

NEW OR LITTLE-KNOWN TIPULIDÆ FROM EASTERN
ASIA (DIPTERA), IV

By CHARLES P. ALEXANDER
Of Amherst, Massachusetts

Separate from
THE PHILIPPINE JOURNAL OF SCIENCE
Published by the Bureau of Science of the Philippine Government
Manila, P. I.

VOLUME 40, No. 3, NOVEMBER, 1929

MANILA
BUREAU OF PRINTING
1929

NEW OR LITTLE-KNOWN TIPULIDÆ FROM EASTERN
ASIA (DIPTERA), IV ¹

By CHARLES P. ALEXANDER
Of Amherst, Massachusetts

THREE PLATES

The crane flies discussed at this time are from various parts of eastern and southern Asia and were received from the following entomologists and collectors: China, Messrs. A. P. Jacot, E. Suenson, and T. Yokoyama; Japan, Messrs. Teiso Esaki, C. Harukawa, S. Kuwayama, Jiro Machida, Akio Nohira, S. Sakaguchi, and E. Suenson; Formosa, Messrs. S. T. Issiki and K. Takeuchi; Philippines, Messrs. Duyag, McGregor, and Rivera; and India, Mr. C. F. C. Beeson and the authorities of the Indian Museum. I wish to express my deepest thanks to all of the above-named gentlemen for the opportunity of studying the great collections of crane flies upon which the following descriptions are based. Except where stated to the contrary, the types of the novelties are preserved in my collection.

The crane-fly fauna of the Oriental Region is tremendously large and varied, more especially so on the slopes and summits of the higher mountains where a characteristic Palæarctic element is found. There can be little question that this region, with its abundant isolated mountain ranges, major islands, and archipelagoes, separated for past ages and having had an abundance of time for the formation of species, will be found to support a greater number of species of Tipulidæ than any other region of the World.

TIPULINÆ

TIPULINI

BRITHURA SANCTA sp. nov.

General coloration dark clove-brown, the præscutum with three paler reddish brown stripes; pleura light brown with two narrower dark brown longitudinal stripes; femora yellowish brown, the tips narrowly blackened, preceded by a clearer yellow sub-

¹ Contribution from the Department of Entomology, Massachusetts Agricultural College.

terminal ring; wings with Sc_1 present; Rs subequal to R_3 , the latter angulated and short-spurred near outer end; male hypopygium large, the sternal region only moderately produced.

Male.—Length, excluding head, about 26 millimeters; wing, 23 by 6. Head broken.

Pronotum yellow, the posterior notum with two approximated median tubercles that are dark brown, the anterior notum darkened laterally. Mesonotal præscutum dark clove-brown with three nearly confluent reddish brown stripes, the dark ground color restricted to the humeral and lateral regions; median stripe broad; scutum chiefly reddish brown; scutellum dark reddish brown, more blackened medially, the parascutella black; postnotal mediotergite dark brown, the posterior portion with an obscure yellow triangle. Pleura light brown with two narrow darker brown longitudinal stripes, the more dorsal lying just beneath the dorsopleural membrane, including the propleura; ventral stripe including the fore coxæ, continued across the sternopleurite to the metapleura; pleurotergite elevated, the anterior face with an appressed yellow pubescence. Halteres light reddish brown, the base of each knob darker. Legs with the coxæ dark brown; trochanters paler, especially the fore trochanters; femora yellowish brown, the base and a subapical ring clearer yellow, the tip narrowly blackened; tibiæ brown, the base yellow; tarsi brown. Wings (Plate 1, fig. 1) as in the genus; costal region opposite the stigma dilated but not broken; ground color yellow, with a sparse dark pattern, including the bases of cells R and M ; origin of Rs ; a large area extending from the stigma across the cord; outer ends of all outer cells from R_3 to $2d A$ inclusive infumed, most of them inclosing small marginal yellow areas; medial veins beyond the cord narrowly bordered by yellow, which in turn has a dusky margin, darker than the centers of the cells; a conspicuous darkened area on either side of vein $1st A$ at near midlength; veins yellow, the costal vein more reddish brown. Venation: Sc_1 present; Rs strongly arcuated, subequal to R_3 , the latter angulated and short-spurred just before apex; cell $1st M_2$ higher than long.

Abdominal tergites brownish black; hypopygium conspicuously reddish; sternites reddish brown. Male hypopygium (Plate 2, fig. 19) relatively large but ninth sternite, $9s$, not greatly developed, as is the case in *B. crassa* Edwards. Ninth tergite $9t$, narrowed outwardly, the caudal margin with a deep U-shaped emargination that is fringed with conspicuous erect yellow setæ, the lateral lobes thus formed relatively conspicuous. Basistyle,

b, produced, the apex flattened, provided with long yellow setæ. Dististyle, *d*, shiny reddish brown, very large and complex in structure. Ninth sternite, 9s, produced into a median tubercle of moderate size.

Habitat.—China (Chi li).

Holotype, male, Ton Che ssu, a temple in hills west of Peking, August 27, 1921 (A. P. Jacot).

Brithura sancta differs from *B. nymphica* Alexander, which seems to be its nearest relative, in the details of coloration and venation, especially the retention of Sc_1 and the arrangement of veins in the radial field. The venation of *B. conifrons* Edwards, the genotype, is shown for comparison (Plate 1, fig. 2).

TIPULA SUBFUTILIS sp. nov.

Allied to *T. futilis* Alexander; antennæ with the basal segments of the flagellum bicolorous; wings with a complete white crossband beyond the cord; distal end of R_{1+2} atrophied; male hypopygium with the lateral lobes of the ninth tergite very low and obtuse, the caudal margin notched, with two small submedian ridges; gonapophyses blackened, simply bispinous.

Male.—Length, about 13 millimeters; wing, 16 by 3.7.

Described from an alcoholic specimen.

Frontal prolongation of head relatively long, brownish yellow; palpi pale. Antennæ of moderate length, if bent backward extending to shortly beyond the base of the abdomen; basal segment yellow; second scapal segment brown; first flagellar segment yellow; succeeding segments brown, the distal end yellow, the amount of the latter decreasing on the outer segments, on the second flagellar including only the distal fourth; beyond the fifth flagellar, the segments are entirely brown; terminal flagellar segment very small, oval. Head brownish gray; vertical tubercle low and obtuse, entire.

Mesonotal præscutum pale brown, with three paler, more brownish yellow stripes that are ill-defined against this background; scutellum and postnotum yellowish brown, with a delicate brown median vitta. Pleura uniformly brownish yellow, possibly pruinose in dry specimens. Halteres chiefly pale. Legs with the femora brownish yellow, clearer basally, darker at tips; tibiæ and tarsi passing into dark brown. Wings relatively long and narrow, as shown by the measurements; pattern almost as in *T. futilis*, the ground color brownish, variegated with whitish subhyaline, this latter including a complete crossband beyond the cord; smaller pale areas in cell R, before the stigma; near outer end of cell M; at outer end of cells Cu and 1st A, crossing

the latter vein; and at midlength of cell 1st A, not touching the veins; darker areas than the ground color at origin of Rs, anterior cord and as a conspicuous seam along the distal half of Cu₁. Venation: R₁₊₂ pale at base, scarcely visible, the outer end entirely atrophied; R₂ short, perpendicular.

Abdominal tergites obscure yellow with a narrow but conspicuous median brown line that is nearly continuous; sternites more uniformly yellow. Male hypopygium (Plate 2, fig. 20) with the ninth tergite (Plate 2, fig. 21) extensive, gradually narrowed outwardly, the caudal margin with a very shallow emargination, the lateral lobes thus formed very low and obtuse; a very small rounded tooth on either side of the median line, these produced back onto the dorsal surface of the tergite as short ridges that inclose a narrow linear furrow. Outer dististyle widely expanded outwardly. Gonapophyses, *g*, appearing as heavily blackened structures that lie on either side of the aedeagus, each apophysis bispinous, the more dorsal spine a little longer.

Habitat.—Japan (Kiushiu).

Holotype, alcoholic male, Unzen Park, Hizen, May, 1926 (*E. Suenson*), received through Doctor Crampton.

Tipula futilis Alexander (Japan) differs from the present species in the details of structure of the male hypopygium. In *T. futilis*, the caudal margin of the ninth tergite (Plate 2, fig. 22) is more deeply and evidently notched, the margin heavily blackened, the lateral lobes more conspicuous; the base of the notch bears a small black median tooth, in addition to two smaller and blunter sublateral knobs; dorsal surface not evidently ridged and furrowed as in *subfutilis*. Outer dististyle (Plate 2, fig. 23) quite as in *T. subfutilis*. Inner dististyle, *id*, with the ventral margin produced into a stout lobe that ends in a nearly terminal black spine. Gonapophyses, *g*, with the dorsal arm bifid, the ventral arm longer and slenderer than in *T. subfutilis*.

TIPULA YUSOUOIDES sp. nov.

Male.—Length, about 14 millimeters; wing, 17.

Female.—Length, about 20 millimeters; wing, 19.

Described from alcoholic specimens.

Closely allied and generally similar to *T. yusou* Alexander (Japan), differing chiefly in the structure of the male hypopygium.

Male hypopygium (Plate 2, fig. 24) with the caudal margin of the ninth tergite arched and heavily blackened, as in *T. yusou*,

the dentation of the margin quite different, the most ventral tooth on either side being much larger and produced into an acute spine. Outer dististyle smaller, more dilated before apex. Inner dististyle, *id.*, with the blade much smaller, the bilobed apex heavily blackened and relatively small. Eighth sternite, 8s, with the caudal lobe longer than broad, clothed with abundant long golden setæ.

Habitat.—Japan (Kiushiu).

Holotype, male, Unzen Park, Hizen, May, 1926 (*E. Suenson*). Allotopotype, female.

In *Tipula yusou* Alexander² the caudal margin of the tergite is highly arched, narrowly blackened, with numerous small teeth and lobules, none of which is acute. Outer dististyle elongate, gradually widened outwardly. Inner dististyle large, the blades conspicuous. Eighth sternite with the caudal lobe transverse, the setæ chiefly marginal.

TIPULA SUBYUSOU sp. nov.

Male.—Length, about 16 millimeters; wing, 18.

Closely allied to *T. yusou* Alexander (Japan), differing especially in the structure of the male hypopygium.

Ninth tergite with the caudal margin narrowly darkened or blackened but without distinct denticles. Outer dististyle nearly as in *T. yusouoides*, being rather conspicuously dilated just beyond midlength. Inner dististyle with the outer marginal lobe intensely blackened, obtusely rounded, the caudolateral margin bearing a pale lateral flange. Eighth sternite with the caudal lobe transverse, its margin with a dense brush of long golden setæ. Gonapophyses (Plate 2, fig. 25) trifold, as in *T. yusou*, but the arms much longer and slenderer, arising from a long, heavily blackened base, the arms gently curved and slightly decurved. In *T. yusou* (Plate 2, fig. 26), the gonapophyses are paler and nearly straight, the longer median spine subtended by the lateral spines.

Habitat.—Japan (Honshiu).

Holotype, male, Mount Takao, altitude 1,000 to 2,000 feet, May 7, 1922 (*Teiso Esaki*). Paratype, male, Nakano, Tokyo, May 1, 1922 (*Teiso Esaki*).

TIPULA RANTAICOLA sp. nov.

General coloration ochereous yellow, the præcutum with ill-defined darker stripes; antennæ bicolorous; wings grayish brown,

² Canadian Entomologist 46 (1914) 240–241, pl. 19, fig. 1.

certain of the veins seamed with darker; cell 1st M_2 very small; male hypopygium with the median region of the tergite produced into a decurved setiferous lobe.

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

Female.—Length, about 11 millimeters; wing, 11.

Frontal prolongation of head brownish yellow; palpi dark brown. Antennæ with the scape yellow; flagellum weakly to strongly bicolorous, the basal enlargement of each segment brownish black, the remainder brownish yellow to yellow; antennæ (male) relatively elongate, if bent backward extending to some distance beyond base of abdomen; antennæ (female) shorter, distinctly bicolorous. Head brownish gray, clearer gray in front; a narrow dusky median line on anterior vertex.

Mesonotal præscutum ochreous yellow, the three usual stripes only a trifle darker, the median stripe split by a capillary, slightly darker vitta; scutal lobes extensively darkened; scutellum and postnotum brown. Pleura brown. Halteres yellow, the knobs infuscated, their apices pale to distinctly yellow. Legs with the coxæ and trochanters yellow; femora yellow, passing into dark brown; tibiæ and tarsi dark brown. Wings (Plate 1, fig. 3) with a grayish brown suffusion, the base and costal region more yellowish; cell C a trifle infumed; stigma conspicuous, dark brown; outer end of cell R_2 darkened; conspicuous brown seams on Cu, m-cu, and more narrowly on most other longitudinal veins; extensive whitish areas before and beyond the stigma and across cell 1st M_2 ; veins dark brown, the oblitative areas whitish, the veins in the yellowish areas more flavous. Macrotrichia of veins very long and abundant. Venation: Cell 1st M_2 very small, diamond-shaped to pentagonal.

Abdominal tergites obscure yellow, the lateral and caudal margins of the segments blackened, the amount increasing on the outer segments; sternites yellow, the caudal margins of the segments a little darkened; eighth sternite blackened; hypopygium chiefly pale. Male hypopygium small, the median region of the tergite produced into a conspicuous decurved lobe, the sides of which are densely clothed with conspicuous yellow setæ. Inner dististyle large, jutting caudad as large, compressed to slightly tumid lobes, the apex of each with a small group of black spinous setæ, this lobe much larger than the flattened outer dististyle. Eighth sternite unarmed.

Habitat.—Formosa.

Holotype, male, Rantaizan, altitude 7,000 feet, June 2, 1927 (S. T. Issiki). Allotopotype, female. Paratopotypes, 4 males.

Tipula rantaicola bears a marked resemblance to *T. microcellula* Alexander (Plate 1, fig. 4) in the general appearance and very small cell 1st M_2 , differing especially in the details of coloration, wing venation, and the structure of the male hypopygium, especially the ninth tergite which here bears a setiferous median lobe.

NESOPEZA RANTAIZANA sp. nov.

General coloration ochreous, the mesonotal præscutum with a median darker line; antennæ (male) relatively long; legs brown, the tibiæ and tarsi extensively white; wings nearly hyaline, the stigma brown; free tip of Sc_2 nearly atrophied, indicated only by a pale line; basal section of R_{4+5} and r-m pale, without macrotrichia, in transverse alignment; forks of medial field relatively shallow, male hypopygium with the tergite produced laterad into slender blackened rods, the median area of the caudal region further produced into a decurved point.

Male.—Length, about 8 millimeters; wing, 10.

Rostrum testaceous yellow; palpi pale brown. Antennæ with the scapal segments yellow, the flagellum dark brown; antennæ 12-segmented, the terminal segment small; flagellar segments with dense short setæ and longer unilaterally arranged black verticils that are conspicuous but scarcely one-half the length of the segment. Head ochreous yellow.

Thorax almost uniformly ochreous, the præscutum with a median darker line; pleura more testaceous. Halteres very long and slender, pale brown, the knobs darker. Legs with the coxæ and trochanters yellowish testaceous; femora brown; posterior tibiæ dusky, the extreme tips white; tarsi dusky, the tips paling to white; on the other legs the amount of white on the tibiæ and tarsi appears to be more extensive. Wings (Plate 1, fig. 5) relatively broad, nearly hyaline, the oval stigma brown; veins brown, unusually slender, with long conspicuous macrotrichia. Macrotrichia on the distal third of vein M, distal half of basal section of Cu_1 , and outer ends of both anal veins. Venation: Sc_2 ending opposite four-fifths the length of Rs; free tip of Sc_2 atrophied or barely visible; basal section of R_{4+5} and r-m pale, without macrotrichia, in transverse alignment; forks of medial veins relatively shallow; m-cu subtransverse; cell 2d A narrow.

Abdomen yellowish brown, darker laterally. Male hypopygium with the lateral margins of the tergal region produced caudad and slightly mesad into slender blackened arms, their

tips microscopically spiculate; median region of tergite with a broad-based acute median point that is directed ventrad, the margin of the tergite dorsad of this with a fringe of long erect setæ; tergite pale except for the blackened lateral and caudal margins. Outer dististyle relatively short and inconspicuous, cylindrical, the apex truncate. Inner dististyle deeply bifid.

Habitat.—Formosa.

Holotype, male, slightly teneral, Rantaizan, altitude, 7,000 feet, June 2, 1927 (*S. T. Issiki*).

NESOPEZA IDIOPHALLUS sp. nov.

General coloration dark brown; antennæ with the scapal segments yellow, the flagellum dark brown; front and anterior vertex conspicuously yellow; mesonotum chiefly dark brown, median area of the præscutum and scutum paler; pleura pale brownish yellow, the anepisternum and sternopleurite conspicuously dark brown, legs dark brown, the tarsi extensively snowy white; male hypopygium with the ædeagus conspicuous, subtended on either side by a flattened spinous arm.

Male.—Length, about 10 millimeters; wing, 11.5.

Female.—Length, about 15 millimeters; wing, 13.

Frontal prolongation of head brown, entirely without nasus; palpi dark brown. Antennæ (male) of moderate length, if bent backward extending about to the base of the abdomen; scapal segments pale yellow, the flagellum dark brown; flagellar segments elongate-cylindrical, the basal enlargements of the segments inconspicuous, the verticils scattered, shorter than the segments. Front and anterior vertex pale yellow; remainder of head dark brown.

Pronotum brown, the posterior notum more yellowish. Mesonotal præscutum dark brown, the median area somewhat paler; scutum dark brown, the median region paler; posterior sclerites of mesonotum testaceous brown. Pleura pale brownish yellow, with a broad transverse dark brown girdle that includes the anepisternum and sternopleurite; meron similarly darkened. Halteres pale, the knobs dark brown. Legs with the coxæ yellow, a little darkened at base; trochanters yellow; femora dark brown, their bases paler; tibiæ and tarsi dark brown, the distal fifth of the basitarsi and remaining tarsal segments snowy white. Wings with a strong brownish suffusion, the oval stigma darker brown; ill-delimited dark clouds on anterior cord and m-cu; whitish obliterative areas before and beyond the stigma and across the fork of M. Venation: Rs of moderate length, about

one-half longer than R_{2+3} ; forks of medial cells relatively shallow; m-cu about one-third its length before the fork of M.

Abdominal tergites brown, the incisures, including the broad base and narrower apex of each segment, more blackened; subterminal segments black; hypopygium obscure yellow, including the conspicuous ædeagus. Ædeagus (Plate 2, fig. 27) very conspicuous, jutting caudad and ventrad from the genital chamber, long, pale yellow, at near midlength subtended on either side by a flattened yellow blade that is bispinous at and near apex. Ovipositor with the tergal valves relatively short and wide, their tips obtuse.

Habitat.—China (Che-kiang).

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

OROPEZA SATSUMA Alexander.

Oropeza satsuma ALEXANDER, Journ. New York Ent. Soc. 26 (1918) 67-68.

The holotype was from Kioto, Japan, July, 1916 (*Akio No-hira*). The male hypopygium of the type was not discussed and may be briefly described as follows: Male hypopygium (Plate 2, fig. 28) with the ventrolateral angles of the tergite produced ventrad, caudad, and mesad into a curled flattened ribbonlike plate; mesal region of sternite produced strongly ventrad. Outer dististyle, *od*, pale, of moderate length only, narrowed gradually to the obtuse apex, provided with abundant long pale setæ. Ninth tergite (Plate 2, fig. 29) entirely pale, the caudal margin subtransverse, crenate, with a very low and shallow median notch and still smaller, more circular, sublateral incisions; the major incisions that separate the caudal margin from the flattened ventrolateral arms are even deeper.

OROPEZA BISPINULA sp. nov.

General coloration dark brown, the præscutum with three still darker stripes; tibiæ and tarsi brown; wings with a pale brown suffusion, the stigma dark brown, preceded and followed by conspicuous pale yellow areas; abdomen beyond base deepening to black; male hypopygium with the caudal margin of the ninth tergite with two black, needlelike points.

Male.—Length, about 10.5 millimeters; wing, 10.5

Rostrum and palpi dark brown. Antennæ with the scapal segments yellow, the flagellum dark brown; flagellar segments cylindrical, the outer segments gradually shortened; verticils

a little shorter than the segments; antennæ of moderate length, if bent backward extending about to the root of the halteres. Head light brown.

Mesonotal præscutum dark brown, subnitidous, with three brownish black stripes; scutum, scutellum, and postnotum uniformly dark brown. Pleura dark liver brown, the dorsopleural membrane pale. Halteres pale, the knobs brown. Legs with the coxæ concolorous with the pleura; trochanters yellow; femora dark brown, the tips broadly more yellowish; tibiæ and tarsi brown. Wings (Plate 1, fig. 6) with a pale brown suffusion, the base and costal region a little more saturated; stigma oval, dark brown; conspicuous pale yellow antestigmal and poststigmal areas, the latter including more than the basal half of cell Sc_2 ; veins dark. Venation: Rs transverse, opposite Sc_2 ; R_1 and R_2 in nearly transverse alignment; R_{1+2} entirely atrophied.

Abdomen with the basal tergites obscure brownish yellow, beyond the second segment reddish brown, gradually deepening to black; sternites beyond the basal segment obscure yellow with narrow black cross lines near base and at margins; outer sternites uniformly darkened; male hypopygium with the inner dististyle, *id*, yellowish, the remainder chiefly dark. Male hypopygium (Plate 2, fig. 30) with the caudal margin of the ninth tergite, *9t*, nearly transverse, the median area blackened, chitinized, produced into two slender, needlelike points, one on either side of the median line (Plate 2, fig. 31).

Habitat.—Japan (Honshiu).

Holotype, male, Lake Ozenuma, on boundary between Iwashirono-kuni and Kotsuke-no-kuni, altitude 5,410 feet, July 25, 1923 (*Teiso Esaki*).

OROPEZA SAUTERI Riedel.

Oropeza sauteri RIEDEL, Archiv für Naturgeschichte 82 (1917) 114-115.

Riedel's types, both sexes, were from Okaseki, Taihoku District, Formosa, collected in June, 1914, by Sauter. I have seen additional males and females from Taihoku, taken April 20, 1922, by K. Takeuchi.

These latter specimens agree very closely with Riedel's description except that the incisures of the abdomen are not darkened but the narrow transverse dark marking of each segment lies at or before midlength of the segment, the base and apex being broadly yellowish. The sternities are extensively brown at the base and very narrowly so at the apex, with a conspicuous

yellowish ring before the apex; subterminal segments more uniformly darkened; hypopygium small, chiefly obscure yellow. Male hypopygium with the median notch of the tergite small, U-shaped with no distinct notches or incisions laterad of this; ventrolateral arms of tergite terminating in large oval heads.

LIMONIINÆ

LIMONIINI

LIMONIA (LIMONIA) RANTAIENSIS *sp. nov.*

Mesothorax shiny black; halteres yellow; legs black, the broad femoral bases, a subterminal femoral ring, and the narrow bases of the tibiæ yellow; wings yellowish, the veins seamed with brown; Sc short; R_{1+2} elongate.

Female.—Length, about 9 millimeters; wing, 9.3.

Rostrum and palpi black. Antennæ with the scape black, the basal flagellar segments black with their tips somewhat more brownish; flagellar segments oval, the verticils considerably longer than the segments. Head brownish black, not nitidous; anterior vertex a little wider than the first scapal segment.

Pronotum black, more pruinose laterally. Mesonotum black, nitidous, only the dorsopleural region restrictedly paler. Pleura black. Halteres yellow, the knobs orange-yellow. Legs with the fore coxæ black; middle coxæ darkened basally; hind coxæ and all trochanters yellow; femora with more than the basal half yellow, the remainder black, inclosing a conspicuous yellow ring about its own length before the apex; tibiæ black, the extreme base yellow; tarsi black. Wings (Plate 1, fig. 7) yellow, the base and costal region somewhat brighter; an extensive brown pattern distributed as follows: Broad seams along RS, R_{2+3} , and R_3 , confluent with the small and ill-defined stigma; cord, outer end of cells 1st M_2 , and longitudinal veins beyond cord seamed with brown; broad seams on Cu_1 , interrupted at base and before end of basal section of vein; broad seams at ends of both anal veins and in the axilla; veins brown; yellow in the basal and costal regions. Venation: h indistinct; Sc relatively short, Sc_1 extending to about opposite one-fourth the length of the strongly arcuated Rs , Sc_2 close to its tip; R_2 only about one-third to one-fourth of R_{1+2} ; cell 1st M_2 closed; m-cu shortly before fork of M.

Abdominal tergites brownish black, the segments variegated medially and caudally with yellow, the ground color more or less restricted to large basolateral areas; genital segment and ovipositor pale reddish yellow; sternites obscure yellow; base of

sternal valves of ovipositor blackened. Ovipositor with the tergal valves unusually slender, acicular, nearly straight.

Habitat.—Formosa.

Holotype, female, Rantaizan, altitude 6,000 feet, June 3, 1927 (S. T. Issiki).

Limonia rantaiensis is well distinguished from allied regional species by the shining black mesothorax, short Rs, long R_{1+2} , and the wing and leg pattern.

LIMONIA (DICRANOMYIA) TRISTOIDES sp. nov.

Allied to *L. (D.) tristis* Schummel; general coloration gray, the præscutum with three brown stripes; legs chiefly brownish black, the femoral bases yellow; wings subhyaline, the stigma reduced or lacking; veins pale brown; male hypopygium with the spines of the rostral prolongation of the ventral dististyle united for a short distance at base, arising from long basal tubercles.

Male.—Length, about 5.2 millimeters; wing, 6.1.

Rostrum and palpi dark brown. Antennæ dark brown, the second segment more reddish apically; flagellum black; flagellar segments oval, the outer segments more elongate. Head light gray.

Mesonotal præscutum yellowish gray with three brown stripes, the median stripe longer and broader; scutellum brown, paler behind; postnotum gray. Pleura gray, vaguely marked with brown. Halteres long, entirely pale. Legs with the coxæ reddish brown; trochanters yellow; femora yellow at base, passing into black, most extensively blackened on fore femora, only the apices of middle and hind femora blackened; tibiæ and tarsi brownish black; legs long and relatively stout. Wings (Plate 1, fig. 8) subhyaline, the stigmal area greatly reduced or lacking; veins pale brown. Venation: Sc_1 ending opposite origin of Rs, the latter relatively long, about two and one-half times the basal section of R_{4+5} ; cells 1st M_2 closed; m-cu oblique, at fork of M, shorter than the distal section of Cu_1 .

Abdomen dark brown, the hypopygium chiefly obscure yellow. Male hypopygium (Plate 2, fig. 32) with the tergite, 9t, transverse, the caudal edge narrowly margined with chitin and provided with setæ, including a small median group; caudal margin of tergite gently emarginate. Basistyle, *b*, relatively long, with a single fingerlike lobe shorty beyond midlength, this tufted with setæ; mesal apical angle of basistyle with about four setigerous punctures but not produced into a tubercle; ventromesal lobe of basistyle large, setiferous. Dorsal dististyle, *dd*, much

stouter than in *L. subtristis*, curved to the acute apex. Ventral dististyle, *vd*, unusually low, pale, produced into the blackened rostral prolongation, the latter bearing two long black spines at near midlength, these arising from a very short common base, both from elongate basal tubercles; inner spine a little shorter than the outer. Gonapophyses, *g*, very broad, the mesal apical angle produced into a short blackened hook.

Habitat.—Manchuria.

Holotype, male, Koshurei, Kongchuling, altitude 625 feet, July 25, 1924 (*T. Yokoyama*).

Limonia tristoides is most closely allied to *L. (D.) subtristis* Alexander (northern Japan), differing especially in the details of structure of the male hypopygium, as the transverse emarginate ninth tergite, the short stout dorsal dististyle, and the low oval ventral dististyle with the long black rostral spines quite distinct in their structure and origin.

LIMONIA (GERANOMYIA) TENUISPINOSA sp. nov.

General coloration of mesonotum reddish brown, the præscutum with three narrow brownish black stripes; pleura yellow with a broad dark brown dorsal stripe; legs yellow; wings grayish yellow with a heavy, chiefly costal pattern; Sc long; m-cu far before the fork of M; abdominal tergites dark brown; male hypopygium with the spines of the rostral prolongation very long and slender, the outermost arising from a large swollen tubercle that is subequal in size to the prolongation beyond it.

Male.—Length, excluding rostrum, about 6 millimeters; wing, 7; rostrum, about 2.5.

Female.—Length, excluding rostrum, about 7.5 millimeters; wing, 7.5; rostrum, about 3.

Rostrum black; maxillary palpi black, 2-segmented. Antennæ with the basal segment black; second segment dark brown; flagellum obscure yellow, the outer segments darkened; flagellar segments short-oval, the outer segments more elongate. Head dusky gray, the narrow anterior vertex clearer gray.

Mesonotal præscutum reddish brown with three conspicuous brownish black stripes, the median stripe narrowed to a point at the suture; humeral and lateral regions more yellowish; scutal lobes extensively dark brown; median region of scutum and the scutellum reddish, slightly pruinose, with a continuous capillary brown vitta; postnotum dark plumbeous. Pleura yellow, the dorsal pleurites and membrane occupied by a broad dark brown longitudinal stripe that extends from the pronotum to the ab-

domen, including the pleurotergite. Halteres chiefly pale, the knobs weakly darkened. Legs with the coxæ and trochanters yellow; remainder of legs yellow, only the outer tarsal segments dark brown. Wings grayish yellow, with a dark brown, chiefly costal pattern; a small, scarcely evident dark seam at *h*; a similar area beyond this in cell *Sc*; a conspicuous triangular area surrounding the subcostal crossvein; extensive areas at origin of *Rs* and tip of *Sc*, these latter confluent or nearly so, especially in cell *C*; stigmal area very large, long-rectangular; a large area at outer end of vein R_3 and a small circular cloud at end of vein R_{4+5} ; narrow and only slightly conspicuous seams at fork of *Rs*, anterior cord, *m-cu*, and outer of end cell 1st M_2 ; veins pale, darker in the infuscated areas. Venation: A supernumerary crossvein in cell *Sc* at near midlength; *Sc* long, Sc_1 extending to about two-thirds the length of *Rs*, Sc_2 at its tip; *m-cu* more than one-half its length before the fork of *M*.

Abdominal tergites uniformly dark brown, the sternites obscure brownish yellow, the caudal margins of the segments somewhat paler, the lateral margins narrowly darkened; hypopygium dark. Male hypopygium (Plate 3, fig. 33) with the ninth tergite transverse, the caudal margin with a small U-shaped emargination; setæ mostly marginal but continued to the cephalolateral portions of the tergite. Basistyle, *b*, relatively small, the ventromesal lobe small. Ventral dististyle, *vd*, large, exceeding the basistyle in size; rostral prolongation slender, bearing two spines, the outermost arising from a very large fleshy tubercle that is subequal to the apex of the rostral prolongation itself, the spine very long and slender; the second spine is close to the base of the rostrum, about two-thirds the length of the outer spine, very slender and gently curved. Dorsal dististyle, *dd*, a strongly curved sickle, the extreme tip acute and upturned. Gonapophyses, *g*, pale, the lateral margin of the mesal apical lobe with microscopic roughenings. *Ædeagus* large, constricted at near midlength.

Habitat.—China (Che-kiang).

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

Limonia tinuispinosa resembles *L. (G.) avocetta* (Alexander) and allied forms, being most readily separated by the somewhat remarkable structure of the male hypopygium.

LIMONIA (GERANOMYIA) SUENSONIANA sp. nov.

General coloration of mesonotum obscure yellow, the præscutum with three brown stripes; pleura yellow, with a narrow

and relatively ill-defined dorsal brown stripe; legs yellow, the terminal tarsal segments darkened; wings subhyaline, with a heavy costal brown pattern, the areas at origin of Rs and end of Sc widely separate; Sc long, Sc₁ ending nearly opposite the fork of Rs; m-cu far before the fork of M; abdominal tergites bicolorous, their apices broadly darkened; male hypopygium with the rostral prolongation of the ventral dististyle short, the two spines close together, relatively short.

Male.—Length, excluding rostrum, about 6 millimeters; wing, 6; rostrum, about 2.

Rostrum and palpi black, the former slightly paler at tips. Antennæ dark brown; flagellar segments oval to long-oval. Head gray.

Mesonotal præscutum obscure yellow with three brown stripes, the median stripe considerably narrowed behind; lateral stripes narrow, crossing the suture onto the scutal lobes; humeral and lateral regions of præscutum extensively light yellow; scutellum yellow with a brown spot medially at base; postnotum pruinose. Pleura yellow with a relatively narrow and ill-delimited dorsal brown stripe extending from the propleura to the postnotum, including the dorsal pleurotergite. Halteres pale, the knobs and a narrow subbasal ring on stem dark brown. Legs with the coxæ and trochanters yellow; remainder of legs obscure yellow, the terminal two tarsal segments dark brown. Wings (Plate 1, fig. 9) subhyaline, with a fairly heavy, chiefly costal brown pattern that is arranged much as in *tenuispinosa* sp. nov.; the areas at Rs and end of Sc are widely separated; wing tip more extensively darkened, inclosing a pale circular spot in outer end of cell R₃; cord and outer end of cell 1st M₂ interruptedly and narrowly seamed with brown. Venation: Sc very long, Sc₁ ending shortly before the fork of Rs, Sc₂ not far from its tip; m-cu nearly its own length before the fork of M.

Abdominal tergites bicolorous, the bases of the segments obscure yellow, the caudal margins broadly infuscated; sub-terminal segments more uniformly darkened; hypopygium chiefly dark; sternites pale yellow. Male hypopygium with the ninth tergite transverse, the caudal margin notched, the setæ chiefly confined to the lobes, not reaching the cephalic lateral portions of the tergite. Basistyle small, the ventromesal lobe low. Ventral dististyle very large and fleshy, the rostral prolongation short and blunt, bearing two spines that are placed close together at near midlength of the prolongation, the outer spine a little longer than the inner, both of moderate length, acute at tips.

Dorsal dististyle a strongly curved sickle, the tip suddenly narrowed into an acute point. Gonapophyses with the mesal apical lobe long and slender, the tips narrowed into slender acute points.

Habitat.—China (Che-kiang).

Holotype, male, hills south of Ning-po, May 1, 1925 (*E. Suen-son*). Paratopotype, male.

I take great pleasure in naming this interesting crane fly in honor of the collector, Mr. E. Suen-son, who has collected numerous Tipulidæ in China and Japan. It is allied to *L. (G.) semistriata* (Brunetti) and similar species of the Oriental fauna, differing especially in the venation and details of the male hypopygium. The acutely pointed gonapophyses present an unusual character in this involved genus.

LIMONIA (ALEXANDRIARIA) ARGYRATA sp. nov.

Head black, the broad front and posterior orbits silvery; mesonotal præscutum shiny castaneous, the lateral regions yellow; scutal lobes blackened; wings hyaline or nearly so, the stigma a little darker; Sc short, Sc₁ and 2d A long.

Female.—Length, about 5.5 millimeters; wing, 5.4 to 5.5.

Rostrum reddish brown, the basal segment of the maxillary palpus pale, the outer segments black. Antennæ black throughout; flagellar segments oval. Head black, the broad front and wide posterior orbits silvery.

Pronotum shiny yellow. Mesonotal præscutum shiny castaneous, the outer ends of the usual lateral stripes darker; lateral and humeral regions clear yellow; scutal lobes conspicuously blackened, the median region yellow; scutellum testaceous yellow; posnotal mediotergite dark plumbeous medially, margined with paler. Pleura yellow, the sternopleurite and anepisternum more purplish. Halteres short, pale, the knobs a little infuscated. Legs with the coxæ reddish yellow; trochanters obscure yellow; remainder of legs obscure yellow, the outer tarsal segments passing into black. Wings (Plate 1, fig. 10) hyaline or nearly so; stigma pale, scarcely darker than the ground color; veins brown. Venation: Sc short, Sc₁ ending far before the origin of Rs; Sc₁ long, about one-third longer than m-cu; Rs short, arcuated, about one-half the basal section of R₄₊₅; free tip of Sc₂ before the level of R₂; m-cu just before the fork of M; vein 2d A long, the cell wide.

Abdominal tergites dark brown, the sternites obscure yellow, the basal segments a little darker; genital segment yellow. Ovipositor with the tergal valves slender, gently upcurved.

Habitat.—Formosa.

Holotype, female, Urai, altitude about 1,500 feet, April 20, 1922 (K. Takeuchi). Paratopotype, female. Paratype, female, Hokuto, 1912 (H. Sauter); Deutschen Entomologischen Institute, through Dr. Walther Horn.

LIMONIA (THRYPTICOMYIA) BREVICUSPIS sp. nov.

Size large (wing, male, 7 millimeters or more); general coloration dark brown, the pleura and sternum paler; wings whitish subhyaline; stigma small, dark brown; free tip of Sc_2 not far before R_2 , R_1 shortened; apical spur of R_{1+2} elongate; male hypopygium with the spines of the rostral prolongation of the ventral dististyle short and spikelike, placed close together at base of the prolongation.

Male.—Length, about 7 to 7.5 millimeters; wing, 7 to 5.

Rostrum obscure yellow, darker above; palpi brownish black. Antennæ brownish black, the flagellar segments elongate-oval, with pale glabrous pedicels to produce a moniliform appearance. Head dark brown.

Mesonotal præscutum brown, the humeral region paler; posterior sclerites obscure testaceous yellow. Pleura obscure yellow. Halteres dark brown, the stem paler. Legs with the coxæ and trochanters yellowish testaceous; femora brown, paler basally; tibiæ dark brown; basitarsi with about the basal two-fifths dark brown, the remainder of the segment and all remainder of tarsi except the outer segment snowy white; terminal segment darkened. Wings (Plate 1, fig. 11) whitish subhyaline, iridescent; stigma oval, relatively small, dark brown; veins nearly black, with conspicuous macrotrichia. Venation: Sc_1 ending opposite origin of R_s , Sc_2 some distance from its tip; free tip of Sc_2 far distad, R_1 being only about one-half the length of the long apical spur of R_{1+2} ; cell 1st M_2 relatively large, m-cu shortly before midlength. In one specimen, the free tip of Sc_2 and R_2 are almost in alignment.

Abdominal tergites brown, the outer segments darker; sternites pale. Male hypopygium (Plate 3, fig. 34) with the rostral prolongation of the ventral dististyle, *vd*, of moderate length, broad at base, the apex narrowed, provided with a conspicuous seta; two rostral spines, placed at the base of the prolongation, only slightly separated; both spines unusually small and spike-like, subequal, the innermost forms a slightly enlarged basal swelling.

Habitat.—Japan (Riukiu Islands).

Holotype, male, Nago, altitude 30 feet, March 18, 1923 (*S. Sakaguchi*). Paratopotypes, 4 males, mostly in poor condition.

Limonia brevicuspis is the largest species of the subgenus *Thrypticomya* so far described.

LIMONIA (EUGLOCHINA) ARACHNOBIA sp. nov.

General coloration dark brown, the pleura paler; legs black, including the proximal ends of all basitarsi; wings strongly infumed, the stigma darker; Rs very short, encircling the proximal end of the stigma; cell 1st M_2 present.

Male.—Length, about 5.8 to 6 millimeters; wing, 6.5 to 6.7. Rostrum testaceous yellow; palpi black. Antennæ black throughout. Head dark brown.

Mesonotum shiny dark brown, the lateral margins of the præscutum and median region of the scutum paler. Pleura more brownish yellow, shiny. Halteres obscure yellow at base, passing into brownish black. Legs black, the coxæ and trochanters concolorous with the pleura; proximal ends of basitarsi extensively blackened, this including from one-third to approximately one-half the length of the segment. Wings (Plate 1, fig. 12) with a strong dusky suffusion, the large oval stigma still darker; veins dark brown. Venation: Sc of moderate length for a member of this subgenus, the distance on $Sc_2 + R_1$ between Sc_2 and origin of Rs more than one-half longer than R_3 ; Rs very short, arcuated, bordering the proximal end of the stigma, shorter than the basal section of R_{4+5} ; cell 1st M_2 relatively small, rectangular; m-cu beyond one-third the length of the cell; Cu_2 preserved to opposite one-third the length of the basal section of Cu_1 .

Abdomen black, the sternites obscure yellow, except laterally and at apex.

Habitat.—Philippines.

Holotype, male, Majayjay, Laguna Province, Luzon, altitude above 500 meters, June 3, 1928 (*R. C. McGregor*). Paratopotype, male, May 28, 1928 (*R. C. McGregor*).

Limonia arachnobia is a very different species from *L. (E.) okinawensis* (Alexander), the only other regional species with similarly patterned legs.

The following notes of occurrence by Mr. McGregor are of unusual interest: "Hanging from a spider line by fore feet, in light forest." and "On horizontal line of spider web—same habitat as *Limonia (Thrypticomyia) arachnophila* Alexander and other members of the subgenus, at Lucban. Only three or

four seen here, in rather light hillside forest, away from any stream." The great value in the above observations lies in the fact that they are the first concerning this habit in any member of the subgenus *Euglochina*. Doleschall, in 1857, described as a doubtful member of the genus *Limnobia*, a species that he called *saltens*, that had the habit of hanging on horizontal strands of spider's webs. The arguments that have been made to settle whether the species was a *Thrypticomys* or a *Euglochina* have been discussed by the writer.³ The above notes by Mr. McGregor and a study of a copy of Doleschall's figure of *saltens* sent me by Mr. Edwards have convinced me that *saltens* certainly pertains to the subgenus *Euglochina*, as long contended by Mr. Edwards. In the light of our present knowledge of the fact that there are numerous, closely allied species of *Euglochina* in the Oriental and Ethiopian Regions, it would be very unwise to attempt to place *L. cuneiformis* de Meijere as a synonym of *saltens* without an examination of the type of the latter, if it is still extant.

LIMONIA (PSEUDOGLOCHINA) RIUKIUENSIS sp. nov.

Mesonotum dark brown, the præscutum yellowish in front; tibiæ snowy white, with two narrow brownish black rings; wings grayish, the stigma dark brown; Rs relatively long, angulated at origin; vein 2d A unusually long, exceeding the distal section of R_{4+5} ; abdominal tergites dark brown, the basal segments with a yellowish median line; sternites yellow, segments four to seven, broadly dark brown at base.

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

Female.—Length, about 7 to 7.5 millimeters; wing, 6.5.

Rostrum, palpi, and antennæ black. Head yellow.

Pronotum yellow. Mesonotal præscutum yellow in front and on the humeral region, the remainder dark brown; remainder of the mesonotum dark, paler medially. Pleura yellow, the sternopleurite extensively dark brown. Halteres infuscated. Legs with the fore coxæ and trochanters dark brown, the remaining coxæ and trochanters yellow; femora yellow, the tips infuscated, more broadly so on the posterior legs; tibiæ snowy white, including the setæ, the two rings brownish black, the first placed at near one-fourth the length of the segment, the second just beyond midlength; tarsi snowy white. Wings (Plate 1, fig. 13) with the ground color grayish, the costal region a little darker;

³ Philip. Journ. Sci. 33 (1927) 299.

stigma dark brown, long-oval, the proximal end sometimes more pointed; a very narrow brown seam at origin of Rs; veins dark brown. Venation: Sc₁ ending beyond midlength of Rs, Sc₂ opposite or just beyond the origin of Rs; Rs elongate and angularly bent near origin; petiole of cell 2d M₂ nearly one-half the cell; vein 2d A of unusual length for a member of this subgenus, on basal fifth approximating the margin, thence swinging cephalad, the cell relatively long and wide, the vein beyond the anal crossvein fully one-fourth longer than the distal section of R₄₊₅.

Abdominal tergites dark brown, the basal segments with a narrow continuous yellow median vitta; incisures and lateral margins pale; sternites extensively pale yellow, the bases of segments four to seven broadly dark brown.

Habitat.—Japan (Riukiu Islands).

Holotype, male, Shuri, Okinawa, altitude about 300 feet, March 8, 1923 (*S. Sakaguchi*). Allotopotype, female. Paratopotypes, 3 females.

Closely allied to *L. (P.) bicinctipes* (Brunetti) differing in the larger size and details of coloration of the wings and abdomen. Vein 2d A is of unusual length for a member of *Pseudoglochina*.

LIMONIA (PSEUDOGLOCHINA) UNICINCTIPES sp. nov.

General coloration of mesonotum dark brown, the median area behind yellowish; all tibiæ white with a single narrow brownish black ring at near midlength; wing nearly hyaline, the stigma conspicuous, short-oval, dark brown; vein 2d A short, approximately three-fifths to two-thirds the length of the distal section of R₄₊₅; abdominal sternites uniformly pale.

Male.—Length, about 4.4 millimeters; wing, 4.7.

Female.—Length, about 5 millimeters; wing, 5.2.

Rostrum and palpi dark. Antennæ black throughout. Head pale, darker on posterior vertex, the latter area narrowly divided by a pale line.

Mesonotum dark brown, paler on the posterior portion of the præscutum, this color increasing in amount behind, on the scutellum and postnotal mediotergite including the entire sclerite except laterally. Pleura yellow, the sternopleurite darker. Halteres darkened. Legs with the coxæ pale yellow, including the fore coxæ; trochanters dark; femora slightly darkened basally, the posterior femora broadly infuscated, the fore and middle more narrowly so; tibiæ snowy white with a very narrow brownish black ring at near midlength; tarsi snowy white. Wings

(Plate 1, fig. 14) nearly hyaline, the stigma small, short-oval, dark brown; veins black. Venation: Sc_1 ending beyond mid-length of R_s , Sc_2 opposite this origin; R_s short, a little exceeding the basal deflection of R_{4+5} ; m-cu at fork of M; vein 2d A short, the basal third approximating the anal margin and parallel with it, the remainder arched and thence extending straight to the margin, the entire vein beyond the anal crossvein from three-fifths to two-thirds the distal section of R_{4+5} .

Abdominal tergites brown, the basal two segments paler medially; sternites more uniformly pale brownish yellow. In the male the tergites are more darkened laterally at base, the median and caudal portions extensively pale.

Habitat.—Philippines.

Holotype, male, Badajoz, Tablas Island, Romblon Province, August 20, 1928 (*Francisco Rivera and A. C. Duyag*). Allotopotype, female.

In the single narrow dark tibial ring, *Limonia uncinclipes* agrees most closely with the larger *L. (P.) kobusi* (de Meijere) and *L. (P.) pulchripes* (Alexander). It is difficult to know how accurate is the figure given by de Meijere⁴ of the wing of *L. kobusi*. The features shown of a very short petiole to cell 2d M_2 and the position of m-cu at nearly its own length beyond the fork of M are distinctive. From *L. pulchripes* the present species differs in the short Sc_1 , the more oblique alignment of the elements of the anterior cord, together with the shorter R_s and the much shorter and more-arcuated vein 2d A.

HELIUS (HELIUS) TENUISTYLUS sp. nov.

General coloration of mesonotum dark brown, the pleura more chestnut brown; rostrum black; legs dark brown, the tarsi paling to yellow; wings with a faint brownish tinge, the stigma and costal margin slightly darkened; R_{2+3} long, diverging gently from R_{4+5} ; m-cu at the fork of M; male hypopygium with the dististyles long and slender.

Male.—Length, excluding rostrum, about 5.5 to 6.5 millimeters; wing, 6.5 to 8; rostrum, 0.7 to 0.8.

Female.—Length, excluding rostrum, about 9 millimeters; wing, 8; rostrum, 0.8 to 0.9.

Rostrum black. Antennæ black, the outer segments more attenuated and slightly paler. Head black.

Pronotum black medially above, paler laterally. Mesonotum dark brown, the humeral and lateral regions of the præscutum

⁴ *Bijd. tot de Dierkunde* 18 (1904) pl. 8, fig. 5.

brighter brown; extreme posteromedian region of præscutum and median portion of scutum more yellowish; remainder of notum dark brown. Pleura chestnut brown, the dorsopleural region darker. Halteres dark brown, the base of the stem narrowly yellow. Legs with the coxæ and trochanters brownish yellow; remainder of legs dark brown, the tarsi paling to yellow. Wings (Plate 1, fig. 15) with a faint brownish tinge, the stigma and costal region a little darkened; veins brownish black. Venation: R_{2+3} long, gently sinuous, diverging gently from R_{4+5} ; cell 1st M_2 widest at base; m a little longer and more oblique than the basal section of M_3 ; $m-cu$ at fork of M .

Abdomen brownish black. Male hypopygium (Plate 3, fig. 35) with the dististyles long and slender, the outer style, *od*, chitinized, the apex obtuse; inner style, *id*, longer, subangularly bent. Mesal face of basistyle, *b*, produced into a weakly spinous lobe.

Habitat.—Formosa.

Holotype, male, Kirakei, altitude 4,000 feet, June, 28, 1927 (*S. T. Issiki*). Allotype, female, Chipon, July 4, 1928 (*S. T. Issiki*); paratypes, 3 males, with the allotype.

Helius tenuistylus belongs to a group of closely allied forms that center about *H. nigriceps* (Edwards). The species differs from *H. nigriceps* in the longer, more gently sinuous R_{2+3} and the structure of the male hypopygium.

HELIUS (HELIUS) ATTENUATUS sp. nov.

General coloration of thorax brownish black, the pleura more brownish yellow; rostrum black; legs brownish black, the tarsi paling to brownish yellow; wings with a dusky tinge, the stigma and costal region darker brown; Sc long, Sc_2 ending opposite or beyond the fork of M ; R_{2+3} long, gently sinuous; $m-cu$ at fork of M ; male hypopygium with the outer dististyle truncated to weakly bidentate at apex; inner dististyle prolonged into a slender yellowish apical portion.

Male.—Length, excluding rostrum, about 5.5 millimeters; wing, 5.5 to 5.8; rostrum, about 0.5.

Female.—Length, excluding rostrum, about 6 millimeters; wing, 5.5; rostrum, about 0.5 to 0.6.

Rostrum dark brown, palpi black. Antennæ black throughout; basal four flagellar segments larger, the remainder narrowed. Head black, the front more opaque and slightly grayish.

Pronotum and mesonotum brownish black, the median area of the scutum paler. Pleura brownish yellow, the dorsopleural

region dusky. Halteres dusky, the base of the stem very restrictedly paler. Legs with the coxæ and trochanters brownish yellow; femora and tibiæ brownish black, the tarsi paling to brownish yellow. Wings with a strong dusky tinge, the stigma and costal region darker brown; wing apex and a seam along vein Cu vaguely infumed; veins dark brown. Venation: Sc long, Sc₂ ending opposite or shortly beyond the fork of Rs, longer than Sc₁; R₂₊₃ long and gently sinuous; cell 1st M₂ generally parallel-sided, the proximal end not or but slightly widened; m-cu at fork of M.

Abdomen, including the hypopygium, black. Male hypopygium (Plate 3, fig. 36) with the outer dististyle, *od*, much shorter than the inner, the apex irregularly truncate to weakly bidentate, in the latter case, the inner tooth more acute. Inner dististyle, *id*, long, the apical portion elongate, pale yellow; base of style with numerous setæ, including a fringe of four or five major bristles along the mesal edge. Basistyle, *b*, without a lobe.

Habitat.—Formosa.

Holotype, male, Chipon, July 4, 1927 (*S. T. Issiki*). Allotopotype, female. Paratopotypes, 3 males.

Helius attenuatus is closely allied to *H. nigriceps* (Edwards), differing especially in the darker coloration of the thorax and wings, the details of venation, as the long R₂₊₃, and the details of the male hypopygium, as the very long apical portion of the inner dististyle.

HEXATOMINI

PHYLLOLABIS BEESONI sp. nov.

General coloration pale testaceous yellow; legs pale yellow, the terminal tarsal segments darkened; wings with a pale brownish yellow suffusion, the base and costal region clearer yellow; cell 1st M₂ closed, m-cu at the fork of M₃₊₄; abdomen dark brown, the genitalia brighter.

Female.—Length, about 6.5 to 7 millimeters; wing, 7.2 to 8.

Rostrum pale, the palpi brown. Antennæ of moderate length, if bent backward extending to shortly beyond the base of the halteres; antennæ pale, only the outer segments a trifle darker; flagellar segments elongate, a little enlarged at bases. Head light grayish brown.

Pronotum and mesonotum testaceous yellow, the pleura a little more yellowish. Halteres pale, the knobs a trifle darker. Legs pale yellow, the terminal tarsal segments darkened. Wings

(Plate 1, fig. 16) with a pale brownish yellow suffusion, the base and costal region clearer yellow, veins brown, the prearcular and costal veins brighter. Venation: Cell 1st M_2 closed; m-cu at the extreme outer end of the cell, opposite the fork of M_{2+4} .

Abdomen dark brown, the genital segment and ovipositor yellowish horn-color; tergal valves of ovipositor elongate and only gently upcurved.

Habitat.—British India.

Holotype, female, Mussoorie, Himalayas, altitude 6,500 feet, August, 1927 (*C. F. C. Beeson*). Paratopotype, female.

I take great pleasure in naming this interesting crane fly in honor of the collector, the Forest Entomologist, Dr. C. F. C. Beeson. *Phyllolabis beesoni* is very different from the only other known Himalayan member of the genus, *P. confluenta* Alexander.⁵

LIMNOPHILA AINO sp. nov.

Male.—Length, about 5.8 to 6 millimeters; wing, 6 to 6.5.

Closely allied to *L. dicranophragmoides* Alexander (Riukiu Islands), differing chiefly in the arrangement of the color pattern.

Antennæ with the first segment of scape black, the second obscure brownish yellow; flagellum chiefly yellow, the outer segments a little darkened. Mesonotal præscutum grayish brown, the three usual stripes entire, the median stripe wide, narrowly divided by a more grayish median vitta; lateral stripes narrow; pseudosutural foveæ and tuberculate pits black, conspicuous, the latter some distance back of the cephalic margin of the sclerite; centers of scutal lobes and the median area brown, yellowish pollinose; scutellum and postnotum brown. Pleura chiefly dark brown. Halteres yellow, the knobs conspicuously dark brown. Legs with the coxæ dark brown; remainder of legs yellow, the outer tarsal segments more infuscated; legs with conspicuous semierect pale setæ. Wings with the ground-color more whitish subhyaline, the pattern arranged in similar manner to *L. dicranophragmoides* but the individual bands more separated, especially the one at origin of Rs and the one along the cord; the latter two are separated by a wide, generally clear band that is approximately as wide as the first-mentioned dark band; dark bands of wing more compact, the pale spots and dashes within them being much reduced; along the costal margin the four or five

⁵ Rec. Indian Mus. 29 (1927) 206-207, fig. 17.

outer areas are solidly darkened, not with a pale central spot as in *L. dicranophragmoides*. Venation: Sc short, Sc₁ ending opposite or shortly before the fork of Rs; inner ends of cells R₄, R₅, and 1st M₂ in oblique alignment, the last most basad; m-cu not far beyond the fork of M. Abdomen chiefly brown, the tergites darker laterally; a narrow subterminal dark ring; hypopygium reddish brown; basal sternites more reddish brown, darkened laterally and caudally, the outer segments more uniformly darkened. Male hypopygium (Plate 3, fig. 37) with the outer dististyle, *od*, appearing as a blackened rod, the tip strongly curved into a spine, the outer margin quite smooth, the inner margin, in the axil of the terminal spine, with a few microscopic denticles. Inner dististyle, *id*, very broad, mitten-shaped. Gonapophyses, *g*, appearing as pale rods, the apex of each dilated into an oval head.

Habitat.—Japan (Hokkaido).

Holotype, male, Jozankei, altitude about 1,000 feet, July 29, 1923 (*S. Kuwayama*). Paratopotypes, 9 males, mostly in poor condition.

ERIOPTERINI

CLADURA ALPICOLA sp. nov.

General coloration pale yellow; legs yellow, the extreme tips of the femora and tibiæ infuscated; tarsi extensively brownish black; wings pale yellow; a tiny black spot at extreme base of wing; male hypopygium large and complex, the basistyle with a large mesal lobe that is unequally bilobulate near tip; inner dististyle with a conspicuous basal shoulder.

Male.—Length, 7.5 to 8 millimeters; wing, 8.5 to 9.

Head, thorax, and abdomen with long conspicuous pale setæ. Rostrum brownish yellow, palpi darker. Antennæ with the basal segment dark brown, in some cases so colored only basally, the remainder yellowish; outer flagellar segments darker; verticils elongate. Head pale brownish yellow, more rarely darker, grayish brown.

General coloration of prothorax and mesothorax pale yellow, immaculate. Halteres pale, the knobs weakly darkened. Legs with the coxæ and trochanters pale yellow; femora yellow, the extreme tips infuscated, tibiæ yellow, the tips narrowly darkened; tarsi extensively brownish black; legs conspicuously hairy. Wings (Plate 1, fig. 17) pale yellowish; a single tiny black dot at extreme wing base above the squama; veins brown, the prearcular and costal veins more yellowish. Macrotrichia of veins long

and conspicuous. Venation: Sc_1 relatively short, only a little longer than Sc_2 ; Rs long, gently arcuated; R_{2+3+4} shorter than cell 1st M_2 ; petiole of cell M_1 subequal to or considerably exceeding m ; $m-cu$ from one-half to nearly its own length beyond the fork of M ; vein 2d A long, very gently sinuous.

Abdomen yellow, the tergites with narrow, interrupted median and lateral dusky stripes, in cases including the subcaudal portions of the segments; sternites similar, their caudal margins darkened; hypopygium pale. Male hypopygium (Plate 3, fig. 38) very large and complicated in structure, much as in *C. megacauda*, differing especially in the structure of the tergite, basistyle, and dististyle. Basistyle, *b*, with the mesal lobe large, flattened, at apex somewhat expanded, on outer margin before apex with a small fingerlike lobe terminating in a small pencil of setæ. Outer dististyle, *od*, very long and pale, slender, considerably longer than the inner style, setiferous, with larger setæ at apex. Inner dististyle, *id*, distinctly bilobed, there being a stout basal shoulder, the more slender inner arm truncate at apex. Gonapophyses, *g*, taken together appearing lyriform, relatively slender, the obliquely truncated apex weakly toothed.

Habitat.—Japan (Honshiu).

Holotype, male, Yarigatake, Japanese Alps, August 24, 1925 (*Jiro Machida*). Paratopotypes, 4 males; paratypes, 3 males, Tsubakuro, Japanese Alps, August 23, 1925 (*Jiro Machida*).

Claudura alpicola is most closely allied to *C. megacauda* Alexander (Hokkaido, Japan), differing especially in the details of structure of the male hypopygium. These two species belong to a distinct group of the genus that can scarcely be referred to the subgenus *Neocladura* Alexander, the only other division of the genus in which the male hypopygium possesses two dististyles.

GYMNASTES CATAGRAPHA sp. nov.

? *Teucholabis* sp. nov. BRUNETTI, Rec. Indian Mus. 15 (1918) 306.

Head orange; mesonotum yellowish, the præscutum with a median black stripe; knobs of halteres orange-yellow; femora with a yellow subterminal ring; wings whitish subhyaline, with three brown crossbands; abdominal tergites dimidiate orange and dark brown.

Male.—Length, about 6.5 millimeters; wing, 5.7.

Rostrum shiny reddish yellow; palpi brownish black. Antennæ with the basal segment orange; second segment brown, paler at base; flagellum brownish black; flagellar segments elongate-

oval to subcylindrical, with elongate verticils. Head broad, obscure orange.

Pronotum obscure orange-yellow. Mesonotal præscutum yellow, the median stripe shiny black, the lateral stripes reddish, poorly delimited; scutum shiny yellow medially, each lobe with a blackened spot near mesal portion, the remainder reddish; scutellum brownish black, brighter basally; postnotum blackened, paler laterally. Pleura badly injured by the pin, the propleura reddish brown, the mesopleura apparently darker brown, variegated with paler. Halteres dusky, the knobs orange-yellow. Legs with the coxæ and trochanters reddish yellow; femora obscure yellow, the distal half passing into dark brown, with a conspicuous subterminal yellow ring that is a little narrower than the darkened tip; tibiæ brown, becoming darker brown toward the tip; tarsi brown, the distal segments darker. Wings (Plate 1, fig. 18) whitish subhyaline, the prearcular and costal region more yellowish; a heavy brown pattern, appearing as three crossbands; basal band narrow, almost parallel-sided, extending from R at the origin of Rs to the anal margin at the end of vein 2d A, very narrowly interrupted in cell R adjoining vein M; the second band includes the cord, widened out at the stigmal region, narrower along the cord, again widened out but much paler in the outer end of cell Cu; the third band includes the wing-tip in cells R_3 , R_4 , R_5 , 2d M_2 , and M_3 , the inner margin nearly straight; a broad additional seam at the outer end of cell 1st M_2 ; veins pale brown, a little darker in the infuscated areas. Venation: Sc_1 ending shortly before the fork of Rs, Sc_2 some distance from the tip of Sc_1 ; R_{2+3+4} a little longer than R_2 alone; R_{2+3} punctiform; R_2 directed a little basad, about one-half R_{1+2} ; veins R_3 and R_4 widely divergent, the former about one-half the latter; cells R_4 , R_5 , and 1st M_2 in slightly oblique alignment; cell 1st M_2 rectangular, a little widened outwardly; m-cu less than its length beyond the fork of M.

Abdominal tergites conspicuously dimidiate, the basal two-thirds of each segment dark brown, the remainder orange; sternites similar but the dimidiate appearance not so conspicuous, especially on the basal segments where the ground color is pale brown, the incisures broadly orange; on the subterminal segments the colors are more contrasted; hypopygium obscure fulvous; no sternal pouch. Male hypopygium (Plate 3, fig. 39) very small; caudal margin of the tergite convex. Basistyle, *b*, rela-

tively large, the outer angle produced, the dististyles being placed on the mesal face of the style at near midlength; two small blackened combs on the style. Outer dististyle a flattened blade, the outer angle at base darkened and microscopically roughened; apex obtuse, darkened, sparsely setiferous, the margin with microscopic serrulations. Inner dististyle smaller, the margins smooth, before the apex with a powerful bristle. *Ædeagus*, *a*, very large, appearing as a conspicuous pale blade that juts caudad beyond the other elements of the hypopygium, the apex obtuse but extended into a short point on the ventroapical portion; distal portion of *ædeagus* with conspicuous setæ.

Habitat.—Southwest India.

Holotype, male, Castle Rock, North Canara District, October 11 to 26, 1916 (*S. Kemp*). Type in the collection of the Indian Museum.

Gymnastes catagrapha is allied to *G. demejerei* (Riedel),⁶ differing in the chiefly yellow body coloration, as well as in the differently colored halteres and legs.

STYRINGOMYIA TABLASENSIS sp. nov.

General coloration yellow, variegated with brownish black; head gray; femoral dark rings incomplete; wings yellow, with four separate dark areas; vein 2d A simple, the apex gently curved; male hypopygium with the ninth sternite deeply bilobed at apex; outer arm of dististyle a long rod that narrows gradually to the acute simple apex.

Male.—Length, about 4 millimeters; wing, 4.2.

Antennal scape dark, the flagellum conspicuously paler. Head gray.

Pronotum brownish black, narrowly paler medially; posterior notum paler laterally. Mesonotal præscutum with the median portion brownish black, the posterior two-thirds fulvous-yellow with a sinuous black line on either side of the more cinerous median area; scutal lobes and median area chiefly pale, completely margined laterally and caudally with black; scutellum black, the median area restrictedly pale; postnotal mediotergite brownish black. Pleura pale, yellowish, the color including the pleurotergite. Halteres pale yellow. Legs with the coxæ and trochanters yellow; femora yellow with two narrow incomplete dark rings, as usual in the genus, the ventral surface of the femora immaculate; tibiæ yellow, the tips darkened; tarsi yellow,

⁶ Ann. Mus. Nat. Hung. 18 (1921) 135-136, new name for *Gnophomyia fascipennis* de Meijere, Bijd. tot de Dierkunde 21 (1919) 15, preoccupied.

the last segment black. Wings with a yellowish suffusion; four dark brown areas, as follows: A large oval area centering about r-m, including the extreme bases of the adjoining veins; fusion of M_{2+1} and M_3 ; m-cu; distal third of vein 2d A; veins yellow, brownish black in the infuscated areas. Venation: A short fusion of M_3 with M_{1+2} beyond cell 1st M_2 ; vein 2d A gently curved to the margin.

Abdominal tergites yellow, each segment with two brown spots at caudal margin, on the seventh segment becoming larger and confluent; eighth segment with a longitudinal brown median stripe; hypopygium chiefly pale; sternites more uniformly pale yellow. Male hypopygium (Plate 3, fig. 40) with the ninth tergite, *9t*, a broad pale setiferous lobe, the apex very insensibly bilobed. Ninth sternite, *9s*, very deeply bilobed, each lobe bearing a very long seta. Basistyle, *b*, with the outer apical angle a slender pale lobe that bears a slender seta that is longer than the lobe itself. Dististyle, *d*, very complex, the outer arm a long rod, its base wide and pale, the outer end narrowed to the acute gently curved apex, entirely without a long apical seta, as in many species of the genus. Two arms, gently curved and more or less opposed to one another, bearing series of peglike spines, those of the outer arm (about 15) more crowded, of the inner or cephalic arm (about 9) more scattered; other lobes of the complex dististyle include a simple boomerang-shaped structure and a broad-based lobe that is tipped with one or two powerful black spines and bears a long powerful seta before apex.

Habitat.—Philippines.

Holotype, male, Badajoz, Tablas Island, Romblon Province, August 27, 1928 (*Francisco Rivera and A. C. Duyag*).

STYRINGOMYIA NIPPONENSIS sp. nov.

Male.—Length, about 5.5 millimeters; wing, 5.2.

Closely allied to *S. formosana* Edwards, differing especially in the structure of the dististyle of the male hypopygium.

Second segment of scape dark brown, the base paler. Largest setæ of head black, a few smaller ones yellow. Menosotal præscutum dark brown, with longitudinal paler stripes, the dark areas of the interspaces interrupted at the level of the pseudosutural foveæ; posterior median region of præscutum, median area of scutum, and central portion of scutellum yellow, scutal lobes reddish brown, encircled by darker, each with an erect seta near mesal edge; disk of scutellum with an erect seta on each side of the yellowish median area; postnotum darkened. Pleura

pale yellow. Halteres pale, the knobs weakly infuscated. Legs with the dark areas on femora narrow and restricted to the dorsal portion; medial tibial ring similarly incomplete, the apical ring narrow but entire; basal four tarsal segments almost white, incisures weakly darkened; terminal segment black. Wings with a yellowish suffusion, the base and costal region brighter; a circular dark spot on r-m; less distinct dark seams on m-cu, outer end of cell 1st M_2 and distal third of 2d A; medial veins beyond cord chiefly darkened; radial, costal, and cubital veins pale. Venation: R_{2+3+4} oblique; m-cu nearly its own length beyond fork of M; vein 2d A bent strongly at end, subangulate but unspurred. Abdominal tergites obscure yellow; basal segment dark; succeeding segments with paired dark spots on caudal margins and less distinct ones on basal ring of segment; segment 7 with a median darkening; hypopygium chiefly pale. Male hypopygium with the dorsal apical lobe of basistyle with a longer and more hairlike apical bristle. Dististyle with the outer lobe long and slender, the apical seta long, as in *formosana*; anterior lobes of dististyle (Plate 3, fig. 41) broad at base, one narrowed apically into an acute pale point, the apical margin with two or three groups of blackened pegs, the more proximal of these arranged more or less in the form of a crescent; innermost lobe of dististyle with the apex obtuse, the outer caudal angle with numerous black peglike spines that decrease in size and become more separated outwardly; surface of style basad of these pegs with very long, basally directed setæ. Ninth sternite very narrow, entire, with the usual two apical setæ.

Habitat.—Japan (Honshou).

Holotype, male, Asahara, June 1, 1925 (*C. Harukawa*).

It may be noted that *Styryngomyia formosana* Edwards has been taken as far north as Tokyo (May 14, 1919, *R. Takahashi*) and is thus the most northerly record for the genus.

ILLUSTRATIONS

[Legend: *a*, aedeagus; *b*, basistyle; *d*, dististyle; *dd*, dorsal dististyle; *g*, gonapophysis; *id*, inner dististyle; *od*, outer dististyle; *s*, sternite; *t*, tergite; *vd*, ventral dististyle.]

PLATE 1

- FIG. 1. *Brithura sancta* sp. nov., wing.
2. *Brithura conifrons* Edwards, wing.
3. *Tipula rantaicola* sp. nov., wing.
4. *Tipula microcellula* Alexander, wing.
5. *Nesopeza rantaizana* sp. nov., wing.
6. *Oropeza bispinula* sp. nov., wing.
7. *Limonia* (*Limonia*) *rantaiensis* sp. nov., wing.
8. *Limonia* (*Dicranomyia*) *tristoides* sp. nov., wing.
9. *Limonia* (*Geranomyia*) *suensoniana* sp. nov., wing.
10. *Limonia* (*Alexandriaria*) *argyrata* sp. nov., wing.
11. *Limonia* (*Thrypticomya*) *brevicuspis* sp. nov., wing.
12. *Limonia* (*Euglochina*) *arachnobia* sp. nov., wing.
13. *Limonia* (*Pseudoglochina*) *riukiensis* sp. nov., wing.
14. *Limonia* (*Pseudoglochina*) *unicinctipes* sp. nov., wing.
15. *Helius* (*Helius*) *tenuistylus* sp. nov., wing.
16. *Phyllolabis beesoni* sp. nov., wing.
17. *Cladura alpicola* sp. nov., wing.
18. *Gymnastes catagrapha* sp. nov., wing.

PLATE 2

- FIG. 19. *Brithura sancta* sp. nov., male hypopygium.
20. *Tipula subfutilis* sp. nov., male hypopygium.
21. *Tipula subfutilis* sp. nov., male hypopygium, ninth tergite.
22. *Tipula futilis* Alexander, male hypopygium, ninth tergite.
23. *Tipula futilis* Alexander, male hypopygium.
24. *Tipula yusouoides* sp. nov., male hypopygium.
25. *Tipula subyusou* sp. nov., male hypopygium, gonapophysis.
26. *Tipula yusou* Alexander, male hypopygium, gonapophysis.
27. *Nesopeza idiophallus* sp. nov., male hypopygium, aedeagus.
28. *Oropeza satsuma* Alexander, male hypopygium.
29. *Oropeza satsuma* Alexander, male hypopygium, ninth tergite.
30. *Oropeza bispinula* sp. nov., male hypopygium.
31. *Oropeza bispinula* sp. nov., male hypopygium, ninth tergite.
32. *Limonia* (*Dicranomyia*) *tristoides* sp. nov., male hypopygium.

PLATE 3

- FIG. 33. *Limonia* (*Geranomyia*) *tenuispinosa* sp. nov., male hypopygium.
34. *Limonia* (*Thrypticomya*) *brevicuspis* sp. nov., male hypopygium.

- FIG. 35. *Helius (Helius) tenuistylus* sp. nov., male hypopygium.
36. *Helius (Helius) attenuatus* sp. nov., male hypopygium.
37. *Limnophila aino* sp. nov., male hypopygium.
38. *Cladura alpicola* sp. nov., male hypopygium.
39. *Gymnastes catagrapha* sp. nov., male hypopygium.
40. *Styringomyia tablasensis* sp. nov., male hypopygium.
41. *Styringomyia nipponensis* sp. nov., male hypopygium, dististyles.

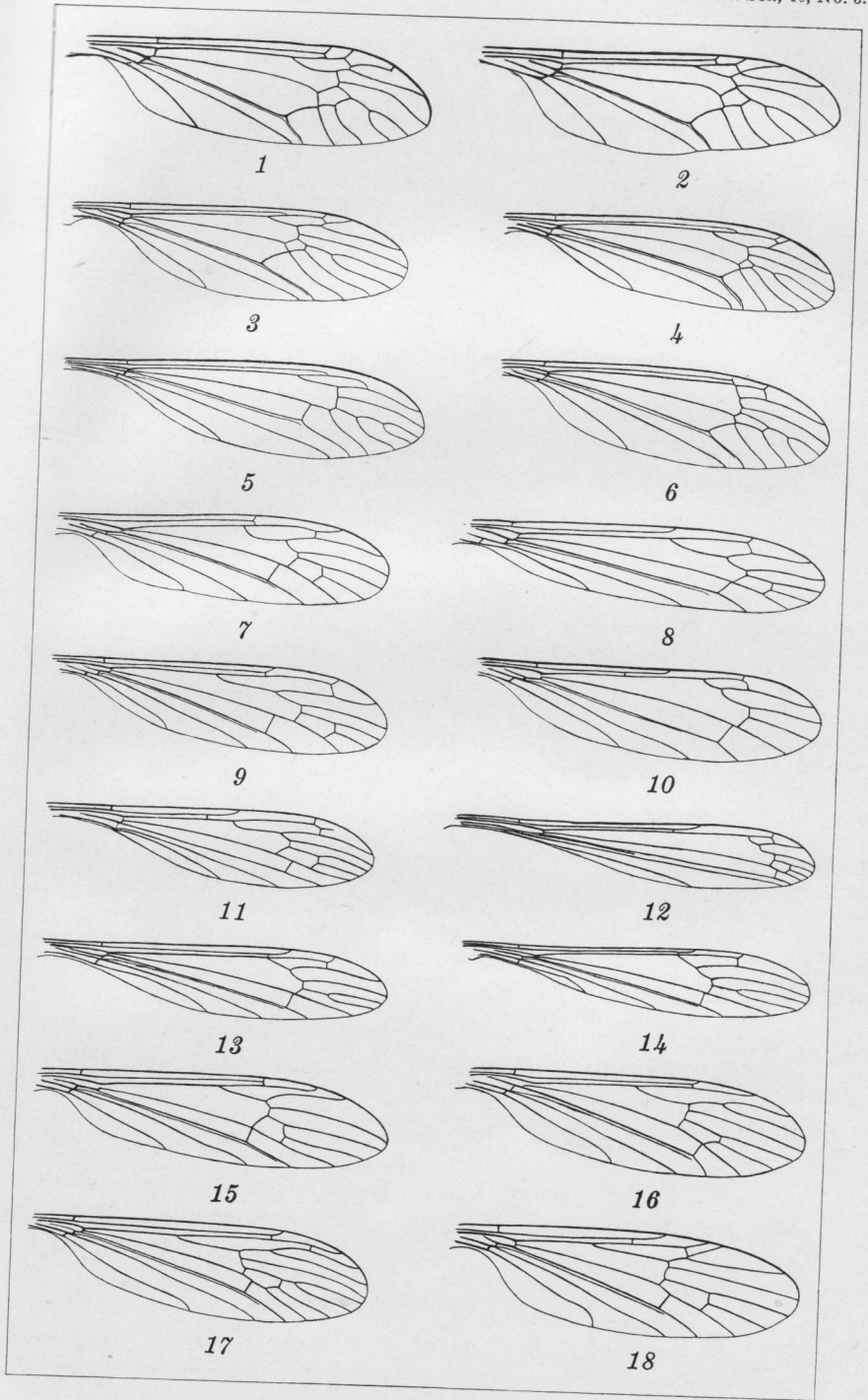


PLATE 1.

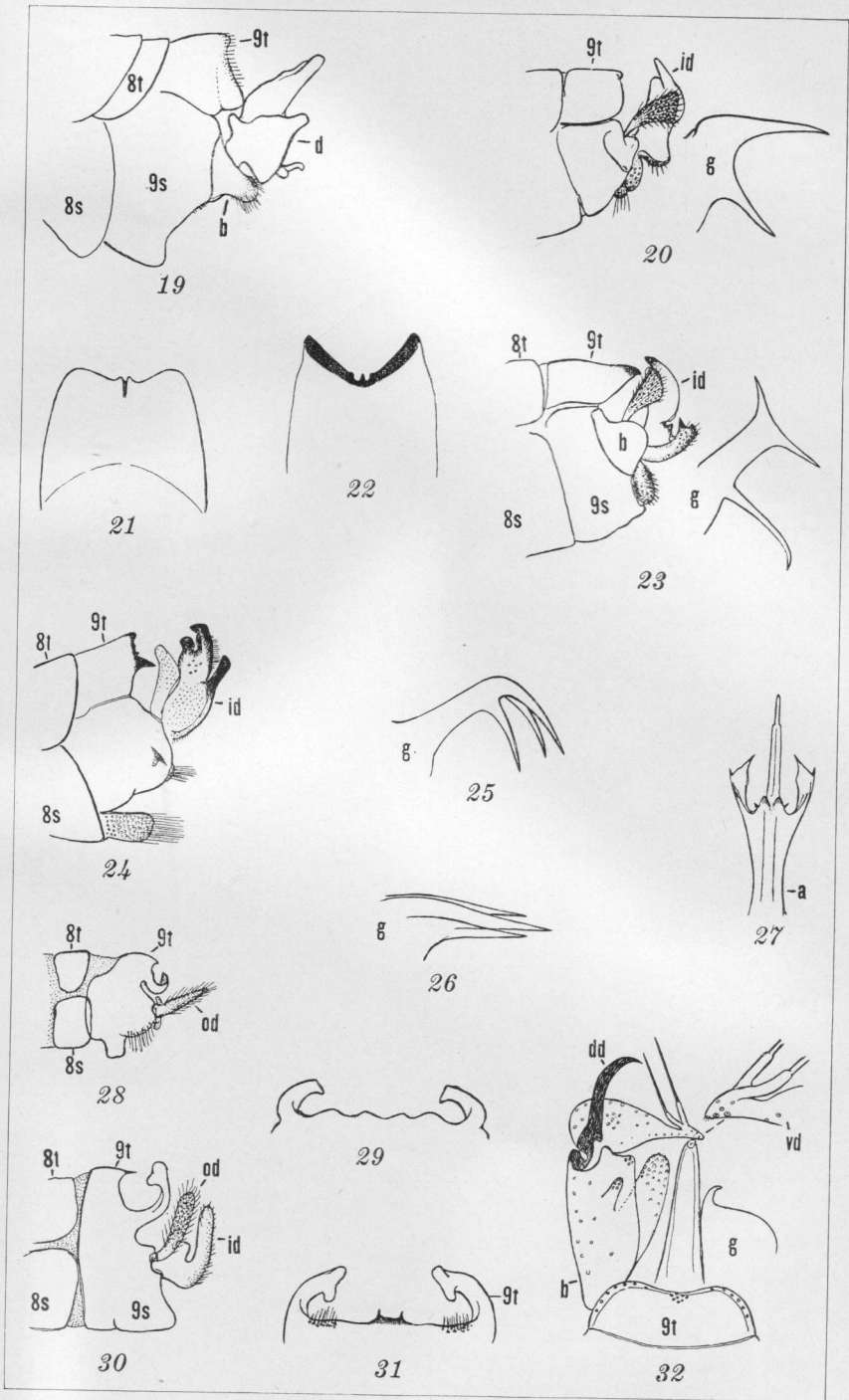


PLATE 2.

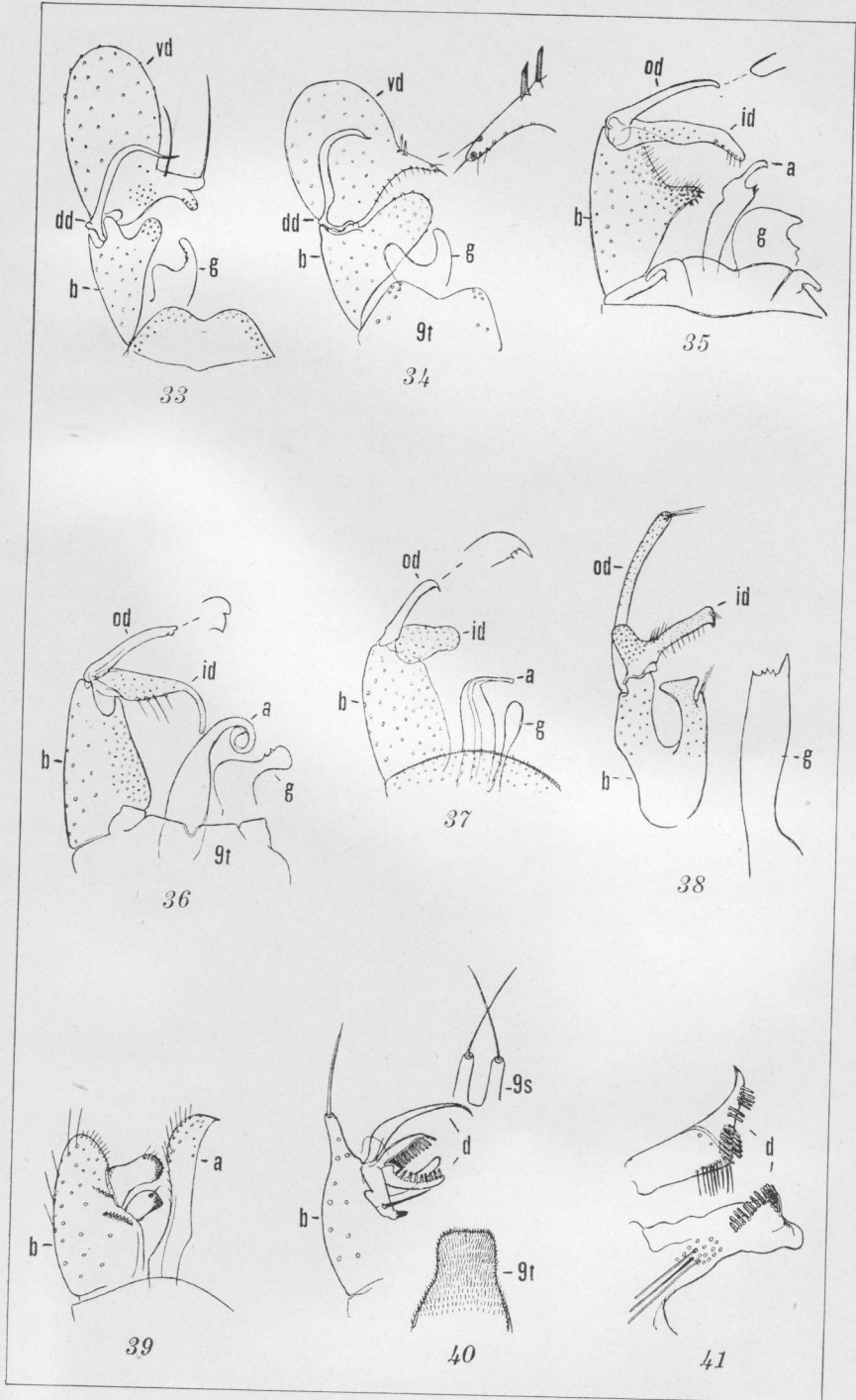


PLATE 3.