

**UNDESCRIBED SPECIES OF JAPANESE  
CRANE-FLIES**

**(Diptera Tipulidae)**

**BY**

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# UNDESCRIBED SPECIES OF JAPANESE CRANE-FLIES

(Diptera: Tipulidae)

## PART VI

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The preceding part under this title was published in the *Annals of the Entomological Society of America*, 17:431-448; 1924. The majority of the new species herein considered were included in large collections sent to me several years ago by my friend, Professor S. Kariya, to whom I express my thanks for the privilege of retaining the types. Other sources of materials are mentioned under the individual species.

Genus *Limonia* Meigen

### *Limonia* (*Discobola*) *parvispinula* n.sp.

General coloration of mesonotum obscure yellow, the praescutum with a single median brown stripe, the posterior sclerites of the notum chiefly infuscated; pleural dark stripe only vaguely indicated; halteres with the knobs uniformly darkened; blackened rings on femora broad; wings with the usual ocelliform pattern and with additional dots and spots in the cells, chiefly in *M* and *Cu*<sub>1</sub> but also in other cells; male hypopygium with the rostral spines very small and peglike, the margin of the dististyle basad of these strongly corrugated.

*Male*.—Length, about 7.5 mm.; wing, 7.8 mm.

Rostrum and palpi black. Antennae with scape black; pedicel obscure yellowish brown; flagellum black, the incisures pale, including the glabrous apices and the narrower bases of the segments; two outermost segments subequal. Head dark gray, variegated with darker.

Pronotum obscure yellow, slightly darker on sides. Mesonotal praescutum obscure yellow with a single median brown stripe; posterior sclerites of notum brown, the dorsal portion of suture between mediotergite and pleurotergite paler. Pleura obscure yellow, with very vague indications of a longitudinal pale brown stripe from behind the fore coxae across the dorsal pleurites. Halteres with stem yellow, knob infuscated throughout. Legs with coxae and trochanters yellow, fore coxae a trifle more infuscated; femora yellow, each with a broad black subterminal ring, subequal on all legs and exceeding twice the yellow apex; tibiae and tarsi yellow, the outer tarsal segments infuscated. Wings yellow, with a conspicuous much broken brown pattern, including the usual ocellate markings, with additional abundant brown spots and dots along posterior border of cell *R*, over all of cell *M*, about seven darker spots in an evenly spaced series in cell *Cu*<sub>1</sub>, and less evident scattered dots in most cells beyond the cord; veins obscure yellow, brown in the patterned fields. Venation: *Sc*<sub>1</sub> ending opposite fork of *Rs*, *Sc*<sub>2</sub> a short distance from its tip; *Rs* angulated and weakly spurred at origin;

cell 1st  $M_2$  elongate, exceeding vein  $M_{1+2}$  beyond it;  $m-cu$  at or shortly beyond the fork of  $M$ ; cell 2nd  $A$  narrower than in *moiwana*, the supernumerary crossvein in cell 1st  $A$  subequal to the distal section of vein 2nd  $A$ .

Abdominal tergites pale brown, with long erect pale setae; sternites clearer yellow; hypopygium brownish yellow. Male hypopygium with the tergite transverse, the caudal margin with a broad and shallow notch, the lateral lobes relatively small and obtuse, provided with elongate setae. Basistyle with the ventromesal lobe very broad-based, tapering to the obtuse tip. Dorsal dististyle angularly bent beyond midlength. Ventral dististyle small, its area subequal to that of the ventromesal lobe of the basistyle; rostral portion conspicuous, unusually sclerotized, narrowed to the subacute tip; rostral spines at base of prolongation, very small and peglike; basad of these spines, the outer margin of style strongly roughened or corrugated. Gonapophysis with mesal-apical lobe long and straight.

*Habitat:* Japan (Honshiu). *Holotype*, ♂, Kamikochi, Shinano, altitude 5,000 ft., August 18-21, 1934 (Kariya).

In an early letter from my friend Mr. E. Suenson, a brief account of Kamikochi is given. "The valley between the mountains lies at 5,000 ft., in places marshy, with a growth of *Alnus*, *Salix* and similar water-loving forms. Elsewhere the soil is dryer and on the mountain slopes grow fine forests of big trees, including large birches, a variety of deciduous trees and conifers, including some fine larch trees."

The present fly is most similar to *Limonia (Discobola) moiwana* (Alexander) of northern Japan, but differs in many details of coloration of the body and wings. In *moiwana*, the supplementary brown pattern is restricted to cell  $M$  and the areas in cell  $Cu_1$  are more extensive and only four in number. The male sex of *moiwana* is still unknown to me.

#### ***Limonia (Libnotes) kariyana* n. sp.**

Allied to *regalis*; general coloration of head and thorax brownish gray; antennae black; legs black, only the femoral bases yellow; wings pale yellow, heavily patterned with brown; supernumerary crossveins in cells  $R_3$  and  $R_5$ ; free tip of vein  $Sc_2$  lying more than its own length beyond the level of  $R_2$ ; veins  $R_3$  and  $R_{4+5}$  on their outer portions deflected strongly caudad, ending at or beyond the obtuse wing tip.

*Male*.—Length about 15 mm.; wing, 25 mm.

Rostrum and palpi black. Antennae black throughout; flagellar segments oval, the short verticils at near midlength of the segments, from evident elevated areas; terminal segment elongate, its distal half suddenly narrowed. Head dark brownish gray; anterior vertex reduced to a narrow line, approximately one-fourth as wide as the diameter of scape.

Pronotum dark brownish gray, the extreme posterior portions and the adjoining part of praescutum obscure yellow. Mesonotum dark brownish gray, the praescutum with three confluent darker brown stripes that chiefly cover the disk; a darker area near side of praescutum behind the pseudosutural foveae; posterior sclerites of notum brownish black, sparsely pruinose. Pleura brownish black, sparsely pruinose, the pleurotergite and posterior anepisternum a trifle paler. Halteres with

stem and apex of knob obscure yellow, the base of the latter weakly darkened. Legs with fore coxae and trochanters abruptly yellow, remaining coxae brownish black, sparsely pruinose, trochanters obscure yellow; remainder of legs black, the femoral bases restrictedly obscure yellow, including about the proximal fourth; claws with a major tooth at near midlength and a series of about six smaller denticles on proximal half; vestiture of femora short and spiniform. Wings with the ground color pale yellow, the prearcular, costal and stigmal fields clear butter-yellow; a conspicuous brown pattern, appearing as seams to the veins and crossveins, most evident along the cord, outer end of cell *1st M*<sub>2</sub> and over the supernumeraries, reaching the costal border at the free tip of *Sc*<sub>2</sub>; a broad seam along vein *Cu*; less evident darkenings on parts of outer radial and medial veins; wing tip and all of posterior border of wing narrowly seamed with brown; veins *R* and *1st A* unpatterned, vein *2nd A* again seamed with brown; spots at fork of *Sc*, *R*<sub>2</sub> and free tip of *Sc*<sub>2</sub> darker brown; veins brownish yellow, darker in the patterned areas, somewhat paler in the three more infuscated spots. Costal setae short and spiniform; wing tip (male) obtuse. Venation: *Sc* long, *Sc*<sub>1</sub> ending nearly opposite the first section of *R*<sub>2+3</sub>, *Sc*<sub>2</sub> at its extreme tip; free tip of *Sc*<sub>2</sub> lying more than its own length beyond *R*<sub>2</sub>, bent at about a right angle into costa; supernumerary crossveins in cells *R*<sub>3</sub> and *R*<sub>5</sub>, the latter slightly more proximad, the whole series of crossveins and deflections forming a secondary cord at near three-fourths the wing length; both veins *R*<sub>3</sub> and *R*<sub>4+5</sub> bent very strongly caudad on their outer portions, both terminating at or beyond the wing tip; *m-cu* about its own length beyond the fork of *M*; vein *2nd A* elongate, gently sinuous beyond the basal arcuation.

Basal abdominal tergites brown, vaguely patterned with yellow; basal sternites clear yellow, the sides conspicuously dark brown; fifth to eighth segments more uniformly blackened to form a broad subterminal ring; hypopygium abruptly yellow.

*Habitat*: Japan (Honshiu). *Holotype*, ♂, Ontake, Hida, southern Alps, altitude 5,850 ft., July 6-10, 1934 (H. Ise); through Kariya.

I take pleasure in naming this species for Professor S. Kariya. This striking and beautiful fly needs comparison only with *Limonia (Libnotes) regalis* (Edwards), of Formosa. It is well distinguished by the coloration, including the almost uniformly darkened head and thorax and the blackened legs. This species and the next are almost the largest known members of the great genus *Limonia* Meigen.

#### ***Limonia (Libnotes) ingentissima* n. sp.**

Size very large (wing, male, 25 mm.); head and thorax almost uniformly plumbeous gray, the praescutum with three brown stripes, the central one broad; halteres elongate, stem yellow, knob dark brown; legs yellow, the tips of the femora broadly and abruptly blackened; wings obtuse at tip, yellow, restrictedly patterned with brown, the areas restricted to the veins; free tip of *Sc*<sub>2</sub> about its own length before vein *R*<sub>2</sub>; cell *1st M*<sub>2</sub> widened outwardly, *m* angularly bent at near midlength, longer than the basal section of *M*<sub>3</sub>; vein *2nd A* relatively long, gently sinuous beyond the arcuated base; abdominal tergites and sternites yellow, trivittate with brown, segments six to eight brownish black; hypopygium yellow.

*Male*.—Length about 17 mm.; wing, 25 mm.

Rostrum and palpi black. Antennae with scape and pedicel light brown, the former sparsely pruinose above; flagellum brown; basal flagellar segments short-oval, constricted at the incisures, the outer segments more elongate; terminal segment long, pointed on distal half; longest verticils subequal in length to the segments, unilaterally distributed. Head gray, more yellow pollinose on the anterior vertex, the latter very narrow, elevated into a ridge between the eyes, continued caudad onto the posterior vertex and becoming bifid behind (this condition possibly due to drying).

Pronotum brownish gray. Mesonotal praescutum light gray, with three relatively indistinct brown stripes, the median one broad, constricted at near midlength, behind more expanded and weakly split by a ground line; lateral stripes less distinct; posterior sclerites of notum more plumbeous gray, the postnotum clear gray pruinose. Pleura plumbeous gray; dorsopleural membrane yellow. Halteres elongated, stem pale yellow, knob dark brown. Legs with all coxae and trochanters light yellow; femora yellow, the tips broadly and abruptly black, subequal on all legs and occupying about the outer eighth of the segment; tibiae yellow, the tips more narrowly infuscated, somewhat more conspicuous on the fore legs; tarsi yellow, the outer segments infuscated; vestiture of femora short and spinous; claws with a conspicuous tooth at near midlength and with about five smaller denticles on basal half. Wings yellow, the prearcular and costal fields deeper yellow; a brown pattern that is restricted to the vicinity of the veins, including seams at origin of *Rs*, over the cord and outer end of cell *1st M*<sub>2</sub>; free tip of *Sc*<sub>2</sub> and *R*<sub>2</sub>; along vein *Cu* in cell *M*, becoming more extensive on the distal section; outer third of vein *2nd A* and the axillary border; veins light brown, those near base and in the brightened fields clear yellow, in the infuscated areas becoming dark brown. Wing tip very obtuse; costal vestiture short and dense. Venation: *Sc*<sub>1</sub> ending about opposite one-third the length of cell *1st M*<sub>2</sub>, *Sc*<sub>2</sub> a short distance from its tip; free tip of *Sc*<sub>2</sub> about its own length before vein *R*<sub>2</sub>, the latter perpendicular but curving into *R*; both veins *R*<sub>3</sub> and *R*<sub>4+5</sub> bent very strongly caudad at outer ends, terminating at or beyond the wing tip; cell *1st M*<sub>2</sub> widened outwardly, *m* angularly bent at near midlength, longer than the basal section of *M*<sub>3</sub>; *m-cu* oblique, about its own length beyond the fork of *M*; vein *2nd A* relatively long, gently sinuous beyond the arcuated base.

Abdomen with basal segment dark brown, sparsely pruinose; succeeding tergites yellow, with three more or less distinct brown stripes, on the outer segments the median one becoming very delicate and restricted to the proximal half of the segment; basal sternites more obscure yellow, similarly trivittate with brown; segments six to eight, inclusive, uniformly brownish black to form a conspicuous ring; hypopygium yellow.

*Habitat*: Japan (Honshiu). *Holotype*, ♂, Kamikochi, Shinano, altitude 5,000 ft., September 8, 1935 (E. Suenson).

This large and striking fly is most similar to the smaller *Limonia* (*Libnotes*) *nohirai* (Alexander), differing not only in the size and coloration of the body but in the obtuse wing tip and in all details of venation. *L. (L.) regina* (Alexander) is more distantly related.

Genus *Dicranota* Zetterstedt*Dicranota (Dicranota) sicaria* n. sp.

Size relatively large (wing, male, 7 mm. or more); antennae short; general coloration of entire body gray, the praescutum with four dark brown stripes; wings with a weak brownish tinge, stigma conspicuous, darker brown; male hypopygium with the tergite scarcely produced medially, the lateral arms pale, expanded at tips; interbase a strong lobe, obliquely truncated at apex and further produced into a strong spine; dististyle small, broadly flattened.

*Male*.—Length, about 6.5–7 mm.; wing, 7–8 mm.; antenna, about 0.8–0.9 mm.

Rostrum gray; palpi black. Antennae short, 12-segmented; basal flagellar segment oval, the succeeding ones passing into short-oval, the outermost again more elongate; verticils relatively short. Head dark brown, broadly gray in front and on the broad orbits.

Pronotum gray, weakly more darkened on central portion. Mesonotum gray, the praescutum with four conspicuous dark brown stripes, the intermediate pair separated only by an obscure brownish gray capillary vitta; scutal lobes patterned with somewhat more grayish brown. Pleura gray. Halteres with stem whitened, knob a trifle darker. Legs with the coxae dark, gray pruinose; trochanters brownish black; remainder of legs black, the femoral bases obscure yellow. Wings with a very weak brownish tinge, the prearcular and costal fields clearer yellow; stigma darker brown, conspicuous; a vague to scarcely indicated brown tinge over the cord; veins brown, more yellowed in the brightened fields. Venation:  $Sc_1$  ending opposite or just beyond the supernumerary crossvein in cell  $R_1$ ;  $R_s$  oblique, variable in length and steepness;  $R_{2+3+4}$  short to very short, subequal to or shorter than the basal section of  $R_5$ ; cell  $M_1$  present; cell  $M_2$  open by the atrophy of  $m$ ;  $m-cu$  more than one-half its length beyond the fork of  $M$ .

Abdomen, including hypopygium, dark gray, the caudal borders of the intermediate tergites a trifle paler. Male hypopygium with the median region of the tergite only vaguely produced, the lateral arms long and conspicuous, pale, the tips more expanded and bent slightly mesad. Basistyle with apical lobes provided with setae, lacking spinous points. Interbase distinctive, appearing as a strong lobe, its apex obliquely truncated and farther produced into a long straight daggerlike spine; the truncated apex with abundant delicate setulae surrounding the base of spine. Dististyle relatively small, subequal in size to the lesser lobe of the basistyle, broadly flattened, with several strong setae near the obtuse apex; on face of style with a flattened plate or flange.

*Habitat*: Japan (Honshiu). *Holotype*, ♂, Hamasaka, Hyogo, April 1, 1931 (*J. Okada*). *Paratopotypes*, ♂♂.

*Dicranota (Dicranota) sicaria* is quite distinct from the two most similar regional species of the subgenus, *D. (D.) nipponica* Alexander and *D. (D.) yezoensis* Alexander. All details of structure of the male hypopygium are distinctive, particularly the tergite, interbase and dististyle.

*Dicranota (Rhaphidolabis) macracantha* n. sp.

Allied to *spina*; general coloration of thorax gray, the scutellum and adjoining sclerites conspicuously yellow; halteres uniformly pale yellow;

wings with a milky tinge, the stigma scarcely indicated; veins pale;  $R_{2+3+4}$  scarcely evident, cell  $R_3$  nearly sessile; male hypopygium with the median area of the tergite produced into a broad conspicuous lobe, the lateral arms extended into long powerful spines; interbase a broad yellow blade, narrowed and strongly bent toward tip and here with both dorsal and lower flanges or crests, the former higher and with its margin microscopically serrulate; dististyle dusky, in length nearly equal to the longest lobe of the basistyle.

*Male*.—Length about 5.5 mm.; wing, 0.8 mm.

Rostrum brown; palpi brownish black. Antennae brownish black, short (the number of segments cannot be determined from the available material); flagellar segments oval, with relatively short verticils. Head dark brownish gray.

Pronotum brownish gray, more yellowed behind. Mesonotum brownish gray, the praescutum with indications of a median darker stripe and less evident lateral ones; median region of scutum, the scutellum and cephalic portion of mediotergite yellow; posterior part of mediotergite darkened, pleurotergite yellow on posterior border, slightly pruinose in front. Pleura chiefly pale brownish yellow, the surface sparsely pruinose, especially the more dorsal sclerites; ventral sternopleurite weakly darkened. Halteres uniformly pale yellow. Legs with the coxae and trochanters yellow; femora yellow basally, weakly darkened outwardly; tibiae and tarsi obscure brownish yellow, the outer tarsal segments more darkened. Wings with a milky tinge, particularly at base, stigma scarcely darkened; veins brownish yellow, relatively inconspicuous against the ground. Venation:  $R_{2+3+4}$  barely evident as an unusually short element, cell  $R_3$  subsessile to virtually sessile; cell  $M_2$  open; *m-cu* very oblique, about one-half its length beyond the fork of *M*.

Abdomen dark brown, the pleural region somewhat paler; hypopygium brownish yellow. Male hypopygium with the tergite large, its median area produced into a broad lobe, the apex subtruncate; surface with numerous setae; lateral tergal arms appearing as strong sinuous spines that are fully three times as long as the median lobe, gradually narrowed to the acute tips. In *spina*, the median tergal lobe is broader and lower and the lateral arms are represented by short slender spines. Interbase a broad yellow blade, narrowed and strongly bent outwardly, terminating in an acute spine, before apex with distinct flanges on both the outer and inner margins, the dorsal crest higher and with the margin microscopically serrulate. In *spina*, such crests are lacking. Dististyle dusky, nearly equal in length to the longest lobe of the basistyle, gradually narrowed to the obtuse tip, the latter with three stronger spinous setae.

*Habitat*: Japan (Honshiu). *Holotype*, ♂, Kamikochi, Shinano, altitude 5,000 ft., August 18–21, 1934 (Kariya).

The present fly is generally similar to *Dicranota (Rhaphidolabis) spina* Alexander (Alpine districts of Hokkaido and Honshiu) from which it differs most conspicuously in the structure of the male hypopygium, as compared above.

#### *Dicranota (Rhaphidolabis) ontakensis* n. sp.

Size large (wing, male, 7 mm. or more); general coloration of thorax gray, the praescutum with three brownish stripes; antennae 14-seg-

mented, black throughout; wings with a milky tinge, the stigma very pale brown; vein  $R_{2+3+4}$  present, varying from short to long; cell  $M_2$  open; male hypopygium with the ninth tergite produced into a depressed bilobed median plate; interbase produced into two slender spines; apex of basistyle produced into a large clavate head that is densely clothed with short spinous setae; dististyle a narrow yellow blade.

*Male*.—Length about 6.5–7 mm.; wing, 7–7.5 mm.; antenna about 1.0 mm.

*Female*.—Length about 7–7.5 mm.; wing, 8–8.5 mm.

Rostrum black, sparsely pruinose; palpi black. Antennae black throughout, 14-segmented; flagellar segments oval, distinct, not at all crowded, the outer ones gradually smaller. Head light gray; anterior vertex wide.

Pronotum dark gray. Mesonotum gray, the praescutum with three more brownish stripes, the broad median one entire in front, very shallowly divided behind; scutal lobes less evidently patterned. Pleura dark gray, the dorsopleural membrane more buffy. Halteres with the stem pale yellow, the apex of knob weakly darkened. Legs with the coxae gray pruinose, paling to obscure yellow at tips; trochanters obscure yellow; femora obscure brownish yellow basally, passing into brown; tibiae and tarsi gradually darker brown to black. Wings with a milky tinge, the prearcular and costal fields more yellowed; stigma scarcely evident as a pale brown cloud; veins brownish yellow, clearer yellow in the brightened fields. Venation:  $R_s$  arcuated to more or less angulated;  $R_{2+3+4}$  present but variable in length, in cases shorter than the basal section of  $R_s$ , in other specimens twice as long as this element;  $R_2$  oblique; cell  $M_2$  open by the atrophy of  $m$ ;  $m-cu$  oblique, from one-third to one-half its length beyond the fork of  $M$ .

Abdomen dark brown or brownish gray, the sternites a trifle more yellowed on their central portions, more infuscated on sides. Male hypopygium very distinctive. Ninth tergite produced medially into a flattened-depressed plate that splits at tip into two oval lobes separated by a deep U-shaped notch, each lobe densely provided with setae; no lateral tergal arms. Basistyle with interbase a glabrous flattened blade that terminates in two acute slender spines; apex of basistyle produced into a large clavate head that is evenly and densely clothed with short dark spinous setae. Dististyle a narrow yellow blade that is more than five times as long as its width at midlength, the tip obtusely rounded; surface of style with sparse elongate setae at base, short peglike setae over much of the outer half, and a few erect or retrorse stronger setae just before apex.

*Habitat*: Japan (Honshiu). *Holotype*, ♂, Ontake, Hida, southern Alps, altitude 5,850 ft., July 6–10, 1934 (H. Ise); through Kariya. *Allotopotype*, ♀; *paratopotypes*, 1 ♂, 2 ♀ ♀.

The present fly is one of the most distinct species in the entire subgenus. The structure of the male hypopygium is so distinctive in all its parts that it scarcely seems necessary to make comparisons with other forms. In the conformation of the ninth tergite, it most approaches species such as *Dicranota (Raphidolabis) biloba* Alexander, but even here the two structures are not very similar.



Genus *Limmophila* Macquart*Limmophila* (*Phylidorea*) *hokkaidensis* n. sp.

Size very large (wing, female, over 13 mm.); general coloration of head and thorax gray; halteres yellow throughout; femora yellow basally, the tips blackened, very broadly so on the fore legs, narrowest on the posterior pair; wings brownish yellow, stigma dark brown; a restricted paler brown pattern over the cord, *Cu* and vein *2nd A*; *Rs* long, approximately twice the long, nearly straight  $R_{2+3+4}$  or three times *m-cu*; *m* very short; cell  $M_1$  subequal in length to its petiole; *m-cu* at near one-third the length of cell *1st M*<sub>2</sub>; abdomen brownish black; valves of ovipositor reddish horn-color.

*Female*.—Length about 15 mm.; wing, 13.3 mm.

Rostrum dark gray; palpi black. Antennae almost uniformly blackened throughout, the extreme base of the first flagellar segment brightened; first flagellar segment cylindrical, the succeeding three short-cylindrical, the remainder much more slender, elongate-cylindrical; verticils of the dilated basal segments unilaterally arranged on outer face, on the outer segments much longer, exceeding the segments in length and occurring on all faces. Head dark gray; anterior vertex very wide, nearly five times the diameter of the scape.

Pronotum large, light gray pruinose. Mesonotum gray, clear light gray pruinose on outer sclerites, the praescutum with indications of three darker grayish brown stripes; pseudosutural foveae very large, dark-colored, suboval in outline; tuberculate pits elongate, near the extreme cephalic portion of praescutum. Pleura heavily gray pruinose over a black ground; dorsopleural membrane light brown. Halteres yellow throughout. Legs with the fore coxae brownish black, heavily gray pruinose, the remaining coxae reddish with a more sparse pruinosity; trochanters yellow; femora yellow, the tips broadly and conspicuously blackened, broadest on the fore pair where nearly the outer two-thirds is included, narrower on the other legs, on the middle pair including about the distal half, on the posterior femora about the distal fifth; tibiae brownish black, the posterior pair a little brighter, brown, the tip narrowly blackened; tarsi black. Wings brownish yellow, the prearcular and costal fields clearer yellow; stigma relatively small, dark brown; a restricted paler brown pattern, as follows: Along cord and at wing-apex; *Cu* and vein *2nd A*; veins brown, yellow in the brightened fields. Venation: *Sc* long,  $Sc_1$  ending about opposite midlength of  $R_{2+3+4}$ ,  $Sc_2$  at its tip; *Rs* long, approximately twice the long  $R_{2+3+4}$  or three times *m-cu*;  $R_{2+3+4}$  nearly straight, subequal to  $R_{2+3}$ ;  $R_2$  and  $R_{1+2}$  subequal in length; basal section of  $R_5$  long, gently arcuated; cell *1st M*<sub>2</sub> subrectangular, a little narrowed at outer end; *m* very short to almost punctiform, the basal section of  $M_3$  correspondingly long; cell  $M_1$  subequal to its petiole; *m-cu* about one-half its length beyond the fork of  $M$ , at near one-third the length of cell *1st M*<sub>2</sub>; vein *2nd A* sinuous on distal half.

Abdomen brownish black, including the genital shield; valves of ovipositor reddish horn-color; cerci very deep at base, short but slender outwardly.

*Habitat*: Japan (Hokkaido). *Holotype*, ♀, Sapporo, June 24, 1932 (Tagawa); through Kariya.

Readily distinguished from all other regional species of the subgenus by the very large size and the details of venation, especially the long *Rs*. In the Nearctic fauna, it is most similar to *Limnophila* (*Phylidorea*) *aleutica* Alexander and *L. (P.) fratria* Osten Sacken, yet entirely distinct. The most similar Palaearctic form is perhaps *L. (P.) squalens* (Zetterstedt), with a wide range over Europe, eastward to Eastern Siberia; this latter is entirely distinct from the present fly and may not belong to this subgenus. All of these species are very much smaller than the present fly.

### Genus *Elephantomyia* Osten Sacken

#### *Elephantomyia* (*Elephantomyia*) *palmata* n. sp.

Allied to *dietziana*; general coloration black, heavily gray pruinose to produce a more or less distinct plumbeous appearance; wings with a weak brownish tinge, heaviest at stigma and in the costal region; abdominal tergites bicolored, the sternites more restrictedly so; male hypopygium with the gonapophyses conspicuously expanded and provided with more than fifteen spines to produce a palmate appearance.

*Male*.—Length, excluding rostrum, 7.5–8 mm.; wing, 9–10 mm.; rostrum, 7–8 mm.

Rostrum about equal in length to the entire body, brownish black. Antennae with scape and pedicel dark brown, flagellum paler. Head dark.

Pronotum black, more or less pruinose. Remainder of thorax almost uniformly blackened, gray pruinose, to produce a more or less plumbeous appearance, the scutellum a little paler; dorsopleural membrane pale yellow. Halteres uniformly pale yellow. Legs with the coxae yellow, the posterior pair clearer; trochanters yellow; femora obscure yellow basally; the outer portions of the fore pair broadly dark brown, involving the outer two-thirds or more; remaining femora with the tips much more narrowly infuscated, including about the outer seventh or eighth; tibiae and tarsi brownish yellow to yellow. Wings with a weak brownish tinge, the costal border and stigma somewhat darker brown; prearcular field yellowed; veins brown, yellow in the prearcular field. Venation:  $Sc_2$  ending just beyond the fork of *Rs*, longer than the subatrophied  $Sc_1$ ; anterior branch of *Rs* sinuous, generally parallel to the posterior branch; cell *1st M*<sub>2</sub> a little longer than vein  $M_4$ ; *m-cu* a little longer than the distal section of  $Cu_1$ , placed just beyond midlength of cell *1st M*<sub>2</sub>.

Abdomen indistinctly bicolored, chiefly dark brown to brownish black, the basal rings of the intermediate segments yellow, broadly so on the tergites, especially segments four to seven, inclusive, where more than the proximal third is so brightened, very narrowly and indistinctly yellowed on the bases of the intermediate sternites, especially segment five; outer segments and hypopygium uniformly blackened. Male hypopygium with the mesal face of basistyle with abundant setae, those near the cephalic portion longer and more conspicuous; outer face of

basistyle with relatively few setae. Dististyles apical in position, the outer shorter, slender, the apical spine strongly curved, the outer sub-apical point small and straight. Inner dististyle with outer half slender. Gonapophyses unusually broad, palmate, provided with more than fifteen conspicuous spines. Aedeagus coiled.

*Habitat:* Japan (Honshiu). *Holotype*, ♂, Ontake, Hida, southern Alps, altitude 5,850 ft., July 6-10, 1934 (H. Ise); through Kariya. *Paratopotypes*, 2 ♂♂.

There are various species in the Palaearctic region that center around *Elephantomyia* (*Elephantomyia*) *dietziana* Alexander. This latter fly has the dististyles apical in position and with the gonapophysis produced into a long pale point, the outer portion much reduced in area and with fewer than ten spines. The European *E. (E.) edwardsi* Lackschewitz is quite distinct from both *dietziana* and *palmata* in the subterminal dististyles and in the armature of the gonapophyses. *E. (E.) hokkaidensis* Alexander, of northern Japan, belongs to an entirely different group of species, being more nearly allied to the genotype, *E. (E.) westwoodi* Osten Sacken, of the Nearctic region, the gonapophyses being without spinous points.

#### Genus *Cladura* Osten Sacken

##### *Cladura daimio* n. sp.

Belongs to the *megacauda* group; general coloration yellow; tips of femora narrowly infuscated; abdominal tergites yellow, trivittate with pale brown, the median stripe more distinct and continuous; male hypopygium with the outer lobe of basistyle and the dististyle subequal in length, the latter large, expanded outwardly, the apex vaguely bilobed; lobe of mesal face of basistyle a large flattened setiferous blade.

*Male*.—Length, about 8 mm.; wing, 9.5 mm.

*Female*.—Length, about 8.5 mm.; wing, 9.5 mm.

Rostrum and palpi yellow. Antennae yellow, the bases of the flagellar segments weakly darkened; verticils conspicuous. Head yellow.

Thorax uniformly yellow, the surface polished or subnitidous, with conspicuous long pale setae on the praescutal interspaces and elsewhere. Halteres pale, the knobs very slightly darker. Legs yellow, the extreme tips of the femora infuscated; outer tarsal segments brown. Wings pale yellow, the prearcular and costal fields a trifle more saturated; veins brown. Venation:  $R_2$  tending to become evanescent;  $R_{1+2}$  a trifle less than  $R_{2+3+4}$ ; cell 1st  $M_2$  small, about as long as vein  $R_{2+3+4}$ ;  $m$  about one-half the petiole of cell  $M_1$ .

Abdominal tergites yellow, rather distinctly trivittate with pale brown, the median stripe especially distinct and continuous; posterior borders of tergites narrowly pale; sternites yellow, the caudal borders and especially the outer lateral angles of the same darkened; hypopygium yellow. Male hypopygium as in *megacauda*, differing in all details of the basistyle and dististyle. Details of tergite not clearly evident in the single available male. Outer lobe of basistyle slender, gradually narrowed to the tip, provided with scattered setae, those at

apex forming a sparse but conspicuous brush. Dististyle as long as the lobe of basistyle and larger, narrow at base, expanded outwardly, the tip vaguely bilobed. Basistyle with proximal end of mesal face produced into a large flattened blade, the apex truncated, the surface with abundant setae; caudal portion of this blade further produced into a flattened oval lobe.

*Habitat:* Japan (Honshiu). *Holotype*, ♂, Morioka, October 6, 1934 (T. Kato). *Allotopotype*, ♀, pinned with type. *Paratopotypes*, 2 broken specimens. Associated with *Cladura megacauda* Alexander.

I am restricting the term *megacauda* group to the three species herewith discussed, all having the outer angle of the basistyle of the male hypopygium greatly produced beyond the point of insertion of the dististyle. All three species are most readily distinguished by their hypopygial characters. *Cladura alpicola* Alexander has the lobe of the basistyle unusually long and slender; dististyle of peculiar shape, produced at base into a strong obtuse lobe; the basistyle itself is very slender, its mesal lobe having a distinctive shape. *C. megacauda* Alexander is again very different, the dististyle being a trifle longer than the outer lobe of the basistyle, narrowed outwardly, the tip obtuse, with a dense cushion of relatively short setae; mesal lobe of basistyle unusually small and slender, again of peculiar shape. Earlier (Philippine Journ. Sci., 40: 342; 1929) I had considered that the members of the group possessed two dististyles but it is now evident that the outer one of these is actually a long outer prolongation of the basistyle, subequal in length to or exceeding the dististyle itself. This condition is unique among the various species of *Cladura* now known and may possibly be held as being of subgeneric value.\* It should be noted that *Crypteria* Bergroth and *Neolimnophila* Alexander actually do have two dististyles.

#### *Cladura alpicola setuliloba* n. subsp.

*Male*.—Length, about 7.5 mm.; wing, 8.8 mm.

Characters as in the typical subspecies (Japanese Alps, Honshiu: Yarigatake), differing especially in hypopygial characters.

Venation with the petiole of cell  $M_1$  short to very short, less than *m*. Male hypopygium with the lateral lobes of the ninth tergite broader and more or less incurved. Basistyle with the lobe of mesal face even larger, the lateral fingerlike lobule more pointed and with only two or three long setae at extreme tip; almost the entire surface of lobe densely setuliferous, more abundant and conspicuous than in the typical form. Outer lobe of basistyle broken in the unique type. Dististyle with the basal lobe longer and stouter, approximately two-thirds the length of the rostral blade and much stouter.

*Habitat:* Japan (Honshiu). *Holotype*, ♂, Mt. Myotaka, August 1, 1923 (Fuzimatsu); through Kariya.

#### *Cladura taiwania* n. sp.

*Cladura decem-notata* Alexander; Philippine Journ. Sci., 40: 540; 1929; not *C. decem-notata* Alexander, Ann. Ent. Soc. America, 17: 436-437; 1924.

*Cladura decem-notata* was described from the island of Kiushiu. Later I discussed the species briefly and indicated the possibility that the Formosan material represented a distinct species, a fact of which I am now more firmly convinced. I have withheld the description of the present fly while awaiting the receipt of male specimens of the true *decem-notata*. No further materials have become available and I am describing the species on the basis of the original specimens.

*Male*.—Length, about 6.5–7 mm.; wing, 8.5–9 mm.

Compared with *decem-notata*, the dark spots on the mesonotal praescutum are larger, particularly the anterior pair and those on the scutal lobes; darkening on the ventral sternopleurite likewise more extensive. Abdominal tergites more uniformly infuscated, the individual segments with very narrow pale posterior borders. In *decem-notata*, the central portion of the abdominal tergites is broadly yellow, the sides abruptly infuscated. Wings clearer yellow, the veins paler, more delicate, and relatively inconspicuous against the ground. Venation:  $Sc_1$  ending opposite the fork of  $R_{2+3+4}$ ;  $R_s$  strongly arcuated at origin;  $R_{2+3+4}$  longer than cell  $1st\ M_2$ ; petiole of cell  $M_1$  longer than  $m$ . Male hypopygium with the mesal face of basistyle provided with abundant long setae. Disistyle very large, terminal in position, narrow at base, widely expanded outwardly to appear more or less triangular in outline, the apex broadly emarginate; cephalic or inner lobe fringed with a row of strong setae that are angularly produced at tip into a slender hairlike point. Gonapophysis relatively small and inconspicuous. Aedeagus dilated at near midlength, the distal third slender.

*Habitat*: Formosa. *Holotype*, ♂, Shorei, altitude 7000–8000 ft., October 25, 1928 (S. Issiki). *Paratopotypes*, 7 ♂♂.

#### *Cladura tetraspila* n. sp.

General coloration yellow, the mesonotum with four conspicuous brown spots, including two each on the praescutum and scutum; wings unpatterned; male hypopygium with the median region of the tergite produced caudad into a flattened plate, its margin with a rounded notch; basistyle unarmed; dististyle apical in position, profoundly bifid; gonapophysis appearing as a broadly flattened blade, the apex with abundant spinous points; aedeagus with a lateral flange that is microscopically papillose.

*Male*.—Length, about 6 mm.; wing, 7.5 mm.

*Female*.—Length, about 7–7.5 mm.; wing, 8–9 mm.

Rostrum yellow; palpi a little darker, especially the outer segments. Antennae 15-segmented; scape and pedicel yellow, flagellum weakly bicolored, yellow, the bases of the segments slightly more darkened; outer segments weakly pale brown; fusion-segment involving two segments. Head uniformly yellow, with a very sparse bloom.

Mesonotum yellow, with four conspicuous dark brown spots, including two on the posterior portions of the praescutum, representing the usual lateral stripes, the second pair on the scutal lobes; remainder of notum and the pleura yellow. Halteres yellow. Legs yellow, the extreme tips of the femora and tibiae infuscated; tarsi dark brown, the proximal portion of the basitarsi obscure yellow. Wings yellow, more brightened in the prearcular and costal fields; stigmal area a trifle

differentiated by a more yellowish suffusion; veins brown, yellow in the more brightened fields. Venation:  $Sc_1$  ending nearly opposite the fork of  $R_{2+3+4}$ ,  $Sc_2$  about opposite two-thirds the length of the latter;  $R_{2+3}$  subequal in length to  $R_{2+3+4}$  or  $R_{1+2}$ , or, in cases, with  $R_{2+3}$  longer; petiole of cell  $M_1$  nearly twice  $m$ ;  $m-cu$  from about one-fourth to nearly one-half its length beyond the fork of  $M$ .

Abdominal tergites brown, sternites yellow; a subterminal more blackened ring; hypopygium obscure yellow. Male hypopygium of moderate size; region of tergite produced into a median paler plate, the caudal border of which bears a rounded notch, the lateral lobes thus formed unequally bilobulate, the inner lobule more truncated at apex, the outer lobule or shoulder rounded. Basistyle relatively slender, without armature. Dististyle apical in position, profoundly bifid, forming two relatively slender arms; inner arm narrowed at apex into an acute point, the entire surface with abundant long pale setae; outer arm a little dilated just before apex, thence narrowed to the tip, the setae restricted to this outer portion. Each gonapophysis appearing as a broad flattened blade, the apical margin with numerous spinous points, including a larger outer spine. Aedeagus short, subtended by a flange that is microscopically papillose.

*Habitat*: Japan (Honshiu). *Holotype*, ♂, Gora, Hakone District, November 11, 1931 (Sawada). *Allotopotype*, ♀. *paratopotype*, 1 ♀.

*Cladura tetraspila* is readily distinguished from the other species having variegated thoraces, including *C. decem-notata* Alexander, *C. machidella* Alexander, and *C. taiwania* sp. n., by the nature of the pattern. It is further told from all species of the genus where the male sex is known by the somewhat peculiar hypopygium, particularly the profoundly bifid terminal dististyle.

#### *Cladura hakonensis* n. sp.

General coloration of thorax brownish gray, conspicuously gray pruinose, especially on the pleura; head dark gray; antennae (female) 15-segmented, brownish black throughout; femora obscure yellow, gradually passing into brown at tips; tarsi dark brown; wings brownish yellow, the prearcular and costal fields clearer yellow; very restricted pale brown clouds over the anterior cord and along vein  $Cu$  in cell  $M$ ; vein  $Sc_1$  ending a short distance before vein  $R_2$ ,  $Sc_2$  opposite or beyond the fork of  $R_{2+3+4}$ ; abdomen dark brown.

*Female*.—Length, about 7.5 mm.; wing, 9.3 mm.

Rostrum and palpi dark brown. Antennae brownish black, 15-segmented, there being two segments involved in the basal fusion-segment; outer segments long-oval, subequal in length to the verticils; terminal segment about two-thirds as long as the penultimate. Head uniform dark gray.

Pronotum obscure testaceous yellow. Mesonotum almost uniformly brownish gray, the praescutum clearer gray on sides, more darkened medially in front; posterior portions of scutal lobes more yellowed. Pleura brownish gray. Halteres yellow, knob weakly darkened. Legs with the coxae and trochanters yellow; femora obscure yellow basally, gradually passing into brown at the tips; tibiae brownish yellow, the tips gradually more infuscated; tarsi dark brown. Wings

brownish yellow, the prearcular and costal fields clearer yellow; a very ill-defined pale brown pattern, best evidenced as a small cloud over the anterior cord and a seam along vein *Cu* in cells *M* and *M*<sub>4</sub>; veins obscure yellow, a trifle darker in the clouded fields. Venation: *Sc*<sub>1</sub> ending only a short distance before *R*<sub>2</sub>, *Sc*<sub>2</sub> opposite or beyond the fork of *R*<sub>2+3+4</sub>; *Rs* gently arcuated; cell 1st *M*<sub>2</sub> long, exceeding vein *R*<sub>2+3+4</sub> in length; petiole of cell *M*<sub>1</sub> slightly longer than *m*; *m-cu* about one-third to two-fifths its length beyond the fork of *M*.

Abdomen dark brown, sparsely pruinose; ovipositor with the very powerful valves yellowish horn-color.

*Habitat*: Japan (Honshiu). *Holotype*, ♀, Gora, Hakone District, November 11, 1931 (Sawada).

*Cladura hakonensis* is entirely distinct from the other Japanese species, differing most evidently in the brownish gray coloration of the body, brownish black antennae, gradually darkened femoral tips, and the sparsely patterned wings. The only other species in the fauna having any wing pattern is the otherwise very different *C. machidella* Alexander.

#### ***Cladura monacantha* n. sp.**

General coloration yellow, unpatterned; femora with tips narrowly but conspicuously dark brown; wings unpatterned; male hypopygium with the tergite terminating in two small subcircular lobes; basistyle without lobes; dististyle single, stout, terminal in position; gonapophyses appearing as flattened blades, each bearing a single strong lateral tooth before the apex.

*Male*.—Length, about 6.5 mm.; wing, 8.5 mm.

Rostrum obscure yellow; palpi dark brown. Antennae with the scape blackened; pedicel more or less darkened; flagellum yellow; flagellar segments subcylindrical, with long conspicuous verticils; basal two flagellar segments fused but not compacted, the position of the suture indicated by a constriction. Head light yellowish brown, weakly pruinose, particularly on the anterior vertex and orbits; anterior vertex about three times the diameter of the scape.

Thorax uniformly yellow, the mesonotum slightly more fulvous. Halteres elongate, yellow. Legs with the coxae and trochanters light yellow; femora yellow, the tips very narrowly but conspicuously dark brown, the amount subequal on all legs; tibiae yellow, the tips even more narrowly darkened; tarsi dark brown. Wings whitish or very pale yellowish subhyaline, the prearcular field light yellow; veins brown. Venation: *Sc*<sub>1</sub> ending about opposite one-third the length of *R*<sub>2+3</sub>; *R*<sub>2+3+4</sub> about one-fourth longer than *R*<sub>1+2</sub>; petiole of cell *M*<sub>1</sub> a little longer than *m*; *m-cu* close to the fork of *M*.

Abdominal tergites weakly infuscated, somewhat paler laterally; basal sternites obscure yellow, the posterior margins narrowly more darkened; subterminal segments not conspicuously dark brown, as is common in various species of the genus; hypopygium brownish yellow. Male hypopygium with the central region of tergite slightly produced, the median portion still farther extended into two subcircular or suboval lobes. Basistyle elongate, without lobes. Dististyle terminal in position, simple, relatively stout, the blunt apex more or less lobed and

pendant. Gonapophyses longer than the aedeagus, appearing as relatively broad yellow blades, each broadest beyond midlength, narrowed to the subacute tip; lateral margin near apex produced into a single strong toothlike point; outer end of style at and near the tooth bearing several delicate setoid points, these continued basad along the mesal portion of the blade (in slide mounts) for about one-third the length; margins of the blade not produced into these hairlike extensions (as in the subspecies *fimbriata*).

*Habitat:* Japan (Honshiu). *Holotype*, ♂, Tottori Prefecture, without further data (Sawada).

This fly, with its subspecies described below, is most nearly allied to *Cladura autumnna* Alexander, differing very evidently in the structure of the male hypopygium, as defined above.

#### *Cladura monacantha fimbriata* n. subsp.

Characters essentially as in the typical form, differing chiefly in minor hypopygial characters. Gonapophyses even narrower, the apex more acute, the lateral spine large and conspicuous; in addition to the microscopic setoid extensions near the apex and along the mesal portion of the blade, the outer margin at near midlength even more conspicuously produced into spines and setoid points.

*Habitat:* Japan (Honshiu). *Holotype*, ♂, Gora, Hakone District, November 11, 1931 (Sawada).

### Genus *Erioptera* Meigen

#### *Erioptera (Psiloconopa) laudatrix* n. sp.

Size small (wing, male, under 4 mm.); general coloration brownish gray, variegated with obscure yellow; antennae short, outer flagellar segments subglobular; femora yellow, the tips broadly blackened; wings with a weak brownish tinge, very restrictedly patterned with darker brown; cell *1st M*<sub>2</sub> closed, small; male hypopygium with two blackened dististyles, subterminal in position, the glabrous outer style bispinous at tip, the inner style terminating in a single point.

*Male*.—Length, about 3.5 mm.; wing, 3.9 mm.

Rostrum obscure yellow; palpi brown. Antennae pale brown, pedicel a trifle darker; flagellar segments very short-oval to subglobular, the verticils exceeding the segments. Head brownish gray, the front and narrow posterior orbits clearer gray.

Pronotum obscure yellow. Mesonotal praescutum chiefly covered by three dark brownish gray stripes that are confluent or virtually so; cephalic border of median stripe more intensely darkened; humeral region broadly yellow; scutal lobes extensively brownish gray, the median area restrictedly obscure yellow; scutellum light yellow, with a narrow pale brown central vitta, parascutella darker; postnotum reddish brown, the posterior third darker. Pleura obscure brownish yellow, restrictedly patterned with dark brownish gray, most conspicuously so on the ventral sternopleurite and meron, narrower across the suture between the anepisternum and sternopleurite. Halteres with knob yellow, the stem a trifle darker. Legs with the coxae and trochanters reddish yellow, the fore coxae darker; femora yellow, the tips



broadly and conspicuously blackened; tibiae and proximal two or three tarsal segments obscure yellow, their tips narrowly infuscated; outer tarsal segments brownish black. Wings with a weak brownish tinge, the prearcular and costal fields more yellowed; a very restricted darker brown pattern, most evident as seams over  $Sc_2$ , tip of  $Sc_1$  and  $R_2$ , tip of  $R_{1+2}$  and along the cord; origin of  $R_s$  and outer end of cell  $1st M_2$  scarcely darkened; veins brown, darker in the patterned areas, more yellowed in the flavous portions. Venation:  $Sc_1$  ending beyond  $R_2$ ,  $Sc_2$  about opposite one-fourth the length of  $R_s$ ;  $R_{2+3+4}$  subequal to the basal section of  $R_5$ , slightly elevated; veins  $R_3$  and  $R_4$  slightly divergent; cell  $1st M_2$  closed, small,  $M_{3+4}$  about three-fifths as long as  $M_4$  alone;  $m-cu$  a short distance before the fork of  $M$ ; vein  $Cu_1$  sinuous on its distal half; vein  $2nd A$  sinuous on the distal sixth.

Abdominal tergites pale brown, the caudal borders narrowly testaceous yellow, somewhat more extensively so on the outer angles; sternites obscure brownish yellow, the posterior borders very narrowly paler yellow; hypopygium chiefly pale, the proximal ends of the basistyles infuscated, the dististyles blackened. Male hypopygium with apex of basistyle produced beyond the point of insertion of the dististyles as a conical lobe extending to beyond midlength of the outer dististyle, tipped with long yellow setae. Both dististyles subequal in size, the outer style glabrous, a little dilated at base, its outer half generally parallel-sided, terminating in two acute spines that are separated by a shallow U-shaped notch; inner style roughly parallel-sided, at apex narrowed into a single spinous point, the surface with nearly 20 pale setigerous punctures, well-scattered over the surface. Lateral gonapophyses very small, appearing as darkened blades, the outer margin irregularly notched or crenate.

*Habitat:* Japan (Honshiu). *Holotype*, ♂, Gifu, June 19, 1932, at light (Kariya).

*Erioptera (Psiloconopa) laudatrix* is entirely different from the other species of the subgenus now known from Eastern Asia, being more like certain European species, including *E. (P.) grata* (Loew) and *E. (P.) pusilla* (Schiner). It differs from all known species in the structure of the male hypopygium. Superficially the fly somewhat resembles *E. (P.) machidai* Alexander but the actual relationship is not close. It should be noted that it is now considered that *Ilisia* Rondani is synonymous with the earlier *Psiloconopa* Zetterstedt.

#### **Erioptera (Empeda) brumalis** n. sp.

Size large (wing, male, 6 mm.); general coloration dark plumbeous gray; legs brownish black to black, without scales; wings grayish subhyaline, with a broad, conspicuous, brown seam from the stigma across the wing at the cord;  $Sc_1$  long,  $Sc_1$  ending about opposite six-sevenths the length of the long  $R_s$ ;  $Sc_1$  long, exceeding twice the length of  $r-m$ ; cell  $M_2$  open by the atrophy of  $m$ ; Anal veins divergent; male hypopygium with the inner dististyle blackened, the two arms very unequal, the shorter one greatly expanded into a flattened blade.

*Male*.—Length, about 5.5 mm.; wing, 6 mm.

*Female*.—Length, about 6–7 mm.; wing, 6.3–8 mm.

Rostrum and palpi black. Antennae black; scape enlarged; flagellar segments long-cylindrical, very slender, with very long verticils, longest on the more proximal segments. Head dark gray.

Thorax dark plumbeous gray, the praescutum with three more brownish stripes; dorsopleural membrane infuscated. Halteres yellow, a trifle more infuscated in male. Legs with the coxae dark plumbeous gray; trochanters brown; remainder of legs brownish black to black; vestiture of legs including large and smaller setae but no scales. Wings grayish subhyaline, restrictedly but conspicuously patterned with brown, including the stigma and a broad seam across the wing at the cord, the stigma more intense; prearcular field, including the veins, a trifle more yellowed; remaining veins brown. Venation:  $Sc$  long,  $Sc_1$  ending about opposite six-sevenths the length of the long  $R_s$ ,  $Sc_2$  some distance from its tip so  $Sc_1$  is unusually long, exceeding twice the length of  $r-m$ ; veins  $R_3$  and  $R_4$  weakly divergent, the former only about one-half to three-fifths as long as the latter; cell  $M_2$  open by the atrophy of  $m$ ;  $m-cu$  just before the fork of  $M$ ; Anal veins divergent, vein  $2nd\ A$  beyond its base straight.

Abdomen dark brown, more or less gray pruinose; hypopygium brownish black; ovipositor with shield dark brown, valves horn-yellow. Male hypopygium of the general type of *fuscocincta* yet quite distinct, especially the inner dististyle. Both dististyles terminal in position, the outer one slender; inner style entirely blackened, the two arms very unequal, the shorter one greatly expanded into a blade, the second arm narrow, approximately as wide as the outer dististyle, its tip narrowly obtuse.

*Habitat*: Japan (Honshiu). *Holotype*, ♂, Gifu, March 13, 1932 (Kariya). *Allotopotype*, ♀, December 19, 1933 (Kariya). *Paratopotypes*, 1 ♀, January 17, 1934 (Kariya), 1 ♀ with the allotype.

*Erioptera (Empeda) brumalis* is entirely distinct from the other Eastern Asiatic species of the subgenus, differing particularly in the large size, patterned wings and structure of the male hypopygium. The most similar species is the western Chinese *E. (E.) fuscocincta* Alexander, which differs most evidently in the structure of the male hypopygium, particularly the inner dististyle.

#### Genus *Ormosia* Rondani

##### *Ormosia (Ormosia) subalpina* n. sp.

Allied to *nantaisana*; general coloration gray, the praescutum with a median brown stripe; antennae black throughout; legs dark brown, the femoral bases broadly yellow; wings with cell  $1st\ M_2$  closed, vein  $2nd\ A$  sinuous; male hypopygium with the outer dististyle very short and compact, the width across the head nearly equal to the length, the stem thus very stout; inner dististyle dark-colored, broad, almost as long as the basistyle; lateral gonapophyses greatly expanded at tips into flattened yellow blades.

*Male*.—Length, about 5.5 mm.; wing, 6 mm.; antenna, about 1.6 mm.

*Female*.—Length, about 7 mm.; wing, 7.5 mm.

Rostrum and palpi black. Antennae black throughout; flagellar segments oval, on the more proximal ones with the lower face a trifle

protuberant; longest verticils subequal to or shorter than the segments. Head gray.

Thorax almost uniformly gray, the pleura somewhat lighter; praescutum with the median stripe brown, the laterals scarcely defined; pseudosutural foveae black; dorsopleural membrane darkened. Halteres with the stem whitened, knob light yellow. Legs with the coxae plumbeous gray; trochanters brownish yellow; remainder of legs dark brown, with the femoral bases broadly yellow. Wings with the ground color yellow, the prearcular and costal fields clearer yellow; stigma brown; a restricted brown pattern along the veins, including the cord and along vein *Cu* in cells *M* and *M*<sub>4</sub>; outer end of cell 1st *M*<sub>2</sub> and some of the veins beyond the cord less evidently seamed; veins light brown, darker in the patterned areas, yellow in the flavous fields. Venation: *R*<sub>2</sub> immediately beyond the fork of *R*<sub>2+3+4</sub>, *R*<sub>2+3</sub> being very short to virtually lacking; vein *R*<sub>3</sub> gently upcurved at tip; cell 1st *M*<sub>2</sub> closed, *m-cu* from one-third to one-fourth its own length beyond the fork of *M*; vein 2nd *A* sinuous, the distal third of the cell narrowed, particularly in the male.

Abdomen of male brown, the hypopygium still darker; in the female, abdomen uniformly dark brown; cerci long and slender, gently upcurved. Male hypopygium having the general structure of *nantaisana* but with all characters even more accentuated, particularly the dististyles. Outer dististyles very short and compact, subtriangular in outline, the width across the head nearly equal to the length, the stem correspondingly stout. Inner dististyle much larger than in *nantaisana*, being fully as long as the basistyle, dark-colored, appearing more or less mitten-shaped, fully twice as wide as in *nantaisana*. Lateral gonapophyses much larger than in *nantaisana*, their tips greatly expanded into flattened yellow blades.

*Habitat*: Japan (Honshiu). *Holotype*, ♂, Mt. Kurobegoro, Toyama (Japanese Alps), altitude 2,400 meters, August 8, 1931 (K. Imanishi); No. 5016, through Tokunaga, No. 145. *Allotopotype*, ♀, with the type; No. 5017.

The present fly is related to *Ormosia* (*Ormosia*) *nantaisana* Alexander, from which it differs very evidently in the structure of the male hypopygium, as detailed above. I had earlier determined this material as being *nantaisana* but the receipt of more material of this latter species has demonstrated the specific distinctness of the two flies.

#### ***Ormosia* (*Ormosia*) *ontakeana* n. sp.**

Size large (wing, female, 7.5 mm.); general coloration of head and thorax gray; antennae black throughout; halteres short, light golden yellow; legs uniformly brownish black; wings broad, ground color grayish, the large stigma dark brown, conspicuous; *R*<sub>2+3+4</sub> long and nearly straight, about twice the oblique *r-m*; cell 1st *M*<sub>2</sub> closed, subequal in length to vein *M*<sub>4</sub>; *m-cu* from one-third to one-half its length beyond the fork of *M*; vein 2nd *A* sinuous.

*Female*.—Length, about 7 mm.; wing, 7.5 mm.

Rostrum dark brown; palpi brownish black. Antennae black throughout; basal flagellar segments long-oval, the outer ones passing through subcylindrical to virtually cylindrical; terminal three seg-

ments subequal in length; verticils slightly exceeding the segments. Head gray.

Pronotum brown, gray on the sides; scutellum and pretergites clear light yellow. Mesonotum and pleura almost uniformly gray over a brown ground; praescutal pattern not visible in the unique type. Halteres short, knobs large, entirely light golden yellow. Legs with the coxae brownish gray; trochanters yellow; remainder of legs uniformly brownish black. Wings broad, the ground color grayish, the prearcular and costal fields more brownish yellow; stigma dark brown, conspicuous; a scarcely evident darkening along the cord, best-evidenced by a deepening in color of the veins; veins brown, those in the brighter fields and toward the wing base somewhat paler. Macrotrichia delicate but distributed over the entire wing. Venation:  $Sc_1$  ending just beyond the oblique  $R_2$ ,  $Sc_2$  about opposite midlength of  $R_3$ ;  $R_{2+3+4}$  long and nearly straight, about twice the oblique  $r-m$ ; vein  $R_3$  only slightly upcurved at its outer end; cell 1st  $M_2$  closed, subequal in length to vein  $M_4$  beyond it;  $m-cu$  about one-third to one-half its length beyond the fork of  $M$ ; vein 2nd  $A$  sinuous.

Abdomen almost uniformly dark brown; ovipositor with the cerci horn-yellow, more darkened basally.

*Habitat*: Japan (Honshiu). *Holotype*, ♀, Ontake, Hida, southern Alps, altitude 5,850 ft., July 6–10, 1934 (H. Ise); through Kariya.

Although only the female sex is available, there is no question of the distinctness of the present fly. From the other species having cell 1st  $M_2$  closed and with vein 2nd  $A$  strongly sinuous, including *Ormosia* (*Ormosia*) *nantaisana* Alexander and *O. (O.) subalpina* sp. n., it is readily told by the almost unpatterned wings, uniformly blackened legs, and the details of venation, including the course of  $R_2$  and  $r-m$ , and the lengths of vein  $R_{2+3+4}$  and cell 1st  $M_2$ .

#### ***Ormosia* (*Ormosia*) *kamikochiae* n. sp.**

Belongs to the *similis* group; general coloration of the mesonotum light brown, the posterior sclerites and the pleura more pruinose; antennae short; legs brown, the femoral bases broadly yellow; wings with cell  $M_2$  open by the atrophy of the basal section of  $M_3$ ; vein 2nd  $A$  sinuous on the distal third; male hypopygium with the gonapophyses unequally bispinous; aedeagus a slender black rod, its tip subacute.

*Male*.—Length, about 4.5 mm.; wing, 4.8 mm.; antenna, about 1 mm.

*Female*.—Length, about 5 mm.; wing, 5 mm.

Rostrum brown; palpi black. Antennae short in both sexes; scape and pedicel brown, flagellum somewhat darker; flagellar segments long-oval to subcylindrical; longest verticils unilaterally arranged and much longer than the segments. Head dark brownish gray.

Pronotum and mesonotum almost uniformly light brown, the posterior sclerites and the pleura more pruinose to produce a plumbeous appearance. Halteres pale yellow. Legs with the coxae obscure yellow, the fore pair darker, sparsely pruinose; trochanters yellow; femora obscure yellow basally, with about the outer half dark brown; remainder of legs light brown, the terminal tarsal segments darker. Wings with a weak brownish tinge, the prearcular and costal fields somewhat more

yellowish brown; stigma darker brown than the ground; veins light brown. Macrotrichia of cells abundant but delicate. Venation:  $Sc_1$  ending opposite  $R_2$ ; cell  $M_2$  open by the atrophy of the basal section of  $M_3$ ;  $m-cu$  close to the fork of  $M$ ; vein 2nd  $A$  sinuous on its distal third.

Abdomen, including the hypopygium, dark brown. Male hypopygium with the ninth tergite conspicuous, narrow but very deeply split medially. Outer dististyle small, densely covered with short appressed setae, arranged in parallel rows as in the group. Inner dististyle larger, dilated at base, the apex narrowed, the lower surface filled with pale membrane. Each gonapophysis appearing as a conspicuous blackened bispinous structure, the spines slender and very unequal, the longer one strongly curved at midlength, the shorter and more basal spine about one-half as long, directed caudad. Aedeagus appearing as a further slender straight blackened rod, the tip subacute or very narrowly obtuse.

*Habitat*: Japan (Honshiu). *Holotype*, ♂, Kamikochi, Shinano, altitude 5,000 ft., August 18–21, 1934 (Kariya). *Allotopotype*, ♀, pinned with the type.

The present fly is quite distinct from the other regional members of the group, being most similar to *Ormosia (Ormosia) machidai* Alexander and *O. (O.) seclusa* Alexander, but differing from these and all others in the structure of the male hypopygium.

#### *Ormosia (Ormosia) dicax* n. sp.

Belongs to the *similis* group; size medium (wing, male, 5 mm. or a trifle more); general coloration of thorax light gray, the praescutum unpatterned; halteres light yellow; femora yellow, the tips infuscated; wings whitish subhyaline, the prearcular and costal fields light yellow; a restricted brown pattern, the largest areas being the stigma and a conspicuous seam along vein  $Cu$ ; cell  $M_2$  open by the atrophy of the outer deflection of  $M_3$ ; Anal veins divergent; male hypopygium with the inner dististyle stout, including the obtuse tip; each gonapophysis appearing as a simple elongate sinuous yellow blade, nearly as long as the basistyle, narrowed gradually to the acute tip.

*Male*.—Length, about 4.2–4.5 mm.; wing, 5–5.5 mm.; antenna about 0.9 mm.

*Female*.—Length, about 5 mm.; wing, 5.2 mm.

Rostrum brownish yellow; palpi brown. Antennae short, as shown by the measurements; scape and pedicel yellow, flagellum brown; flagellar segments oval, the longest verticils slightly exceeding the segments. Head gray.

Pronotum pale brown or brownish yellow, sparsely pruinose. Mesonotum clear gray, the tuberculate pits and pseudosutural foveae black; praescutal stripes not indicated. Pleura gray, the dorsopleural region and pretergites yellow. Halteres light yellow, especially the knobs. Legs with the coxae yellow, the fore pair a little darker; trochanters yellow; femora yellow or brownish yellow, the tips infuscated; tibiae yellow, the tips more narrowly darkened; tarsi passing into black. Wings whitish subhyaline, prearcular and costal fields yellow; a restricted brown pattern, including the stigma, a broad seam along vein  $Cu$  and less evident cloudings along cord and as barely indicated mar-

ginal darkenings at ends of the veins; veins light brown, darker in the clouded areas, yellow in the flavous portions. Venation:  $R_2$  at or very close to the fork of  $R_{2+3+4}$ ; tips of veins  $R_3$  and  $R_4$ , especially the former, slightly upcurved; cell  $M_2$  open by the atrophy of basal section of  $M_3$ ;  $m$  at its junction with outer section of  $M_3$  square and, in cases, more or less spurred;  $m-cu$  at fork of  $M$ ; Anal veins gradually divergent.

Abdomen brownish black, the basal sternites more reddened; hypopygium varying from obscure yellow to dark brown. Male hypopygium with the tergite broad, the sides and the caudal margin gently emarginate, the outer third pale. Inner dististyle relatively stout, including its obtuse apex. Gonapophyses appearing as simple elongate sinuous yellow blades that narrow very gradually to the acute tips, the total length of either apophysis nearly equal to the basistyle.

*Habitat*: Japan (Honshiu). *Holotype*, ♂, Hamasaka, Hyogo (Tottori), April 1, 1931 (Okada). *Allotopotype*, ♀, pinned with type. *Paratopotypes*, 3 ♂♂, March 25–April 1, 1931 (Okada).

*Ormosia* (*Ormosia*) *dicax* is entirely different from the most similar regional species, including *O. (O.) takeuchii* Alexander and *O. (O.) takahashii* Alexander, both of which have the male hypopygium, especially the gonapophyses, entirely different.

#### Genus *Molophilus* Curtis

#### *Molophilus* (*Molophilus*) *efferox* n. sp.

Belongs to the *gracilis* group and subgroup; general coloration of body black; antennae short; halteres entirely pale yellow; femora black, the bases broadly obscure yellow; wings with a weak brownish tinge, the base brighter; male hypopygium with the ventral lobe of basistyle very small, the dorsal or lateral ones very powerfully developed into spines, one a long curved simple rod, the other bifid into two unequal spines; two dististyles, the longest at about two-thirds the length bent at nearly a right angle; shorter spine sinuously bent, the tip a long slender spine.

*Male*.—Length, about 4.5 mm.; wing, 4.7 mm.; antenna, about 0.9 mm.

Rostrum and palpi black. Antennae short; scape black, pedicel more piceous, flagellum brownish black; flagellar segments oval, the outer ones a little more elongate. Head brownish black.

Thorax almost uniformly blackened, the surface with a vague pruinosity to produce a weak plumbeous appearance. Halteres uniformly very pale yellow. Legs with the coxae brownish black; trochanters obscure brownish yellow; femora with about the proximal third or fourth obscure yellow, the remainder passing into brownish black; tibiae and basitarsi light yellowish brown, the outer tarsal segments more strongly infuscated. Wings with a weak brownish tinge, the prearcular and costal fields light yellow; veins and macrotrichia darker brown, the veins in the paler fields brownish yellow. Venation:  $R_2$  lying a short distance beyond the transverse level of  $r-m$ ; petiole of cell  $M_3$  nearly three times  $m-cu$ , the latter only a short distance beyond the fork of  $M$ ; vein 2nd  $A$  long, gently sinuous, ending about opposite midlength the petiole of cell  $M_3$ .

Abdomen, including hypopygium, black. Male hypopygium with the apical lobes of the basistyle much developed; ventral lobe unusually small, only about twice as long as its diameter at base; outer or lateral portion of style produced into two lobes that lie close together at base, one a long curved spine that is nearly as long as the longest dististyle, the other shorter but broader at base, split into two unequal acute spines, the shorter of which is more slender. Two dististyles, the longest strongly bent at about two-thirds its length into a long straight spine; lower style shorter, the proximal half broader, the distal portion sinuously bent, thence narrowed into a slender, very acute spine, the ventral margin with a few scattered spinous points. Aedeagus long and slender. Phallosomic plate relatively narrow, obtuse at tip, the surface with microscopic setulae.

*Habitat:* Japan (Honshiu). *Holotype*, ♂, Kamikochi, Shinano, altitude 5,000 ft., August 18-21, 1934 (Kariya).

While differing entirely in the black coloration, the present fly suggests *Molophilus (Molophilus) ferox* Alexander, likewise from the Japanese Alps, in the unusual development of spinous points on both the basistyle and dististyles of the male hypopygium. The Korean *M. (M.) avidus* Alexander has a somewhat similar modification of the dorsal lobe of the basistyle but differs in all details of structure of both the basistyle and dististyles.