

UNDESCRIBED SPECIES OF JAPANESE CRANE-FLIES
(DIPTERA: TIPULIDAE)
PART VIII

By

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The preceding part of this series of papers was published in the *Annals of the Entomological Society of America*, 43: 418-436, 1950. The species discussed at this time were taken in various parts of Honshu and Kyushu by several friends and colleagues to whom my sincere thanks are extended for the privilege of retaining the types of the novelties in my private collection of these flies. Materials from Kyushu were taken by Messrs. Issiki and Ito; from Honshu, by Messrs. Fukuhara, Haruta, Hasegawa, Inoue, and Ito.

Genus *Tanyptera* Latreille
Tanyptera brevipecten n. sp.

Size medium (wing, male, about 12 mm.); general coloration black, the basal abdominal

segments extensively yellow; antennal flagellum with the unpaired branch relatively short; femora yellow, the tips very narrowly black; wings with vein R_1+2 oblique to suberect; male hypopygium with the outer dististyle relatively large, narrowed gradually into an acute blackened spine.

Male.—Length, about 14-15 mm.; wing, 12-12.5 mm.; antenna, about 4.0-4.1 mm.

Frontal prolongation of head and palpi black. Antennal scape brownish black, pedicel and flagellum paler, brown to yellowish brown, the branches darker; longest branches nearly three times the segments, the outer unpaired one much shorter, less than the segment itself; first flagellar segment with a short simple branch, segments two to ten, inclusive, with paired basal branches; terminal segment simple.

Head black. Thorax black, the praescutum

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and scutum more polished; dorsopleural membrane obscure yellow. Halteres with stem dusky, knob yellow. Legs with the coxae black; trochanters obscure yellow; femora yellow, the tips very narrowly black; tibiae and basitarsi obscure yellow, the tips very narrowly darkened; remaining tarsal segments more uniformly dark brown. Wings (Fig. 1) with a weak brownish tinge, the prearcular and costal fields a little more yellowed; stigma oval, dark brown; a paler brown cloud over the anterior cord; veins brownish black. Venation: R_{1+2} oblique to suberect, cell Sc_2 small to very small; petiole of cell M_1 from one to one and one-half times m ; basal section of vein M_4 relatively long, erect.

First abdominal tergite and base of second black; succeeding tergites yellow, with a broad conspicuous black central stripe, the outer segments uniformly black; basal sternites yellow. Male hypopygium with the posterior border of tergite very gently emarginate. Outer dististyle relatively large, narrowed gradually into an acute blackened spine; inner dististyle about two-thirds as long, more or less parallel-sided.

Habitat: Japan (Kyushu). *Holotype:* ♂, Naidaizin, altitude 700 meters, May 25, 1952 (Issiki-Ito). *Paratype:* ♂, Kunimidake, altitude 1200 meters May 24, 1952 (Issiki-Ito).

Tanyptera brevipecten is most nearly allied to species such as *T. angustistyla* Alexander and *T. perangusta* Alexander, both of which are smaller forms with the structure of the male hypopygium, particularly the outer dististyle, quite distinct.

Genus *Macgregoromyia* Alexander *Macgregoromyia syusiro* n. sp.

General coloration dark plumbeous gray; antennae and legs brownish black; wings with the restricted ground yellow, most of the surface suffused with darker; stigma and narrow seams over the cord dark brown; abundant macrotrichia in outer cells of wing; vein R_{1+2} preserved; $r-m$ very strongly arcuated basad; abdomen dark brown, the basal sternites dimidiate, brown, the apices broadly testaceous yellow; ovipositor with the cerci small and slender.

Female.—Length, about 9.5 mm.; wing, 11 mm.; antenna, about 2 mm.

Frontal prolongation of head dark gray, nasus distinct; palpi black. Antennae brownish black, the scape and pedicel a trifle paler, 12-segmented; flagellar segments not enlarged basally, the intermediate ones subequal to the verticils. Front and anterior vertex light gray, posterior vertex dark grayish brown; no vertical tubercle; anterior vertex broad, approximately seven or eight times the diameter of the scape.

Pronotum dark brown. Mesonotum almost uniformly dark plumbeous, the praescutum with vague indications of a darker median brown line on anterior half; scutellum, postnotum and

pleura lighter gray; dorsopleural membrane restrictedly obscure yellow. Halteres brown, the knob dark brown. Legs with the coxae gray; trochanters brownish gray; remainder of legs dark brown to brownish black. Wings (Fig. 2) with the restricted ground yellow, most evident in cells C and Sc; most of remainder of surface infuscated, appearing as central streaks in cells R and M, most of cells Cu and Anals, and as broad seams to the veins beyond cord, involving the entire wing tip; stigma oval, dark brown, conspicuous, preceded and followed by extensive whitened areas; narrow darker brown seams at anterior cord, less evident but distinct on the posterior cord; veins dark brown, paler in the costal field. Abundant macrotrichia in centers of cells beyond cord (indicated in drawing by stippling), extending from cells R_2 to Cu, inclusive. Venation: R_s short, about one-half R_{2+3} , R_{1+2} preserved; $r-m$ very strongly arcuated basad; petiole of cell M_1 nearly twice m ; cell 1st M_2 relatively narrow, parallel-sided or virtually so; basal sections of veins M_{1+2} and M_{3+4} subequal.

Abdominal tergites chiefly dark brown, the sternites dimidiate, brown basally, the posterior parts broadly testaceous yellow, on the sixth and succeeding segments more uniformly darkened; cerci and hypovalvae fulvous horn color. Ovipositor with cerci small and weak but slender, pointed at tips.

Habitat: Japan (Kyushu). *Holotype:* ♀, Naidaizin, altitude 600 meters, May 23, 1952 (Issiki-Ito).

This interesting fly is named for Professor Syusiro Ito, distinguished student of the Japanese Diptera. Despite the aberrant characters of the strong retention of vein R_{1+2} and the presence of abundant macrotrichia in the wing cells, I am referring this fly to *Macgregoromyia*, from all other known species of which it differs in the two points indicated. The only other generic assignment possible would seem to be in the subgenus *Mitopeza* Edwards of the genus *Dolichozeza* Curtis, but here, too, the characters are quite discordant. The discovery of the male sex might throw some further light on this question.

Macgregoromyia itoi n. sp.

General coloration dark brown, the praescutum vaguely striped with darker; antennae short; legs brownish black, the femoral bases restrictedly brightened; wings grayish subhyaline, cells C and Sc brown; stigma and a narrow seam over the anterior cord darker brown; R_s short, transverse; cell 1st M_2 small, about as long as the petiole of cell M_1 ; male hypopygium with the margins of the lobes of the tergites slightly produced; inner dististyle with its posterior border strongly convex, the caplike apex produced backward; beak with a low chitinized flange on side.

Male.—Length, about 9 mm.; wing, 11.3 mm.; antenna, about 3.2 mm.

Frontal prolongation of head relatively short, about one-half the remainder, buffy above, including the distinct nasus, dark brown on sides; palpi with basal two segments black, the outer two brown. Antennae with scape and pedicel testaceous yellow, flagellum brownish black; segments elongate-cylindrical, with very poorly developed basal tubercles; verticils very short, less than the diameter of the segment at the point of their insertion. Head brownish black, sparsely pruinose, more heavily and conspicuously so on the anterior vertex; front light gray; anterior vertex broad, nearly six times the diameter of the scape; vertical tubercle lacking.

Pronotum brown, more pruinose laterally. Mesonotum chiefly dark brown, the praescutum with vague indications of stripes, the median one narrowly bordered by darker and divided by a similar capillary vitta; lateral praescutal borders pruinose; posterior sclerites of notum dark brown. Pleura chiefly brownish gray, the ventral propleura, sternopleurite and meron darker brown; dorsopleural membrane more buffy. Halteres elongate, stem yellow, clearer basally, knob brownish black. Legs with the coxae pale brown; trochanters yellow; remainder of legs brownish black, the femoral bases restrictedly yellow; claws long and slender, simple. Wings grayish subhyaline, cells C and Sc brown; stigma and a narrow seam over the anterior cord dark brown, posterior cord more narrowly darkened; outer radial field and wing margin vaguely infuscated; veins brownish black. Venation: R_s short, transverse, about one-half longer than the basal section of R_{4+5} ; cell 1st M_2 small, about as long as the petiole of cell M_1 .

Abdominal tergites black, sternites brownish yellow, their bases blackened; outer segments, including hypopygium, blackened. Male hypopygium with the tergite large, the lobes broad, their outer lateral margins slightly more produced, glabrous; remainder of lobes with dense erect setulae and scattered relatively small setae; median region of tergal notch farther produced into a semicircular blade. Outer dististyle darkened, about four times as long as broad, the tip obtuse. Inner dististyle with the posterior border strongly convex, the caplike apex produced backward, the beak longer, with a low chitinized flange back from the tip.

Habitat: Japan (Kyushu). *Holotype:* ♂, Udonno, altitude 200–250 meters, May 15, 1952 (Issiki-Ito).

I am pleased to name this interesting fly for Professor Syusiro Ito, student of the Japanese Diptera, particularly the Empididae and Trypetidae. The most nearly allied species is *Macgregoromyia shikokuana* Alexander, of Shikoku, Japan. As has been discussed elsewhere, the discovery of members of the genus in southern Japan came as a surprise, the hitherto described forms occurring in eastern and southeastern Asia,

from the Philippines to the Malay Peninsula, as far west as Szechwan, China. The various species are readily told among themselves by the details of venation and structure of the male hypopygium.

Genus *Nephrotoma* Meigen

Nephrotoma akitae n. sp.

Size relatively large (wing about 15 mm.); general coloration yellow contrasted with polished black or blue-black areas, including three praescutal stripes; male antennae with the flagellar segments strongly incised; occipital brand very large, subquadrate in outline; scutellum testaceous yellow, mediotergite yellow, its posterior border narrowly darkened; abdominal tergites yellow with an almost entire median black stripe, segments seven to nine, inclusive, black; ovipositor with the cerci and hypovalvae short and subfleshy; male hypopygium with the beak of the inner dististyle very long; ninth sternite with a conspicuous median appendage that is clothed with long reddish setae; gonapophysis microscopically setuliferous.

Male.—Length, about 15 mm.; wing, 14.5 mm.; antenna, about 5 mm.

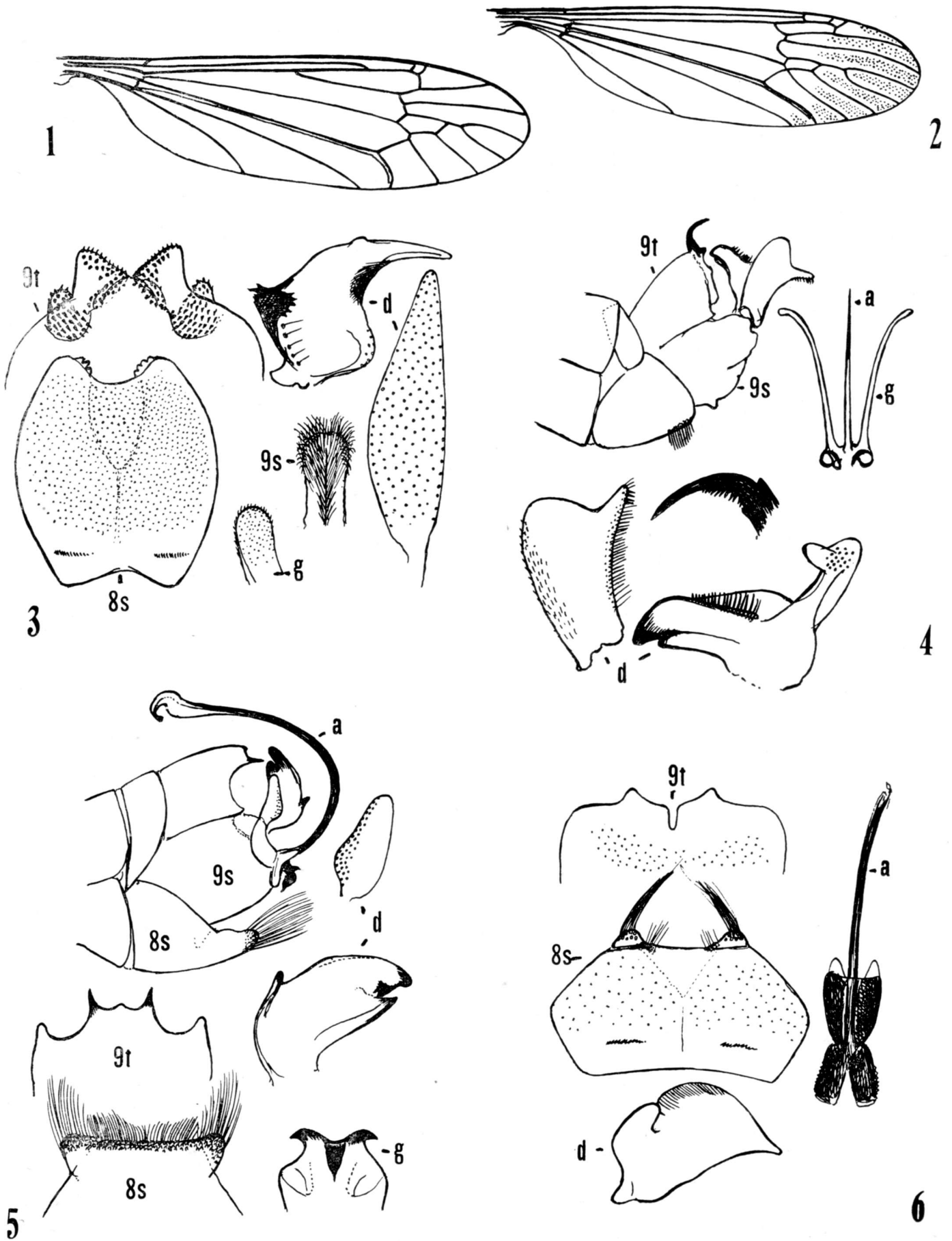
Female.—Length, about 16 mm.; wing, 15 mm.

Frontal prolongation of head yellow, the apex darkened medially above, including the nasus; basal segment of palpus dark brown, the second and third segments brownish yellow, terminal segment black. Antennae (male) relatively long, as shown by the measurements; scape brownish yellow, pedicel dark brown, flagellum black; flagellar segments strongly incised, the outer node of each segment larger than the basal one. In the female, antennae shorter, the flagellar segments very feebly incised. Head yellow; occipital brand very large, subquadrate in outline, its anterior border truncate or virtually so.

Pronotum light yellow medially, the propleura black. Mesonotal praescutum yellow with three polished blue-black stripes that are vaguely bordered by more velvety black, including the cephalic border of the median stripe and a larger spot opposite the anterior end of the lateral stripe, this not reaching the margin, median praescutal stripe reaching the suture behind; lateral ends of suture blackened, the color continued cephalad along the extreme lateral

EXPLANATION OF PLATE

- FIG. 1. *Tanyptera brevipecten* n.sp.; venation.
 FIG. 2. *Macgregoromyia syusiro* n.sp.; venation.
 FIG. 3. *Nephrotoma akitae* n.sp.; male hypopygium.
 FIG. 4. *Tipula (Indotipula) itoana* n. sp.; male hypopygium.
 FIG. 5. *Tipula (Oreomyza) harutai* n. sp.; male hypopygium.
 FIG. 6. *Tipula (Oreomyza) daitenjoensis* n.sp.; male hypopygium. (Symbols: a, aedeagus; d, dististyle; g, gonapophysis; s, sternite; t, tergite).



border to nearly opposite the anterior end of the lateral stripe; centers of scutal lobes polished leaden black, the remainder of scutum yellow; scutellum testaceous yellow; mediotergite yellow, the posterior border narrowly darkened, pleurotergite dusky, the katapleurotergite extensively yellow. Pleura yellow, contrastedly patterned with black, including the ventral anepisternum, ventral sternopleurite, ventral meron and along the mesopleural suture; dorsopleural membrane extensively pale yellow. Halteres obscure brownish yellow. Legs with the coxae blackened basally, more extensively so on fore legs where more than the basal half is included, on the other coxae only the bases darkened, the setae abundant, pale; trochanters yellow; fore femora chiefly black, the basal two-fifths brownish yellow; remaining femora brownish yellow with approximately the outer sixth blackened; tibiae brown, the tips broadly black; tarsi black; claws apparently simple. Wings with the ground color yellowed, the prearcular and costal regions clearer; wing tip and anterior cord narrowly darkened; stigma oval, darker brown, with trichia. Venation: R_s oblique, fully twice the basal section of R_{4+5} ; cell M_1 broadly sessile; m-cu at fork of vein M_4 .

Abdominal tergites yellow with an only slightly broken mid-dorsal black stripe, interrupted at the cephalic borders of the individual segments; basal sternites yellow; segments seven to nine, inclusive, black. Ovipositor with the cerci short, somewhat as in *esakii*; hypoalvae with the terminal part very short, bent strongly ventrad. Male hypopygium (Fig. 3) with the ninth tergite, *9t*, transverse, narrowed outwardly, terminating in two triangular lobes, their apices obliquely truncated, densely spiculate; flange of ventral surface with unusually abundant spicules, jutting caudad on either side as a small lobe. Ninth sternite, *9s*, with a conspicuous median appendage, carinate beneath, densely provided with long reddish setae. Outer dististyle moderately long, its length about 3.5 times its greatest width. Inner dististyle, *d*, with the beak unusually long and slender, nearly straight; lower beak lacking; no dorsal crest but with a low rounded knob opposite the base of beak; posterior crest blackened and strongly armed with spinous points. Gonapophysis, *g*, shorter than the broad aedeagus, appearing as a slightly elongate blade, the surface microscopically setulose, apex rounded. Eighth sternite, *8s*, very large and sheathing, longer than broad, widest opposite midlength, thence narrowed, the posterior border produced into two low lobes, their ventral-mesal face with three or four tubercles, the lobes with dense relatively short yellow setae; median region for nearly one-half the length with shield-shaped membranous area that bears numerous strong setae.

Habitat: Japan (Honshu). *Holotype:* ♂,

Yuze, Akita, altitude 250 meters, June 22, 1951 (Issiki-Ito). *Allotopotype:* ♀, pinned with the type.

In its general appearance the present fly is most like *Nephrotoma ozenumensis* Alexander, differing in all details of coloration, especially of the head and mesonotum. The hypopygial structure marks the present fly as very distinct.

Genus *Tipula* Linnaeus

Tipula (Indotipula) itoana n.sp.

General coloration of mesonotum orange, the pleura more whitened; head dark gray above, with a capillary dark brown line; wings brownish yellow, the prearcular and costal fields clearer yellow, stigma yellow; basal abdominal tergites yellow, the outer ones darker with narrow pale borders, sternites yellow; male hypopygium with the tergite produced medially into a pair of strong curved hooks, their mesal faces with abundant spines; outer dististyle a large broadly flattened blade that bears a slender lobe on outer margin; inner dististyle with its outer basal lobe elongate; aedeagus needle-like, the gonapophyses approximately as long and only a little stouter, their tips narrowly obtuse; eighth sternite with the posterior border scarcely emarginate, the midregion of the posterior border with a dense group of erect yellow setae.

Male.—Length, about 15–16 mm.; wing, 18.5–19 mm.; antenna, about 3.8–3.9 mm.

Female.—Length, about 23 mm.; wing, 20 mm.; antenna, about 3.8 mm.

Frontal prolongation of head yellow, relatively short, less than the remainder of head, nasus elongate; palpi brownish yellow, the terminal segment a trifle darker. Antennae relatively short, subequal in both sexes; scape and pedicel yellow, first flagellar segment brownish yellow, remaining segments dark brown, feebly incised in male, the longest verticils slightly exceeding the segments. Head above dark gray, with a capillary dark brown median vitta, the very short front and space surrounding the antennal fossae yellowed; no vertical tubercle; head beneath more ochreous.

Pronotum light reddish brown. Mesonotum chiefly orange, the lateral praescutal borders whitened, mediotergite more yellowed. Pleura and pleurotergite whitened. Halteres infuscated, the knob more heavily so, the base of stem narrowly yellowed. Legs with the coxae whitened; trochanters yellow; femora and tibiae obscure yellow, narrowly infuscated at tips; tarsi dark brown; spur-formula 0–1–2; claws (male) bidentate, the outer spine longer and more conspicuous than the basal one. Wings brownish yellow, the prearcular and costal fields clearer yellow; cell *Sc* deeper yellow; stigma yellow, its outer end narrowly more darkened; veins brown, more brownish yellow in the more brightened

fields. No squamal setae; trichia of outer medial veins sparse, virtually restricted to outer half of vein M_1 ; vein R_{4+5} with abundant trichia, more crowded outwardly. Venation: R_s about one-third longer than r-m; cell 1st M_2 long-pentagonal, m and petiole of cell M_1 subequal; m-cu on M_4 just beyond origin; cell 2nd A relatively narrow.

Basal abdominal tergite yellowed, the posterior half of the second and the succeeding ones darker, the borders narrowly and inconspicuously pale, the lateral margins becoming broader on the outer segments; sternites yellow; hypopygium, including the large outer dististyle, brownish yellow. Ovipositor with the cerci straight, slender; hypoalvae long, appearing as compressed blades. Male hypopygium (Fig. 4) with the suture separating the ninth tergite and sternite complete except at cephalic end. Ninth tergite, $9t$, terminating in two powerful blackened hooks that are directed dorsad and slightly caudad, the outer half or less slightly decurved; mesal faces of the hooks with a group of erect black spinous setae; base of hooks on either side produced into a low shoulder. Ninth sternite with a small median knob or tubercle. Outer dististyle, d , a large broadly flattened blade, the lower apical region farther produced into a slender lobe that is fringed along margin with dense erect setae, near outer end of the expanded blade with an extensive whitened area. Inner dististyle, d , with the beak stout, lower beak obtusely rounded at tip; outer basal lobe a strong outwardly directed arm, at apex more expanded, as shown; region of the dorsal crest bearing a row of about 20 strong bristles, the longest being at the inner end of the row, becoming progressively shorter outwardly. Phallosome consisting of the long very slender acicular aedeagus, a , and the almost as slender subtending apophyses, g , the tips of the latter narrowly obtuse. Eighth sternite, $8s$, only moderately sheathing, the posterior border scarcely emarginate; immediately back from the border, the midregion with a dense group of erect yellow setae.

Habitat: Japan (Honshu). *Holotype*: ♂, Yatsugatake, Shinano, altitude 1250 meters, August 9, 1949 (Ito). *Allotopotype*: ♀. *Paratopotype*: ♂.

This is another of the interesting novelties discovered by Professor Syusiro Ito and which I am pleased to name in his honor. The nearest ally is *Tipula (Indotipula) yamata* Alexander, in which the male hypopygium is entirely distinct in structure.

Tipula (Oreomyza) harutai n.sp.

Allied to *yusou*; general coloration gray, the praescutum with four slightly more infuscated stripes that are bordered by dark brown; no

nasus; basal two antennal segments yellow, the scape narrowly darkened at base, flagellum black, the segments rather strongly incised; femora obscure yellow, the tips black; wings whitened, the base and costal region more yellowed; a conspicuous clouded pale brownish gray pattern with darker areas at stigma, anterior cord and over the bases of cells R and M; basal abdominal segments yellow, the outer ones blackened; male hypopygium large and conspicuous; ninth tergite with the median region of posterior border produced into a plate, each lateral angle extended into a sharp spine; aedeagus very large and conspicuous, blackened; eighth sternite with the posterior border truncate, the lateral angles produced into conspicuous lobes, the entire border with long yellow setae.

Male.—Length, about 13–14 mm.; wing, 16–17 mm.; antenna, about 5 mm.

Frontal prolongation of head brownish black, pruinose at base, without nasus; palpi black. Antennae with scape obscure yellow, more or less darkened at base; pedicel yellow; flagellum black, the segments rather strongly incised, somewhat more strongly so in the paratype; segments about equal in length to the longest verticils. Head gray, darker on the genae; vertical tubercle conspicuous, weakly bilobed.

Pronotum gray, darkened medially. Mesonotal praescutum brownish gray, with four slightly more infuscated stripes that are narrowly margined with dark brown, the anterior ends of the borders of the intermediate stripes becoming obsolete in front, the outer borders of the lateral pair similarly obliterated behind; central dark stripe very conspicuous; posterior sclerites of notum gray, the scutal lobes each with two brown areas; katapleurotergite light gray. Pleura dark gray, variegated with paler gray across the dorsal sternopleurite and lower pteropleurite. Halteres pale, the base of knob a trifle darker. Legs with the coxae light gray; trochanters obscure yellow; femora obscure yellow, the tips rather broadly and conspicuously blackened, the amount subequal on all legs; tibiae black, a trifle more brightened basally; tarsi black; claws (male) toothed. Wings with the ground color whitened, the prearcular and costal fields light yellow; a conspicuous clouded pale brownish gray pattern, most evident in the outer and posterior cells, basad of cord appearing as longitudinal areas in the centers of cells R and M; stigma and a confluent seam over the anterior cord dark brown; a small but conspicuous dark brown postarcular area in cells R and M; both ends of cell 2nd A conspicuously whitened; veins dark brown, yellow in the flavous areas. Venation: R_s and R_3 subequal; cell 1st M_2 small, pentagonal in outline; petiole of cell M_1 a trifle longer than m; m-cu close to fork of M.

Abdomen with basal tergites obscure yellow, with a vague brown sublateral stripe, most

distinct at base; outer four segments uniformly brownish black. Male hypopygium (Fig. 5) large and conspicuous; basistyle entire. Ninth tergite, *9t*, with the median area produced into a transverse plate, each lateral angle of which is produced into an acute spine, the median area with a low triangular point; median plate separated from the sides by a broad U-shaped notch. Ninth sternite produced into a small slender lobe on either side of the phallosome. Outer dististyle, *d*, unusually short and stout, broadest on basal half, narrowed to the obtuse tip, the entire posterior border fringed with very long setae. Inner dististyle, *d*, with both beaks blackened; a very low and inconspicuous dorsal crest; outer basal lobe a small blackened spinous point, its tip obtuse. Gonapophysis, *g*, with the lateral blackened points unusually small, directed laterad, the decurved median point longer, its tip suddenly narrowed to an acute point. Aedeagus, *a*, very large and conspicuous, blackened, the tip paler, decurved. Eighth sternite, *8s*, sheathing, the entire posterior border truncate, each lateral angle produced into a stout lobe that is provided with a brush of long yellow setae, the transverse median part with shorter setae, these angularly bent at near mid-length.

Habitat: Japan (Honshu). *Holotype*: ♂, Mount Takao, May 5, 1950 (Haruta). *Paratopotype*: ♂, May 13, 1950 (Inoue).

The species is named for Mr. Toshiro Haruta. The fly is readily told from other members of the *yusou* group by the wing pattern and, especially, the structure of the male hypopygium, including the tergite, gonapophysis, and eighth sternite. The most similar species is *Tipula (Oreomyza) subyusou* Alexander, with which the present fly was associated in nature.

Tipula (Oreomyza) daitenjoensis n.sp.

General coloration light gray, the praescutum with three darker stripes; nasus lacking; antennae short, black throughout; legs black, the femoral bases obscure yellow; wings weakly brownish with a restricted darker brown pattern and more extensive whitened areas, including cells M, Cu and a poststigmatal band; basal tergites yellow, trivittate with dark brown, outer segments more uniformly blackened; male hypopygium with the posterior margin of the ninth tergite smooth, with a small narrow U-shaped notch; inner dististyle entirely blackened, its outer basal lobe a large darkened appendage; eighth sternite large, the posterior border membranous, on either side with a low hemispherical lobe that bears a pencil of setae.

Male.—Length, about 18 mm.; wing, 18 mm.; antenna, about 4 mm.

Frontal prolongation of head elongate, a little shorter than the remainder, light gray above, dark brown on sides and beneath; nasus lacking;

palpi brownish black. Antennae (male) relatively short, as shown by the measurements, black throughout, the scape slightly pruinose; flagellar segments with basal enlargements small and inconspicuous, the segments a little longer than the longest verticils. Head light gray, washed with pale brown across the posterior vertex and behind the eyes, the orbits narrowly gray; vertical tubercle very low, impressed medially.

Pronotum brownish gray, the scutellum lighter gray. Mesonotal praescutum light gray with three stripes, the broad median one dark gray, paler behind, narrowly bordered by brown along the interspaces, the cephalic third with a vague median darkening; lateral stripes small, paler brown; posterior interspaces slightly infuscated; posterior sclerites of notum clear light gray, the scutal lobes each with two separate brown areas; scutellum and mediotergite with vague indications of a capillary central darkening. Pleura clear light gray, the dorsopleural membrane medium brown. Halteres with stem yellow, knob dark brown. Legs with all coxae clear light gray; trochanters brownish gray; femora black, the bases rather narrowly obscure yellow, narrowest on the fore pair where about the proximal fifth is involved, on the posterior legs including slightly more than the basal fourth; remainder of legs black; claws (male) small, with a basal tooth. Wings with the ground brownish, conspicuously patterned with whitened areas, including a band beyond the stigma that extends to cell 1st M_2 ; two major areas in cell M, the outer one passing into cell Cu; a further major white area at near midlength of cell 1st A; more restricted whitenings at axilla and in bases of cells 1st M_2 and M_3 ; restricted darker marks include the stigma and a confluent seam over the anterior cord and a very small mark at origin of R_s ; veins brown, the obliterative areas whitened. Venation: R_s long, exceeding two and one-half times m-cu; R_{1+2} entire but short and oblique; cell M_1 very deep, its petiole less than one-half m.

Abdomen with the basal tergite clear gray; tergites two to four yellow, the lateral borders broadly light gray, margined internally by a dark brown stripe that is almost continuous; a central black stripe, narrowly interrupted at the posterior margins of the segments; fifth and succeeding segments more uniformly blackened, more or less pruinose; basal sternite gray, segments two to four yellow, remaining segments darkened. Male hypopygium (Fig. 6) with the ninth tergite, *9t*, transverse, its posterior border with two broad subtruncated lobes, separated by a small and narrow U-shaped notch. Outer dististyle not clearly apparent in the type slide. Inner dististyle, *d*, entirely blackened, compact, the beak small and slender; dorsal crest strongly ribbed; outer basal lobe a

large darkened appendage. Phallosome represented by a small blackened cylinder or collar, with the aedeagus, *a*, jutting through it. Eighth sternite δ_s , narrowed outwardly, the median region of the apex filled with pale membrane; on either side of the posterior border with a low hemispherical lobe that bears a pencil of setae, directed slightly inward but not decussate.

Habitat: Japan (Honshu). *Holotype*: ♂, Mount Daitenjo, Shinano, altitude 2900 meters, July 26, 1951 (Inoue).

In the lack of a nasus, the present fly appears to fall in the group of flies that center about *Tipula* (*Oreomyza*) *yusou* Alexander and allies, differing evidently in the coloration and structure of the antennae and male hypopygium. The resemblance to species such as *T. (O.) matsumuriana* Alexander and *T. (O.) trupheoneura* Alexander seems more superficial.

Genus *Limonia* Meigen

Limonia (*Geranomyia*) *hakoneana* n.sp.

General coloration of mesonotum brownish gray, the praescutum with three narrow more blackened stripes; rostrum long, black; head above grayish brown with a central gray vitta; ventral thoracic pleurites light yellow; halteres yellow, the apex of knob slightly darkened; legs brownish yellow, unpatterned; wings tinged with yellow, with a sparse but evident brown pattern, including spots at various points and with narrow seams over the cord and outer end of cell 1st M_2 ; Sc long, Sc_1 ending about opposite three-fourths R_s , Sc_2 near its tip; abdomen dark brown, the posterior borders of the tergites narrowly yellow; male hypopygium yellow, rostral spines two, relatively short, straight.

Male.—Length, excluding rostrum, about 6.5 mm.; wing, 7 mm.; rostrum, about 3 mm.

Rostrum intensely black, nearly one-half the body; palpi black. Antennae black throughout, short; flagellar segments oval, the terminal one about one-half longer than the penultimate; verticils subequal to the segments. Head above grayish brown, with a central gray vitta, involving the front and a slightly broader line over the vertex.

Pronotum obscure yellow, narrowly darker laterally. Mesonotal praescutum narrowly yellowed in front, more brownish gray behind, with three narrow more blackened stripes, the lateral pair far removed from the margin; posterior sclerites of notum brownish gray, the scutal lobes with darker centers. Pleura brownish testaceous above, paling to light yellow on the sternopleurite and meron. Halteres pale yellow, the apex of knob slightly darkened. Legs with the coxae and trochanters light yellow; remainder of legs brownish yellow, unpatterned, the outer tarsal segments a trifle darker; claws with an outer major spine and two or three

smaller more basal denticles. Wings tinged with yellow, slightly more saturated in the prearcular and costal fields; a very restricted but clear-cut brown pattern, including small spots at h, anterior arculus, supernumerary crossvein in cell Sc, origin of R_s , fork of Sc and as marginal clouds at ends of the longitudinal veins, those at R_{4+5} and M_{1+2} confluent; narrow but conspicuous seams at cord and outer end of cell 1st M_2 ; stigma brown, conspicuous, its center paler; veins yellow, darker in the patterned areas. Venation: Sc long, Sc_1 ending about opposite three-fourths R_s , Sc_2 near its tip; cell 1st M_2 longer than vein M_{1+2} beyond it; m-cu at fork of M.

Abdominal tergites dark brown, the posterior borders narrowly yellow; hypopygium yellowed. Unfortunately, the male hypopygium was lost before mounting on a slide; two straight rostral spines of moderate length were present, about as in *gifuensis*.

Habitat: Japan (Honshu). *Holotype*: ♂, Miyanoshita, Hakone, August 31, 1950 (Collector unknown).

The present fly is readily told from other regional species having patterned wings by the reduced pattern, with a different arrangement of the markings, and by the structure of the male hypopygium. Such forms with patterned wings include *Limonia* (*Geranomyia*) *avocetta* (Alexander), *L. (G.) multipuncta* (Alexander), and *L. (G.) radialis* Alexander; *L. (G.) gifuensis* (Alexander), with a somewhat similar hypopygium, has the wings unpatterned.

Genus *Dicranoptycha* Osten Sacken

Dicranoptycha *hasegawai* n.sp.

Generally similar to *edashigeana*; mesonotum polished fulvous yellow, with four polished black areas; legs yellow, the tips of the femora and bases and tips of the tibiae abruptly black; wings tinged with brown, darker along the costal border; abdomen, including hypopygium, black; male hypopygium with the phallosome unusually small, the gonapophyses appearing as short straight yellow spines.

Male.—Length, about 9 mm.; wing, 9 mm.

Female.—Length, about 9 mm.; wing 10 mm.

Rostrum obscure brownish yellow; palpi obscure yellow basally, the outer two segments black, the terminal one enlarged. Antennae obscure yellow, the outer segments darker. Head dark brown, paler on occiput and beneath.

Thorax polished fulvous yellow, the praescutum in cases with a pair of more reddish intermediate stripes, these obsolete in the type, better indicated in the allotype; a pair of large black areas on sides of praescutum with a second pair on the scutal lobes. Halteres weakly darkened, the knobs slightly more so. Legs with the coxae and trochanters yellow; femora yellow, the tips

abruptly and conspicuously black, the amount subequal on all legs and including about the outer tenth; tibiae yellow, the bases narrowly blackened, a little less than the femoral tips, the apices similarly blackened; basitarsi yellow, narrowly darkened at tip; outer tarsal segments passing into brownish black. Legs more slender and less conspicuously hairy than in *edashigeana*. Wings with a brownish tinge, still darker along the costal border to the apex, the extreme base more yellowed; conspicuous white lines in cell R adjoining vein M, behind basal half of vein 1st A, and the usual fork in cell Cu; veins brown. Venation: Cell 1st M_2 relatively small, about two-thirds vein M_4 ; m-cu about one-third its length beyond fork of M.

Abdomen, including hypopygium, black. Male hypopygium with the posterior border of the ninth tergite weakly bilobed. Outer dististyle slender, narrowed to a long gently curved terminal spine, the surface before the point with very weak microscopic spinulae; inner dististyle dusky, pointed at tip. Phallosome unusually small for a member of the group, the central area terminating in two low blunt lobes that are separated by a broad U-shaped notch. Each gonopophysis appearing as a short straight yellow spine.

Habitat: Japan (Honshu). *Holotype*: ♂, Mount Norikura, near Reisen-goya, Shinano, altitude 2400 meters, September 8, 1951 (Hasegawa). *Allotopotype*: ♂, September 7, 1951.

I am pleased to name this interesting fly for the collector, Mr. H. Hasegawa, student of the Japanese Hemiptera, to whom I am indebted for many crane-flies from the Japanese Alps. The species is most similar to *Dicranoptycha edashigeana* Alexander, of Shikoku, which differs in details of coloration, the stouter and hairier legs, and especially the structure of the male hypopygium, particularly the phallosome.

Genus *Dicranota* Zetterstedt

Dicranota (Rhaphidolabis) paraconsors n.sp.

Allied to *consors*; general coloration of thorax ochreous; head light gray; antennae short, 13-segmented, dark brown, the scape yellow; wings very pale yellow, unpatterned, veins pale; R_{2+3+4} longer than R_2 ; abdominal tergites brown, the subterminal segments darker to form a ring; male hypopygium with the posterior border of tergite almost truncate, the lateral arms slender; interbase distinctive, at apex produced into a gently curved spine.

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

Rostrum yellow; palpi obscure yellow. Antennae 13-segmented, relatively short, only a little longer than the head; scape yellow, the remainder dark brown; flagellar segments oval to long-oval. Head light gray.

Thorax ochreous, the praescutum a trifle

darker brown, especially medially; posterior sclerites and the pleura clearer yellow. Halteres with stem whitened, the knob infuscated. Legs with the coxae and trochanters yellow; femora brown, the remainder somewhat paler brown, only the outer tarsal segments darkened. Wings very pale yellow, unpatterned, the veins before the cord only a little darker than the ground, more infuscated beyond the cord. Venation: R_{2+3+4} longer than vein R_2 ; cell M_1 present; m-cu nearly its own length beyond the fork of M.

Abdominal tergites brown, the subterminal segments still darker to form a subterminal ring; basal sternites more yellowed. Male hypopygium with the tergite large, its posterior border nearly truncate to very feebly and gently convex, with relatively sparse stout marginal setae; lateral tergal arms appearing as strong simple horns or slender blades. Basistyle with the outer apical angle produced into a stout lobe, the outer half with numerous spinous setae; inner apical angle only slightly produced, with short setae; mesal face of style with a group of about ten long powerful setae, as in *consors* and allies. Interbase a strongly built structure, at apex produced into a gently curved spine, inner margin of dilated part of blade microscopically serrulate, somewhat as in *neoconsors*. Dististyle subequal in length and general size to the outer lobe of the basistyle, appearing as a flattened mittenlike blade, the apex obtuse; basal half with abundant delicate setae from conspicuous tubercles.

Habitat: Japan (Honshu). *Holotype*: ♂, Yatsugatake, Shinano, altitude 2000 meters, August 10, 1949 (Ito).

The structure of the male hypopygium readily distinguishes the present fly from other members of the *consors* group, particularly the ninth tergite and the interbase. It is closer to *Dicranota (Rhaphidolabis) consors* Alexander and *D. (R.) neoconsors* Alexander than to the very different *D. (R.) subconsors* Alexander.

Genus *Cladura* Osten Sacken

Cladura (Cladura) fuscivena n.sp.

Size small (wing, female, 7 mm.); general coloration of mesonotal praescutum gray with a broad central darker stripe that is more blackened in front; posterior sclerites of notum extensively yellow, pleura chiefly dark brown; halteres yellow; femora yellow, the tips gradually dark brown, on the fore pair including about the outer fifth, less extensive on the other legs; wings whitish subhyaline, restrictedly patterned with brown; a supernumerary crossvein in cell R_3 ; abdomen dark brown.

Female.—Length, about 6 mm.; wing, 7 mm.

Rostrum dark gray; palpi black. Antennae 14-segmented, the fusion-segment apparently involving three segments; scape reddish brown, remainder of organ black. Head dark gray.

Pronotal scutum brown, scutellum yellow. Mesonotal praescutum gray with a broad central darker stripe that is more blackened in front, scutal lobes similarly darkened; region of suture, central area of scutum, lateral margins of scutellum and parascutella more yellowed; postnotum brownish yellow, the cephalic part somewhat clearer yellow. Pleura chiefly dark brown, the metapleura more yellowed. Halteres yellow. Legs with the coxae and trochanters yellow; femora yellow, the tips gradually dark brown, somewhat more extensive on the fore legs where about the outer fifth is included, on the posterior femora involving about the outer seventh; tibiae yellow, the tips narrowly blackened; tarsi black, the proximal ends of the basitarsi a little paler. Wings whitish subhyaline, the prearcular and costal fields slightly more yellowed; a restricted but conspicuous brown pattern, most evident at origin of R_s , cord, fork of Sc, supernumerary crossvein in cell R_3 and as a seam along vein Cu; a clearer more yellowish white stigmal area beyond the fork of Sc; veins brown, darker in the patterned area, clear yellow in the flavous portions. Venation: Sc_2 subequal to Sc_1 ; R_2 far distad, at outer end of the pale stigmal area, more or less in alignment with the supernumerary crossvein in cell R_3 ; petiole of cell M_1 shorter than m; m-cu at near midlength of M_{3+4} .

Abdomen dark brown, the pleural membrane pale. Genital segment yellow; valves of ovipositor slender, including the cerci.

Habitat: Japan (Honshu). *Holotype:* ♀, Sugadaira, Shinano, October 16, 1950 (Hasegawa).

Most similar to the larger and more blackened *Cladura (Cladura) machidella* Alexander, differing in all details of coloration. As is the case in the latter fly, it remains questionable as to whether the crossvein in cell R_3 of the wings is adventitious or supernumerary in nature.

Cladura (Cladura) bicornuta n.sp.

Belongs to the *megacauda* group; general coloration yellow, the mesonotal praescutum and scutal lobes more reddened; legs yellow, the femoral tips narrowly and gradually infuscated, tarsi brownish black; wings pale yellowish subhyaline, unpatterned; male hypopygium with the posterior border of tergite produced into two obtuse lobes that are separated by a U-shaped notch, the sides of the tergite further produced into slender curved horns; outer lobe of basistyle shorter than the dististyle, the latter densely spiculate at apex; gonapophysis with more than the apical half dilated into a flattened glabrous blade; aedeagus small and slender.

Male.—Length, about 6–7 mm.; wing, 7.5–8.5 mm.

Female.—Length, about 8 mm.; wing, 10 mm.

Rostrum and palpi yellow. Antennae obscure yellow, the outer flagellar segments darker. Head brownish gray.

Thorax almost uniformly yellow, the mesonotal praescutum and the scutal lobes more reddened. Halteres yellow. Legs yellow, the femoral tips narrowly and gradually infuscated; tarsi brownish black. Wings pale yellowish subhyaline, the prearcular and costal fields deeper yellow; veins brown, paler in the brightened areas. Venation: R_{2+3+4} and R_{2+3} subequal; R_2 pale, placed in the whitened stigmal area; petiole of cell M_1 longer than m.

Abdomen pale brown, the extreme posterior borders of the segments paler. Male hypopygium with the ninth tergite distinctive, the posterior border with two obtuse lobes that are separated by a U-shaped notch, the sides of the tergite farther produced into slender curved horns; tergite just laterad of the intermediate lobes with about six or seven long setae. Basistyle with a small curved hairy lobe on mesal face before midlength; a larger lobe at extreme base of mesal face of style, provided with long conspicuous setae at base, narrowed outwardly into a subacute point; outer lobe of style shorter than the dististyle, slightly dilated outwardly, provided with long yellow setae. Dististyle slender, at apex bent or deflected at nearly a right angle, the tip with very dense microscopic points to produce a macelike appearance. Gonapophysis with more than the apical half dilated into a large flattened glabrous blade. Aedeagus small and slender, extending caudad to shortly beyond the apophyses.

Habitat: Japan (Honshu). *Holotype:* ♂, Sirahone-onsen, Shinano, altitude 1500 meters, September 9, 1951 (Hasegawa). *Allotype:* ♀, Mount Norikura, Shinano, near Reisen-goya, altitude 2400 meters, September 8, 1951 (Hasegawa). *Paratypes:* 3, with the allotype.

Most similar to *Cladura (Cladura) megacauda* Alexander, differing in the structure of the male hypopygium, especially the tergite, basistyle and phallosome.

Cladura (Cladura) telephallus n.sp.

Belongs to the *megacauda* group; size small (wing, male, 6.5 mm.); general coloration of entire body yellow; male hypopygium very large, the tergite narrowed into a depressed-flattened plate that divides at apex into two obtuse lobes; gonapophysis short-stemmed, the apex dilated into a large blade; aedeagus very long and extended, terminating in an acute spinous point.

Male.—Length, about 5 mm.; wing, 6.5 mm.

Rostrum and palpi yellow. Antennae and head pale yellow.

Thorax uniformly pale yellow. Halteres yellow. Legs yellow, the tips of the femora narrowly and abruptly blackened, of the tibiae less evidently so; tarsi passing into brown. Wings subhyaline; veins pale brown. Venation: Petiole of cell M_1 at least twice as long as m, in cases longer.

Abdomen yellow, relatively short, the unusually large and conspicuous male hypopygium approximately one-third the total length; hypopygium reddish yellow, the ventral part of the ninth sternite conspicuously blackened. Male hypopygium with the tergite narrowed outwardly into a depressed-flattened plate that is divided at apex into two obtuse lobes that are separated by a very narrow median split; no lateral tergal arms or projections. Basistyle elongate, with a conspicuous appressed lobe on mesal face at base, this provided with scattered spinous setae and close-set abundant microscopic spiculate points; apical lobe of style shorter than the dististyle, stout, with long conspicuous setae on outer third. Dististyle narrowed on outer third, the apex obtuse, flattened, with a very few long setae but without spicules, as in some related forms. Gonapophysis short-stemmed, the apex broadly dilated into an oval flattened blade. Aedeagus unusually long and extended, in a position of rest directed caudad and ventrad and finally cephalad, the terminal third a slender acute spinous point.

Habitat: Japan (Honshu). *Holotype:* ♂, Oze, Hatomati Toge, Kotsuke, September 22, 1950 (Hasegawa). *Paratopotypes:* 2 ♂♂.

The present fly is entirely distinct from other members of the *megacauda* group in the structure of the male hypopygium, especially the tergite, basistyle and aedeagus. The latter organ is somewhat noteworthy and contrasts markedly with the condition in some other members of the group where it is very small and inconspicuous.

Genus **Teucholabis** Osten Sacken
Teucholabis (Paratropesa) inouei n.sp.

Head black; mesonotum black, only the humeral region of the praescutum restrictedly reddened; pleura chiefly blackened; femora black, the bases yellow; posterior tibia (male) conspicuously dilated at apex; wings whitened, patterned with dark brown, including a band over the cord and the slightly wider wing tip; abdomen black, the posterior borders of the intermediate segments restrictedly pale; male hypopygium with the apex of the basistyle obtuse; inner dististyle complex.

Male.—Length, about 9 mm.; wing, 9 mm.

Rostrum, palpi and antennae black; flagellar segments oval, becoming more elongate outwardly, shorter than the verticils. Head dull black.

Pronotum narrowly dark brown medially, reddish yellow on sides. Mesonotum black, the humeral region of praescutum restrictedly reddened; pleurotergite black. Propleura orange;

mesopleura chiefly black, the dorsal sternopleurite and metapleura restrictedly orange. Halteres with stem brownish black, knob darkened, with the apex obscure yellow. Legs with all coxae and trochanters orange; fore femora black, with about the proximal third yellow; tibiae yellow, narrowly blackened basally, the tips more broadly so; tarsi black; middle and hind legs with the femora yellow, with about the apical third black, tibiae and tarsi about as on fore legs; posterior tibia conspicuously dilated at apex. Wings whitened, patterned with dark brown, including a band over the cord and the somewhat broader wing tip; additional small isolated dark spots at origin of R_s , vein R_3 , outer end of cell 1st M_2 and tip of vein 2nd A; vague dusky washes in cell Cu and the adjoining part of cell M; stigma oval, darker than the remaining pattern; veins brown. Venation: Sc long, Sc_1 ending about opposite three-fourths the length of R_s , Sc_2 far from its tip, at near one-seventh the length of R_s ; R_2 about four times R_{2+3+4} ; cell 1st M_2 rectangular, subequal to the distal section of vein M_3 ; m-cu about one-third its length beyond fork of M.

Abdomen, including hypopygium, black, the posterior borders of segments two to six narrowly pale. Sternal pocket of fifth segment very large, broad, with unusually abundant black setae surrounding a central glandular area; sixth sternite with nearly a dozen strong setae on either side of the midline. Male hypopygium with the basistyle produced beyond the point of insertion of the dististyles as a narrow blunt-tipped lobe. Outer dististyle a narrow parallel-sided black blade, its tip bent at a right angle into a sharp spine. Inner dististyle very complex, in general bilobed, the outer lobe a strong curved spine that bears a small point on its face at near mid-length; lower lobe slender, narrowed to the obtuse blackened tip; in the axil between the major branches with a strong acute spine.

Habitat: Japan (Honshu). *Holotype:* ♂, Mount Takao, Musashi, May 13, 1950 (Inoue).

This distinct fly is named for Mr. Hiroshi Inoue, well-known Japanese Lepidopterist, to whom I am indebted for many desirable Tipulidae from various parts of Honshu. The only other regional member of the subgenus is *Teucholabis (Paratropesa) esakii* (Alexander), of northern Japan, which differs in the coloration of the body, legs and wings, and, especially, in the distinctive sternal pockets of the fifth abdominal segment and the structure of the male hypopygium, including the apical spine of the lobe of the basistyle and the much simpler structure of the inner dististyle.