsoapical bristles and sometimes with an erect stronger hair. Femora unarmed, without spines or spinules.

*Wing*: Slightly brownish tinged, becoming gradually darker toward costa and wing apex. First costal section 0.18-0.20 mm., second 2.73-2.93 mm., third 0.59-0.61 mm., and fourth 0.18 mm. long. Prebasal section of  $M_1$  0.82-1.00 mm., median 0.88-0.95 mm., and ultimate 2.30-2.41 mm. long. *Ta* situated about middle of discoidal cell.

*Preabdomen*: 2.1-2.8 mm. long and 1.1-1.2 mm. wide; tergites subshining testaceous yellow to yellowish brown, except for linear median and two broad lateral vittae which are dark brown; posterior margins of second to fourth tergites bordered by narrow, dark-brown to blackish-brown bands; fifth tergite without vittae. Lateral membranes yellowish to reddish brown; sternites linear, paler in color.

*Postabdomen*: Shining, dark reddish yellow, and relatively large; 7+8 syntergite always shorter (0.48-0.66 mm.) than epandrium, which is 0.77-0.80 mm. long, 0.25-0.34 mm. wide at apex, and 0.25-0.27 mm. wide at base; cerci unusually long and large, nearly two-thirds as long as epandrium. Basal region of surstyli united to apicolateral margins of epandrium (as in African *Chaetoneria apicalis*), but their short tip is free, subglobose.

*Female*: Like male. Body 5.3-7.6 mm. long, wing 4.3-5.8 mm. long, and 1.3-1.6 mm. wide, 3.3-3.6 times longer than wide.

*Head*: 1.13-1.59 mm. long, 1.02-1.43 mm. wide and 0.82-1.18 mm. high. Frons at vertex 0.38-0.57 mm. wide. Eyes in profile 0.80-1.02 mm. long and 0.63-0.93 mm. high, only 1.1-1.2 times longer than high, and 4-5 times longer than postcranium (0.20-0.21 mm.).

*Antenna*: Scape 0.16-0.22 mm., pedicel 0.27-0.40 (body 0.11-0.20, "inner process" 0.16-0.20) mm. long; postpedicel 0.34-0.50 mm. long and 0.20-0.30 mm. wide, approximately 1.7 times longer than wide. *Thorax*: 1.7-2.3 mm. long, 1.11-1.45 mm. wide, and 1.50-2.09 mm. high.

*Legs*: As in male, but all femora brown, fore femora with nearly median, and mid-femora with broad, distomedian, testaceous-yellow ring; hind femora wider than others but less wide than in male; broadest are fore and mid-femora at basal third and hind femora at middle. *Wing*: Characters as in male; first costal section 0.14-0.18 mm., second 2.43-3.41 mm., third 0.57-0.63 mm., and fourth 0.18-0.22 mm. long. Prebasal section of  $M_1$  0.75-1.04 mm., median 0.82-1.13 mm., and ultimate 1.88-2.63 mm. long. *Preabdomen*: 1.9-2.8 mm. long and 0.8-1.3 mm. wide; coloration and markings as in male but median, linear, dark-brown vitta in many, and wider, lateral vittae in some specimens may be inconspicuous or nearly absent. *Oviscape*: Shining yellowish to reddish brown with narrow, median, dark-brown vitta; adjoining basal region of median part of ovipositor blackish brown. Ovipositor 1.47-1.63 mm. long and 0.87-1.09 mm. wide, 1.5-1.7 times as long as wide.

HOSTS. Swept from human feces. Adults were taken also in light traps in cut native forest.

Holotype, male (US 64073), Mt. Temwetemwensekir, 180 m., Ponape, Caroline Is., Jan. 17-19, 1953, Gressitt; allotype, female (BISHOP), southeast

Nanpohnmal (Nanponmal), Ponape, Jan. 10, 1953, Gressitt. Ten paratypes (BISHOP, CM, US), all from Ponape: Mt. Dolen Nankep, 540 m., Aug. 11, 1946, Townes; southeast Nanpohnmal, Jan. 10-11, 1953, Gressitt; Mt. Temwetemwensekir, 180 m., Jan. 17-19, 1953, Gressitt; Agric. Exper. Sta., Colonia, Jan. 20, 1953, Gressitt; southeast of Nanpohnmal, Jan. 18, 1953, Clarke; Mt. Nahnalaud, 300-600 m., Mar. 19, 1948, Dybas.

DISTRIBUTION. Endemic in Ponape, eastern Caroline Is.

This species has the largest epandrium of all Micronesian forms.

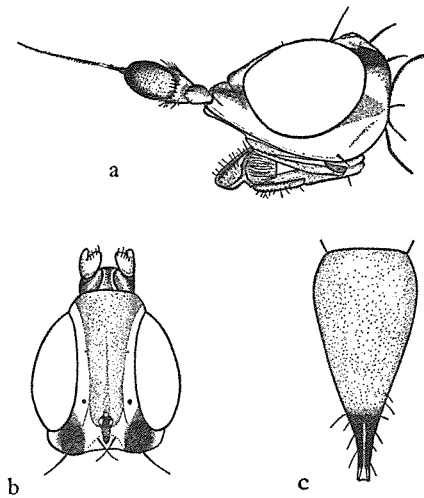


FIGURE 6.—*Telostylinus yapensis*: a, lateral view of head; b, dorsal view of head; c, dorsal view of oviscape.

***Telostylinus speculator* Hennig (fig. 2, d).**

*Telostylinus speculator* Hennig, 1937, Stett. Ent. Zeitung 98: 279 (New Hebrides).

An extralimital species. Having only two female specimens at hand which correspond completely to the original description, I prefer not to give a redescription of this species. The species was described by Hennig from Pentecost Island, New Hebrides, but seems to be widespread.

Specimens examined: Fiji, female (US), June, Stoner; Tahiti, female (US), Papeete, Dec. 31, 1948, Edgar (51, 49-5625). Very similar to the female of *T. lineolatus*.

**4. *Telostylinus yapensis* Aczél, n. sp. (figs. 2, e; 6).**

*Female*: Body 5.0-6.8 mm. long; wing 3.9-5.25 mm. long and 1.1-1.5 mm. wide, 3.5 times longer than wide.

*Head*: 1.13-1.48 mm. long, 0.86-1.22 mm. wide and 0.77-1.00 mm. high, less wide and dorsoventrally more flattened than in *T. ponapensis*, and considerably shorter than in

*T. gressitti* and *T. longicoxa*. Head testaceous yellow and faintly shining; below eyes dull, pale, testaceous yellow; short, yellowish-brown vitta before eye and continuation behind eye; pair of short, broad vittae on upper part of postcranium, small ocellar triangle, and narrow vitta behind it dark brown to blackish brown. Frons at vertex 0.30-0.46 mm. wide, frontal stripe dull, rich, reddish yellow, in some specimens brownish on both sides along genovertical plates (frontal orbits). Vertex around ocellar plate whitish dusted. Eyes in profile 0.73-0.95 mm. long and 0.57-0.80 mm. high, only 1.2-1.3 times longer than high, and 4-5 times longer than postcranium (0.18-0.20 mm.). Mouthparts testaceous yellow, labella yellowish brown.

*Antenna*: Scape and pedicel brownish yellow, postpedicel reddish yellow with apical and dorsal margins infusate; scape 0.18-0.22 mm., pedicel 0.25-0.39 (body 0.14-0.23, "inner process" 0.11-0.16) mm. long; postpedicel 0.32-0.43 mm. long and 0.23-0.30 mm. wide, short oval, 1.4 times longer than wide. Arista dark brown, with short, shining, brown pubescence; thickened basal joints shining; short basal region of arista whitish.

*Head bristles*: Shining black; *orsa* and *vti* practically absent in this species, since they are microscopically fine and short erect hairs; one erect and slightly divergent *orss*, one strongly divergent *vte* and a convergent and crossing *pvt*, all subequal in length. One *ge* present.

*Thorax*: 1.6-2.3 mm. long, 1.04-1.34 mm. wide and 1.34-1.82 mm. high; mesonotum laterally blackish brown, dorsally yellowish brown with pair of brown to blackish-brown, median vittae, very similar to that of *T. ponapensis*. Scutellum dark to blackish brown but its median third pale yellow. Pleurae pale, testaceous yellow with relatively narrow, yellowish to blackish-brown, anterior band; in place of posterior band, there is only an isolated brown to blackish-brown spot, which entirely occupies the convex inferior pleurotergite and may extend to the narrow adjacent region of the superior pleurotergite. Thoracic bristles shining black. Mediotergite pale testaceous yellow.

*Legs*: Coxae and femora testaceous yellow; apex and narrow distomedian ring of each femur dark brown; tibiae and tarsi dark brown; apices of tibiae and tarsi darker brown. Procoxa with the usual two dorsoapical black bristles. Bristles or spinules completely absent on femora.

*Wing*: Slightly yellowish-brownish tinged, becoming gradually darker toward costa and wing apex. First costal section 0.11-0.13 mm., second 2.27-3.18 mm., third 0.48-0.68 mm., and fourth 0.07-0.13 mm. long. Prebasal section of  $M_1$  is 0.76-1.11 mm., median (between both cross veins) 0.70-0.87 mm., and ultimate 1.80-2.48 mm. long. *Ta* situated slightly distad to middle of discoidal cell.

*Preabdomen*: 1.6-2.6 mm. long and 0.7-0.8 mm. wide; tergites subshining, testaceous yellow, except for a dark-brown, linear, median and two dark-brown, broad, lateral vittae; posterior margins of third to sixth tergites bordered by linear dark-brown to black bands. Sternites linear, testaceous yellow; lateral membranes testaceous yellow to reddish yellow.

*Oviscape*: 1.18-1.36 mm. long and 0.57-0.70 mm. wide, 1.9-2.1 times longer than wide, shining yellowish brown; adjoining basal region of ovipositor blackish brown.

*Male*: Unknown.

Holotype, female (US 64074), Yap, Yap Is., Aug. 1952, Krauss. Ten paratypes (BISHOP, US, two specimens in Instituto M. Lillo), Yap: near Yaptown, Yap I., July 14, 1946, Townes; Yap I., Oct. 1952, Krauss; Mt. Mataade, 95 m., Yap I., Dec. 1, 1952, Gressitt; Rumung, female, June 17, 1957, Sabrosky; Map, female, Chol, June 19, 1957, Sabrosky; two females, one at light, Gachapar, Gagil, June 19, 1957, Sabrosky; three females, Kolonia, May 21, 1957, Sabrosky.

DISTRIBUTION. Endemic in Yap group, western Caroline Is.

Closely related to *T. ponapensis*, but differs from this species by the characters given in the key to species.

## MICROPEZIDAE (TYLIDAE)

I was glad to study this material since in this way I had the chance of definitely settling the status of two misinterpreted *Mimegralla* species. There is a large amount of material at hand from Indonesia and New Guinea, kindly supplied by the authorities of the Museum Zoologicum Bogoriense of the Kebun Raya Indonesia, and by Dr. F. Keiser of the Naturhistorisches Museum Basel. Apparently all the former authors overestimated the taxonomic value of the coloration of the antennae, frons, and especially that of the legs, without taking into consideration the more reliable structural characters of the *Mimegralla* species, of which the most important are those of the male postabdomen. The existing morphological characters of some *Mimegralla* are considered first in this paper, and I intend also to settle the status of the other Oriental and Australian species of this genus.

## KEY TO THE MICRONESIAN SUBFAMILIES AND TRIBES OF MICROPEZIDAE

1. Frontal stripe mostly spindle-shaped and situated at level of genovertical plates; its anterior region more or less elevated and convex; ocellar plate usually situated in central region of frontal stripe. Antennae widely spaced, maxillary palpi long. Capitulum of halteres involute (folded upward) and spindle-shaped, apparently massive; petiole long and fine. Distal region of fifth sternite always produced into well-developed copulatory fork, which consists of pair of un-inflated, converging, apical processes, and of more or less elongated stalk. On hind margin of katepisternum (sternopleuron), there is dense vertical fan of many long and fine bristle-like hairs, lighter colored than the other shorter and stronger thoracic bristles. Epandrium conspicuously compressed, in cross section U-shaped; surstyli always absent (Taeniapterinae; type genus: *Taeniaptera* Macquart)..... 2
- Frontal stripe mostly vitta-like and usually more or less impressed between genovertical plates. Ocellar plate situated usually at vertex or at least in posterior region of frontal stripe. Antennae closely spaced, maxillary palpi abbreviated, short. Capitulum of halteres depressed and spatulate, only its narrow apical region involute; petiole short. On upper hind margin of katepisternum there are at most only two or three long, fine bristle-like hairs or one or two bristles present. Epandrium never compressed, short subhemispherical to nearly annular; surstyli always present (Micropezinae; type genus: *Micropeza* Meigen)..... 3
- 2(1). Anal cell short, the cross vein,  $Cu_2$  which apically closes this cell always shorter than petiole of this cell (type genus: *Taeniaptera* Macquart)..... **Taeniapterini**  
 Anal cell long,  $Cu_2$  at least as long as, but usually considerably longer than, petiole of this cell ( $Cu_2+An$ ). (Syn. *Grallipezini* Aczél; type genus: *Raimeria* Rondani.)..... **Raimieriini**
- 3(1). Cross vein between second basal ( $M$ ) and discoidal ( $1M_2$ ) cells,  $M_3$ , always present. Fifth sternite always produced into copulatory fork which may be strongly inflated (Holarctic *Trepidaria* sp.) and stalkless, or with only short stalk between bases of processes, or with more or less elongated stalk. Usually two or three sternopleural bristles and some hairs present, which are long, fine, and hair-like, one placed beneath the other, and lighter colored than the rest of thoracic bristles (type genus: *Trepidaria* Meigen)..... **Trepidariini**

M<sub>3</sub> completely absent. Copulatory fork never inflated, usually with long stalk, but may be absent. Single (or, exceptionally, two) bristle-like, relatively short, sternopleural bristle, which does not differ in color from the other thoracic bristles (type genus: *Micropeza* Meigen).....**Micropezini**

The tentative suggestions concerning the lines of descent and the inter-relations of the principal subdivisions of this family, offered in the following discussion, are based upon a comparative study of morphological characters and their biogeographical distribution.

The above key is much more correct than any previous one, including the key I formerly published (Aczél, 1953, Acta Zool. Lilloana 11: 488) when I did not know the Oriental and Australian forms of this family. Among the Australian Trepidariini (Tylinae), many forms may be found which are very similar to the Rainieriini (Taenipterinae) in general aspect, in having a subglobose head with ocellar plate situated near the central region of frons and with an unimpressed frontal stripe, and in having, on hind region of katepisternum, two or three long, fine, hair-like, sternopleural bristles and many shorter hairs, usually yellow to yellowish brown in color, much lighter red than the other thoracic bristles. In the Oriental and Australian Regions, both subfamilies morphologically approach one another so closely that I now retract my former suggestion (Aczél, 1953, Acta Zool. Lilloana 11: 512-513; 1954, Treubia 22: 507) to separate Taenipterinae as an independent family of Tanypezidiformes from the Tyliidae, in which more primitive characters have survived (plesiomorph) than in the other subfamily (Tylinae). Nevertheless, it may easily be distinguished from Tylinae by the characters given in the key.

On the basis of the comparative morphology, we may assume that long ago the ancestors of the Tylinae were separated from those of the Taenipterinae in the area of the Oriental and Australian Regions and that these ancestors most probably possessed surstyli and already at that time a short anal cell. The long anal cell of the recent Taenipterini (dispersed only in the Neotropical and Ethiopian Regions) is undoubtedly a plesiomorph (primitive) character which existed in the ancestors of this family long before the segregation of both subfamilies. The principal evolutionary tendencies in this family lead apparently in the following directions: The head becomes less globose and the frontal stripe impressed; the antennae become more closely spaced and the maxillary palpi shorter; the dense vertical fan of sternopleural bristle-like hairs becomes gradually sparser until only the one to two upper ones remain; the halteres become gradually less massive looking, more depressed and spatulate; the *pvt*, fore pair of *npl*, and the *dc*, except the prescutellar pair, become reduced and have already disappeared in most groups; the long anal cell becomes gradually shorter and narrower, the converging third and fourth veins tend to unite before attaining the apex of wing; the complete transverse suture tends to be interrupted in the central region of mesonotum; the head and fore region of the thorax tend to be more elongate, et cetera.



On the other hand, I am convinced that the ancestors of the Tylini were separated from those of the Trepidariini at the border of the Australian and the Antarctic-South American Regions, the  $M_3$  cross vein disappearing between the second basal and discoidal cells. Species of the Antarctic genus *Cryogonus*, Tylini, are morphologically (in the shape of the anal cell, and so forth) the most similar to the Oriental Trepidariini; they are even more plesiomorph in character than the Oriental Trepidariini, having more than one pair of *dc* bristles. In the tribe Tylini, only the Antarctic *Cryogonus formicarius* and a still undescribed Antarctic *Tylos* species possess two sternopleural bristles, one placed beneath the other; these *st* bristles, however, are bristle-like and of the same color as the other thoracic bristles. The shape and structure of the sixth sternite of the Micronesian *Crosa yapensis* is the same as that of the Neotropical *Tylos similis* Aczél (1950, Acta Zool. Lilloana 8: 274, fig. 12E), and there are no essential differences between Trepidariini and Tylini in the shape and structure of the epandrium. In both tribes, forms may still be found with a subglobose head with the ocellar plate placed near the central region of the frons (plesiomorph character). After the segregation of the tribes, the plesiomorph Trepidariini expanded from the Australian Region through the Oriental into the Holarctic Region. The Holarctic forms are the most specialized in having the copulatory fork with more or less inflated processes and without stalk, since the bases of the processes are separated by a secondarily membranous area, and in lacking the small antero- and posterodorsal bristles of the mid- and hind tibiae which are present in all other groups of the family, except in Tenthes, Taeniapterini.

The apomorph Tylini spread from the Antarctic Region through the Neotropical into the Holarctic Region, their principal evolutionary tendencies being as follows: The head becomes more elongate and conical, and the copulatory fork is reduced (in all Holarctic species it is already absent), et cetera.

#### SUBFAMILY TAENIAPTERINAE

##### TRIBE RAINIERIINI

Steyskal (1947) published a key to genera of the Ethiopian, Oriental, and Australian Regions.

#### KEY TO MICRONESIAN GENERA OF RAINIERIINI

1. Ocellar plate placed posterior to *orss* or at most the fore ocellus in line with these. Frontal stripe more than one-half as wide as total width of frons. *Orsa* stand in tomentose frontal stripe or just on the borderline between this and genovertical plates. *Pvt* absent in all Micronesian species.....**Mimegralla**
- Ocellar plate placed anterior to *orss*, or at most, posterior ocelli in line with these. Frontal stripe at most one-half as wide as total width of frons, but usually considerably narrower; *orsa* stand on shining genovertical plate; *pvt* always present .....**Rainieria**

Genus **Mimegralla** Rondani

- Mimegralla* Rondani, 1850, Nuovi Ann. Sci. Nat. Bologna III, 2: 180 (type: *Calobata coeruleifrons* Macquart; from India to Flores in Indonesia).—  
 Enderlein, 1922, Archiv Naturgesch. A, Jahrgang 88, 5: 195.  
*Calobata*, Enderlein, 1922, Archiv Naturgesch. A, Jahrgang 88, 5: 181.  
*Hyobobata* Enderlein, 1922, Archiv Naturgesch. A, Jahrgang 88, 5: 196 (type: *Calobata triannulata* Macquart; Madagascar).  
*Tanypada*, Enderlein, 1922, Archiv Naturgesch. A, Jahrgang 88, 5: 197 (part).  
*Cyclosphe*n Frey, 1927, Notulae Ent. 7: 69 (type: *Calobata galbula* Osten-Sacken; Philippines).—Verbeke, 1951, Explor. Parc Nat. Albert Belg. Congo, Miss de Witte, Fasc. 72: 64.

Body usually dark brown to black, densely pruinose and usually with metallic shine, except (*Townesa*) *spinosa* which has brownish-yellow body. Head mostly subglobose. Cephalic bristles: One to three *orsa*, one *orss*, one *vii*, one *vte*, and none to one *pvt*. Thorax usually considerably longer than wide or high and slightly higher than wide. Thoracic bristles: One to two *npl*, one *sa*, one *pa*, one *dc* prescutellar, and one *sc* apical, some *prpl* in a horizontal row, and the dense vertical fan of long, fine, erect *st* bristle-like hairs.

Legs long and fine, femora without bristles, except in the subgenus *Townesa*.

Wing hyaline with none to three dark-brown transverse bands or only indistinctly darkened. Preabdomen long and linear; first and second tergites fused without suture, as is general in higher Diptera; third tergite also united with this syntergite, with suture but without intersegmental membrane. First sternite separated from second by intersegmental membrane; first sternite usually wide, second sternite strongly narrowing toward apex from wide base; third to fourth sternites of male and third to fifth sternites of female linear and usually very reduced, only short sclerite remaining on base of each segment, except in *perfulva*. Fifth sternite of male produced into a simple copulatory fork, without inner appendages between bases of processes, in all known species.

Type: *Calobata coeruleifrons* Macquart.

The genus is widespread in the Ethiopian, Oriental, and Australian Regions.

KEY TO MICRONESIAN SUBGENERA AND SPECIES OF MIMTEGRALLA

1. Only hind *npl* present; frontal stripe flat and not velvety black. Body yellow to yellowish brown; postpedicel of antennae and tip of maxillary palpi black (*Steyskalia*) ..... *perfulva*
- Two *npl* present; anterior region of frontal stripe elevated and convex, frontal stripe usually velvety black. Body dark brown to blackish brown with metallic shine..... 2
- 2(1). *Pvt* present on head (no Micronesian species).....subgenus *Tanypomylia*
- Pvt* always absent on head..... 3
- 3(2). Fore femora with conspicuous antero- and posteroventral bristles (*Townesa*).....*spinosa*
- Femora without bristles (*Mimegralla*)..... 4
- 4(3). Antennae bright reddish yellow, maxillary palpi completely yellow. Posterior region of anepisternum (mesopleuron) sericeous with silvery to pale,

Table 3.—Length of Leg (mm.) in Micronesian Micropezidae

	FORE LEG		MID LEG		HIND LEG	
	Femur	Tibia (Basitarsus)	Femur	Tibia (Basitarsus)	Femur	Tibia (Basitarsus)
<i>Mimegralla</i> ( <i>Mimegralla</i> ) <i>albimana</i>						
Male	2.27-2.95	2.27-3.00	4.85-6.32	4.88-6.38	5.59-6.98	6.09-8.41
Female	2.11-2.77	2.25-3.09	4.54-5.91	4.70-5.68	5.50-6.73	6.07-7.50
<i>M. (M.) contraria</i>						
Male	2.68-2.77	2.68-3.00	5.41-5.80	5.82-6.25	6.04-6.59	7.00-7.95
Female	2.25-2.77	2.32-3.09	5.00-5.75	4.88-6.25	5.11-6.81	6.07-7.95
<i>M. (Steyskalia) perfulva</i>						
Male	2.20-2.43	2.20-2.40	5.38-6.41	6.13-7.07	6.27-6.88	4.73-7.95
Female	2.68	2.61-2.70	6.20-7.00	7.04-7.41	7.07-7.77	8.25-8.45
<i>M. (Townesa) spinosa</i>						
Male	2.54-3.75	2.38-3.38	5.04-8.13	5.48-8.81	5.77-8.75	6.59-10.44
Female	2.77-2.80	2.68-2.77	5.98-6.16	6.50	6.84-6.86	7.91
<i>Rainieria boninensis</i>						
Female	2.61	2.77	6.00	6.41	7.43	8.20
<i>Crosa yapensis</i>						
Male	2.11-2.41	2.09-2.11	4.75-4.86	4.50-4.70	4.50-4.52	4.45-4.70
Female	1.68-1.77	1.68-1.80	3.80-4.32	3.80-4.34	3.66-4.13	3.77-4.16

brass-yellow shine. Apex of copulatory fork in lateral view curved conspicuously downward; stalk approximately as long as forceps; oviscape very short, only 1.2 times longer than wide.....*albimana*  
 Antennae reddish brown to dark brown, apical region of maxillary palpi always blackish brown. Posterior region of anepisternum dusted dark brown, with reddish-brown luster. Copulatory fork in lateral view straight; stalk conspicuously longer than forceps. Oviscape elongated oval, 1.6-1.7 times longer than wide.....*contraria*

The genus *Tanypomyia* was described by Verbeke (1955) with *Tanypoda venusta* Enderlein (1922) designated as type for the *Mimegralla* species with postvertical bristles. However, I consider this genus and *Townesa* Steyskal (1952) as only subgenera since they differ from the typical subgenus *Mimegralla* in only a single important (generic) character.

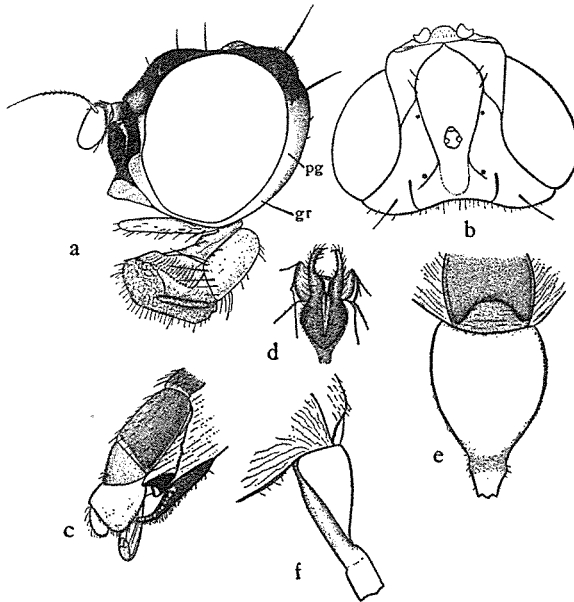


FIGURE 7.—*Mimegralla (M.) albimana*: a, lateral view of male head; b, dorsal view of male head; c, lateral view of male postabdomen; d, dorsal view of copulatory fork (fifth sternite); e, dorsal view of oviscape; f, lateral view of oviscape. Abbreviations not previously defined: pg = postgena, gr = gular region.

Subgenus *Mimegralla* Rondani

1. *Mimegralla (Mimegralla) albimana* (Doleschall). (Figure 7.)  
*Taenioptera albimana* Doleschall, 1856, Nat. Tijd. Ned. Ind. 10: 413, pl. X, fig. 4.  
*Calobata longiventris* C. G. Thomson, 1870, Freg. Eugenies Resa, Dipt., 589.

*Calobata nigripes* var. *pictipes* de Meijere, 1914, Tijdschr. Ent. 57: 175.

*Calobata albimana*, Enderlein, 1922, Archiv Naturgesch. A, Jahrgang 88, 5: 182.

*Calobata stabilis*, Enderlein, 1922 (*nec* Walker, 1861), Archiv Naturgesch. A, Jahrgang 88, 5: 183.

*Mimegralla albimana albimana*, Hennig, 1935, Konowia 14: 199.

*Mimegralla albimana palauensis* Hennig, 1935, Konowia 14: 201 (n. syn.).

*Mimegralla longiventris*, Hennig, 1935, Konowia 14: 293.

*Calobata galbula*, Swezey, 1946, B. P. Bishop Mus., Bull. 189: 198.

*Mimegralla albimana galbula*, Bohart and Gressitt, 1951, B. P. Bishop Mus., Bull. 204: 90-91, fig. 12, a.—Steyskal, 1952, U. S. Nat. Mus., Proc. 102 (3294): 166.

*Male*: Body 9.1-11.8 mm. long; wing 6.8-8.2 mm. long and 1.8-2.3 mm. wide, 3.5-3.8 times longer than wide.

*Head*: Subglobose, 1.29-1.59 mm. long, 1.82-2.18 mm. wide, and 1.30-1.59 mm. high, much wider than long or high, and almost exactly as long as high (as in *M. contraria*). Ground color of head dark brown to brown black, except the yellowish-brown to reddish-yellow facial orbits (parafacial plate) before eye. Furthermore, anterior region of frons and median part of mesofacial plate (between blackish-brown, shining, antennal foveae) dark, reddish-brown in ground color and aeneous or rosaceous luster, but in examined specimens never so reddish yellow as in *M. contraria*. Frontal stripe dull, velvety black, around ocelli sericeous with whitish to brownish-white shimmer. Posterior part of genovertical plate and inferior region of cerebral plate with pale blue, metallic shine, rest of postcranium with a rich, dark-brown shimmer. Region behind eyes (postgenae and gular region), linear genae, and facial orbits whitish sericeous, in certain light with silvery-white luster. Frons at vertex 0.75-0.88 mm. wide. Eyes in profile 0.98-1.20 mm. long and 1.20-1.45 mm. high, 1.2 times higher than long, and approximately 7 times longer than postcranium (0.14-0.20 mm.). Mouthparts yellowish red, labella brown; maxillary palpi in all specimens examined entirely reddish testaceous yellow, the apex never infuscate.

*Antenna*: Bright yellowish red to reddish yellow. Postpedicel oval, 0.36 mm. long and 0.20-0.23 mm. wide, 1.6-1.8 times longer than wide. Arista, except for reddish-yellow, thickened, basal joints, subshining dark brown, with basal half sparsely pubescent, pubescence very short and fine.

*Cephalic bristles*: Shining black, relatively short; one to two erect and slightly divergent *orsa*, one erect and slightly convergent *orss*, one *vti*, and one conspicuously divergent *vte*; *pvt* and *ge* always absent; *vti* and *vte* equal in length, and much longer and stronger than orbital bristles.

*Thorax*: 2.7-3.4 mm. long, 1.7-2.2 mm. wide and 1.9-2.6 mm. high; dark brown to brown black in ground color; finely pruinose with light blue, metallic shine on pleura and on anterior fourth of mesonotum (anterior half of prescutum); rest of mesonotum (posterior half of prescutum and scutum, metapleuron and scutellum) densely covered with blackish-brown dusting which in certain light is lustrous rich, dark reddish-brown color. Mesonotum with pair of lateral vittae, situated on both sides between the *dc* and *sa-pa* lines, grayish yellow dusted with metallic luster, completely enclosed in dark-brown, dusted area. Hind half of anepisternum (mesopleuron) and katepisternum (sternopleuron) finely sericeous with bright, yellowish-silvery luster. In some specimens (e.g., one from Faraulap Atoll), coloration of mesonotal vittae and of the posterior half of anepisternum and katepisternum metallic, shining, brass yellow as in *galbula* Osten-Sacken. Mediotergite densely dusted, silvery gray to whitish yellow.

*Thoracic bristles*: Relatively short and strong, black and shining; four to five long, fine, golden-yellow, shining propleural hairs; long, fine sternopleural bristle-like hairs pale yellow with golden shine.

*Legs:* Procoxae, and fore and mid-trochanters testaceous yellow; mesocoxae, metacoxae, and hind trochanter usually dark brown. Basal two-thirds to one-half of fore femora testaceous to reddish yellow, rest blackish brown; fore tibiae and basal one-half to two-thirds of basitarsi brown black, the rest of the fore tarsi white. Mid- and hind femora testaceous yellow to reddish yellow ("*palauensis*") with diffuse to conspicuous dark-brown apices and proximomedian, distomedian, and subapical rings (which may be almost absent); mid- and hind tibiae usually yellowish brown, with base and tip darker in color; mid- and hind tarsi pale, whitish brown.

*Wing:* Hyaline, yellowish brown, tinged with diffuse, darker brown, transverse band between both cross veins, and apex also darkened diffusely. Apices of  $R_{4+5}$  and  $M_1$  veins never fused before reaching apex of wing.  $R_{2+3}$  terminating approximately above basal third of ultimate section of  $M_1$ , or slightly more distal. First costal section 0.27-0.34 mm., second 3.11-4.04 mm., third 1.82-2.00 mm., and fourth 0.07 mm. long. Second costal section 1.7-2 times longer than third. Prebasal section of  $M_1$  is 1.23-2.02 mm., median 1.41-1.81 mm., and ultimate 2.27-2.72 mm. long; ultimate section 1.2-1.3 times longer than third costal section. Anal cell short,  $Cu_2$  which closes this cell nearly half as long (0.41-0.54 mm.) as petiole ( $Cu_2+An$ , 0.80-0.95 mm.). *Halteres:* Scabellum and pedicel testaceous yellow, knob (capitulum) yellowish brown to brown.

*Preabdomen:* 4.5-6.0 mm. long and 0.75-0.95 mm. wide, long and linear. Tergites dark brown to brownish black, lustrous; however, in some specimens with pale blue, metallic shine. First tergite with long, fine, erect, pale yellow hairs; the other tergites covered with appressed, short, fine, black hairs with dark-brown luster. First and second sternites brown; first tergite trapeziform, wider than long. Fifth sternite produced into dark-brown to blackish-brown copulatory fork which rests on short, wide, crescent-shaped, shining, dark-brown sixth sternite. Characteristic of this species is short cleft between bases of both processes and apex of forceps in lateral view curved conspicuously downward. Copulatory fork 0.86-1.02 mm. long, with the basal part (stalk, 0.45-0.52 mm. wide) approximately as long as the apical forceps (0.36 mm. wide).

*Postabdomen:* Short, subconical 7+8 syntergite of the same color and shine as preabdominal tergites but appressed black hairs absent; measured dorsally, always slightly longer (0.34-0.45 mm.) than the testaceous-yellow, compressed epandrium (0.23-0.34 mm.). Basal region of epandrium may be brown and shining, rest whitish-sericeous-testaceous yellow, like cerci. Aedeagus shining reddish yellow, knee joint surpassing the epandrium, nearly always visible below cerci.

*Female:* Like male; length of body 8.8-10.0 mm.; wing 6.4-8.1 mm. long and 1.8-2.2 mm. wide, 3.5-3.7 times longer than wide.

*Head:* 1.29-1.59 mm. long, 1.81-2.25 mm. wide, and 1.27-1.45 mm. high. Frons at vertex 0.73-0.88 mm. wide. Eyes in profile 0.90-1.23 mm. wide and 1.16-1.48 mm. high, approximately 1.2 times higher than long, and 4-5 times longer than postcranium (0.18 mm.). *Antenna:* Postpedicel 0.34-0.36 mm. long and 0.25-0.27 mm. wide, 1.2-1.4 times longer than wide. *Thorax:* 2.7-3.0 mm. long, 1.7-2.1 mm. wide and 2.0-2.5 mm. high. *Legs and wings:* As in male; first costal section 0.34 mm., second 3.18-3.88 mm., third 1.73-1.91 mm., and fourth 0.04-0.04 mm. long. Prebasal section of  $M_1$  is 1.66-2.07 mm., median 1.47-1.77 mm., and ultimate 2.11-2.61 mm. long;  $Cu_2$  is 0.45-0.50 mm., petiole of anal cell 0.70-0.90 mm. long. *Preabdomen:* 4.5-4.6 mm. long and 0.77-1.30 mm. wide. Characteristic of female that on sixth tergite, in front of the oviscapae, there is feebly chitinized, nearly membranous triangular-to-semicircular region. *Oviscapae:* Subshining dark brown to brownish black, but its apex and adjoined median part of ovipositor reddish yellow; very wide oval, depressed, 1.13-1.32 mm. long and 0.90-1.13 mm. wide, approximately only 1.2 times as long as wide.

**HOSTS:** Adults were swept beating weeds, from "*Nephrolepis* + grasses," from grass with *Stenotaphrum* and *Asplenium*, from human feces, and were taken in light traps and in taro pits. See also in Bohart and Gressitt (1951, B. P. Bishop Mus., Bull. 204: 90-91).

DISTRIBUTION. Malacca, Java, Riouw Archipelago, Borneo, Philippine Is., Ryukyu Is., western Micronesia.

S. MARIANA IS. SAIPAN: Thirteen (BISHOP, KU), Jan. 1945, Hagen; Dec. 1944, Edgar; Donni, Feb. 1936, Esaki; Garapan, Jan. 1938, Aoki; Garapan-Sadog-Tasi and Fanaganan (Fanagam), May 1940, Yasumatsu and Yoshimura; Garapan, Apr. 1946, Krauss; southern part, near Garapan, and As Mahetog area, Dec. 1944, Dybas. GUAM: Eleven (BISHOP), Fullaway (one specimen determined as *Calobata galbula* Osten-Sacken, by Swezey); Agat and Mt. Alifan, Apr. 1946, and Aug. 1952, Krauss; Pilgo River and Pt. Oca, May-June 1945, Bohart and Gressitt.

PALAU. NGAIANGL (Kayangel): Eight, Dec. 1952, Gressitt; Aug. 1956, McDaniel; May 1957, Sabrosky. BABELTHUAP: 27 specimens, Ngerehelong, May 1957, Sabrosky; Ulimang, Dec. 1957, Dybas; Ngiwal, May 1957, Sabrosky; Ngardok, May 1957, Sabrosky; Ngaremlengui, June 1957, Sabrosky; Emertao, Feb. 1938, Esaki; Melekeiok, May 1957, Sabrosky; Imeliik, Netkeng, June 1957, Sabrosky; Iwang, 8 m., Dec. 1952, Gressitt; Airai, Ngarung, May 1957, Sabrosky. KOROR: 30 specimens, Jan. 1938, Esaki (one female determined as *Mimegralla albimana palauensis* Hennig, by Esaki); Apr.-May 1957, two on foliage of Malay apple, low limestone ridge, Apr. 1957, Sabrosky. MALAKAL: One, May 1957, Sabrosky. ULEBSEHEL: Three, Auluptagel (Aurapushekaru), Sept. 1952, Krauss. PELELIU: North end, one, May 1957, Sabrosky. ANGAUR: One, Aug. 1945, Ducoff.

YAP. YAP: Thirty-eight (BISHOP, KU), Aug., Oct. 1952, Krauss; Mar. 1954, Beardsley; hill beyond Yaptown, 50 m., and Mt. Mataade, 60 m., Dec. 1952, Gressitt; Dugor-Kanif-Ruul, Sept. 1939, Esaki; three females, one male, Gagil, Gachapar, June 1957, Sabrosky; female, male, Ruul, June 1957, Sabrosky; five females, three males, Giliman, June 1957, Sabrosky. MAP: Three females, one male, Chol, June 1957, Sabrosky.

CAROLINE ATOLLS (BISHOP). ULITHI: One, Falalop I., Aug. 1952, Beardsley. FAIS: One, Oct. 1952, Krauss. SOROL: One, Oct. 1952, Krauss. WOLEAI: Two, Falalis I., and Utage I., Feb. 1953, Beardsley. FARAULEP: Nine, Faraulep I. and Pigue I., Sept. 1952, Krauss; Falaulep I., Feb. 1953, Beardsley. IFALUK: Two, Ifaluk I., Dec. 1953, Bates. ELATO: Four, Elato I., Feb. 1953, Beardsley. NOMWIN: One, Nomwin I., Feb. 1954, Beardsley. NAMA: One, Nama I., Oct. 1952, Beardsley. KAPINGAMARANGI: Ringutotu I., and Nunukita I., Aug. 1954, Niering.

TRUK (BISHOP, KU). TON (Tol): Four, Mt. Unibot, 180 m., Feb. 1953, Gressitt; Pata, Sabote-Epin, Apr. 1940, Yasumatsu and Yoshimura. WENA (Moen): One, Mt. Chukumong (Teroken), 70-80 m., Feb. 1953, Gressitt. TONOAS (Dublon): Ethen (Toloas-Erin), Nov. 1937, Esaki; Oct. 1952, Beardsley.

This is a well-characterized species which may easily be separated from the closely related species by constant structural characters. *Mimegralla contraria* and *M. albitarsis* are independent species and by no means geographical subspecies of *albimana* or *leucopeza*. There were no structural characters by which the examined Micronesian specimens might be separated from the Indonesian specimens on hand (from Java and Riouw Archipelago) or from the Palau specimens. The Palau specimens, with usually more reddish femora, represent only a color variation. The Micronesian specimens in general are slightly darker and have the basal region of the fore basitarsi slightly more extensively black than in the examined Indonesian specimens. Because there are some *albimana* specimens in the Micronesian material with conspicuous shining brass-yellow markings on the thorax, it appears very probable that the *Calobata galbula* Osten-Sacken is also only a color variety of *albimana*. However, I do not desire to establish a synonymy before studying more material of *galbula* specimens from the Philippine Islands.

2. *Mimegralla (Mimegralla) contraria* (Walker). (Figure 8.)

*Calobata contraria* Walker, 1861, Linn. Soc. London, Proc. 5: 253.—Enderlein, 1922, Archiv Naturgesch. A, Jahrgang 88, 5: 185.

*Calobata albimana*, Osten-Sacken, 1880, Mus. Civ. Stor. Nat. Genoa, Ann. 14: 454 (part).—de Meijere, 1909, Nova Guinea 9: 362.

*Calobata bürgersi* Enderlein, 1922, Archiv Naturgesch. A, Jahrgang 88, 5: 184.

*Calobata diffundens*, Enderlein (*nec* Walker), 1922, Archiv Naturgesch. A, Jahrgang 88, 5: 183.

*Calobata impingens* Enderlein, 1922, Archiv Naturgesch. A, Jahrgang 88, 5: 183 (part).

*Mimegralla contraria albimana*, Hennig, 1935, Konowia 14: 201-202.—Steyskal, 1952, U. S. Nat. Mus., Proc. 102 (3294): 166.

*Mimegralla ponapensis* Hennig, 1935, Konowia 14: 207 (n. syn.).

*Mimegralla ponapensis ponapensis*, Steyskal, 1952, U. S. Nat. Mus., Proc. 102 (3294): 170.

*Mimegralla ponapensis kusaieana* Steyskal, 1952, U. S. Nat. Mus., Proc. 102 (3294): 170 (n. syn.).

*Male*: Body 10.2-11.3 mm. long; wing 7.6-7.9 mm. long and 2.1 mm. wide, 3.6-3.8 times longer than wide.

*Head*: Subglobose, 1.36-1.43 mm. long, 1.88-2.11 mm. wide and 1.25-1.50 mm. high, approximately as long as high; ground color dark brown to brown black, except testaceous-yellow parafacial plates (facial orbits) before eyes, anterior region of frons, and upper region of mesofacial plate between antennae, which are yellowish brown to dark reddish yellow [in *M. albitarsis* (Wiedemann) it is usually considerably lighter testaceous yellow]. Frontal stripe dull, velvety black, sericeous around ocellar plate with whitish-brown shimmer; cerebral plate with aeneous luster, and the densely dark-brown dusted postgenae (region behind eyes) with only faint greasy luster. Only inferior (gular) region of postcranium is as whitish sericeous as the facial orbits in front of eyes and linear genae, which



in certain light are silvery white, shining. Fore region of frontal stripe considerably convex. Frons at vertex 0.80-0.86 mm. wide. Eyes in profile 1.02-1.11 mm. long and 1.20-1.32 mm. high, nearly 1.2 times as high as long, and approximately 6 times longer than postcranium (0.16-0.18 mm.). Antennal foveae shining blackish brown. Anteclypeus shining yellowish brown to brown. Mouthparts testaceous yellow to reddish yellow, labella dark brown, apical one-third to one-half of maxillary palpi dark brown to blackish brown in all specimens examined, including those from New Guinea and Indonesia.

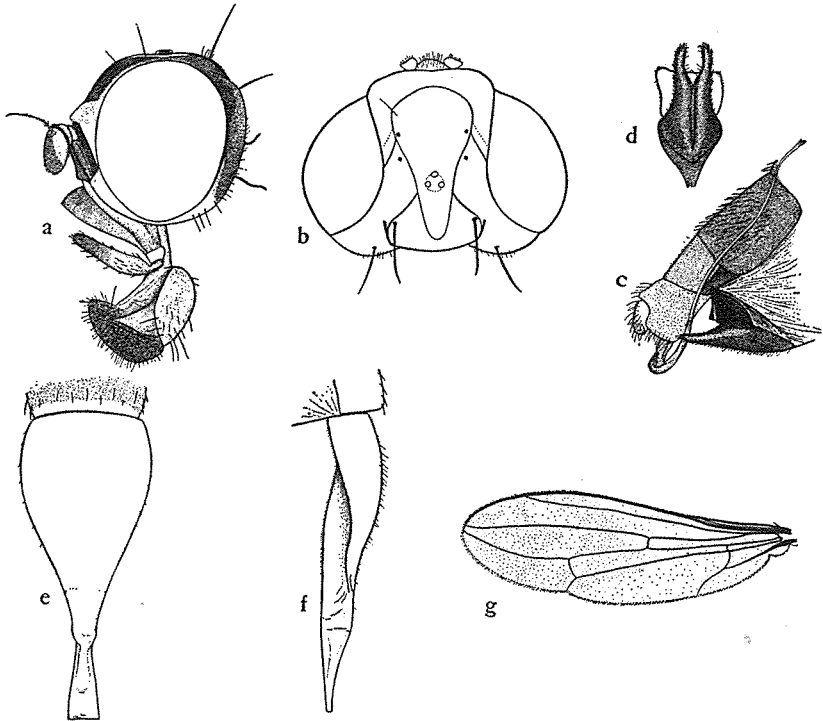


FIGURE 8.—*Mimegralla (M.) contraria*: a, lateral view of male head; b, dorsal view of male head; c, lateral view of male postabdomen; d, dorsal view of copulatory fork; e, dorsal view of oviscapae; f, lateral view of oviscapae; g, wing.

*Antenna*: Scape and pedicel brownish yellow to yellowish brown, postpedicel dark brown to blackish brown, except basal half which is rich, reddish yellow (postpedicel of the "*sepsoides*" specimens from Sumbawa are entirely reddish yellow). Postpedicel oval, 0.38 mm. long and 0.25 mm. wide, 1.5 times as long as wide. Arista, except for yellowish-brown, thickened base, subshining dark brown, its basal half with sparse, microscopically short, fine pubescence.

*Cephalic bristles*: Shining black, relatively short. *Vti* usually longer than *vtc*.

*Thorax*: 3.4-3.8 mm. long, 2.0-2.1 mm. wide and 2.4-2.6 mm. high, dark brown to brown black in ground color; mesonotum, propleuron, anepisternum (mesopleuron) entirely or only its hind region, anepimeron (pteropleuron), inferior pleurotergite, mero-pleurite and scutellum densely covered with blackish-brown dusting which in certain light is lustrous in rich, dark, reddish-brown color. (This is the only *Mimegralla* species I

know which has dark-brown dusting on the anepisternum in both sexes; this character was present in all specimens examined of this species, including those from New Guinea and Indonesia.) Rest of pleurae finely pruinose, superior pleurotergite and mediotergite densely, silvery whitish dusted, and all with a pale blue, metallic shine. On the mesonotum pair of vittae with light, yellowish-gray shine, each begins between the *pa* and *dc* bristles and, converging toward anterior margin of mesonotum, unites behind head on prescutum, including large, wedge-shaped, dark-brown dusted area. Hind region of katepisternum densely, silvery white, sericeous.

*Thoracic bristles*: Relatively short and strong, black and shining. Four to five brown-black *pp* with faint-brown luster. Long, fine sternopleural bristle-like hairs mixed, brown black and white.

*Legs*: Procoxae reddish yellow, narrow basal and apical regions infuscate; mesocoxae and metacoxae dark brown to blackish brown; all trochanters brown to dark brown, but trochanters of fore leg usually more yellowish. All specimens examined from Ponape have femora dark brown to blackish brown, except basal one-third of fore femora and a more or less narrow basal region of mid- and hind femora, which are testaceous yellow to reddish yellow (= *M. ponapensis* Hennig); yellow basal ring of hind femora is usually one-fifth of total length, and yellow basal ring of mid-femora approximately one-half as long as those of hind femora. In all other Micronesian specimens, approximately apical two-fifths of the mid- and hind femora reddish yellow, with wide but inconspicuous, yellowish-brown, preapical ring. In some specimens from Kusaie, however, the apical two-fifths of the mid- and hind femora are dark brown except testaceous-yellow, proximal one-fourth of this section, which forms conspicuous, yellow, distomedian ring (= *M. ponapensis kusaiana* Steyskal). Fore tibiae and basal two-thirds to three-fourths of fore basitarsi blackish brown, rest of the fore tarsi whitish yellow. Mid- and hind tibiae entirely brown or testaceous yellow with both ends brown. Mid- and hind tarsi pale yellow as in *M. albimana*. (Coloration of legs varies considerably in this species, as in many other species of this family. Those who prefer to consider this species as a *Rassenkreis*, composed of numerous geographical subspecies, may use the old synonymic names.)

*Wing*: Yellowish brown tinged with diffuse, darker-brown transverse band between both cross veins; apex also diffusely darkened. Tips of third and fourth veins never fused before reaching wing apex. Second vein terminates approximately above middle of ultimate section of  $M_1$  or slightly proximal. First costal section 0.45-0.50 mm., second 3.25-3.77 mm., third 1.73-1.91 mm., and fourth 0.10-0.11 mm. long; prebasal section of  $M_1$  1.82-1.88 mm., median 1.73-1.95 mm., and ultimate 2.34-2.59 mm. long; ultimate section 1.5-1.6 times longer than third costal section, which is consistently much shorter in this species than in *M. albimana*. *Ta* situated approximately in middle of discoidal cell. Anal cell short,  $Cu_2$  approximately half as long (0.41 mm.) as petiole (0.82-0.95 mm.). *Halteres*: Scapellum brown, petiole pale brown, capitulum dark brown.

*Preabdomen*: Long and linear, 5.7-6.2 mm. long and 0.91-1.0 mm. wide. Tergites dark brown to blackish brown, shining; in some specimens tergites with same pale-bluish, metallic shine as pleurae. First tergite with long, fine, erect, pale yellow hairs; other tergites covered with appressed, short, fine, black hairs with brown luster. Sternites yellowish or reddish brown to dark brown. Fifth sternite produced into a simple, subshining, dark-brown to blackish-brown copulatory fork which rests on short, wide, crescent-shaped, shining, dark-brown sixth sternite. No cleft between bases of processes. In lateral view forceps completely straight, never curved downward as in *M. albimana*. Copulatory fork 0.98-0.98 mm. long, with stalk (0.48-0.50 mm. wide) conspicuously longer than apical forceps (0.32-0.36 mm. wide).

*Postabdomen*: Short, subconical 7+8 syntergite has same color and shine as pre-abdominal tergites but, in place of the appressed black hairs, covered with microscopically short, fine, erect, white hairs, and always more or less longer (0.34-0.50 mm.) than the yellowish-brown, whitish-brown, sericeous, compressed epandrium (0.27-0.30 mm. dorsally); cerci pale yellow. Aedeagus similar to that of *M. albimana*.

*Female*: Like male; body 8.0-11.3 mm. long; wing 6.2-8.5 mm. long and 1.8-2.5 mm. wide, approximately 3.4 times as long as wide, relatively wider than in male. *Head*:

1.23-1.57 mm. long, 1.73-2.32 mm. wide, and 1.25-1.66 mm. high. Frons at vertex 0.73-0.93 mm. wide. Eyes in profile 0.88-1.20 mm. long and 1.09-1.50 mm. high, approximately 1.2 times as high as long and 6-8 times longer than postcranium (0.14 mm.). *Antenna*: Postpedicel 0.36-0.38 mm. long and 0.25-0.29 mm. wide, 1.3-1.4 times longer than wide. *Thorax*: 2.5-3.6 mm. long, 1.5-1.9 mm. wide, and 2.0-2.7 mm. high. *Legs and wing*: As in male; first costal section 0.32-0.52 mm., second 2.98-4.20 mm., third 1.30-1.77 mm., and fourth 0.07-0.13 mm. long. Prebasal section of  $M_1$  is 1.52-2.04 mm., median 1.59-1.95 mm., and ultimate 2.11-2.93 mm. long.  $Cu_2$  of anal cell 0.36-0.47 mm., petiole 0.68-1.02 mm. long. *Preabdomen*: 3.9-5.3 mm. long and 0.80-1.07 mm. wide; posterior margin of sixth tergite without conspicuous membranous area. *Oviscape*: Subshining dark brown to brownish black, tip and adjacent median part of ovipositor reddish yellow; ovate and depressed, 1.41-1.86 mm. long and 0.86-1.11 mm. wide, relatively considerably longer than in *M. albimana*, 1.6-1.7 times as long as wide.

**HOSTS**: Adults were taken sweeping, and were seen congregating on dead giant snails.

**DISTRIBUTION**. Sumba Is., New Guinea, Ponape, Kusaie, and eastern Caroline Atolls. If *contraria* is synonym of *sepsoides*, which is most probable, Celebes, Halmahera, Amboina, Aru Is., and Ternate complete the area of distribution of the species.

**PONAPE**. Twenty-one (BISHOP, KU, Wheeler coll.), Colonia, July 1949, Owen and Glassmann, Aug. 1956, Wheeler; Madolenihm (Metalanum), Nov. 1953, Beardsley; Nanpohmmal, Jan. 1953, Gressitt; Mt. Temwetemwensekir, 180 m., Jan. 1953, Gressitt; Rohnkiti-One, Colonia-Sankakuyama, Colonia-Palikir, Palikir-Rohnkiti, July 1939 (determined as *M. ponapensis* Hennig, by Esaki, 1944), Nihpit-Kapiro-i-Lehdau (Reitao), Lehdau (Reitao-Ona-U), July 1939, Colonia-Net, Nov. 1939, all Esaki.

**KUSAIE**. Seventeen (BISHOP, KU), July 1949, Owen; Mwot (Inshappu), Jan., Mt. Wakapp, Jan., and Mt. Fuinkol (Fenkol), Lele I., Jan. 1936, Ono; Mutunlik, 22 m., Jan. 1953, Inmen River, 60 m., Jan. 1953, Mwot, Apr. 1953, and Sensrik, 1 m., Apr. 1953, all Clarke; Mt. Fuinkol (Fenkol), 300 m., Jan. 1953, Gressitt; Malem, Lele, and Tafunsak-Mwot, Dec. 1937, all Esaki.

**CAROLINE ATOLLS**. **MOKIL**: Six (BISHOP), Mokil I., July 1948, Owen; Jan. 1953, Gressitt; Mokil (Kalap) I., July 1949, Owen. **PINGELAP**: One, July 1949, Owen.

This is another well-characterized species, which may easily be distinguished from the allied species by constant structural characters. There were no morphological characters by which the examined Micronesian specimens could be separated from the Indonesian (Sumba Islands) and from the New Guinea specimens at hand. Among the specimens collected from diverse areas, however, a certain variation in the coloration of postpedicel, anterior region of frons and mesofacial plate, and of the legs could be noted. The coloration of the legs in the Micronesian specimens is in general considerably darker than in the Indonesian (Sumba Islands) and New Guinea specimens, while, on the contrary, the anterior region of frons and upper region of mesofacial plate between antennae in the Micronesian specimens is much lighter-colored (reddish

yellow to yellowish red) than in the New Guinea specimens, or those from the Sumba Islands; many of the New Guinea specimens have the anterior region of the frons and the upper region of mesofacial plate between antennae dark brown or but slightly yellowish tinged, whereas all specimens examined from Sumba have the anterior region of frons dark brown or only slightly yellowish tinged, but the upper region of the mesofacial plate yellowish red. The dorso-apical half of the postpedicel in the Micronesian and New Guinea specimens was dark brown, in general darker in the Micronesian specimens, whereas in the specimens from Sumba the antennae were as bright reddish yellow as in *M. albimana*. This specimen might be identified by Hennig's key only as *Mimegralla albimana sepsoides* (Walker).

I am convinced that *Calobata contraria* Walker (1861) is only a synonym of *C. sepsoides* Walker (1859), known to be distributed just between Sumba and New Guinea. The latter name would be the valid name of this species; nevertheless, I do not desire to establish definitely this synonymy without first studying corresponding material from the known area of distribution of "*Mimegralla albimana sepsoides* (Walker)."

The Micronesian specimens of this species, with anterior region of frons yellowish red, could only be identified by Hennig's key (1935, *Konowia* 14: 83-89) as "*Mimegralla leucopeza albitarsis*." However, the specimens of *M. albitarsis* (Wiedemann, 1819) may easily be separated from the specimens of *contraria* by constant morphological characters.

#### Subgenus *Steyskalia* Aczél, new subgenus

Body testaceous yellow to brown. Head considerably depressed, frontal stripe flat, in level of the genovertical plates, dull yellowish red and sericeous with silvery-yellow luster. Eyes in profile transverse oval, slightly longer than high. Frons one-half as wide as total width of head, or slightly less wide. On thorax only hind pair of *npl* is present. Wing uniformly light brown, tinged hyaline,  $R_{2+3}$  ending approximately above basal third to middle of ultimate section of  $M_1$ . Anal cell narrow,  $Cu_2$  one-half as long as petiole of cell. Stalk (undivided basal part) of copulatory fork approximately only one-third as long as apical forceps.

Type: *Mimegralla perfulva* Steyskal, by present designation.

This subgenus is endemic in Ponape.

The subgenus differs from all known subgenera and species of *Mimegralla* in having a single pair of *npl* bristles, the body brownish yellow to brown, the anterior region of frontal stripe flat and not convex, and the frons relatively narrow.

#### 3. *Mimegralla* (*Steyskalia*) *perfulva* Steyskal (fig. 9).

*Mimegralla perfulva* Steyskal, 1952, U. S. Nat. Mus., Proc. 102 (3294): 169.

*Male*: Body 7.4-8.1 mm. long; wing 6.7 mm. long and 1.4 mm. wide, conspicuously narrow, 4.8 times longer than wide.

**Head:** Testaceous yellow to yellowish red brown, considerably depressed dorsoventrally, 1.16-1.25 mm. long, 1.42-1.52 mm. wide and 0.86-0.98 mm. high; genae, inferior (gular) region of postcranium, and facial orbits in front of eyes testaceous yellow and sericeous with silvery-white luster; mesofacial plate between dark brown, shining, antennal foveae as testaceous yellow to reddish yellow as aforementioned regions and anterior border of frons, but without sericeous-silvery pruinosity. Superior region of postcranium (postgenae, cerebral plate) and genovertical plates yellowish red brown, subshining; frontal stripe dull yellowish red, sericeous with silvery-yellow luster, entirely flat, situated on level with genovertical plates; ocellar plate black among the bright yellow ocelli. Frons at vertex only 0.54-0.57 mm. wide, as wide as one-half of total width of head, or slightly less wide. Eyes in profile transverse oval, slightly but conspicuously longer (0.85-0.95 mm.) than high (0.72-0.82 mm.). Mouthparts testaceous yellow to reddish yellow, anteclypeus shining, prementum subshining. Apex of maxillary palpi brownish black.

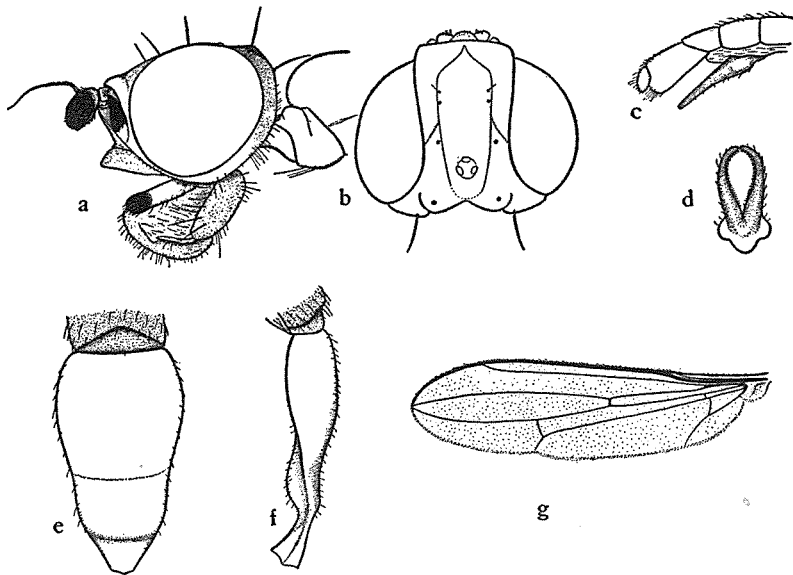


FIGURE 9.—*Mimegralla (Steyskalia) perfulva*: a, lateral view of female head; b, dorsal view of female head; c, lateral view of male postabdomen; d, dorsal view of copulatory fork; e, dorsal view of oviscape; f, lateral view of oviscape; g, wing.

**Antenna:** Scape, pedicel and narrow basal region of brownish-black postpedicel brownish yellow to reddish yellow. Postpedicel oval, 0.32-0.34 mm. long and 0.23 mm. wide, approximately 1.4 times as long as wide. Arista testaceous yellow, sparsely pubescent, pubescence short and fine.

**Cephalic bristles:** Shining black; two erect and well-developed *orsa*, posterior nearly as long as the *orss*, anterior much shorter and weaker; *vti* and *vte* bristles subequal and longer than aforementioned pairs; *pvt* and *ge* always absent.

**Thorax:** 2.7-2.8 mm. long, 1.2 mm. wide and 1.6-1.8 mm. high; pleurae brownish yellow, pleurotergites and mediotergite mostly darker; mesonotum and scutellum chiefly yellowish brown with pair of testaceous yellow, broad, lateral vittae. **Thoracic bristles:** Relatively short, black, and shining, subequal, only divergent *sc* pair considerably, and the *dc* pair slightly, longer than others; single *npl* present; *st* bristle-like hairs yellow with golden shine; two to three fine, brown *pp* with golden shine.

*Legs:* Coxae and femora testaceous yellow, tips of femora black; each femur with inconspicuous, brownish, distomedian ring, which in some specimens may be absent. Tibiae yellowish brown to dark brown, more yellowish toward the bases and blackish at their tips; tarsi dark brown to blackish brown, fore tarsi darker than mid- and hind tarsi, except apical one-half to two-thirds of basitarsi and entire second segment which are pale yellow.

*Wing:* Hyaline, uniformly light-brownish tinged, and relatively narrow;  $R_{2+3}$  ending approximately above basal one-third to middle of ultimate section of  $M_1$ , or slightly proximal. First costal section 0.57 mm., second 2.85 mm., third 1.32 mm., and fourth 0.07 mm. long; prebasal section of  $M_1$  1.50 mm., median 1.70 mm., and ultimate 2.02 mm. long; ultimate section 1.5 times longer than third costal section. Second costal section 2.2 times longer than third. Anal cell narrow,  $Cu_2$  one-half as long (0.36 mm.) as petiole of cell (0.73 mm.). *Halere:* Brownish yellow, knob (capitulum) yellowish brown.

*Preabdomen:* Long and linear, 4.0 mm. long and 0.85 mm. wide; tergites dark brown, subshining, first tergite and narrow lateral regions of others paler; first tergite with long, fine, erect, shining, golden-yellow hairs; other tergites covered with short, fine, appressed black hairs. Sternites testaceous yellow, subshining; fifth sternite produced into simple, testaceous yellow copulatory fork; 0.98 mm. long, with short stalk (0.41 mm. wide) nearly one-third as long as apical forceps (0.34 mm. wide); apical one-third to one-half of this copulatory fork brownish in color.

*Postabdomen:* Testaceous yellow to yellowish brown. Characteristic of this species that 7+8 syntergite (measured dorsally) always considerably shorter (0.32 mm.) than long, relatively narrow epandrium (0.50 mm.); aedeagus reddish yellow, partly shining.

*Female:* Like male, body 9.1-9.2 mm. long; wing 7.5 mm. long and 1.9-2.0 mm. wide, 3.5-3.9 times longer than wide, relatively much broader than in male.

*Head:* 1.54 mm. long, 1.77-1.82 mm. wide, and 1.18-1.20 mm. high. Frons at vertex 0.68 mm. wide. Eyes in profile 1.13-1.18 mm. long and 1.02-1.04 mm. high. *Antenna:* Postpedicel 0.36 mm. long and 0.23-0.25 mm. wide, 1.4 times longer than wide. *Thorax:* 3.3-3.5 mm. long, 1.7-1.8 mm. wide and 2.3 mm. high. *Legs and wing:* As in male; first costal section 0.37-0.45 mm., second 3.75-3.77 mm., third 1.63-1.75 mm. long; prebasal section of  $M_1$  is 1.93-2.04 mm., median 1.70 mm., and ultimate 2.45-2.50 mm. long;  $Cu_2$  0.38-0.45 mm., petiole of anal cell 0.61-0.75 mm. long. *Preabdomen:* 4.3-4.4 mm. long and 1.09-1.13 mm. wide. *Oviscape:* Entirely shining, brownish yellow with reddish tinge, depressed and elongate oval, 1.93-1.98 mm. long and 1.02-1.04 mm. wide, 1.8-1.9 times longer than wide.

DISTRIBUTION: Endemic in Ponape.

PONAPE. Seven specimens (BISHOP, KU), Mt. Temwetemwensekir, slope 150-450 m., Mar. 1948, and Nanipil, Net district, Feb. 1948, Dybas; Nanipil-Nanpohnmal, 65 m., Jan. 1953, Gressitt; Nanipil (Nanpir)-Sankaku Yama, Jan. 1938, and Nihpit, July 1939, Esaki.

Steyskal stated that this species, since it runs in Hennig's key to *Mimegralla leucopeza*, may be a subspecies of that form. However, it is certain that *M. perfulva*, which by a series of outstanding characters is easily distinguishable from all other known *Mimegralla* species, has an isolated situation in this genus, deserving the erection of a separate subgenus for it. *Mimegralla albitalarsis* (Wiedemann, 1819) is closely related to *M. albimana* and *C. contraria* and widespread in the Oriental Region from Tonkin and Siam throughout the Indonesian islands to the Philippine Islands. *Mimegralla leucopeza* (Wiedemann, 1824), described from Burma, is unknown to me; perhaps it represents an independent species.

Subgenus *Townesa* Steyskal

*Townesa* Steyskal, 1952, U. S. Nat. Mus., Proc. 102 (3294): 171-172.

Head subglobose, postvertical bristles absent. Thorax always with two pairs of *npl*. Wing hyaline, without transverse bands. Tips of third and fourth veins never united before attaining apex of wing.

Type: *Townesa spinosa* Steyskal.

This subgenus is endemic in Kusaie (eastern Caroline Is.).

The typical species of *Townesa*, which were considered by Steyskal as a genus, have the same general morphological characters as the *Mimegralla* species with the exception that conspicuous anteroventral and posteroventral bristles are present on the fore femora of both sexes, which is a rather unusual character in the subfamily Taeniopterinae. I cannot, however, accept *Townesa* as a distinct genus on the basis of a single important morphological character, but only as a subgenus of *Mimegralla*. Evidently in this case, it is only a specific character that the basal one-half to two-thirds of the arista is "distinctly and abundantly short" pubescent, since this pubescence is present in all examined *Mimegralla* species; but it is usually more or less shorter or finer and more inconspicuous than in *spinosa*.

The present subgenus as accepted herein may be easily distinguished from all others as indicated in the key to subgenera and species. The type species resembles *albimana* and *contraria* in most respects, but the fore tarsi lack white-colored parts.

#### 4. *Mimegralla* (*Townesa*) *spinosa* (Steyskal), n. comb. (fig. 10).

*Townesa spinosa* Steyskal, 1952, U. S. Nat. Mus., Proc. 102 (3294): 172, fig. 72, c-d.

*Male*: Body 8.0-11.1 mm. long; wing 5.3-7.2 mm. long and 1.4-1.8 mm. wide, 3.8-4.0 times as long as wide.

*Head*: Subglobose, 1.11-1.59 mm. long, 1.38-1.95 mm. wide and 1.07-1.52 mm. high, almost as high as long and considerably wider than long. Ground color of head dark brown to blackish brown; facial orbits before eyes and mesofacial plate testaceous yellow to yellowish brown, antennal foveae shining; anterior region of frons yellowish brown, lustrous; hind part of genovertebral plate and postgenae (of postcranium) with pale bluish shine; cerebral plate covered with brownish dusting and faintly shimmering. Facial orbits, the linear genae and inferior (gular) region of postcranium sericeous, in certain light with silvery-white luster. Frons at vertex 0.52-0.75 mm. wide; approximately half as wide as total cephalic width; frontal stripe not so dull velvety black as in *albimana* and *contraria* but dark brownish gray to bluish black tomentose with faint metallic shimmer. Anterior region of frontal stripe only very slightly convex. Eyes in profile 0.82-1.13 mm. long and 1.00-1.38 mm. high, nearly 1.2 times higher than long and 7-8 times longer than width of postcranium (0.11-0.14 mm.). Mouthparts: Prementum shining, testaceous yellow, labella dark brown, maxillary palpi and anteclypeus yellowish brown to brown, anteclypeus shining.

*Antenna*: Scape and pedicel yellowish brown to reddish brown, postpedicel dark brown to blackish brown with basal and inferior regions reddish yellow. Postpedicel compressed oval, 0.34-0.41 mm. long and 0.18-0.21 mm. wide, approximately 1.9 times longer than wide. Arista dark brown except thickened, yellowish basal segments, with basal one-half

to two-thirds conspicuously pubescent; this pubescence slightly denser and larger than in other Micronesian species of *Mimegralla*.

**Cephalic bristles:** Shining black, relatively long; two erect and slightly divergent *orsa*, anterior pair shorter and weaker; one erect and slightly convergent *orss*, slightly longer than hind *orsa* and situated in this species more posteriorly than in others, approximately level with anterior ocelli; one divergent *vii* and one strongly divergent *vte*, nearly equal in length, slightly longer than the *orss*; *pvt* and *ge* always absent. On postcranium (inferior region of cerebral plate, postgenae and gular region), erect hairs are relatively longer and more numerous than in other Micronesian *Mimegralla* species; those on gular region longest.

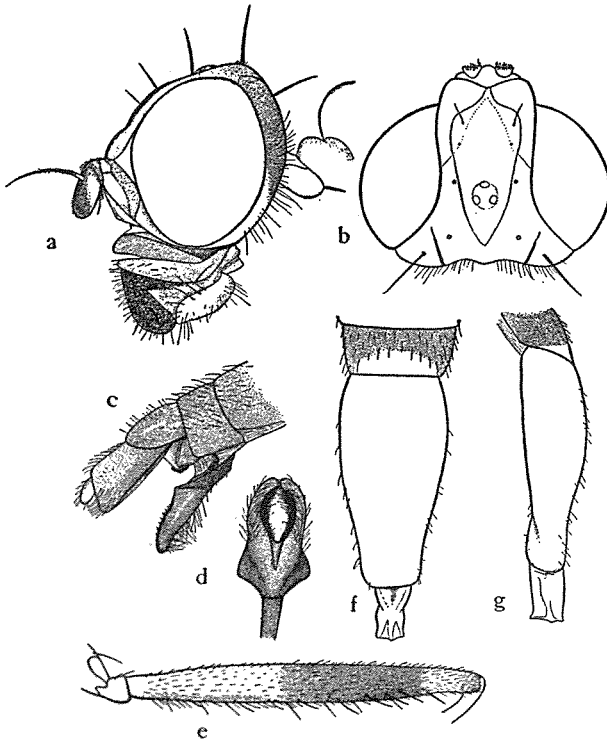


FIGURE 10.—*Mimegralla (Townesa) spinosa*: a, lateral view of male head; b, dorsal view of male head; c, lateral view of male postabdomen; d, dorsal view of copulatory fork; e, posterior view of male right fore femur; f, dorsal view of oviscape; g, lateral view of oviscape.

**Thorax:** 2.4-3.6 mm. long, 1.1-1.8 mm. wide and 1.3-1.6 mm. high, dark brown to brown in ground color but propleura yellowish tinged; pleurae with greenish metallic luster or shine; mesonotum and superior region of anepisternum (mesopleura) densely, dark brown dusted, mesonotum with pair of metallic, greenish, shimmering, broad sub-lateral vittae, which unite anteriorly on hump.

**Thoracic bristles:** Black and shining, two *npl*, one *sa*, one *pa*, one *dc*, one *sc*; two to four *pp* and long, fine sternopleural bristle-like hairs dark brown with iridescent luster. Sexual dimorphism in number of *pp*, since females have 10 to 12.



*Legs:* Coxae and femora testaceous yellow; tips of all femora dark brown to blackish brown, fore femora with large, distomedian, blackish-brown ring while mid- and hind femora with only narrow, indistinct, preapical, brown rings and with more inconspicuous, brownish, distomedian ring or dorsal spot. Fore tibiae and tarsi blackish brown, mid- and hind tibiae and tarsi dark brown, basitarsi with shining, golden-yellow, dense, ventral hairs. Fore femora with eight to 16 conspicuous, black, shining anteroventral and posteroventral bristles.

*Wing:* Hyaline, nearly evenly yellowish brown tinged; tips of third and fourth veins not united before attaining costa in apex of wing. First costal section 0.38-0.68 mm., second 2.13-3.13 mm., third 1.32-1.63 mm., and fourth 0.04-0.07 mm. long; second costal section 1.6-1.9 times as long as third. Prebasal section of  $M_1$  is 1.36-1.88 mm., median 1.16-1.81 mm., and ultimate 1.59-2.09 mm. long; ultimate section 1.2-1.3 times as long as third costal section.  $Cu_2$  0.32-0.38 mm., petiole ( $Cu_2+a$ ) 0.41-0.70 mm. long. *Haltere:* Stem pale brown, knob dark brown.

*Preabdomen:* Long and linear, 4.5-6.7 mm. long and 0.57-0.85 mm. wide. Tergites and sternites dark brown to brownish black, dark brown dusted and faintly lustrous except for shining sixth tergite. First tergite with long, fine, erect, brownish-yellow hairs; other tergites covered with appressed, short, brown-black hairs. Sixth tergite only about one-half as long as fifth. First sternite basally concave, longer than wide, second sternite strongly narrowed toward apex from wide base, third and fourth sternites linear, fifth sternite produced into simple, yellowish-brown, shining copulatory fork which rests on shining, yellowish-brown, crescent-shaped sixth sternite. Copulatory fork relatively large, 0.82-1.04 mm. long, with basal part (0.50-0.52 mm. wide) approximately as long as apical forceps (0.41-0.43 mm. wide).

*Postabdomen:* Epandrium longer than subconical, shining, yellowish-brown 7+8 syntergite (0.43-0.57 mm.) but dorsally considerably shorter (0.27-0.36 mm.); compressed epandrium yellowish brown to brown, lustrous; cerci yellow. Aedeagus shining, semi-translucent, reddish yellow, knee segment usually surpassing apex of epandrium and nearly always visible below cerci.

*Female:* Like male; body 8.6-8.9 mm. long (without ovipositor), wing 6.5-7.0 mm. long and 1.9-2.0 mm. wide, 3.4-3.5 times longer than wide. *Head:* 1.50-1.52 mm. long, 1.85-1.88 mm. wide, and 1.36-1.45 mm. high. Frons at vertex 0.70-0.72 mm. wide. Eyes in profile 1.10-1.11 mm. long and 1.30-1.43 mm. high, 1.2-1.3 times as high as long and approximately 8 times longer than width of postcranium (0.14 mm.). *Antenna:* Postpedicel 0.43 mm. long and 0.23-0.23 mm. wide, 1.8-1.9 times longer than wide. *Thorax:* 3.1-3.5 mm. long, 1.8 mm. wide and 2.2 mm. high. *Legs and wing:* As in male but four to six anteroventral and posteroventral bristles of fore femora are smaller than in male. First costal section 0.41-0.48 mm., second 3.00-3.16 mm., third 1.77-1.80 mm., and fourth 0.07-0.09 mm. long; prebasal section of  $M_1$  1.70-1.77 mm., median 1.63 mm., and ultimate 2.02-2.025 mm. long;  $Cu_2$  0.38 mm., petiole of anal cell 0.66-0.70 mm. long. *Preabdomen:* 3.7-4.4 mm. long and 0.82-1.02 mm. wide. In this species, as in *M. albimana*, feebly chitinized, nearly membranous, semicircular region on sixth tergite in front of oviscape. *Oviscape:* Shining, dark, reddish brown to blackish brown, depressed elongate oval, 1.80-1.82 mm. long and 0.95-0.98 mm. wide, 1.8-1.9 times longer than wide; adjoined median part of ovipositor black.

HOSTS: Many adults were taken in light traps.

DISTRIBUTION: Endemic on Kusaie (eastern Caroline Is.).

KUSAIE. Seventeen specimens (BISHOP, KU), July 1949, Owen; Mt. Wakapp, Jan. and Mt. Fuinkol (Fenkol), Lele, Jan. 1936, Ono; Matanluk (Japan), 16 m., Jan. 1953, Gressitt; Matanluk (Mutunlik), 22 m., Feb., Lele I., 100 m., Feb., and "Hill 541," 165 m., Apr. 29, 1953, Clarke; Lele, Nov., Dec. 1937, Esaki.

Genus *Rainieria* Rondani

*Rainieria* Rondani, 1843, Nuovi Ann. Sci. Nat. Bologna 10: 40; 1850, Nuovi Ann. Sci. Nat. Bologna III, 2: 180 (type: *Calobata calceata* Fallén; Europe).—Cresson, 1926, Am. Ent. Soc., Trans. 52: 268; 1930, Am. Ent. Soc., Trans. 56: 318.—Czerny, 1930, IN Lindner, Die Fliegen Palearkt. Reg., 42a, Tylidae, 11.—Hennig, 1935, Stett. Ent. Zeitung 96: 57-58; 1938, Ins. Matsumurana 13: 5.—Aczél, 1950, Acta Zool. Lilloana 8: 169-170, 360.

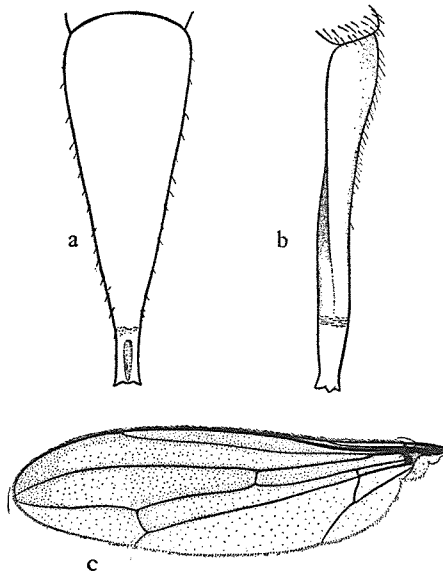


FIGURE 11.—*Rainieria boninensis*: a, dorsal view of oviscap; b, lateral view of oviscap; c, wing.

*Tanypoda* Rondani, 1856, Dipt. Ital., Prodr. 1: 116.

*Tanypoda* Schiner, 1864, Fauna Austriaca, Dipt. 2: 191.—Enderlein, 1922, Archiv Naturgesch. A, Jahrgang 88, 5: 197 (part).—Frey, 1927, Notulae Ent. 7: 70.

This genus is well characterized in the key to genera; it is widespread in the Neotropical, Nearctic, and Palearctic Regions and penetrates into the northwestern region of Micronesia with a single species.

5. *Rainieria boninensis* (Hennig). (Figure 11.)

*Crepidochaetus boninensis* Hennig, 1935, Konowia 14: 300.

*Rainieria boniensis*, (lapsus) Hennig, 1938, Ins. Matsumurana 13: 5-8, figs. 5, 6, 8.

*Female*: Body 8.4 mm. long; wing 7.3 mm. long and 2.0 mm. wide, 3.6 times longer than wide.

*Head*: Subglobose, 1.36 mm. long, 1.73 mm. wide and 1.27 mm. high, nearly as high as long and considerably wider than long; ground color dark brown to brown black, except facial orbits in front of eyes, linear genae, and inferior (gular) region of postcranium which are yellowish brown and sericeous, in certain light silvery white shining; anterior margin of frons and inferior half of mesofacial plate slightly yellowish tinged, and antennal foveae silvery, whitish, sericeous. Frons at vertex 0.70 mm. wide, wider than eye but narrower than one-half of cephalic width; frontal stripe velvety, blackish brown, in certain light shimmering in pale-brown color. Posterior part of genoverical plate with pale-bluish, metallic shine, anterior part subshining. Eyes in profile 0.93 mm. long and 1.22 mm. high, 1.3 times higher than long and approximately 8-9 times longer than the width of postcranium (0.11 mm.). Mouthparts brown, anteclypeus shining, blackish brown.

*Antenna*: Dark brown; postpedicel compressed oval, 0.32 mm. long and 0.24 mm. wide, 1.3 times as long as wide. Arista bare, brownish black, except slightly thickened basal segments brown to yellowish brown, with few scattered microscopically fine, tiny hairs.

*Cephalic bristles*: Shining black; in examined specimens, two to three bristle-like *orsa* and two *orss*, all erect and slightly divergent, hind pair of *orss* slightly longer than other pairs, approximately as long as divergent *vti* and *vte* pairs; *pvt* pair convergent and crossing, slightly longer than *orsa* bristles; *ge* absent.

*Thorax*: 3.1 mm. long, 1.9 mm. wide and 2.2 mm. high, dark brown to brownish black in ground color but propleura and anepimeron (pteropleuron) more yellowish; all parts of thorax emit pale-bluish metallic shine or luster. *Thoracic bristles*: Black and shining; two *npl*, anterior pair approximately two-thirds as long as posterior; one *sa* and one *pa* subequal and shorter than *npl* bristles; one erect prescutellar *dc* and one erect and nearly parallel *sc* longest thoracic bristles and subequal in length. Four to five *pp* and bristle-like *st* hairs dark brown with golden-yellow shine.

*Legs*: Procoxa testaceous yellow, mesocoxa and metacoxa yellowish brown. Femora dark brown, except for narrow basal region, wider preapical ring, and narrow apical margin of the mid- and hind femora as testaceous yellow as trochanters. Tibiae slightly compressed and darker brown than femora, except for narrow, yellowish, basal region of mid- and hind tibiae. Fore and hind tarsi entirely whitish yellow except two brownish-yellow distal segments; mid-tarsi brown in general aspect (pale yellow with dense, dark-brown hairs).

*Wing*: Yellowish brown tinged, with diffuse and indistinct, darker-brown, transverse band between both cross veins (*Ta* and *Tp*); apex also diffusely darkened. Apices of third and fourth vein never fused before reaching costa. Second vein terminating approximately above basal one-fourth of ultimate section of  $M_1$ . First costal section 0.43 mm., second 3.16 mm., third 1.88 mm., and fourth 0.07 mm. long; prebasal section of  $M_1$  is 1.73 mm., median 1.81 mm., and ultimate 2.27 mm. long; ultimate section 1.2-1.3 times longer than third costal section. Anal cell narrow,  $Cu_2$  approximately one-third as long (0.09 mm.) as petiole ( $Cu_2+a$ ; 0.30 mm.). *Haltere*: Scabellum and pedicel yellowish brown, knob dark brown.

*Preabdomen*: Long and linear, 3.5 mm. long and 0.8 mm. wide; tergites dark brown to blackish brown, with posterior margins yellowish, and usually with pale-bluish metallic shine. First tergite with erect, fine, shining, golden-yellow hairs, other tergites covered with appressed, shining, dark-brown hairs. Sternites yellowish red to yellowish brown, subshining; first sternite quadrangular, conspicuously longer than wide; second sternite from wide base strongly narrowed toward apex; third and fifth sternites linear, sixth sternite from linear basis widens into narrow oval shape. Intersclerital membranes grayish brown.

*Oviscape*: Very long ovate, shining yellowish brown to reddish brown, 2.72 mm. long and 0.98 mm. wide, nearly 2.8 times longer than wide.

DISTRIBUTION: Japan (Shikoku, Honshu), Bonin Is.

BONIN IS. Female (NIAS), Feb. 1920, Daido. CHICHI JIMA: Female (BISHOP), Omura, July 1949, Mead.

This is the only species of Tylidae known from Micronesia which has postvertical bristles and the ocelli slightly in front of the (hind) *orss* bristles. The genus *Rainieria* represents a Palearctic element in Micronesia. Hennig (1935, 1938) has given the description of the male which has the epandrium considerably longer than the 7+8 syntergite, and a long copulatory fork, the stalk of which is more than three times as long as the apical forceps.

### TRIBE TREPIDARIINI

#### KEY TO ORIENTAL AND AUSTRALIAN GENERA OF TREPIDARIINI

1. Apex of scutellum turned upward; head subglobose; pterostigma absent, third costal section very long, approximately as long as the ultimate section of fourth vein. Copulatory fork long, with long stalk and narrow forceps (Borneo, Solomon Is.).....**Gongylocephala**  
Scutellum flattened and horizontal dorsally. Head more or less depressed..... 2
- 2(1). Postscutellum unusually long and conical, surpassing apex of scutellum (Halmahera, New Guinea, Bismarck Archipelago).....**Nestima**  
Postscutellum small, normally shaped..... 3
- 3(2). Distal one-third to one-half of mid- and hind femora with antero- and posteroventral rows of short but conspicuous black spinules..... 4  
Mid- and hind femora distoventrally unarmed..... 5
- 4(3). Wing conspicuously fasciate or tessellate with dark-brown color; frontal stripe shining medially, flat, and angulate apically. Ocellar plate situated in posterior region of frons, genovertical plates tapering into acutely pointed apices. Basal region of fore femora of male without long and shaggy hairs (Philippines).....**Eurybata**  
Wing with only indistinct pattern; frontal stripe entirely dull and convex. Ocellar plate placed much more anteriorly, near central region of frons; genovertical plates abbreviated with truncate tips. Basal region of fore femora of male with long and shaggy ventral hairs (Indonesian islands, New Guinea, Micronesia).....**Crosa**
- 5(3). Only single pair of *orsa* present; pterostigma present. Arista only at the bases microscopically pubescent. Third costal section short (Tonkin, Siam, Burma, Formosa, Sumatra, Philippines, New Guinea).....**Trepidarioides**  
Two pairs of *orsa* present..... 6
- 6(5). Arista long plumose, third costal section short. Only one *st* (Waigeo I., New Guinea, Bismarck Archipelago, Australia, Tasmania).....**Metopochetus**  
Arista bare; third costal section long, approximately as long as ultimate section of  $M_1$ . Two *st* present. Frontal stripe impressed (Sumatra, Celebes, Mysol, Aru Is., New Guinea, Bismarck Archipelago).....**Crepidochetus**

Only the genus *Crosa* is represented in Micronesia.

#### Genus *Crosa* Steyskal

*Crosa* Steyskal, 1952, U. S. Nat. Mus., Proc. 102 (3294): 176 (type: *Eurybata semilauta* Osten-Sacken; Philippine Is.).

This genus is well characterized in the key. I want to note here a conspicu-

ous new morphological character which I first noted in this species, later also in other New Guinea species of this genus: The shining metapleural sclerites widen, expand behind the metacoxa and cover completely (in some New Guinea forms, incompletely) the usually membranous area situated between the metacoxa and the first abdominal sternite. So far as I know, this character occurs in the family Tylidae only in some Australasian Trepidariini.

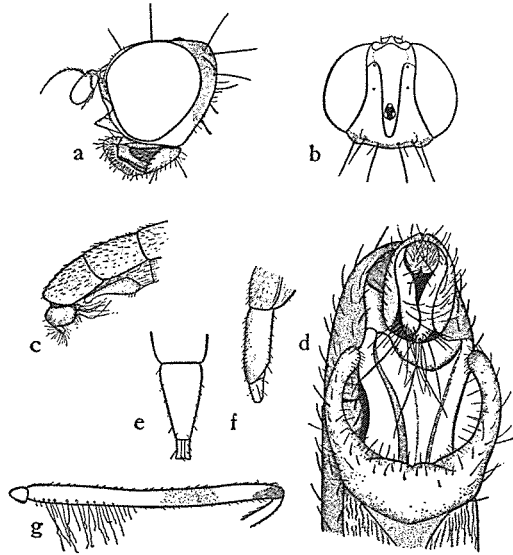


FIGURE 12.—*Crosa yapensis*: a, lateral view of male head; b, dorsal view of male head; c, lateral view of male postabdomen; d, ventral view of male postabdomen; e, dorsal view of oviscape; f, lateral view of oviscape; g, posterior view of male right fore femur.

#### 6. *Crosa yapensis* Steyskal (fig. 12).

*Crosa yapensis* Steyskal, 1952, U. S. Nat. Mus., Proc. 102 (3294):177-178, fig. 74, i.

*Male*: Body 7.8 mm. long; wing 5.2-5.4 mm. long and 1.3 mm. wide, 4.0-4.1 times as long as wide.

*Head*: Subglobose, 1.04-1.06 mm. long, 1.18-1.27 mm. wide and 0.88 mm. high, slightly wider than long and longer than high; testaceous yellow, except impressed frontal stripe dull yellowish red to brown; anterior part of abbreviated genovertical plates shining brown; posterior part of genovertical plate, postgenae, and cerebral plate of postcranium yellowish brown and subshining since it is covered with sparse, fine, brown dusting. Inferior (gular) region of postcranium, linear genae, and parafacial plates (facial orbits) in front of eyes silvery yellow sericeous. Eyes in profile 0.85-0.89 mm. long and 0.85-0.86 mm. high and 8-10 times as long as width of superior region of postcranium (0.09-0.11 mm.). Mouthparts testaceous yellow, labella yellowish brown, abbreviated maxillary palpi with long, black, apical bristle.

*Antenna*: Testaceous yellow, scape and pedicel slightly darker in color; postpedicel compressed, oval, 0.27 mm. long and 0.18 mm. wide, 1.5 times longer than wide. Arista black, thickened basal segments dark brown, basal half conspicuously pilose.

*Cephalic bristles*: One proclined and distinct *orsa*, one erect and nearly parallel *orss*; *vti* and *vte* pairs divergent, *pvt* pair parallel. On inferior margin of cerebral plate in all specimens examined, pair of divergent and widely spaced, hair-like, but conspicuous, small bristles (*cer*).

*Thorax*: 2.3-2.4 mm. long, 1.1-1.2 mm. wide and 1.4-1.5 mm. high; pleurae shining brownish yellow, pleurotergites yellowish brown; pleural vitta narrow, dull lead gray but sericeous and (seen from above) strong, silvery-white luster; vitta runs from narrow inferior margin of propleura across middle region of anepisternum (mesopleura). Mesonotum, scutellum, and mediotergite yellowish brown and lustrous, covered with fine dusting; propleura and pronotum golden-yellow dusted. *Thoracic bristles*: Black and shining; one *npl*, one slightly divergent prescutellar *dc*, one *sa*, one *pa*; *npl* and *pa* subequal in length, *sa* shorter, *dc* longer than these; one very closely spaced, erect, divergent, apical *sc*, longer than *dc*. On upper hind region of katepisternum (sternopleuron), two long and erect bristle-like hairs of equal length, one below other, and beneath these two to three still shorter bristle-like hairs, one approximately two-thirds as long as superior two but rest shorter; furthermore, in front of these three to five scattered, erect, short, fine hairs, all shining, golden yellow; these sternopleural hairs and bristle-like hairs appear to be modest remains of decorative, sternopleural fan of erect bristle-like hairs of a taeniopterine fly. Propleurae below with only short, fine, shining, golden-yellow hair and microscopic pubescence.

*Legs*: Coxae and femora testaceous yellow; apex of femora brown and indistinct, brown preapical ring on fore femora. Tibiae and tarsi yellowish brown, tibiae with dark-brown apices. Basitarsi of fore and hind legs appear lighter colored since fore basitarsi anteroventrally and hind basitarsi posteroventrally are densely covered with shining, golden-yellow hairs. Nearly whole basal half of fore femora furnished with loose, shaggy, long, fine, antero- and posteroventral hairs, brown with yellowish-brown shine. Basal one-third to one-fourth of mid- and hind femora, in both sexes, with two rows (antero- and posteroventral) of tiny, but conspicuous, black spinules.

*Wing*: Pale brownish tinged and conspicuously iridescent. Pterostigma absent since tips of subcostal and first longitudinal veins very closely placed. First costal section therefore absent; second 1.00-3.13 mm., third 0.80-0.88 mm., and fourth 0.09-0.13 mm. long; prebasal section of  $M_1$  1.25-1.36 mm., median 1.11-1.16 mm., and ultimate 1.59-1.61 mm. long; ultimate section 1.8-2 times as long as third costal section, because second vein long, ending nearly above distal third of ultimate section of  $M_1$ . Anal cell short, shape same as in Rainieriini species since  $Cu_2$  is slightly retrograde;  $Cu_2$  usually slightly shorter (0.25-0.27 mm.) than petiole of anal cell (0.34 mm.).

*Preabdomen*: Long and linear, 4.1 mm. long and 0.7-0.8 mm. wide, tergites yellowish brown to blackish brown, laterally more yellowish; sternites and lateral membranes brownish yellow to yellowish brown. Fifth sternite produced into simple, very wide, shining, testaceous-yellow copulatory fork, 0.50-0.52 mm. long and 0.56 mm. wide, with stalk much wider than long and situated between bases of processes; sixth sternite elongate, whitish yellow, and shaped similarly to some South American *Tylos* species.

*Postabdomen*: Reddish to brownish yellow, subshining; epandrium in profile considerably wider (0.30-0.32 mm.) than long (0.13-0.20 mm.); surstyli simple and lobate with short, and some long, apical hairs, as shining golden yellow as hairs of cerci.

*Female*: Like male; body 6.2-6.9 mm. long; wing 4.5-4.9 mm. long and 1.2-1.3 mm. wide, 3.7-3.8 times longer than wide.

*Head*: 0.85-0.91 mm. long, 0.95-1.09 mm. wide, and 0.75-0.85 mm. high. Eyes in profile as long as high (0.66-0.73 mm.) and 7-8 times longer than postcranium. *Antenna*: Postpedicel 0.25-0.27 mm. long and 0.18 mm. wide, 1.4-1.5 times as long as wide. *Thorax*: 1.9-2.2 mm. long, 1.1 mm. wide and 1.2-1.4 mm. high. *Legs and wing*: As in male but fore femora without long and shaggy ventral hairs below. Second costal section 2.86-2.93

mm., third 0.68-0.86 mm., and fourth 0.11-0.12 mm. long. Prebasal section of  $M_1$  is 1.09-1.13 mm., median 1.04-1.20 mm., and ultimate 1.43-1.66 mm. long; ultimate section 1.9-2.1 times longer than third costal section;  $Cu_2$  is 0.20-0.23 mm., petiole of anal cell 0.20-0.32 mm. long. *Preabdomen*: 3.2-3.5 mm. long and 0.63-0.66 mm. wide. *Oviscape*: Yellowish brown but narrow dorsal vitta and apical third dark brown, densely brown dusted, elongate ovate and relatively small, 0.66-0.68 mm. long and 0.34 mm. wide, 1.9-2 times longer than wide.

HOSTS: Adults were swept or taken in light traps.

DISTRIBUTION: Western Caroline Is.

PALAU. Ten specimens (BISHOP). BABELTHUAP: Ngiwal, jungle, May 1957, Sabrosky; Imeliik, Netkeng, June 1957, Sabrosky. ULEBSEHEL (Aulup-tagel): 60 m., Sept. 1952, Krauss; Ngarmalk, 25 m., Dec. 1952, Gressitt. NGURUKDABEL: Ngaremediu, May 1957, Sabrosky.

YAP. Four (BISHOP). YAP: Oct. 1952, Krauss; Mt. Tabiwol (Gillifitz), 150 m., Nov. and Mt. Madaade (Matade), 60 m., Dec. 1952, Gressitt; Giliman, June 1957, Sabrosky. MAP: Chol, June 1957, Sabrosky.

New to the Palau Islands.