

NEW OR LITTLE-KNOWN CRANE-FLIES FROM CALIFORNIA

(TIPULIDAE, DIPTERA), II

By CHARLES P. ALEXANDER

The preceding part under this general title appeared in 1945 (Bull. So. California Acad. Sci., 44: 33-45, pls. 13-16). In the present report I am discussing the Californian species of the subgenus *Trichotipula* Alexander in the vast genus *Tipula* Linnaeus. Besides the thirteen species known from the state at this time, several additional forms are found in adjoining states, particularly to the east. The enumeration of the species adopted in the preceding part is continued in this paper, the first species in this report being No. 11. By adopting such a system of continuous numbering it will be possible at any time to readily ascertain the total number of species treated in the entire series of reports. I am very greatly indebted to several entomologists and collectors for their continued interest in saving Tipulidae during the past season. Particular acknowledgment is made to Messrs. John A. Comstock, Gustave Glückert, Joe Mayeda, Axel L. Melander, Lawrence W. Saylor, John L. Sperry and Loran Whitelock, Jr., for many specimens used in the present study. Through the appreciated interest of the various collectors, I am privileged to retain the type specimens of the species in my collection of these flies.

SUBGENUS TRICHOTIPULA

KEY TO MALES OF CALIFORNIAN SPECIES

1. Claws toothed..... 2
Claws simple..... 5
2. Wings patterned, with distinct markings additional to the stigmal darkening 3
Wings virtually unpatterned, except for the darker stigma 4
3. Mediotergite with a yellow central line; male hypopygium with the appendage of the 9th sternite bearing a slender lateral branch; antennal scape and pedicel more or less darkened. *beatula* O. S.
Mediotergite uniformly plumbeous gray; male hypopygium with the appendage of the 9th sternite bearing a short stout lobe; antennal scape and pedicel light yellow. *capistrano* sp. n.

4. Male hypopygium with the 9th sternite produced caudad into two elongate appendages; inner dististyle with outer blade simple. *trichophora* Alexander
 Male hypopygium with the 9th sternite not conspicuously produced; inner dististyle with outer blade bilobed. *macrophallus* (Dietz)
5. No macrotrichia in outer cells of wing..... 6
 Macrotrichia in outer radial cells..... 7
6. Wings pale, costal border strongly darkened; knobs of halteres light yellow; vertical tubercle very high, clear yellow. *maycdai* sp. n.
 Wings without a distinctly darkened costal border; knobs of halteres vaguely brightened; vertical tubercle low and convex. *desertorum* sp. n.
7. Male hypopygium with the 9th sternite produced caudad into two elongate pale horns. *megalodonta* sp. n.
 Male hypopygium with the 9th sternite not produced..... 8
8. Male hypopygium with the outer dististyle with short, pale, inconspicuous setae 9
 Setae of outer dististyle long and conspicuous, darkened.... 10
9. Outer dististyle pale. *bituberculata* Doane
 Outer dististyle blackened. *cahuilla* Alexander
10. Wings strongly infuscated or blackened, stigma very distinct, obliterative areas conspicuous; mesonotum brownish black, with a broad central pale stripe extending the entire length..... 11
 Wings only moderately infuscated, the stigma and obliterative areas not conspicuously contrasting; mesonotum without such a continuous pale stripe..... 12
11. Male hypopygium with the beak of inner dististyle short and obtuse; basistyle and 9th sternite with tufts of strong black setae. *sayloriana* sp. n.
 Male hypopygium with the beak slender; basistyle and 9th sternite not bearing evident brushes of black setae. *furialis* sp. n.
12. Male hypopygium of simple unmodified structure, the inner dististyle not flattened or armed with spines; aedeagus simple; macrotrichia of wing cells sparse. *cazieri* Alexander
 Male hypopygium with the rostral portion of inner dististyle strongly flattened into a blade, basad of which the margin is produced into two acute blackened spines; aede-

gus elongate, divaricate at tip; outer cells of wing with numerous macrotrichia. *repulsa* Alexander

11. TIPULA (TRICHOTIPULA) BEATULA Osten Sacken.

The types were from Marin and Sonoma Cos., April-May, 1876 (Osten Sacken). Further records show a wide range in central and southern California.

Alameda County: Castro Valley, May 17, 1939 (Mont Cazier); Livermore, May 1, 1939 (T. H. G. Aitken); Moraga, May 1939 (Thomas Kelley).

Contra Costa County: Mount Diablo, altitude 1,000-3,000 feet, April 28, 1939 (Cazier & Kelley).

Santa Cruz County: Ben Lomond, near Brookdale, altitude 1,500 feet, June 1, 1945 (L. W. Saylor).

Monterey County: Hastings Reservation, April 30-May 15, 1943 (Jean Linsdale).

Riverside County: Idyllwild, altitude 5,400 feet, June 15, 1940 (C. D. Michener).

Los Angeles County: Griffith Park, Los Angeles, May 15, 1945 (Loran Whitelock, Jr.).

San Diego County: Palomar Mountain, 4,700 feet, July 3-4, 1945 (J. A. Comstock); Campo, on Mexican border, altitude 2,190 feet, May 18, 1945 (L. W. Saylor).

12. TIPULA (TRICHOTIPULA) BITUBERCULATA Doane.

The types were labeled "California," without exact locality.

Monterey County: Hastings Reservation, April 25-May 10, 1943 (Jean Linsdale).

Kern County: Arvin, March 14, 1935 (A. L. Melander).

Riverside County: Riverside, February 24, 1935 (A. L. Melander).

Los Angeles County: Claremont, on *Artemesia tridentata*, 1929 (Helen E. Sweet).

San Diego County: San Diego (through Doane).

13. TIPULA (TRICHOTIPULA) CAHUILLA Alexander.

The types were from Atascadero, San Luis Obispo County, April 26, 1919, and Bradley, Monterey County, April 27, 1919, collected by E. P. Van Duzee. Further material from Campo, San Diego County, altitude 2,190 feet, close to the Mexican border, and also across the border in Baja California, one mile south of Campo, all May 18, 1945 (L. W. Saylor).

14. TIPULA (TRICHOTIPULA) CAPISTRANO sp. n.

Allied to *beatula*; mesonotum gray, the four praescutal stripes conspicuously bordered by brownish black; humeral and lateral borders of praescutum yellow; postnotal mediotergite brownish gray, unpatterned; antennae with scape and pedicel yellow; flagellum black; femora yellow, tips narrowly blackened; claws (♂) toothed; wings yellowish gray, restrictedly patterned with darker, the pattern arranged much as in *beatula*; male hypopygium with the appendage of ninth sternite stout, unequally bilobed, each lobe with conspicuous brushes of setae.

MALE: Length about 11.5-12 mm.; wing 12-14 mm.; antenna about 2.2-2.7 mm.

FEMALE: Length about 13-16 mm.; wing 11-14 mm.

Allied and generally similar to *beatula* Osten Sacken, differing in details of coloration and, especially, in the structure of the male hypopygium.

Frontal prolongation of head dark brown above, with a capillary yellow median line; sides of prolongation on dorsal half yellow, on ventral portion dark brown; nasus dark, long and slender; palpi dark brown. Antennae relatively short in both sexes; scape and pedicel yellow. Flagellum black; flagellar segments in male weakly incised; verticils a little shorter than the segments. Head above obscure yellow; center of posterior vertex infuscated, sending a capillary vitta forward onto the anterior vertex; vertical tubercle low and virtually entire in front.

Pronotal scutum infuscated, scutellum light yellow. Mesonotal praescutum with four clear gray stripes that are conspicuously bordered by brownish black, the median vitta a little dilated near midlength; humeral and lateral praescutal borders yellow, the former more interrupted by darker at the margin; scutum gray, the mesal and posterior portion of each lobe narrowly blackened; central region of scutum and adjoining portion of praescutum yellow; scutellum yellow, with a central black stripe, parascutella blackened; mediotergite brownish gray, without the yellow central line found in *beatula*; pleurotergite yellow, the katapleurotergite conspicuously bordered by brownish gray, more intense dorsally. Pleura chiefly obscure yellow, restrictedly patterned with brownish gray, especially on the propleura, ventral anepisternum, ventral sternopleurite and meron. Halteres with stem yellow, base of knob dark brown, apex of knob obscure yellow. Legs with the coxae gray, the fore pair a little paler; trochanters yellow; femora obscure yellow, the tips narrowly blackened, the amount subequal on all legs; tibiae yellow, the tips even more narrowly blackened; tarsi obscure yellow basally, passing into black; claws (male) toothed. Wings with the ground yellowish

gray, restrictedly patterned with darker; stigma oval, dark brown; paler brown clouds along cord, a spot near outer end of cell M , another beyond midlength of Cu ; other washes in centers of outer radial cells, near base and tip of cell *1st A*, along border of *2nd A* and as a heavier cloud at end of vein *2nd A*; outer medial veins less evidently seamed with brown; veins dark brown, prearcular veins, Sc , R and R_{1+2} paler. Sparse macrotrichia in outer end of cell R_5 and occasionally in the adjoining cells; stigmal trichia lacking. Venation: Sc_1 very weak and faint but evidently preserved; R_{1+2} with macrotrichia only at base; fork of M_{3+4} before level of $r-m$; $m-cu$ on M_4 , the basal section of the latter perpendicular.

Basal abdominal segments yellow, sparsely gray pruinose, the outer segments more or less patterned medially and laterally with brownish black; a narrow subterminal brownish black ring; sternites and hypopygium chiefly yellow. Ovipositor with cerci straight, longer and stouter than the hypovalvae, the latter with very acute tips. Male hypopygium (Plate 1, fig. 1) relatively large. Ninth tergite, ϱt , with the caudal notch relatively broad but deep, U-shaped; lateral lobes obtusely rounded, the usual blackened spinoid setae not reaching the base of the notch, being here replaced by delicate setulae; spines or outer thickened portion of lobes shorter, more peglike, retrorse. Ninth sternite, ϱs , with the appendage of either side stout, conspicuous, bearing a smaller lateral lobule on side; apex of main arm of appendage with unusually long dense yellow setae; lateral lobule with more sparse but powerful setae at apex and along sides. Outer dististyle, od , broadly oval, setae long but pale. Inner dististyle, id , with the rostrum blackened, very long, the outer third slender. Eighth sternite emarginate on posterior portion, the notch filled with pale membrane.

Holotype, ♂, San Gabriel River Bird Sanctuary, near El Monte, Los Angeles County, May 21, 1945 (J. A. Comstock). *Allotopotype*, ♀, pinned with type. *Paratopotypes*, ♂ ♀. *Paratypes*, ♂, San Francisco, March 27, 1935 (Ting), formerly determined as *beatula*; ♂ ♀, Elsinore, Riverside County, 1,300 feet, May 13, 1945 (G. Glückert); Del Mar, San Diego County, June 10, 1945 (J. A. Comstock); Campo, San Diego County, 2,190 feet, May 17, 1945 (L. W. Saylor).

15. TIPULA (TRICHOTIPULA) CAZIERI Alexander.

A ♂, Claremont, Los Angeles County (C. F. Baker). Although this specimen is much larger than the type and other specimens from Nevada, the structure of the male hypopygium is so similar that I must regard the identification as being correct.

16. TIPULA (TRICHOTIPULA) DESERTORUM sp. n.

General coloration opaque; praescutum with three brownish gray stripes, the interspaces narrowly dark brown, more or less united in front, behind crossing the suture onto the mesal portion of each scutal lobe; antennae with scape and pedicel light yellow, flagellum black; halteres weakly darkened, knobs brownish yellow at tips; wings weakly tinged with brown, cell *Sc* and stigma medium brown; no macrotrichia in wing cells; male hypopygium with the outer dististyle broadly flattened, with coarse setae; inner dististyle with beak obtuse; setae immediately back of beak very long, pale, erect.

MALE: Length about 13 mm.; wing 10 mm.; antenna about 4 mm.

FEMALE: Length about 15 mm.; wing 12 mm.

Frontal prolongation of head obscure brownish yellow above, including the nasus; lower half of prolongation dark brown; palpi brown; nasus longer in female than in male. Antennae with scape and pedicel light yellow, flagellum black; flagellar segments of male moderately incised, verticils shorter than the segments; in female, segments subcylindrical, the verticils exceeding the segments in length. Front and anterior vertex light yellow, the orbits and central portion of posterior vertex more obscure yellow, sides of posterior vertex infuscated; vertical tubercle simple, low and convex.

Pronotum obscure yellow, restrictedly patterned with pale brown, the sides of both the scutum and scutellum light yellow. Mesonotal praescutum opaque, with three brownish gray stripes, the interspaces narrowly dark brown, extending the entire length of the sclerite, more or less united across the cephalic border, behind crossing the suture onto the mesal portion of each scutal lobe; lateral borders of each praescutal stripe similarly darkened, expanded behind, crossing the suture onto the anterior portion of the scutal lobes; scutellum brownish yellow; mediotergite pale brown, its central portion and narrow lateral borders vaguely more yellowed. Pleura and pleurotergite obscure yellow, restrictedly patterned with brown, most evident on the anepisternum; dorsopleural membrane pale. Halteres short, stem obscure yellow, base of knob weakly darkened, the apex obscure brownish yellow. Legs with the coxae yellow, the fore pair a trifle darker; trochanters yellow; femora yellow, the tips narrowly brownish black, the amount subequal on all legs; tibiae and basitarsi obscure yellow, the outer tarsal segments passing into black; claws (male) simple. Wings with a very weak brownish tinge, cell *Sc* and stigma medium brown; whitish obliterative area across base of cell *1st M*₂ moderately distinct, pre- and poststigmal brightenings scarcely

evident; vague whitish streaks in certain cells, especially *R*, *M*, outer radial cells and in cell *1st A* near vein *2nd A*; veins brown. Stigmal trichia very sparse, only 3 or 4 in either sex; no macrotrichia in outer wing cells. Venation: Sc_1 distinctly preserved, erect; M_{3+4} very short, forking before level of *r-m*.

Abdomen medium brown, the more basal segments variegated with yellow, especially on the basal rings or incisures; outer segments more uniformly brown; sternites and hypopygium yellow. Male hypopygium (Plate 1, fig. 3) with the ninth tergite, *9t*, broad, especially the lobes; median notch narrow but deep; elongate spinoid setae extending almost to base of notch; retrorse spicules on ventral face of lobe numerous. Outer dististyle, *od*, broadly flattened, apex obtuse; setae elongate, those of outer margin of medium length, black, very dense, those of lower edge of various lengths, paler in color, the longest only a little shorter than the maximum width of style. Inner dististyle, *id*, with the beak moderately produced, obtuse; outer setae behind the beak very long, pale, erect (near the outer basal lobe with a flattened blade that is not shown in the figure). Ninth sternite with the appendage a low rounded lobe, provided with long reddish setae, with a comparable group on the basistyle.

Holotype, ♂, Borego, San Diego County, April 19, 1944 (J. L. Sperry). *Allotopotype*, ♀, pinned with type.

Closest to species such as *Tipula (Trichotipula) mayedai* sp.n., but amply distinct.

17. TIPULA (TRICHOTIPULA) FURIALIS sp. n.

Very similar in its general appearance to *sayloriana*, differing especially in the structure of the antennae and male hypopygium, as compared below.

MALE: Length about 11.5-13 mm.; wing 10.5-12 mm.; antenna about 4.5-5 mm.

Antennae more elongate than in *sayloriana*, the flagellar segments correspondingly lengthened, especially the stems; in the Inyo County paratype, antennae shorter (4 mm.). Praescutum with the lateral stripes distinct but darker gray than the much more evident median line; central region of scutum light yellow, extended forward onto the posterior portion of praescutum; scutellum weakly infuscated, somewhat interrupting the central pale mesonotal stripe; pale line on mediotergite very distinct, subequal in width to the line on the scutum. Pleura and pleurotergite dark gray, the dorsopleural region and a ventral stripe paler, the latter more distinct on the mesepimeron and metapleura. Halteres with apex of knob obscure yellow. Wings with the

whitish oblitative areas more extensive, the prestigmal one including all of cell R_1 before the stigma, the others correspondingly large; membrane in vicinity of veins somewhat paler than the centers of the cells to produce a slightly streaked appearance. Stigmal trichia more abundant. Male hypopygium (Plate 2, fig. 6) with the tergite, $9t$, more deeply emarginate, the lateral lobes slightly narrower; a group of small blackened spicules on lateral lobes. Ninth sternite and basistyle with the setae more sparse, paler and more slender, not forming conspicuous brushes. Outer dististyle, od , broader, the length about two and one-half times the greatest width. Inner dististyle with the beak more slender, its tip rounded; crest back from the beak bearing 8 to 10 very long setae; setae of dorsal crest dark brown in color.

Holotype, ♂, Campo, San Diego County, altitude 2,190 feet, June 28, 1945 at light (L. W. Saylor). *Paratopotype*, 1 ♂, June 24, 1945 (L. W. Saylor). *Paratype*, 1 ♂, Camp Manzanar, Inyo County, altitude about 3,700 feet, July 6, 1945 (Joe Mayeda).

18. TIPULA (TRICHOTIPULA) MACROPHALLUS (Dietz).

Part of the type series was from Milpitas, Santa Clara County, collected in April 1912 by H. Miller. The species has a wide range in western North America, additional California records being as follows:

Contra Costa County: Berkeley, May 4, 1939 (T. H. G. Aitken).

Monterey County: Carmel, July 7, 1940 (Aitken & Cazier); Hastings Reservation, June 1, 1943 (Jean Linsdale).

Los Angeles County: San Gabriel River Bird Reservation, near El Monte, May 21, 1945 (J. A. Comstock); Griffith Park, Los Angeles, May 19, 1945 (Loran Whitelock, Jr.).

19. TIPULA (TRICHOTIPULA) MAYEDAI sp. n.

General coloration of body contrasted light yellow and gray; frontal prolongation of head dark chestnut brown, the mid-dorsal line, including nasus, yellow; antennae relatively long, scape yellow, flagellum black; head light yellow, including the very high, simple vertex tubercle; sides of posterior vertex more brownish gray; praescutum with four gray stripes that are separated by pale brown interspaces; median region of scutum, scutellum, parascutella, a conspicuous central stripe on mediotergite, and the dorsal pleura light yellow; ventral pleura chiefly brownish gray; knobs of halteres light yellow; wings pale brownish, the costal border conspicuously darker brown; no trichia in cells of wing; male hypopygium with the outer dististyle broad, with coarse

setae; inner dististyle with the beak narrow; eighth sternite with extensive pale membrane, isolating the lateral lobes.

MALE: Length about 12-13 mm.; wing 10-10.5 mm.; antenna about 4.5-4.6 mm.

Frontal prolongation of head dark chestnut brown, polished, at base and along mid-dorsal line, including the elongate nasus, narrowly yellow; palpi black. Antennae (male) relatively long; scape yellow, pedicel dark brown, flagellum black; flagellar segments moderately incised, clothed with a dense white pubescence; longest verticils shorter than the segments. Head bright yellow, more infuscated on sides of posterior vertex, the surface of the latter, with the narrow orbits, light gray pruinose; vertical tubercle very high and conspicuous, entirely simple.

Pronotal scutum testaceous yellow, the lateral angles and the scutellum very light yellow. Mesonotal praescutum opaque, almost covered by four light gray stripes; interspaces pale brown, relatively inconspicuous, more evident behind, the capillary median darkening even less evident, becoming obsolete at near midlength of the sclerite; humeral region light yellow, concolorous with the pronotum and dorsopleural membrane; lateral praescutal border gray; scutal lobes chiefly gray, the anteromesal portion vaguely darkened; median region of scutum, with the narrow adjoining portion of the praescutum, the scutellum, including parascutella, and a conspicuous central stripe on mediotergite all light yellow, the mediotergite elsewhere with a conspicuous brownish gray area on either side; pleurotergite more or less brownish gray, especially on the katapleurotergite, otherwise yellow. Pleura chiefly brownish gray, the dorsopleural region broadly light yellow, the remainder vaguely patterned with yellow, more evident on the posterior sclerites. Halteres with stem brownish black, knob conspicuously light yellow. Legs with the coxae infuscated, sparsely pruinose, the fore pair somewhat darker brown; femora brownish yellow, the tips very narrowly blackened, the amount subequal on all legs; tibiae yellowish brown to brown, passing into black; tarsi black; claws (male) simple. Wings with the ground pale brownish, paler, more whitened, in the paratype; prearcular field, cells *C* and *Sc*, and the stigma conspicuously darker brown; obliterative area across cell *1st M*₂ conspicuous, the prestigmal and poststigmal brightenings somewhat less so; veins dark brown. No trichia in outer cells of wing; stigmal trichia coarse but sparse, varying in number from 2 to 8. Venation: *Sc*₁ more or less preserved, in cases slightly broken at *C*.

Abdomen with pattern somewhat variable, in cases, including type, the more proximal tergites and sternites chiefly obscure yellow, more darkened laterally, outer segments more uniformly darkened; in other cases, the abdomen more extensively and uniformly darkened, leaving the median region of the tergites broadly

yellow; hypopygium chiefly yellow. Male hypopygium (Plate 1, fig. 2) with the ninth tergite, *9t*, having the median notch deep, margined with sparse blackened spinoid setae that extend to the very base of the notch; ventral blackened spiculae near apex of lobes mostly retrorse. Outer dististyle, *od*, broad; setae long and conspicuous; style widest at or just before midlength, about one-half as wide as long. Inner dististyle, *id*, with the beak narrow, before the apex with an extensive group of long pale setae. Eighth sternite appearing rather deeply emarginate by pale membrane that is provided only with microscopic microtrichia; lobes with long coarse setae that become more concentrated at the apices.

Holotype, ♂, Camp Manzanar, Inyo County, altitude about 3,700 feet, July 1-6, 1945 (Joe Mayeda). *Paratopotypes* 2 ♂♂.

Paratype, 1 ♂, Borego, San Diego County, April 18, 1944 (J. L. Sperry).

The species is named for Mr. Joe Mayeda, to whom we are indebted for many fine Tipulidae from the vicinity of Camp Manzanar.

20. TIPULA (TRICHOTIPULA) MEGALODONTA sp. n.

General coloration opaque brownish gray, including four stripes on praescutum that are bordered by darker brown, the lateral praescutal borders broadly yellow; antennae with scape and pedicel light yellow, flagellar segments beyond the first one or two blackened; apex of knob of halteres obscure yellow; femora yellow, the tips narrowly brownish black; wings brownish yellow, the oval stigma dark brown, very conspicuous; outer cells of wings with abundant macrotrichia; basal abdominal tergites brown and yellow, the outer segments more uniformly darkened; sternites and hypopygium chiefly yellow; male hypopygium with the tergal notch narrow; ninth sternite produced caudad into two elongate horns that jut beyond the other hypopygial elements; beak of inner dististyle slender.

MALE: Length about 9-10 mm.; wing 10-11.5 mm.; antenna about 3.5-3.8 mm.

FEMALE: Length about 12-13 mm.; wing 11-11.5 mm.

Frontal prolongation of head above, including nasus, yellow, darker on sides; palpi brown. Antennae (male) of moderate length; scape and pedicel light yellow, basal two flagellar segments brown, the outer segments dark brown or brownish black; flagellar segments gently incised, subequal in length to the longest verticils. Head above yellow, with a major brownish gray area

on either side of the posterior vertex, the midline light yellow; vertical tubercle very low and simple.

Pronotum yellow, restrictedly patterned with brownish gray, arranged in four more or less distinct areas, the intermediate pair narrowly separated by a yellowish central line. Mesonotal praescutum with four opaque brownish gray stripes that are bordered by darker brown, these lines forming the interspaces; humeral and lateral portions of praescutum broadly yellow; scutal lobes similarly brownish gray, bordered internally by brown; median area of scutum clear yellow; scutellum and anterior central portion of mediotergite obscure yellow, the remainder brownish gray. Pleura yellow, conspicuously patterned with brownish gray, including more or less distinct longitudinal stripes, the more dorsal from the propleura across the anepisternum, not including the pteropleurite; ventral stripe including the lower sternopleurite and meron, the lower edge of the katapleurotergite darkened. Halteres with stem yellow, base of knob dark brown, the apex obscure yellow. Legs with the coxae narrowly brownish gray basally, the apices broadly yellow; trochanters yellow; femora yellow, the tips, together with the tarsi, black; claws (male) simple. Wings brownish yellow, the oval stigma dark brown, very conspicuous; a restricted brown cloud over the anterior cord; a linear dusky line in cell *R*; less evident pale brown seams over veins M_1 , M_2 and distal section of Cu_1 ; obliterative areas before and beyond stigma and across base of cell *1st* M_2 relatively small and inconspicuous against the ground; veins dark brown, *Sc* and *R* more yellowed. Macrotrichia of outer cells abundant and well-distributed, especially numerous in cells R_3 , R_5 and M_1 , where more than the outer half of cell is included; in cells *2nd* M_2 and M_3 the trichia are more restricted to the outer ends of the cells; stigmal trichia abundant. Venation: Sc_1 atrophied; R_{1+2} entire, with trichia throughout its length; cell M_1 deep, its petiole usually subequal to or shorter than *m*; basal section of M_{3+4} short, usually subequal to *r-m*.

Basal abdominal tergites obscure yellow, with a broad dark brown stripe on either side, at about midlength of abdomen becoming more extensive to confluent, restricting the ground to the lateral borders; sternites yellow, the seventh dark brown; hypopygium chiefly yellow, the outer horns of the ninth sternite dusky. In female, the genital shield brownish black; hypovalvae and cerci subequal in length, straight Male hypopygium (Plate 2, fig. 4) having the tergite fused with the sternite and basistyle only on the cephalic portion. Ninth tergite, *9t*, with an unusually deep and narrow median notch, the margin with blackened spinoid setae, those of the more thickened outer border of lobes smaller, more peglike, retrorse. Ninth sternite, *9s*, profoundly divided beneath, produced caudad into two elongate horns that extend far

beyond all other elements of the hypopygium, the narrowed outer third or more directed slightly dorsad, the tips narrowly obtuse. Outer dististyle, *od*, unusually narrow, tapering to the subobtuse apex, the surface provided with long coarse setae. Inner dististyle, *id*, with the beak unusually slender, blackened; outer basal lobe produced into an erect pale hornlike point or spine, its tip acute, the surface with long coarse setae; near base of lobe with a second stouter but shorter black lobe. Eighth sternite with the median area very extensively filled with pale membrane that is destitute of setae, the sides and dusky lateral lobules provided with coarse setae.

Holotype, ♂, Elsinore, Riverside County, 1,300 feet, May 13, 1945 (G. Glückert). *Allotopotype*, ♀, pinned with type. *Paratopotypes*, 8 ♂, ♀, three pairs pinned "in copula." *Paratypes*, 2 broken ♂ ♂, Griffith Park, Los Angeles, May 26, 1945 (Loran Whitelock, Jr.); 1 ♀, Del Mar, San Diego County, April 29, 1945 (J. A. Comstock).

21. *TIPULA* (*TRICHOTIPULA*) *REPULSA* Alexander,

Known from British Columbia to California.

Solano County: Green Valley, June 13, 1939 (George Bohart).

Mariposa County: Mormon Bar, June 6, 1940 (Brookman, Cazier & Aitken).

22. *TIPULA* (*TRICHOTIPULA*) *SAYLORIANA* sp. n.

Allied to *apache*; general coloration of mesonotum dark brown to brownish black, with a broad central pale stripe extending the entire length; femora obscure yellow, the tips narrowly blackened; wings with an unusually strong brownish ground, variegated by the still darker stigma and small but very conspicuous whitish obliterative areas, these including a mark across base of cell *1st M*₂ and pre- and post-stigmal areas; sparse macrotrichia in outer ends of cell *R*₅ and *M*₁; vein *Sc*₁ retained; male hypopygium with brushes of blackened setae on basistyle and ninth sternite; outer dististyle narrow, the length exceeding three times the width, provided with long conspicuous setae; inner dististyle with the beak short and obtuse; dorsal crest with a fringe of long yellow setae.

MALE: Length about 11 mm.; wing 10.5 mm.; antenna about 4.5 mm.

Frontal prolongation of head above light yellow, the sides and ventral portion abruptly brownish black; nasus distinct, pale; palpi black. Antennae with the scape and pedicel light yellow,

flagellum uniformly black; flagellar segments beyond the first gently incised; longest verticils a little shorter than the segments. Anterior portion of vertex light yellow, the sides of the posterior vertex infuscated.

Pronotum narrowly yellow medially, dark brown on the sides. Mesonotum dark brown or brownish black, with a broad central pale stripe down the entire length, light gray on the praescutum, light yellow on the posterior sclerites, a little widened at the scutellum, narrowed to a point at the abdomen; lateral praescutal stripes and scutal lobes barely differentiated from the blackened ground; parascutella black; side of mediotergite more pruinose. Pleura and pleurotergite chiefly dark brown, light gray pruinose, vaguely patterned with obscure brownish yellow, most evident on the dorsopleural membrane, along the dorsal sternopleurite and across the posterior pleurites to the root of the halteres. Halteres short, blackened, only the base of the stem restrictedly yellow. Legs with the coxae dark brown, sparsely pruinose; trochanters obscure yellow; femora obscure yellow, the tips narrowly blackened; tibiae brown, tarsi passing into black; claws (male) simple. Wings with an unusually strong brownish ground, cell *Sc* a trifle darker; stigma dark brown, oval, very conspicuous; isolated small white spots before and beyond stigma, at extreme outer end of cell *C*, and across the base of cell *1st M*₂ and adjoining portions of *R*, not or scarcely invading cell *M*₃; veins brown, except in the obliterative areas. Rather sparse macrotrichia in outer ends of cells *R*₅ and *M*₁, more abundant in the former; a few scattered stigmal trichia. Venation: *Sc*₁ distinctly preserved; *m* subequal to petiole of cell *M*₁; basal section of *M*₁₊₂ about twice the basal section of *M*₃₊₄.

Abdominal tergites variegated with obscure yellow and brown or brownish black; the pale color includes the proximal portions, especially the basal rings, of the segments, the caudal and sub-lateral portions blackened; lateral margins narrowly light gray; sternites paler brown, sparsely pruinose; hypopygium chiefly brownish black above, obscure yellow beneath. Male hypopygium (Plate 2, fig. 5) with the tergite, *9t*, slightly narrowed posteriorly, the caudal border with a broad V-shaped notch, the margin with relatively sparse, slender, blackened spinous setae; ordinary elongate black setae on the disk, these lacking on the cephalic third. Basistyle and adjoining portion of ninth sternite each with a concentration of strong black setae, forming more or less distinct brushes or pencils. Outer dististyle, *od*, relatively narrow, its length slightly exceeding three times the greatest width; surface and especially the margins with coarse black setae. Inner dististyle, *id*, with the beak short and obtuse, provided with numerous setae; lower beak elongate, glabrous; dorsal crest with abundant long yellow setae. Eighth sternite with the caudal mar-

gin truncated or nearly so, unmodified; a pale central line that extends cephalad almost to the posterior margin of the sclerite.

Holotype, ♂, Campo, San Diego County, altitude 2,190 feet, about one-half mile from the Mexican border, June 24, 1945 (L. W. Saylor).

I take great pleasure in naming this interesting *Tipula* in honor of Lawrence W. Saylor, who has sent me many Tipulidae from the Pacific and from California. Although somewhat similar to species such as *Tipula (Trichotipula) apache* Alexander and *T. (T.) furialis* sp. n., it is amply distinct.

23. TIPULA (TRICHOTIPULA) TRICHOPHORA Alexander

Described from material taken at Santa Cruz, June 1, 1919, by E. P. Van Duzee. Additional material was taken at Ben Lomond, in Santa Cruz County, 1,500 feet, June 1, 1945, by Saylor, evidently close to the type locality. Further material was secured at Mirror Lake in the Yosemite National Park, Mariposa County, altitude 4,000 feet, on June 6, 1939, by Anthony Downes. A female taken at Del Mar, San Diego County, May 14, 1945, by J. A. Comstock, appears to represent this same uncommon species and is the most southern record to this date.

EXPLANATIONS

PLATE 1

DETAILS OF MALE HYPOPYGIA

Fig. 1. *Tipula (Trichotipula) capistrano* sp. n.

Fig. 2. *Tipula (Trichotipula) mayedai* sp. n.

Fig. 3. *Tipula (Trichotipula) desertorum* sp. n.:

(Symbols: *id*, inner dististyle; *od*, outer dististyle; *s*, sternite; *t*, tergite).

PLATE 2

DETAILS OF MALE HYPOPYGIA

Fig. 4. *Tipula (Trichotipula) megalodonta* sp. n.

Fig. 5. *Tipula (Trichotipula) sayloriana* sp. n.

Fig. 6. *Tipula (Trichotipula) furialis* sp. n.

(Symbols: *id*, inner dististyle; *od*, outer dististyle; *s*, sternite; *t*, tergite).

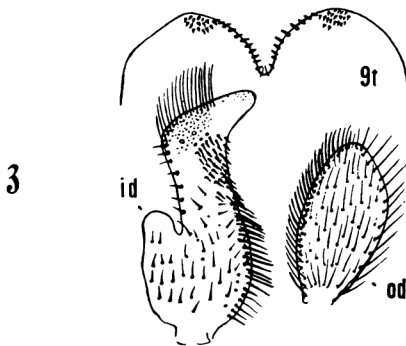
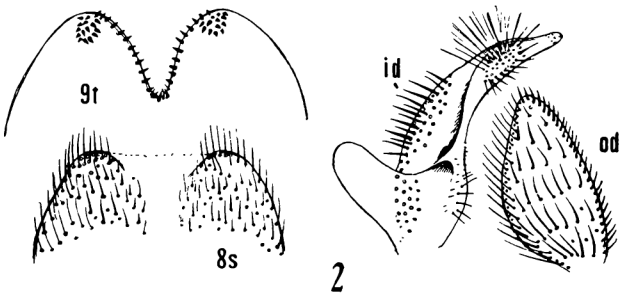
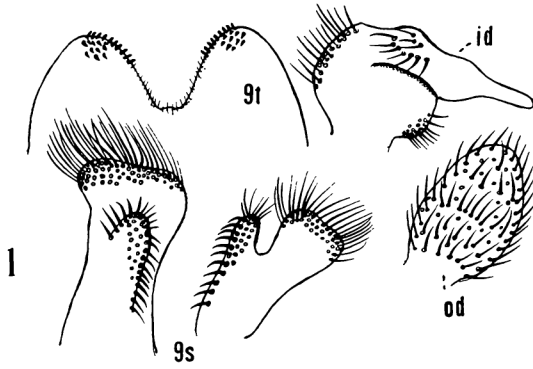


PLATE 1

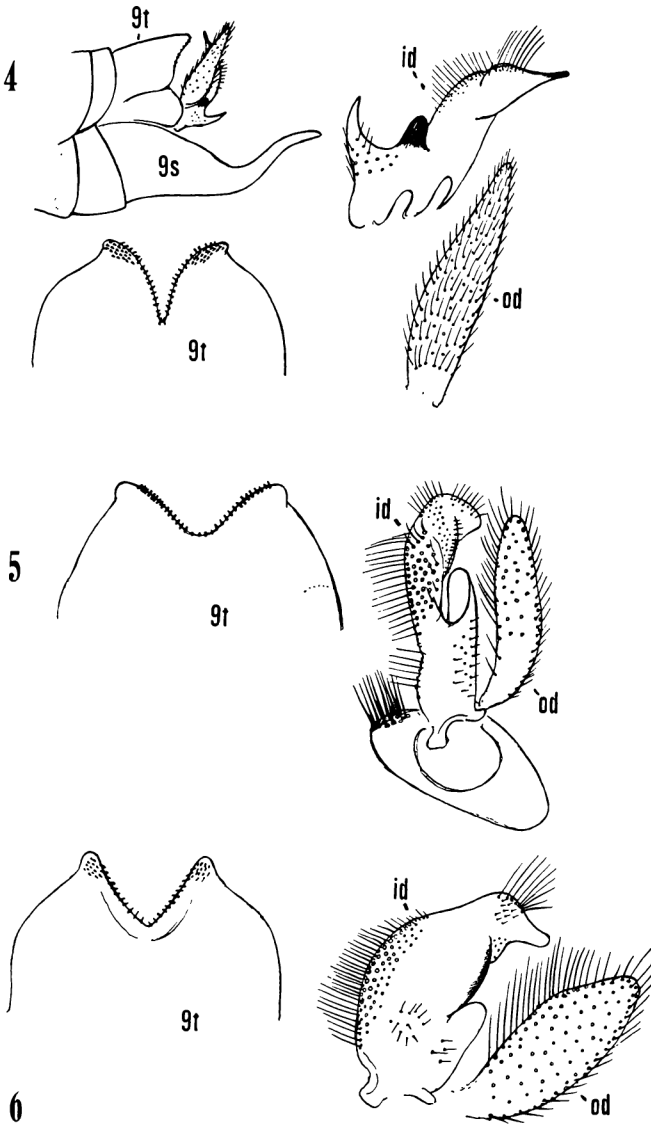


PLATE 2