

RECORDS AND DESCRIPTIONS OF JAPANESE  
TIPULIDÆ (DIPTERA), PART IV  
THE CRANE-FLIES OF SHIKOKU, IV

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FOUR PLATES

The present report, continuing the survey of the crane-flies of Shikoku, adds 53 species to the three preceding lists, bringing the total as now known from the island to the impressive figure of 263. It is certain that the record still remains incomplete and that many additional species will be discovered as a result of future collecting. The species recorded at this time were taken chiefly in Iyo by Messrs. Michio Chûjô, Tadao Edashige, Hidenobu Ide, Tamotsu Ishihara, Hiroyuki Kusunoki, Mutsuo Miyatake, Terunori Mohri, Tetsusaburo Tachikawa, K. Tachechi, and Toshiro Yano. Some interesting records were made in the Omogo Valley on November 12, 1953, on the occasion of the mountain field trip of the members of the Entomological Society of Japan following the annual meeting held earlier in Matsuyama. Various persons in the above list, together with Dr. Teiso Esaki, of Fukuoka, and other visiting entomologists, participated in this excursion. A few further records are from Sanuki, taken by Chûjô, and from Tosa, by Edashige. I wish to express my continued appreciation to all of these friends and co-workers who have aided so materially in developing the list of Tipulidæ of Shikoku.

In the initial part of this series of Records<sup>1</sup> it was stated inadvertently that the division of the Japanese Empire into Kuni, or Provinces, was more recent than that into Ken, or Prefectures. This is incorrect; the more ancient division was into Provinces or Kuni, the use of Prefectures or Ken, although now generally in use in a political and public sense, dating only from 1871.

<sup>1</sup> Philip. Jour. Sci. 82 (1953) 21.

## RECORDS OF DISTRIBUTION

## TIPULINAE

## Subtribe CTENOPHORARIA

*Ctenophoraria* ALEXANDER, Cornell Univ. Mem. 38 (1920) 986.

*Pselliophorinina* MASAKI, Mushi 6 (1933) 77.

## CTENOPHORA Meigen

In an earlier paper<sup>2</sup> I have provided a key to the then recognized genera of the *Ctenophoraria* and indicated the increasing difficulty in maintaining these supposed genera except on trivial characters based primarily on the structure of the male antennæ. I now feel that the time has come when it is no longer logical or possible to continue to maintain the names as representing valid genera and am placing the following five names as subgenera under the oldest name *Ctenophora*: *Ctenophora*, *Dictenidia*, *Phoroctenia*, *Pselliophora*, and *Tanyptera*. Of these, *Phoroctenia* and *Pselliophora* might well be held to be untenable and be relegated to strict synonymy.

A course such as the above finds an almost exact parallel in the subgenus *Rhipidia* Meigen of the genus *Limonia* Meigen where several supposedly valid subgenera have been relegated into the synonymy of the subgenus. The male antennæ in *Rhipidia* are commonly bipectinate, unipectinate or subpectinate but there are some species where an unequal tripectinate condition is found. Moreover, in this subgenus there is to be found a considerable range in the length of the branches of the antennæ in the males of various species, in the extreme cases these being fully as long, proportionate to the size of the insect, as is found in *Pselliophora*, where the maximum length in the present genus is to be found. Further, the antennæ in the female sex in *Rhipidia* are almost invariably simple or weakly subpectinate, as in the present instance. At this time it is uncertain whether *Prionota* van der Wulp, with *Plocimas* Enderlein, is actually distinct from *Ctenophora* or merely represents an extreme reduction of the pectinate condition of the antennæ in this genus. The various subgenera listed above are as follows:

## CTENOPHORA Meigen

*Flabellifera* MEIGEN, Nouv. Class. Mouch. (1800) 13; *nomen nudum*.  
(Diagnosis, with indication of four unnamed species).

<sup>2</sup> Philip. Jour. Sci. 60 (1936) 167-168.

*Ctenophora* MEIGEN, Illiger's Mag. 2 (1803) 263. (The above four species validated by names: *pectinicornis*, *bimaculata*, *atrata*, and *flaveolata*). Genotype: *pectinicornis* Linnæus, designated by Westwood, 1840; pseudotype, *flaveolata* Fabricius, by Rondani, 1856. *Cnemoncosis* ENDERLEIN, Zool. Anzeig. 52 (1921) 219; type *nohiræ* Matsumura, as *hülgendorfi* Enderlein.

#### TANYPTERA Latreille

*Tanyptera* LATREILLE, Hist. Nat. Crust., et Ins. 14 (1805) 286. (Removed *atrata* Linnæus from the above Meigen list; subgenotype). *Xiphura* BRULLÉ, Soc. Ent. France Ann. 1 (1832) 206; type *atrata*. *Mesodictenidia* MATSUMURA, 6,000 Illus. Ins. Japan Empire (1931) 395; type *jozana* Matsumura, as *macræformis* Matsumura.

#### DICTENIDIA Brullé

*Dictenidia* BRULLÉ, Soc. Ent. France Ann. 2 (1833) 401. (Removed *bimaculata* Linnæus from the above Meigen list; subgenotype). *Ceroctena* RONDANI, Dipt. Ital. Prodr. 1 (1856) 186; type *bimaculata*. *Dicera* LIOY, Atti dell' Istitut Veneto (3) 9 (1863) 216; type *bimaculata*.

#### PSELLIOPHORA Osten Sacken

*Pselliophora* OSTEN SACKEN, Berlin, Ent. Zeitschr. 30 (1886) 165-166; subgenotype, *læta* Fabricius (designated by Brunetti, 1912; Enderlein, 1912).

#### PHOROCTENIA Coquillett

*Phoroctenia* COQUILLET, U.S. Nat. Mus. Proc. 37 (1910) 589; subgenotype, *Ctenophora vittata angustipennis* Loew (western Nearctic Region).

*Malpighia* ENDERLEIN, Zool. Jahrb., Syst. 32 (1912) 18-19, figs. C. D. (antennæ); type, *Ctenophora vittata vittata* Meigen (Palearctic Region).

It may be noted that Latreille in 1805 removed *atrata* from the original list of species included in *Ctenophora* by Meigen to become the type of *Tanyptera*. In 1810 he suppressed the name *Tanyptera* and designated *atrata* as type of *Ctenophora*, an unwarranted procedure in the light of his previous action.

(4). CTENOPHORA (CTENOPHORA) ISHIHARAI Alexander. Plate 1, figs. 1, 2.

IYO: Omogo Valley, August 23, 1953 (*Edashige*); Mount Takana-wa, altitude 960 meters, August 14, 1953 (*Kusunoki*).

TOSA: Mount Kajigamori, altitude 700 meters, July 30, 1953 (*Edashige*).

The above specimens show a slight range in size (*Female*.—Length, 18 to 20 millimeters; wing, 12 to 14). The venation of the female is shown (Plate 1, fig. 1), the antenna (Plate 1, fig. 2).

## 211. CTENOPHORA (CTENOPHORA) NOHIRÆ Matsumura.

*Ctenophora Nohiræ* MATSUMURA, Thous. Ins. Japan Addit. 2 (1916) 451-453, pl. 24, fig. 14 (whole ♂).

*Cnemoncosis hilgendorfi* ENDERLEIN, Zool. Anzeig. 52 (1921) 219-220.

*Cnemoncosis nohiræ* ESAKI, et al., Icon. Insect, Japan. Ed. 2 (1950) 1531, fig.

Matsumuras' type of *Nohiræ*' a male, was collected in the vicinity of Kyoto by Akio Nohira. Enderlein's type of *hilgendorfi* was from an unspecified locality in Japan, taken by Dr. Franz Hilgendorf. It should be noted that the enlargement of the basal part of the posterior tibia occurs in both sexes though less developed in the female than in the male.

IYO: Mount Sara (Saragamine), altitude 1,250 meters, July 25, 1953 (*Kusunoki*).

## 212. CTENOPHORA (PSELLIOPHORA) SEPTENTRIONALIS (Alexander).

*Pseliophora septentrionalis* ALEXANDER, Insec. Inscit. Menst. 9 (1921) 182-183.

The holotype was from Teshio, Hokkaido, taken July 12, 1916, by Issiki; a paratype from Lake Chuzenji, Honshu, taken July 21, 1910, by Edmonde Henri Gallois.

IYO: Mount Takanawa, altitude 960 meters, August 14 and 15, 1953 (*Kusunoki*).

The relationship of this fly to *Ctenophora isshikii* Matsumura, 1916, described from Odaigahara, Yamato, Honshu, remains in question and the two flies may well prove to be identical. Matsumura's type was a female whereas I have never seen anything but males of the present fly. *C. isshikii* has the antennæ yellow; præscutum shiny dark brown, with two indistinct fulvous stripes, presumably representing the interspaces; scutellum fulvous with a brown central spot. In the present fly the antennal flagellum beyond the basal segment is uniformly black; thorax fulvous yellow with the notum only a trifle darker.

## 213. CTENOPHORA (TANYPTERA) FLAVOPOSTICATA Alexander. Plate 1, figs. 3, 4.

*Tanyptera flavoposticata* ALEXANDER, Shikoku Ent. Soc. Trans. 4 (1954) in press.

Size relatively small (wing, 12 millimeters or less); general coloration black; halteres yellow; femora yellow, the tips abruptly black; tibiæ brown, the posterior pair with a broad yellow subterminal ring; wings yellow, the outer radial field strongly infuscated; vein R<sub>1+2</sub> preserved; abdomen yellow, the tergites trivittate with black, the sternites more extensively blackened; male hypopygium with the outer dististyle short and massive, its

inner margin with about five teeth; inner dististyle a little larger, narrowed into a point, the lower beak a strong blackened spine.

Male hypopygium (Fig. 4) with the outer dististyle, *d*, short and massive its inner margin with about five teeth, the outermost longest. Inner dististyle slightly larger, extended into a narrow point, the lower beak a strong blackened conical spine.

The wing is shown (Fig. 3).

*Male*.—Length, about 11 to 12 millimeters; wing, 10 to 12; antennæ, about 3.3 to 3.5.

*Female*.—Length, about 13 millimeters; wing, 11 to 12.

IYO: Omogo Valley, altitude 700 meters, April 26 and 27, 1953 (Yano).

214. *TIPULA (BILLARDINA) AMPLIATA* Alexander. Plate 1, fig. 5.

*Tipula ampliata* ALEXANDER, Ann. and Mag. Nat. Hist. (9) 15 (1925) 394–395.

The type of this uncommon species was from Gokanosho, Higo, Kyushu, altitude 1,000 to 3,000 feet, taken May 3, 1924, by H. Hori.

IYO: Mount Ishizumi, altitude 1,200 meters, May 17, 1953 (Ishihara).

Male hypopygium (Plate 1, fig. 5) with the ninth tergite, *9t*, transverse, its posterior border conspicuously toothed, including shorter lateral spines and a central plate whose outer margin is produced into still larger slender rods, the median area weakly produced and carinate. Outer dististyle, *d*, a clavate or foot-shaped pale blade, at the apex or toe with numerous conspicuous black setæ. Inner dististyle irregular in outline, the beak relatively stout; outer basal lobe a powerful flattened more sclerotized blade, its apex obtusely rounded; lower margin with abundant short erect dark-colored setæ; outer margin at base with very long pale setæ.

(142). *TIPULA (SCHUMMELIA) ACIFERA* Alexander. Plate 1, figs. 6, 7.

IYO: Dogo, near Matsuyama, August 23, 1953 (Yano).

Wings (Plate 1, fig. 6) with *Rs* gently arcuated, a little longer than the straighter *R*<sub>2+3</sub>; cell 1st *M*<sub>2</sub> unusually small, the veins beyond it proportionately long; cell *M*<sub>1</sub> deep, about twice its petiole; *m-cu* just beyond midlength of *M*<sub>3+4</sub>.

Male hypopygium (Plate 1, fig. 7) with the tergite, *9t*, distinctive, the central portion of the posterior border produced into a terete rod that narrows gradually to the nearly acute tip, the

surface with microscopic appressed setulæ; immediately ventrad of this projects a stouter glabrous blade, its tip very obtuse (drawn to the side for clarity). Outer dististyle, *d*, a small pale blade, broadest about opposite one-third the length, the apex obtuse. Inner dististyle with the beak produced, the lower margin, together with the obtuse lower beak heavily blackened; posterior end of style produced backward into an oval blade, with long setæ that are directed backward.

215. TIPULA (SCHUMMELIA) ACIROSTRIS Alexander.

Plate 1, figs. 8, 9,

*Tipula (Schummelia) acirostris* ALEXANDER, Shikoku Ent. Soc. Trans. 4 (1954) in press.

General coloration of præscutum yellow with three dark brown stripes; antennæ relatively short, flagellum black; pleura variegated dark brown and yellow; femora yellow, the tips conspicuously black; wings weakly infuscated, patterned with whitish and darker clouds; cell 1st  $M_2$  small, cell  $M_1$  long-petiolate; abdominal tergites dark brown, the more basal ones with the incisures pale; male hypopygium with the posterior border of the tergite very shallowly emarginate, the lobes correspondingly low, on ventral margin of each lobe with a small blackened tooth; inner dististyle a very flattened blade, the lower margin at near two-thirds the length with an unusually slender rostrum, the apex of style broadly rounded.

*Male*.—Length, about 11 to 12 millimeters; wing, 12 to 13.8; antenna, about 4 to 4.2.

Wings (Plate 1, fig. 8) with the ground weakly infuscated, patterned with restricted whitish areas and darker clouds; the white marks occur before and beyond the dark brown stigma, across cell 1st  $M_2$ , near outer end of cell 1st  $M_2$ , and as a marginal spot in cell 1st A near vein 2nd A; the darker clouds are chiefly in the outer radial field, at and near the fork of  $M_{+2}$ , and over m-cu; veins dark brown, lighter in the pale areas. Venation: Petiole of cell  $M_1$  relatively long, fully one-fourth the cell; cell 1st  $M_2$  small; m-cu just before fork of  $M_{3+4}$ .

Male hypopygium (Plate 1, fig. 9) with the tergite, *9t*, transverse, its posterior border very shallowly emarginate, the lobes correspondingly low; on ventral surface of each lobe just back from the margin with a small blackened tooth. Outer dististyle, *d*, narrow, broadest near base, tapering gradually to the obtuse tip. Inner dististyle a very flattened blade, bearing on its lower margin at near two-thirds the length an unusually slender  $M^{1+2}$ , and over m-cu; veins dark brown, lighter in the pale

rostrum; apex of style broadly rounded, the surface with relatively few setæ.

IYO: Omogo Valley, August 3, 1952 (*Kusunoki*); Mount Ishizuchi, summit, altitude 1,931 meters, August 18, 1953 (*Chûjô*).

216. *TIPULA* (*SCHUMMELIA*) *OMOGICOLA* Alexander. Plate 1, fig. 10; Plate 2, fig. 15.

*Tipula* (*Schummelia*) *omogicola* ALEXANDER, Shikoku Ent. Soc. Trans. 4 (1954) in press.

Allied to *macrotrichiata*; general coloration of thorax brownish gray, the præcutum with three scarcely darker brown stripes; antenna (male) elongate, flagellar segments bicolored; femora yellow, the tips narrowly dark brown; wings pale brownish or grayish yellow, the prearcular and costal fields more saturated yellow; narrow pale brown seams over the cord; sparse macrotrichia in outer end of cell  $R_5$ ; cell 1st  $M_2$  small, narrowed outwardly, m short to entirely obliterated; m-cu long, at fork of M; abdomen with basal three segments yellow, the outer ones brown; hypopygium brownish black, the posterior border of the ninth tergite produced caudad into a setiferous compressed blade; inner dististyle with the blade broad but relatively high.

*Male*.—Length, about 8 to 8.5 millimeters; wing, 10 to 11; antenna, about 5.

Wings (Plate 1, fig. 10) with the ground pale brownish or grayish yellow, the prearcular and costal fields more saturated yellow; stigma long-oval, dark brown, conspicuous; outer radial cells more conspicuously darkened; narrow pale brown seams over the cord, including m-cu; cells before cord slightly darker than those immediately beyond; oblitative areas before and beyond stigma and along the cord; veins brown, clear yellow in the flavous fields. Sparse macrotrichia in outer end of cell  $R_5$ , in cases with three or four further trichia in extreme outer ends of cells  $R_3$  and  $M_1$ . Venation:  $R_s$  relatively long, gently arcuated; cell 1st  $M_2$  small, narrowed outwardly, m short to entirely obliterated; m-cu long, oblique, at the fork of M.

Male hypopygium (Plate 2, fig. 15) with the posterior border of the ninth tergite, *9t*, produced caudad into a compressed blade, the sides of which bear dense long setæ; lateral lobes of tergite somewhat produced, obtuse. Outer dististyle, *d*, broadest beyond base, the tip obtuse. Inner dististyle with the blade broad but relatively high, the beak simple, slender. *Ædeagus* slender, straight, narrowed to the apex.

IYO: Omogo Valley, June 2, 1953 (*Mohri*); June 6, 1952 (*Yano*); May 31, 1953 (*Edashige*).



217. TIPULA (SCHUMMELIA) ESAKIANA Alexander. Plate 1, fig. 11; Plate 2, fig. 16.  
*Tipula (Schummelia) esakiana* ALEXANDER, Philip. Jour. Sci. 51  
(1933) 507-509, pl 1, fig. 1 (venation), pl 2, fig. 23 ( $\delta$  hypopygium).

The type of this very small member of the subgenus was from Sobosan, Bungo, Kyushu, collected July 13, 1931, by Esaki and Fujino.

IYO: Dogo, near Matsuyama, October 14, 1952 (*Yano*).

The present material adds to our knowledge of this uncommon fly and a re-description and new figures are furnished.

*Male*.—Length, about 7 millimeters; wing, 8; antenna, nearly 5.

Frontal prolongation of head yellow above, brown on sides and beneath; nasus distinct; palpi with basal two segments testaceous yellow, the outer ones darker. Antenna long; scape and pedicel yellow; first flagellar segment yellow, the succeeding ones bicolored, yellow, the small basal enlargements dark brown. Front whitened, the vertex light brown; vertical tubercle very low and inconspicuous.

Pronotum buffy, narrowly darkened medially. Mesonotal præscutum brownish yellow with a brown central stripe, the lateral stripes small and relatively inconspicuous; posterior sclerites of notum brown, sparsely pruinose, the scutal lobes patterned with brown. Pleura whitened, variegated with pale brown on the ventral anepisternum, sternopleurite and meron. Halteres with stem yellow, knob infuscated, the apex restrictedly paler. Legs with the coxæ whitened, the posterior pair a little infuscated basally; trochanters pale yellow; femora yellow basally, outwardly becoming more obscure, the tips passing into brown; tibiæ pale brown, narrowly darkened at tips; tarsi brown. Wings (Plate 1, fig. 11) weakly infuscated, more conspicuously so in the outer radial cells; cells C and Sc slightly darkened; stigma long-oval, darker brown, preceded and followed by whitened areas; obliterative markings at cord restricted in size, inconspicuous; veins brown, paler in the brightened areas. No macrotrichia in wing cells. Venation: Rs longer than  $R_{2+3}$ , only moderately arcuated; cell 1st  $M_2$  small, pointed at outer end, m punctiform or obliterated; m-cu at near mid-length of  $M_{3+4}$ ; cell  $M_1$  nearly twice its petiole; cell 2nd A narrower than in *acifera*.

Abdominal tergites brownish yellow, the posterior and lateral borders of the segments narrowly brown; sternites yellow, the posterior margins less distinctly darkened; hypopygium brown-

ish yellow. Male hypopygium (Plate 2, fig. 16) with the median region of the posterior border of the ninth tergite, 9t, produced caudad into a relatively narrow lobe, the dorsal surface with a median furrow; sides of the lobe with conspicuous erect coarse setæ. Outer dististyle, *d*, relatively small, broadest before medlength, the apex obtuse. Inner dististyle unusually high, the outer end obtusely rounded, with coarser and more blackened setæ than else-where on style; rostrum more or less deflexed, blackened.

As was indicated at the time of the original description, this fly bears a striking superficial resemblance to *Tipula* (*Schummelia*) *acifera* Alexander, which is re-described in the present report. The male hypopygia of the two flies are entirely different.

218. *TIPULA* (*ACUTIPOLA*) *BUBO* Alexander.

*Tipula bubo* ALEXANDER, N.Y. Ent. Soc. Journ. 26 (1918) 69-70.

*Tipula* (*Acutipula*) *bubo* ALEXANDER, Philip. Jour. Sci. 57 (1935) 109.

*Tipula bubo* ESAKI, et al., Icon. Insect. Japon, Ed. 2 (1950) 1535, fig.

The type was from Akakura, Echigo, Honshu, taken August 6, 1914, by Nohira. The species is wide-spread in Japan, Korea and eastern Siberia (Okeanskaja, recorded by Masaki, 1933).

IYO: Omogo Valley, August 3, 1952 (*Kusunoki*).

219. *TIPULA* (*OREOMYZA*) *HARUTAI* Alexander.

*Tipula* (*Oreomyza*) *harutai* ALEXANDER, Ent. Soc. America Ann. 48 (in press).

The type was from Mount Takao, Musashi, Honshu, taken May 5, 1950, by T. Haruta.

IYO: Omogo Valley, April 25, 1953 (*Edashige*); Mount Takana-wa, altitude 850 meters, May 8, 1953 (*Takechi*).

The male from Omogo Valley is unusually small but undoubtedly conspecific (Length, about 11 mm; wing, 14 mm).

220. *TIPULA* (*OREOMYZA*) *KIUSHIENSIS* Alexander.

*Tipula kiushiensis* ALEXANDER, Ent. Soc. America Ann. 17 (1924) 444-445.

*Tipula* (*Oreomyza*) *kiushiensis* ALEXANDER, Philip. Jour. Sci. 57 (1935) 122.

The types were from Mount Kirishima, on the boundary between Osumi and Hiuga, Kyushu, altitude 3,250 feet, taken October 30, 1923, by Esaki.

IYO: Mominoki, Saragamine, altitude 700 to 800 meters, November 15, 1953 (*Yano*). Associated in nature with *Tipula* (*Oreomyza*) *koreana* Alexander.

The structure of the male hypopygium readily separates these two flies. In *kiushiuensis*, the inner dististyle is chiefly yellow, with a high pale dorsal crest. Eighth sternite sheathing, the apex obtuse, with relatively few and scattered long pale setæ. In *koreana*, the inner dististyle is entirely black, including the dorsal crest. Eighth sternite sheathing, tapering to the narrowly obtuse tip which bears a dense brush of shorter fulvous setæ. There are further conspicuous differences in the two flies involving almost every structure of the hypopygium. *T. (O.) mohriana* Alexander, which is likewise a member of the *marmorata* group, is entirely distinct.

221. TIPULA (OREOMYZA) KOREANA Alexander.

*Tipula (Oreomyza) koreana* ALEXANDER, Philip. Jour. Sci. 55 (1934) 33-35, pl. 1, fig. 8 (venation), pl. 2, fig. 31 (♂ hypopygium).

Described from Kongo San, Diamond Mountains, Korea, taken in October, 1933, by Machida.

IYO: Omogo Valley, November 12, 1953 (*Mohri*); Mominoki, Saragamine, altitude 700 to 800 meters, November 15, 1953 (*Yano*).

The present fly is still another of the increasing list of Tipulidæ and allied families that was originally described from Korea and are now recorded from Japan. Several of these are known in Japan only from Shikoku, including *Trichocera mirabilis* Alexander, *Limonia (Dicranomyia) kongosana* Alexander, and *Limnorimarga limonioides* (Alexander), but it seems certain that all of these will later be found in Honshu, as perhaps on Mount Daisen, in Hibi.

222. TIPULA (OREOMYZA) KUSUNOKIANA sp. nov.

Plate 2, fig. 12.

General coloration of head and thorax light gray, the mesonotum patterned with darker, including a narrow central darkened vitta; conspicuous setigerous punctures on præscutal interspaces; legs black; wings very pale yellow, patterned with brown and black, including the uniformly blackened cells C and Sc; tip of vein  $R_{1+2}$  atrophied; abdomen obscure yellow, both the tergites and the sternites with a central darkening on the more proximal segments; cerci slender, straight.

*Female*.—Length, about 15 to 16 millimeters; wing, 13 to 13.5; antenna, about 1.6.

Frontal prolongation of head brownish black, heavily light gray pruinose above, including the long nasus; palpi black. Antennæ with scape relatively short, gray; pedicel brownish yellow, flagellum black, the extreme apex of the more proximal

segments paler; flagellar segments with the basal enlargements scarcely evident, a little more so on the outer ones; longest verticils a trifle exceeding the segments. Head clear light gray, vaguely patterned with darker, including a capillary line on the posterior vertex and broader postorbital areas; vertical tubercle hemispherical in shape, conspicuous.

Pronotum light gray, darkened medially. Mesonotal præscutum light gray, patterned with darker, including three vaguely differentiated darker gray stripes that are bordered by blackish, the most conspicuous marks being the anterior outer borders and a capillary central stripe that is very narrow on the anterior half of sclerite, widened behind; lateral stripes even less evidently bordered by darker; setigerous punctures of interspaces conspicuous, brownish black; posterior sclerites of notum similarly light gray, the dark central præscutal stripe continued across the suture and including the central parts of the scutum and scutellum, on the mediotergite much narrower; scutal lobes patterned with paler brown. Pleura and pleurotergite clear light gray, unpatterned; dorsopleural membrane vaguely more yellowed. Halteres yellowish brown, the knobs dark brown. Legs with the coxæ light gray; trochanters darker brownish gray; remainder of legs entirely black, the femora more intensely so. Wings (Plate 2, fig. 12) with the ground very pale yellow, slightly deeper yellow in the posterior prearcular cells; costal border, including cells C and Sc, black, confluent with the stigma; elsewhere on wing with a slightly paler dark brown pattern, including the outer end to just beyond the apex; narrower areas at origin of Rs, along cord, and as a cloud in cell M adjoining vein Cu; paler gray clouds in Anal cells and as a vague cross-band in cells R, M and Cu at the level of the darkened area in cell M; very narrow darkened seams on outer medial veins; veins light yellow in the clear parts, including both Anal veins, blackened in the patterned portions. Venation: Rs about twice m-cu; outer half of vein  $R_{1+2}$  atrophied; cell  $M_1$  more than twice its petiole; cell 1st  $M_2$  narrowed outwardly, m being the shortest element enclosing the cell; m-cu on  $M_4$  just beyond the perpendicular base.

Abdominal tergites obscure yellow, with a conspicuous median brown stripe that narrows behind, becoming obsolete on about the sixth segment; sternites with a similar stripe, very extensive on the basal segments. Ovipositor with the cerci straight, slender; hypovalvæ much shorter but deeper, compressed, the tips obtuse.

*Habitat*.—Japan (Shikoku).

Holotype, female, Mount Saragamine, Iyo, altitude 1,000 meters, July 26, 1952 (*Kusunoki*). Paratype, female, Mount Takanawa, Iyo, altitude 960 meters, August 15, 1953 (*Kusunoki*).

I am pleased to dedicate this interesting crane-fly to Mr. Hiroyuki Kusunoki, who has added many interesting records to the Shikoku list, particularly from Mounts Saragamine and Takanawa. Other regional members of the subgenus having the costal border of the wings narrowly blackened include *Tipula* (*Oreomyza*) *nigrocostata* Alexander, *T. (O.) strix* Alexander, and some others, all of which differ from the present fly in all details of coloration of the body, legs and wings. The uniformly blackened legs of the present species are noteworthy.

223. TIPULA (OREOMYZA) MOHRIANA Alexander.

Plate 2, figs. 13, 19.

*Tipula (Oreomyza) mohriana* ALEXANDER, Shikoku Ent. Soc. Trans. 4 (1954) in press.

Belongs to the *marmorata (fragilis)* group; size large (wing, male, 17 millimeters); general coloration of mesonotum dull gray, the præscutum with four brown stripes; femora obscure yellow, the tips abruptly blackened; wings very pale gray, vaguely patterned with whitish spots, the stigma darker brown; abdomen yellow, the outer segments dark brown; male hypopygium with the outer dististyle long and narrow, with a blackened marginal tooth near base; gonapophysis a slender curved black spine; eighth sternite produced into two relatively narrow lobes that are separated by a broad U-shaped notch.

*Male*.—Length, about 15 millimeters; wing, 17; antenna, about 4.

*Female*.—Length, about 18 millimeters; wing, 18.

Male hypopygium (Plate 2, fig. 19) with the ninth tergite, *9t*, produced into two slender lobes that are very strongly divergent, on a microscope slide appearing virtually at a straight angle; posterior border between the lateral lobes with a few blackened spicules. Basistyle with a blackened flange on mesal face. Outer dististyle, *d*, long and narrow, the dorsal edge near base with a blackened tooth. Inner dististyle with the beak very small. Gonapophysis, *p*, appearing as a slender curved black spine; on either side of phallosome with a broadly flattened pale lobe. Eighth sternite, *8s*, at outer end produced into two relatively narrow lobes that are separated by a broad V-shaped notch.

The wing is shown (Plate 2, fig. 13).

IYO: Mount Ishizuchi, altitude 1,600 to 1,800 meters, October, 1952 (*Mohri*).

The species was named in honor of Mr. Terunori Mohri.

224. *TIPULA (OREOMYZA) NIGRO-COSTATA* Alexander. Plate 1, figs. 14, 20.

*Tipula nigrocostata* ALEXANDER, Ent. Soc. America Ann. 17 (1924) 445-446.

*Tipula sakaguchiana* ALEXANDER, Philip. Jour. Sci. 51 (1933) 379-381, pl. 1, fig. 7 (venation), pl. 2, fig. 32 (♂ hypopygium).

The types of *nigrocostata* were from various stations in Kyushu, taken in October and November. The type of *sakaguchiana* was from Kii, Honshu, taken in August, 1929, by Sakaguchi. In the light of the further material now available, I consider the two flies as being conspecific, or, at most, the latter form representing a weak, more northern cline of the typical form.

IYO: Omogo Valley, September 28, 1952 (*Yano*).

The wing is shown (plate 2, fig. 14).

Male hypopygium (Plate 2, fig. 20) relatively small, the tergite, sternite and basistyle separated by complete sutures. Viewed from the side, the blackened tergal disk appears about as shown, the posterior spines being directed dorsad and very slightly caudad; the median pale membrane is elevated into a compressed bladelike area. Ninth tergite, *9t*, including a cephalic or posterior portion that is completely divided into two halves by pale membrane; outer tergal disk blackened on either side, separated by pale membrane, as described above; each outer lobe expanded, divided into two lobules by a small notch; cephalic end of the blackened plate produced into a spine, as described. Basistyle, *b*, strongly produced, the lobe narrowed gradually to the obtuse tip; surface of lobe with very abundant elongate setæ. Outer dististyle, *d*, a pale club, slightly enlarged outwardly. Inner dististyle pale, the beak a compressed-flattened circular blade; disk of main body of style produced into a flattened flange. *Ædeagus*, *a*, small and simple; gonapophyses so reduced as to be virtually lacking. Eighth sternite, *8s*, short-transverse, the posterior border nearly truncate, with pale membrane; provided with numerous black setæ of moderate length.

225. *TIPULA (OREOMYZA) OTIOSA* Alexander. Plate 2, figs. 17, 18.

*Tipula otiosa* ALEXANDER, Ann. and Mag. Nat. Hist. (9) 14 (1924) 467-469.

*Tipula (Oreomyza) otiosa* ALEXANDER, Philip. Jour. Sci. 57 (1935) 122.

The types were from Mount Takao, Musashi, Honshu, altitude 1,000 to 2,000 feet, taken April 13, 1923 by Esaki.

IYO: Omogo Valley, altitude 700 meters, April 25, 1953 (*Edashige* and *Yano*); Mominoki, Saragamine, altitude 650 to 800 meters, May 17, 1953 (*Yano*).

The wings of the present specimens are somewhat more heavily patterned than in the types, the whitened areas especially being somewhat more conspicuous. The peculiar ovipositor (Plate 2, fig. 18) has not been described. Cerci very long and slender, their bases swollen and provided with long yellow setæ, the outer part of the structure long and slender, decurved to the narrowly obtuse tips. Hypovalvæ stout, their bases with numerous setæ, the tips broadly obtuse. Male hypopygium (Plate 2, fig. 17) with the tergite, *9t*, transverse, its posterior border with a broad shallow median notch, the low lateral lobes with almost the same outline; midline of dorsal surface with a narrow furrow; posterior border at base of the notch beneath with a small obtuse lobule. Outer dististyle, *d*, an elongate pale blade, broadest at near midlength, thence narrowed to the obtuse tip, the length about four times the breadth. Inner dististyle with the base expanded, constricted at near midlength, thence dilated, the beak slender; lower beak a flattened blade, its apex obtuse.

226. *TIPULA (OREOMYZA) STRIX* Alexander.

*Tipula strix* ALEXANDER, N.Y. Ent. Soc. Jour. 26 (1918) 71.

*Tipula (Oreomyza) strix* ALEXANDER, Philip. Jour. Sci. 57 (1935) 123.

The type was from Tokuhara, Shinano, Honshu, collected August 31, 1915, by Nohira.

IYO: Joju, Mount Ishizuchi, August 17, 1953 (*Chûyô*); Onagahara, August 6, 1952 (*Kusunoki*); Mominoki, altitude 700 meters, September 6, 1953 (*Yano*); Mount Saragamine, altitude 1,200 meters, July 24, 1953 (*Kusunoki*); Mount Takanawa, altitude 960 meters, August 14 and 15, 1953 (*Kusunoki*).

In some of the present specimens the blackened tips of the fore femora are more extensive than in the type, including the outer two-thirds of the segment.

227. *TIPULA (OREOMYZA) TRUPHEONEURA* Alexander.

*Tipula trupheoneura* ALEXANDER, Amer. Ent. Soc. Trans. 46 (1920) 17-18.

*Tipula trupheoneura* ALEXANDER, Philip. Jour. Sci. 51 (1933) 391-392, pl. 4, fig. 43 ( $\delta$  hypopygium).

*Tipula (Oreomyza) trupheoneura* ALEXANDER, Philip. Jour. Sci. 57 (1935) 123.

The type was from Musashi (Saitama), Honshu, taken May 31, 1919, by Takahashi.

IYO: Omogo Valley, altitude 800 meters, May 4, 1952 (*Ide*).

228. NEPHROTOMA REPANDA (Alexander).

Plate 3, figs. 21, 22.

*Pachyrhina repanda* ALEXANDER, Can. Ent. 46 (1914) 162-163, pl. 11, fig. 3 (venation), fig. 11 (antennal segment), figs. 8, 16 (♂ hypopygium).

The type was taken in the vicinity of Tokyo in August, 1912.

IYO: Mount Saragamine, altitude 1,100 meters, June 27, 1952 (*Ide*), altitude 1,200 meters, July 25, 1953 (*Kusunoki*).

The original description is faulty and deficient in certain respects and is replaced by the following account.

*Male*.—Length, about 12 to 13.5 millimeters; wing, 11.5 to 14; antenna, about 5 to 5.5.

Frontal prolongation of head polished yellow; nasus elongate, darker; palpi obscure yellow, the intermediate segments more obscure. Antennæ (male) relatively long, exceeding one-third the wing; proximal three segments yellow, succeeding flagellar segments weakly bicolored, the conspicuous basal enlargements dark brown, the remainder of segment brownish yellow; outer segments uniformly darkened; intermidate segments strongly incised, the outer swelling longer and almost as deep as the basal enlargement; segments about equal in length to the longest verticils. Head dull orange, weakly darkened on anterior orbits; vertical tubercle protuberant, entire; occipital brand not or scarcely indicated.

Pronotum orange, paling to yellow on sides. Mesonotal præscutum yellow with three polished black stripes, the cephalic and posterior borders of the central stripe, spot at anterior end of lateral vitta, and outer ends of suture more velvety black, the lateral stripes thus appearing outcurved; remainder of notum yellow, each scutal lobe with a major polished black area that is narrowly bordered internally with velvety black; mediotergite and pleurotergite more orange, the former vaguely darker on posterior fourth. Pleura orange yellow; dorsopleural membrane more yellowed. Halteres obscure yellow, the knobs weakly darkened. Legs with the coxæ and trochanters yellow; remainder of legs obscure yellow or brownish yellow, the tarsi passing into brownish black; claws (male) toothed. Wings (Plate 3, fig. 21) grayish yellow; stigma brown, with relatively numerous trichia on proximal half; veins dark brown. Venation: Sc<sub>2</sub> ending opposite or just beyond origin of Rs, the latter straight, about one-half longer than basal section of R<sub>4+5</sub>; cell



$M_1$  barely to more broadly sessile; m-cu at fork of  $M$  or just beyond this on the base of  $M_4$ .

Abdominal tergites yellow, more or less distinctly trivittate with dark brown, the central stripe beginning on the second segment, in cases paler to barely indicated; lateral stripes more distinct; basal sternites yellow. Male hypopygium (Plate 3, fig. 22) with the ninth tergite,  $9t$ , transverse, the posterior border produced into four broad lobes that are provided with abundant spiculose points; lateral lobes unusually broad for a member of this genus, expanded outwardly. Outer dististyle,  $d$ , short, about two and one-half times as long as broad, narrowed to the obtuse tip. Inner dististyle short and compact; beak slender; no well-developed dorsal or posterior crests. Phallosome,  $p$ , with the gonapophyses small, suboval, their tips rounded, shorter than the broad-based  $\text{\ae}deagus$ . Eighth sternite,  $8s$ , moderately sheathing, the posterior border entire, membranous, with very abundant long yellow setae of moderate length; setae elsewhere on sclerite more scattered, shorter and darker.

## LIMONIINAE

### LIMONIINI

#### 229. LIMONIA (LIMONIA) GLOBITHORAX GLOBULITHORAX (Alexander).

*Dicranomyia globithorax* OSTEN SACKEN, Monog. Dipt. N. Amer. 4 (1869) 74-75.

*Dicranomyia globulithorax* ALEXANDER, Philip. Jour. Sci. 24 (1924) 547-548.

The subspecies was described from Lake Shikotsu, Hokkaido, taken September 27, 1922, by Esaki.

IYO: Mominoki, altitude 700 meters, September 6, 1953 (Yano).

The present fly is exceedingly close to typical *globithorax* and may prove to be identical. The typical form is known only from the eastern Nearctic Region, as far west as Michigan and Wisconsin; the present fly is known only from Hokkaido and Shikoku. No representatives of the species are known at the present time from the intervening area.

#### 230. LIMONIA (LIMONIA) INELEGANS Alexander.

*Limonia inelegans* ALEXANDER, Insec. Inscit. Menst. 12 (1924) 156-157.

Described from various stations in Hokkaido and Honshu, collected in 1923 by Esaki. Also known from the high mountains of Formosa and eastern China, as far west as Mount Omei, Szechwan.

IYO: Mount Ogawamine, altitude 700 meters, August 1, 1953 (*Idé*).

231. LIMONIA (LIMONIA) NEONEBULOSA (Alexander).

*Dicranomyia nebulosa* ALEXANDER, Can. Ent. 45 (1913) 203-205, pl. 3, fig. 10 (wing), pl. 4, figs. 8-9 (♂ hypopygium); name preoccupied.

*Limonia neonebulosa* ALEXANDER, Philip. Jour. Sci. 24 (1924) 555-556.

*Limonia neonebulosa* ESAKI, et al., Icon. Insect. Japon. Ed. 2 (1950) 1515, fig.

A well-known species in Karafuto, Hokkaido and Honshu, likewise occurring in eastern China as far west as Szechwan. Very recently it has been discovered in northeastern North America (Amherst, Massachusetts, October, 1952, 1953) and will probably be found to have a much wider distribution than is known at present. It is chiefly a late season species which may account for its failure to be found in United States until such a recent date. Most collecting is done in the spring and summer and there is a tapering off of such activities later in the season.

IYO: Mount Onagahara, August 5, 1952 (*Kusunoki*).

232. LIMONIA (LIMONIA) OCHRIPIES sp. nov.

Plate 3, figs. 23, 24.

Size relatively small (wing, male, under 7 millimeters); mesonotum brown, with vague indications of three more brownish yellow stripes; antennæ black, the flagellar segments with short apical pedicels; thoracic pleura obscure yellow with a broad dorsal brown stripe; halteres black; legs light brown, the outer ends of the tibiæ and the tarsi passing into obscure yellow; wings with a strong brownish tinge, restrictedly patterned with darker;  $Sc_1$  ending shortly beyond midlength of  $R_s$ ; cell 1st  $M_2$  large, about as long as the distal section of vein  $M_{1+2}$ ; male hypopygium with the dorsal dististyle a weak, virtually straight spine; ventral dististyle relatively small, its rostral prolongation long and conspicuous, with two long spines placed close together at its base.

*Male*.—Length, about 5.5 millimeters; wing, 6.8; antenna, about 1.2.

Rostrum obscure yellow; palpi black. Antennæ with the scape obscure yellow, remaining segments black; basal flagellar segments oval, with short abrupt apical pedicels, the outer segments becoming longer; terminal segment about one-third longer than the penultimate. Head obscure fulvous yellow; anterior vertex relatively broad, fully twice the diameter of the scape.

Pronotum light yellow above, the color continued backward to the wing-root, involving the dorsopleural region and the lateral

border of the præscutum, sides of pronotum brownish black. Mesonotal præscutum brown, with vague indications of three more brownish yellow stripes; posterior sclerites of notum brown, the scutellum a trifle more brightened. Pleura obscure yellow, with a broad dorsal brown stripe extending from the pronotum across the dorsal pleurites to the postnotum; ventral sternopleurite vaguely darkened. Halteres black. Legs with all coxæ yellow; trochanters a trifle darker; femora light brown; tibiæ light brown basally, paling to ochreous yellow outwardly); tarsi obscure yellow, the last segment black; claws long and slender, with a conspicuous basal spine. Wings (Plate 3, fig. 23) with a strong brownish tinge, restrictedly patterned with darker; stigma oval, brown; narrow, very inconspicuous seams over cord and outer end of cell 1st  $M_2$ ; veins brown, those in the costal areas paler. Venation:  $Sc_1$  ending shortly beyond midlength of  $Rs$ ,  $Sc_2$  near its tip,  $h$  very oblique; free tip of  $Sc_2$  lying just proximad of  $R_2$ ; cell 1st  $M_2$  large, about as long as the distal section of  $M_{1+2}$ ;  $m-cu$  close to fork of  $M$ ; vein 2nd  $A$  long, very gently sinuous at near midlength.

Abdomen dark brown, the eighth segment a little paler; hypopygium dark brown, the styli paler. Male hypopygium (Plate 3, fig. 24) with the tergite,  $9t$ , large, its cephalic margin convex, the posterior border narrowly emarginate medially, the lobes obtusely rounded, each with about 10 or 11 very long setæ. Basistyle,  $b$ , with the ventromesal lobe simple, with long setæ. Dorsal dististyle,  $d$ , a weak, virtually straight rod that narrows very gradually to the acute tip. Ventral dististyle relatively small, its area much less than that of the basistyle; rostral prolongation very long, almost parallel-sided, the apex subtruncate, tipped with several strong setæ; at base of prolongation with two long slender rostral spines, placed close together; body of style with relatively few but very long setæ. Gonapophysis,  $g$ , with mesal-apical lobe a long simple blade, narrowed to the obtuse tip. Ædeagus relatively slender.

*Habitat*.—Japan (Shikoku).

Holotype, male, Mount Saragamine, Iyo, altitude 1,000 meters, July 4, 1953 (*Mohri*).

In its general appearance, the present fly is most as in *Limonia* (*Limonia*) *edura* Alexander and *L. (L.) yakushimensis* Alexander, differing in all details of coloration and in the structure of the antennæ and male hypopygium (this unknown for *edura*).

## 233. LIMONIA (METALIMNOBIA) BIFASCIATA FLAVOABDOMINALIS (Alexander).

*Tipula bifasciata* SCHRANK, Enum. Insect. Austr. (1781) 428.*Limnobia avis flavo-abdominalis* ALEXANDER, Ent. Soc. America Ann. 11 (1918) 445.*Limnobia avis flavoabdominalis* ALEXANDER, Ent. Mag. (Kyoto) 3 (1919) 123.

Described from an unknown locality in Honshu, collected by Nohira.

IYO: Mount Takanawa, August 15, 1953 (*Kusunoki*).

## 234. LIMONIA (LIBNOTES) NOHIRAI (Alexander).

*Libnotes nohirai* ALEXANDER, Ent. Soc. America Ann. 11 (1918) 445.*Libnotes nohirai* ALEXANDER, Ent. Mag. (Kyoto) 3 (1919) 123-124.*Libnotes nohirai* ESAKI, et al., Icon. Insect. Japon, Ed. 2 (1950) 1514, fig.

The type was from Iwate, Honshu, collected in June, 1916 by Akio Nohira. Known also from Kyushu.

IYO: Omogo valley, altitude 800 meters, October 17 to 20, 1952 (*Kusunoki*), November 9, 1953 (*Kusunoki*), November 9, 1953 (*Mohri*); Sugitate, near Matsuyama, November 3, 1953 (*Mohri*).

## 235. LIMONIA (DISCOBOLA) ANNULATA (Linnæus).

*Tipula annulata* LINNÆUS, Syst. Nat., Ed. 10 (1758) 586.*Limnobia argus* SAY, Long's Exped. to St. Peters R., 2, Appendix (1824) 358.*Trochobola argus* OSTEN SACKEN, Monog. Dipt. N. Amer. 4 (1869) 98-99, pl. 1, fig. 4 (wing).*Discobola argus* ALEXANDER, Crane-flies N.Y. 1 (1919) 892, pl. 32 fig. 41 (wing).*Diceratomyia* sp., SAITO, Ent. World (76) 8 (1940) 379, 2 figs. (wing).*Limonia (Discobola) annulata* ALEXANDER, Dipt. Conn. 1 (1942) 309-310, fig. 37, A (♂ hypopygium).

Widespread throughout the Holarctic Region, in eastern Asia ranging southward into the high mountains of Luzon, Mindanao and Borneo, and probably farther.

IYO: Mount Ishizuchi, summit, altitude 1,980 meters, August 18, 1953 (*Chûjô*).

## 236. LIMONIA (DISCOBOLA) FUMIHALTERATA sp. nov.

Size small (wing, female, 7.5 millimeters); mesonotal præscutum chiefly covered by three blackened sparsely pruinose stripes, the humeral region extensively obscure yellow; posterior sclerites of notum dull black; knobs of halteres conspicuously dark brown; femora weakly infuscated, with a broad black subterminal ring, preceded and followed by clear yellow, the latter one narrower;

wings with a faint yellow tinge, with an ocellate brown pattern, the margins of the rings narrow, the open centers correspondingly large; a few faint darkened spots in cell M.

*Female*.—Length, about 6.5 millimeters; wing, 7.5

Rostrum and palpi black. Antennæ black throughout; flagellar segments oval. Head dark gray, anterior vertex reduced to a capillary strip; some strong erect setæ on cephalic portion of this strip opposite anterior part of eye.

Pronotum greenish testaceous. Mesonotal præscutum chiefly covered by three blackened, sparsely pruinose stripes, the humeral region extensively obscure yellow; posterior scleritics of notum black, sparsely pruinose. Pleura blackened on anterior part, including the propleura and anepisternum, the sternopleurite and mesepimeron paler. Halteres with stem white, knob conspicuously dark brown. Legs with the coxæ greenish testaceous; trochanters yellow; femora weakly infuscated, with a broad black subapical ring, the narrow tip and a broader subterminal ring clearer yellow; tibiae brown, the tips narrowly darker; tarsi brown, the tips brownish black. Wings with a faint yellow tinge, the prearcular and costal regions clearer yellow; a restricted brown pattern having the usual ocellate pattern as found in *annulata* and allies, the margins of the rings narrow, the open centers correspondingly large; a few faintly darkened spots in cell M; veins yellow, darker in the patterned areas. Venation: Sc<sub>1</sub> ending about opposite the fork of Rs, Sc<sub>2</sub> near its tip; m-cu very close to the fork of M.

Abdominal tergites dark brown, the sternites paler; genital shield yellow; cerci small, slender; hypoalvæ darkened basally.

*Habitat*.—Japan (Shikoku).

Holotype, female, Mount Takanawa, altitude 980 meters, October 24, 1953 (*Kusunoki*).

Distinguished from other regional members of the subgenus by the uniformly darkened knobs of the halteres and the very sparse brown dotting in cell M of the wings. In *annulata* there are no darkened spots in this cell while in *moiwana* Alexander and *parvispinula* Alexander, these are numerous and conspicuous.

#### 237. LIMONIA FUSCA Meigen.

*Limonia fusca* MEIGEN, Klass. 1 (1804) 54.

*Limnobia turpis* WALKER, Ins. Saundersiana, Dipt. 3 (1856) 300.

*Dicranomyia pubipennis* OSTEN SAKEN, Acad. Nat. Sci. Philadelphia Proc. (1859) 211.

*Limnobia pilipennis* EGGER, Zool.-bot Ges. Wien Verh. 13 (1863) 1108.

Eurasia, eastern Nearctic Region; widely distributed throughout the North Temperate zone. In Japan first recorded from Hokkaido.

IYO: Omogo Valley, May 31, 1953 (*Mohri*).

238. LIMONIA (DICRANOMYIA) BASIFUSCA (Alexander).

*Dicranomyia basifusca* ALEXANDER, Ent. Soc. America Ann. 12 (1919) 328.

*Dicranomyia atripleura* ALEXANDER, Ent. Soc. America Ann. 12 (1919) 328-429.

The type of *basifusca* was from the vicinity of Tokyo, taken April 10, 1919 by Takahashi; that of *atripleura* from Choshi, Shimosa (Chiba), taken October 17, 1919, also by Takahashi. The types of both were represented by unique females and in the light of more abundant materials later received I do not consider them to be distinct. The fly is related to *Limonia* (*Dicranomyia*) *sordida* (Brunetti), differing in relatively slight hypopygial characters.

IYO: Omogo Valley, altitude 800 meters, July 14, 1952 (*Ishihara*), September 28, 1952 (*Yano*); Onogohara, August 5, 1952 (*Kusunoki*); Mount Saragamine, altitude 1,200 meters, July 24, 1953 (*Kusunoki*); Shiroyama, near Matsuyama, altitude 132 meters, July 24, 1953 (*Yano*).

239. LIMONIA (DICRANOMYIA) KONGOSANA Alexander.

*Limonia* (*Dicranomyia*) *kongosana* ALEXANDER, Philip. Jour. Sci. 55 (1934) 43-44, pl. 1, fig. 14 (venation), pl. 3, fig. 35 (♂ hypopygium).

The types were from Kongo San (Diamond Mountains), Korea, taken October 8 to 17, 1933, by Machida. The fly was not previously known from Japan. This is the largest known member of the *morio* group of the subgenus. It is most nearly allied to *Limonia* (*Dicranomyia*) *spinifera* Alexander, of the north-eastern Nearctic Region, differing in the black color, conspicuously darkened stigma of the wings, and in slight details of structure of the male hypopygium.

IYO: Omogo Valley, November 9 to 12, 1953 (*Mohri*).

240. LIMONIA (DICRANOMYIA) MODESTA (Wiedemann).

*Limnobia modesta* WIEDEMANN, in Meigen, Syst. Besch. 1 (1818) 134.

*Dicranomyia takahashii* ALEXANDER, Amer. Ent. Soc. Trans. 46 (1920) 2.

*Dicranomyia spinicauda* ALEXANDER, Philip. Jour. Sci. 24 (1924) 545-546, pl. 1, fig. 5 (♂ hypopygium).

*Dicranomyia takahashii* ESAKI, et al., Icon Insect, Japon Ed. 2 (1950)  
1517, fig.

The types of *takahashii* were from the vicinity of Tokyo; of *spinicauda* from various stations in Karafuto and Hokkaido. It is now known that the species has a virtually Holarctic range, being lacking only in the eastern Nearctic Region (though recorded from Greenland).

IYO: Maminomi, Mount Saragamine, altitude 700 to 800 meters. November 15, 1953 (*Yano*).

241. **HELIUS (HELIUS) OBLITERATUS** (Alexander).

*Rhamphidia obliterata* ALEXANDER, Amer. Ent. Soc. Trans. 46 (1920)  
7-8.

The type was from Saitama, Honshu, collected May 29, 1919 by Takahashi.

IYO: Omogo Valley, altitude 800 meters, June 2, 1953 (*Mohri*).

242. **DICRANOPTYCHA EDASHIGEANA** sp. nov.

Plate 3, figs. 25, 26.

General coloration of thorax reddish yellow, the posterior end of præscutum with two large polished black areas, the acutal lobes similarly patterned; pleura polished reddish yellow; legs stout, conspicuously hairy, yellow, the femoral tips, tibial bases and tips broadly blackened; wings with a strong blackish tinge, the base more yellowish brown, the forked fold in cell Cu conspicuously whitened against the dark ground; abdomen black; male hypopygium with the outer dististyle having spinulæ on outer third; two pairs of gonapophyses, the outer ones pointed at tips.

*Male*.—Length, about 8.5 to 9 millimeters; wing, 9.5 to 10.

*Female*.—Length, about 8 to 9 millimeters; wing, 9 to 10.

Rostrum reddish yellow; palpi dark brown. Antennæ with the proximal seven or eight segments yellow, the scape a trifle darker; outer flagellar segments darker, especially on the slightly dilated basal portions; verticils elongate. Head brownish black, the front and cephalic part of anterior vertex obscure yellow; anterior vertex broad, nearly four times the diameter of the scape.

Pronotum yellow. Mesonotum reddish yellow, with four large polished black oval areas, one on either side of posterior part of præscutum, the other somewhat larger pair on the scutal lobes; scutellum more infuscated. Pleura polished reddish yellow. Halteres infuscated, the base of stem slightly paler. Legs with the coxæ and trochanters yellow, the posterior coxæ a trifle more darkened; femora yellow, the tips abruptly black; tibiæ yellow,

the broad base and the apex black; proximal two tarsal segments yellow, their tips blackened; outer tarsal segments uniformly black; legs stout, conspicuously hairy, the setæ generally concolorous with the part of leg that bears them, those of femora darkened but with the abundant linear scales pale. Wings (Plate 3, fig. 25) with a strong blackish tinge, the base vaguely more yellowish brown, the costal and apical parts more intensely blackened; whitened oblitative streaks in cell R near vein M, just behind vein 1st A, and as the usual forked fold in cell Cu; veins dark brown, paler in the basal portions. Venation: Sc<sub>1</sub> ending just beyond fork of Rs; cell 1st M<sub>2</sub> relatively small, shorter than vein M<sub>4</sub>; m-cu about its own length beyond the fork of M.

Abdomen intensely black, including the genitalia of both sexes. Male hypopygium (Plate 3, fig. 26) with the outer dististyle, *d*, shorter than the inner dististyle, its apex acute, slightly decurved; outer third of style with very small erect spinulæ; inner style gently curved, slender, the basal half with large punctures, those of the apex smaller, with minute setæ. Interbase, *i*, a parallel-sided blade, its tip obtuse. Two pairs of gonapophyses, *g*, the outer ones longer, slightly dilated before the acute tip; inner apophyses with the tips obtuse.

*Habitat*.—Japan (*Shikoku*).

Holotype, male, Mount Kajigamori, Tosa, August 12, 1952 (*Edashige*). Allotopotype, female, pinned with type. Paratopotypes, 1 male, 2 females.

I am very pleased to dedicate this interesting species to the collector, Mr. Tadao Edashige, who has secured several interesting Tipulidæ. The only approximately similar species so far described is *Dicranoptycha geniculata* Alexander, of Formosa, which differs evidently in the coloration of the body, legs and wings and, especially, the very different male hypopygium. A further species of this attractive group has recently been discovered in the central Alps of Honshu and is being described elsewhere.

#### PEDICINI

##### 243. NIPPONOMYIA TRISPINOSA (Alexander).

*Genus incertus (Hexatomini)* BRUNETTI, Rec. Indian Mus. 15 (1918) 328.

*Tricyphona trispinosa* ALEXANDER, Amer. Ent. Soc. Trans. 44 (1920) 15.

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



*Nipponomyia trispinosa* ALEXANDER, Rec. Ind. Mus. 29 (1927) 202.  
*Nipponomyia trispinosa* ESAKI, et al., Icon Insect, Japon Ed. 2  
 (1950) 1521, fig.

The type was from an unspecified locality in Honshu, collected by Nohira. Later recorded from several stations in Honshu, at low and moderate altitudes.

IYO: Mount Saragamine, altitude 800 meters, September 6, 1953 (Yano).

#### HEXATOMINI

244. EPIPHRAGMA (EPIPHRAGMA) TRICHOMERA sp. nov. Plate 3, figs. 27, 28.

Size small (wing under 10 millimeters); præscutum in front chestnut brown, the margins black, the posterior half of sclerite with four abbreviated dark brown stripes, the interspaces yellow pollinose; pleura dark brown, with narrow pruinose longitudinal stripes on ventral half; halteres with base of knob dark brown, the apex extensively pale yellow; legs yellow, the femora with a narrow vaguely indicated subterminal brown ring; wings whitish with an extensive brown pattern, the areas solidly darkened, pattern ocellate, chiefly confluent; m-cu opposite one-third the length of cell 1st  $M_2$ ; male hypopygium with the tergal lobes very low; interbase a long sinuous very slender rod that narrows to the hairlike tip.

*Male*.—Length, about 9.5 millimeters; wing, 9.2.

*Female*.—Length, about 8.5 millimeters; wing, 8.

Rostrum brown; palpi black. Antennæ short; scape and pedicel black, fusion-segment of flagellum orange-yellow, succeeding flagellar segments light brown. Head above chestnut brown, the center of vertex darker brown.

Prothorax dark brown. Mesonotal præscutum in front chestnut brown, bordered laterally by black, behind with four abbreviated dark brown stripes, the interspaces yellow pollinose; scutum brown, the centers of the lobes extensively darker brown; scutellum dark brown, pruinose; mediotergite dark brown posteriorly, the cephalic half with a central brown area that is bordered behind by convergent gray lines. Pleura and pleurotergite dark brown, with narrow pruinose longitudinal stripes on the ventral half; dorsopleural membrane dark brown. Halteres with stem brownish yellow, base of knob dark brown, the apex extensively pale yellow. Legs with the coxæ dark brown, more or less pollinose; trochanters brownish yellow; femora obscure yellow, virtually unpatterned or with vague indications of a darker subterminal ring; tibiæ and tarsi obscure yellow,

the last tarsal segment a trifle darker. Wings (Plate 3, fig. 27) with the ground color whitish, with an extensive brown pattern, the areas solidly darkened or uniform in pattern, not with darkened margins and pale centers, as in *subfascipennis* and *subin-signis*; dark areas more extensive than the pale ground, chiefly ocellate in form but so extensive as to be chiefly confluent, particularly at and beyond the cord; in cases, a complete but narrow crossband of the ground at midlength of wing, this obliterated in the type; extensive pale marginal spots at ends of all the cells, including two in cell 2nd A; a yellow marginal area in cell Sc<sub>1</sub> above the stigma; veins brown in the patterned areas, more yellowed in the ground. Venation: R<sub>2+3+4</sub> nearly straight, subequal to R<sub>2+3</sub>; m-cu before midlength of cell 1st M<sub>2</sub>, commonly near one-third the length of the cell.

Abdomen black, the posterior borders of the segments narrowly and vaguely pale, more expanded on sides; hypopygium brown. Male hypopygium (Plate 3, fig. 28) with the tergite, *9t*, very shallowly emarginate medially, the lobes very low. Interbase, *i*, a long sinuous very slender rod, narrowed very gradually to the acute hairlike tip. Outer dististyle, *d*, relatively narrow, the slender tip decurved; inner style longer, the tip obtuse.

*Habitat*.—Japan (Shikoku).

Holotype, male, Mount Saragamine, Iyo, altitude 1,200 meters, July 25, 1953 (*Kusunoki*). Allotopotype, female, with the type. Paratype, female, Omogo Valley, Iyo, altitude 800 meters, August 7, 1953 (*Yano*).

The most similar regional species is *Epiphragma* (*Epiphragma*) *evanescens* Alexander, which differs in details of coloration and in the structure of the male hypopygium, particularly the interbase. Both species have the darkened areas of the wings uniformly colored, not pale with darkened margins as in many members of the genus.

245. **LIMNOPHILA (PRIONOLABIS) ATROFEMORATA** Alexander.

*Limnophila* (*Prionolabis*) *nigrofemorata* ALEXANDER, Philip. Jour. Sci. 66 (1938) 117-118, pl. 1, fig. 14 (venation), pl. 3, fig. 39 (♂ hypopygium); preoccupied by *Limnophila nigrofemorata* ALEXANDER, U. S. Nat. Mus. Proc. 72 art. 2 (1927) 14.

*Limnophila* (*Prionolabis*) *atrofemorata* ALEXANDER, Shikoku Ent. Soc. Trans. 4 (1954) in press.

The types were from Mount Nansho, Rikuchiu (Iwate), Honshu, altitude 2,600 feet, taken November 4, 1934, by Kato.

Iyo: Omogo Valley, altitude 800 meters, November 9, 1953 (*Mohri, Tachikawa*); Mount Ishizuchi, altitude 1,600 to 1,800

meters, October 18, 1952 (*Mohri*); Mominoki, altitude 700 to 800 meters, November 15, 1953 (*Yano*); Mount Saragamine, altitude 800 to 900 meters, November 15, 1953 (*Yano*).

The males are fully winged but the female, discovered by *Yano*, has the wings very reduced. The males are generally similar to the types, differing in minor regards. Antennæ definitely 16-segmented. Male hypopygium with the spinulose points at outer end of lobe of the inner dististyle more reduced, both in size and number. One specimen, on both wings, has cell  $M_2$  open by the atrophy of the basal section of vein  $M_3$ .

*Male*.—Length, about 10 to 12 millimeters; wing, 11 to 14.

*Female*.—Length, about 7 millimeters; wing,  $1.0 \times 0.15$ .

Quite different in its general appearance from the male, due to the very reduced wings and resultant flightless condition. Legs much paler, brownish testaceous, relatively short; segments with abundant long erect setæ that are much longer than the segment at the point of their insertion. Wings reduced to small long-oval scales, obscure yellow; venation reduced and entirely distorted.

Allotype, female, Mount Saragamine, Iyo, altitude 800 to 900 meters, November 15, 1953 (*Yano*).

Although the females in the subgenus *Prionolabis* are commonly fully winged, various species occur in both the Nearctic and eastern Palaearctic faunas where the wings are reduced. The present fly represents the extreme condition known to me.

246. LIMNOPHILA (PRIONOLABIS) IYENSIS sp. nov.

Plate 3, figs. 29, 30.

Size medium (wing, male, 5.5 to 6 millimeters); general coloration black; halteres yellow; legs black, the femoral bases restrictedly paler; wings with a strong blackish tinge, the prearcular field restrictedly pale yellow; cell  $M_1$  lacking; male hypopygium with the posterior border of the ninth tergite virtually truncate; outer dististyle broad, its inner margin with a single broad tooth; inner dististyle extended into a slender nearly straight rod; gonapophysis terminating in a long curved spine, with a second shorter recurved spine at near midlength; ædeagus relatively narrow, the apical filament proportionately short.

*Male*.—Length, about 4.6 to 5.2 millimeters; wing, 5.5 to 6.1; antenna, about 1.1 to 1.3.

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

Rostrum and palpi black. Antennæ 16-segmented, black; flagellar segments oval, about as long as their verticils. Head opaque black, sparsely pruinose.

Thorax black, the surface of the notum subnitidous, the pleura more pruinose, especially ventrally. Halteres pale yellow. Legs with the coxæ pruinose; trochanters brownish black; remainder of legs black, the femoral bases restrictedly obscure yellow. Wings (Plate 3, fig. 29) with a strong blackish tinge, the prearcular field restrictedly pale yellow; stigma slightly darker than the ground; veins brown, yellow in the prearcular area. Venation:  $Sc_1$  ending shortly beyond fork of  $Rs$ ,  $Sc_2$  slightly removed from the tip;  $Rs$  weakly angulated at origin; cell  $M_1$  lacking;  $m-cu$  at near midlength of  $M_{3+4}$ .

Abdomen black. Male hypopygium (Plate 3, fig. 30) with the posterior border of the tergite,  $9t$ , thickened, virtually truncate to vaguely emarginate. Outer dististyle,  $d$ , broad, extended into a long outer spine, with a broader tooth on inner margin beyond midlength. Inner dististyle extended into a slender nearly straight rod, the narrow simple tip obliquely truncated to subacute. Gonapophysis,  $g$ , as shown, terminating in a long curved spine, with a second shorter recurved spine at near midlength.  $\mathcal{A}$ edeagus,  $a$ , relatively narrow, the apical filament proportionately short.

*Habitat*.—Japan (Shikoku).

Holotype, male, Kurotaki, Iyo, altitude 600 meters, May 9, 1953 (*Kusunoki*). Allotopotype, female. Paratopotypes, 3 males and females; paratype, male, Sugitate, Iyo, April 14, 1953 (*Mohri*).

The most similar species is *Limnophila* (*Prionolabis*) *kunumiana* Alexander, of Kyushu, which differs in the structure of the hypopygium, particularly the tergite, other dististyle, and gonapophysis.

247. *LIMNOPHILA* (*PHYLIDOREA*) *MUNDELLA* Alexander.

*Limnophila mundella* ALEXANDER, Philip. Jour. Sci. 44 (1931) 357.

Hitherto known only from the alpine regions of Honshu. The fly is most nearly allied to *Limnophila* (*Phylidorea*) *subcostata* Alexander, and its race *L. (P.) subcostata claggi* Alexander, of the Nearctic Region, being best distinguished by the structure of the male hypopygium, particularly the spinous gonapophyses.

IYO: Omogo Valley, altitude 800 meters, June 2, 1953 (*Mohri*).

248. *LIMNOPHILA* (*DICRANOPHRAGMA*) *PERLATA* sp. nov.

Plate 3, fig. 32.

Mesonotal præscutum with the restricted ground dark brown, the disk with three very extensive brownish yellow stripes; antennal pedicel and basal segment of flagellum orange, the

succeeding segments black; wings (male) very broad, widest opposite the termination of vein 2nd A; a conspicuous brown pattern that is virtually restricted to the vicinity of the veins, without dots or freckling in the cells; cell 1st  $M_2$  unusually small, subquadrate.

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

Rostrum and palpi black. Antennæ with scape darkened, pedicel and first flagellar segment orange, succeeding segments passing into black; flagellar segments becoming elongate, with very long verticils. Head dark brown.

Pronotum concealed in the unique type. Mesonotal præscutum with the restricted ground dark brown, the remainder of disk occupied by three brownish yellow stripes, the interspaces very limited; scutum brownish yellow, posterior sclerites of notum darker, the posterior two-thirds of the mediotergite even more blackened. Pleura obscure yellow, variegated with blackened areas on the ventral half. Halteres pale yellow. Legs with the coxæ brownish black; trochanters dark brown; remainder of legs broken. Wings (Plate 3, fig. 32) with the ground pale yellow, the prearcular field more intensely so; a conspicuous brown pattern, arranged about as in *formosa*, including about seven costal darkenings of which four and five at the stigma are confluent; six and seven are likewise confluent, continued caudad over the supernumerary crossvein; conspicuous seams over the cord and outer end of cell 1st  $M_2$ ; marginal darkenings at ends of veins  $R_4$  to 2nd A, inclusive; a cloud at fork of  $M_{1+2}$ ; four or five marginal clouds in cell 2nd A; centers of cells M and Cu extensively washed with paler brown; a similar linear brown line in cell 1st A; no spots or dots in the wing cells, as in various other members of the subgenus; veins yellow in the interspaces, darker in the patterned areas. Wings of male very broad, representing the extreme condition in the present faunal area, widest opposite the termination of vein 2nd A. Venation: Cell 1st  $M_2$  unusually small, subquadrate.

Abdomen dark brown, the sternites vaguely more bicolored, the posterior borders of the segments somewhat paler; hypopygium dark. Male hypopygium generally as in *formosa* and other members of the subgenus; tergite produced medially but apparently without lateral lobes.

*Habitat*.—Japan (Shikoku).

Holotype, male, Mount Saragamine, Iyo, altitude 1,200 meters, July 25, 1953 (*Kusunoki*).

The present fly is most similar to *Limnophila* (*Dicranophragma*) *formosa* Alexander, which differs especially in the narrower wings of the male, with a different venation. A male from Kyoto (June 24, 1923, taken by Takeuchi) may represent this same species but is not well preserved.

249. *NIPPOLIMNOPHILA OMOGIANA* sp. nov. Plate 3, fig. 31; plate 4, fig. 38.

General coloration dark brown; antennæ (male) elongate, nearly one-half the wing, 13-segmented, dark brown throughout; halteres very long, approximately equal in length to the entire thorax; legs brown; wings weakly suffused with brown, the prearcular field more yellowed; male hypopygium with the tergite produced medially into a slender lobe; outer dististyle a simple gently curved blade that narrows into a strong black spine; inner dististyle smaller, appearing as a blackened spine, its tip narrowly obtuse; gonapophysis flattened, narrowed into a long apical spine; ædeagus unusually long and slender, decurved beyond midlength.

Male.—Length, about 4.5 millimeters; wing, 5; antenna, about 2.3 to 2.4.

Rostrum and palpi black. Antennæ (male) elongate, nearly one-half the length of wing, 13-segmented, dark brown throughout; pedicel elongate, as in the genotype, only a trifle shorter than the scape; flagellar segments elongate-cylindrical, much longer than the sparse verticils and the shorter abundant erect pubescence; terminal segment elongate, about one-fourth longer than the penultimate. Head dark brown; anterior vertex broad.

Thorax almost uniformly dark brown; the pleura somewhat darker dorsally. Halteres very long, approximately equal to the entire thorax, weakly infuscated. Legs with the coxæ light brown; trochanters yellow; remainder of legs brown, the outer tarsal segments still darker. Wings (Plate 3, fig. 31) weakly suffused with brown, the stigmal area a trifle darker, prearcular field more yellowed; veins very pale brown, brighter in the prearcular field. Venation Sc short, Sc<sub>1</sub> punctiform, Sc<sub>2</sub> longer, ending distinctly before the fork of Rs; cell M<sub>1</sub> lacking; m-cu at near midlength of M<sub>3+4</sub>; cell 2nd A long and narrow.

Abdomen dark brown. Male hypopygium (Plate 4, fig. 38) with the tergite, 9*t*, produced medially into a slender lobe, provided with microscopic setæ; dorsal surface of tergite with a single row of few long setæ; ninth sternite more broadly and obtusely produced. Outer dististyle, *d*, a simple gently curved blade that narrows into a strong black spine; outer surface with

a few strong setæ. Inner dististyle smaller, appearing as a simple slender curved spine, the tip narrowly obtuse. Gonapophysis, *g*, flattened, narrowed into a long apical spine. Ædeagus *a*, unusually long and relatively slender, decurved beyond mid-length.

*Habitat*.—Japan (Shikoku).

Holotype, male, Omogo Valley, Iyo, altitude 700 meters, April 26, 1953 (Yano). Paratopotype, male.

This fly is readily told from the only other species having elongate antennæ, *Nippolimmophila yakushimana* Alexander, by the very long 13-segmented antennæ and by the structure of the male hypopygium, especially the tergite, dististyles, gonapophyses and ædeagus.

250. **HEXATOMA (ERIOCERA) NIGROTROCHANTERATA** (Alexander).

*Eriocera nigrotrochanterata* ALEXANDER, Philip. Jour. Sci. 49 (1932) 123, pl. 1, fig. 14 (venation).

The type, a male, was from Mount Ohdai, Yamato, Honshu, taken June 5, 1930, by Sakaguchi. I am characterizing the present female specimen as allotype.

*Female*.—Length, about 24 millimeters; wing,  $15.5 \times 5$ ; antenna, about 4.5.

Antennæ 9-segmented, relatively short; flagellar segments gradually decreasing in length and diameter outwardly, provided with long setæ. Darkened apex of posterior femur narrow, including about the outer fifth; all trochanters black. Genital shield brownish black. Ovipositor with the cerci powerfully constructed, compressed-flattened, lying subvertically, somewhat as in *Tipula* (*Vestiplex*) species.

Allotype, female, Komi, Iyo, Shikoku, August 4, 1952 (*Kusunoki*).

251. **HEXATOMA (ERIOCERA) NIPPONENSIS** (Alexander).

*Eriocera nipponensis* ALEXANDER, Ent. Soc. America Ann. 11 (1918) 446-447.

*Eriocera nipponensis* ALEXANDER, Ent. Mag. (Kyoto) 3 (1919) 126-127.

The types were from Kyoto, Honshu, collected May 28, 1914 by Nohira.

SANUKI: Ikenobe, Hirai-chô, July 17, 1953 (Chûjô).

252. **ATARBA (ATARBODES) MINUTICORNIS** Alexander.

Plate 3, fig. 33.

*Atarba (Atarbodes) minuticornis* ALEXANDER, Philip. Jour. Sci. 42 (1930) 526.

The type was from Kosugidani, Yakushima, altitude 2,500 feet, taken April 29, 1929 by Issiki.

IYO: Omogo Valley, June 6, September 28, 1952 (*Yano*).

In the type the thorax is dull testaceous yellow, with vague indications of darker color in the region of the lateral præscutal stripes. The legs of the type were broken. The present material agrees closely with the type except for the increase in amount of dark color on the notum, especially the posterior parts; scutal lobes ringed with black; scutellum chiefly blackened. The tips of the femora are narrowly and abruptly black. Wings (Plate 3, fig. 33) with the veins pale and poorly differentiated against the ground.

253. **ELEPHANTOMYIA (ELEPHANTOMYIA) HOKKAIDENSIS** Alexander.

*Elephantomyia (Elephantomyia) hokkaidensis* ALEXANDER, Philip. Jour. Sci. 24 (1924) 580-581.

*Elephantomyia (Elephantomyia) hokkaidensis* IRO, Mushi 18, pt. 14 (1948) 89-90.

*Elephantomyia hokkaidensis* ESAKI, et al., Icon. Insect. Japon. Ed. 2 (1950) 1525, fig.

The types were from various stations in Hokkaido, taken in August and September, 1922 by Esaki. Later found in Honshu.

IYO: Mount Ishizuchi, altitude 1,600 to 1,800 meters, October 18, 1952 (*Mohri*); Mominoki, Mount Saragamine, altitude 700 to 800 meters, November 15, 1953 (*Yano*).

The species is readily told from other members of the subgenus so far found in Shikoku by its large size and by the simple gonapophyses of the male hypopygium. *Elephantomyia (Elephantomyia) takachihoi* Ito (1948) from Kyushu seems to be closely related but appears to be distinct by the coloration, as the darkened male hypopygium.

ERIOPTERINI

**CLADURA** Osten Sacken

This genus, unusually rich in species in Japan, now has seven species known from Shikoku. In this faunal area, the species fall in two distinct groups, based on the structure of the male hypopygium. One of these the *megacauda* group, known at the present time by eight species occurring in Hokkaido and Honshu, but with no known representatives in the two southern islands, is separated by the structure of the basistyle of the hypopygium, which is produced into a long apical lobe that strongly resembles the dististyle in general shape and size. The other forms have the basistyle unproduced, with the dististyle terminal in



position. All known members of the genus are autumnal, flying in September to November.

(50). *CLADURA (CLADURA) DECEM-NOTATA* Alexander.

Additional records—IYO: Sugitate, near Matsuyama, November 3, 1953 (*Mohri*); Mominoki, altitude 700 to 800 meters, November 15, 1953 (*Yano*); Mount Saragamine, altitude 600 meters, October 20, 1953 (*Mohri*); Mount Takanawa, altitude 300 to 800 meters, October 25, 1953 (*Ide-Kusunoki*).

254. *CLADURA (CLADURA) HAKONENSIS PORRECTA* subsp. nov. Plate 4, fig. 39.

Close to typical *hakonensis* Alexander, of Honshu, differing especially in slight details of structure of the male hypopygium, as the gonapophyses.

*Male*.—Length, about 7 to 7.5 millimeters; wing, 7.5 to 8.5.

*Female*.—Length, about 7.5 to 8 millimeters; wing, 9 to 10.

Rostrum and palpi dark brown. Antennal scape light brown, pedicel obscure yellow, flagellum varying from pale to darker brown; flagellar segments elongate, with moderately conspicuous verticils. Head gray.

Pronotum infuscated, paler medially. Mesonotal præscutum brown, the humeral region yellow; scutal lobes darkened, the central area obscure yellow; scutellum and mediotergite grayish brown, yellowed laterally. Pleura and pleurotergite yellow, the mesepisternum and mesosternum slightly more infuscated. Halteres with stem whitened, the knobs obscure yellow to weakly infuscated. Legs with the coxæ and trochanters testaceous yellow; femora obscure yellow to brownish yellow, the tips narrowly dark brown, the amount subequal on all legs; tibiæ obscure yellow, with still narrower darkened tips; tarsi black, wings faintly yellowed, more conspicuously so at base; stigmal region yellowed; veins dark brown, conspicuous, the basal ones yellowed. Venation:  $R_2$  generally atrophied or virtually so, when evident lying nearly opposite to just beyond the tip  $Sc_1$ ; in the paratype male the vein is clearly preserved; petiole of cell  $M_1$  approximately twice  $m$  or slightly less;  $m-cu$  usually at or close to fork of  $M$ , more rarely more distad, in cases up to three-fourths its own length.

Abdomen dark brown, ninth segment of male more blackened to form a narrow ring; hypopygium yellowish brown. Male hypopygium (Plate 4, fig. 39) with the tergite,  $9t$ , produced medially into a membranous sheet that is densely covered with microscopic setulæ arranged in more or less distinct transverse lines or narrow bands. Basistyle,  $b$ , elongate, simple. Dististyle,  $d$ .

small, less than one-half as long as the basistyle, gently curved and narrowed to the obtuse tip. Central plate of phallosome produced into a sharp median point. Gonapophysis slender, bearing an acute appressed spine at near two-thirds the length. *Ædeagus, a*, small, a very little longer than the apophysis.

*Habitat*.—Japan (Shikoku).

Holotype, male, Omogo Valley, Iyo, November 12, 1953 (*Mohri*). Allotopotype, female. Paratopotypes, 2 females, 1 male, with the type (*Miyatake*); paratypes, 2 females, Momi-noki, Mount Saragamine, altitude 700 to 800 meters, November 15, 1953 (*Yano*), 1 female, Mount Takanawa, altitude 900 meters, October 25, 1953 (*Kusunoki*).

Very close to the typical form but apparently distinct in the characters indicated above.

255. *CLAUDURA (CLAUDURA) MACHIDELLA* Alexander.

Plate 4, fig. 40.

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

The unique type female was taken on Mount Hiei, Kyoto, Honshu, October 30, 1933, by Jiro Machida. No other material was known to me until the species was re-discovered in Shikoku.

IYO: Omogo Valley, November 12, 1953 (*Mohri*).

*Male*.—Length, about 7.5 millimeters; wing, 9.

Characters generally as in the female. Venational details slightly different:  $Sc_1$  much shorter, less than three times  $Sc_2$ ; supernumerary crossvein in cell  $R_3$  lying more basad, about its own length before the one in cell  $R_3$ .

Male hypopygium (Plate 4, fig. 40) with the tergite, *9t*, large, narrowed posteriorly, the border conspicuously biemarginate, there being a narrow median notch at the base of the broad outer one; lobes narrow, the tips obtusely rounded, without major setæ. Basistyle, *b*, elongate, dilated on mesal face of basal half; a small apical tubercle on mesal face. Dististyle, *d*, flattened, terminating in a short curved point; inner or mesal half of style with unusually long pale setæ. Gonapophysis, *g*, appearing as a flattened blackened plate, its apex farther produced into a slender outer rod, the margin of the expanded blade conspicuously serrate. *Ædeagus, a*, relatively long, slender, exceeding the apophyses in length, bent back upon itself near origin and curved at nearly a right angle on outer fourth.

Allotype, male, Omogo Valley, Iyo, November 12, 1953 (*Mohri*).

As was indicated earlier, it is possible that the number and arrangement of the crossveins of the wing may prove to be variable. This has been found to be the case in the genotype, *Cladura (Cladura) flavoferruginea* Osten Sacken, of the eastern Nearctic Region.<sup>3</sup>

256. **CLAUDURA (CLAUDURA) MICROPHALLUS** sp. nov. Plate 4, figs. 34, 41.

Size large (wing, male, 9 millimeters or more); mesonotum buffy brown, the præscutum with a more blackened central stripe; pleura buffy yellow; femora yellow, the tips narrowly blackened, the amount subequal on all legs; wings weakly tinged with yellow, restrictedly patterned with brown; a supernumerary crossvein in cell  $R_3$  and usually one in cell  $R_5$ ; male hypopygium with the tergal lobes broad; basistyle unusually long and slender; gonapophysis blackened more or less bilobed, the margin crenulate; ædeagus unusually small, shorter than the apophyses.

*Male*.—Length, about 7 to 8 millimeters; wing, 9 to 9.5.

Rostrum and palpi dark brown. Antennæ brownish yellow, the bases of the flagellar segments a trifle more darkened; outer segments more uniformly darkened, flagellar segments broadest near base, narrowed outwardly, with long verticils. Head gray.

Pronotum buffy brown. Mesonotum chiefly buffy brown, the præscutum with three darker stripes, the median one darkest, especially on the cephalic part which is brownish black. Pleura buffy yellow. Halteres with stem whitened, knob weakly infuscated. Legs with coxæ and trochanters yellow; femora and tibiæ yellow, the tips narrowly blackened, the amount subequal on all legs; tarsi passing into black. Wings (Plate 4, fig. 34) weakly tinged with yellow, clearer yellow at base; a restricted but conspicuous brown pattern, including the cord, outer end of cell 1st  $M_2$ , origin of  $R_s$ ,  $Sc_2$ ,  $R_2$ , the supernumeraries, and as more or less distinct seams on veins Cu and 2nd A; veins brown, darker in the clouded areas, more yellowed at wing base. Venation: A supernumerary crossvein in cell  $R_3$  and usually with one in cell  $C_5$ ;  $Sc_2$  beyond fork of  $R_{2+3+4}$ ; petiole of cell  $M_1$  short, at most twice m; m-cu beyond fork of M, in cases to fully its own length.

Abdominal tergites dark brown, the sternites more yellowish brown, with narrow brown posterior borders; hypopygium

<sup>3</sup> Alexander, Charles P., and M. D. Leonard. Venational variation in *Cladura* (Tipulidæ, Diptera). N.Y. Ent. Soc. Jour. 20 (1912) 35-39, pl 4.

chestnut brown. Male hypopygium (Plate 4, fig. 41) with the tergite, *9t*, large, narrowed outwardly, the posterior border biemarginate, the smaller median notch provided with thickened folds, the larger outer emargination relatively narrow, the lobes correspondingly broad. Basistyle, *b*, unusually long and slender, the mesal face more expanded on less than the basal half; outer tubercle undeveloped. Dististyle, *d*, small, only about one-third as long as the basistyle, narrowed outwardly, the upper surface with a blackened line (this perhaps an artifact caused by compression in the slide mount); surface with dense setulæ, the lower half with very long scattered setæ. Gonapophysis, *g*, blackened, more or less bilobed, the lower lobe roughened or crenulate but scarcely toothed. *Æ*deagus, *a*, unusually small, stout at base, shorter than the apophyses.

*Habitat*.—Japan (Shikoku).

Holotype, male, Omogo Valley, Iyo, November 12, 1953 (*Mohri*). Paratopotype, 1 male, November 12, 1953 (*Miyatake*). Paratypes, 1 male, Mominoki, Mount Saragamine, altitude 700 to 800 meters, November 15, 1953 (*Yano*); 1 male, Mount Takanawa, altitude 950 meters, October 24, 1953 (*Kusunoki*).

The present fly is most nearly related to *Cladura* (*Cladura*) *machidella* Alexander, agreeing chiefly in the patterned wings with supernumerary crossveins in certain of the outer radial cells, differing conspicuously in the coloration of the body and legs and in the structure of the male hypopygium, especially the styli, gonapophyses and unusually small *æ*deagus. *C.* (*C.*) *fuscivena* Alexander, of Honshu, of which the male sex is still unknown, is smaller, with the coloration of the body and wings slightly different.

(51). CLADURA (CLADURA) SERRIMARGO Alexander.

Additional records—IYO: Omogo Valley, November 9, 1953 (*Kusunoki*), November 12, 1953 (*Mohri*); Mount Saragamine, altitude 800 to 900 meters, November 15, 1953 (*Yano*); Mount Takanawa, altitude 800 meters, October 23 to 25, 1953 (*Kusunoki*).

257. CLADURA (CLADURA) SHOMIO sp. nov.

Plate 4, figs. 35, 42.

General coloration of thorax dark plumbeous gray; antennæ brownish black; femora obscure yellow, the tips darkened, more narrowly and abruptly so on the posterior pair; wings weakly infuscated, vaguely patterned with darker; Sc relatively

short,  $Sc_1$  ending opposite  $R_2$ ; cell 1st  $M_2$ ; very small, only about one-half the petiole of cell  $M_1$ ; male hypopygium with the tergite membranous at apex; basistyle long and slender, without mesal lobes; gonapophysis appearing as a curved hook, with a small lateral spine on basal half; aedeagus short and stout, subequal in length to the apophyses.

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

Rostrum and palpi brownish black. Antennæ brownish black throughout; flagellar segments passing into subcylindrical, with conspicuous verticils and a shorter white pubescence. Head dark gray; anterior vertex broad.

Thorax almost uniformly dark plumbeous gray; pronotal scutellum obscure brownish yellow; præscutum with a broad still darker central stripe, the lateral pair narrow and inconspicuous. Halteres with stem white, knob weakly infuscated. Legs with the coxæ and trochanters testaceous yellow, the fore coxæ narrowly more darkened basally; femora obscure yellow, the tips darker, more abrupt but very narrowly so on the posterior legs; tibiæ brownish yellow, the tarsi passing into brownish black. Wings (Plate 4, fig. 35) weakly infuscated, the prearcular field yellowed; a vague to scarcely indicated darker clouding, best-indicated over the cord and outer end of cell 1st  $M_2$ ; veins brown, conspicuous, including  $R_2$ , those at wing base yellow. Venation:  $Sc$  relatively short,  $Sc_1$  ending opposite  $R_2$ ,  $Sc_2$  nearly opposite fork of  $R_{2+3+4}$ ;  $Rs$  subangulate at origin, its basal part long so cell  $R_1$  is unusually wide; cell 1st  $M_2$  very small, only about one-half the petiole of cell  $M_1$ ; m-cu just beyond the fork of  $M$ ; vein 2nd  $A$  short and nearly straight.

Abdomen dark brown, including the hypopygium, the ninth segment more blackened to produce a narrow subterminal ring. Male hypopygium (Plate 4, fig. 42) with the tergite,  $9t$ , broad, its posterior portion produced shortly into small lateral points, the median area membranous and its limits difficult to determine. Basistyle,  $b$ , long and slender, without lobes on mesal face. Dististyle,  $d$ , small, slender, narrowed to the short curved point, the length less than half that of the basistyle; a slightly indicated outer glabrous flange or narrowing. Gonapophysis,  $g$ , appearing as a curved spine, with a small appressed lateral spine on outer margin of basal half. Aedeagus about as long as the apophyses, stout at base.

*Habitat*.—Japan (Shikoku).

Holotype, male, Mount Saragamine, Iyo, altitude 800 to 900 meters, November 15, 1953 (Yano).

In its dark coloration and virtually unpatterned wings, this fly is most like *Cladura* (*Cladura*) *hakonensis* Alexander, differing in the venation and in the details of structure of the male hypopygium.

258. **CLADURA (CLADURA) TETRASPILA** Alexander. Plate 4, fig. 43.  
*Cladura tetraspila* ALEXANDER, Ent. Soc. America Ann. 40 (1947)  
 361-362.

The types were from Gora, Hakone District, Honshu, taken in November, 1931 by Sawada.

YO: Mount Ishizuchi, altitude 1,600 to 1,800 meters October 18, 1952 (*Mohri*); Omogo Valley, altitude 800 meters, November 9, 1953 (*Kusunoki*), November 13 and 14, 1953 (*Mohri*); Mominoki, altitude 700 to 800 meters, November 15, 1953 (*Yano*); Mount Saragamine, altitude 800 to 900 meters, November 15, 1953 (*Yano*); Mount Takanawa, altitude 950 meters, October 23, 1953 (*Kusunoki*).

Male hypopygium (Plate 4, fig. 43) with the posterior border of tergite, 9t, produced into a subquadrate plate, its margin irregularly emarginate, the central part darkened, its margin appearing erose, the lateral angles obtuse and paler. Basistyle, b, long and slender, without lobes or other armature. Dististyle, d, single, terminal in position, profoundly bifid into two subequal arms, the outer one more nearly glabrous, especially on its basal part; inner arm subacute at tip, the surface with abundant setæ, those of the outer third smaller. Phallosome, p, small and simple, including the short slender ædeagus and broadly flattened gonapophyses that form a partial collar around the base, the apex microscopically spinulose.

259. **GONOMYIA (GONOMYIA) OMOGOENSIS** sp. nov. Plate 4, figs. 36, 44.

Mesonotal præscutum and scutal lobes extensively grayish brown, the posterior sclerites of notum and the pleura yellow; rostrum light yellow; knob of halteres yellowed; legs dark brown, the femoral bases restrictedly obscure yellow; wings brownish gray; Sc relatively long, Sc<sub>1</sub> ending beyond one-third the length of Rs; R<sub>2+3+4</sub>; a little longer than R<sub>3</sub>, cell R<sub>3</sub> large; male hypopygium with the inner dististyle complex, including a flattened dark-colored blade that terminates in a slender apical spine, with two further marginal spines nearer base; phallosome long and slender, pale, bearing laterally a single blackened spine.

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

*Female*.—Length, about 5.2 millimeters; wing, 5.5.

Rostrum light yellow; palpi black. Antennæ black, the proximal half of scape yellowed; flagellar segments long-oval, becoming linear outwardly, with conspicuous verticils. Head gray.

Pronotum yellow. Mesonotal præscutum chiefly grayish brown, the color produced by three virtually confluent stripes, the humeral and lateral parts obscure yellow; pseudosutural foveæ reddened; scutum yellow medially, the lobes grayish brown; scutellum and postnotum yellow. Pleura and pleurotergite reddish yellow, with a broad paler yellow longitudinal stripe between; dorsopleural membrane brighter yellow. Halteres with stem pale, knob yellowed. Legs with the coxæ and trochanters pale yellow; remainder of legs dark brown, the femoral bases restrictedly obscure yellow. Wings (Plate 4, fig. 36) brownish gray, the prearcular and costal fields more yellowed; stigma not or scarcely differentiated; veins brown, paler in the flavous portions. Venation: Sc relatively long, Sc<sub>1</sub> ending beyond one-third the length of Rs; cell R<sub>3</sub> large, vein R<sub>3</sub> only a little shorter than the gently arcuated R<sub>2+3+4</sub>; basal section of R<sub>5</sub> short, r-m correspondingly long, transverse; cell 1st M<sub>2</sub> closed, gently widened outwardly, shorter than vein M<sub>4</sub>; m-cu beyond fork of M, in cases up to about one-third its length.

Abdominal tergites brown, yellowed laterally, sternites clearer yellow. Ovipositor with the valves elongate, the cerci very slender, only gently upcurved. Male hypopygium (Plate 4, fig. 44) with the apical lobe of basistyle, *b*, a little more than one-half as long as the more slender outer dististyle, the latter narrowed to the apex. Inner dististyle, *d*, complex, consisting of a flattened dark-colored blade that is extended into a slender apical spine, with two further marginal spines near base, the outer one longer and more slender; on face of blade with the usual strong rostral portion, narrowed outwardly and terminating in two unequal powerful bristles, the lower one stouter. Phallosome, *p*, a long slender pale structure that juts beyond the level of the dististyles, on its lateral portion near base bearing a single blackened rod or spine, this gently curved, narrowed to the acute tip.

*Habitat*.—Japan (Shikoku).

Holotype, male, Omogo Valley, Iyo, altitude 800 meters, June 6, 1952 (*Yano*.) Allotopotype, female, pinned with type.

Readily distinguished from all regional species, as *Gonomyia* (*Gonomyia*) *gilvipennis* Alexander, by the structure of the male hypopygium, particularly the diagnostic inner dististyle.

## 260. ERIOPTERA (EMPEDA) JAPONICA Alexander.

Plate 4, fig. 37.

*Erioptera (Empeda) japonica* ALEXANDER, Insec. Inscit. Menst. 8  
(1920) 134-135. 3

The type was from near Tokyo, taken December 3, 1919, by Takahashi.

IYO: Mominoki, Mount Saragamine, altitude 700 to 800 meters, November 15, 1953 (*Yano*).

The wing is shown (Plate 4, fig. 37). Attention is called to the unusually long Sc. long Sc<sub>1</sub>, oblique R<sub>2</sub>, deep cell R<sub>3</sub>, narrowing of cell R<sub>5</sub> at wing tip, and the sinuous to slightly upcurved vein M<sub>4</sub>. The very long macrotrichia of the veins are noteworthy.

Like *Erioptera (Empeda) brumalis* Alexander, the present fly appears to be a late autumn or early winter species.

## 261. MOLOPHILUS (MOLOPHILUS) APICIDENTATUS sp. nov.

Plate 4, fig. 45.

Belongs to the *gracilis* group and subgroup; size very small (wing under 3.5 millimeters); general coloration brownish black; antennæ short; knobs of halteres slightly infuscated; male hypopygium with the mesal lobe of basistyle profoundly divided into two long acute spines; outer dististyle a blackened rod that forks near apex into two short spines; inner dististyle a long sinuous rod that narrows gradually to the acute tip, the outer third with small but conspicuous denticles.

*Male*.—Length, about 2.5 to 2.6 millimeters; wing, 3.2 to 3.3; antenna, about 0.7 to 0.75.

*Female*.—Length, about 3 millimeters; wing, 3.4.

Rostrum and palpi brownish black. Antennæ black throughout, relatively short; verticils long. Head brownish black.

Mesonotal præscutum and scutum brownish black, very sparsely pruinose to appear a dark plumbeous; scutellum in cases paling to obscure brownish yellow, in the type concolorous with the remainder of notum. Pleura brownish black. Halteres pale basally, the long knobs more infuscated. Legs with the coxæ and trochanters testaceous yellow; remainder of legs brownish yellow, the color appearing darker because of the vestiture; outer tarsal segments darkened. Wings grayish, the base more yellowed; veins and macrotrichia darker. Venation: R<sub>2</sub> lying just basal of the level of r-m; petiole of cell M<sub>3</sub> about three times m-cu; vein 2nd A sinuous, elongate, ending nearly opposite fork of M<sub>3+4</sub>.

Abdomen, including hypopygium, dark brown. Male hypopygium (Plate 4, fig. 45) with the mesal lobe of basistyle, *mb*,



profoundly divided into two long acute spines; ventral lobe shorter and stouter, fleshy, setiferous. Two dististyles, *d*, the outer a blackened rod that forks near apex into two short spines; inner style long and sinuous, narrowed to the acute tip, its outer third with small but conspicuous denticles. Phallosomic plate broadest at near midlength, the apex obtuse, surface with microscopic setulæ. *Ædeagus* long and slender.

*Habitat*.—Japan (Shikoku).

Holotype, male, Omogo Valley, Iyo, altitude 800 meters, June 5, 1952 (*Yano*). Allotopotype, female, pinned with type. Paratopotypes, 2 males.

In the strongly spined apical lobes of the basistyle of the male hypopygium, the present fly suggests species such as *Molophilus* (*Molophilus*) *ferox* Alexander, *M. (M.) polycanthus* Alexander, and various others, differing from all in the very small size and, especially, in the details of structure of the male hypopygium.

262. **MOLOPHILUS (MOLOPHILUS) FEROX** Alexander.

*Molophilus ferox* ALEXANDER, Philip. Jour. Sci. 44 (1931) 365, pl. 2, fig. 45 (♂ hypopygium).

The type was from the Japanese Alps, taken at Norikuradake, Shinano, July 26, 1929, by Machida.

IYO: Omogo Valley, altitude 800 meters, August 21, 1953 (*Miyatake*).

The type is much paler than the present fly and except for the very similar male hypopygia the two specimens might be held to be distinct. However, there seems to be no necessity of proposing a further name for the present fly but the colorational differences should be noted. General coloration of entire thorax dull black. Halteres with base of stem yellow, the outer half or more infuscated, knob obscure brownish yellow. Legs with the coxæ and trochanters yellow, the remainder brownish black.

In the original description it was stated that what is now considered to represent a dorsal lobe of the basistyle of the male hypopygium was a third dististyle. There are now known several species of the genus in eastern Asia having this dorsal lobe duplicated or complicated in form and it is evident that there are actually only two dististyles, as common in the genus.

263. **MOLOPHILUS (MOLOPHILUS) TRIACANTHUS** Alexander.

*Molophilus triacanthus* ALEXANDER, Philip. Jour. Sci. 53 (1934)  
294-295, pl. 1, fig. 21 (venation), pl. 3, fig. 41 (♂ hypopygium);

The types were from Yumoto, Shimotsuke, Honshu, altitude 4,850 feet, taken June 20, 1932, by Issiki. Now known from various stations in Honshu and also from northern Korea.

IYO: Naose, near Kuma, altitude 600 meters, May 16, 1953  
(*Mohri*).

## ILLUSTRATIONS

[Legend: a, aedeagus; b, basistyle; d, dististyle; g, gonapophysis; i, interbase; mb, mesal lobe of basistyle; p, phallosome; s, sternite; t, tergite; vb, ventral lobe of basistyle.]

### PLATE 1

- FIG. 1. *Ctenophora* (*Ctenophora*) *ishiharai* Alexander; venation.  
2. *Ctenophora* (*Ctenophora*) *ishiharai* Alexander; antenna, female.  
3. *Ctenophora* (*Tanyptera*) *flavoposticata* Alexander; venation.  
4. *Ctenophora* (*Tanyptera*) *flavoposticata* Alexander; male hypopygium, dististyles.  
5. *Tipula* (*Bellaridina*) *ampliata* Alexander; male hypopygium, details.  
6. *Tipula* (*Schummelia*) *acifera* Alexander; venation.  
7. *Tipula* (*Schummelia*) *acifera* Alexander; male hypopygium, details.  
8. *Tipula* (*Schummelia*) *acirostris* Alexander, venation.  
9. *Tipula* (*Schummelia*) *acirostris* Alexander; male hypopygium.  
10. *Tipula* (*Schummelia*) *omogicola* Alexander; venation.  
11. *Tipula* (*Schummelia*) *esakiana* Alexander; venation.

### PLATE 2

- FIG. 12. *Tipula* (*Oreomyza*) *kusunokiana* sp. nov.; venation.  
13. *Tipula* (*Oreomyza*) *mohriana* Alexander; venation.  
14. *Tipula* (*Oreomyza*) *nigrocostata* Alexander; venation.  
15. *Tipula* (*Schummelia*) *omogicola* Alexander; male hypopygium.  
16. *Tipula* (*Schummelia*) *esakiana* Alexander; male hypopygium.  
17. *Tipula* (*Oreomyza*) *otiosa* Alexander; male hypopygium.  
18. *Tipula* (*Oreomyza*) *otiosa* Alexander; ovipositor, lateral.  
19. *Tipula* (*Oreomyza*) *mohriana* Alexander; male hypopygium.  
20. *Tipula* (*Oreomyza*) *nigrocostata* Alexander; male hypopygium.

### PLATE 3

- FIG. 21. *Nephrotoma repanda* (Alexander); venation.  
22. *Nephrotoma repanda* (Alexander); male hypopygium.  
23. *Limonia* (*Limonia*) *ochripes* sp. nov.; venation.  
24. *Limonia* (*Limonia*) *ochripes* sp. nov.; male hypopygium.  
25. *Dicranoptycha edashigeana* sp. nov.; venation.  
26. *Dicranoptycha edashigeana* sp. nov.; male hypopygium.  
27. *Epiphragma* (*Epiphragma*) *trichomera* sp. nov.; venation.  
28. *Epiphragma* (*Epiphragma*) *trichomera* sp. nov.; male hypopygium.  
29. *Limnophila* (*Prionolabis*) *iyogensis* sp. nov.; venation.  
30. *Limnophila* (*Prionolabis*) *iyogensis* sp. nov.; male hypopygium.  
31. *Nippolimnophila omogiana* sp. nov.; venation.  
32. *Limnophila* (*Dicranophragma*) *peralta* sp. nov.; venation.  
33. *Atarba* (*Atarbodes*) *minuticornis* Alexander; venation.

## PLATE 4

- FIG. 34. *Cladura* (*Cladura*) *microphallus* sp. nov.; venation.  
35. *Cladura* (*Cladura*) *shomio* sp. nov.; venation.  
36. *Gonomyia* (*Gonomyia*) *omogoensis* sp. nov.; venation.  
37. *Erioptera* (*Empeda*) *japonica* Alexander; venation.  
38. *Nippolimnophila omogiana* sp. nov.; male hypopygium.  
39. *Cladura* (*Cladura*) *hakonensis porrecta* subsp. nov.; male hypopygium.  
40. *Cladura* (*Cladura*) *machidella* Alexander; male hypopygium.  
41. *Cladura* (*Cladura*) *microphallus* sp. nov.; male hypopygium.  
42. *Cladura* (*Cladura*) *shomio* sp. nov.; male hypopygium.  
43. *Cladura* (*Cladura*) *tetraspila* Alexander; male hypopygium.  
44. *Gonomyia* (*Gonomyia*) *omogoensis* sp. nov.; male hypopygium.  
45. *Molophilus* (*Molophilus*) *apicidentatus* sp. nov.; male hypopygium.

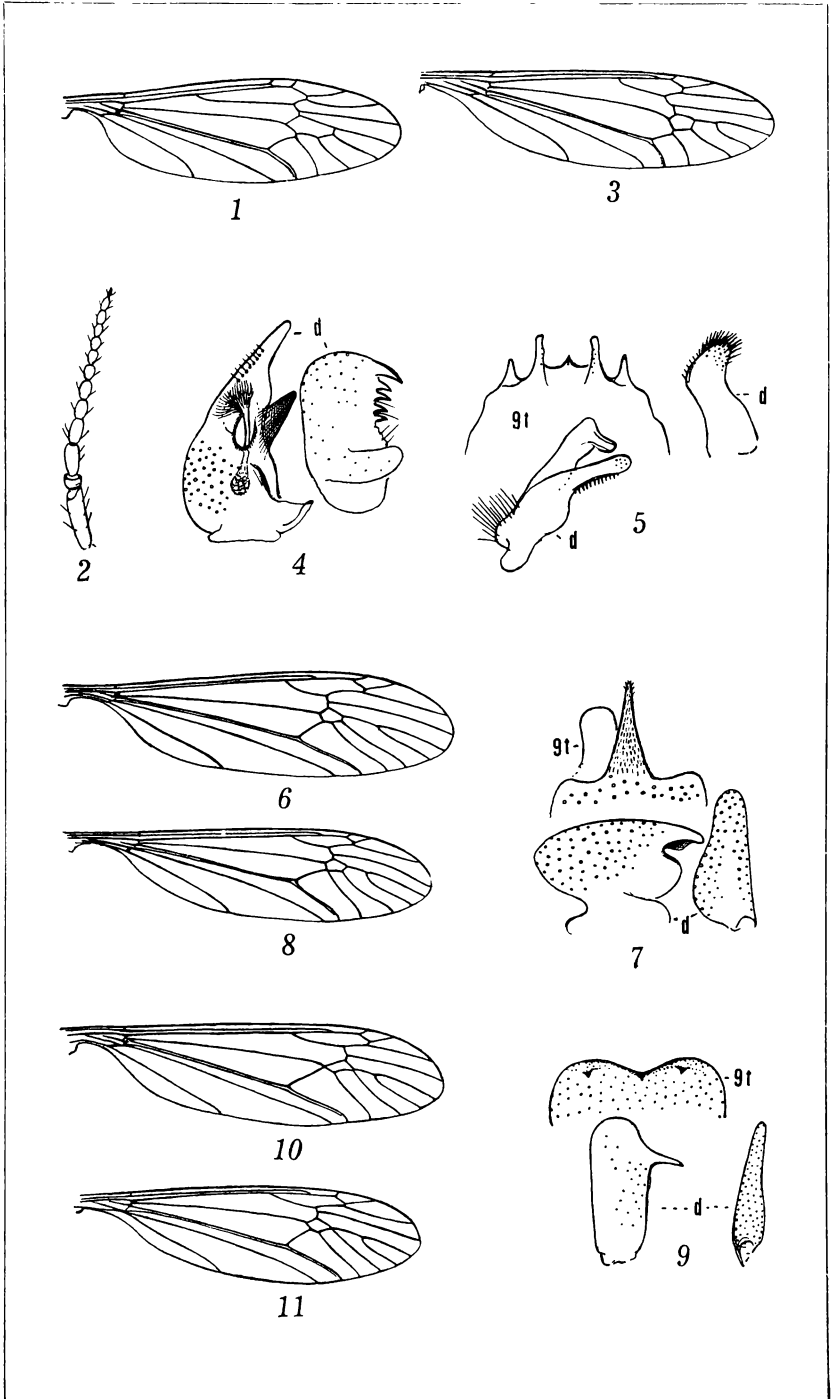


PLATE 1.



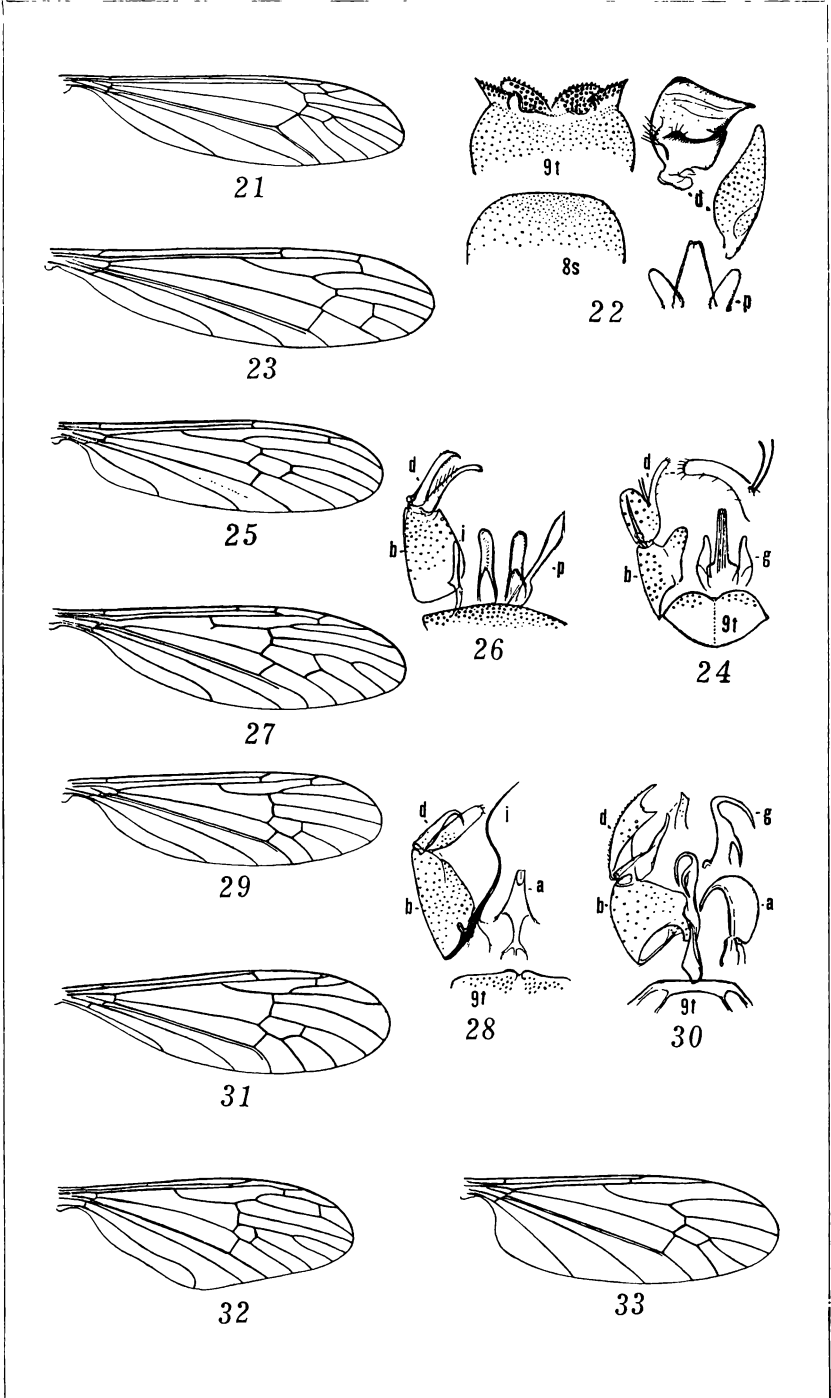
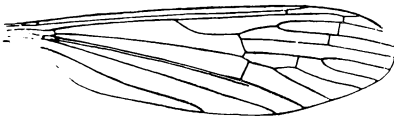
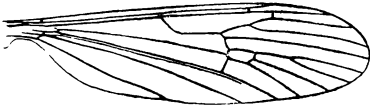


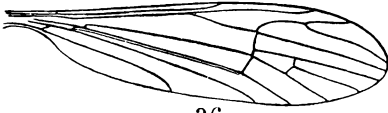
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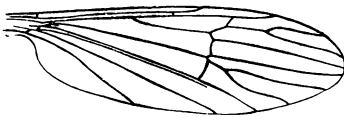
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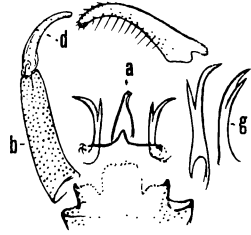
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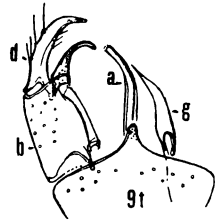
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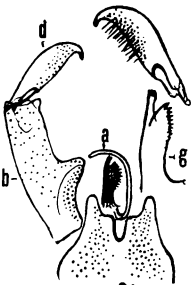
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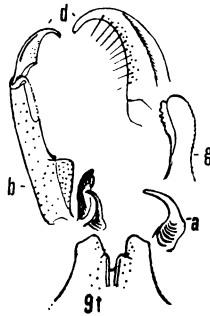
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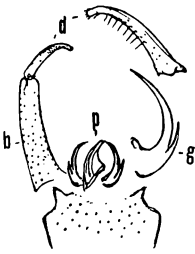
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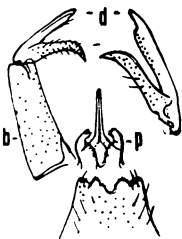
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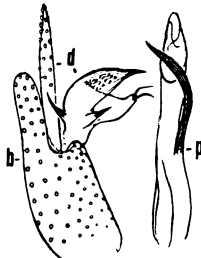
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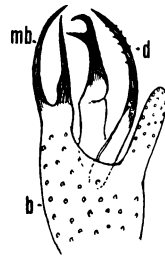
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