STUDIES ON THE CRANE-FLIES OF MEXICO.

PART IV.*

(Order Diptera, Superfamily Tipuloidea).

Charles P. Alexander, Amherst, Massachusetts.

In the present paper, I wish to discuss additional species of crane-flies that were taken in various parts of Mexico by Dr. Alfons Dampf, Government Entomologist. A very considerable proportion of the species were taken in the State of Chiapas, under conditions that have been discussed in general terms in the preceding part under this same title (Annals Ent. Soc. America, 20:301-318; 1927). A few additional localities require special explanation:

Nayarit: Near Tepic, Nayarit, altitude 945 meters, swept from shrubs and bushes on shores of swift-flowing rivulet, March, 1927. M. B. 203. Geranomyia (Geranomyia) perfecta sp. n.

Rio Mayo: Near Navojoa, Sonora, March, 1927. M. F. 1221. Cryptolabis (Cryptolabis) fuscovenosa sp. n.

Desierto de los Leones: Near Mexico City, altitude 3,100 meters, in Abies forest, swept from along a swift-flowing aqueduct, March, 1925. M. B. 116. Shannonomyia moctezuma sp. n. This locality has been discussed in greater detail in an earlier part of this series of papers (Annals Ent. Soc. America, 18:341-362; 1925).

In this paper, and others prepared subsequently to 1926, I have adopted the interpretation of the radial field of the wing that has been discussed in detail in other papers (Proc. Linn. Soc. New South Wales, 52:42-72, 92 figs.; 1927; Rec. Indian Museum, 29:167-214, plate; 1927). Several Australasian Entomologists, especially Drs. Mackerras, Tillyard and Tonnoir, have considered that the interpretation as given was too conservative in that it was not applied to all of the subfamilies and tribes of the family. I now consider that this emendation is advisable and by applying the following changes to the

^{*} Contribution from the Entomological Laboratory of the Massachusetts Agricultural College.

Tipulinæ, Cylindrotominæ, and the tribes Limoniini and Lechriini, all groups within the family are brought into harmony:

First section of $R_1 = Sc_{2+}R_1$. Distal section of $R_1 = Sc_2$ (free tip). $r = R_1$. $R_2 = R_{1+2}$.

As before, I wish to express my deepest thanks to Dr. Dampf for the privilege of studying these extensive series of Tipulidæ and of retaining the types of the novelties herein described.

Tipula Linnaeus.

Tipula zeltale sp. n.

Belongs to the moctezumæ group; antennæ (\circlearrowleft) of moderate length, 13-segmented, bicolorous; wings strongly tinged with brown, variegated with conspicuous whitish spots.

Male. Length, about 16 mm.; wing, 19-20 mm. Female. Length, about 26-31 mm.; wing, 19-22 mm.

Frontal prolongation of head relatively long, dark chestnut-brown laterally, the dorsum dusted with yellow; nasus long and slender; palpi black. Antennæ (♂) of moderate length, if bent backward extending about to the base of the abdomen; scape and first flagellar segment yellow; remaining flagellar segments bicolorous, the basal enlargement black, the remainder of the segment yellow, on the outer segments the coloration passing through brownish yellow to brown; first flagellar segment of moderate length only, subequal to the first scapal; remaining flagellar segments increasing in length and decreasing in diameter outwardly; terminal segment very small, elongate-conical; antennæ (♀) shorter and the bicolorous nature poorly indicated. Front yellow, the vertex dark brown, the posterior orbits more yellowish.

Pronotum brown. Mesonotal praescutum dark brown, the usual four brown stripes entire and but little different in color from the interspaces, the whole surface dusted with a sparse pollen, the lateral margins more broadly so, the humeral region darker brown; in the paratype female the stripes are very distinct, brownish black, the interspaces golden-yellow; scutum dark brown, the posterior portions more pruinose; scutellum and postnotum dark, gray pruinose, with a capillary brown median vitta. Pleura dark, indistinctly variegated with paler, the surface dusted with brown and gray; dorso-pleural membrane buffy brown. Halteres long, yellow, the knobs infuscated. Legs with the coxæ dark, pruinose; trochanters obscure brownish yellow; remainder of legs very long and slender, the femora brownish yellow, brighter basally, the tips narrowly but conspicuously blackened; tibiæ yellowish brown, the tips even more narrowly dark brown; tarsi dark brown; basitarsi longer than the tibiæ. Wings strongly tinged with brown, the base and costal region more yellowish brown; stigma rather ill-delimited, pale brown; conspicuous whitish areas before the cord, near outer end of cell M and in the bases of cells M, 1st A and 2nd A; antestigmal and poststigmal regions more creamy-white; veins dark brown, R_2 paler; obliterative areas extensive. Venation: R_{1+2} long, entire, cell R_2 deep; cell M_1 very deep, the petiole greatly reduced;

m-cu, basal section of M_3 and m in oblique sinuous alignment.

Abdominal tergites yellow, passing into brownish yellow on the outer segments, trivitate with black, the stripes narrowly interrupted at the incisures; sternites similar, with a conspicuous median black longitudinal line, the outer segments more uniformly darkened. Male hypopygium as in the moctezumæ group; ninth tergite large, the caudal margin with a broad, rectangular notch, the median area of which is gently produced and again split by a tiny median V-shaped notch; lateral lobes flattened, the tips obtusely rounded. The conspicuous outer dististyle lies caudad of the inner, narrow at base, expanded outwardly, the caudal portion of the apex further extended into a triangular lobe. Ovipositor with the valves very long and straight, the margins smooth.

Holotype, &, near Gruta del Elcanto, Chiapas, in pine forest, altitude about 2,200 meters, June 6, 1926 (A. M. Dampf). Allotopotype, &, with the type. Paratopotype, &, M. B. 162; paratypes, &, San Cristobal, July 12, 1926, M. F. 1,030; 1 &, June 4, 1926, M. B. 160; 1 &, Summit of the Hueitepec, altitude 2,600 meters, June 14, 1926, M. F. 971.

The specific name is that of a Maya tribe of Chiapas.

Tipula zotzil sp. n.

Male. Length about 16 mm.; wing, 18 mm.; antenna about 9.5 mm. Female. Length about 22 mm.; wing, 18.5 mm.

Belongs to the monilifera group; allied to T. mitua Alexander

(Colombia), from which it differs as follows:

Antennæ a little longer in proportion to the length of the body. Frontal prolongation of head dark brown laterally, conspicuously yellow above. Antennæ with the scape and first flagellar segment yellow; second flagellar segment with the stem brownish yellow; remaining flagellar segments with the stem passing from dark brown into black, concolorous with the basal node. The head and thorax are discolored and their coloration cannot be well compared. Pleura yellow. Wings much as in mitua, the white areas more restricted, the oblique white band across cells R and M very narrow and the subbasal white areas in the same cells merely indicated; basal half of vein R_{1+2} dark brown, the distal half abruptly pale. Male hypopygium large, the ninth tergite black on the sides, the caudal margin and median area broadly yellow; tergite narrowed apically, the caudal margin Dististyle light yellow, congently rounded, almost as in mitua. spicuous. Median area of the eighth sternite a low blunt lobe that is only about as long as the width at base, the apex obtuse, tufted with golden-yellow setæ that are longer than the lobe itself.

Holotype, ♂, Hueitepec, Chiapas, in dense leafy woods, altitude 2,600 meters, June 14, 1926 (A. M. Dampf); M. B. 170. Allotype, ♀, San Cristobal, in midst of meadows, swept from hanging branches of willows near rivulet, July 3, 1926; M. B. 183.

The specific name is that of a native Indian tribe of Chiapas. The monilifera group and its included species has been discussed in an earlier paper by the writer (Trans. Amer. Ent. Soc., 42: 23-30, pls. 3-5; 1916). T. zotzil is the most northern species so far discovered. Osten Sacken (Biol. Centr.-Amer., Dipt. 1: 13; 1886) refers specimens from Irazu, Costa Rica, to monilifera, with a question.

Dicranomyia Stephens.

Dicranomyia onerosa sp. n.

Similar to *D. liberta* O. S.; general coloration gray; antennæ black throughout; wings strongly tinged with dusky, the small stigma darker; male hypopygium with the rostral prolongation of the ventral dististyle stout, bearing a single spine which arises from an enlarged basal papilla.

Male. Length about 5.3-5.5 mm.; wing, 7.4 mm.

Very similar in general appearance to the Nearctic D. liberta Osten Sacken, differing notably in the structure of the male hypopygium. Rostrum, palpi and antennæ black, the flagellar segments oval. Head and thorax brownish gray, the praescutal stripes and centers of the scutal lobes darker. Halteres pale, the knobs dark brown. Legs dark brown, the tips of the femora broadly blackened, the tibiæ more narrowly so; tarsi brownish black. Wings strongly suffused with dusky, the small, ill-delimited stigma darker brown; vague darker seams along the cord and outer end of cell $1st\ M_2$; obliterative areas conspicuous, including part of m-cu. Venation: Sc short, Sc_1 ending shortly beyond the origin of Rs, Sc_1 not far from the tip and about opposite the origin of Rs; m-cu varying in position from some distance before to opposite the fork of M. In the right wing of the type, cell M_2 is open by the atrophy of the outer deflection of M_3 .

Abdomen, including the hypopygium, dark brown. Male hypopygium with the rostral prolongation of the ventral dististyle stout, near midlength bearing a single conspicuous spine which arises from a

swollen papilla.

Holotype, &, San Cristobal, Chiapas, altitude 2,100 meters, July 12, 1926 (A. M. Dampf); M. F. 1,030. Paratopotype, &.

Dicranomyia ingrata sp. n.

Male. Length about 5.5 mm.; wing, 7.6 mm. Female. Length about 6 mm.; wing, 7.5 mm.

Praescutal stripes brown, the lateral stripes poorly delimited. Legs with the femora light brown, the tips broadly blackened; remainder of legs black. Wings almost exactly as in onerosa, with Rs a little shorter. Abdomen with the hypopygium dark brown. Male hypopygium with the margin of the ninth tergite evenly convex, not at all emarginate. Ventral dististyle relatively small, the rostral prolongation broad, with two spines, these arising from small, equal, elevated tubercles that are separated from one another by a distance a little less than the width of one; spines of moderate length, subequal, acutely pointed. Dorsal dististyle a strongly curved sickle-shaped rod, the long apex very slender and acutely pointed; basal portion stouter, narrower at midlength, a trifle dilated before the long apical portion. Gonapophyses with the mesal apical angle long, slender, gently curved, the lateral margin microscopically roughened.

Holotype, ♂, Cerro San Cristobal, Chiapas, on low herbage, June 29, 1926 (A. M. Dampf); M. B. 182. Allotype, ♀, San Cristobal, altitude 2,100 meters, at light, July 12, 1926; M. F. 1,030.

Dicranomyia subravida sp. n.

Generally similar to *D. ravida* Alexander; antennæ black throughout; rostral prolongation of the ventral dististyle of the male hypopygium with two subequal spines that are directed strongly basad.

Male. Length about 5 mm.; wing, 5-5.5 mm. Female. Length about 5-5.5 mm.; wing, 6-6.5 mm.

Rostrum brownish yellow, the palpi black. Antennæ black throughout, the first segment sparsely pruinose; flagellar segments short-oval, decreasing in size outwardly. Head gray, the vertex more or less darkened, the posterior orbits clear.

Mesonotum yellowish gray, the praescutum with three dark brown stripes, the median stripe broad, the laterals sometimes obsolete, sometimes more distinct. Pleura gray. Halteres yellow, the knobs infuscated. Legs with the coxæ pale, the fore coxæ infuscated, the remaining coxæ infuscated only at bases; trochanters yellow; femora dark brown, the bases narrowly obscure yellow; tibiæ brown, the tips narrowly dark brown; outer tarsal segments brownish black. Wings hyaline, the oval stigma pale brown; veins brown. Venation: Sc relatively short, Sc_1 ending some distance before the origin of Rs, Sc_2 far from the tip of Sc_1 , the latter alone about equal to m-cu; Rs short, subequal or shorter than the basal section of R_{4+5} , strongly arcuated to feebly angulated; cell 1st M_2 closed; m-cu at or before the fork of M, subequal to or a little shorter than the distal section of Cu_1 .

Abdomen dark brown, the surface pruinose; ventral dististyle of hypopygium yellow. Male hypopygium with the ninth tergite nearly transverse across the caudal margin, the lateral lobes very low, each with a group of about ten setæ; a median group of about seven setæ.

Generally similar to D. onerosa sp.n., differing especially in the structure of the male hypopygium.

Basistyle relatively small, the ventro-mesal lobe large. Ventral dististyle large and fleshy, the rostral prolongation broadly flattened, with two subequal spines that are directed strongly basad. Dorsal dististyle gently curved, sinuous. Gonapophyses very broad, the caudo-mesal angle produced into a relatively slender lobe.

Holotype, ♂, San Cristobal, Chiapas, altitude 2,100 meters, July 12, 1926 (A. M. Dampf); M. B. 188. Allotopotype, ♀; M. B. 183. Paratopotypes, 20 ♂♀, June 9–July 23, 1926; M. B. Nos. 163, 164, 165, 166, 173, 179, 183, 185, 188, 193, 194; M. F. Nos. 973, 1,005, 1,006, 1,007, 1,008, 1,015, 1,021 and 1,031.

Geranomyia Haliday.

Geranomyia pentheres sp. n.

Related to *G. canadensis* Westwood; legs uniformly brownish black; wings with a strong dusky suffusion, the oval stigma darker brown; abdominal tergites uniformly dark brown; male hypopygium with the spines of the rostral prolongation of the ventral dististyle very long, curved, arising from a single conspicuous tubercle.

Male. Length (excluding rostrum) about 5 mm.; wing, 6.8 mm.;

rostrum about 4 mm.

Rostrum elongate, black, the palpi concolorous. Antennæ brownish black throughout; flagellar segments oval or the outer apical angles a

little produced. Head dark gray.

Mesonotal praescutum reddish brown, the median stripe more plumbeous, indicated posteriorly; humeral region of praescutum brighter; scutal lobes dark plumbeous; scutellum more brownish testaceous; postnotum, including the pleurotergite, plumbeous gray. Pleura obscure brownish yellow. Halteres dark brown, the base of the stem narrowly pale. Legs with the coxæ and trochanters testaceous; remainder of the legs brownish black, the femoral bases only narrowly paler. Wings with a strong dusky suffusion, the oval stigma darker brown, conspicuous; veins still darker brown. Venation: Sc relatively long, Sc_1 extending to midlength of Rs, Sc_2 not far from its tip; Rs long and straight; R_1 present but very short, Sc_2 thus lying just proximad of R_2 ; cell 1st M_2 closed; m-cu shortly before the fork of M; cell 2nd A relatively narrow.

Abdominal tergites dark brown, the basal sternites more yellowish. Male hypopygium with the tergite deeply emarginate, the conspicuous lateral lobes densely set with spinous setæ. Ventral dististyle very large and fleshy, the rostral prolongation short, with a very large and conspicuous fleshy tubercle occupying about all of its outer surface, this long tubercle bearing both of the long curved rostral spines, these latter lying close together and subequal in length, approximately as long as the dorsal dististyle. Dorsal dististyle a curved sickle-shaped rod, narrowed very gradually to the obtuse apex. Gonapophyses with the mesal lobes

elongate, the apex produced into a weak spinous point.

Holotype, \eth , near San Cristobal, Chiapas, in the shadowy ravine of a mountain brook, July 17, 1926 (A. M. Dampf); M. B. 190a. Paratopotype, \eth .

Geranomyia turbida sp. n.

Related to *G. canadensis* Westwood; mesonotal praescutum yellow with scarcely evident fulvous stripes; pleura yellow; legs with the femora dark brown, the tips narrowly obscure yellow; wings with a yellowish brown suffusion, the oval stigma darker brown; abdominal tergites darker brown; male hypopygium with the ventral dististyle very large and fleshy, the rostral prolongation short, with two short straight spines.

Male. Length (excluding rostrum) about 6-6.4 mm.; wing, 7-8 mm.;

rostrum about 3.5–4 mm.

Rostrum relatively elongate, brownish black, paler basally. Antennæ brownish black throughout; flagellar segments oval. Head above brownish gray, the vertex with a vague darker median line; anterior

vertex relatively wide.

Mesonotal praescutum light yellow, with scarcely evident fulvous stripes; scutum yellow, the centers of the lobes darker; scutellum clearer yellow; postnotum more infuscated. Pleura yellowish. Halteres relatively short, dark brown, the base of the stem narrowly yellow. Legs with the coxæ and trochanters obscure yellow; femora dark brown, a trifle paler basally, the tip narrowly but rather conspicuously light yellow; tibiæ brownish black, the tips and the tarsal segments a little paler. Wings with a bright yellowish brown suffusion, the oval stigma darker; veins dar brown. Venation: Sc long, Sc_1 ending about opposite two-thirds the length of Rs, Sc_2 close to its tip; free tip of Sc_2 some distance before R_2 , R_1 thus being relatively elongate; cell 1st M_2 rectangular, gently widened outwardly; m-cu not far from the fork of M, longer than the distal section of Cu_1 .

Abdominal tergites dark brown, the sides paler; sternites more testaceous yellow; hypopygium dark. Male hypopygium with the caudal margin of the ninth tergite only gently emarginate, the lateral lobes broad. Ventral dististyle very large and fleshy, elongate; rostral prolongation short and stout, provided with two short, straight spines of which the outer one is a trifle shorter; the spines are placed close together near the base of the prolongation, not arising from enlarged basal swellings as in related species. Dorsal dististyle pale, gently

curved, the tip abruptly narrowed to an acute point.

Holotype, &, near San Cristobal, Chiapas, in shaded ravine of mountain brook, altitude about 2,200 meters, July 17, 1926 (A. M. Dampf); M. B. 190a. Paratopotypes, 3 & &, July 15, 1926; M. B. 190; July 17, 1926; M. B. 190a.

Geranomyia eurygramma sp. n.

Antennæ black throughout; mesonotal praescutum light green, with a broad dark brown median stripe and less evident orange-brown lateral stripes; wings yellowish, with an extensive brown pattern; Sc short; male hypopygium with the spines of the rostral prolongation of the ventral dististyle unequal, arising from conspicuous tumid bases.

Male. Length (excluding rostrum) about 6-6.5 mm.; wing, 6.5-7 mm.; rostrum about 2.9 mm.

Female. Length (excluding rostrum) about 7.5-8 mm.; wing,

7.8 mm.; rostrum about 3.2-3.5 mm.

Rostrum relatively long, black, in the male a little less than one-half the length of the body; palpi black. Antennæ black throughout; flagellar segments elongate-oval. Head brownish gray, the vertex

with a narrow median light gray vitta.

Mesonotal praescutum light green with a very broad, dark brown median stripe and less evident orange-brown sublateral stripes, the broad lateral margins remaining of the ground-color; scutum pale, the centers of the lobes extensively dark brown; scutellum green; postnotum pale brown, with greenish reflections. Pleura pale reddish or testaceous brown, with green reflections. Halteres short, pale, the knobs dark brown. Legs with the coxæ pale, tinged with green; trochanters pale yellow; femora light brown, the tips broadly yellow, preceded by a subequal darker brown annulus; in cases, this latter ring is preceded by a broader but more diffuse obscure yellow ring; tibiæ and tarsi brown, the terminal tarsal segments darker. Wings with a vellowish tinge, cell Sc more strongly so; an extensive darker pattern, arranged as follows: A series of about four darker brown areas along the costa, the first just beyond h, the second at the supernumerary crossvein, the third at origin of Rs and end of Sc, the fourth the stigmal area; cord and outer end of cell 1st M_2 broadly seamed with paler brown; pale brown marginal clouds at ends of veins R_3 , Cu_1 and very extensively on both Anal veins; veins yellow, brown in the infuscated ateas. Venation: Sc_1 ending a short distance beyond the origin of Rs, Sc2 near its tip and likewise beyond Rs; a supernumerary crossvein in cell Sc; Rs feebly angulated at origin; m-cu at fork of M; cell 2nd A broad.

Abdominal tergites brown, the sternites more greenish yellow. Male hypopygium with the ninth tergite having a relatively narrow U-shaped median notch, the broad lateral lobes thus formed conspicuously setiferous. Ventral dististyle very large and fleshy, the rostral prolongation slender, near its base with two very conspicuous, strongly divaricate spines that arise from tumid bases; spines slightly unequal in size, one arising from a base that is nearly as large as the rostral prolongation beyond it, the spine long and straight; the second spine arises from a shorter and broader base, is only about two-thirds

as long as the other and is strongly bent at base.

Holotype, ♂, Córdoba, Barranca of the Rio San Antonio, altitude 870 meters, November 20, 1924 (A. M. Dampf); M. B. 102. Allotopotype, ♀. Paratopotypes, 6 ♂♀.

Geranomyia perfecta sp. n.

General coloration gray, the praescutum with three dull black stripes; scutal lobes black, the median area obscure yellow; pleura pale ochreous, with longitudinal brown stripes; femora brownish yellow, the tips blackened, preceded by a vague yellowish subterminal ring; wings whitish, the oval stigma dark brown; paler brown seams on the cord, outer end of cell 1st M_2 and the wing-tip; Sc long; abdomen dark brown.

Female. Length (excluding rostrum) about 8.5 mm.; wing, 7.5 mm.; rostrum about 3.5 mm.

Rostrum elongate, as shown by the measurements, black throughout, including the palpi. Antennæ black throughout, the flagellar segments oval to short-cylindrical. Head dark gray, the center of the vertex with a darker line; anterior vertex brighter; sides of the genæ obscure yellow.

Pronotum dark brown, the posterior notum obscure yellow laterally. Mesonotal praescutum with three dull black stripes, the median stripe vaguely divided behind; humeral triangles obscure fulvous, the interspaces and lateral margins of the sclerite more infuscated; scutum obscure yellow medially, the lobes black; scutellum obscure vellow. the base on either side of the median line narrowly infuscated; postnotum dark gray, margined laterally with paler. Pleura chiefly pale ochreous, longitudinally variegated with brown on the anepisternum and ventral sternopleurite; pleurotergite gray. Halteres dark brown, the base of the stem narrowly pale. Legs with the fore coxe dark brown, the middle and hind coxæ less distinctly darkened; trochanters obscure testaceous; femora brownish yellow, paler basally, the tips rather narrowly blackened, the amount subequal on all the legs; a vague subterminal yellowish ring; tibiæ yellowish brown, the tips narrowly dark brown; basitarsi brown, the tips and remainder of tarsi brownish Wings whitish, the stigma oval, dark brown; cell Sc darkened: a tiny brown cloud at origin of Rs; cord and outer end of cell 1st M_2 seamed with grayish; wing-tip in cells Sc_2 to M_3 distinctly infumed; veins black, the obliterative areas extensive. Venation: Sc moderately long, Sc_1 ending about opposite midlength of Rs, Sc_2 close to the tip of Sc_1 ; Rs approximately three times the basal section of R_{4+5} ; m-cu at the fork of M.

Abdomen dark brown, including the genital segment. Ovipositor with the tergal valves short and slender, the sternal valves straight, darkened.

Holotype, ♀, near Tepic, Nayarit, altitude 3,069 feet, swept from shrubs and bushes on shores of a swift-flowing rivulet, March 14, 1927 (A. M. Dampf); M. B. 203. Paratopotype, ♀; M. F. 1191.

Epiphragma Osten Sacken.

Epiphragma oreonympha sp. n.

General coloration dark brown, the anterior portion of the praescutum paler; antennæ (♂) elongate, the first flagellar segment yellow; halteres elongate, brownish black; femora with the apical third yellow, enclosing a broad black subterminal ring; wings long and narrow, subhyaline, with an ocelliform brown pattern; abdominal tergites dark brownish black, the sternites yellow; hypopygium dark brown.

Male. Length about 9-10 mm.; wing, 10.5-12.5 mm.; antennæ about 4.3-4.6 mm.

Female. Length about 11 mm.; wing about 10 mm.

Rostrum and palpi black. Antennæ (♂) elongate, if bent backward extending nearly to the base of the fourth abdominal segment; scape black; first flagellar segment yellow; remainder of organ black; flagellar segments elongate-cylindrical, the basal enlargement small. Head

brown, darker medially; anterior vertex (♂) very narrow.

Pronotum chiefly dark brown; anterior lateral pretergites vellow. Mesonotal praescutum light golden to ochreous brown, the posterior half dark brown, the usual intermediate stripes more or less distinct throughout their whole length; humeral triangles and the broad lateral margins of the sclerite black; scutum light brown, the lobes and the median area variegated with dark brown; scutellum and postnotum dark, conspicuously pruinose. Pleura brownish black, with paler areas on the meron and ventral portion of the pteropleurite, and immediately beneath the wing-root; dorso-pleural region dusky. Halteres elongate, brownish black, only the extreme base of the stem vellowish. Legs with the coxe obscure yellow, the bases narrowly dark brown, most extensive on the fore coxe where the basal half is included, narrowest on the posterior coxæ; in some specimens, the middle and posterior coxæ are uniformly pale; trochanters obscure yellow; femora brown, paler basally, the apical third yellow enclosing a broad, conspicuous black ring, about equal in extent to the combined yellow apex and subterminal annulus; tibiæ brown, the base narrowly yellow, the extreme tip very narrowly pale; tarsi paling into golden vellow, especially the posterior tarsi. Wings relatively long and narrow, subhyaline, with a handsome ocelliform brown pattern; cell Sc more yellowish; brown seams at h and the supernumerary crossvein in cell C, between these two latter two broad, pale brown areas that are margined laterally with dark brown, the marks continued caudad into cell Sc; a similar but smaller area at end of vein Sc; stigma elongate-oval, darker brown; ocelliform markings broken, the principal ones having the following points as centers: Origin of Rs; anterior cord; m; fork of M_{1+2} , these centers being of a darker brown than the rings; marginal areas at the ends of all the longitudinal veins, largest in cells R_2 and R_3 ; a large gray cloud extends across cells Cu and 1st A from the ocellus at the origin of Rs; the long, narrow cell 2nd A is almost uniformly gravish brown.

interrupted by the ground-color near the base, and, in cases, near the outer end; outer end of cell 1st A extensively clouded in similar manner; veins dark brown. Venation: Cells beyond the cord long and narrow, the veins with conspicuous macrotrichiæ; R_{2+3+4} longer than R_{2+3} ; m-cu about its own length beyond the fork of M, transverse in position; cell 2nd A long and narrow.

Abdominal tergites brownish black, the caudal margins of the segments narrowly pale; a lateral yellow spot at near two-thirds the length of the intermediate segments; sternites yellow; hypopygium

dark brown.

Holotype, ♂, near San Cristobal, Chiapas, July 17, 1926 (A. M. Dampf); M. B. 190a. Allotype, ♀, Huixtan, Chiapas, altitude 2,700 meters, in virgin forest, July 7, 1926 (A. M. Dampf); M. F. 1022. Paratopotype, ♂, with the allotype.

Epiphragma oreonympha is allied to E. circinata Osten Sacken (Costa Rica) in the elongate antennæ of the male. It differs in the details of coloration, especially of the thorax and abdomen, and in the long, narrow wings. The halteres are not brightened at their tips.

Shannonomyia Alexander.

Shannonomyia moctezuma sp. n.

Allied to S. lenta (Osten Sacken), most closely allied to S. lentoides (Alexander); antennæ relatively long, in the male if bent backward extending about to the base of the abdomen; wings with a strong brownish tinge, the broad costal margin darker brown, the central portion pale, producing a longitudinal whitish stripe that extends to the wing-tip.

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

Rostrum and palpi dark brown. Antennæ relatively elongate for a member of this group; scapal segments a trifle paler than the dark brown flagellum; if bent backward, the antennæ extend approximately to the base of the abdomen; antennal segments long-oval, with a dense,

erect, white pubescence. Head gray.

Mesonotum dark brownish gray, the praescutum with three scarcely evident darker brownish gray stripes. Pleura brown, uniformly pruinose. Halteres pale, the knobs scarcely darkened. Legs with the coxe and trochanters brownish yellow; femora yellow, the tips weakly darkened; tibiæ brownish yellow, the tips narrowly darkened; tarsi pale brown, the terminal segments dark brown. Wings with a strong brownish tinge, especially the costal third, the posterior third a little paler, the central third nearly clear, to produce a longitudinal pale stripe that extends from the arculus to the wing-apex, including all of cell R_5 ; indistinct brown seams at origin of R_5 , along cord and outer end of cell 1st M_2 ; stigma small, restricted to R_2 ; veins brown, darker in the infuscated areas. Venation: Sc relatively short, Sc_1 ending shortly

before the end of Rs, Sc_2 near its tip; Rs short, arcuated at origin; R_2 about equal to R_{1+2} and a trifle longer than R_{3+4} ; R_3 and R_4 strongly divergent at ends; cell 1st M_2 long and narrow, m-cu near midlength.

Abdomen dark brown, the ninth tergite and proximal portions of the basistyles of the male hypopygium a little brightened. Male hypopygium with the dististyles broadly united basally by pale membrane; apex of the outer dististyle weakly bifid, narrowly blackened. Aedeagus relatively long.

Holotype, \circlearrowleft , Desierto de los Leones, altitude 3,100 meters, in Abies forest, swept from along a swift-flowing aqueduct, March 29, 1925 (A. M. Dampf); M. B. 116. Paratopotype, \circlearrowleft .

Shannonomyia lentina sp. n.

Allied to S. lenta (Osten Sacken); general coloration light gray, the praescutum with three inconspicuous, darker gray stripes; sternopleurite conspicuously pale; wings yellowish, the stigma oval, pale brown; male hypopygium with the aedeagus short.

Male. Length about 5 mm.; wing, 6 mm.

Female. Length about 7.5 mm.; wing, 7.5-8 mm.

Rostrum and palpi brownish black. Antennæ (♂) relatively elongate, if bent backwards extending nearly to the root of the halteres; scapal segments brownish yellow, the flagellum brownish black; flagellar segments long-oval, becoming smaller outwardly. Head dark gray, the

anterior vertex and posterior orbits clear light gray.

Pronotum above pale gray. Mesonotum light gray, the praescutum with three darker gray stripes that are relatively inconspicuous; humeral region slightly reddish; scutellum slightly reddish behind; postnotum Pleura dark, the sternopleurite largely buffy yellow, the anepisternum darker, to produce a dorsal longitudinal stripe from the cervical sclerites to below the wing-root; dorso-pleural membrane pale. Halteres pale yellow. Legs with the coxæ obscure yellow; trochanters a little darker; femora brownish yellow, a trifle darkened outwardly; tibiæ pale brown, the tips weakly infuscated; tarsi pale, passing into black at the ends of the basitarsi. Wings yellowish, the oval stigma pale brown; vague, pale brown seams at origin of Rs, along the cord and outer end of cell 1st M_2 ; veins pale yellow, those in the infuscated areas a little darker. Venation: R_2 about equal to R_{1+2} and a little longer than R_{2+3} ; veins R_3 and R_4 relatively short, diverging markedly; cell 1st M_2 small, widened outwardly, m-cu at or before midlength, variable in position; in the type it is only a little shorter than the distal section of Cu_1 , in other cases scarcely one-half this length.

Abdomen dark brown, the ninth segment and basal portion of the basistyles obscure yellow. Male hypopygium with the outer dististyle conspicuously split at apex. Gonapophyses relatively small. Aedeagus

short.

Holotype, &, near San Cristobal, Chiapas, in narrow, shaded ravine of small mountain brook, altitude nearly 2,200

meters, July 15, 1926 (A. M. Dampf); M. B. 190a. *Allotopotype*, \circ . *Paratopotype*, \circ ; *paratypes*, \circ , \circ , Valle de San Cristobal, in oak forest, the ground covered with leaves, July 23, 1926 (A. M. Dampf); M. B. 194.

Limnophila Macquart.

Limnophila madida sp. n.

Male. Length about 8 mm.; wing, 10 mm.

Female. Length about 10 mm.; wing, 10-10.5 mm.

Generally similar to L. guttulatissima Alexander (Guatemala—Costa Rica), differing especially in the coloration of the legs and the structure

of the male hypopygium.

Rostrum, palpi and antennæ dark throughout. Head brownish gray, the setigerous punctures appearing as dark brown dots. Legs with the femora yellow, the tips very broadly blackened, on the fore legs including about the distal fourth, on the posterior legs including about the distal fifth; tips of the tibiæ conspicuously blackened; basitarsi yellow, the tips and remainder of the tarsi blackened. Male hypopygium with the aedeagus relatively short and strongly sinuous. Gonapophyses slender, their tips acute.

Holotype, ♂, San Cristobal, Chiapas, altitude 2,100 meters, July 6, 1926 (A. M. Dampf); M. B. 184. Allotopotype, ♀, pinned with the type. Paratopotypes, numerous ♂, ♀, June 4–July 6, 1926 (A. M. Dampf); M. B. 173, 183, 184, 185; M. F. 942-952, 960, 973.

Atarba Osten Sacken.

Atarba (Atarba) amabilis sp. n.

General coloration light chestnut-brown, the postnotum and pleura darker; antennæ black, the incisures of the segments conspicuously light yellow; legs yellow, the terminal tarsal segments darker; wings with a grayish yellow suffusion, the stigma darker; Sc ending beyond the origin of the long angulated Rs.

Female. Length about 6.5 mm.; wing, 7.5 mm.

Rostrum golden-yellow; palpi brownish black. Antennæ elongate for the female sex, if bent backward extending about to the base of the abdomen; scapal segments obscure yellow; flagellum black, the base of each segment broadly, the tips more narrowly, yellow, to produce an annulated appearance; flagellar segments elongate-cylindrical. Head brown, lighter in front and on the occiput.

Mesonotal praescutum and scutum uniformly light chestnut-brown, the surface shiny, without markings; scutellum more testaceous; postnotum pale, the surface pruinose. Pleura pale brown, the surface very sparsely pruinose, the dorso-pleural region dark. Halteres pale, the knobs dark brown. Legs with the coxæ and trochanters yellowish testaceous; femora yellow, the tips of the fore femora very narrowly and inconspicuously infumed, the other femora undarkened; remainder of legs obscure yellow, the terminal tarsal segments passing into dark brown. Wings with a grayish yellow suffusion, the base and costal region clearer yellow; stigma elongate-oval, pale brown; veins dark yellow. Venation: Sc_1 ending shortly beyond the origin of Rs, Sc_2 at its tip and likewise beyond this origin; Rs relatively long for a member of this genus, about as in *columbiana*, strongly angulated at origin; cell R_2 at margin narrower than cell R_3 ; cell 1st M_2 relatively large, irregularly pentagonal; m-cu shortly beyond the fork of M.

Abdominal tergites dark brown, the sternites and genital segments obscure yellow. Ovipositor with the tergal valves slender, gently

upcurved, the tips acute; sternal valves very deep.

Holotype, ♀, near San Cristobal, Chiapas, in a narrow, shadowy ravine, July 17, 1926 (A. M. Dampf); M. B. 190a.

Atarba amabilis is most closely related to A. columbiana Alexander (Colombia). By means of the writer's key to the species of Atarba (Annals Ent. Soc. America, 19:171; 1926), the present form runs to megaphallus Alexander, with which it agrees in coloration of the antennæ, but differs in other respects, notably the venation.

Elephantomyia Osten Sacken.

Elephantomyia fumipes sp. n.

General coloration fulvous-yellow, in cases with a conspicuous median brown stripe on the pronotum and praescutum; rostrum longer than the body; femora and tibiæ dark brown; wings with a strong brownish tinge, the center of the disk brighter; Rs long, arcuated to weakly angulated at origin.

Male. Length (excluding rostrum) about 7 mm.; wing, 10.5 mm.;

rostrum about 8 mm.

Female. Length (excluding rostrum) about 9 mm.; wing, 10.5 mm.; rostrum about 9-9.5 mm.

Rostrum elongate, dark brown, approximately as long as, or slightly longer than, the remainder of the body. Antennæ dark. Head obscure yellow, the center of the vertex darker; anterior vertex very narrow.

Cervical sclerites dark brown. Pronotum and mesonotum bright fulvous-yellow, with a conspicuous, median, brown stripe ending just before the suture; scutum yellow, the mesal portions of the lobes conspicuously darkened; scutellum and postnotum dark brown, paler laterally. Pleura shiny fulvous-yellow, the sternopleurite a little darker. Halteres pale, the knobs darker. Legs with the coxæ and trochanters yellowish testaceous; remainder of legs dark brown, the femoral bases a little brighter, the tarsi fading into obscure orange. Wings with a strong brown tinge, especially along the costal region,

beyond the cord, and in the anal cells, cells R and M being somewhat brighter, especially near vein M; stigma elongate-oval, darker brown; veins brown. Venation: Sc long, Sc_1 and Sc_2 ending opposite or beyond the fork of Rs, the latter long, arcuated to weakly angulated at origin.

Abdominal tergites brown, the bases of the segments indistinctly variegated with obscure yellow; a subterminal black ring that includes segment eight and the caudal portion of segment seven; hypopygium obscure yellow.

In the female, the dorsal median praescutal line is not evident and

the tarsal segments are not so conspicuously pale.

Holotype, ♂, Hueitepec, Chiapas, altitude 2,600 meters, in dense leafy woods, June 14, 1926 (A. M. Dampf); M. B. 170. Allotype, ♀, near San Cristobal, altitude 2,250 meters, in dense forest of oaks and pines, July 7, 1926 (A. M. Dampf); M. B. 186.

Elephantomyia fumipes is very different from the other described Mexican species, E. alticola Alexander. It is closer to E. westwoodi Osten Sacken, differing in the coloration of the wings and legs and in the venation.

Teucholabis Osten Sacken.

Teucholabis (Teucholabis) cinereiceps sp. n.

General coloration shiny coal black, this including the entire disk of the praescutum; head above silvery gray; pleura with a broad silvery white longitudinal stripe; knobs of the halteres yellow; wings subhyaline, the stigma dark brown; abdomen black, the sternites banded with yellow.

Male. Length, 4.8-5 mm.; wing, 5.5-6 mm.

Rostrum obscure yellow; palpi brownish black. Antennæ brownish black, the basal segment of the scape a little brightened beneath; flagellar segments subglobular, the outer segments passing into oval. Head blackish, the whole dorsal surface with a dense silvery gray

pubescence; vertex broad.

Pronotum and lateral pretergites yellow. Mesonotal praescutum shiny coal black, with an obscure yellow median spot just before the suture, crossing the latter onto the median region of the scutum; scutum obscure yellow medially, with a silvery pubescence behind, the lobes extensively shiny black, confluent across the suture with the praescutal shield; scutellum obscure yellow, darker laterally; postnotum black, sparsely pruinose anteriorly. Propleura yellow. Mesopleura black, with a broad pale longitudinal stripe extending from behind the fore coxe, passing beneath the halteres to the hind coxe, this stripe densely covered with microscopic silvery white pubescence; meron pale. Halteres dark, the knobs obscure yellow. Legs with the coxe and trochanters obscure brownish yellow; fore femora yellow basally, passing into black at tip; middle and hind femora not darkened apically; posterior tibiæ brownish yellow, the fore tibiæ more blackened, the middle tibiæ dark brown; tarsi black. Wings subhyaline, the sub-

circular stigma dark brown; a vague brown seam on the anterior cord; basal half of cell Sc infumed; veins dark brown. Venation: Sc relatively short, Sc_1 ending about opposite one-fourth to one-fifth the length of Rs, Sc_2 variable in position, in the type removed from the tip of Sc_1 , in the paratype closer to the end; Rs long, strongly arcuated; R_2 at or slightly before the fork of Rs; R_{3+4} and R_4 beyond it relatively straight, R_5 bent strongly to the wing-tip so cell R_4 is very wide at the margin; m-cu close to or before the fork of M.

Abdominal tergites black, the segments restrictedly variegated laterally with obscure yellow; sternites black, the caudal margins of the segments broadly banded with obscure yellow, the outer sternites more uniformly pale; hypopygium black. Male hypopygium with both dististyles blackened and each terminating in a chitinized spine.

Holotype, &, Peña Blanca, December 15, 1924 (A. M. Dampf); M. B. 109. Paratopotype, &.

Teucholabis cinereiceps is readily distinguished from similarly colored species by the silvery gray head and plain wings. The locality was discussed in some detail in a preceding part under this title (Annals Ent. Soc. America, 19:171; 1926).

Gonomyia Meigen.

Gonomyia (Gonomyia) debilis sp. n.

Belongs to the *cognatella* group; size small (wing, Q, under 4 mm.); pleura yellow with a single narrow brown stripe; abdominal tergites dark brown, the caudo-lateral angles obscure yellow.

Female. Length about 3.3-3.5 mm.; wing, 3.6-3.8 mm.

Rostrum and palpi black. Antennæ with the first scapal segment orange; second segment yellow; flagellum dark brown. Head orange-

yellow, the center of the vertex more or less darkened.

Pronotum yellow. Mesonotal praescutum grayish brown, the lateral margins yellow, the pseudosutural foveæ large but pale and inconspicuous; scutal lobes brown, the median area obscure yellow; scutellum testaceous; postnotum pale brown, paler laterally, the caudal margin narrowly darkened. Pleura pale, with a single narrow dark brown longitudinal stripe extending from the cervical sclerites to the postnotum, passing above the root of the halteres; sternopleurite very weakly darkened; dorso-pleural region clearer yellow. Halteres relatively long, brown. Legs with the coxæ and trochanters testaceous; remainder of legs brownish testaceous, the terminal tarsal segments passing into darker brown. Wings with a brownish gray tinge, the small stigma a little darker brown; veins still darker brown. Venation: Sc short, Sc_1 ending far before the origin of Rs, Sc_2 a short distance from its tip, the distance on radius between Sc2 and origin of Rs about twice m-cu; Rs nearly if not quite in alignment with R_5 ; R_{2+3+4} nearly in alignment with r-m, the veins at the end of Rs thus forming a cruciform arrangement; petiole of cell R₃ strongly arcuated, about one-third

longer than R_3 ; R_4 about three times as long as R_3 ; cell M_2 open by the atrophy of the deflection of M_3 ; m-cu shortly before the fork of M.

Abdominal tergites dark brown, the caudo-lateral angles of the segments obscure yellow; sternites obscure testaceous yellow.

Holotype, ♀, San Isabel, Chiapas, altitude about 650 meters, July 30, 1926 (A. M. Dampf); M. F. 1,057. Paratopotype, ♀.

Gonomyia (Lipophleps) peracuta sp. n.

Male. Length about 3.5 mm.; wing, 3.1–3.2 mm.

Belongs to the pleuralis group; very distinct in the structure of the

male hypopygium.

Rostrum and palpi brownish black. Antennæ with the scapal segments orange; flagellum brownish black, with very long verticils in the male. Mesonotum bright cinnamon brown; scutellum yellow with a narrow brownish black median line; postnotal mediotergite reddish brown with a darker spot at base. Pleura with the two brown stripes very distinct, a little narrower than the white stripe enclosed: dorso-pleural region more or less darkened, especially in front. Halteres pale, the tips of the knobs yellowish. Legs with the femora brown, the tips narrowly but conspicuously whitened, preceded by a broader dark brown subterminal ring. Wings faintly tinged with brown, the base and costal region clearer yellow; conspicuous cream-colored areas before and beyond the stigma and along the cord; stigma oval, dark brown; veins pale, the cord and outer end of cell 1st M_2 dark brown. Venation: Sc_1 ending a short distance before the origin of Rs; m-cu a short distance before the fork of M. Abdominal tergites obscure vellow, margined laterally and caudally with brownish black, the median line of the segments a little dusky; sternites more uniformly yellowish. Male hypopygium with the basistyles terminating in a fleshy lobe and a single, conspicuous, broad-based spine. Dististyle single, broadly oval, terminating in two conspicuous setæ, and bearing a very large, elongate, conical spine, as well as a smaller, pale, slender spine, these latter unequal in size on the dististyles of the two sides of the unique type. Long arms of the gonapophyses likewise asymmetrical, one being much shorter and nearly straight, the other sinuous, the acute apex more narrowly blackened.

Holotype, ♂, Santa Lucia, Chiapas, altitude 575 meters, July 29, 1926 (A. M. Dampf); M. F. 1,055.

Erioptera Meigen.

Erioptera (Mesocyphona) quadrifurcata sp. n.

Male. Length about 2.1-2.3 mm.; wing, 2.2-2.5 mm.

Most closely related to E. (M.) troglodyta Edwards (Trinidad), differing especially in the dark coloration, the different leg-pattern and the structure of the male hypopygium.

Rostrum and palpi brownish black. Antennal flagellum pale brown or yellowish brown. Head dark brown, the anterior region of the vertex brighter. Mesonotum dark brown, without evident stripes: scutellum a little paler. Pleura dark brown, with a broad silvery yellow stripe extending from behind the fore coxe to the base of the abdomen, the dorso-pleural region usually dark. Halteres with vellowish knobs. Legs with the coxe dark; trochanters obscure testaceous; femora yellow with two dark annuli, most conspicuous on the posterior femora, the subterminal ring a little darker in color than the medial ring; on the fore legs the coloration is more infumed, with only the subterminal ring; tibiæ and tarsi yellow. Wings short and broad, with a faint brownish tinge, immaculate; veins and macrotrichiæ darker. Abdomen, including the hypopygium, dark brown. Male hypopygium with the dististyle single, with four free points, the outer being a slender, dark-colored rod, the inner a long pale rod, the main body of the style being produced into a stout curved arm that is split at apex into two parts, the outer a broad, flattened, curved black portion, the margin microscopically serrulate, the second point slender. much longer, pale in color. Gonapophyses appearing as long, gently curved black horns, the tips acute.

Habitat: Mexico, Salvador. Holotype, ♂, Rancho Sabino Perez, Chiapas, Mexico, altitude nearly 500 meters, hilly country with bush and forest, with small rivulets, at light, July 28, 1926 (A. M. Dampf); M. F. 1,052. Allotype, ♀, San Isabel, Chiapas, altitude about 650 meters, typical pine ridge vegetation, near swift-flowing brook, at light, July 30, 1926 (A. M. Dampf); M. F. 1,057. Paratypes, ♂♀, with the allotype; 1 ♂, Agronomia, Sonsonate, Salvador, altitude 1,500 feet, March 20, 1926 (K. A. Salman).

Cryptolabis Osten Sacken.

Cryptolabis (Cryptolabis) fuscovenosa sp. n.

Head obscure yellow, the central third dark brown; mesonotal praescutum with three velvety-black stripes; pleura black, striped longitudinally with yellowish white; femora yellowish brown, the tips blackened; wings whitish with conspicuous grayish brown seams on certain of the veins; macrotrichiæ of the cells sparse, including cells R_5 to M_2 .

Female. Length about 3.6 mm.; wing, 4.2 mm.

Rostrum and palpi black. Antennæ black throughout, short, the flagellar segments oval. Head obscure yellow, the central third of the vertex and occiput dark brown.

Pronotum whitish yellow. Mesonotal praescutum virtually covered by three velvety-black stripes, the interspaces very narrow, paler brown; humeral region orange-yellow; lateral margins of praescutum narrowly yellowish, margined internally by the black lateral stripes;

scutum pale brown medially, the lobes black; scutellum obscure yellow, darker basally and laterally; postnotum black, the extreme cephalic lateral angles yellowish white. Pleura black, striped longitudinally with pale yellowish white, the dorsal stripe including the dorso-pleural region, passing beneath the wing-root, across the dorsal portion of the pleurotergite to the mediotergite; ventral stripe narrow, traversing the sternopleurite; a small spot before the root of the halteres. Legs with the coxæ and trochanters obscure vellow; femora yellowish brown, the tips rather narrowly but conspicuously blackened; tibiæ obscure vellow, the tips narrowly blackened: basitarsi vellowish brown, the distal half and the remainder of the tarsi brownish black. Wings whitish, with conspicuous grayish brown seams along several of the veins, including the anterior cord; R₂ and adjoining veins; broader washes along veins R_5 , M_3 , M_4 , Cu_1 and m-cu; axilla conspicuously darkened; veins dark brown, costa paler. Macrotrichiae of cells very sparse, there being none in cell R_3 , a few in outer end of cell R_4 ; rows of trichiæ in the distal half of each of cells R_5 and M_2 . Venation: Sc short, Sc_1 ending before the fork of Rs, Sc_2 far before the origin of Rs; Rs strongly convex; R_2 a little longer than R_{2+3} , the two nearly in transverse alignment; cells beyond the cord deep.

Abdomen dark brown, the genital segment paler.

Holotype, ♀, Rio Mayo, near Navojoa, Sonora, March 25, 1927 (A. M. Dampf); M. F. 1,221.