

# New species of tipuline crane-flies from eastern Asia (Tipulidae, Diptera)

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disk depressed and finely punctate, posteriorly obsolete carinate. Clavus with three rows of punctures, the two outer anteriorly converging to form a single row. A little less than anterior half of corium, ochraceous with ferruginous punctures along veins; more than posterior half of corium embrowned, sparsely punctate, with a large pale spot on either side opposite the apex of the commissure; the entire costal margin rather widely expanded, lightly reflexed and impunctate. Membrane piceous-brown, with some of the veins, particularly at base, pale, with a large white spot at the outer basal angle and another opposite to it at the inner apical angle. Fore femur armed with a single large post-median tooth, between which and apex is a row of four or five minute even teeth. Venter shining, provided with a coating of fine, white, incumbent hairs. Length ♂ 3.5 mm., ♀ 4.5 mm.

Described from 11 ♂'s and 3 ♀'s from Palm Springs, Cal. (coll. by Hubbard); 4 ♂'s and 4 ♀'s Los Angeles Co., Cal., collected by Coquillett in the collection of the U. S. N. M. Type a ♂ from Palm Springs, Cal. (U. S. N. M.). These are all macropterous individuals. This is the largest member of the genus thus far known to our fauna. It is most closely related to *S. atlanticus* Horv., having much the same general markings and armature of the fore femora. But besides being larger, the relative length of the antennal segments is different, the legs and antennæ paler, the pronotum relatively wider, etc.

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## NEW SPECIES OF TIPULINE CRANE-FLIES FROM EASTERN ASIA. (TIPULIDÆ, DIPTERA.)

BY CHARLES P. ALEXANDER,

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The following new species of crane-flies belonging to the subfamily Tipulinæ have been received from various sources. The Kamchatka material was collected by Dr. L. Stejneger, the Siberian specimen by Dr. Dall. The Japanese crane-flies were included in material sent to me through the kindness of Dr. Akio Nohira, these latter specimens being in my collection, the other material in the collection of the United States National Museum.

I have recently seen a copy of Matsumura's "Thousand Insects of Japan, addition two, 1916," and the following observations on synonymy should be made:

*Nippotipula* Mats. = *Tipula* L.

*N. nubifera* (Coq.) = *T. coquilletti* End.

*Platytipula* Mats. = *Tipula* L.

*Yamatotipula* Mats. = *Tipula* L.

*Daimiotipula* Mats. = *Pedicia* Lat.

*Globericera* Mats. = *Eriocera* Macq.

*Gagamba* Mats. = *Limnophila* Macq. (*Eutonia* v. d. W.).

*G. takei* Mats. = *L. (Eutonia) satsuma* (Westw.).

*Formotipula* Mats. may be a valid genus, and *Togotipula* Mats. may be a valid subgenus of the genus *Tipula*. *Ptychoptera scutellaris* Mats. is homonymous with *P. scutellaris* Meig. and, to judge from the descriptions of the two species, may well be synonymous with it.

#### Genus *Oropeza* Needham.

##### *Oropeza satsuma* new species.

Male.—Length 11.3 mm.; wing 12.6 mm.

Female.—Length 12.8 mm.; wing 12.7 mm.

##### Alcoholic:

Frontal prolongation of the head short; palpi brown, the last segment largely pale. Antennæ with the scape light yellow; flagellum dark brown. Head brown with a distinct tubercle on vertex.

Mesonotal præscutum dark brown, the humeral angles paler, more yellowish-brown; scutum with the lobes almost entirely dark brown. Pleura yellow, with large brown spots including, also, most of the sternum and the extreme base of the fore coxæ. Legs brown, the coxæ, trochanters and base of the femora more yellow. Halteres pale, knobs darker, the extreme tips pale. Wings with a distinct brown tinge; stigma dark brown; a yellow obliterative mark before and beyond the stigma; inner end of cell 1st  $M_2$  with a similar obliterative streak.

Abdominal tergites with a smooth basal area and a setiferous apical portion; segments light yellow with a broad interrupted median brown stripe, on each segment connected near its anterior end with a transverse bar to form a T. Sternites with the basal glabrous portion dark brown, the apical portion yellow.

Habitat: Japan.

Holotype, ♂, Kyoto, Japan, July, 1916 (Nohira).

Allotopotype, ♀, May, 1916.

This is the first Old World species of the genus to be described.



Genus *Tipula* Linnæus.*Tipula asio* new species.

Male.—Length 13.3–14 mm.; wing 17.5 mm.

Frontal prolongation of the head rather elongate, yellow, with a narrow brown dorso-median line; palpi dark brown. Antennæ short; four basal segments yellow, the apical segments of the flagellum blackish basally, the remainder of each segment a little paler; flagellar segments with the basal enlargement inconspicuous, with about four long verticils that exceed the segment.

Thoracic præscutum gray with three broad grayish-brown stripes that are narrowly margined with darker, the median stripe narrowly bisected; scutum with the lobes largely dark gray; scutellum and postnotum yellow with a narrow brown median line. Pleura gray. Halteres pale at the base, the stem darkened, the knob dark brown, orange at the apex. Legs with the coxæ, trochanters and base of femora yellow; remainder of femora yellowish-brown, the apices dark brown; tibiæ brown, the apical half dark brown; tarsi dark brown. Wings marbled with gray, brown and subhyaline; cell *C* yellowish-brown; stigmal area largely dark brown; a brown spot at the origin of *R*<sub>3</sub> and another in the end of cell *R*<sub>2</sub> and the middle of *R*<sub>3</sub>; base of cells *R* and *M* brownish; remainder of the wings grayish with large whitish spots and blotches; a large blotch extending across the wing near the base; a large spot near the end of cell *M*; other spots at the end of vein *1st A*, *2d A*, end of cell *1st A* and in the anal angle of the wing. Venation: *R*<sub>2</sub> persistent; petiole of *M*<sub>1</sub> short, less than cross-vein *m*; cross-vein *m-cu* obliterated or punctiform.

Habitat: Japan.

Holotype, ♂, Shinaño, Japan, Sept. 9, 1916 (Nohira).

Paratopotype, ♂, Aug. 9, 1916.

*Tipula tateyamæ* new species.

Male.—Length 11.5–12.2 mm.; wing 14–15.5 mm.

Frontal prolongation of the head dark, gray pruinose; nasus short; palpi dark brown. Antennæ moderate in length; first scapal segment dark brown; second segment yellowish; flagellum black. Head brownish-gray, paler gray along the inner margin of the eye; a more or less distinct median brown mark on the vertex.

Mesonotum dull yellowish-gray with three præscutal stripes, the median one indistinctly bisected by a pale line; scutum and postnotum gray; scutellum testaceous gray. Pleura clear light gray. Halteres pale brown, the knobs dark brown. Legs with the coxæ dusted with light gray; trochanters dull yellow; femora dull yellow, broadly tipped with dark brown; tibiæ dark brown, the apices narrowly blackish-brown; tarsi dark brown. Wings with a strong reddish-brown suffusion; cells *C* and *Sc* and the base of the wing yellow; stigma small, ill-defined, dark brown; veins dark brown; oblitative streak yellowish, beginning before the stigma, running to about mid-length of cell *M*<sub>4</sub>; a pale suffusion beyond the stigma.

Abdominal tergites dull yellow, the basal segments brighter, on the terminal segments passing into light gray; a broad dark brown median stripe beginning at the base of segment two; shorter sublateral stripes beginning at mid-length of segment two; lateral margins of the tergites broadly pale clay-color; sternites dark brown, the terminal segments blackish-gray.

Habitat: Japan.

Holotype, ♂, Mt. Tateyama, Japan, July 3, 1914 (Nohira).

Paratopotype, ♂.

**Tipula kuzuensis** new species.

Male.—Length 19 mm.; wing 21.4 mm.

Frontal prolongation of the head rather elongate, dark brown, the nasus prominent; palpi dark brown. Antennæ rather short; scape bright yellow; flagellum almost unicolorous dark brown, the basal enlargements a little darker than the remainder of the segment. Head dull gray, the middle of the vertex indistinctly more brownish.

Pronotum dull yellow, the sides more infuscated. Mesonotum dull light yellowish-gray, the præscutum with the four darker grayish-brown stripes poorly defined; scutum with the lobes grayish-brown; scutellum and postnotum yellowish-brown. Pleura pale, dull yellowish pollinose. Halteres rather short, brown. Legs with the coxæ pale, yellowish pollinose; trochanters dull yellow; femora brownish-yellow, the tips broadly dark brown; tibiæ similar but the tips more narrowly darkened; tarsi with the three basal segments pale yellowish-brown, the apices darkened; last two tarsal segments brown. Wings heavily suffused with yellow, passing into gray on the caudal and apical cells; cells *C* and *Sc* and the base of the wing yellowish; stigma brown, poorly defined; obliterative streak very broad, conspicuous, extending well into the base of cell *M*<sub>4</sub>; similar pale areas at the base of the wing in cells *R* and *M* and in cells *M* and *Cu* at about one-fourth the length of vein *Cu*; vein *Cu* beyond this last mark broadly but indistinctly suffused with brownish.

Abdominal tergites dull yellowish passing into brown on the terminal segments; a blackish sublateral stripe beginning on segment two; lateral margins pale, clay-colored; basal sternites yellowish, terminal sternites dark brown, narrowly and indistinctly ringed caudally with paler; hypopygium dark brown, the outer pleural appendage pale, whitish.

Habitat: Japan.

Holotype, ♂, Kuzu, Province Shinano, Japan, August 4, 1914 (Nohira).

**Tipula bubo** new species.

Female.—Length 21–23 mm.; wing 19–20.5 mm.

Frontal prolongation of the head light brown; palpi dark brown. Antennæ bicolorous, the three basal segments uniform yellow, the remaining segments yellow with the basal swelling dark brown. Head dark gray.



Pronotum yellowish. Mesonotal præscutum dull brownish-yellow, the usual three stripes gray, the median one broadly divided by a pale line of the ground-color and confluent with the lateral stripes or nearly so; pseudo-sutural foveæ very deep and prominent; scutum obscure brown, the lobes gray; scutellum and postnotum dull brownish-yellow. Pleura pale, very sparsely whitish pruinose. Halteres light brown. Legs dull brownish-yellow, the tips of the femora broadly, those of the tibiæ narrowly, dark brown; tarsi yellowish-brown, the segments tipped with dark brown, the last two segments uniform brown. Wings with a heavy yellowish-brown to brown pattern; costal and subcostal cells more yellow; remainder of the wings brownish, more gray in the caudal cells; white areas as follows: a broad band before the cord extending from in front of the stigma across the basal half of cell *1st M*<sub>2</sub> almost to the wing-margin in cell *Cu*<sub>1</sub>; base of cells *M*<sub>1</sub>, *M*<sub>2</sub>, and *M*<sub>3</sub> and the apical half of *R*<sub>5</sub> of this color; a large blotch in the middle of cell *M*, extending caudad into cell *Cu*; a large blotch in the base of cell *Cu*, indistinctly suffusing the base of the anal cells. Venation: tip of *R*<sub>2</sub> strongly persistent.

Abdominal tergites light yellowish-brown with a broad dark brown sub-lateral band becoming indistinct on the seventh tergite; lateral margins narrowly and indistinctly yellowish; sternites brownish-yellow, the caudal margins narrowly paler and with an indistinct brown subterminal ring. Ovipositor chestnut.

Habitat: Japan.

Holotype, ♀, Akakura, Province Echigo, Japan, August 6, 1914 (Nohira).

Paratype, ♀, Yoshino, Japan, August 2, 1913 (Nohira).

#### **Tipula aluco** new species.

Male.—Length 12.5 mm.; wing 11.5 mm.

Female.—Length 14–18 mm.; wing 13–15.5 mm.

Frontal prolongation of the head and palpi dark brown. Antennæ indistinctly bicolorous, the first three segments yellow, the remaining segments of the flagellum having the basal enlargement dark brown, paler brown apically. Head dark.

Mesonotal præscutum grayish with three dark brown stripes, the median one broadest in front, narrowed behind; lateral stripes narrow, slightly curved; thoracic interspaces with numerous tiny brown dots; scutum gray, the lobes with two dark brown marks; scutellum dark; postnotum paler with a delicate brown median vitta. Pleura light-colored with dark brown areas. Halteres pale, the knobs dark brown. Legs dark brown, only the trochanters and the extreme bases of the femora pale yellow. Wings whitish subhyaline with four brown cross-bands that are darkest anteriorly, becoming paler in the caudal cells, the first occupying the base of the wing just beyond the arculus;

the second at the origin of the sector, the third along the cord and the last at the wing-tip; cells *C* and *Sc* dark brown. Venation: tip of  $R_2$  atrophied.

Abdominal tergites in the female with the basal segment dark brown, the remaining tergites pale cream yellow, each segment with a triangular brown median mark with the point directed backward; on segments 3 to 8 the disk of the tergites gradually darkens until on the terminal segments only the caudal and lateral margins remain pale; sternites pale with a triton-shaped brown mark on each segment, the points directed backward; on segments 6 to 8 darker colored. In the male the abdomen is paler on the three basal segments, the rest of the organ dark brown, the segments narrowly margined with paler. Hypopygium with the ninth tergite deeply notched medially, the adjacent lobes obtusely rounded; ninth pleurite complete, extensive.

Habitat: Japan.

Holotype, ♂, Kioto, Japan, July, 1916 (Nohira).

Allotopotype, ♀.

Paratopotypes, 2 ♀♀.

***Tipula strix*** new species.

Female.—Length 17 mm.; wing 15.4 mm.

Frontal prolongation of the head dark brown; palpi similar, the tip of the second segment and the third and fourth segments paler. Antennæ bicolorous; scape dark brown; flagellar segments yellow, the base of each segment darkened, less distinctly on the basal segments. Head dark brown.

Head very deep reddish or liver-colored, darker on the præscutal interspaces. Halteres pale, the bases of the knobs a little darker. Legs with the coxæ deep liver-red, concolorous with the pleura; trochanters light yellow; femora bright yellow, tipped with black; on the fore legs the dark tips include the outer half; on the middle and hind legs only the broad tip is darkened; tibiæ black, the bases yellowish; tarsi black. Wings whitish subhyaline, sparsely marked with brown; base of the wings light yellow; veins dark brown, *1st anal* slender, yellowish; cells *C* and *Sc* dark brown; stigma dark brown; wing-apex and the outer longitudinal veins narrowly seamed with dark brown; dark clouds at the origin of the sector and along the cord and the outer two-thirds of cell  $R_2$ ; somewhat paler clouds in the middle of cells  $R_3$  and  $R_5$ , the base and middle of cells *R*, *M* and *Cu*; tip of cell *M* clouded; gray clouds in the anal cells. Venation: vein  $R_2$  persistent; cell *1st M*<sub>2</sub> small, pentagonal; cell *M*<sub>1</sub> deeper than its petiole.

Abdomen shiny liver-brown, the genital segment and the ovipositor more yellowish; ovipositor with the tergal valves acicular, straight, parallel; sternal valves shorter but higher.

Habitat: Japan.

Holotype, ♀, Tokuhara, Province Shinano, Japan, August 31, 1915 (Nohira).



**Tipula kamchatkensis** new species.

Male.—Length 20 mm.; wing 14.5 mm.

Frontal prolongation of the head moderately elongated, dark brown, with a distinct nasus; palpi dark brown. Antennæ long and slender, dark brown; the second scalpal and extreme base of the first flagellar segment a little reddish; flagellar segment with the basal swelling from two-fifths to one-third the length of the segment, with four long verticils; an additional verticil at about mid-length of the segment. Head light gray.

Thorax discolored, in the type almost entirely blackish, but in fresh specimens probably gray; humeral region and the dorso-pleural membrane yellowish. Halteres brown. Legs with the coxæ dark colored; trochanters yellow; femora light brown, the tips broadly dark brown; tibiæ and tarsi dark brown. Wings subhyaline, costal cell not brighter; stigma large, brown. Venation: cross-vein *m-cu* present, situated near the inner end of cell *1st M*<sub>2</sub>.

Basal abdominal segments yellowish, the tergites with a broad black median line; tergites four to nine blackish, with the lateral margin broadly yellowish, the caudal margin narrowly silvery. Sternites similar, the caudal margin of the segments narrowly silvery, the spatula on segment eight pale. Hypopygium closely resembling that of *T. pribilofensis* Alex. and related species. Ninth tergite ample, the dorsal surface gently convex, caudal margin evenly and roundly notched, the lateral angles produced into conspicuous chitinized horns; a tiny median notch on the caudal margin, and a pale yellowish median line extending the length of the tergite. Ninth pleurite incomplete, fused with the sternite; outer pleural appendage a very long, slender, cylindrical lobe, that tapers to the blunt apex and is covered with long coarse hairs, meeting its fellow of the opposite side on the median line; inner pleural appendage complex, the caudal angle produced into a slender flattened yellow blade. Eighth sternite produced medially into a broad, flattened, pale, shovel-shaped lobe, the tip with a deep U-shaped notch, which is filled with fimbriate hairs.

Habitat: Kamchatka.

Holotype, ♂, Kamchatka, No. 1255 (L. Stejneger).

**Tipula gynaptera** new species.

Female.—Length 16.8 mm.

Frontal prolongation of the head moderately elongated, dark gray, the sides reddish-brown, shiny; nasus lacking; palpi dark brown. Antennæ dark brown throughout, the flagellar segments, short, cylindrical, the third segment about twice the length of the second. Head gray with a narrow interrupted brown median line. Eyes very small, not protuberant. A distinct tubercle on the vertex.

Thoracic præscutum light gray, with three indistinct brown stripes, the middle one margined with two cinnamon-brown lines that are better indicated behind. Postnotum blackish. Pleura brownish-gray, the dorsal pleural membranes brown. Halteres short, brown, the knobs distinctly darker. Legs



short and powerful; coxæ dark gray; trochanters brown; femora strongly incrassated, reddish-brown, the tips dark brown; tibiæ brown, the spurs very long; tarsi very short, brown. Wings greatly atrophied, short and broad, about equal in length to the halteres, appressed to the postnotum.

Abdomen reddish with a broad black median stripe on the dorsum that is almost continuous, lateral stripes less distinct. Ovipositor with the dorsal basal shield blackened, heavily chitinized; the dorsal valves of the ovipositor slender, divergent, reddish horn-colored; sternal valves short, the tips pointed.

Habitat: Northeastern Siberia.

Holotype, ♀, Plover Bay, Siberia, July 11, 1899 (Dall). (The Harriman Alaska Expedition, 1899.)

This species is close to *T. whitneyi* Alex. of the Pribilof Islands, off the Alaskan coast. This latter species, however, has the eyes much larger and more protuberant; the antennæ much more elongate, the third segment especially being much longer; the præscutum is without distinct stripes, the second antennal segment reddish, etc.

***Tipula subcentralis* new species.**

Male.—Length 20 mm.; wing 20.5 mm.

Frontal prolongation of the head elongate, pale brown, thinly dusted with gray; nasus stout; palpi light brown. Antennæ with the scalpal segments and the first flagellar segment light yellow; remaining segments of the flagellum with the enlarged base black, the stem yellow, on the apical segments becoming more dusky; flagellar segments rather deeply incised, the enlarged bases a little shorter than the apical swelling of each segment. Head gray, the tubercle on the vertex more reddish; a very narrow median brown line extending the length of the head.

Mesonotal præscutum light gray, the usual stripes concolorous, narrowly and somewhat indistinctly margined with brown, the broad median stripe bisected by a brown line; thoracic interspaces with a few short setæ, set in black punctures; pseudosutural foveæ large, triangular, pale in color; scutal lobes gray; scutellum pale brown, with an indistinct median stripe; postnotum brownish, thinly dusted with gray. Pleura gray, the dorso-pleural membrane more yellowish. Halteres pale, the knobs brown. Legs with the coxæ dull brownish-yellow, thinly dusted with a gray pollen; trochanters yellow; femora yellow, a little darkened at the tip; tibiæ yellowish-brown, tipped with darker; tarsi brown, the tips of the metatarsi dark brown. Wings with a brown, gray and whitish pattern, the ground color brown; a large white area beyond the stigma; apex of cell  $R_5$  white; a large irregular blotch before the cord, extending across the sector and across cell 1st  $M_2$  nearly to the wing margin; a large white area on cell  $M$  and another near the base of the wing; basal half of anal cells conspicuously whitish. Venation:  $R_2$  persistent;  $R_3$  elongate; petiole of  $M_1$  a little longer than  $m$ ;  $m-cu$  obliterated or punctiform.

Basal abdominal tergites rich yellow, with a broad median brown stripe, on the fifth to seventh segments expanded to include most of the segments;

lateral and caudal margins of the segments narrowly silvery; an indistinct brown sublateral line. Basal sternites light brown, the caudal margin silvery, with an indistinct subterminal median brown spot; sternites five to eight much darker, purplish-brown, ringed caudally with silver. Male hypopygium with the ninth tergite hollowed out into a strongly chitinized saucer, the lateral and posterior margins narrowly raised and blackened (as in *centralis* Lw.); the caudal margin is concave and roughened into irregular teeth or denticles; viewed from the side the margin of the tergite shows two teeth at the ends of the rim, the innermost acute, directed dorsad and caudad, the outermost flat, directed caudad. Ninth pleurite complete or nearly so, the ventral caudal angle produced into flattened plates that bear the inner pleural appendages in their concavity; outer pleural appendage flattened, broadly oval. Ninth sternite profoundly incised by a very narrow notch. Eighth sternite weakly carinate, unarmed.

Habitat: Kamchatka.

Holotype, ♂, Kamchatka (L. Stejneger).

Genus *Nephrotoma* Meigen.

*Nephrotoma stejneri* new species.

Male.—Length 17 mm.; wing 14 mm.

Frontal prolongation of head short, shiny yellow; nasus slender. Antennæ of moderate length, the first segment yellow, the remainder of the organ dark brown; flagellar segments slender, the basal swelling equal to about one-third the length of the segment. Head orange-yellow, on the posterior part of the vertex and on the occiput with a broad brown stripe.

Mesonotal præscutum yellow with three broad black stripes, the lateral pair straight (as in *lunulicornis*, *aculeata*, etc.), not curved at their anterior ends, crossing the suture and occupying the anterior parts of the scutal lobes; another large brownish-black mark on the posterior inner portions of these lobes; scutellum brownish-yellow; postnotum yellow with a narrow, distinct brown line. Pleura yellow with reddish blotches. Halteres brown. Legs with the coxæ light yellow, the base of the fore coxa reddish; trochanters yellow; femora yellowish-brown, the tips narrowly dark brown; tibiæ and tarsi brown. Wings with a very faint brownish-yellow tinge, the costal cell very indistinctly yellow; stigma oval, brown; veins dark brown. Venation: *Rs* oblique; cell *M*<sub>1</sub> petiolate, the petiole about equal to *r-m*; *m-cu* punctiform, located far before the fork of *M*. In both wings of the type a nearly or entirely complete cross-vein near the end of cell *R*<sub>3</sub>.

Abdominal tergites yellow with a broad blackish-brown median stripe that is narrowly interrupted at the caudal margin of each segment, on segments 7 to 9 occupying almost the entire segment; extreme lateral margins of the tergites with an elongate dark brownish mark, on the basal segments with two such marks, one basal, the other near mid-length of the segment; sternites dull yellow with a narrow brown median line. Eighth sternite dark brown, the caudal margin yellowish. Hypopygium with the ninth tergite rather



small, each half bulging, convex; a V-shaped median notch; outer pleural appendage flattened, elongate, tapering gradually to the apex, the outer face with numerous hairs of moderate length. Ninth sternite deeply notched.

Habitat: Kamchatka.

Holotype, ♂, Kamchatka (L. Stejneger).

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## A REVIEW OF THE GENUS BUPRESTIS IN NORTH AMERICA.

BY ALAN S. NICOLAY AND HARRY B. WEISS.<sup>1</sup>

NEW BRUNSWICK, N. J.

The genus *Buprestis*, which contains some of the most beautiful and rarest beetles of our fauna, was very much neglected by the early coleopterists. Since Le Conte's revision of the family in 1859, there was no serious attempt made at classification until 1909, when Colonel Thomas L. Casey made an exhaustive study of the genus. The result of this was a multitude of new species, the validity of most of which may be justly questioned by students who demand at least one good, constant character. Common and well known species were split in such a way as to cause one to wonder whether a species was erected on an evident character or on the geographical limits of a state. No one will deny that there is considerable variation in all of these large, brightly colored forms and it has been demonstrated that the amount of food available to the larva influences the development and size of the adult. Mr. W. J. Chamberlin, who has carried on extensive experiments in the breeding of various buprestids, has secured from one female of *Buprestis aurulenta*, a series of forms ranging from entirely green to a uniform bronze. Owing to floods, commerce, etc., infested wood is constantly being distributed over the country. These taken together with the fact that the adults are strong fliers make it absurd to limit each species to a certain restricted area.

Colonel Casey's work has been of considerable value to students of the Buprestidæ, as it was the first careful treatise of the group and on account of the many new facts and painstaking descriptions of the species. On the other hand, we feel that there is no good founda-

<sup>1</sup> The arrangement of the authors' names is alphabetical.