

RECORDS AND DESCRIPTIONS OF JAPANESE  
TIPULIDÆ (DIPTERA), PART VI  
THE CRANE-FLIES OF HONSHU, II

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EIGHT PLATES

The present report on the crane-flies of Honshu brings the cumulative list for the island to 96 species, with a total of 350 species treated in the six parts so far prepared under this general title. As before, particular stress is placed on the describing and illustrating of species that have not been discussed or shown hitherto. At this time, species of the two tribes Pediciini and Eriopterini are considered. As was the case in the preceding report, the materials here discussed were taken in greatest part by Dr. Kintaro Baba, of Kurokawa, to whom my continued thanks and appreciation are extended.

RECORDS OF DISTRIBUTION

PEDICIINI

**PEDICIA** Latreille

*Pedicia* LATREILLE, Gen. Crust. et Ins. 4 (1809) 255.

As has been stressed by the present writer in various other papers, the species of the typical subgenus *Pedicia* as known from the Japanese Empire present unusual difficulties, particularly in those species that tend to bridge the gap between the typical group and *Tricyphona*. The group of forms that center around *Pedicia* (*Pedicia*) *grandior* have venational characters that approach closely those of various unquestioned members of the subgenus *Tricyphona*. I am providing a short preliminary discussion concerning these two major groups of the genus.

Subgenus *Pedicia* Latreille. The regional members of the subgenus may be separated roughly into two groups, based on venational characters.

1. Wings with r-m at or beyond the fork of Rs, in the latter case R<sub>4+5</sub> short to very short, with two sections; cord oblique; cells 1st M<sub>2</sub> short-pentagonal. Included species *P. (P.) brachycera* Alexander (Honshu), *P. (P.) cockerelli* Alexander (Eastern Siberia, Karafuto), *P. (P.) daimio* Matsumura (Hokkaido),

*P. (P.) gifuensis* Kariya (Honshu), *P. (P.) lætabilis* Alexander (Korea), *P. (P.) nawai* Kariya (Honshu), and *P. (P.) subfal-cata* Alexander (Eastern China).

2. Wings with r-m before the fork of Rs,  $R_{4+5}$  thus entire, longer than r-m; cord more nearly transverse; cell 1st  $M_2$  more elongate, pentagonal or hexagonal in outline. Included species *P. (P.) cubitalis* Alexander (Honshu), *P. (P.) gaudens* Alexander (Honshu), *P. (P.) grandior* Alexander (Honshu), and *P. (P.) issikiella* Alexander (Shikoku).

3. Intermediate in characters between the above groups; r-m beyond the fork of Rs on  $R_{4+5}$ , as in Group 1, but cell 1st  $M_2$  elongate and cord subtransverse. Included species *P. (P.) subtransversa* Alexander (Honshu).

Subgenus *Tricyphona* Zetterstedt. In his last treatment of the British Tipulidæ, Edwards (1938)<sup>1</sup> recognized the genus *Pedicia* Latreille, with four subgenera, including besides typical *Pedicia* (type, *rivosa* Linnæus), *Crunobia* Kolenati (type, *schineri* Kolenati), *Amalopsis* Haliday (type *occulta* Meigen), and *Tricyphona* Zetterstedt (type, *immaculata* Meigen). I still do not believe it to be advisable to attempt to split the basic subgenus *Tricyphona* into lesser groups since it is certain that when the World fauna is considered so many additional groups of comparable value are to be found that it would seem illogical not to provide names for them and it would be found to be almost impossible to distinguish between such groups except on very trivial and merging characters.

In the Japanese fauna, several species of the *occulta* group (*Amalopsis* Haliday) are found, some of which are discussed later. In addition to the venational character mentioned by Edwards of a very deep and sessile cell  $M_3$ , with m-cu connecting with  $M_4$ , it may be indicated that vein  $R_{2+3+4}$  is present and is unusually erect; cell  $M_2$  is open or closed in the different species. It may be noted further that some Nearctic species that center about *vernalis* Osten Sacken have the medial and cubital fields very much as in *occulta* and allies but the radial field is quite distinct in the long vein  $R_{4+5}$ . The nature of the shifting of the veins at the end of Rs and the transfer of vein  $R_4$  from the generalized position on the posterior fork of the sector onto the upper fork to produce an element  $R_{2+3+4}$  is one of the most striking features in the venation of the Pediciini.

<sup>1</sup> Edwards, F. W. British short-palped crane-flies. Taxonomy of adults. Trans. Soc. British Ent. 5 (1938) 1-168, 31 figs., 5 pls.

Any student working on the group should become familiar with the problem which has been discussed in the following references.<sup>2</sup>

- 29 (291). **PEDICIA (PEDICIA) BRACHYCERA** Alexander, Plate 1, fig. 1.  
*Pedicia brachycera* ALEXANDER, Philip. Jour. Sci. 50 (1933) 145-146,  
 pl. 1, fig. 12 (venation), pl. 3, fig. 40 (♀ antenna).  
*Pedicia brachycera* KARIYA, Philip. Jour. Sci. 53 (1934) 304.

The unique type was from Shirouma-dake, Shinano, taken August 8, 1931, by Machida.

ECHIGO: Kajiyama, Nechi, Itoyogawa, August 18, 1954 (*Yoshitomo Maruyama*); Baba No. 36.

Wings with the darkened seam along distal section of vein  $Cu_1$  not reaching the margin. Male hypopygium (Plate 1, fig. 1) with the posterior border of the tergite only moderately produced, subtruncate, with sparse small setæ, the margin fringed with delicate setulæ. Basistyle, *b*, stout, the interbase, *i*, an unusually short, suboval darkened blade. Dististyle, *d*, large, roughly suboval in outline, the outer margin with about eight small spines; beak very obtuse, with a small sclerotized flange near its base; mesal face of style with a low lobe that is densely set with slender spinous points, those nearer the base becoming very small; disk of style with numerous small spinous setæ, with a few very long bristles near outer end. Phallosome small, the gonapophyses shorter than the ædeagus, the obtusely rounded tips microscopically crenulate.

- 30 (292). **PEDICIA (PEDICIA) CUBITALIS** Alexander. Plate 1, fig. 2.  
*Pedicia (Tricyphona) cubitalis* ALEXANDER, Philip. Jour. Sci. 51  
 (1933) 396-397, pl. 1, fig. 16 (venation).

The type, a unique female, was from Mount Kurobegoro, Etchu, taken in a subalpine meadow, altitude 7,800 feet, August 10, 1931, by Imanishi. Two additional males are here recorded, one of which is designated as allotype of the species.

*Male*.—Length, about 23 to 24 mm; wing, 21 to 23 mm; antenna, about 1.6 to 1.9 mm.

<sup>2</sup> Alexander, C. P. A new interpretation of the wing-venation of the Pediciine crane-flies (Tipulidæ, Diptera). Ent. News 29 (1918) 201-205, 1 pl.

Alexander, C. P. The interpretation of the radial field of the wing in the Nematoceros Diptera, with special reference to the Tipulidæ. Proc. Linn. Soc. New South Wales 52 (1927) 42-72, 22 figs.

Alexander, C. P. A comparison of the systems of nomenclature that have been applied to the radial field of the wing in the Diptera. 4th Internat. Congress Ent. 2 (1929) 700-707, 3 pls.

Antennæ 13-segmented; flagellar segments crowded, shorter than the verticils, outer three or four segments much smaller. Head with vertical depression relatively shallow, subcircular in outline. Mesonotal præcutum with four darker stripes, the intermediate pair narrow, very vaguely bordered by darker; vestiture of interspaces white, conspicuous. Legs longer than in female. Wings with the dark pattern more as in *gaudens*, excepting the narrow brown seam along vein Cu; central area of disk paler than the broad border; cell R<sub>1</sub> extensively darkened.

Abdominal tergites fulvous, with a conspicuous brown central stripe, wider and slightly darker behind; lateral borders narrowly pruinose; basal sternites light yellow, the outer segments, including the hypopygium, passing into brownish black. Male hypopygium (Plate 1, fig. 2) with the median area of the tergite somewhat produced, the outer border nearly truncate to very gently emarginate. Basistyle, *b*, with the interbasal blade weakly dilated on outer half. Dististyle, *d*, with an unusually heavy armature of spines, including a row of about 15 major spines along the outer margin, becoming more numerous but not larger at outer end of row; a second series of smaller spines down face of beak near inner margin, totaling about 12 to 15, the more basal ones more slender; lower beak with the usual elongate welt or modified area, provided with numerous strong setæ. Ædeagus terminating in a de-curved black head.

Allotype, male, Mount Ontake, Hida, July 6, 1934 (*H. Ise*); through the kindness of Kariya.

31 (293). **PEDICIA (PEDICIA) GAUDENS (Alexander).**

Plate 1, fig. 3.

*Tricyphona gaudens* ALEXANDER, Ent. Soc. America Ann. 17 (1924)  
440-441.

The type was from the vicinity of Kyoto, taken in May, 1923 by Takeuchi. Other records include Mount Daisen, Hoki, July 1, 1931 (Tokunaga); Takane, Kuga-gun, Nagato, May 6, 1930 (Teranishi).

This interesting fly was described as a *Tricyphona* and most nearly approximates this subgenus of any known member of the present subgenus. The darkened seam along vein Cu of the wings is entirely lacking. Venation: r-m moderately oblique, connecting with Rs at or shortly before fork; cell 1st M<sub>2</sub> elongate, pentagonal in outline, subequal in length to the distal section of vein M<sub>3</sub>; petiole of cell M<sub>1</sub> variable in

length, in the type shorter than m, in other specimens much longer, up to twice the length of m; m-cu at or shortly beyond the fork of M.

Antennæ 13-segmented; basal two segments black, flagellum fulvous. Male hypopygium (Plate 1, fig. 3) with the posterior border of tergite strongly produced into a subquadrate lobe, its posterior margin truncate or virtually so. Basistyle, *b*, with the outer lobe stout, conspicuously setiferous, some of the bristles very long; interbase expanded into a broad blade. Dististyle, *d*, strongly fused with the apex of the basistyle, the suture indicated on the lateral part; style yellow, the beak short and stout; outer margin with about eight small spines, those nearest the beak a little larger; near margin of style on side of beak with a further concentration of eight much smaller spines; elongate welt of the lower beak with numerous strong spinous setæ.

32 (294). **PEDICIA (PEDICIA) GIFUENSIS** Kariya.

*Pedicia gifuensis* KARIYA, Philip. Jour. Sci. 53 (1934) 305-306, pl. 1, fig. 2 (wing), 6 (♂ hypopygium), 7 (antenna), 8 (ovipositor).

*Pedicia gifuensis* ESAKI, et al., Icon. Insect. Japon. Ed. 2 (150) 1520 fig.

The type was from Mount Kinkwa, Hida, taken from April 13 to May 27 and again in August and September.

ECHIGO: Kurokawa, June 12, 1953 (*Kintaro Baba*).

A large and showy species with the darkened wing pattern heavy and conspicuous, the dark seam along vein Cu broad, at margin expanded so as to include also the end of vein 1st A. Fore femora extensively blackened, with only the bases yellow. I do not possess a male which, from the original description and figure, is distinctive in the nature of the dististyle; this bears a sole-shaped welt on the lower face, the armature of the polished apex consisting only of three or four minute spines.

The subspecies *Pedicia (Pedicia) gifuensis sawadai* Kariya, taken at Hakone, where it flies in May, is generally similar to the typical form, having the dark seam along Cu not expanded at tip and the darkened area at origin of Rs not quite reaching vein M.

33 (295). **PEDICIA (PEDICIA) GRANDIOR** (Alexander).

*Tricyphona grandior* ALEXANDER, Ent. Soc. America Ann. 16 (1923) 69-70.

*Tricyphona grandior* ESAKI, et al., Icon. Insect. Japon. Ed. 2 (1950) 1520, fig.

*Pedicia (Tricyphona) grandior* ALEXANDER, Philip. Jour. Sci. 82 (1953) 59, pl. 2, fig. 15 (♂ hypopygium).

The type was from Mount Hakuba, Shinano, taken July 20, 1918, by Issiki. The fly evidently is quite distinct from its nearest described relatives, *Pedicia* (*Pedicia*) *cubitalis* (Alexander) and *P. (P.) gaudens* (Alexander). This is a relatively large species (body and wing 18 mm), dull gray, the præscutum with three clearer gray stripes. Antennæ very reduced, 11-segmented. I had briefly described the dististyle in the original account and in the later reference had provided a somewhat diagrammatic figure, made from the dry type which is preserved in Taihoku, Formosa.

34 (296). **PEDICIA (PEDICIA) NAWAI** Kariya.

*Pedicia nawai* KARIYA, Philip. Jour. Sci. 53 (1934) 304-305, pl. 1, fig. 1 (wing), 5 (♂ hypopygium).

The type was from Mount Ontake, Hida, collected April 16, 1897, by Y. Nawa, for whom it was named. No other specimen is known to me. From Kariya's description it evidently is distinct in the small size (body and wing 17 mm), pale wing pattern, and in the structure of the male hypopygium.

The wing pattern has the costal border much paler than the other darkened areas, the humeral region yellowed, dark spot at origin of Rs circular in outline, not reaching vein M behind; darkened cubital seam reaching the margin. The venation shows r-m oblique, at fork of Rs, with  $R_{4+5}$  much shorter than r-m; cell 1st  $M_2$  relatively short, pentagonal; m-cu at fork of M; petiole of cell  $M_1$  longer than m. Male hypopygium with the dististyle relatively large, subrectangular in outline, with a small bladelike protuberance on inner face. Kariya does not mention the presence of marginal spines as are common in other species of the subgenus and it is presumed that these are lacking.

35 (297). **PEDICIA (PEDICIA) SUBTRANSVERSA SUBTRANSVERSA** Alexander.

*Pedicia subtransversa* ALEXANDER, Philip. Jour. Sci. 50 (1933) 146-147, pl. 1, fig. 13 (venation), pl. 3, fig. 41 (♂ hypopygium).

*Pedicia subtransversa* KARIYA, Philip. Jour. Sci. 53 (1934) 304.

The type male was from Shirouma-dake, Shinano, taken August 8, 1931, by Machida. Additional material has been taken in North Korea, Chonsani, Paiktusan and in the Seren Mountains, from late July to early October, 1937, by Alexander Yankovsky.

35a (297a). *PEDICIA (PEDICIA) SUBTRANSVERSA TRIACANTHA* subsp. nov. Plate 1, fig. 4.

*Male*.—Length, about 21 to 23 millimeters; wing, 19 to 22. Generally as in the typical subspecies, differing as follows: Coloration of head and thorax of holotype clear light gray, the præscutal stripes slightly darker gray, very poorly defined against the ground. In the allotype female, the ground color of the præscutum is obscure yellow, the three gray stripes distinctly separated. Knobs of halteres strongly infuscated. Tips of femora and tibiæ broadly blackened. Wing pattern much darker and more conspicuous, including the costal border which is palest immediately beyond h; in cases with a dark spot beyond the cord, in the holotype on m, in other specimens at the fork of  $M_{3+4}$ . Venation:  $Sc_2$  variable in position, from opposite the origin of  $R_s$  to some distance before this point; r-m connecting with  $R_5$  beyond the fork of  $R_s$ . Abdominal tergites medially chiefly fulvous or obscure yellow, the posterior borders more or less darkened, the lateral margins infuscated and more or less pruinose. Cerci strongly darkened. Male hypopygium (Plate 1, fig. 4) with only three spines on outer margin of dististyle, *d*, the outermost largest. Welt of lower beak of style with long delicate setæ on the lower or cephalic half.

*Habitat*.—Japan (Honshu).

Holotype, male, Mount Amakazari, Echigo, altitude 900 meters, June 26, 1955 (*Baba*); *Baba* No. AM 17. Allotype, female, Yoshigahira, Mount Sumon, Echigo, June 25, 1954 (*Baba*); *Baba* No. 35. Paratopotype, male, with the allotype.

When more abundant materials of the present fly and of typical *subtransversa* become available, this may well be found to represent a valid species.

36 (298). *PEDICIA (TRICYPHONA) CONFLUENS SUBCONFLUENS* subsp. nov. Plate 1, fig. 5, Plate 2, fig. 7.

*Male*.—Length about 14 to 16 millimeters; wing, 13.5 to 16; antenna, about 1.3 to 1.5.

Rostrum dark gray; palpi black. Antennæ yellowish brown, scape darker; basal flagellar segments short and crowded in the type, longer in the Nikko paratype. Head dark gray, clearer gray on front.

Pronotum dark brown, gray pruinose. Thoracic notum gray, the præscutum with three darker gray stripes; posterior sclerites and the pleura dark gray; dorsopleural membrane pale to weakly infuscated. Halteres elongate, yellow, knobs weakly



darkened. Legs with the coxæ obscure yellow; trochanters clear yellow; femora black, only the narrow bases yellow, the amount subequal on all legs; tibiæ light brown, tips darker; tarsi dark brown. Wings (Plate 1, fig. 5) brownish yellow, cell C weakly more darkened; pale brown clouds at Sc<sub>2</sub>, origin of Rs, both ends of the pale yellow stigma, and along cord; veins brown, more brownish yellow in the prearcular and costal fields. Venation: Sc relatively short, angulated and more or less spurred near base; R<sub>4+5</sub> short to very short, cell R<sub>4</sub> thus very short-petiolate to subsessile; cell M<sub>2</sub> open, as in the typical form; m-cu at or just beyond the fork of M.

Basal abdominal tergites obscure yellow, with a conspicuous black central line, the sixth and succeeding segments uniformly brownish black; basal sternites light yellow. Male hypopygium (Plate 2, fig. 7) with the tergite transverse, the posterior border produced into two low lobes, separated by a shallow U-shaped emargination, the lobes densely setuliferous, the margin and dorsal surface of plate with long coarse setæ. Basistyle, *b*, relatively short and stout, the low outer lobe and dorsal face with long coarse black setæ; interbase, *i*, a long slender horn or rod that narrows very gradually to the acute tip, the surface glabrous. What appears to represent a single large dististyle, *d*, occupies the outer end of style, including an outer narrow blade or spine and two much broader flattened blades, the larger intermediate one with long erect pale setæ along its inner face and margin; inner blade narrower, its lower surface with abundant shorter and stouter setæ.

*Habitat*.—Japan (Honshu).

Holotype, male, Mount Amakazari, Echigo, altitude 1,000 meters, June 25, 1955 (*Baba*); *Baba* No. AM 19. Paratopotypes, 2 males. Paratype, male, Nikko, Shimotsuke, June 6, 1931 (*M. Ueno*).

Distinguished from typical *confluens* Alexander by the coloration and by the structure of the male hypopygium.

37 (30). *PEDICIA (TRICYPHONA) KIRISHIMENSIS* (Alexander). Plate 2, fig. 8.

*Tricyphona kirishimensis* ALEXANDER, Philip. Jour. Sci. 35 (1928), 474-475, pl. 1, fig. 6 (venation).

The type, a male, was from Mount Kirishima, Kyushu, taken June 9, 1926, by Issiki. Known also from Shikoku.

SETTSU: Ushitaki, Osaka, April 27, 1930 (*Teranishi*).

HOKI: Mount Daisen, altitude 1,200 meters, June 7, 1930 (*Hibi*).

The wings are quite unpatterned except for the weakly and uniformly darkened cell C; cell Sc and the stigma paler brownish yellow. Venation: Position of r-m variable, from slightly before fork of Rs to connecting with R<sub>4+5</sub> beyond its origin; m-cu at or beyond fork of M, in the latter case to more than one-half its own length.

Male hypopygium (Plate 2, fig. 8) with the tergite, *t*, large, narrowed posteriorly, terminating in a large transverse cushion, densely setuliferous, with fewer scattered pale setæ. Basistyle, *b*, with a very low lobe on face; interbase a very long needlelike spine from an enlarged base. Dististyle, *d*, with two elongate lobes, both obtuse at tips, the inner one shorter and a little stouter, with a few long setæ at tip; outer apical angle produced into a low setuliferous lobe, not spinelike as in *confluens*. Phallosome with both the ædeagus and gonapophyses long and conspicuous, tips broad and truncated.

38 (299). *PEDICIA (TRICYPHONA) NORIKURÆ* sp. nov.

Plate 2, fig. 9.

Generally similar to *seticauda* Alexander, differing especially in the structure of the male hypopygium (Plate 2, fig. 9). Tergite large, narrowed outwardly, the cephalic half with two large lobes that are directed dorsad (on slide mounts the lobes are directed either cephalad or caudad, as figured); lobes with abundant long yellow setæ. Basistyle, *b*, provided with abundant long setæ; interbase very large, shaped about as in figure; the constriction or flange before the apex, as shown, may be caused by pressure of the coverslip. Dististyle, *d*, with outer lobe low and obtuse, the apex with abundant short blackened pegs or spines; inner style suboval, apex obtuse, with several relatively long slender setæ.

*Habitat*.—Japan (Honshu).

Holotype, male, on slide, Norikuradake, Shinano, July 27, 1930 (*K. Kamiya*). Allotopotype, female, July 22, 1929 (*M. Ueno*). Paratopotype, male, July 26, 1929 (*Jiro Machida*). Paratype, male, "Northern Alps," without more exact data, August 21, 1934 (*S. Kariya*).

I have had this fly in my collection for several years while awaiting better preserved material. The species is allied to *Pedicia (Tricyphona) seticauda* (Alexander) but has the hypopygial details, particularly the tergite and dististyle, quite distinct.

- 39 (32). **PEDICIA (TRICYPHONA) SETICAUDA** (Alexander). Plate 2, fig. 10.  
*Tricyphona seticauda* ALEXANDER, Ann. and Mag. Nat. Hist. (9)  
 15 (1925) 77-78.

The type was from Lake Ozenuma, on the boundary between Iwashiro and Kotsuke, altitude 5,460 feet, taken July 26, 1923, by Esaki. Also known from Hokkaido and Shikoku.

AKI: Kure, altitude 400 meters, October 16, 1955 (*Baba*); Baba No. SD 23.

ECHIGO: Kurokawa, September 30, 1954, (*Baba*) Baba No. 293. Mount Amakazari, altitude 600 meters, June 26, 1955 (*Baba*); Baba No. AM 18.

Male hypopygium (Plate 2, fig. 10) with the tergite narrowed outwardly, the posterior border subtruncate or with a very shallow emargination; dorsal surface on either side of midline with very large stout erect lobes that bear brushes of long yellow setæ (in slide mounts, lobes generally directed caudad, as shown). Basistyle, *b*, with mesal face provided with longer and stouter setæ; interbase a powerful rod, stouter than in some related species, the outer part or head narrowed to a point. Dististyle, *d*, with the outer lobe flat, apex set with abundant small blackened spicules; inner style an almost circular disk, the outer half with several small but conspicuous setæ.

- 40 (300). **PEDICIA (TRICYPHONA) SETIPENNIS** (Alexander.). Plate 2, fig. 11.  
*Tricyphona setipennis* ALEXANDER, Philip. Jour. Sci. 44 (1931) 355,  
 pl. 1, fig. 11 (venation).

The type was from Norikuradake, Shinano, taken July 26, 1929, by Machida.

The species is most readily told from other regional members of the *occulta* group by the presence of conspicuous macrotrichia in the outer ends of cells  $R_2$  to 2nd  $M_2$  of the wings, stronger and more conspicuous in the radial field. Male hypopygium (Plate 2, fig. 11) distinctive in the very large simple tergite, without dorsal lobes as in allied forms. Ninth tergite narrowed posteriorly, the tip subtruncate to very shallowly emarginate, the outer half of both the upper and lower surface with abundant long yellow setæ. Basistyle, *b*, much smaller than the tergite, its mesal part provided with long setæ; interbase stout. Dististyle, *d*, with the outer part very obtuse, the apex with abundant small blackened pegs; inner or beak portion suboval, narrowed to the obtuse tip, near apex with several long setæ.

- 41 (301). **PEDICIA (TRICYPHONA) VETUSTA** (Alexander). Plate 2, fig. 12.  
*Tricyphona vetusta* ALEXANDER, Can. Ent. 46 (1913) 320-321, pl. 3,  
 fig. 5 (wing).

The type was from the vicinity of Tokyo, taken April 25, 1912 by Kuwana and assistants. Also known from Shikoku.

HIDA: Gifu, October 10, 1920, November 5, 1921 (*Takeuchi*); April 29, 1932 (*Kariya*). Mount Kinkwa, May 6 to 11, 1932 (*Kariya*).

SETTSU: Osaka, November 27, 1914 (*Nohira*).

MUSASHI: Tokyo, June 25, 1912.

Male hypopygium (Plate 2, fig. 12) with the tergite large, the central area of the posterior border produced caudad, its outer margin truncate; dorsal surface back from apex with two small erect darkened lobes provided with small weak setæ (lobes on slide mounts generally bent caudad by pressure); vestiture of remainder of tergite weak. Basistyle, *b*, small; interbase pale, terminating in a cultrate beak. Dististyle, *d*, with the outer lobe relatively small, the spicules small; inner lobe or beak with a row of unusually long setæ.

In addition to the species of the *occulta* group discussed at this time, two additional forms have been treated in earlier parts of this series of reports, *Pedicia (Tricyphona) fimbriatula* Alexander, of Shikoku (Part I, pp. 59-61) and *P. (T.) tenuiloba* Alexander, of Honshu (Part V).

- 42 (302). **PEDICIA (TRICYPHONA) DIAPHANOIDES** Alexander. Plate 1, fig. 6; Plate 2, fig. 13.

*Pedicia (Tricyphona) diaphanoides* ALEXANDER, Philip. Jour. Sci. 67 (1938) 150-151, pl. 1, fig. 15 (venation).

The types were from Ompo, North Korea, taken in May, 1937 and 1938 by Yankovsky.

Shinano: Ichinomata-Goya, Mount Jonen, 1,600 to 2,857 meters, July 27, 1951 (*Hiroshi Inoue*).

Wings (Plate 1, fig. 6) in cases with crossvein *m* weakly preserved, closing cell 1st *M*<sub>2</sub>, in these cases cell *M*<sub>1</sub> a little longer than its petiole.

Male hypopygium (Plate 2, fig. 13) with the tergite large, its posterior border broadly emarginate, the lateral lobes large; margin fringed with delicate setæ; one ventral face near cephalic-lateral angle with a strong spine directed chiefly caudad. Basistyle, *b*, with the larger apical lobe suboval, with abundant long black spinelike setæ; smaller lobe provided with very few similar setæ; interbase a pale elongate flattened blade. Dististyle, *d*, a long compressed blade, the apex obtuse; surface of

outer part with rather numerous slender setæ. Phallosome, *p*, with the ædeagus terminating in two small points; outer ends of the gonapophyses very narrow.

#### NIPPONOMYIA Alexander

*Nipponomyia* ALEXANDER, Insec. Inscit. Menst. 12 (1924) 158-159.

*Nipponomyia* is best distinguished from *Pedicia* (*Tricyphona*) by the glabrous eyes, the distinctive wing pattern, venation, and basic structure of the male hypopygium. There are about a dozen known species, ranging from Japan through Formosa and eastern China to Borneo, Sumatra, and Assam.

The three local species may be separated by the accompanying key.

1. Costal cell of wings without transverse black dashes; crossvein *m* oblique; male hypopygium with three spines on dististyle.

*trispinosa* (Alexander)

Costal cell of wings with numerous transverse darkened lines or dashes; male hypopygium with the spines of the dististyle more numerous.

2. Spines of dististyle five in number; cell 1st *M*<sub>2</sub> closed.

*pentacantha* sp. nov.

Spines of dististyle small but numerous, approximately twelve in number; cell 1st *M*<sub>2</sub> usually open by the atrophy of *m*.

*kuwanai* (Alexander)

The homologies of certain parts of the male hypopygium remain somewhat in question. I have interpreted the entire outer end of the style as representing a single complex dististyle, with no outer lobe of the basistyle being present, as is the case in many *Pediciini*. However, in this tribe it is sometimes difficult to decide what is dististyle and what basistyle and the interpretation given here may be questioned. In this same connection, see also Edwards.<sup>3</sup>

43 (303). NIPPONOMYIA KUWANAI (Alexander).

Plate 3, fig. 16.

*Tricyphona kuwanai* ALEXANDER, Can. Ent. 45 (1913) 318-319, pl. 3, fig. 6 (wing).

*Nipponomyia kuwanai* ALEXANDER, Insec. Inscit. Menst. 12 (1924) 158-159.

*Nipponomyia kuwanai* ESAKI, ET AL., Icon. Insect. Japon. Ed. 2 (1950) 1521, fig.

The type, a female, was from Tokyo, taken May 7, 1912, by the late Dr. Shinkay Inokichi Kuwana, for whom it was named.

MUSASHI: Tokyo, April 7, 1919 (*Takahashi*); Meguro, April 15, 1919 (*Takahashi*).

<sup>3</sup> Edwards, F. W. Soc. British Ent. Trans. 5 (1938) 52.

RIKUCHIU: Iwate-gun, altitude 3,000 feet, June 28, 1935 (H. Yamamoto).

Male hypopygium (Plate 3, fig. 16) with the basistyle, *b*, stout, the setæ unusually long and abundant; interbase extended into a long point, setæ restricted to its base. Dististyle, *d*, including a low oval outer cushion, provided with abundant slender spines and an inner compressed rostral portion, the beak slender, at its base with a compact group of about twelve strong black spines. Phallosome with ædeagus narrowly obtuse at tip.

44 (304). NIPPONOMYIA PENTACANTHA sp. nov.

Plate 3, figs. 14, 17.

Generally as in *kuwanai* in the coloration of the body and wings; cell 1st  $M_2$  closed, *m* transverse; male hypopygium with the interbase dilated on outer half; dististyle with five strong spines at base of beak.

*Male*.—Length, about 12 to 13 millimeters; wing, 10 to 11.5; antenna, about 1.5 to 1.6.

Rostrum testaceous; palpi brownish black. Antennæ 14-segmented; scape light brown, pedicel and flagellum yellow; flagellar segments suboval, becoming more elongate outwardly, terminal segment long; verticils unilaterally distributed, one major one on each segment. Head obscure brownish yellow behind, the anterior vertex and orbits weakly infuscated.

Pronotum light yellow. Mesonotal præscutum fulvous, paling to yellow on sides, with a semicircular to subtransverse row of oval black spots about one-third the length from suture; posterior sclerites of notum yellow, the scutum with three black spots, including the cephalic part of each lobe near the suture and a triangular spot at the point of the suture; a further scarcely evident black spot on parascutella. Pleura yellow. Halteres pale yellow throughout. Legs with the femora yellow, the remainder paler yellow, the tips of the tibiæ narrowly dark brown, the three proximal tarsal segments narrowly infuscated; outer two tarsal segments uniformly brownish black. Wings (Plate 3, fig. 14) subhyaline, the costal cell with a series of transverse black dashes, as in *kuwanai*; immediately behind this border with a broad yellow longitudinal stripe that extends virtually to the wing tip, in cells R and  $R_1$  bordered behind by a broken brownish black line, in the outer radial field margined above and below by light brown; a further oblique light brown line from near the tip of  $Sc_1$  across the fork of Rs to the outer end of cell 1st  $M_2$ , the cord more narrowly bordered

by pale brown; a narrow black dash in cell M at base, adjoining vein M; vein Cu bordered by brighter yellow; veins yellow, M and Rs darker. Venation: r-m some distance before fork of Rs;  $R_{2+3}$  nearly perpendicular at origin, lying close to  $R_1$ ; cell  $R_4$  sessile; cell 1st  $M_2$  closed, m transverse, connecting  $M_2$  beyond its base with  $M_3$  beyond midlength; m-cu close to the fork of M.

Abdomen yellow, the tergites with a narrow broken pale brown central stripe; tergites with further conspicuous black lateral lines, sternites with comparable sublateral dashes; hypopygium yellow. Male hypopygium (Plate 3, fig. 17) with the basistyle, *b*, stout; interbase short, its outer half dilated, terminating in an acute point, setæ confined to basal part. Dististyle, *d*, occupying the entire outer end of style, the outer part a small oval lobe set with abundant slender spinlike setæ, the inner portion extended into a slender beak, at its base with a compact group of five large spines. Phallosome small.

*Habitat*.—Japan (Honshu).

Holotype, male, Mount Amakazari, Echigo, altitude 600 meters, June 25, 1955 (*Baba*); Baba No. AM 28. Paratopotype, male, altitude 300 meters, June 26, 1955 (*Baba*).

Readily told from the most similar regional species, *Nipponomyia kuwanai* (Alexander) by the structure of the male hypopygium.

45 (243). NIPPONOMYIA TRISPINOSA (Alexander),

Plate 3, fig. 18.

*Nipponomyia trispinosa* (Alexander), Philip. Jour. Sci. 83 (1954) 285-286 (latest references).

The type was from "Honshu," without further data (*Akio Nohira*); Nohira No. 28.

AKI: Kure, altitude 400 meters, October 16, 1955 (*Baba*); Baba No. SD 17.

HIDA: Gifu September 15, 1921 (*Takeuchi*); November 15, 1931 (*Kariya*).

OMI: Otsu, Lake Biwa, October 9, 1905, swarming near ground (*Annandale*).

Male hypopygium (Plate 3, fig. 18) with the interbase, *i*, of the basistyle, *b*, dilated beyond base, thence narrowed into a sharp spine, the surface of the basal and central parts with several setæ, some of unusual length. Dististyle, *d*, with the body produced, the face with numerous long blackened spinules

that extend far cephalad along the style, near apex of lobe with numerous long setæ; rostrum slender, spines three, very strong. Phallosome with the gonapophysis elongate, subtending the ædeagus which is extended into a long aciculate point.

**HETERANGÆUS Alexander**

*Heterangæus* ALEXANDER, Ann. and Mag. Nat. Hist. (9) 15 (1925) 78-79.

Antennæ 12- or 13-segmented. Wings commonly cross-banded with brown. Venation: Rs relatively long, angulated and spurred at origin;  $R_{2+3}$  perpendicular at base, with a spur jutting backward into cell  $R_1$ ;  $R_2$  far distad,  $R_{1+2}$  correspondingly short; cell 1st  $M_2$  closed; position of m variable, in cases connecting  $M_2$  with  $M_3$ , in other instances lying more proximad; supernumerary crossveins in cells  $R_3$ ,  $R_4$ ,  $M_1$  and M, the last approximately opposite the origin of Rs (Plate 3, fig. 15). Male hypopygium (Plate 3, fig. 19) with the dististyle, *d*, terminating in a single powerful erect spine. Ædeagus usually short, terminating in a capitate head, in *japonicus* elongate, extended into a needlelike spine.

There evidently is great variation in the relative positions of the supernumerary crossveins in the different cells and their location can be used as a taxonomic character only within limits.

The known species of *Heterangæus* may be told by the following key:

1. Legs brownish black, the femoral bases restrictedly yellowed.
  - spectabilis* (Alexander)
  - Legs chiefly yellow, the tips of the femora and tibiæ dark brown to brownish black ..... 2
2. Cell C of wings uniformly darkened ..... 3
  - Cell C chiefly pale, variegated with dark areas at base, apex and above the origin of Rs ..... 6
3. Darkened pattern of the wing disk faint to subobsolete, at first sight the wing appearing to be virtually unpatterned; a dusky longitudinal streak over much of the length of cell R ..... *esakii* (Alexander)
  - Darkened pattern of the wing disk conspicuous, appearing as cross-bands and seams over the veins and deflections; no dark longitudinal streak in cell R ..... 4
4. Size larger (wing 10 millimeters or more); darkened wing bands commonly with the centers only a little paler than the margins; bands broad, the interspaces correspondingly reduced; darkened spots in cell Cu more or less confluent, in cases forming larger areas.
  - laticinctus* Alexander
  - Size smaller (wing usually less than 9 millimeters); darkened wing bands pale with brown margins; bands narrow, the interspaces correspondingly wide; darkened spots in cell Cu isolated. (*japonicus*) 5



5. Darkened wing bands narrower than the pale interspaces.  
     crenate ..... *japonicus japonicus* Alexander  
     Darkened wing bands broader, the brown margins less evident; posterior border, especially in the cubital and anal fields, strongly crenate ..... *japonicus crenatus* Alexander
6. Wing pattern very pale, cell Cu<sub>2</sub> chiefly clear ..... *pallidellus* Alexander  
     Wing pattern dark and clearly defined, including areas in cell Cu<sub>2</sub>, these reduced in *gloriosus kusunokii*. (*gloriosus*) ..... 7
7. Cell Cu<sub>2</sub> with conspicuous darkenings, most of which completely traverse the cell Sc<sub>2</sub> narrow vein Sc. transverse.  
     ..... *gloriosus gloriosus* (Alexander)  
     Cell Cu<sub>2</sub> with dark markings reduced, not completely traversing the cell; cell Sc broad, vein Sc<sub>2</sub> oblique. (Shikoku).  
     ..... *gloriosus kusunokii* Alexander

46 (305). **HETERANGÆUS ESAKII** Alexander.

*Heterangæus esakii* ALEXANDER, Ann. Mag. Nat. Hist. (9) 15 (1925) 79-80.

Types from Lake Ozenuma, on boundary between Iwashiro and Kotsuke, altitude 5,460 feet, taken July 28, 1923, by Teiso Esaki.

47 (179). **HETERANGÆUS GLORIOSUS** (Alexander).

*Polyangæus gloriosus* ALEXANDER, Philip. Jour. Sci. 24 (1924) 569-571.

The types were from Shimizu, Karafuto, taken July 27, 1922, by Esaki.

ECHIGO: Mount Amakazari, altitude 900 meters, June 25, 1955 (*Baba*); *Baba* No. AM 30.

I am referring this specimen to *gloriosus* with a slight question and the discovery of more material, especially the male, may make it desirable to propose a new subspecies or species. The wings are narrow, with the pale interspaces of both cells C and Sc speckled with dark brown.

48 (34). **HETERANGÆUS JAPONICUS** (Alexander).

*Polyangæus japonicus* ALEXANDER, Ent. Soc. America Ann. 12 (1919) 342.

The type was from the mountains of Musashi (Saitama), where it was taken May 31, 1919 by Takahashi.

RIKUCHIU: Iwate-gun, altitude 3,000 feet, May 17, 1935 (*Yamamoto*).

48a (34a). **HETERANGÆUS JAPONICUS CRENATUS** Alexander.

*Heterangæus japonicus crenatus* ALEXANDER, Philip. Jour. Sci. 51 (1933) 541.

The type was from Mount Ohdai, Yamato, taken June 5, 1930, by S. Sakaguchi.

49 (306). **HETERANGÆUS LATICINCTUS** Alexander. Plate 3, fig. 19.

*Heterangæus laticinctus* ALEXANDER, Philip. Jour. Sci. 44 (1931)  
355-357.

The types were from Hirayu, Shinano, taken July 26 to 27, 1929, by Jiro Machida.

HIDA: Mount Ontake, altitude 5,850 feet, July 6 to 10, 1934 (*H. Ise*).

MINO: Gifu, June 6, 1931 (*S. Sawada*); Mount Kinkwa, Gifu, May 11 to 23, 1932, April 28, 1933 (*Kariya*).

Male hypopygium (Plate 3, fig. 19) with the tergite transverse, the posterior border scarcely produced, the central area truncate or very insensibly trilobed, with abundant microscopic setulæ. Basistyle, *b*, produced into a very stout apical lobe or cushion, provided with numerous slender spinoid setæ; interbase, *i*, a long narrow blade, the tip acute. Dististyle, *d*, long and narrow, curved at base, tip obtuse; before apex with a single elongate spinoid seta; lower margin of style near tip with about eight very long pale setæ. Phallosome, *p*, with the gonapophyses appearing as pale setuliferous cushions; ædeagus short, the apex capitate.

As is the case with various other Pediciine groups, there is a question as to whether the spiniferous terminal lobe of the basistyle is not actually a dististyle, as so interpreted under the discussion of *Nipponomyia*, ante.

50 (307). **HETERANGÆUS PALLIDELLUS** Alexander.

*Heterangæus pallidellus* ALEXANDER, Philip. Jour. Sci. 51 (1933)  
540-541, pl. 1, fig. 21 (venation).

The types were from Mount Kurobegoro, Etchu, taken in subalpine meadows at an altitude of 7,800 feet, August 8, 1931, by Imanishi.

51 (308). **HETERANGÆUS SPECTABILIS** Alexander.

*Heterangæus spectabilis* ALEXANDER, Ann. Mag. Nat. Hist. (9) 15  
(1925) 80-81.

The type was from Hinoëmata, Iwashiro, altitude 4,000 feet, taken on July 24, 1923, by Esaki.

#### DICRANOTA Zetterstedt

*Dicranota* ZETTERSTEDT, Ins. Lapponica, Dipt. (1838) 851.

The genus *Dicranota* includes the small and obscure members of the Pediciini, represented by numerous species in Japan.

In another report,<sup>4</sup> I have attempted to separate out various subgeneric groups within the genus but these are based chiefly on weak and insufficient characters and are difficult to maintain except for convenience of treatment of the abundant forms.

52 (309). **DICRANOTA (DICRANOTA) NIPPOALPINA** Alexander.

*Dicranota (Dicranota) nippoalpina* ALEXANDER, Philip. Jour. Sci. 50 (1933) 147-148, pl. 1, fig. 14 (venation), pl. 3, fig. 42 ( $\delta$  hypopygium).

The type was from Shiroumadake, Shinano, taken August 8, 1931, by Machida.

53 (310). **DICRANOTA (DICRANOTA) SICARIA** Alexander. Plate 4, fig. 29.

*Dicranota (Dicranota) sicaria* ALEXANDER, Ent. Soc. America Ann. 40 (1947) 354.

The types were from Hamasaka, Harima, taken April 1, 1931, by J. Okada.

Male hypopygium (Plate 4, fig. 29) with the tergite large, the median area of the posterior border only vaguely produced, with weak setæ; lateral tergal arms large and conspicuous, pale, dilated and more or less recurved at tip. Basistyle, *b*, with two apical lobes, one longer and more slender, both with normal setæ only; interbase appearing as a flattened blade, at apex produced into a long straight spinelike blade. Dististyle, *d*, a flattened oval blade, the tip obtusely rounded, with several strong setæ. Phallosome, *p*, with the gonapophyses divergent.

54 (311). **DICRANOTA (RHAPHIDOLABIS) ANGULATA** Alexander.

*Dicranota (Rhaphidolabis) angulata* ALEXANDER, Philip. Jour. Sci. 60 (1936) 182-183, pl. 1, fig. 9 (venation).

The type, a female, was from Iwate-gun, Rikuchiu, altitude 3,000 feet, taken June 9, 1935, by Yamamoto. The male sex is still unknown.

55 (312). **DICRANOTA (RHAPHIDOLABIS) BABAL**, sp. nov. Plate 4, figs. 20, 23.

General coloration dark brown, the præscutum with three brownish black stripes; antennæ 17-segmented, relatively short; wings relatively narrow, tinged with dusky; Rs unusually long, cell  $R_3$  sessile; m-cu short, at near midlength of  $M_{3+4}$ ; male hypopygium with the median region of tergite produced into a depressed plate, its posterior border emarginate; lateral tergal arms powerful; basistyle elongate, with a small apical lobe; dististyle much longer.

<sup>4</sup> Alexander, C. P. Entomological results from the Swedish Expedition 1934 to Burma and British India. Diptera: Tipulidæ-Pediciini. Arkiv för Zoologi 42 A 2 (1949) 17-18.

*Male*.—Length, about 5.5 millimeters; wing, 6.1; antenna, about 0.9.

Rostrum and palpi brownish black. Antennæ short, 17-segmented, black throughout; flagellar segments oval, becoming progressively smaller outwardly. Head dark gray.

Pronotum dark brown. Mesonotal præscutum brown, with three brownish black stripes, the sides more pruinose; scutal lobes dark, scutellum testaceous brown; postnotum slightly darker. Pleura uniformly brown, unpatterned; dorsopleural membrane dark. Halteres with stem dirty white, knob infuscated. Legs with the coxæ and trochanters light brown; remainder of legs somewhat darker brown. Wings (Plate 4, fig. 20) relatively narrow, tinged with dusky; stigmal region large, slightly more darkened; veins brown, those at base and in proximal part of costal region paler. Venation: Rs unusually long;  $R_2$  about twice  $R_{1+2}$ ; cell  $R_3$  sessile, cell  $R_4$  virtually so, there being a very short element  $R_{4+5}$ ; m-cu short, at near midlength of  $M_{3+4}$ .

Abdomen, including hypopygium, dark brown. Male hypopygium (Plate 4, fig. 23) very distinctive. Ninth tergite, *t*, transverse, the median area produced caudad into a broad depressed plate, its posterior border with a broad U-shaped notch, lobes narrower; surface with abundant setulæ; lateral tergal arms strongly developed into sinuous spines that gradually narrow to acute points. Basistyle, *b*, elongate, at tip with a small fleshy lobe, with several long setæ; interbase a powerful arm of approximately the same size and shape as the lateral tergal spines; basad of the interbase, on mesal face, with a compact group of five or six long setæ; what appears to be a still further outgrowth of the basistyle, at proximal end (not shown in figure) appears as an elongate densely setuliferous lobe lying beneath the tergal plate. What is interpreted as being the dististyle, *d*, is a long slender structure, fully three times as long as the lobe of the basistyle, at near midlength with a lateral lobe that is provided with several strong setæ, the outer extended part gradually narrowed to the obtuse tip, bearing other smaller setæ. What appears to represent the phallosome (not shown in figure) appears as a central triangular plate, the outer arms extended laterad, their tips obtuse. As in other Pediciine forms, it seems difficult to decide which of the outer extensions of the basistyle are actual lobes of the same or represent dististyles.

*Habitat*.—Japan (Honshu).

Holotype, male, Kure, Aki, altitude 400 meters, October 16, 1955 (*Baba*); *Baba* No. SD 19.

I take unusual pleasure in dedicating this distinct fly to Dr. Kintaro Baba. It is very different from other known species of the subgenus that have cell  $R_3$  of the wings sessile in the great number of antennal segments and in the very peculiar structure of the male hypopygium. *Dicranota* (*Rhaphidolabis*) *polymera* Alexander similarly has the antennæ 17-segmented but in all other respects is a very different fly.

56 (313). DICRANOTA (RHAPHIDOLABIS) BASISTYLATA sp. nov. Plate 4, figs. 21, 24.

Allied to *ontakensis* and *trilobulata*; general coloration gray, the præscutum with three brown stripes, the median one more or less split by a pale central vitta; antennæ black, flagellar segments subglobular to short-oval; legs obscure yellow to light brown; wings milky white, stigma slightly darker, veins pale brown;  $R_{2+3+4}$  distinct; male hypopygium with the tergite terminating in a plate that divides into two fingerlike lobes; basistyle produced dorsad into a large clavate lobe and ventrad into an even larger structure, both provided with long white setæ; interbase with two unequal spines; dististyle a pale boomerang-shaped blade.

*Male*.—Length, about 5 to 5.2 millimeters; wing, 6.2 to 6.5; antenna, about 1.0 to 1.1.

*Female*.—Length, about 5.5 millimeters; wing, 7.

Rostrum and palpi black. Antennæ short, black throughout; flagellar segments subglobular to short-oval, longer than the verticils. Head dark gray.

Pronotum gray. Mesonotal præscutum dark gray, with three brown stripes, the broad central vitta very narrowly and indistinctly split by a capillary pale line, in cases showing four distinct stripes; posterior sclerites of notum gray, the centers of the scutal lobes somewhat darker. Pleura uniformly gray. Halteres with stem whitened, knob very weakly darkened. Legs with the coxæ gray; trochanters obscure yellow; femora obscure yellow, the tips slightly darkened; tibiæ and tarsi light brown. Wings (Plate 4, fig. 21) milky white, the prearcular and costal regions a trifle more yellowed; stigma very faintly more darkened, scarcely evident; veins light brown. Venation:  $R_s$  short, strongly arcuated to weakly angulated at near mid-length,  $R_{2+3+4}$  distinct;  $R_{1+2}$  shorter than  $R_2$ , the latter very

slightly oblique; m-cu about one-third to one-half its length beyond the fork of M.

Abdomen dark gray, hypopygium brownish gray. Male hypopygium (Plate 4, fig. 24) very distinctive, especially because of the major lobes of the basistyle, *b*. Ninth tergite, *t*, produced into a more or less erect plate that divides into two fingerlike lobes separated by a broad notch. Basistyle, *b*, stout, very complex; outer apical angle produced into a large clavate lobe, densely provided with long pale setæ; on mesal face at near midlength with a small protuberance that bears numerous slender dark-colored spines or points; on mesal face of body of style near outer end with a small oval lobe, provided with abundant setæ; ventral part of style produced into large conspicuous lobes or flaps, directed chiefly ventrad, provided with abundant long white setæ that become smaller basally and extend up the face of the style to the mesal lobe above described; interbase very conspicuous, broad-based, forking into two unequal spines. Dististyle, *d*, shorter and narrower than the outer lobe of basistyle, appearing as a flattened blade, somewhat boomerang-shaped, gradually narrowed and curved to the obtuse tip; surface with microscopic pale punctures, on the lower margin at near midlength with long pale setæ. Phallosome, *p*, with the slender ædeagus darkened; gonapophyses shorter and broader.

*Habitat*.—Japan (Honshu).

Holotype, male, Kurokawa, Echigo, April 26, 1955 (*Baba*); *Baba* No. 413. Allotopotype, female. Paratopotypes, 3 males, 1 female, April 20 to 29, 1955 (*Baba*).

This conspicuous fly is readily told from *Dicranota* (*Rhaphidolabis*) *ontakensis* Alexander and *D. (R) trilobulata* sp. nov., by the structure of the male hypopygium, especially the large ventral lobes of the basistyle which differentiate the fly from all other known species of the subgenus.

57 (314). DICRANOTA (RHAPHIDOLABIS) MACRACANTHA Alexander. Plate 4, fig. 25.

*Dicranota* (*Rhaphidolabis*) *macracantha* ALEXANDER, Ent. Soc. America Ann. 40 (1947) 354–355.

The type was from Kamikochi, Shinano, altitude 5,000 feet, taken August 18 to 21, 1934, by Kariya.

Male hypopygium (Plate 4, fig. 25) with the tergite, *t*, transverse, the median area of posterior border produced into a broad lobe, its apex truncate, surface with abundant long setæ that are directed caudad; lateral tergal arms very long and

powerful, fully three times as long as the lobe, appearing as sinuous yellow blades that narrow to the acute tips. Basistyle, *b*, terminating in two lobes, a short outer one and a longer clavate lobe, both with relatively numerous blackened spinoid setæ at and near tips; interbase, *i*, a powerful flattened glabrous yellow blade, narrowed into a long acute spine that is bent at about a 45° angle to the axis; immediately back from the point, both above and below, with a low flange. Dististyle, *d*, about as long as the longer lobe of the basistyle narrowed gradually to the obtuse tip, with a few long strong retrorse setæ near apex; on face of style at base with a fold or flange (in microscope slide). Phallosome, *p*, with ædeagus darkened, constricted near outer end to form an oval head; gonapophysis dilated into a broad obtuse hyaline blade.

58 (315). **DICRANOTA (RHAPHIDOLABIS) ONTAKENSIS** Alexander. Plate 4, fig. 26.

*Dicranota (Rhaphidolabis) ontakensis* ALEXANDER, Ent. Soc. America Ann. 40 (1947) 355-356.

The types were from Mount Ontake, Hida, altitude 5,850 feet, taken July 6 to 10, 1934, by H. Ise.

UGO: Kuroyu, altitude 850 meters, June 13, 1951 (*Issiki-Ito*).

Male hypopygium (Plate 4, fig. 26) with the tergite, *t*, large, the median area of the posterior border produced caudad into a depressed blade that terminates in two broad lobes, separated by a narrower notch, each lobe with abundant setæ. Basistyle, *b*, with outer apical lobe very stout, capitate, the stem short, head very large, obtusely rounded, set with abundant peglike spines or spicules, these becoming more hairlike toward base; interbase, *i*, a conspicuous bispinous plate, the spines slightly unequal; mesal face of style beyond the interbase with a group of very long setæ. Dististyle, *d*, slender, slightly widened outwardly, the tip obtuse, with a very few strong subapical setæ.

59 (316). **DICRANOTA (RHAPHIDOLABIS) PLATYMERIA** Alexander.

*Dicranota (Rhaphidolabis) platymera* ALEXANDER, Philip. Jour. Sci. 53 (1934) 279-280, pl. 1, fig. 8 (venation), pl. 2, fig. 30 (♂ hypopygium).

The types were from Yumoto, Shimotsuke, altitude 4,850 feet, taken June 20, 1932, by Issiki.

60 (317). **DICRANOTA (RHAPHIDOLABIS) PROFUNDA** Alexander. Plate 4, fig. 28.

*Dicranota (Dicranota) profunda* ALEXANDER, Ent. Soc. America Ann. 43 (1950) 425-426.

The types were from Funakosi, Rikuchiu, taken May 21, 1947, by Yamamoto.

ECHIGO: Kitakanbara, Sugatani, altitude 300 meters, May 8, 1955 (*Hiroshi Koike*); Baba No. 465. Kurokawa, May 5, 1954 (*Baba*); Baba No. 224.

Although the type material showed a supernumerary cross-vein in cell  $R_1$  of the wings, as in the subgenus *Dicranota*, additional specimens lack this vein and I am now referring the fly to the subgenus *Rhaphidolabis*.

Male hypopygium (Plate 4, fig. 28) with the tergite large, the posterior border profoundly divided medially, the parts thus formed further produced caudad into a narrow submedian lobe, tipped with short bristles, in cases with a single marginal seta on either side. Basistyle, *b*, with the small dorsal lobe tipped with a few short spinoid setæ; outer lobe relatively long, cylindrical, with numerous setæ, those on outer third stouter; interbase very large and flattened, the outer margin microscopically serrulate. Dististyle, *d*, subequal in length to the outer lobe of the basistyle, expanded at base, the outer two-thirds narrowed, tip obtuse; inner margin of basal half with abundant setæ.

61 (318). DICRANOTA (RHAPHIDOLABIS) SPINA Alexander.

*Dicranota (Rhaphidolabis) spina* ALEXANDER, Philip. Jour. Sci. 51 (1933) 398-399, pl. 1, fig. 17 (venation), pl. 4, fig. 48 (♂ hypopygium).

The holotype male was from Mount Kurobegoro, Etchu, altitude 7,800 feet, taken in a subalpine meadow on August 13, 1931, by Imanishi. Known also from Hokkaido.

ECHIGO: Mount Zaô, Iwafune, May 3, 1955 (*Baba*); Baba No. 432 B.

62 (319). DICRANOTA (RHAPHIDOLABIS) TRILOBULATA sp. nov. Plate 4, figs. 22, 27.

Allied to *ontakensis*; general coloration of thorax light brown, heavily pruinose, mesonotum unpatterned; legs light brown; wings milky white, unpatterned, veins pale;  $R_{2+3+4}$  long; male hypopygium with the tergite produced caudad into a narrow lobe, its tip with three subequal lobules, all with numerous short setæ; outer lobe of basistyle stout, tip obtuse, densely spiculose; interbase bispinous; dististyle long and slender, nearly parallel-sided, near the tip with a few long setæ.

*Male*.—Length, about 5.5 millimeters; wing, 6; antenna, about 1.2.

Rostrum brown; palpi brownish black. Antennæ black; flagellar segments oval, a little longer than their verticils. Head gray.



Thoracic dorsum light brown, heavily pruinose, without pattern; pleura and pleurotergite more yellowed. Halteres yellow, including the large knob. Legs with the coxæ and trochanters yellow; remainder of legs light brown, the femoral bases a little more yellowed; outer tarsal segments darker. Wings (Plate 4, fig. 22) milky white, the prearcular and costal regions a trifle more yellowed, stigma barely indicated; veins poorly visible, very pale brown, yellowed in the brightened fields. Venation: Rs strongly arcuated to weakly angulated;  $R_{2+3+4}$  long; m-cu about three-fourths its length beyond the fork of M.

Abdomen medium brown, hypopygium, especially the styli, more brownish yellow. Male hypopygium (Plate 4, fig. 27) with the tergite transverse, the posterior border produced caudad into a narrow lobe that terminates in three subequal lobules, all with numerous short stout setæ. Basistyle, *b*, stout, the outer apical lobe short, a little dilated outwardly, apex very obtuse, with abundant short peglike spicules or spinoid setæ, these more elongate and hairlike nearer the base; interbase, *i*, a large bispinous plate, the lower spine a little larger than the outer one. Dististyle, *d*, long and slender, nearly parallel-sided, tip obtuse, just before apex with a few long retrorse setæ. Phallosome, *p*, small; ædeagus with tip obtuse.

*Habitat*.—Japan (Honshu).

Holotype, male, Kurokawa, Echigo, altitude 300 meters, June 11, 1955 (*Baba*); *Baba* No. 429.

The most similar species is *Dicranota (Rhaphidolabis) on-takensis* Alexander, which is most readily distinguished by the structure of the male hypopygium, particularly the tergite.

63 (320). **DICRANOTA (RHAPHIDOLABIS) TUBERCULATA** Alexander.

*Dicranota (Rhaphidolabis) tuberculata* ALEXANDER, Philip. Jour. Sci. 59 (1936) 241-242, pl. 1, fig. 13 (venation).

The types, represented by females, were from Kibune, Kyoto, Yamashiro, taken October 11, 1934, by Tokunaga. The male is still unknown.

ERIOPTERINI

**CLADURA** Osten Sacken

*Cladura* OSTEN SACKEN, Acad. Nat. Sci. Philadelphia Proc. (1859) 229.

Honshu is extremely rich in species in this interesting genus of autumnal crane-flies.

64 (321). **CLADURA (CLADURA) ALPICOLA** Alexander.

*Cladura alpicola* ALEXANDER, Philip. Jour. Sci. 40 (1929) 341-342, pl. 1, fig. 17 (venation), pl. 3, fig. 38 (♂ hypopygium).

*Cladura (Cladura) alpicola* ALEXANDER, Brooklyn Ent. Soc. Bull. 50 (1955) 18.

The types were from various stations in Shinano, taken by Machida on Tsubakuro, on August 23, 1925, and on Yarigatake, on August 24, 1925. Later records, similarly from Shinano, include Norikuradake, near Reisentoge, altitude 2,400 meters, September 8, 1951, and near Kwaigahara, altitude 2,600 meters, September 8, 1951, and Sirahoneonsen, altitude 1,500 meters, September 9, 1951, all taken by H. Hasegawa.

64a (321a). **CLADURA (CLADURA) ALPICOLA SETULILOBA** Alexander.

*Cladura alpicola setuliloba* ALEXANDER, Ent. Soc. America Ann. 40 (1947) 360.

The unique type male was from Mount Myotaka, taken August 1, 1923, by Fuzimatsu.

65 (322). **CLADURA (CLADURA) AUTUMNA** Alexander.

Plate 5, fig. 31.

*Cladura autumnna* ALEXANDER, Insec. Inscit. Menst. 7 (1919) 137.

*Cladura autumnna* ALEXANDER, Philip. Jour. Sci. 31 (1926) 370, pl. 2, fig. 9 (♂ hypopygium, gonapophysis).

The types were from Meguro, Tokyo, taken October 22, 1919, by Takahashi.

MINO: Gifu, October 7 to 10, 1920 (*K. Takeuchi*).

MUSASHI: Tokyo, October 31, 1929 (*B. Oda*).

SETTSU: Osaka, Kibune, October 16, 1934 (*Tokunaga*).

Male hypopygium (Plate 5, fig. 31) with the posterior border of the tergite narrowly notched, forming two low lobes, with a further lobule on ventral side cephalad of the outer one. Basistyle, *b*, stout, without lobes. Dististyle, *d*, terminal in position, simple, nearly as long as the basistyle, stout, the obtuse tip pendant; lower surface with abundant setæ, smaller but very dense at apex. Gonapophysis, *g*, appearing as a flattened blade, terminating in two weak teeth, with further irregular serrations on lateral margin; inner or upper edge with relatively sparse and weak setæ on outer half.

66 (323). **CLADURA (CLADURA) BABAI** Alexander.

Plate 5, fig. 32.

*Cladura (Cladura) babai* ALEXANDER, Brooklyn Ent. Soc. Bull. 50 (1955) 18-19.

The types were from Kurokawa, Echigo, taken October 15, 1953, by Kintaro Baba, with other material from Mount Chokai, Uzen, altitude 600 meters, October 17, 1950 (*Kotaro Shirahata*) and from Morioka, Rikuchiu, October 6, 1934 (*T. Kato*).

Male hypopygium (Plate 5, fig. 32) resembling that of *daimio*, differing in details. Tergal lobes, *t*, greatly expanded apically, subtrigonal in outline, with long lateral setæ. Basistyle, *b*, with the apical lobe narrowed gradually to the obtuse tip which bears a group of very long setæ; basal lobe unequally bilobulate, all with dense appressed setulæ. Dististyle, *d*, much stouter than the outer lobe of the basistyle, its apex strongly bilobulate. Gonapophysis, *g*, a powerful blade, strongly recurved into an acute spinous point. Ædeagus slender.

67 (324). **CLADURA (CLADURA) BIDENS** Alexander.

Plate 5, fig. 33.

*Cladura bidens* ALEXANDER, Philip. Jour. Sci. 31 (1926) 369-370, pl. 2, figs. 6, 8 (♂ hypopygium).

The types were from Sapporo, Hokkaido, taken October 6, 1923, by M. Hori.

ECHIGO: Kanno, Iwafune, October 7, 1954 (*Baba*); *Baba* No. 56.

Male hypopygium (Plate 5, fig. 33) generally as in *autumna*, differing especially in the structure of the gonapophysis. Tergite with the outer lobes low and obtuse, the cephalic pair longer, in cases conspicuously so. Basistyle and dististyle much as in *autumna*. Gonapophysis, *g*, appearing as a flattened blade that terminates in two long points; margins of blade without serrations, as in *autumna* and *serrimargo*.

68 (325). **CLADURA (CLADURA) BICORNUTA** Alexander.

Plate 5, fig. 34.

*Cladura (Cladura) bicornuta* ALEXANDER, Ent. Soc. America Ann. 48 (1955) 373.

The types were from various stations in Shinano, taken by H. Hasegawa-Sirahoneonsen, altitude 1,500 meters, September 9, 1951; near Reisen-goya, Mount Norikura, altitude 2,400 meters, September 8, 1951.

Male hypopygium (Plate 5, fig. 34) with the tergite, *t*, distinctive; posterior border with a central plate, its posterior border deeply U-shaped, the lateral arms narrow, obtuse at tips; lateral tergal plates adjoining the central one with a group of six or seven very long pale setæ; sides of lateral plate produced into a slender curved arm or horn. Basistyle, *b*, with the apical lobe about three-fourths as long as the dististyle, the tip obtuse, with long setæ; on mesal face of style with a slender curved lobe; basal lobe large, gradually narrowed to a subacute point, the enlarged cephalic part with a group of very long setæ. Dististyle, *d*, a simple rod, very gradually narrowed to the obtuse microscopically spiculose tip. Gonapophysis, *g*,

appearing as a flattened blade, about four-fifths as long as the ædeagus.

69 (326). *CLADURA (CLADURA) BREVIFILA* sp. nov. Plate 5, figs. 30, 35.

Allied to *telephallus*; male hypopygium of the same general structure, the details distinct; spinulose mesal lobe of basistyle more oval; ædeagus terminating in three shorter filaments, the longer one with a flange on its proximal two-thirds, the shorter paired filaments about two-thirds as long.

*Male*.—Length, about 6 to 6.5 millimeters; wing, 7 to 7.5.

*Female*.—Length, about 6.5 millimeters; wing, 7.

Rostrum yellow; palpi yellow basally, the terminal segment infuscated. Antennæ with scape and pedicel yellow, flagellum a little darker, especially at base. Head yellowish brown.

Thoracic dorsum fulvous yellow, unpatterned; posterior sclerites and pleura clearer yellow. Halteres with stem whitened, knob yellow. Legs with coxæ and trochanters light yellow; femora yellow, the tips narrowly brownish black; tibiæ brownish yellow, still more narrowly darkened at tips; tarsi passing into dark brown. Wings (Plate 5, fig. 30) subhyaline, the prearcular and costal fields a trifle more yellowed; stigma not indicated; veins pale brown, those in the prearcular and costal fields more yellowed. Venation:  $Sc_1$  ending about opposite fork of  $R_{2+3+4}$ ; petiole of cell  $M_1$  about twice  $m$ ;  $m-cu$  at one-third to one-fourth the length of  $M_{3+4}$ .

Abdomen in male yellowish brown, with a narrow dark brown subterminal ring; in female, abdomen more uniformly dark brown; genital segment in both sexes yellowed. Male hypopygium (Plate 5, fig. 35) with the tergite,  $t$ , terminating in a simple depressed plate that is divided at apex into two obtuse lobes, surface of plate glabrous, except at base. Basistyle,  $b$ , with outer lobe shorter than the dististyle, elongate-subcylindrical, with conspicuous setæ, especially at and near tip; appendage of mesal face of style conspicuous, bilobed, the outer lobe oval, densely set with short spiculate points, inner lobe subequal in size, with coarse setæ. Dististyle,  $d$ , stout basally, the outer fourth narrowed and strongly recurved, the lower margin of the dilated base with long coarse setæ, the upper margin of the narrowed outer part with somewhat shorter bristles. Phallosome,  $p$ , including subcircular basal apophyses at base of a very large ædeagus that terminates in three short filaments, the longer one with a flange on the proximal two-thirds, the shorter paired filaments about two-thirds as long.

*Habitat*.—Japan (Honsu).

Holotype, male, Mount Tanigawad Kotsuke, altitude 800 meters, October 24, 1955 (*Baba*); *Baba* No. SD 38.

Allotopotype, female, pinned with type. Paratopotype, 1 male.

The most similar species is *Cladura* (*Cladura*) *telephallus* Alexander, which is told most readily by the structure of the male hypopygium, particularly the ædeagus.

70 (327). *CLADURA* (*CLADURA*) *DAIMIO* Alexander.

Plate 5, fig. 36.

*Cladura daimio* ALEXANDER, Ent. Soc. America Ann. 40 (1947) 359–360.

The type was from Morioka, Rikuchiu, taken October 6, 1934, by T. Kato.

Male hypopygium (Plate 5, fig. 36) much as in *babai*, differing in details. The tergal blades obtusely rounded at tips. Basistyle, *b*, with the proximal lobe large, the major inner part or lobule with abundant coarse setulæ, the outer arm or lobule a flattened oval blade that is nearly glabrous except for a few scattered setæ near apex. Dististyle, *d*, gradually dilated outwardly, broadest at near three-fourths the length. Phallosome, *p*, with the apophyses stout, curved, the tips obtuse; ædeagus much stouter than in *babai*, dilated shortly before the obtuse tip which has several pale circular punctures.

The hypopygium of the unique type specimen is mounted on a slide and is defective in certain regards. In particular, the gonapophyses, as shown, may be broken at their tips and not end abruptly as is shown. Except for the recurved pointed gonapophyses, the most decisive character for separating this fly from *babai* lie in the nature of the basal lobe of the basistyle and the structure of the ædeagus.

71 (328). *CLADURA* (*CLADURA*) *FUSCIVENA* Alexander.

*Cladura* (*Cladura*) *fuscivena* ALEXANDER, Ent. Soc. America Ann. 48 (1955) 372–373.

The unique type, a female, was from Sugadaira, Shinano, taken October 16, 1950, by H. Hasegawa.

72 (254). *CLADURA* (*CLADURA*) *HAKONENSIS* Alexander

Plate 5, fig. 37.

*Cladura hakonensis* ALEXANDER, Ent. Soc. America Ann. 40 (1947): 362–363.

The unique type female was from Gora, Hakone District, taken November 11, 1931 by Sawada.

SHINANO: Sugadaira, October 16, 1950 (*H. Hasegawa*).

KOTSUKE: Oze, Hatomachi Toge, September 22, 1950 (*Hasegawa*).

Male hypopygium (Plate 5, fig. 37) with the tergite produced laterad into short points, the space between filled with pale membrane. Basistyle, *b*, very long and slender, without lobes. Dististyle, *d*, about two-fifths as long as the basistyle, appearing as a simple slender terminal lobe, slightly curved, narrowed to the obtuse tip. Phallosome with the gonapophyses, *g*, unequally bispinous, the axial spine longer and more powerful than the lateral one.

73 (329). **CLADURA (CLADURA) JAPONICA** (Alexander).

*Crypteria japonica* ALEXANDER, Ent. Soc. America Ann. 11 (1918) 448.

*Crypteria japonica* ALEXANDER, Entomol. Mag. (Kyoto) 3 (1919) 125.

The types were from an unspecified locality in Honshu, presumably Kyoto (Akio Nohira) Collector's No. 26.

This, the first member of the genus to be discovered in Japan, was based only on female specimens. In the light of the great accession of species now known from the islands I feel very uncertain about the strict identity of this fly. It is possible that more material, including males, from the presumed type locality may help in settling the identity or otherwise the species may best be considered as falling as a species dubium.

74 (255). **CLADURA (CLADURA) MACHIDELLA** Alexander.

*Cladura (Cladura) machidella* ALEXANDER, Philip. Jour. Sci. 55 (1934) 50-51, pl. 1, fig. 19 (venation).

*Cladura (Cladura) machidella* ALEXANDER, Philip. Jour. Sci. 83 (1954) 295-296, pl. 4, fig. 40 ( $\delta$  hypopygium).

The unique type female was from Mount Hiei, Kyoto, Yamashiro, collected October 30, 1933, by Machida. The species later was found in Shikoku.

General coloration of entire body black, dusted with gray; fore femora black, the extreme bases obscure yellow; posterior femora with the outer third blackened, tarsi black; wings yellow, patterned with brown on the crossveins and the distal two-thirds of vein Cu; supernumerary crossveins in cells R<sub>3</sub> and R<sub>4</sub>, in approximate transverse alignment with R<sub>2</sub>.

75 (330). **CLADURA (CLADURA) MEGACAUDA** Alexander.

*Cladura megacauda* ALEXANDER, Philip. Jour. Sci. 31 (1926) 370-371, pl. 1, fig. 7 (venation), pl. 2, figs. 4, 5 ( $\delta$  hypopygium).

The type, a male, was from Sapporo, Ishikari, Hokkaido, taken in late August, 1925, by Satoru Kuwayama.

ECHIGO: Kurokawa, October 15, 1953, October 22, 1954 (*Baba*); *Baba* No. 290.

KOTSUKE: Hatomati Toge, Oze, September 22, 1950 (*Hasegawa*); Hiramino-Tashiro, Oze, September 7, 1952 (*Fuhuhara*).

RIKUCHIU: Morioka, October 6, 1934 (*Kato*).

SHINANO: Sigakōgen, altitude 1,600 meters, September 11, 1953 (*Ito*).

UZEN: Mount Chokai, altitude 600 meters, October 17, 1950 (*Shirahata*).

76 (331). **CLADURA (CLADURA) MONACANTHA** Alexander. Plate 5, fig. 38.

*Cladura monacantha* ALEXANDER, Ent. Soc. America Ann. 40 (1947) 363-364.

The types were Inaba (Tottori-ken), collected by Sawada.

Male hypopygium (Plate 3, fig. 38) with the posterior border of tergite, *t*, slightly produced into a transverse glabrous plate, the mesal part of which is farther extended into two subcircular disks from very slender bases. Basistyle, *b*, moderately stout, less than twice the length of the dististyle, *d*, the latter terminal in position, stout, with the obtuse tip more or less pendant. Gonapophysis, *g*, distinctive, appearing as a narrow yellow blade, the apex narrowly obtuse, the outer margin before tip with a strong erect horn; margin of blade on same side as the horn with strong teeth; apex of blade beyond the horn with a few scattered pale setoid points. Ædeagus broad basally, narrowed to the tip, a little shorter than the apophyses.

76a (331a). **CLADURA (CLADURA) MONACANTHA FIMBRIATA** Alexander.

*Cladura monacantha fimbriata* ALEXANDER, Ent. Soc. America Ann. 40 (1947) 364.

The type, a male, was from Gora, Hakone District, collected November 11, 1931, by Sawada.

This weakly defined race is distinguished only by minor differences in the male hypopygium, including the narrower gonapophyses, with the lateral horn large and conspicuous; the outer setoid extensions continue down the margin as teeth, some of which are produced into hairlike points (Plate 5, fig. 38, subfigure on right).

77 (332). **CLADURA (CLADURA) NIPPONENSIS** Alexander. Plate 5, fig. 39.

*Cladura nipponensis* ALEXANDER, Insec. Inscit. Menst. 7 (1919) 136.

*Cladura nipponensis* ALEXANDER, Philip. Jour. Sci. 31 (1926) 370, pl. 2, fig. 7 (♂ hypopygium, apophysis).

The types were from Tokyo and vicinity, taken November 16 to December 9, 1919, by Takahashi.

ECHIGO: Kurokawa, November 7 to 9, 1954 (*Baba*); *Baba* No. 326.

Male hypopygium (Plate 5, fig. 39) generally like that of *hakonensis*, differing especially in the details of structure of the phallosome, particularly the gonapophyses. Ninth tergite with the posterior border produced medially, the central part emarginate, the lateral angles produced into dusky flattened blades, the margins microscopically serrulate, in cases strongly so. Gonapophyses, *g*, deeply bifid, the axial spine longer and stouter than the lateral one.

78 (333.). *CLADURA (CLADURA) TELEPHALLUS* Alexander. Plate 5, fig. 40.  
*Cladura (Cladura) telephallus* ALEXANDER, Ent. Soc. America Ann. 48 (1955) 373-374.

The types were from Oze, Hatomati Toge, Kotsuke, taken September 22, 1950, by Hasegawa.

KOTSUKE: Mount Tanigawa, altitude 700 to 800 meters, October 24, 1955 (*Baba*); *Baba* No. SD 38. Associated in nature with *Cladura (Cladura) brevifila* sp. nov. and *C. (C.) tetraspila* Alexander.

Male hypopygium (Plate 5, fig. 40) with the tergite, *t*, narrowed outwardly into a depressed-flattened plate that divides at apex into two obtuse lobes that are separated by a very narrow median split, in cases, the apex only slightly emarginate, without a further median split; no lateral tergal arms or projections. Basistyle, *b*, with the outer lobe shorter than the dististyle, stout, with long conspicuous setæ on outer third; mesal lobe elongate, provided with abundant microscopic spiculate points and scattered strong setæ. Dististyle, *d*, narrowed on outer third or less, the apex recurved, obtuse and slightly expanded, with long setæ. Phallosome, *p*, with the gonapophysis, *g*, short-stemmed, expanded into a glabrous oval flattened blade; ædeagus unusually long and extended, directed caudad and ventrad and finally cephalad; ending in a long filament that is about one-third the enlarged basal part, with a further pair of microscopic filaments at its base.

79 (334). *GONOMYIA (IDIOCERA) ARETE* sp. nov. Plate 6, figs. 41, 47.

Allied to *pruinosa*; pedicel and first flagellar segment yellowed; wings yellowish gray, stigma small, light brown; Sc short, vein  $R_4$  nearly one-half longer than  $R_{2+3+4}$ ; male hypopygium with three styles, the intermediate and inner ones forked to produce a total of five branches or spines.



*Male*.—Length, about 4.5 millimeters; wing, 4.5.

Rostrum brownish black; palpi black. Antennæ with scape black, heavily gray pruinose; pedicel and base of first flagellar segment yellow, remainder of flagellum black; segments long-oval, with verticils that much exceed the segments. Head light gray.

Pronotum gray. Mesonotum discolored, the præscutum apparently gray with darker grayish brown stripes; scutal lobes brown, scutellum brown; postnotum darker brownish gray. Pleura light yellow, especially clear behind; dorsopleural region more infuscated. Halteres with stem pale, knob weakly infuscated. Legs with the coxæ and trochanters pale yellow; remainder of legs very slightly darkened, the outer tarsal segments more infuscated. Wings (Plate 6, fig. 41) yellowish gray, the costal border light yellow; stigma small, light brown, lying basad of vein  $R_3$ ; cord slightly seamed with brown, best-evidenced by a deepening in color of the veins; remaining veins pale, with dark trichia. Venation:  $Sc_1$  ending a short distance beyond the origin of  $R_s$ ; distance on costa between  $R_{1+2}$  and  $R_3$  about one-third the length of the latter vein; vein  $R_4$  relatively long, nearly one-half longer than  $R_{2+3+4}$ ; m-cu about one and one-half times its length before the fork of M.

Abdominal tergites brown, sternites paler; hypopygium brownish yellow. Male hypopygium (Plate 6, fig. 47) with the outer apical lobe of basistyle, *b*, exceeding one-half the length of the style, stout. Three dististyles, *d*, of which two are branched, producing a total of five styles or branches, these shaped as shown in figure; outer style simple, at extreme tip produced into two points arranged in virtually a straight angle; intermediate style largest, forked, the outer arm longest, appearing as a flattened blade that is extended into a long point, inner arm shorter, dilated on outer half, its outer apical angle produced into a darkened lobe; inner style forked, including a slender pale rod that narrows abruptly into an acute spine, and an inner very slender basal spine. Ædeagus constricted before the slightly dilated apex, with several strong setæ before the more narrowed yellow tip.

*Habitat*.—Japan (Honshu).

Holotype, male, Kurokawa, Echigo, August 23, 1955 (*Baba*); *Baba* No. 375.

The present fly is readily told from *Gonomyia (Idiocera) pruinosa* Alexander and *G. (I.) subpruinosa* Alexander, the

closest relatives, by the structure of the male hypopygium, the conformation of the dististyles being quite distinct.

80 (335). *GONOMYIA (IDIOCERA) SUBPRUINOSA* Alexander. Plate 6, fig. 48.

*Gonomyia (Ptilostena) subpruinosa* ALEXANDER, Philip. Jour. Sci. 24 (1924) 588-590.

The types were from Jozankei, Hokkaido, taken on August 19, 1922 by Esaki. The species later was found at Koiwai Farm, near Morioka, Rikuchiu, from August 15 to September 2, 1920 by Teranishi.

Male hypopygium (Plate 6, fig. 48) with the outer lobe of the basistyle, *b*, large and fleshy, obtuse at tip. Five dististyles or branches of the same, *d*; outer style a slender blackened rod, long and sinuous, narrowed very gradually to the acute tip, on margin beyond midlength with a short spine; intermediate style deeply forked, the outer arm the longest element, appearing as a broadly flattened blade that is extended into a long slender spine, inner arm shorter, the blackened head hispinous; inner style forked at base, the inner arm a slender pale rod, its tip not produced into a spine, outer arm a long straight spine. Ædeagus slender, at tip narrowed into a point or spine.

The Formosan *Gonomyia (Idiocera) pruinosa* Alexander differs in the details of structure of the hypopygium, including the dististyles and ædeagus; outer dististyle a long pale very slender rod that narrows to an acute point, without a lateral spine, as in *subpruinosa*.

81 (336). *GONOMYIA (IDIOCERA) TERANISHII* Alexander. Plate 6, fig. 49.

*Gonomyia (Ptilostena) teranishii* ALEXANDER, Ent. Soc. America Ann. 14 (1921) 118-119.

The type was from Koiwai Farm, near Morioka, Rikuchiu, taken August 17, 1920, by Teranishi.

ECHIGO: Kurokawa, July 3, 1954 (*Baba*); *Baba* No. 163. July 5, 1954 (*Baba*), No. 226; May 22, 1955 (*Baba*), No. 401.

What appears to represent the same species has been found as far to the west as Szechwan, China.

Male hypopygium (Plate 6, fig. 49) with the outer lobe of the basistyle, *b*, terminating in an acute blackened spine; inner apical lobe small and slender. Three dististyles, *d*, the outer one simple, narrowed gradually to an acute blackened point; intermediate style longest, stem long, forking into two unequal lobes, the outer one about twice as long as the inner and more slender, inner lobe blackened, its tip truncate; inner style nearly

as long as the outer one, pale, slender, on inner face with a low swelling that bears a concentration of setæ. *Ædeagus* blackened, straight, bifid at tip; lower margin with a row of about six long setæ.

82 (337). *LIPSOTHRIX BABAI* sp. nov.

Plate 6, figs. 44, 50.

General coloration of thorax black; antennæ of male relatively long; femora brownish yellow, tips narrowly blackened; wings weakly tinged with brown, with numerous macrotrichia in the outer cells; Rs very long and straight, exceeding vein  $R_4$ ; m-cu about opposite midlength of the rectangular cell 1st  $M_2$ ; male hypopygium with the interbase a long sinuous rod, near its tip bent at nearly a right angle into a slender spine.

*Male*.—Length, about 8 to 8.5 millimeters; wing, 8.5 to 9; antenna, about 2.5 to 2.9.

*Female*.—Length, about 10 millimeters; wing, 8.5; antenna, about 2.

Rostrum brown, small; palpi black. Antennæ with the scape and pedicel black, flagellum brown, elongate in male; flagellar segments oval, with a dense white pubescence and short verticils. Head dark brown; anterior vertex relatively narrow, elevated into a tubercle behind the antennal bases.

Pronotum brownish black, scutellum testaceous. Mesonotal præscutum and scutum polished black, scutellum and postnotum less distinctly polished black; parascutella, posterior callosities of the scutal lobes and the postnotal suture obscure yellow. Pleura black; dorsopleural region, meron and metapleura somewhat paler. Halteres with stem dirty white, clearer basally, knob weakly infuscated. Legs with the coxæ and trochanters testaceous yellow; femora obscure yellow to brownish yellow, the tips narrowly blackened; tibiæ light brown, the extreme base and tip slightly more darkened; tarsi brownish yellow, the outer two segments darker; claws with the teeth chiefly grouped at base. Wings (Plate 6, fig. 44) weakly tinged with brown, prearcular field more yellowed, costal field brownish yellow; veins brown. Strong macrotrichia in cells beyond cord (indicated in figure by stippling), chiefly in centers and outer ends of cells. Venation: Both  $Sc_1$  and  $Sc_2$  ending opposite or shortly before fork of Rs;  $R_{1+2}$  and  $R_2$  subequal or the former a little longer; Rs very long and straight, longer than vein  $R_4$ ; cell 1st  $M_2$  rectangular, in cases longer and narrower, shorter than any of the veins beyond it; m-cu close to midlength of the cell.

Abdomen black, the centers of the more proximal sternites paler; hypopygium black. Male hypopygium (Plate 6, fig. 50) with the outer dististyle, *d*, beyond the lateral spine short and stout, narrowed to a terminal spine; inner style dilated on basal half, provided with a few long setæ. Interbase a long sinuous rod, near tip bent at nearly a right angle and narrowed into a slender acute spine. Ædeagus broad-based, behind its apex with two pale very obtuse flattened plates (not shown in figure).

*Habitat*.—Japan (Honshu).

Holotype, male, Kurokawa, Echigo, July 17, 1955 (*Baba*); *Baba* No. 448. Allotype, female, Mount Amakazari, Echigo, altitude 1,000 meters, June 25, 1955 (*Baba*); *Baba* No. AM 89. Paratopotype, male, July 13, 1955 (*Baba*); *Baba* No. 414. Paratypes, 2 males, one pinned with the allotype.

This very distinct and interesting crane-fly is another of the many discoveries of Dr. Kintaro Baba, to whom the species is dedicated. It is very distinct from all other Japanese members of the genus in the presence of strong macrotrichia in the outer wing cells. In this regard the fly agrees with western Nearctic species, such as *Lipsothrix nigrilinea* (Doane) and *L. shasta* Alexander, that differ in the coloration of the body, venation, and structure of the male hypopygium.

83 (338). *LIPSOTHRIX TOKUNAGAI* Alexander.

*Lipsothrix tokunagai* ALEXANDER, Philip. Jour. Sci. 50 (1933) 152, pl. 1, fig. 18 (venation), pl. 3, fig. 44 (♂ hypopygium).

The type was taken on Mount Daisen, Hoki, on July 2, 1931, by Masaaki Tokunaga, for whom it was named.

ECHIGO: Kurokawa, July 2 to 12, 1955 (*Baba*); *Baba* No. 444.

The present specimens are somewhat larger than the type (male, length, about 7.5 to 8 millimeters; wing, 7.5 to 8; antenna, about 2.2 to 2.3). The type male had lost the antennæ and legs and these are described herewith. Antennæ of male elongate, if bent backward extending about to midlength of the second abdominal segment, yellow throughout; flagellar segments with a dense white pubescence and short inconspicuous verticils. Legs uniformly whitened, with no indications of dark femoral tips, as in *apicifusca*. Male hypopygium as in the type. It may be noted that the interbase, as there figured, is slightly erroneous, being longer and more slender, strongly bent at near two-thirds the length, terminating in a long acute spine.

The very remarkable larvæ and pupæ of species of *Lipsothrix* have been discovered in recent years and have been discussed in two outstanding papers by Hinton and by Rogers and Byers.<sup>5</sup>

84 (339). RHABDOMASTIC (SACANDAGA) MICROXANTHA sp. nov. Plate 6, figs. 45, 51.

Size very small; wing of male 4 millimeters; color of entire body pale yellow; antennal flagellum brown; wings relatively narrow, pale yellow, veins very pale brownish yellow; relatively complete series of trichia on vein  $R_4$  and distal sections of  $R_5$ ,  $M_{1+2}$ ,  $M_3$  and  $M_4$ ; vein  $R_3$  short and erect, about two-fifths the distance on C between veins  $R^{1+2}$  and  $R_3$ ; cell 1st  $M_2$  relatively long and narrow; male hypopygium with the spines of the outer dististyle relatively few but large and coarse; gonapophyses pointed at tips.

*Male*.—Length, about 3.5 millimeters; wing, 4.

Rostrum and palpi light yellow. Antennæ with scape and pedicel light yellow, flagellum brown; segments oval, much shorter than the longest verticils. Head light yellow.

Thorax uniformly very pale yellow. Halteres pale yellow. Legs yellow throughout. Wings (Plate 6, fig. 45) relatively narrow, pale yellow; veins very pale brownish yellow. Relatively complete series of long trichia on veins  $R_4$ , distal sections of  $R_5$ ,  $M_{1+2}$ ,  $M_3$  and  $M_4$ ; on  $R_1$  basad almost to origin of Rs. Venation:  $Sc_1$  ending nearly opposite midlength of the long Rs; vein  $R_3$  short and erect, about two-fifths as long as the distance on C between tips of  $R^{1+2}$  and  $R_3$ ; cell 1st  $M_2$  broad-based, relatively long and narrow, the length about three times the greatest width; m-cu shortly before midlength of  $M_{3+4}$ ; cell 2nd A relatively narrow.

Abdomen yellow throughout. Male hypopygium (Plate 6, fig. 51) with the outer dististyle, *d*, relatively slender, the spines few but large; inner style broad-based, narrowed rapidly to the slender apex. Gonapophysis, *g*, broad at base and apex, stem slender, tip pointed.

*Habitat*.—Japan (Honsu).

Holotype, male, Kurokawa, June 15, 1955 (*Baba*); *Baba* No. 398.

<sup>5</sup>Hinton, H. E. The structure of the spiracular gill of the genus *Lipsothrix* (Tipulidæ), with some observations on the living epithelium isolated in the gill at the pupa-adult moult. Roy. Ent. Soc. London Proc. (A) 30, pts. 1-3 (1955) 1-14, 14 figs.

Rogers, J. Speed, and George W. Byers. The ecological distribution, life-history, and immature stages of *Lipsothrix sylvia* (Diptera: Tipulidæ). Mus. Zool. Univ. Michigan Occas. Pap. 572 (1956) 1-14, 7 figs.

The only approximately similar regional species is the much larger *Rhabdomastix* (*Sacandaga*) *japonica* Alexander, which differs not only in size but in the details of coloration and venation, as the long Sc and the approximation of veins  $R_{1+2}$  and  $R_3$  at the margin.

85 (340). RHABDOMASTIC (SACANDAGA) SADŒNSIS sp. nov. Plate 6, fig. 46.

General coloration of thorax gray, the disk of the præscutum more infuscated but not forming an evident stripe; antennæ brownish black; halteres yellow; legs yellow throughout; wings tinged with gray, the prearcular and costal fields more yellowed; sparse macrotrichia on outer ends of veins  $R_5$ ,  $M_{1+2}$  and  $M_3$ ; vein  $R_3$  short, erect, the distance on C between  $R_{1+2}$  and  $R_3$  fully twice the length of the latter.

*Female*.—Length, about 4 millimeters; wing, 4.3.

Rostrum gray; palpi black. Antennæ with scape and pedicel brownish black, flagellum broken. Head dark gray; anterior vertex broad, exceeding four times the diameter of the scape.

Prothorax gray. Mesonotum gray, the præscutum with the central area a trifle more infuscated but not forming distinct stripes; posterior sclerites of notum and the pleura somewhat lighter gray. Halteres yellow. Legs with the coxæ brownish testaceous, the fore pair somewhat darker; trochanters yellow; remainder of legs brownish yellow to yellowish brown throughout. Wings (Plate 6, fig. 46) tinged with gray, the prearcular and costal fields somewhat more yellowed; stigma not or scarcely indicated; veins pale brown, more brownish yellow in the brightened fields. Macrotrichia present on less than the distal half of outer section of vein  $M_3$ , none on anterior branch of  $R_5$ . Venation:  $Sc_1$  ending about opposite midlength of  $R_5$ , the latter about one-fifth longer than  $R_{2+3+4}$ ; vein  $R_3$  short and erect, less than one-fourth  $R_4$ , which is gently arcuated and curved slightly cephalad at tip; distance on C between  $R_{1+2}$  and  $R_3$  fully twice the length of the latter vein; distal section of vein  $M_{1+2}$  arched at origin; m-cu at near midlength of  $M_{3+4}$ .

Abdominal tergites dark brown, sternites a little paler.

*Habitat*.—Japan (Honshu).

Holotype, female, Mount Donden, Sado, altitude 600 meters, July 19, 1955 (*Baba*); *Baba* No. SA 35.

The most similar regional species is *Rhabdomastix* (*Sacandaga*) *atrata* Alexander, which is brownish black throughout, including the halteres and legs.

## ORMOSIA Rondani

*Ormosia* RONDANI, Prodr. Dipter. Ital. 1 (1856) 180.

## Subgenus OREOPHILA Lachschewitz

*Oreophila* LACKSCHEWITZ, Troms. Mus. Arsh. 4 53 (1935) 7.

*Oreophila* LACKSCHEWITZ, Naturhist. Mus. Wien Ann. 50 (1939) 34-35 (published March 13, 1940); type *bergrothi* Strobl, 1894.

*Ilisomyia* RONDANI, Prodr. Dipter. Ital. 1 (1856) 180; type *nebulosa* Rondani (as *nubipennis* lapsus, nomen nudum).

*Ilisomyia* OSTEN SACKEN, Berlin. Ent. Zeitschr. 31 (1887) 231.

I consider the identity of *Ilisomyia* Rondani as being too much in doubt to be accepted in favor of the later proposed *Oreophila* Lachschewitz. The following species in northeastern Asia belong here—*Ormosia* (*Oreophila*) *confluenta* Alexander (Japan), *O. (O.) weymarni* Alexander (Korea, Manchuria), and *O. (O.) yankovskyi* Alexander (Korea). Whether *Ormosia tokionis* Alexander should likewise be placed here is more questionable and its assignment to the present group would require a modification of characters in both the venation and the male hypopygium. Various other species, including *O. (O.) absaroka* Alexander and *O. (O.) flaveola* (Coquillett), occur in western and northwestern North America.

Male hypopygium with the phallosomic plate large, depressed-flattened, somewhat as in *Molophilus*; ædeagus much more slender than in typical *Ormosia*; usually with two dististyles. Wings with cell  $M_2$  open by the atrophy of m.

86 (341). ORMOSIA (ORMOSIA) AMAKAZARII sp. nov. Plate 7, figs. 54, 56.

Allied to *nantaisana*; general coloration dark gray, the præscutum with a vaguely indicated darker central stripe; pseudo-sutural foveæ black; halteres light yellow; legs brownish black, femoral bases obscure yellow, including about the basal third of the fore femora; wings grayish yellow, the prearcular and costal fields clear light yellow, stigma dark brown; cell 1st  $M_2$  closed; male hypopygium with the tergite produced medially; dististyles relatively small, the outer style with rows of microscopic spicules on the weakly capitate outer end; phallosome simple, gonapophyses comparatively small, ædeagus very broad.

*Male*.—Length, about 5.5 millimeters; wing, 6.5; antenna, about 1.3.

Rostrum dark gray; palpi black. Antennæ black throughout; flagellar segments passing through oval to elongate-oval, the

verticils of moderate length, longer and stouter on the proximal segments. Head gray; anterior vertex broad.

Pronotum dark plumbeous gray, the sides of the scutellum obscure yellow. Mesonotum dark gray, the præscutum with a vaguely indicated darker central stripe; pseudosutural foveæ and tuberculate pits black; pronotum with very long erect setæ. Pleura and pleurotergite dark gray, including the dorsopleural membrane. Halteres light yellow. Legs with the coxæ dark gray; trochanters obscure yellow; remainder of legs brownish black, the femoral bases obscure yellow, on the fore legs including about the basal third, on the posterior legs more than one-half. Wings (Plate 7, fig. 54) with the ground grayish yellow, the prearcular and costal fields clear light yellow; stigma dark brown, conspicuous; outer end of cell  $R_3$  and a seam in cell M adjoining vein Cu vaguely darker; veins brown, yellow in the flavous parts. Macrotrichia distributed virtually over the entire wing surface (position shown in figure by stippling). Venation:  $Sc_1$  ending just beyond level of  $R_2$ , the latter at fork of  $R_{2+3+4}$ ; m-cu about one-fourth its length beyond the fork of M.

Abdomen, including hypopygium, dark brown, with abundant long yellow setæ. Male hypopygium (Plate 7, fig. 56) with the ninth tergite, *t*, very short and broad, the median area of the posterior border produced into a subquadrate lobe. Both dististyles, *d*, relatively small, as compared with *nantaisana* and *subalpina*; outer style with rows of microscopic spinules on outer or head portion; inner style cleaverlike, with microscopic setæ near apex. Phallosome, *p*, simple, as compared with related forms; gonapophyses appearing as comparatively small flattened blades, dark-colored with pale margins. Ædeagus very broad at base, narrowed outwardly, the tip truncate.

*Habitat.*—Japan (Honshu).

Holotype, male, Mount Amakazari, Echigo, altitude 1,000 meters, June 25, 1955 (*Baba*); *Baba* No. AM 35.

The most similar described species are *Ormosia* (*Ormosia*) *nantaisana* Alexander and *O. (O.) subalpina* Alexander, which are most readily distinguished by the structure of the male genitalia, as indicated above. Both of these species are further discussed later in this report (Nos. 87, 88).



87 (206). *ORMOSIA (ORMOSIA) NANTAISANA* Alexander. Plate 7, fig. 57.

*Ormosia nantaisana* ALEXANDER, Philip. Jour. Sci. 82 (1953) 304  
(latest reference).

SHIMOTSUKE: Nantaisan, August 16, 1909 (type).

SHINANO: Mount Shirouma, August 8, 1931 (*Machida* and *Nakamura*). Kamikochi, August 18 to 21, 1934 (*Kariya*).

Male hypopygium (Plate 7, fig. 57) with the tergite, *t*, transverse, the central part with an X-shaped thickening, the anterior arms extended outwardly into blunt lobes, the median area with pale membrane. Basistyle, *b*, with the interbasal process (or lateral gonapophysis) appearing as an inner slender pale blade and a much larger outer or lateral expansion. Outer dististyle, *d*, short and stout, its apex expanded and more or less folded, provided with dense rows of spiculate points; inner style a longer cultrate yellow blade. Phallosome, *p*, including conspicuous yellowish horn-colored gonapophyses and a smaller ædeagus, the latter somewhat as in the subgenus *Rhyphotophus* but with the arms short and inconspicuous.

88. (342). *ORMOSIA (ORMOSIA) SUBALPINA* Alexander. Plate 7, fig. 58.

*Ormosia (Ormosia) subalpina* ALEXANDER, Ent. Soc. America Ann. 40 (1947) 366-367.

The types and only known specimens were from Mount Kurobegoro, Etchu, altitude 2,400 meters, taken August 8, 1931, by K. Imanishi.

The present fly, while allied to *Ormosia (Ormosia) nantaisana*, is quite distinct in the structure of the male hypopygium.

Male hypopygium (Plate 7, fig. 58) with the tergite generally as in *nantaisana*, the posterior border produced and emarginate, the lateral lobes slender. Basistyle, *b*, short and stout. Dististyles, *d*, unusually large, the outer style very short-stemmed, the head large, the total length only about one-half greater than the breadth near apex, the latter with rows of dense black spicules; inner style unusually large, its length virtually equal to that of the basistyle or about one-half longer than the outer style, roughly cultriform in outline. Phallosome, *p*, with the lateral apophyses appearing as very large incurved pale blades, expanded at outer ends; inner apophyses much smaller; ædeagus with two genital ducts, each unequally bifid at tip, the inner part produced into a long slender point.

The three species last considered, *Ormosia amakazarii*, *O. nantaisana*, and *O. subalpina*, are aberrant in the typical subgenus and show certain points of resemblance to the subgenus

*Rhypholophus Kolenati*, to which group they might more properly be referred. More material or the discovery of annectant forms might help clarify this question.

#### ERIOPTERA Meigen

*Erioptera* MEIGAN, Illiger's Magaz. 2 (1803) 262.

#### Subgenus TASIOCERODES novum

Characters as in the typical subgenus, differing especially in the venation, particularly the radial field which is as much as the otherwise very distinct genus *Tasiocera*; vein  $R_{2+3}$ ; perpendicular at the end of  $R_s$ , bent at a right angle, at the bend with  $R_2$  directed basad, thence angularly bent to joint  $R_1$ ;  $R_{4+5}$  lacking, with both  $R_4$  and  $R_5$  at the end of  $R_s$ , the former in direct longitudinal alignment with it; basal section of  $R_5$  in direct transverse alignment with  $R_{2+3}$ ; vein 2nd A. sinuous. In a second species, *subsessilis*, there is a very short element  $R_{2+3+4}$  at the end of  $R_s$ , this soon forking into  $R_4$ . Veins with very long trichia, approximately as in *Molophilus*. Male hypopygium of the general type of *Erioptera*; two complex dististyles; phallosome likewise complex, with long apophyses.

*Type of subgenus.*—*Erioptera (Tasiocerodes) persessilis* sp. nov. (Japan). Also included is *E. (T.) subsessilis* Alexander, of Formosa.<sup>6</sup> Since there are only the two species known at present, and in order to complete the data I am providing a figure and brief description of the male hypopygium of *subsessilis*. This agrees with the present fly in its general structure but all details are distinct (Plate 8, fig. 62). Dististyles, *d*, complex, the larger outer one with the beaklike portion long and slender; inner style shaped about as figured. Phallosome, *p*, with the central plate or ædeagus broad-based, with spinulose outer margins, the outer spines large and blackened; lateral apophyses appearing as slender ribbonlike blades that are narrowed only at the slightly darkened tips (only one side of phallosome is figured). The various parts as described and figured are as they appear on a microscope slide and may appear different at various other views or angles.

89 (343). ERIOPTERA (TASIOCERODES) PERSESSILIS sp. nov. Plate 7, fig. 53;  
Plate 8, fig. 61.

General coloration of mesonotum brownish yellow, vaguely patterned with darker; antennæ testaceous yellow; knob of halteres infuscated; legs yellow; wings subhyaline, venation as described under the subgenus; male hypopygium with both

<sup>6</sup> Ent. Soc. America Ann. 17 (1924) 67-68.

dististyles complex, lateral apophyses appearing as yellow rods that narrow into long straight blackened spines.

*Male*.—Length, about 3.4 to 3.5 millimeters; wing, 3.8 to 4; antenna, about 1.0.

Rostrum brownish yellow; palpi brownish black. Antennæ testaceous yellow, the outer segments darker; flagellar segments long-oval to fusiform, with coarse bristles that are much longer than the segments. Head above chiefly yellow, with coarse black bristles.

Cervical region darkened; pronotum obscure yellow. Mesonotum brownish yellow, with vague indications of a darker pattern on the præscutum, especially evident on the interspaces where there are coarse black setæ; posterior sclerites of notum obscure yellow. Pleura and pleurotergite paler yellow. Halteres with stem yellow, knob infuscated. Legs with the coxæ and trochanters pale yellow; remainder of legs yellow, the outer tarsal segments a trifle darker. Wings (Plate 7, fig. 53) subhyaline, the veins and trichia a little darker. Venation: As in the subgenus; vein 2nd A sinuous.

Abdominal tergites brownish yellow, sternites clearer yellow; hypopygium light brown. Male hypopygium (Plate 8, fig. 61) generally as in *subsessilis* (Plate 8, fig. 62) but differing in all details. Basistyle, *b*, with the inner apical angle produced into a long blade that is provided with long setæ. Two dististyles, *d*, both complex in structure, the outer a narrow blade with a greatly expanded basal flange; inner style arising very low on the basistyle, narrowed and sinuous at base, expanded outwardly, terminating in a spinous point. Phallosome, *p*, complex, including a pair of broad flattened plates that apparently represent the ædeagus, these terminating in blackened divergent spines, at base of plates near the midline with a slender acute spine; lateral margins of plates with microscopic retrorse spinules; lateral apophyses much longer, appearing as yellow rods that narrow gradually into long straight black spines.

*Habitat*.—Japan (Honshu).

Holotype, male, Kurokawa, Echigo, July 30, 1955 (*Baba*); *Baba* No. 379. Paratopotype, male, July 9, 1955; *Baba* No. 359.

The distinctions between this species and the Formosan *Erioptera (Tasiocerodes) subsessilis* Alexander are indicated in the description.

90 (344). ERIOPTERA (HOPLERIOPTERA) HONSHUENSIS sp. nov. Plate 7, fig. 52;  
Plate 8, fig. 60.

General coloration of body dull yellow, without pattern; femora brownish black, their bases restrictedly paler, narrowest on the fore legs; wings hyaline, unpatterned; m-cu at near two-thirds the length of  $M_{3+4}$ ; male hypopygium with the outer dististyle a simple paddlelike blade, the outer half densely setuliferous; inner style shorter, the outer margin with an erect slender spine; phallosome with the gonapophyses appearing as simple black horns.

*Male*.—Length, about 4 to 4.5 millimeters; wing, 5 to 5.3.

*Female*.—Length, about 5 to 5.5 millimeters; wing, 5 to 5.5

Rostrum yellow; palpi brown. Antennæ with the scape brownish yellow, pedicel brown, flagellum light brown; flagellar segments elongate, with conspicuous verticils. Head yellow.

Thorax dull yellow, without evident pattern. Halteres pale yellow. Legs with the coxæ and trochanters pale yellow; femora brownish black, the bases restrictedly paler, narrowest on the fore legs, more extensive on the middle and posterior pairs; remainder of legs dark brown to brownish black. Wings (Plate 7, fig. 52) hyaline, unpatterned; veins pale. Venation:  $Sc_1$  ending about opposite the fork of  $R_{2+3+4}$ ,  $Sc_2$  shortly before fork of Rs;  $R_2$  just beyond fork of  $R_{2+3+4}$ , vein  $R_{2+3}$  short to lacking; cell 1st  $M_2$  closed; m-cu far distad, at near two-thirds  $M_{3+4}$ ; vein 2nd A nearly straight.

Abdomen, including hypopygium, obscure yellow. Male hypopygium (Plate 8, fig. 60) with the tergite poorly delimited. Basistyle, *b*, simple, the mesal-apical angle produced into a small lobule. Outer dististyle, *d*, a long blackened blade, the outer two-thirds more expanded, provided with abundant microscopic setulæ; inner style about two-thirds as long, appearing as a paler blade, on outer margin beyond midlength with an erect to slightly recurved slender black spine that has about three long setæ around its base; a low tubercle beyond the spine on face of blade bears three similar very long setæ. Phallosome, *p*, unusually simple; gonapophyses appearing as slender gently curved smooth black horns, their bases enlarged; ædeagus longer, gradually narrowed to the simple apex.

*Habitat*.—Japan (Honshu).

Holotype, male, Mount Amakazari, Echigo, altitude 900 meters, June 25, 1955 (*Baba*); *Baba* No. AM 42. Allotopotype, female. Paratopotypes, 6 males and females.

*Erioptera* (*Hoploerioptera*) *honsuensis* is quite distinct in hypopygial structure from the two species of the subgenus previously described, *E. (H.) luctuosipes* Alexander and *E. (H.) shikokuensis* Alexander, both from Shikoku.

91 (345). **ERIOPTERA (PSILOCONOPA) MACHIDAI** Alexander. Plate 7, fig. 55.

*Erioptera (Ilisia) machidai* ALEXANDER, Philip. Jour. Sci. 44 (1931) 363-364, pl. 1, fig. 19 (venation).

The type, a female, was from Hirayu, Shinano, taken July 27, 1929, by Machida.

ECHIGO: Mount Amakazari, altitude 900 meters, June 25, 1955 (*Baba*); *Baba* No. AM 41.

SHINANO: Kamikochi, altitude 5,000 feet, August 18 to 21, 1934 (*Kariya*).

Male hypopygium (Plate 7, fig. 55) with the tergite large, its posterior border convexly rounded, with strong setæ. Basistyle, *b*, stout, narrowed to an obtuse apical point. Outer dististyle, *d*, very large and complex, blackened, shaped about as figured; outer margin with two small acute points, with a further large black spine lying across the face of the style, directed outwardly; apex of rostral portion broad, truncated; inner style small, pale, gradually narrowed outwardly. Phallosome, *p*, very complex, on either side of the broad ædeagus with three apophyses, the innermost appearing as a slender straight black rod, at apex with about six teeth; lateral of this a longer and stouter apophysis, outer half blackened, outer end with more numerous small teeth; at base of these rods with a large pale subtending blade, virtually as long as the longest apophysis.

92 (346). **ERIOPTERA (ERIOPTERA) DAMA** sp. nov. Plate 8, figs. 59, 63.

Size relatively large (wing of male over 6 millimeters); general coloration of entire body light yellow; antennæ yellow; halteres with stem whitened, knob a trifle darker; legs yellow; wings pale yellow, the outer radial field, including the stigma, more saturated yellow; male hypopygium with the outer dististyle very complex, with four branches that bear smaller denticles; inner style a long slender simple rod; gonapophysis a blackened rod, its outer margin with microscopic denticles.

*Male*.—Length, about 5.5 millimeters; wing, 6.2.

Rostrum light yellow; palpi with first segment yellow, the remainder abruptly and conspicuously blackened. Antennæ

with scape and pedicel fulvous yellow, flagellum clear light yellow. Head light yellow; eyes large, black, contiguous beneath.

Thoracic dorsum pale yellow, the præscutum a trifle more fulvous yellow medially in front; pleura almost white. Halteres with the stem whitened, knob a trifle darker. Legs with the coxæ and trochanters pale yellowish white; remainder of legs yellow. Wings (Plate 8, fig. 59) pale yellow, the outer radial field, including the stigma, more saturated yellow; veins yellow, the trichia pale. Venation: Vein 2nd A strongly sinuous on outer third.

Abdomen, including hypopygium, yellow, with only certain structures of the genitalia black. Male hypopygium (Plate 8, fig. 63) with the basistyle, *b*, relatively simple, not produced into an apical lobe. Dististyles, *d*, very complex, especially the outer style which is much branched, suggesting the specific name. In the unique type slide, one style is lacking and the tips of certain of the branches broken so the appearance of the hypopygium may be somewhat different from the figure, as provided; outer style blackened, with the main branch broad-based, forking into two unequal arms, the longer one with five or six small denticles scattered along the inner margin, shorter arm smooth; near base of style with apparently two distinct arms, one of which is broken near its base; inner style a long slender simple rod, paler and more dilated at base, blackened outwardly, the tip broken. Phallosome with the gonapophyses, *g*, appearing as nearly straight blackened rods, the outer margins with microscopic denticles. Arms of ædeagus long and slender.

*Habitat*.—Japan (Honshu).

Holotype, male, Kurokawa, Echigo, June 17, 1955 (*Baba*); *Baba* No. 443.

A very distinct species, most similar to *Erioptera* (*Erioptera*) *holoxantha* Alexander, differing evidently in the complicated outer dististyle of the male hypopygium.

93 (347). **MOLOPHILUS (MOLOPHILUS) DIFEROX** sp. nov. Plate 8, fig. 64.

Belongs to the *gracilis* group and subgroup; allied to *ferox*; general coloration black, pretergites yellow; wings weakly tinged with brown, veins and trichia darker; male hypopygium with the outer lobe of basistyle deeply and unequally bifid; both

dististyles simple, from dilated bases, the concave margins with microscopic spinules.

*Male*.—Length, about 3.5 millimeters; wing, 4.2; antenna, about 0.9.

Rostrum and palpi black. Antennæ black throughout, short; flagellar segments oval to long-oval, with very long verticils. Head dull black.

Pronotum black, pretergites light yellow. Mesonotum dull black, opaque by a sparse pruinosity; pleura black. Halteres yellow, knob large, somewhat more obscured. Legs with the coxæ brownish yellow; trochanters yellow; femora brown, yellowed basally, the tips passing into dark brown; tibiæ brownish yellow, the tips more narrowly and vaguely darkened; tarsi dark brown. Wings with a weak brownish tinge, the prearcular and costal fields slightly more yellowed; veins and macrotrichia brown. Venation:  $R_2$  lying shortly beyond level of  $r-m$ ; petiole of cell  $M_3$  about three times  $m-cu$ ; vein 2nd A relatively long, extending to shortly beyond the level of  $m-cu$ .

Abdomen, including hypopygium, brownish black. Male hypopygium (Plate 8, fig. 64) with the dorsal lobe of the basistyle, *b*, small, only about twice as long as broad, provided with a few setæ; lateral lobe very large and conspicuous, simulating the dististyles in length and shape, broad at base, deeply bifid into a slender outer arm and a shorter but broader inner arm that narrows into a slender curved spine; ventral lobe broad. Dististyles, *d*, two, both appearing as simple curved rods from dilated bases, the outer style more slender, narrowed very gradually to a long slender spine, the concave margin with abundant spinules, more sparse and scattered outwardly; inner style a trifle shorter but stouter, tip more obtuse, the face and margin with six or seven small scattered spinules. Phallosomic plate, *p*, oval, microscopically setuliferous. Ædeagus very long and slender.

*Habitat*.—Japan (Honshu).

Holotype, male, Kurokawa, Echigo, altitude 200 meters, June 12, 1955 (*Baba*); *Baba* No. 380.

The various regional species that are allied to *Molophilus* (*Molophilus*) *ferox* Alexander, including also *M. (M.) efferox* Alexander and *M. (M.) perferox* Alexander, all are separated among themselves by differences in the male hypopygium.

- 94 (348). **MOLOPHILUS (MOLOPHILUS) KIUSHIUENSIS** Alexander. Plate 8, fig. 65.  
*Molophilus (Molophilus) kiushiuensis* ALEXANDER, Philip. Jour. Sci. 73 (1940) 416-417, pl. 1, fig. 24 (venation), pl. 5, fig. 50 (♂ hypopygium).

The types were from Fugandake, Kyushu, collected in May, 1922.

ECHIGO: Sugatani, Kitakanbara, altitude 300 meters, May 8, 1955 (*Hiroshi Koike*); Baba No. 466.

I now consider this fly as being a member of the *gracilis* group, *pubipennis* subgroup of the genus, rather than as belonging to the typical subgroup, as was originally indicated.

Male hypopygium (Plate 8, fig. 65) with the dorsal lobe of the basistyle, *b*, relatively slender; ventral lobe small, with spinulose points, additional to the scattered setæ. Outer dististyle, *d*, broad, especially at midlength, the tip obtuse and indistinctly bidentate; spicules on face of style about 15 to 18 in number; inner style with the apical point longer than in type (as shown in subfigure on extreme right), with a few microscopic denticles at point of bending. Phallosomic plate subtriangular, narrowed on outer part, microscopically setulose. Ædeagus small, only about one-third to one-half longer than the phallosome.

- 95 (349). **MOLOPHILUS (MOLOPHILUS) PERFLAVEOLUS** Alexander.

*Molophilus perflaveolus* ALEXANDER, Can. Ent. 50 (1918) 160-161.

*Molophilus auricomus* ALEXANDER, Insec. Inscit. Menst. 14 (1926) 115-117.

*Molophilus auricomus* ALEXANDER, Ins. Connecticut, 6 Dipt. (1942) 478, pl. 55 B (♂ hypopygium).

The species was described from North America, where it is known to have a very discontinuous distribution, in the east occurring in the southern Appalachians, and again throughout the far western states and provinces. The discovery of the fly in Japan is of unusual interest.

ECHIGO: Kurokawa, June 28, 1954 (*Baba*); Baba No. 199.

- 96 (350). **MOLOPHILUS (MOLOPHILUS) POLYCANTHUS** Alexander. Plate 8, fig. 66.

*Molophilus polycanthus* ALEXANDER, Philip. Jour. Sci. 59 (1936) 254-255, pl. 1, fig. 24 (venation), pl. 2 fig. 38 (♂ hypopygium).

The types were from Kibune, Kyoto, Yamashiro, taken August 17, 1932, by Tokunaga.

ECHIGO: Kurokawa, July 11, 1954 (*Baba*); Baba No. 202. August 1, 1955 (*Baba*); Baba No. 378.

The original description and figure of the male hypopygium were somewhat incomplete and incorrect in certain details.



The further material now available indicates the great complexity of parts in this organ.

Male hypopygium (Plate 8, fig. 66) with the basistyle, *b*, strikingly armed with spines. Dorsal lobe small, simple; ventral lobe long and fleshy, with strong setæ; remaining lobes of basistyle extended into spinelike points, including a mesal lobe that bears a needlelike spine from an expanded base, with a second similar spine from still nearer the base; a further small spinous point, as shown in the figure (drawn separately, to left of main figure). Dististyles, *d*, apparently two, the longer one a powerful black rod from an expanded base, its outer two-thirds more slender, before tip with several strong spinulose points; what appears to be the second style is a strong black spine from an expanded base, near origin produced into a short yellow arm. Phallosome, *p*, obtuse, glabrous. *Æ*deagus weakly expanded at base, gradually narrowed outwardly, approximately three times as long as the phallosome.

The unusual array of spinous points on the hypopygium serves to separate the present fly from similar forms. It is believed that the two structures discussed as being dististyles are such but with the material available there is some possibility that some of the spines of the basistyle and the dististyles may have been confused.

## ILLUSTRATIONS

[Legend; *a*, ædeagus; *b*, basistyle; *d*, dististyle; *g*, gonapophysis;  
*i*, interbase; *p*, phallosome; *t*, tergite.]

### PLATE 1

- FIG. 1. *Pedicia* (*Pedicia*) *brachycera* Alexander; male hypopygium.  
2. *Pedicia* (*Pedicia*) *cubitalis* Alexander; male hypopygium.  
3. *Pedicia* (*Pedicia*) *gaudens* (Alexander); male hypopygium.  
4. *Pedicia* (*Pedicia*) *subtransversa triacantha* subsp. nov.; male hypopygium.  
5. *Pedicia* (*Tricyphona*) *confluens subconfluens* subsp. nov.; venation.  
6. *Pedicia* (*Tricyphona*) *diaphanoides* Alexander; venation.

### PLATE 2

- FIG. 7. *Pedicia* (*Tricyphona*) *confluens subconfluens* subsp. nov.; male hypopygium.  
8. *Pedicia* (*Tricyphona*) *kirishimensis* Alexander; male hypopygium.  
9. *Pedicia* (*Tricyphona*) *norikuræ* sp. nov.; male hypopygium.  
10. *Pedicia* (*Tricyphona*) *seticauda* (Alexander); male hypopygium.  
11. *Pedicia* (*Tricyphona*) *setipennis* (Alexander); male hypopygium.  
12. *Pedicia* (*Tricyphona*) *vetusta* (Alexander); male hypopygium.  
13. *Pedicia* (*Tricyphona*) *diaphanoides* Alexander; male hypopygium.

### PLATE 3

- FIG. 14. *Nipponomyia pentacantha* sp. nov.; venation.  
15. *Heterangæus laticinctus* Alexander; venation.  
16. *Nipponomyia kuwanai* (Alexander); male hypopygium.  
17. *Nipponomyia pentacantha* sp. nov.; male hypopygium.  
18. *Nipponomyia trispinosa* (Alexander); male hypopygium.  
19. *Heterangæus laticinctus* Alexander; male hypopygium.

### PLATE 4

- FIG. 20. *Dicranota* (*Rhaphidolabis*) *babai* sp. nov.; venation.  
21. *Dicranota* (*Rhaphidolabis*) *basistylata* sp. nov.; venation.  
22. *Dicranota* (*Rhaphidolabis*) *trilobulata* sp. nov.; venation.  
23. *Dicranota* (*Rhaphidolabis*) *babai* sp. nov.; male hypopygium.  
24. *Dicranota* (*Rhaphidolabis*) *basistylata* sp. nov.; male hypopygium.  
25. *Dicranota* (*Rhaphidolabis*) *macracantha* Alexander; male hypopygium.  
26. *Dicranota* (*Rhaphidolabis*) *ontakensis* Alexander; male hypopygium.  
27. *Dicranota* (*Rhaphidolabis*) *trilobulata* sp. nov.; male hypopygium.  
28. *Dicranota* (*Rhaphidolabis*) *profunda* Alexander; male hypopygium.  
29. *Dicranota* (*Dicranota*) *sicaria* Alexander; male hypopygium.

## PLATE 5

- FIG. 30. *Cladura* (*Cladura*) *brevifila* sp. nov.; venation.  
 31. *Cladura* (*Cladura*) *autumna* Alexander; male hypopygium.  
 32. *Cladura* (*Cladura*) *babai* Alexander; male hypopygium.  
 33. *Cladura* (*Cladura*) *bidens* Alexander; male hypopygium.  
 34. *Cladura* (*Cladura*) *bicornuta* Alexander; male hypopygium.  
 35. *Cladura* (*Cladura*) *brevifila* sp. nov.; male hypopygium.  
 36. *Cladura* (*Cladura*) *daimio* Alexander; male hypopygium.  
 37. *Cladura* (*Cladura*) *hakonensis* Alexander; male hypopygium.  
 38. *Cladura* (*Cladura*) *monacantha* Alexander; male hypopygium.  
 39. *Cladura* (*Cladura*) *nipponensis* Alexander; male hypopygium.  
 40. *Cladura* (*Cladura*) *telephallus* Alexander; male hypopygium.

## PLATE 6

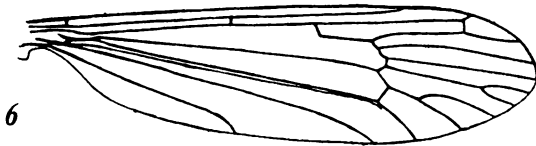
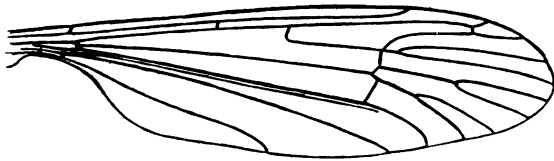
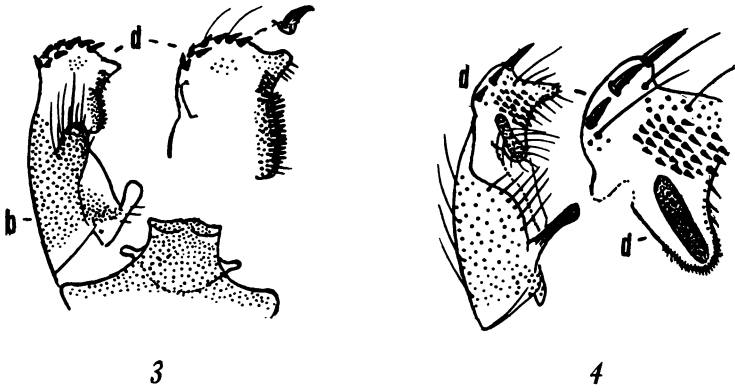
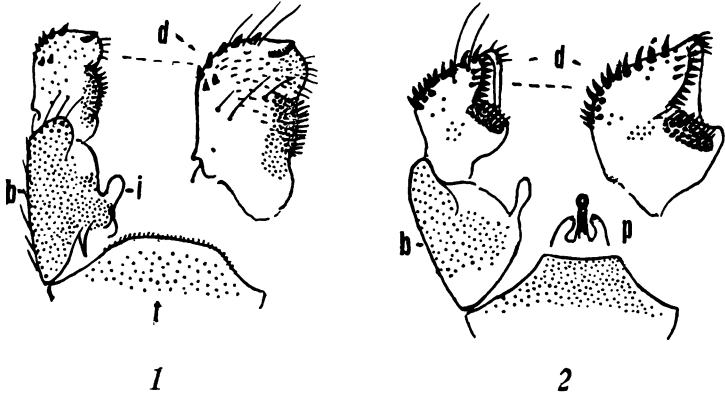
- FIG. 41. *Gonomyia* (*Idiocera*) *arete* sp. nov.; venation.  
 42. *Gonomyia* (*Idiocera*) *subpruinosa* Alexander; venation.  
 43. *Gonomyia* (*Idiocera*) *teranishii* Alexander; venation.  
 44. *Lipsothrix* *babai* sp. nov.; venation.  
 45. *Rhabdomastix* (*Sacandaga*) *microxantha* sp. nov.; venation.  
 46. *Rhabdomastix* (*Sacandaga*) *sadensis* sp. nov.; venation.  
 47. *Gonomyia* (*Idiocera*) *arete* sp. nov.; male hypopygium.  
 48. *Gonomyia* (*Idiocera*) *subpruinosa* Alexander; male hypopygium.  
 49. *Gonomyia* (*Idiocera*) *teranishii* Alexander; male hypopygium.  
 50. *Lipsothrix* *babai* sp. nov.; male hypopygium.  
 51. *Rhabdomastix* (*Sacandaga*) *microxantha* sp. nov.; male hypopygium.

## PLATE 7

- FIG. 52. *Erioptera* (*Hoplærioptera*), *honsuensis* sp. nov.; male venation.  
 53. *Erioptera* (*Tasiocerodes*) *persessilis* sp. nov.; venation.  
 54. *Ormosia* (*Ormosia*) *amakazarii* sp. nov.; venation.  
 55. *Erioptera* (*Psiloconopa*) *machidai* Alexander; male hypopygium.  
 56. *Ormosia* (*Ormosia*) *amakazarii* sp. nov.; male hypopygium.  
 57. *Ormosia* (*Ormosia*) *nantaisana* Alexander; male hypopygium.  
 58. *Ormosia* (*Ormosia*) *subalpina* Alexander; male hypopygium.

## PLATE 8

- FIG. 59. *Erioptera* (*Erioptera*) *dama* sp. nov.; venation.  
 60. *Erioptera* (*Hoplærioptera*) *honsuensis* sp. nov.; male hypopygium.  
 61. *Erioptera* (*Tasiocerodes*) *persessilis* sp. nov.; male hypopygium.  
 62. *Erioptera* (*Tasiocerodes*) *subsessilis* Alexander; male hypopygium.  
 63. *Erioptera* (*Erioptera*) *dama* sp. nov.; male hypopygium.  
 64. *Molophilus* (*Molophilus*) *diferox* sp. nov.; male hypopygium.  
 65. *Molophilus* (*Molophilus*) *kiushiuensis* Alexander; male hypopygium.  
 66. *Molophilus* (*Molophilus*) *polycanthus* Alexander; male hypopygium.



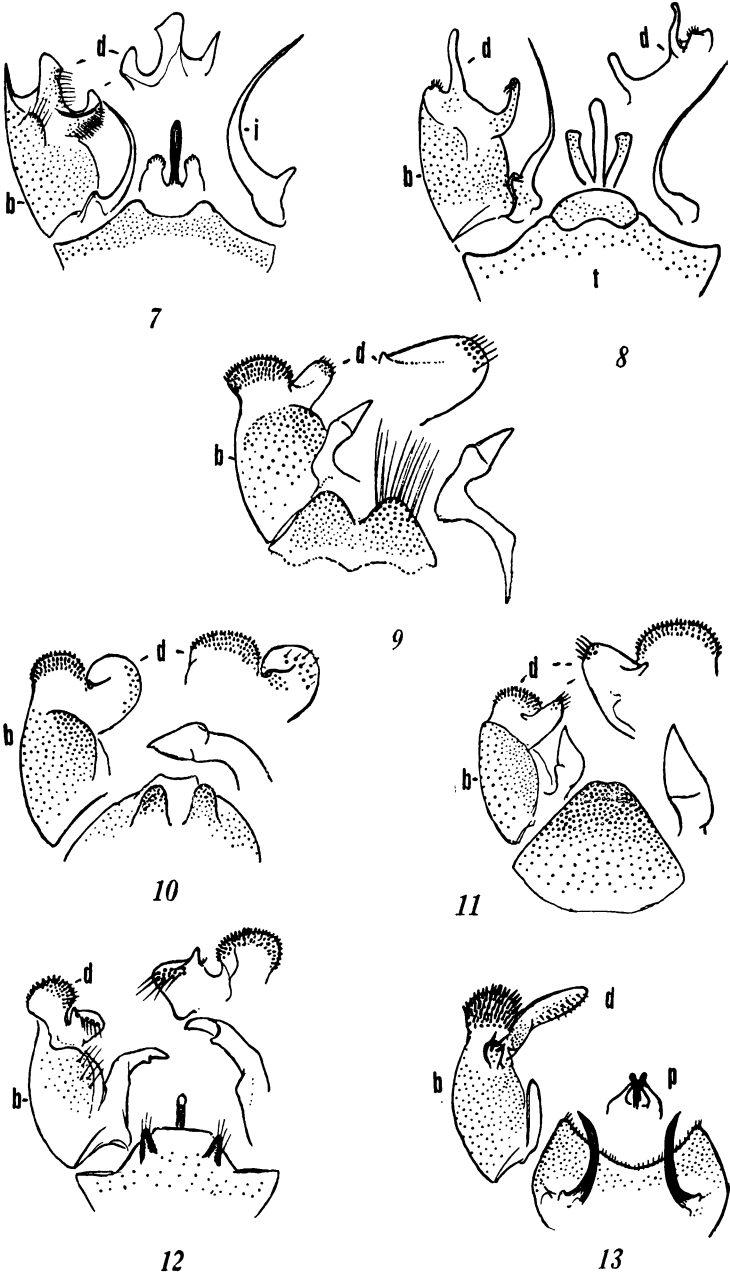
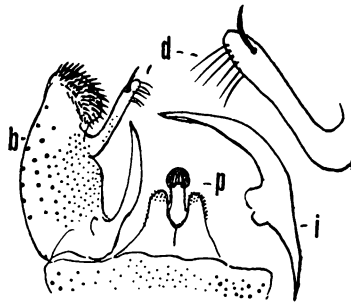
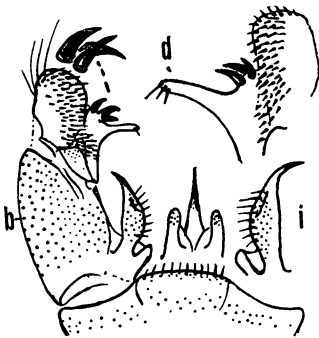
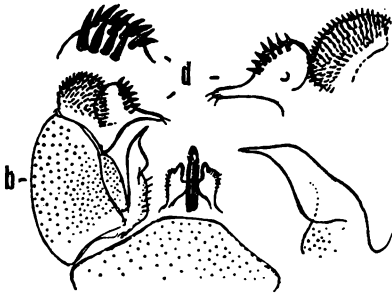
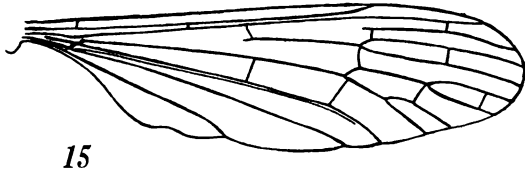
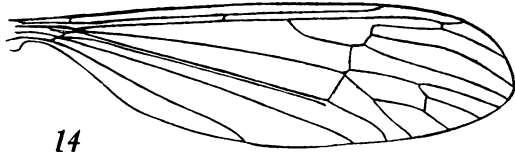


PLATE 2.



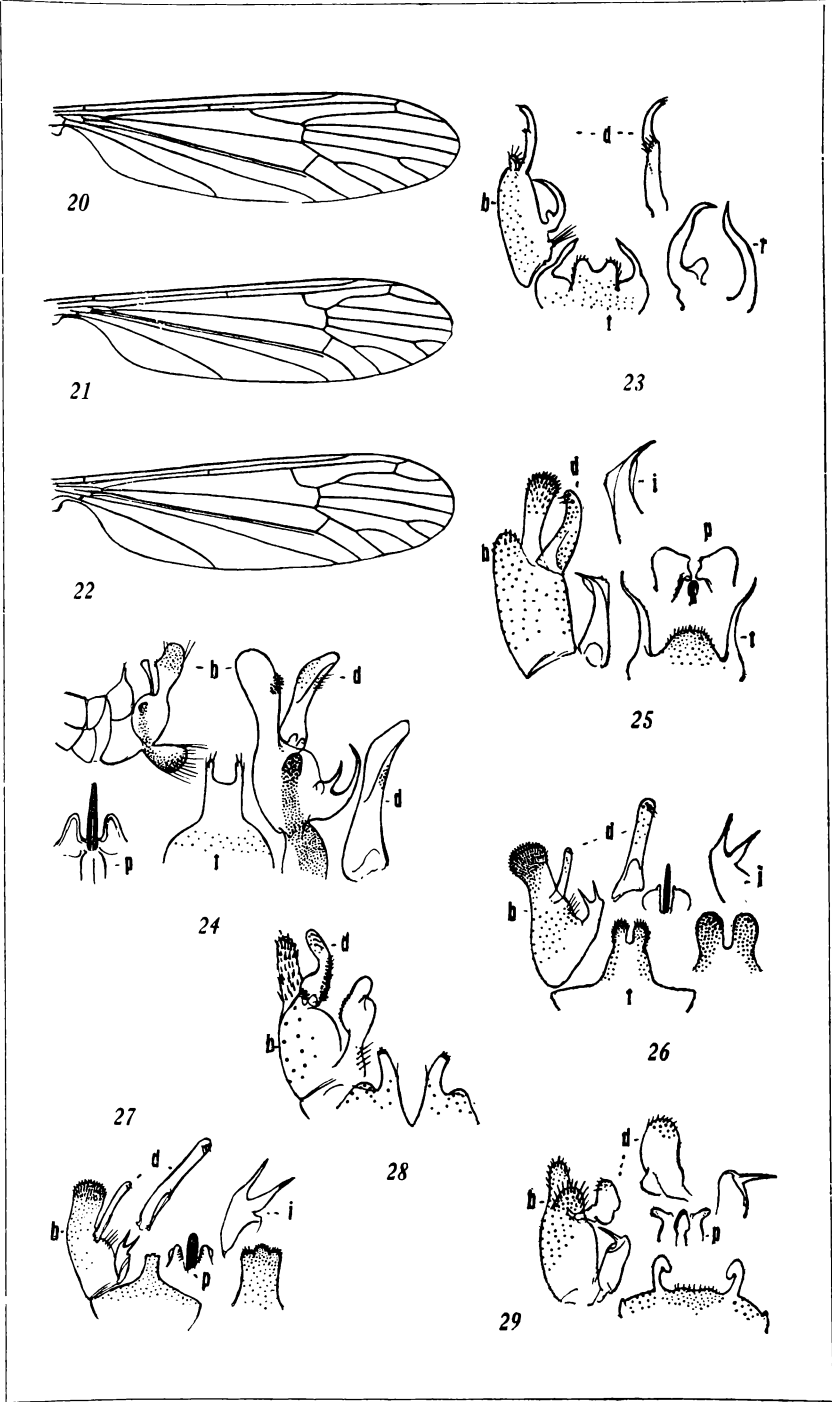
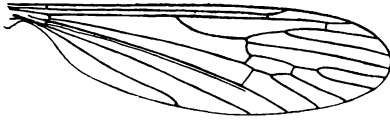
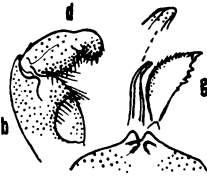


PLATE 4.



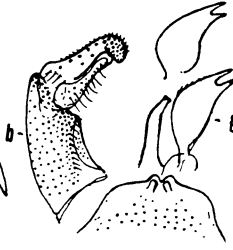
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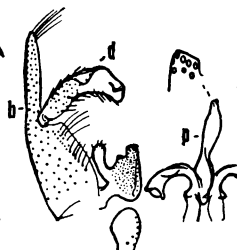
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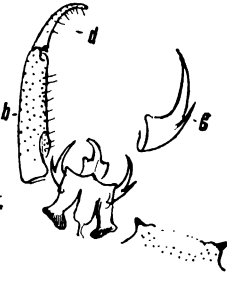
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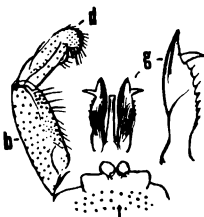
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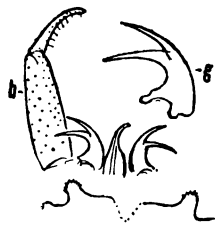
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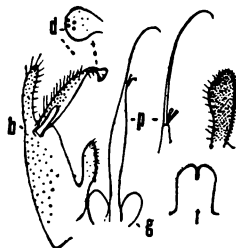
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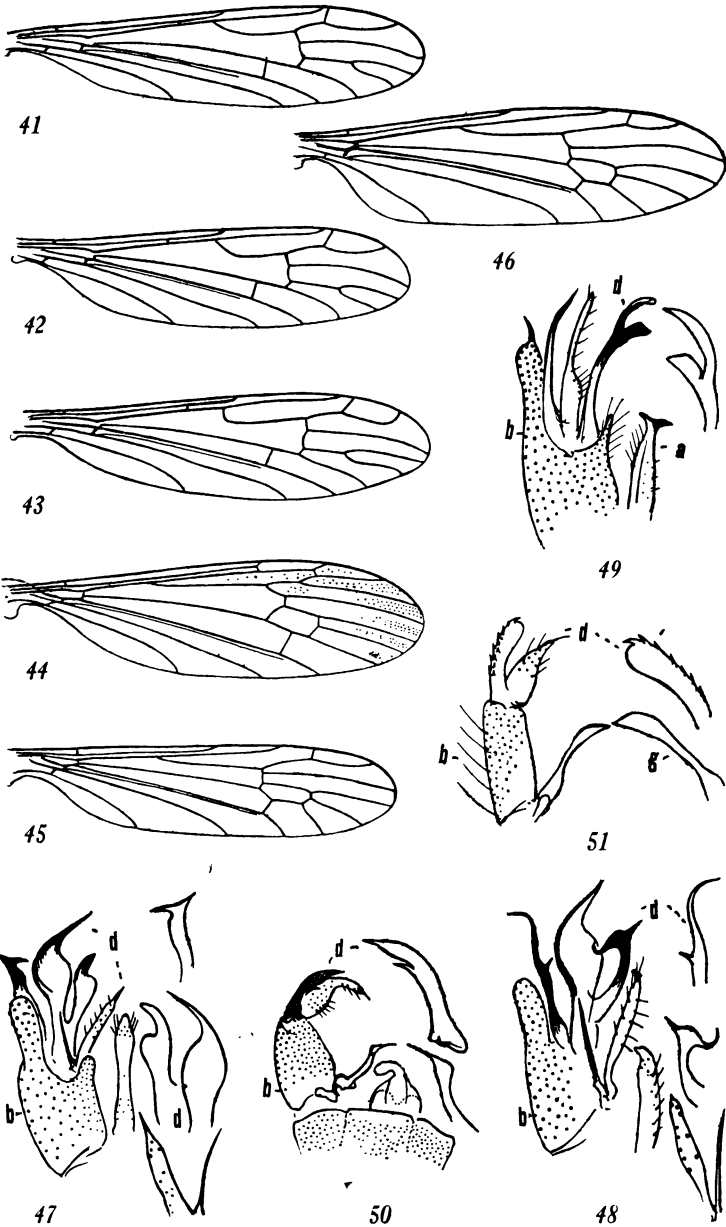
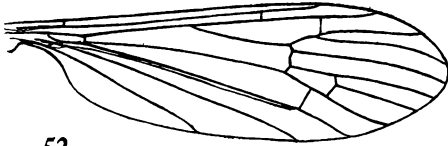
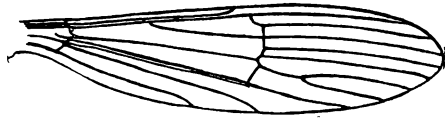


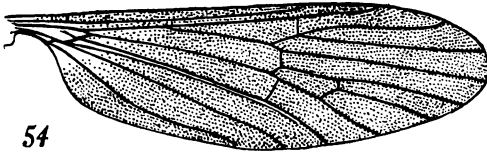
PLATE 6.



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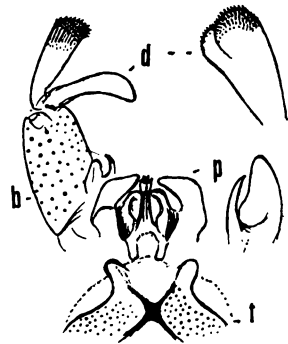
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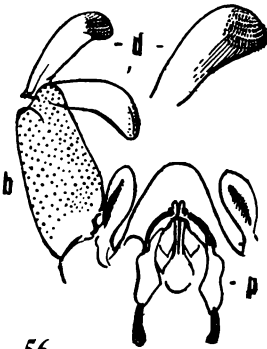
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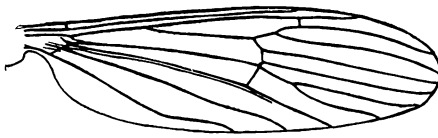
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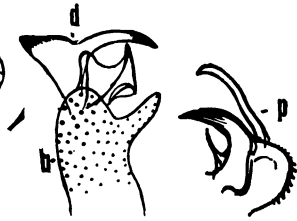
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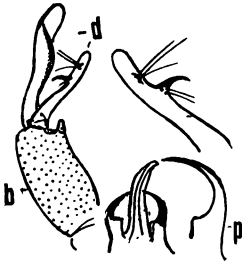
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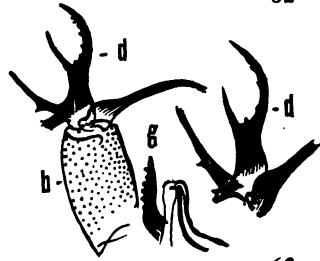
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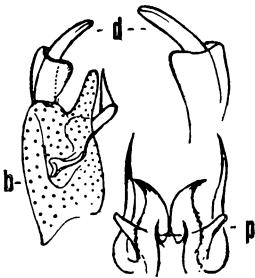
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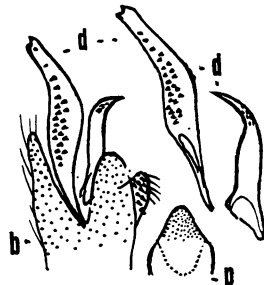
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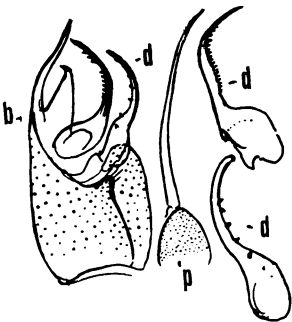
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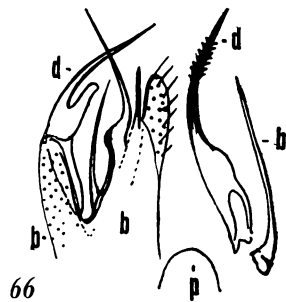
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