# NEW OR LITTLE-KNOWN TIPULIDÆ FROM EASTERN ASIA (DIPTERA), PART I

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TWO PLATES

In the present paper, undescribed species of crane flies from various parts of China and Japan are considered. The paper is based to a large extent upon a very interesting series from Che-kiang, China, where they were collected by Mr. E. Suenson, in the hills south of Ning-po, halfway to Nimrod Sound. The Japanese species include material from Hokkaido taken by Messrs. Satoru Kuwayama and Matsuji Hori; from Honshiu and Shikoku, kindly submitted by Messrs. K. Takeuchi and C. Harukawa; and a species from Taiwan included in large series of Tipulidæ sent to me by Doctor Shiraki. I wish to express my sincere thanks to all of the above-mentioned entomologists for their kindness in collecting these fragile flies. The types of the species are preserved in my collection through the interest of the various collectors.

## LIMONIINÆ

**Dicranomyia paramorio** sp. nov.

Belongs to the *morio* group; antennæ black throughout; thoracic pleura heavily pruinose; male hypopygium with the dorsal dististyle an acutely pointed cylindrical rod; ventral dististyle with the rostrum bearing a single long pale spine.

*Male.*—Length, about 4 millimeters; wing, 5.8.

*Female.*—Length, about 6.2 millimeters; wing, 7.

Rostrum and palpi black. Antennæ black throughout, the flagellar segments oval. Head black, the anterior vertex silvery.

Thorax shiny black, the pleura with a conspicuous microscopic gray pubescence that appears like a bloom, especially on the sternopleurite and the cephalic portion of the pteropleurite. Halteres yellow, the knobs dark brown. Legs with the

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coxæ yellow, the fore coxæ with the basal half dark brown; trochanters obscure yellow; femora yellowish brown, the fore femora more uniformly darker, the posterior femora paler, with the tips relatively narrowly darker. Tibiæ and tarsi brownish black. Wings (Plate 1, fig. 1) with a faint brownish tinge, the stigma oval, darker brown than the ground color; veins dark brown. Venation: $Sc_1$ ending opposite the origin of Rs, $Sc_2$ very far from its tip, at about two-thirds the length of Sc; Rs long, in alignment with $R_{2+3}$; tip of $R_1$ very faint. In the female, $Sc_1$ ends just beyond the origin of Rs.

Abdominal tergites brown, the caudal margins of the basal segments broadly obscure yellow; outer segments more uniformly darkened, including the hypopygium; basal sternites extensively obscure yellow. In the female, the basal sternites are bicolorous, the tergites more uniformly black, only the caudal margins of the segments being dark brown instead of black. Male hypopygium (Plate 2, fig. 1) with the basistyles, *b*, relatively small, the ventromesal lobe setiferous. Dorsal dististyle, *dd*, slender, the extreme tip suddenly narrowed into an acute point. Ventral dististyle, *vd*, fleshy, larger than the basistyle; rostrum slender, provided with a single long pale flattened spine arising from a short squat base, the spine longer than the rostrum beyond it; basad of this spine is a small tubercle that is otherwise unarmed. Gonapophyses, *g*, narrow, dark brown. Ædeagus, *a*, broad, the base setiferous. The dorsal dististyles are like those of the ordinary type of the *morio* group, but the ventral dististyle is more like that of the aberrant *D. pseudomorio* Alexander (eastern Asia).

*Habitat.*—China (Che-kiang).

Holotype, male, hills south of Ning-po, May 1, 1925 (*E. Suenson*). Allotopotype, female.

**Antocha (Antocha) confluenta** sp. nov.

General coloration brownish gray, the ventral thoracic pleurites lighter gray; rostrum obscure yellow; antennæ dark brown throughout; wings with a dusky tinge; cell 1st $M_2$ open by the atrophy of m.

*Male.*—Length, 5 to 5.5 millimeters; wing, 6 to 6.5. Rostrum obscure yellow, the palpi dark brown. Antennæ dark brown throughout; flagellar segments oval with a conspicuous white pubescence. Head dark gray.



Mesonotum dark brownish gray without evident stripes; posterior sclerites of the mesonotum somewhat paler. Pleura dorsally grayish brown, the sternopleurite and pteropleurite light gray pruinose. Halteres brown, the base of the stem narrowly pale. Legs with the coxæ and trochanters yellow; femora brownish testaceous to darker brown, the segments outwardly passing into darker. Wings (Plate 1, fig. 2) with a faint dusky tinge; stigma barely indicated, pale brown; veins pale brown. Macrotrichiæ restricted to the apical half of vein $R_{4+5}$ and the apical two-fifths of veins $M_{1+2}$ and $M_3$. Anal angle very conspicuous. Venation: r lying opposite or just beyond the level of r-m; cell 1st $M_2$ open by the atrophy of m; m-cu about one-third its length before the fork of M.

Abdomen dark brown, including the hypopygium; sternites 1 to 4 with a median yellow stripe. Male hypopygium (Plate 2, fig. 2) with the caudal margin of the ninth tergite, *t*, unequally trilobed, the broader lateral lobes provided with larger setæ, the small, low median lobe with a lesser number of small setæ. Basistyles, *b*, relatively short and stout. Dististyles, *d*, fused basally, the outer style chitinized, gently curved to the subacute tip, the apical portion carinate; inner style subequal in length, fleshy, provided with numerous small setæ. Gonapophyses, *g*, small and slender, the two taken together appearing lyriform, each apophysis gently sinuous. Ædeagus, *a*, broad.

*Habitat.*—China (Che-kiang).

Holotype, male, hills south of Ning-po, May 1, 1925 (*Suenson*). Paratopotypes, 3 males.

The present fly shows features of resemblance to the genus *Orimargula* Mik and tends to break down the distinctions between the two genera. Despite this point of contact, I consider that the two genera are sufficiently differentiated. *Antocha* is essentially Holarctic in its distribution, with numerous species in eastern Asia and a lesser number elsewhere in the Nearctic and Palæarctic Regions. A few species occur farther south but then only at higher altitudes in the Himalayas and the mountains of the East Indian islands. *Orimargula*, on the contrary, is essentially Palæotropical in its distribution, with only the genotype, *alpigena* Mik, and the small fly described hereinafter as *O. flavella* sp. nov., occurring in the Holarctic Region. In the Tropics the genus shows a great distribution in the Ethiopian Region, and again in Australia, occurring as far south as Tas-

mania. It is probable that future collecting will add much to our knowledge of these two genera.

**Orimargula flavella sp. nov.**

General coloration obscure testaceous yellow; rostrum obscure yellow; antennæ indistinctly bicolorous; head light silvery gray; wings subhyaline, the veins pale.

*Female.*—Length, about 3.5 to 3.7 millimeters; wing, 4.5. Rostrum obscure yellow; basal segments of palpi obscure yellow, the terminal segments passing into brown. Antennæ with the scapal segments obscure yellow; flagellar segments indistinctly bicolorous, the bases of the individual segments pale, the apices more infuscated, the amount of darkening increasing on the outer segments. Head light silvery gray.

Thorax obscure testaceous yellow, the pteropleurite with a vague darkening. Halteres pale. Legs with the coxæ and trochanters yellow; remainder of the legs pale, only the terminal tarsal segments faintly darker. Wings subhyaline, the veins pale. Macrotrichiæ on the distal three-fourths of $R_{4+5}$ and $M_{1+2}$; all of $M_3$ except the base, and about six well scattered along vein $M_4$. Venation: r–m shorter than the basal section of $R_{4+5}$; r proximad of r–m, on $R_{2+3}$ at about its own length beyond the end of Rs; cell $M_3$ about twice its petiole; m–cu very oblique, about two-thirds to three-fourths its own length before the fork of M.

Abdomen obscure yellow, the lateral margins of the tergites slightly darker.

*Habitat.*—China (Che-kiang).

Holotype, female, hills south of Ning-po, May 1, 1925 (*Suenson*). Paratopotype, 1 female.

**Orimargula flavella fuscolineata subsp. nov.**

*Female.*—Length, about 4 millimeters; wing, 4.8. Generally similar to the typical form, differing as follows:

Antennæ somewhat longer, the flagellum uniformly dark brown. Mesonotal præscutum yellow with a very broad, conspicuous, dark brown, median stripe that ends just before the suture, the posterior end feebly bifid. Scutum broadly pale medially, the lobes infuscated; scutellum concolorous with the median area of the scutum; postnotal mediotergite pale, more darkened behind. Pleura yellowish testaceous, the anepisternum infuscated. Bases of veins $R_{4+5}$ and $M_{1+2}$ more extensively glabrous. Venation as shown in Plate 1, fig. 3.



*Habitat.*—China (Che-kiang).

Holotype, male, hills south of Ning-po, May 1, 1925 (*Suenson*).

**Molophilus velvetus sp. nov.**

General coloration light gray, the pleura dark brown; head yellow, the center of the vertex blue-gray; knobs of the halteres dark; legs dark brown; abdomen dark brown, the hypopygium paler; outer lateral angle of basistyle of male hypopygium prolonged into a slender setiferous lobe.

*Male.*—Length, about 4 millimeters; wing, 5.2. Rostrum and palpi brownish black. Antennæ short, the basal segments yellowish, the terminal segments passing into brown; flagellar segments oval. Head obscure yellow, the vertex extensively blue-gray, this color reaching the posterior lateral angles of the eyes but the occipital region remaining pale.

Pronotum pale dorsally. Lateral pretergites very pale yellowish white. Mesonotal præscutum with a blue-gray bloom, the narrow brown interspaces indicated behind; pseudosutural foveæ and tuberculate pits dark; lateral margins of the præscutum behind the foveæ narrowly yellowish; scutum dark, pruinose; scutellum dark, the caudal margin narrowly brownish yellow; postnotum dark brown. Pleura dark brown. Halteres brown, the knobs dark brown. Legs with the fore coxæ dark brown, the middle and posterior coxæ paler; trochanters brownish yellow; remainder of the legs dark brown. Wings yellowish, the costal region brighter yellow; anal angle narrowly darkened; veins yellowish, the macrotrichiæ pale brown. Venation: Proximal end of cell $R_3$ lying far basad of either cell $R_4$ or $R_5$, the two latter subequal in length; m-cu near midlength of $M_{3+4}$; vein 2d A elongate, sinuous, ending about opposite the caudal end of the slightly oblique m-cu.

Abdomen dark brown, the hypopygium brownish yellow. Male hypopygium (Plate 2, fig. 11) with the outer lateral angle of the basistyle, *b*, produced caudad into a slender lobe, setiferous except for the restricted acute apex which is chitinized; mesal lobe of basistyle very broad and flattened, the margin with abundant erect setæ. Dististyles two, lying in the notch of the basistyle; outer dististyle, *od*, flattened, the apex narrower, the distal third with an appressed velvety pubescence; inner margin of the style with a series of microscopic conical roughenings; inner, dististyle, *id*, broad at base, prolonged caudad into

a slender cylindrical rod, the surface with vague, microscopic appressed spinulæ.

*Habitat.*—China (Che-kiang).

Holotype, male, hills south of Ning-po, May 1, 1925 (*Suenson*).

**Erioptera (Erioptera) harukawai sp. nov.**

*Male.*—Length, about 4 to 4.2 millimeters; wing, 5.4 to 6. Generally similar to *E.* (*E.*) *elegantula* Alexander, differing chiefly in the wing pattern and the structure of the male hypopygium.

Flagellar segments shorter, more oval. Knobs of the halteres infuscated. Legs with the femoral bases broadly pale. Wings narrower, whitish subhyaline (Plate 1, fig. 4) with the brown pattern reduced to very tiny spots at the origin of Rs, $Sc_2$, r, tip of $R_1$, and as a vague seam along the cord, interrupted at the fork of M; veins brownish black. Venation: m-cu strongly sinuous; vein 2d A strongly sinuous, in some cases with a strong kink immediately beyond midlength. Male hypopygium with the acicular gonapophyses pale throughout. In *elegantula* they are heavily blackened apically.

*Habitat.*—Japan (Honshiu).

Holotype, male, Kurashiki, Okayama-ken, altitude 12 meters, April 6, 1925 (*C. Harukawa*). Paratopotypes, 6 males, April 2 to 16, 1925 (*Harukawa*); paratype, male, Gifu, Mino-no-kuni, May 3, 1921 (*K. Takeuchi*).

The species is named in honor of the collector, my friend Prof. C. Harukawa, entomologist of the Ohara Institute for Agricultural Research, to whom I am indebted for numerous Tipulidæ from Kurashiki and elsewhere in Japan.

**Gonomyia (Ptilostena) kuwayamai sp. nov.**

*Female.*—Length, about 5 millimeters; wing, 6 to 6.1. Closely related to *G.* (*P.*) *sachalinensis* Alexander (Karafuto), differing as follows:

Size smaller. Head grayish yellow, the center of the vertex darker. Mesonotal præscutum with the median brown stripe well indicated, the lateral stripes subobsolete; scutal lobes dark; scutellum reddish brown, somewhat testaceous; postnotal mediotergite dark medially, the sides paling to reddish brown. Pleura reddish without evident pale stripes as in *sachalinensis*. Halteres yellow, the knobs broken. Legs with the coxæ and trochanters reddish; femora yellow, passing into dark brown,



this color very extensive on the fore legs where it includes more than the distal two-thirds, narrower on the hind legs where less than the distal third is darkened; tibiæ light brown, the tips narrowly blackened; tarsi brownish black, the basitarsi paler at proximal ends. Wings (Plate 1, fig. 5) with a strong yellowish tinge, the costal region and the space between the branches of Cu lighter yellow; stigma small; veins dark brownish yellow. Venation: $Sc_1$ ending shortly before midlength of the relatively short, arcuated Rs, $Sc_2$ before the origin of Rs; $R_{2+3}$ relatively short and straight, only a little longer than the petiole of cell 2d $M_2$; in *sachalinensis* (Plate 1, fig. 6) $R_{2+3}$ is long and gently arcuated, nearly twice as long as the petiole of cell 2d $M_2$; veins $R_1$ and $R_2$ contiguous at wing-margin, closing cell $R_1$.

Abdomen with the caudal margins of the tergites very narrowly and indistinctly yellowish, much less evident than in *sachalinensis*.

*Habitat.*—Japan (Hokkaido).

Holotype, male, Maruyama, near Sapporo, Ishikari-no-kuni, July 24, 1925 (*S. Kuwayama*). Allotopotype, female; paratopotypes, 2 females.

This interesting fly is named in honor of Prof. Satoru Kuwayama, entomologist of the Hokkaido Agricultural Experiment Station, who has sent me many interesting Tipulidæ from Hokkaido and Karafuto. The most evident points in which the present species differs from *sachalinensis* are the coloration of the head and thorax, the darkened femora, the strongly flavescent wings, and the venation. The abdomen of the unique male type was lost before the hypopygium could be studied.

**Cladura bidens sp. nov.**

General coloration pale fulvous yellow; tips of the femora and tibiæ narrowly infuscated; abdomen bicolored, the caudal margins of the segments pale, the bases infuscated; male hypopygium only moderately incrassated, the basistyles stout; dististyle single, stout; each gonapophysis produced into two strong teeth at apex.

*Male.*—Length, about 6.5 millimeters; wing, 8.

*Female.*—Length, 7.5 milimeters; wing, 9.

Rostrum and palpi obscure yellow, the terminal segments of the latter a little infuscated. Antennæ relatively short, the basal segments yellow, the outer segments weakly bicolorous, the basal portions of the individual segments being a little darker than the tips. Head brownish yellow.

Pronotum yellow. Mesonotum shiny fulvous yellow, the median area of the præscutum a little darker, the lateral margins narrowly yellowish; scutellum and postnotum more infuscated. Pleura yellow. Halteres yellow, the knobs weakly infuscated. Legs with the coxæ and trochanters light yellow; femora and tibiæ brownish yellow, the tips narrowly but conspicuously dark brown; tarsi dark brown, the proximal ends of the basitarsi paler. Wings with a yellowish tinge, the stigmal region still more yellowish; veins dark. Macrotrichiæ relatively long and conspicuous. Venation: $Sc_1$ ending some distance beyond the origin of $R_2$, $Sc_2$ removed from its tip to a distance about equal to m-cu; Rs sinuous; r present, variable in position, usually at or before middistance between the fork of $R_{2+3}$ and the tip of $R_1$; m a little shorter than the petiole of cell $M_1$; m-cu at or beyond the fork of M.

Abdominal tergites indistinctly bicolorous, dark brown, the caudal margins of the segments paler; on the sternites this bicolorous appearance is more clearly indicated. In the female the brown of the segments is largly confined to the cephalic and lateral portions, leaving the median area pale as a more or less distinct median stripe. Subterminal segment of male dark brown; hypopygium pale yellowish brown. Male hypopygium (Plate 2, fig. 6) of the general structure of *C. autumna* Alexander, there being a single stout dististyle and the basistyle of moderate length and stoutness. Dististyle, *d*, broadest at base. Gonapophyses, *g*, appearing as flattened, winglike plates, the apex (Plate 2, fig. 8) bearing two powerful forceps-like teeth, the outer margin of the apophysis microscopically setulose. In *autumna* the apical teeth of the gonapophysis (Plate 2, fig. 9) consist of two weak denticles that lie side by side, the cephalic edge of the apophysis with a few weak denticles. The gonapophyses of *C. nipponensis* Alexander (Plate 2, fig. 7) are very different in structure.

*Habitat.*—Japan (Hokkaido).

Holotype, male, Maruyama, near Sapporo, Ishikari-no-kuni, October 6, 1923 (*M. Hori*). Allotopotype, female; paratopotypes, 5 males and females.

**Cladura megacauda** sp. nov.

General coloration pale pulvous yellow; tips of femora and tibiæ narrowly infuscated; abdomen bicolorous, yellow, the caudal margins of the individual segments narrowly infuscated; male hypopygium very large, nearly globular in form, with two dististyles.



*Male.*—Length, about 7 millimeters; wing, 8.4. Basal segments of the antennæ yellow, the flagellum broken. Head yellow.

Pronotum yellow. Mesonotum shiny fulvous yellow, without markings, the lateral margins of the præscutum paler. Pleura pale yellow. Halteres pale, the knobs darkened. Legs with the coxæ and trochanters pale yellow; femora and tibiæ yellow, the tips narrowly but conspicuously infuscated; basitarsi brown, the tips passing into dark brown, the terminal tarsal segments uniformly dark brown; legs conspicuously hairy. Wings (Plate 1, fig. 7) subhyaline, the costal region very slightly more yellowish; veins dark brown, those in the costal region a trifle paler. Venation: $Sc_1$ ending just beyond the origin of $R_2$, $Sc_2$ about three times its own length from the tip; r atrophied, indicated only by a weak spur on $R_2$; inner ends of cells $R_3$, $R_5$, and 1st $M_2$ in oblique alignment.

Abdomen yellow, the caudal margins of the segments narrowly infuscated to produce a narrowly banded appearance; basal tergites with a narrow dusky median stripe. Male hypopygium very large, the ninth tergite and sternite fused into a globular structure (Plate 2, fig. 5). Region of the ninth tergite (Plate 2, fig. 4) with a deep V-shaped notch, the extreme apex of the V with a smaller rounded notch; lateral lobes of the tergite thus formed extended into acute points; viewed laterally there are seen to be a second pair of stouter, more obtuse lobes of equal length immediately ventrad of the first pair. Sternal region, *s*, with a very broad V-shaped notch, the margin with abundant, conspicuous yellow setæ. Basistyle, *b*, slender, on the ventro-mesal face of each with two lobes. Two dististyles; outer dististyle, *od*, shorter, fleshy, the inner edge with long erect setæ; inner dististyle, *id*, longer and slenderer, narrowed distally, the basal portion with conspicuous erect setæ, the apex of the style curved.

*Habitat.*—Japan (Hokkaido).

Holotype, male, Sapporo, Ishikari-no-kuni, end of August, 1925 (*Kuwayama*).

*Cladura megacauda* is readily distiguished from all known species of *Cladura* by the very large and complicated male hypopygium.

**Dactylolabis gracilistylus sp. nov.**

General coloration dark gray; præscutum with four brown stripes; pleura clear gray; wings of male strongly infumed; male hypopygium with the long slender basistyle more than twice the length of the outer dististyle.

*Male.*—Length, 7.2 millimeters; wing, 7.8.

*Female.*—Length, about 6.8 to 7 millimeters; wing, 7.3 to 7.5.

Rostrum and palpi dark brown. Antennæ black throughout, the basal segment slightly pruinose; flagellar segments oval, very distinctly separated. Head light blue-gray with a small fuscous spot on the anterior vertex from which a capillary vitta extends caudad to the occiput. In the female this capillary line is less clearly defined.

Pronotum brownish gray, clearer gray laterally. Mesonotal præscutum gray with four narrow dark brown stripes; posterior sclerites of mesonotum darker gray. Pleura clear gray. Halteres dark brown, the base of the stem narrowly yellow. Legs with the coxæ light gray; trochanters brown, sparsely pruinose; legs brownish black, the femoral bases only a trifle paler. Wings (Plate 1, fig. 8) with a strong dusky tinge, the stigma and vague seams on the anterior cords still darker; veins dark brown, with conspicuous obliterative areas at the end of Rs and along the cord. Venation: $Sc_1$ ending immediately before the fork of Rs, $Sc_2$ at its tip; r at tip of $R_1$ and just beyond midlength of $R_2$; petiole of cell $M_1$ equal to the cell; m-cu at fork of M; arculus punctiform, veins R, M, and Cu being approximated at origin. In the type male, in both wings, veins $M_1$ and $M_2$ before the wing margin unite and fuse for a short distance back from the margin, forming an elongate-oval cell $M_1$. The type of the related *D. longicauda* Alexander, of Japan, exhibits the same peculiarity.

Abdomen of male elongated, dark gray, the hypopygium dark. Male hypopygium (Plate 2, fig. 3) with the basistyles very elongate and slender, more than twice as long as the outer dististyle, the latter nearly straight, stout; inner dististyle slenderer, curved.

In the females that are referred to this species a rather noteworthy difference in coloration from that in the male is found. The femora and tibiæ are light brown with blackened tips. The wings are paler with the brown clouds along the cord more evident. Cell 1st $M_2$ more elongate; cell $M_1$ varying



from relatively short to more than twice the length of the petiole. Halteres more uniformly pale in color.

*Habitat.*—China (Che-kiang).

Holotype, male, hills south of Ning-po, May 1, 1925 (*Suenson*). Allotopotype, female; paratopotypes, 1 male, 1 female.

**Limnophila (Ephelia) suensoni sp. nov.**

*Male.*—Length, about 6 millimeters; wing, 7. Generally similar to *L.* (*E.*) *dietziana* Alexander (Honshiu, Japan) but notably larger and with differences in coloration and structure of the male hypopygium.

Antennæ with the scape brownish black; basal flagellar segments light yellow, the intermediate segments bicolorous, the bases of the segments being slightly darkened. Præscutal pattern very similar, but the anterior ends of the intermediate stripes subobsolete. The black apical rings of the femora are slightly paler at their extreme tips so that the black annuli appear narrower and subterminal in position. Wings with the same abundant dotted pattern, the apical fascia (in ends of cells $R_2$ to $M_1$) tending to be broken into blotches. Venation: The supernumerary crossvein in cell M lies shortly beyond the level of the origin of Rs and opposite the end of vein 2d A. Male hypopygium with the outer dististyle weakly setiferous, as in *dietziana*, but the apical hook short and only gently curved. The differences between the species concerned are shown by the dististyles in figures on Plate 2 (fig. 14, *subaprilina* Alexander; fig. 12, *dietziana* Alexander; fig. 13, *suensoni* sp. nov.).

*Habitat.*—China (Che-kiang).

Holotype, male, hill south of Ning-po May 1, 1925 (*Suenson*).

This handsome crane fly is named in honor of the collector, Mr. E. Suenson, to whom I am indebted for many species of Tipulidæ from eastern China.

## Genus TROGLOPHILA Brunetti

1924. *Troglophila* BRUNETTI, Rec. Ind. Mus. 26: 99–100.
1925. *Esakiomyia* ALEXANDER, Ann. & Mag. Nat. Hist. IX 15: 73–74.

Brunetti proposed the name *Troglophila* (as a subgenus of *Limnophila*) for a peculiar fly from the Garo Hills, Assam. The following year, I erected the genus *Esakiomyia* for a Japanese species of the same group. There is some question in

my mind as to whether the orthopteran genus *Troglophilus* Krauss.,[2] having quite the same derivation, does not preclude the use of *Troglophila* Brunetti, despite the termination. However, until some agreement is reached as to what constitutes a preoccupied name, the genus *Esakiomyia* is placed in the synonymy.

As now constituted, *Troglophila* includes four species, which occur in China, Japan, Assam, and Borneo. These species may be separated by the following characters:

1. m-cu some distance before the fork of M; vein 1st A relatively short, ending opposite the fork of M. (Assam.)..... cavernicola (Brunetti).
   m-cu at or close to the fork of M; vein 1st A longer, extending to beyond one-third the length of cell 1st $M_2$..... 2.
2. Cell $M_1$ normally present; penultimate and ultimate sections of vein $R_1$ subequal, or the latter longer. (China.)..... seticornis sp. nov.
   Cell $M_1$ lacking; ultimate section of vein $R_1$ about one-half the length of the penultimate section..... 3.
3. Sc relatively short, $Sc_1$ ending opposite the fork of Rs; macrotrichiæ of veins long and conspicuous. (Japan.)..... filicornis (Alexander).
   Sc longer, $Sc_1$ ending between one-third and one-fourth the length of $R_{2+3}$; macrotrichiæ of veins inconspicuous. (Borneo.)
   monticola Edwards.

*Troglophila monticola* is known to me only by the proof sheets of Mr. Edwards's paper on the Bornean Nematocera, which was to have appeared in the Sarawak Museum Journal, volume 2, part 4, No. 8, for 1924. Mr. Edwards informs me that the paper had not appeared in press by the middle of 1925. The proof sheet supplies an excellent figure of the wing, indicating a species generally similar to *T. filicornis,* but differing as indicated above. It is probable that the description, when available, will furnish other differences of size, structure, and coloration between the two species.

The generic characters of *Troglophila* may now be recast as follows:

Rostrum very short. Antennæ elongate, filiform, presumably 16-segmented, the suture between the last two segments obsolete or nearly so; scapal segments very small; flagellar segments elongate-cylindrical, clothed with a short erect pubescence and inconspicuous verticils. Anterior vertex broad. Pronotum small and inconspicuous. Mesonotum with the tuberculate pits elongate, approximated or contiguous at the median line, lying slightly anterior to the level of the pseudosutural foveæ. Middle

[2] Sitzber. Akad. Wiss. Wien 78 [1] (1879) 533.



and posterior coxæ closely approximated. Tibial spurs slender. Wings with Sc ending opposite or slightly beyond the fork of Rs, $Sc_2$ at the tip of $Sc_1$; r on $R_2$, far removed from the tip of $R_1$; cell $M_1$ present (*seticornis*) or lacking; m-cu before (*cavernicola*) or close to the fork of M; anterior arculus present. Longitudinal veins of wing with macrotrichiæ almost to wing base. Male hypopygium of simple structure; dististyles two. Ovipositor entirely fleshy, the base cylindrical, the tiny tergal valves lying transversely, each terminating in a small spinous point.

Genotype, *Limnophila* (*Troglophila*) *cavernicola* Brunetti (Oriental Region).

**Troglophila seticornis sp. nov.**

General coloration light brownish yellow; head grayish brown; antennæ of male fully one-half longer than the body; wings with a faint brownish tinge; penultimate and ultimate sections of vein $R_1$ subequal or the latter a little longer; cell $M_1$ normally present; m-cu at or close to the fork of M.

*Male.*—Length, 3.8 to 4.5 millimeters; wing, 5.3 to 5.5; antenna, 6 to 7.

*Female.*—Length, 4 to 4.5 millimeters; wing, 5.1 to 5.8; antenna, 1.9 to 2.

Rostrum obscure yellow; basal segment of palpus brownish yellow, the remaining segments dark brown. Antennæ setiform, dark brown throughout; in male 15-segmented, the first flagellar segment shorter than the second, the second shorter than the third; beyond the third the segments gradually decrease in length to the end, the terminal segment elongate, approximately as long as the penultimate and probably the result of fusion of two segments. In the female the antennæ are indistinctly 16-segmented, the elongate terminal segment being weakly divided at near two-thirds the length. Head grayish brown.

Pronotum infuscated. Mesonotum light brownish yellow, the lateral margins of the præscutum somewhat paler; pseudosutural foveæ pale. Pleura testaceous yellow, the dorsal pleurites slightly infuscated. Halteres pale brown, the base of the stem narrowly yellow. Legs with the coxæ and trochanters yellowish testaceous; remainder of legs pale brown, the terminal tarsal segments darker. Wings (Plate 1, fig. 9) with a faint brown tinge; veins slightly darker brown. Macrotrichiæ present on

bases of M, Cu, and 2d A; $Cu_2$ without trichiæ as in all known Tipulidæ. Venation: Sc relatively short, $Sc_1$ ending about opposite one-third the length of $R_{2+3}$, $Sc_2$ at its tip; in a few cases Sc is shorter, ending more nearly opposite the fork of Rs; penultimate section of vein $R_1$ shorter than or subequal to the ultimate section, cell 2d $R_1$ thus being very deep; cell $M_1$ normally present, small; in a few cases cell $M_1$ is lacking but in such instances the tip of vein $M_{1+2}$ is asymmetrical, with usually the anterior of the branches ($M_1$) preserved, the posterior branch ($M_2$) being atrophied or with only a marginal trace present; m-cu close to the fork of M; cell 1st $M_2$ rectangular, gently widened outwardly; cell 2d A broad.

Abdominal tergites dark brown, somewhat paler laterally; sternites obscure yellow.

*Habitat.*—China (Che-kiang).

Holotype, male, hills south of Ning-po, May 1, 1925 (*Suenson*). Allotopotype, female; paratopotypes, 6 males and females.

TIPULINÆ

**Oropeza shirakiella sp. nov.**

*Female.*—Length, 12 to 13 millimeters; wing, 11 to 11.5. Generally similar to *O. candidipes* Alexander (Honshiu, Japan), differing especially in the antennæ and coloration.

Antennæ much shorter. Flagellar segments beyond the first bicolorous, the basal portion of each segment dark brown, the distal portion paler, the terminal segments passing into uniform brown. Præscutum with four stripes; the median vitta of *candidipes* broadly divided by a line of the ground color. Legs with the fore and middle tibiæ strongly infuscated, the narrow base and broader apex of each snowy white; posterior tibiæ entirely snow white; all tarsi white. Wings with the ground color more saturated, especially the costal region which is strongly infumed; prearcular cells largely dark; white prestigmal and poststigmal spots very conspicuous. Abdominal tergites dark brown, the basal rings of the individual segments slightly paler; sternites obscure testaceous yellow, the caudal margins of the segments a little darker.

*Habitat.*—Taiwan.

Holotype, female, Tamaru (Rato), August 31, 1923 (*T. Shiraki*). Paratopotype, female.



This handsome *Oropeza* is named in honor of Prof. Tokuichi Shiraki, entomologist for Formosa, to whom I am greatly indebted for many kind favors.

**Tipula acifera sp. nov.**

Belongs to the *annulicornis* group; size very small (wing less than 10 millimeters); antennæ (male) elongate, bicolorous; mesonotal præscutum brownish yellow with three brown stripes, the median stripe paler in front and split by a capillary brown vitta; pleura dark brown; male hypopygium with the median lobe of the tergite cylindrical, gradually narrowed to the blunt tip.

*Male.*—Length, 8 millimeters; wing, 8.5; antenna, about 4.2.

*Female.*—Length, 10 millimeters; wing, 9.

Frontal prolongation of the head short, brown, the nasus very short; palpi dark brown. Antennæ elongate in the male, if bent backward extending about to one-third the length of the abdomen; first scapal segment obscure yellow, the second segment light yellow; flagellum bicolorous, the second flagellar segment and those following with the basal enlargement dark brown, the remainder of each segment yellow. In the female the antennæ extend about to the wing root. Head grayish brown, more yellowish anteriorly. In the female the anterior vertex is split by a distinct capillary blackish vitta, the posterior orbits narrowly pale.

Pronotum dark brown. Mesonotal præscutum brownish yellow with three brown stripes, the lateral stripes entire, the median stripe entire only at the caudal end, the anterior end becoming subobsolete, the margins and a capillary median line remaining dark brown; scutum brownish testaceous, the centers of the lobes dark brown; scutellum testaceous, the surface more or less pollinose. Pleura dark brown. Halteres yellow, the knobs dark brown, their apices paler. Legs with the coxæ brown basally, the apices passing into obscure yellow; trochanters obscure yellow; fore femora dark brown, the bases narrowly obscure yellow; middle and hind femora brownish yellow, the tips rather narrowly infuscated; tibiæ and tarsi dark brown. In the female the femora are more extensively and uniformly darkened. Wings (Plate 1, fig. 10) with a faint brown tinge; cells C and Sc slightly darker; stigma oval, dark brown; narrow darker seams along Rs, the cord, and veins $R_{4+5}$, Cu, and 2d A;

conspicuous obliterative areas before the cord, extending from before the stigma, crossing cell 1st $M_2$ into the base of cell $M_3$; a conspicuous pale spot beyond the stigma in cells 2d $R_1$ and base of $R_2$; veins dark brown, more yellowish just before the stigma; the veins in the obliterative areas are so pale as to be almost invisible, especially the basal deflection of $M_3$. Venation: Cell 1st $M_2$ very small, relatively narrow, m being from one-third to one-half the length of the basal section of $M_{1+2}$; cell $M_1$ deep; vein 2d A relatively long, extending to about opposite two-thirds the length of the first section of vein $Cu_1$.

Abdominal tergites obscure fulvous yellow, the segments margined laterally and caudally with black, the median line of the tergites more or less infuscated, restricting the ground color to the sublateral regions of the sclerites; sternites obscure fulvous yellow, the caudal margins of the segments narrowly ringed with dark brown, the eighth sternite entirely blackened; hypopygium light brown. Male hypopygium with the median region of the tergite produced caudad into a slender blackened cylindrical rod that narrows gradually to the narrow blunt tip.

*Habitat.*—Japan (Shikoku).

Holotype, male, Mount Ishitsuchi, altitude 1,000 meters, August 10, 1925. Allotopotype, female.

*Tipula acifera* is allied to *T. insulicola* Alexander, *T. nikkoensis* Alexander, and *T. sparsiseta* Alexander, differing in the small size and structure of the male hypopygium. The fly was included in some interesting species from Shikoku sent to me by Professor Harukawa.

**Tipula cylindrostylata sp. nov.**

Belongs to the *nipponensis* group; closely allied to *T. querula* Alexander (Japan), differing in the more elongate antennæ and the structure of the hypopygium, especially the feebly notched tergite and the long curved outer dististyle.

*Male.*—Length, about 11 millimeters; wing, 12.5; antenna, about 4.

*Female.*—Length, about 12 millimeters; wing, 12.

Frontal prolongation of the head clear light yellow, the palpi beyond the basal segment dark brown; nasus long and slender. Antennæ (male) relatively elongate, if bent backward extending to beyond the base of the abdomen; flagellar segments uniformly blackened. Pleura with the sternopleurite and anepisternum extensively darkened. Wings somewhat darker, the pale areas more clearly delimited, five in number; namely, pre-



stigmal, poststigmal, cell 1st $M_2$, outer end of cell M, and the outer end of cell 1st A near vein 2d A. Venation: Cell 1st $M_2$ somewhat smaller.

Abdominal tergites bicolorous, dark brown, the bases of the segments obscure yellow, the amount more extensive on the basal segments, this coloration becoming more restricted behind; basal sternites more uniformly yellow. Male hypopygium (Plate 2, fig. 15) with the ninth tergite, *t*, simple, the caudal margin gently notched. Outer dististyles, *od*, very long and slender, curved mesad, pale throughout, their surfaces with conspicuous erect setæ. Inner dististyles, *id*, viewed laterally simple, the apex produced into an acute point.

*Tipula querula* has the ninth tergite with a conspicuous U-shaped median notch, the margin of which is blackened, the base untoothed; outer dististyle of moderate length only.

*Habitat.*—China (Che-kiang).

Holotype, male, hills south of Ning-po, May 1, 1925 (*Suenson*). Allotopotype, female; paratopotype, male.

There can be little question that flies of this general type were the ancestors of *Nesopeza* Alexander, *Mitopeza* Edwards, and through them the remaining Dolichopezaria.

**Tipula yamamuriana sp. nov.**

General coloration gray, the præscutum with three brown stripes; antennæ bicolorous; wings with a strong brownish tinge; stigma dark brown; pale areas before the cord and including the basal half of cell M; abdominal tergites with brown sublateral stripes.

*Female.*—Length, 28 millimeters; wing, 23.5. Frontal prolongation of the head dark gray, the nasus elongate; palpi dark brown, the incisures slightly paler. Antennæ with the basal segment elongate, heavily pruinose; second segment brown; flagellar segments bicolorous; first flagellar segment black, obscure brownish yellow at both ends; succeeding flagellar segments black basally, the apical portion brownish yellow, the amount of black gradually increasing outwardly, the terminal segments uniformly infuscated; flagellar segments only moderately incised beneath; verticils conspicuous. Head light gray; vertical tubercle obsolete.

Pronotum light gray. Mesonotal præscutum clear light gray with three brown stripes, the lateral stripes short and narrow, of a paler brown than the median area; median stripe V-shaped, the anterior portion being invaded by an acute triangle of the

ground color; scutum gray, each lobe with a single large brown spot; scutellum pale whitish gray; postnotal mediotergite whitish gray, the median area vaguely darkened. Pleura gray, the pleurotergite with a brown spot on the tumid ventral portion. Halteres brown, the base of the stem paler. Legs with the coxæ pale, white pruinose; trochanters obscure yellow; femora reddish brown, the tips passing into black; tibiæ light brown, the tips broadly blackened; tarsi dark brown, passing into black; tibial spurs very slender; tarsi a little longer than the tibiæ. Wings with a strong brownish tinge, the base and cells C and Sc more yellowish; stigmal region very conspicuous, dark brown; whitish subhyaline areas before the cord, including cells 1st $R_1$, the outer fifth of R, the proximal half of 1st $M_2$, and the extreme basal portions of cells $M_3$ and $M_4$; a second conspicuous pale wash includes the entire basal half of cell M; veins black, brown in the costal region; obliterative areas including the end of Rs, and the basal sections of veins $M_{1+2}$, and $M_3$. Venation: Cell $R_2$ acute at origin, both sections of vein $R_2$ being approximately in alignment; cell 1st $M_2$ broad and ample, the cephalic margin gently arcuated; the obliterative sections that surround the cell subequal in length; m and petiole of cell $M_1$ subequal.

Abdominal tergites dark gray with a broad sublateral brown stripe on either side, the lateral margins broadly, the caudal margins more narrowly, ocherous; the brown sublateral stripes are interrupted or nearly so by the conspicuous blackened impressed basal areas at the sides of the tergites; the gray median area of the tergum begins on the third segment and continues to the end of the abdomen; the brown sublateral stripes become narrowed behind, obsolete on the sixth tergite; sternites brownish gray basally, the outer sternites clearer gray, the caudal margins of the segments narrowly and indistinctly pale. Ovipositor with the basal shields shiny black; valves brownish horn color, all valves smooth; tergal valves slender.

*Habitat.*—Japan (Honshiu).

Holotype, female, Kurashiki, Okayama-Ken, along a woodland brook, altitude 15 meters, May 27, 1925 (*Harukawa*).

*Tipula yamamuriana* is apparently most closely allied to *T. kuzuensis* Alexander. It was associated with other vernal crane flies at Kurashiki, especially with *Erioptera* (*Ilisia*) *asymmetrica* Alexander, *Pseudolimnophila inconcussa* (Alexander), *Limnophila* (*Ephelia*) *subaprilina* Alexander, *Tipula nipponensis* Alexander, *T. yamata* Alexander, and *T. aino* Alexander.



The fly bears a rather marked superficial resemblance to *T. aino* but differs in the wide cell 1st $M_2$ and the conspicuous pale base to cell M.

I dedicate this fly to the memory of Shôzaburo Yamamura, the first native Japanese student of the Tipulidæ. I am indebted to Prof. Teiso Esaki for an account of Yamamura's life, of which a brief summary is given herewith:

Shôzaburo Yamamura was born in either 1893 or 1894 in Minakuchi, Kôga-gun, Province of Omi, of Christian parents. He studied in the Minakuchi Agricultural and Dendrological School and graduated therefrom in March, 1912. During his school days he was one of the leaders of the Minakuchi Boys Entomological Society, founded in 1910, with more than fifty members in various parts of Japan. Upon his graduation, in 1912, he entered Nawa's Entomological Laboratory in Gifu as an entomological assistant. In April, 1915, he moved to the Forestry Institute of Keikidô, Keijô, Chosen, where he died of typhoid fever on December 5, 1915. There can be no question that in the death of Yamamura, Japanese entomology lost one of the most promising of its younger students. Although his early work was devoted to the Lepidoptera, especially the Lithosiidæ, he later had turned his whole attention to the Tipulidæ with the intention of becoming Japan's authority on the group. Only his early decease prevented his attaining this position. Yamamura had amassed a large and valuable collection of Tipulidæ at the time of his death, but this has entirely disappeared. In 1918 and later, through the kind efforts of Dr. Akio Nohira and Professor Esaki, I tried to locate this collection, which, according to Doctor Nohira, included in excess of one hundred species, but this search was unavailing. A portrait of Yamamura is given in the Entomological Magazine (Kyoto) 2 (1916) 64.

# ILLUSTRATIONS

[Legend: *A*, anal veins; *b*, basistyle; *Cu*, cubitus; *d*, dististyle; *dd*, dorsal dististyle; *g*, gonapophysis; *id*, inner dististyle; *M*, media; *od*, outer dististyle; *R*, radius; *Sc*, subcosta; *t*, tergite; *vd*, ventral dististyle. Venational terminology used: Comstock-Needham-Tillyard. Hypopygial terminology used: Crampton.]

## PLATE 1

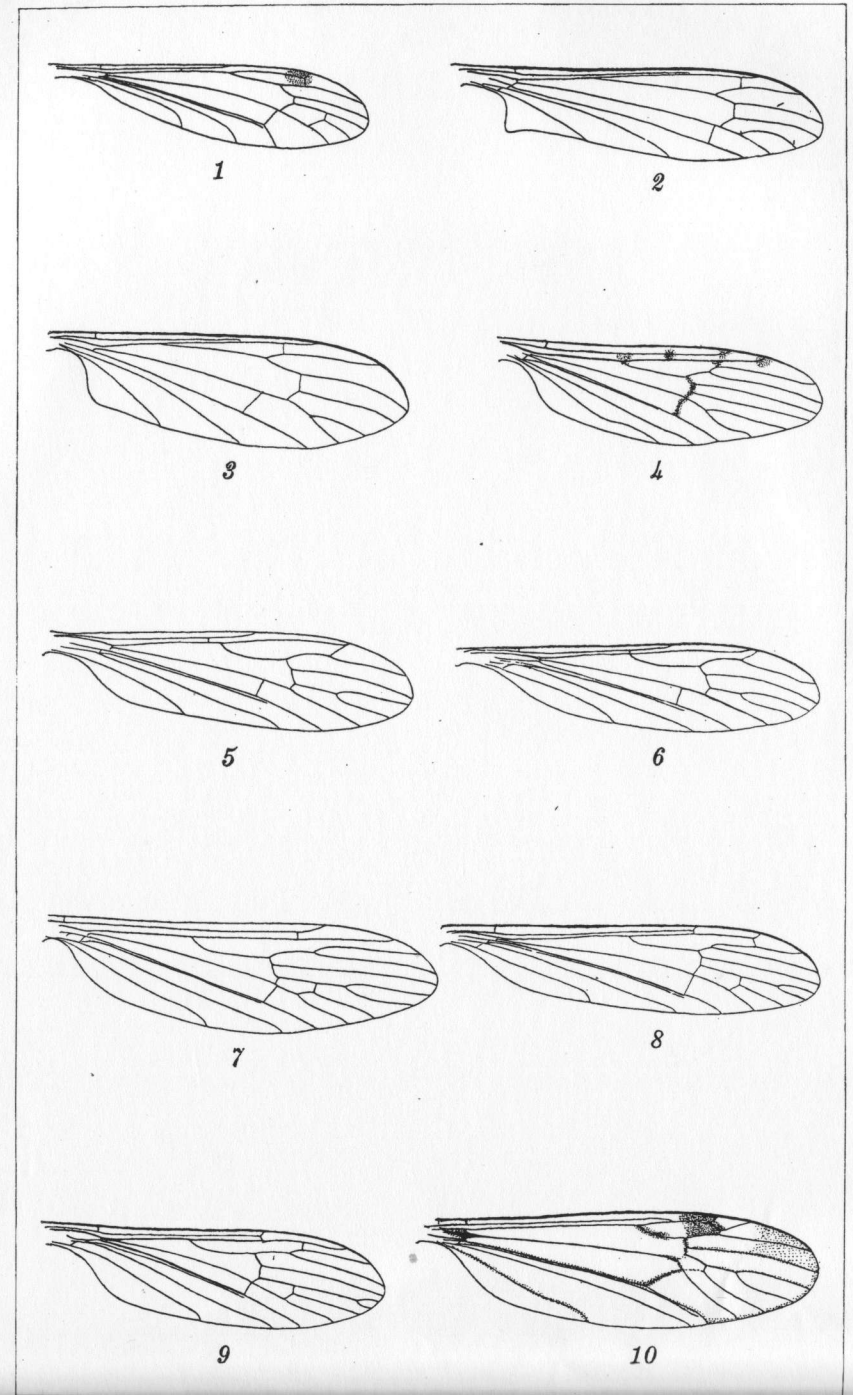
FIG. 1. *Dicranomyia paramorio* sp. nov., wing.
2. *Antocha* (*Antocha*) *confluenta* sp. nov., wing.
3. *Orimargula flavella fuscolineata* subsp. nov., wing.
4. *Erioptera* (*Erioptera*) *harukawai* sp. nov., wing.
5. *Gonomyia* (*Ptilostena*) *kuwayamai* sp. nov., wing.
6. *Gonomyia* (*Ptilostena*) *sachalinensis* Alexander, wing.
7. *Cladura megacauda* sp. nov., wing.
8. *Dactylolabis gracilistylus* sp. nov., wing.
9. *Troglophila seticornis* sp. nov., wing.
10. *Tipula acifera* sp. nov., wing.

## PLATE 2

FIG. 1. *Dicranomyia paramorio* sp. nov., male hypopygium.
2. *Antocha* (*Antocha*) *confluenta* sp. nov., male hypopygium.
3. *Dactylolabis gracilistylus* sp. nov., male hypopygium.
4. *Cladura megacauda* sp. nov., male hypopygium, dorsal.
5. *Cladura megacauda* sp. nov., male hypopygium, lateral.
6. *Cladura bidens* sp. nov., male hypopygium.
7. *Cladura nipponensis* Alexander; gonapophysis.
8. *Cladura bidens* sp. nov., gonapophysis.
9. *Cladura autumna* Alexander; gonapophysis.
10. *Cladura autumna* Alexander; tergite.
11. *Molophilus velvetus* sp. nov., male hypopygium.
12. *Limnophila* (*Ephelia*) *dietziana* Alexander; outer dististyle.
13. *Limnophila* (*Ephelia*) *suensoni* sp. nov., outer dististyle.
14. *Limnophila* (*Ephelia*) *subaprilina* Alexander; outer dististyle.
15. *Tipula cylindrostylata* sp. nov., male hypopygium.







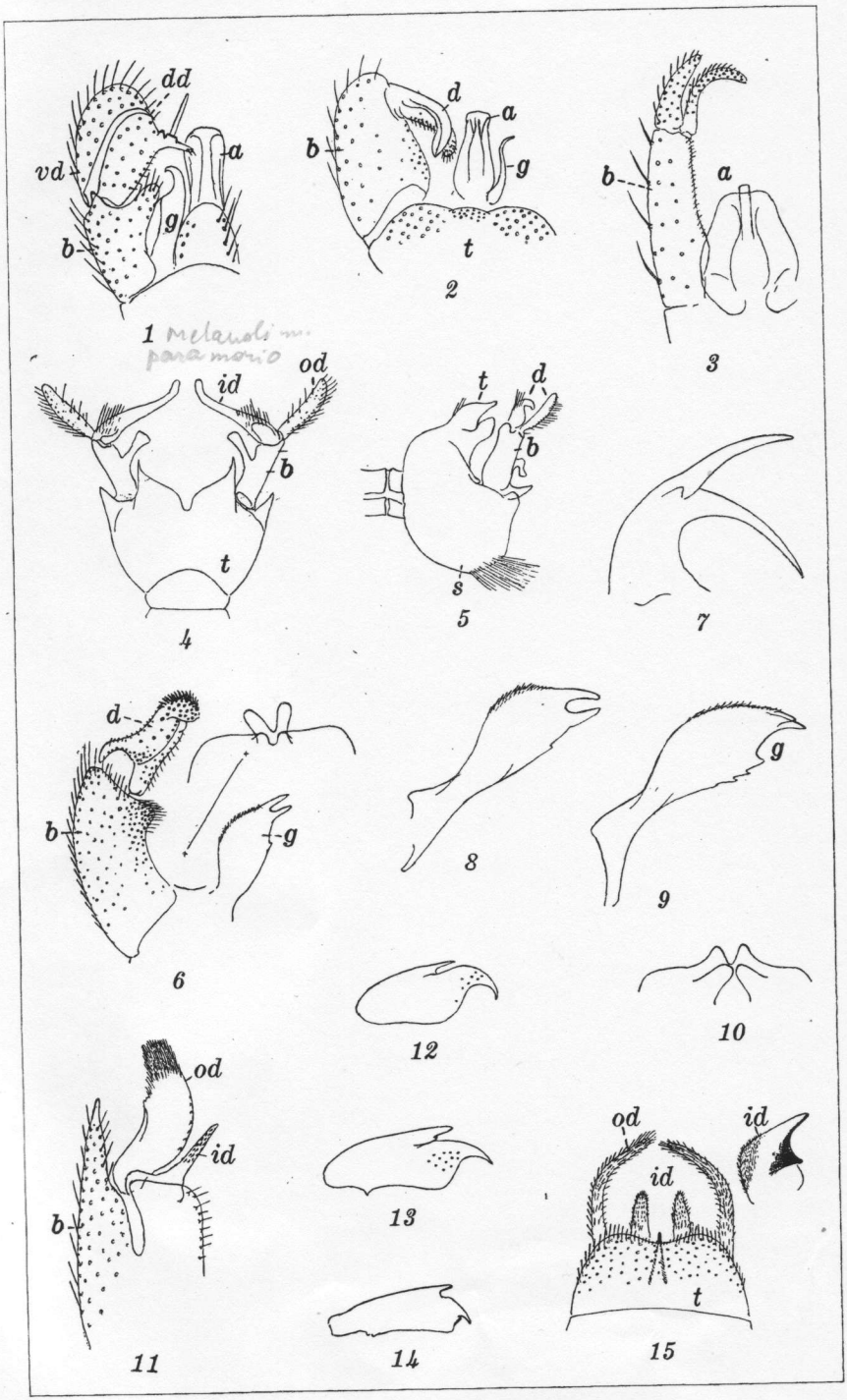

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PLATE 2.