

*H. F. Strohecker*

---

---

STUDIES IN  
ORTHOPTERA  
WHICH OCCUR IN NORTH AMERICA  
NORTH OF THE MEXICAN BOUNDARY

III. REVISIONARY DATA AND NEW NORTH AMERICAN  
DECTICINAE

BY

Morgan Hebard

---

From the Transactions of The American Entomological Society, LX, 31-54

Issued

No. 984

MAR - 7 1934

\$0.60

---

---

This is a separatum from the TRANSACTIONS, and is not a reprint. It bears the original pagination and plate numbers, and was placed on sale at the price quoted and library copies mailed at Philadelphia on the above date of issue.

# STUDIES IN ORTHOPTERA WHICH OCCUR IN NORTH AMERICA NORTH OF THE MEXICAN BOUNDARY

BY MORGAN HEBARD

(Plates II-III, text figure)

The first two sections of this series have recently appeared,<sup>1</sup> dealing with the Genera *Psychomastax* and *Cyphoderris*.

## III. REVISIONARY DATA AND NEW NORTH AMERICAN DECTICINAE

In the large series of this interesting group now assembled for study we find eight new species and one new race. Many of the species of the Decticinae are scarce and very local in distribution and all are nocturnal. It is therefore always a most difficult but interesting task in the field to attempt to secure at each locality visited the species which are present. Stalking individuals which are stridulating at night and capturing them with the aid of a flash light after close approach is the most important method of securing many of the forms, but we have secured many valuable specimens by examining possible hiding places in the day time (ranging from Tree Yuccas, Century Plants and Prickly Pear to empty greasy barrels) and by violent beating of clumps of desert plants or brush.

*Atlanticus americanus hesperus* new subspecies (Text figs. 3 and 4)

In past literature this insect has been recorded only by Rehn and Hebard as *americanus* in 1916, from Lookout Mountain, Tennessee; Bainbridge, Georgia; River Junction, Florida; Opelika, Alabama, and Holly Springs, Winona, Meridian and Natchez, Mississippi. It is the western race of the species and occurs east to Lookout Mountain, Tennessee; Bainbridge, Georgia and Camp Torreya in Liberty County, Florida, and west to Meridian and Natchez, Mississippi, and Alto Pass and Thebes, Illinois.

---

<sup>1</sup> Trans. Amer. Ent. Soc., LIX, pp. 363 to 375, (1934).

The races of *americanus* may be distinguished particularly by the following features.

A. Size averaging smaller and limbs shorter. Male subgenital plate with a medio-longitudinal cleft between the cerci which is longer than one of the styles and is usually very narrow, very rarely broad enough to be termed narrowly V-emarginate, this cleft always preceded by a fine but decided medio-longitudinal carina for some distance. Male styles averaging shorter. Female subgenital plate narrowly divided medio-longitudinally, the cleft extending decidedly more than half the distance to the base of the plate, the lateral projections thus formed each longer than its basal width. (See text figs. 1 and 2.)

*americanus americanus* (Saussure)

AA. Size averaging larger and limbs longer. Male subgenital plate with a median emargination between the cerci angulate emarginate, individually sometimes U-shaped or narrowly V-emarginate, this usually not as long as one of the styles and with medio-longitudinal carina before it normally obsolete, rarely very faintly indicated (present only in Ohio material). Male styles averaging longer. Female subgenital plate V-emarginate meso-distad, this cleft extending less than half the distance to the base of the plate, the lateral projections thus formed each slightly shorter than or no longer than its basal width. (See text figs. 3 and 4.) . . . . . *americanus hesperus* new subspecies

*Type*.— ♀ ; River Junction, Florida. August 31, 1915. (Rehn and Hebard; among tree shoots in heavy deciduous forest on limestone hills.) [Hebard Collection, Type No. 1250.]

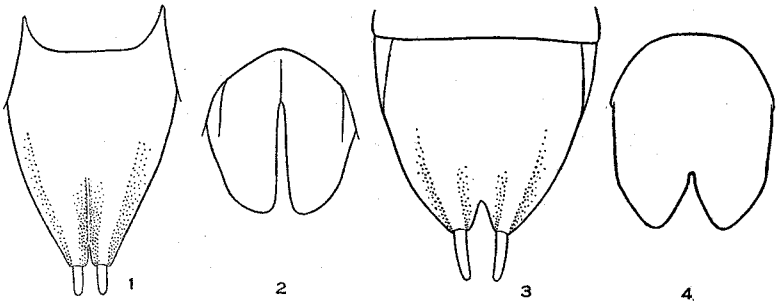
Size large, form graceful, limbs elongate for the genus. Fastigium broader than a proximal antennal joint, rounding broadly with a minute median dorso-distal impression. Pronotum with disk defined from lateral lobes by prominent percurrent carinae, which in dorsal aspect are very broadly and feebly concave in cephalic portion and more strongly convex in the shorter caudal portion. Tegmina absent. Ultimate tergite rather deeply angulate-emarginate mesad, there the small rounded-rectangulate supra-anal plate projects from beneath. Cerci short, acute. Ovipositor elongate, unarmed, almost straight and only very feebly decurved, the dorsal margin at apex strongly declivent to the acute apex which is at the ventral margin. Subgenital plate ample, V-emarginate meso-distad, this emargination reaching considerably less than one-half the distance to the base of the plate, lateral apices each no longer than its basal width, their margins rounded-angulate (varying in series to evenly rounded).

Cephalic margins of cephalic and median and internal margins of caudal femora armed with a few spines. Caudal femora much more than twice length of pronotal disk.

*Allotype*.—♂; same data as type. [Hebard Collection.]

Size slightly smaller than female and caudal femora shorter. Tegmina projecting beyond pronotum, the exposed portions short, rounded, convex and covered with a network of veins distad. Ultimate tergite bluntly rectangulate produced on each side dorsad, the margin between forming a shallow rounded obtuse-angulate emargination. Below this is the transverse, feebly obtuse-angulate rounded supra-anal plate. Cerci as in *americanus americanus* but definitely more elongate with apices acute. Subgenital plate simple, with prominent rounded lateral carinae convergent to the style sockets, a V-shaped (varying from narrow to U-shaped in series) distal emargination which is shorter than one of the styles. Styles moderately elongate, straight, slender.

Coloration generally mottled wood brown, the sides of pronotum (and rarely of abdomen) shining blackish brown (usually leaving the ventral portions paler), with a narrow buffy margin at the humeral sinus. Occasional individuals are much more generally buffy brown, sometimes conspicuously flecked with dark brown.



(Figures greatly enlarged)

Fig. 1.—*Atlanticus americanus americanus* (Saussure). Ventral view of subgenital plate. Male. Reega, New Jersey. Fig. 2.—*Atlanticus americanus americanus* (Saussure). Same. Female. Plummers Island, Maryland. Fig. 3.—*Atlanticus americanus hesperus* new subspecies. Same. Male. *Allotype*. River Junction, Florida. Fig. 4.—*Atlanticus americanus hesperus* new subspecies. Same. Female. *Type*. River Junction, Florida.

The following are the measurements of the type and allotype:<sup>2</sup> length of body ♂ 24, ♀ 24.3; length of pronotum ♂ 9.3, ♀ 10.2; greatest (caudal) width of pronotal disk ♂ 6, ♀ 6; exposed length of tegmen ♂ 2.1, ♀ 0; length of caudal femur ♂ 27.3, ♀ 29; length of ovipositor 27.6 mm.

Four males and three females bear the same data as the type and allotype and are here designated paratypes as well as the series from Liberty County, Florida, listed below.

The variation in the contour of the emargination of the subgenital plate is noted above for both sexes. The extremes for the males occur in the River Junction series, but in none of the material before us is this emargination in that sex as narrow as in typical material of *americanus americanus* nor is it preceded by a medio-longitudinal carina, except in Ohio material. In the females variation is found in the degree of angulation shown in the convexity of the lateral apices.

The female from Lookout Mountain, Tennessee, recorded by Rehn and Hebard in 1916, shows a tendency toward *americanus americanus*. Two males from the series taken near Talladega, Alabama, are typical of *americanus americanus*. The Ohio material is all typical of *americanus hesperus* except that the males have the subgenital plate showing marked carination preceding the comparatively shallow meso-distal emargination.

In the northwestern portion of the species distribution the females, but not the males, of *americanus hesperus* show differentiation which may indicate the presence there of a third geographic race, but which, we believe, is more probably indicative of incipient racial evolution which has not progressed sufficiently to warrant nominal recognition. With only three females from that region before us, the exact significance of the difference shown can not be determined. The three females in question are from Alto Pass, Illinois, and Holly Springs and Winona, Mississippi. All of these have the subgenital plate with emargination deeper than normal in *americanus hesperus*, as deep or slightly deeper than the remaining length of the plate, with

---

<sup>2</sup> Measurements of specimens from Lookout Mountain, Tennessee; River Junction, Florida; Opelika, Alabama, and Holly Springs, Meridian and Natchez, Mississippi, are given under *americanus* by Rehn and Hebard, *Trans. Amer. Ent. Soc.*, XLII, pp. 76 to 78, (1916).

lateral productions approximately as long as broad but, as usually is the case in *americanus hesperus* but never in *americanus americanus*, triangular, tapering to their rounded apices.

*Specimens Examined* (in addition to the ten pair previously recorded): 108; 25 males, 61 females and 22 immature individuals.

OHIO. Fairfield County, X, 25, 1931, (J. C. Hambleton), 1 ♀, [Ohio State Mus.]. Camp Neotoma, Hocking County, VII, 4, 1931, (E. S. Thomas), 1 juv. ♀, [Ohio State Mus.]. Harrison Township, Vinton County, IX, 17, 1931, (C. F. Walker), 1 ♀, [Ohio State Mus.]. Byer, Jackson County, IX, 12, 1932, (Walker and Bailey), 3 ♂, [Ohio State Mus.]. Nile Township, Scioto County, IX, 13, 1931, (C. F. Walker), 1 ♂, 1 ♀, [Ohio State Mus.]. Fort Hill, Highland County, VII, 22, 1931, (C. F. Walker), 1 ♂, [Ohio State Mus.].

TENNESSEE. Nashville, XI, 1932, (J. L. Major), 1 ♂, [U. S. Nat. Mus.], Allardt, 1650 feet, VIII, 11 to X, 10, 1922 and 1924, (T. H. Hubbell), 3 ♂, 7 ♀, 3 juv. ♂, 6 juv. ♀, [Univ. of Michigan].

GEORGIA. Two miles south of Armuchee, VIII, 26, 1929, (T. H. Hubbell), 1 ♂, 1 ♀, [Univ. of Michigan]. Barnesville, VI, 8, 1925, (T. H. Hubbell), 2 ♂, 1 ♀, 1 large juv. ♂, 1 large juv. ♀, [Univ. of Michigan].

FLORIDA. River Junction, VII, 25, 1925, (T. H. Hubbell), 1 ♂, *paratype*, [Univ. of Michigan]. Camp Torreya, Liberty County, IV, 27 to VI, 2, 1924, 5 juv. ♂, 5 juv. ♀; VII, 25 to VIII, 1, 1929, (T. H. Hubbell), 9 ♂, 22 ♀, *paratypes*, [Univ. of Michigan].

ALABAMA. Four to nine miles southeast of Talladega, VIII, 24, 1929, (T. H. Hubbell), 10 ♀, [Univ. of Michigan]. Sharpshin Ridge, two miles northeast of Leesburg, VIII, 25, 1929, (T. H. Hubbell), 1 ♂, 14 ♀, [Univ. of Michigan]. Two miles east of Spratt, VIII, 22, 1929, (T. H. Hubbell), 1 ♀, [Univ. of Michigan].

MISSISSIPPI. Holly Springs, VII, 12, 1890, (E. H. Raidle), 1 ♀,<sup>3</sup> [U. S. Nat. Mus.]. Bullards, VIII, 20, 1929, (T. H. Hubbell), 1 ♂, [Univ. of Michigan].

ILLINOIS. Alto Pass, VIII, 16, 1909, 1 ♀, [Illinois State Lab.]. Thebes, VII, 31, 1905, 1 ♂, [Illinois State Lab.].

*Pediodes tinkhami* new species (Pl. II, fig. 1; pl. III, figs. 1 and 2.)

This insect in size, form (particularly of the pronotal lateral lobes) and projection of the male tegmina beyond the pronotum agrees best with *Eremopedes scudderi* Cockerell, but the strongly bispinose prosternum, more inflated head with larger vertex and the genitalia show that it is a member of the genus *Pediodes*. The genitalia show nearest approach to the type developed in *P. prattei* (Caudell). The length of the caudal femora in ratio to that of the pronotum also agrees best with that species, due to

<sup>3</sup> This specimen was recorded as *dorsalis* by Caudell in 1907 and measured and recorded as *americanus* by Rehn and Hebard in 1916.

the shorter pronotum, though the caudal femora are distinctly shorter and more robust in proportion to the body than in any previously described species of *Pediodes*.

The Lower Californian *P. ateloploides* (Caudell) shows features of agreement but, though known only from a female, may be easily distinguished by the decidedly narrower vertex and interocular space, shallower pronotal lateral lobes and very different coloration.

The finely impressed but complete first transverse sulcus of the pronotum, on the other hand agrees best with that of *Ateloplus schwarzi* Caudell. The coloration in general is very different, but in some respects also suggests that species. The head, however, shows a most strikingly distinctive coloration and pattern, as it is black above and below a very broad transverse arcuate cream colored facial band; this only to some extent approached in some individuals of *P. bruneri* (Caudell).

In spite of evident divergence in certain characters toward both *Eremopedes* and *Ateloplus*, *tinkhami* is clearly best placed in *Pediodes*.

*Type*.—♂; Chinati Mountains, Presidio County, Texas. October 29, 1928. (E. R. Tinkham.) [Hebard Collection, Type No. 1169.]

Size though large for the Decticinae small for the genus *Pediodes*, form robust. Head much as in *bruneri* except in being considerably broader, the broad transverse whitish facial band (indicated only in dark specimens of *bruneri*) much more definite and less declivent laterad than it is, when present, in *bruneri*. Fastigium much broader than first antennal joint. Pronotum ample, produced in caudal portion; disk with caudal margin truncate, showing a mere trace of convexity, first transverse sulcus decided, median transverse sulcus decided only on lateral lobes; lateral lobes shallower than normal in *Pediodes*, humeral sinus broad and shallow (subobsolete in some paratypes). Tegmina projecting beyond pronotum briefly, all but caudal portion of stridulating area covered by pronotal disk; deflexed lateral and caudal portions with a coarse network of veins, costal and distal margins very feebly convex, disto-external angle and sutural margins broadly convex. Prosternum armed with a pair of stout, straight, conical spines much as in *bruneri*. Ultimate tergite produced mesad in two small triangular projections, each no longer than its basal width and separated by a truncate U-shaped area. Cerci much as in *bruneri* but heavier and blunter,

cylindrical, nearly straight, the small rounded apex situated disto-externally and directed disto-externally, a large tapering finger internally at base of apex which terminates in a small spine curved cephalad. Titillators (from paratype) represented by a pair of adjacent spatulate very slender elongate processes which diverge slightly distad, inner margin unarmed and curving distad to outer margin, the latter armed with five heavy teeth curved proximad. Subgenital plate with two heavy rounded carinae which weakly converge distad to the sockets of the small styles, the latter simple, straight, separated by a distance distinctly longer than the length of one of them, the caudal margin of the subgenital plate in the interval between with a small angulate emargination, the margins of which are moderately convex (in *bruneri* this emargination is variable, U-emarginate or shallowly to deeply angulate emarginate). Femora with genicular lobes unarmed except the internal of the median femora which bear a small spine and the internal of the cephalic femora which bear a very small ventral spine. Ventral femoral margins armed with spines (in the series) as follows: cephalic internal 2 to 4, cephalic external 0; median internal 0, median external 0 to 2; caudal internal 4 to 9, caudal external 3 to 9. Cephalic tibiae with dorso-caudal margin armed with a proximal, median and apical spine (and sometimes with one additional spine), caudal margin (rarely) with a proximal and median spine.

*Allotype*: ♀; same data as type but taken at 6400 feet, July 17, 1930. [Hebard Collection.]

Generally similar to male in ambisexual features, larger. Tegmina represented by small vestigial lateral pads concealed by the pronotum. Pronotum less produced caudad with caudal margin of disk truncate. Ultimate tergite medio-longitudinally deeply sulcate and with caudal margin produced in two minute rounded projections above each side of the very small rounded triangular supra-anal plate. Ovipositor elongate but considerably shorter than the robust (and comparatively short for the genus) caudal femur, weakly curved dorsad, base stout, apex very sharply acute, margins unarmed, dorsal and ventral valves both with a medio-longitudinal carina only near the immediate apex. Subgenital plate with lateral margins almost parallel, disto-lateral angles rounded, distal margin broadly concave.

Generally cinnamon buff mottled with clay color (and with microscopic short streaks of tawny olive), paling to light ochraceous buff broadly along cephalic and ventral margins of pronotal lateral lobes and exposed margins of male tegmina. Cephalic femora, all tibiae (but particularly the caudal) and subgenital plate in two adult males tinged with green, this often very weak



or absent. Exposed portion of the stridulating areas of the male tegmina brown. Antennae immaculate, light brown. Head with a broad transverse band of bright cream color which laterad curves moderately ventrad, portions of face above clypeus below this marking, genae, extremely narrow area below eyes and ocelli, ventral portion of fastigium and all of facial fastigium shining blackish brown. Palpi buffy. Mouthparts russet.

A darker paratypic male has the pronotal lateral lobes heavily suffused with brown meso-distad and in a small caudal apical area, while the abdomen is strongly tessellate with brown.

Immatures have broad subapical annuli of dark brown on all the femora. Such markings are absent or almost obsolete in the adults.

	Length of body	Length of pronotum	Caudal width of pronotum	Greatest exposed length of tegmen	Length of caudal femur	Width of caudal femur
♂						
<i>Type</i> .....	25	8.3	5.7	2.4	21.6	4.9
<i>Paratype</i> .....	25.6	9.2	6.2	2	23	5.2
				Length of ovipositor		
♀						
<i>Allotype</i> .....	32	8.7	5.8	18	23	5.8
<i>Paratype</i> .....	28.2	8.7	6.2	18	23.8	5.8
<i>Paratype</i> .....	28.6	8.9	5.6	16.1	24.5	5.7

From the form of the caudal femora we believe that the saltatorial powers of this insect are probably remarkable. The species is probably confined to a very limited area in the United States, but should be found over a much greater extent of territory in adjacent Mexico.

*Specimens Examined:* 14; 6 males, 6 females and 2 immature individuals.

Hills west of the Ord Mountains, Big Bend of the Rio Grande, Texas, V to VIII, 1926, (O. C. Poling), 4 ♂, 3 ♀. Chinati Mountains, Big Bend of the Rio Grande, Texas, (all E. R. Tinkham), 4400 feet, VII, 17, 1930, 1 ♂, 1 ♀, *paratype* and *allotype*, 1 large juv. ♂, 1 medium juv. ♀; IX, 8, 1929, 2 ♀, *paratypes*; X, 29, 1928, 1 ♂, *type*.

Tinkham collected his specimens near Shafter on slopes covered with Sotol, much Lecheguilla, a few Octotillo, Acacias and scattered clumps of grasses and desert plants. In places *Yucca macrocarpa* was fairly common.

**Eremopedes covilleae** new species

(Pl. II, fig. 2; pl. III, fig. 3.)

This is a very handsome insect, apparently largely green in life with buff pronotal margins and male tegmina strikingly black with whitish veins. We believe that it will be found to be peculiar to the Creosote Bush, *Covillea tridentata*, and like *Pediodyctes tinkhami* here described is probably distributed over a very limited area in the United States but much more extensively in adjacent Mexico.

Its nearest known relative is *E. scudderi* Cockerell, that insect differing in being larger, more robust, the pronotum with a very weak but appreciable humeral sinus and lacking a meso-caudal marking, the male cerci weakly but distinctly sigmoid and individually showing as a rule a striking striped and maculate color pattern.

*Type*.—♂; twenty miles North of Chisos Mountains, Big Bend of the Rio Grande, Texas. Elevation 3800 feet. July, 18, 1930. (E. R. Tinkham; on *Covillea tridentata*.) [Hebard Collection, Type No. 1238.]

Size little larger than the average for *E. balli* Caudell which is the smallest species of the genus. Form robust, though not as robust as in *scudderi*. Head similar, but vertex decidedly smaller with width less than that of proximal antennal joint. Pronotum much as in *scudderi* but shorter, disk rounding evenly into lateral lobes with no trace of angulation or carina, caudal portion little produced with caudal margin transverse; first sulcus very fine, caudal sulcus obsolete; lateral lobes shallow, Ateloploid though not as shallow as in that genus, caudal margin of lateral lobes broadly convex ascendant with no trace of humeral sinus but an extensive low convex callosity adjacent to it, sulci all very feebly indicated. Tegmina projecting briefly beyond pronotum, all but caudal portion of stridulating area concealed by disk (entirely concealed in paratype); deflexed exposed distal portion with a coarse network of veins, its margins convex. Prosternum unarmed, but with indication of faint elevations where spines, if present, would be situated. Ultimate tergite as in *scudderi*; produced mesad in two slender triangular processes separated by narrow deep medio-longitudinal emargination which reaches nearly to the base of the tergite. Cerci as in *scudderi* but much straighter; cerci cylindrical and very faintly curved to a submedian point where a large node projects inward, armed at its apex with a minute tooth, apical portion gradually tapering thence to its blunt apex and occupying half the total cercal length. Titillators much as here described for *Pediodyctes tink-*

*hami*, their teeth somewhat less heavy. Subgenital plate with a medio-longitudinal and two coarse rounded lateral carinae which converge weakly distad to the sockets of the small, simple, straight styles, the latter separated by a distance less than twice the length of one of them, the caudal margin in this interval rectangulate emarginate with margins straight. Femora with all genicular lobes armed with a minute spine except the cephalic external. Ventral femoral margins armed (in the series) as follows: cephalic and median unarmed, caudal internal 0 to 8, caudal external 1 to 7. Cephalic tibiae with dorso-caudal margin alone armed with a proximal, median and apical spine.

Coloration apparently light green in life, now faded to light brown except on extremities. Pronotum with ventral margins of lateral lobes broadly (particularly caudad, there including the entire convex callosity) and caudal margin narrowly warm buff, a very small but distinctive pair of short, longitudinal brown suffusions meso-caudad on disk, a fleck of the same mesad at the cephalic margin in the male paratype. Tegmina strikingly black with coarse network of veins warm buff. Antennae, except proximal joints, mars brown in type, buckthorn brown with intersections of joints dark in paratypic and immature male, apparently green in life in immature female.

Though simply colored this is one of the handsomest Decticids of the southwestern United States.

The measurements of a paratypic male follow those of the male type. Length of body 17.5 and 18.3, length of pronotum 5.8 and 6.3, caudal width of pronotum 4.8 and 4.7, greatest exposed length of tegmen 2.1 and 1.6, length of caudal femur 18.3 and 18.3, greatest width of caudal femur 3.5 and 3.6 mm.

A male paratype, an immature male and an immature female have been studied in addition to the type. These specimens all bear the same data.

#### ***Ateloplus hesperus* new species**

This diminutive species is closely related to *A. luteus* Caudell, a species occurring over a considerable area to the East.<sup>4</sup> The specialization of the ventral surface of the female abdomen is identical, a condition not found in *A. notatus* Scudder of southern California.<sup>5</sup> The male cerci are also nearer those of *luteus*,

---

<sup>4</sup> As shown by a large series now before us.

<sup>5</sup> A series of *notatus* from southwestern San Diego County, California, is now before us.

though the production of the apex is decidedly less pronounced and of different form. The male styles agree with those of *notatus*, being considerably larger and longer than in *luteus*. The male ultimate tergite in *hesperus* and *luteus* has its two projections much more produced than in *notatus*, this being slightly greatest in *hesperus*; but these projections are less produced and less acute in *hesperus* than in a topotypic male of *A. minor* Caudell from Oracle, Arizona, in the author's collection. The male subgenital plate in *hesperus* has its distal margin subrectangulate emarginate, thus showing greater emargination than in any of the related species.

*Type*.—♂; nine miles west of Lone Pine, Owens Valley, California. August 5, 1931. (E. R. Tinkham.) [Hebard Collection, Type No. 1241.]

Size very small, nearly as small as the smallest specimen of *luteus* before us; form robust. Head rounded; fastigium not sulcate, slightly narrower than proximal antennal joint (in *luteus* varying from this to slightly wider than the proximal antennal joint). Pronotum broad, short, transversely evenly convex with lateral lobes shallow and strongly deflexed; first transverse sulcus fine but decided, median sulcus subobsolete; disk with cephalic and caudal margins truncate; lateral lobes with a broad but well defined humeral sinus present; convex callosity indistinct. Tegmina briefly projecting beyond pronotum with entire stridulating area concealed (in *luteus* varying from this to having the distal portion of the stridulating area exposed), the deflexed exposed distal portion with a network of veinlets, its margins convex. Prosternum unarmed. Ultimate tergite with a blunt acute-angulate projection which is longer than its basal width present mesad on each side of the median line, (such projections in *luteus* vary from as long as to decidedly shorter than their basal width). Cerci very small, a stout and very slightly tapering shaft with apex oblique to its moderately produced (much less so than in *luteus*) internal angle, which production gradually narrows to the minute terminal tooth. Subgenital plate with a weak medio-longitudinal carina and strong slightly convergent lateral carinae, distal margin rounded sub-rectangulate emarginate. Styles moderately large, cylindrical, three times as long as broad, separated by a distance equal to the length of one of them. Genuiclar lobes of femora unarmed except one of the median internal which bears a single minute spine (see variation in females). Ventral femoral margins armed with very small spines (in the series as follows; cephalic internal 1 to 2, cephalic external 0;

median internal 0, median external 1 to 3; caudal internal 3 to 5; caudal external 3 to 7). Cephalic tibiae with external margin of dorsal surface armed with a proximal, median and distal spine.

*Allotype*.—♀; same data as type. [Hebard Collection.]

Very similar to this sex of *luteus* except that in the dark color phase the pale margins of the paler medio-longitudinal pronotal area are more suddenly constricted mesad (as in the type of *hesperus*). Fastigium damaged (in female paratype very slightly narrower than first antennal joint). Pronotum shorter but otherwise similar to that of male. Tegmina represented by minute rounded lateral pads not projecting caudad of the caudal margin of the pronotum. Ultimate tergite with a somewhat deflexed acute-angulate projection longer than wide on each side of a median impression, these projections smaller but of the same type as in the male and more produced and slender than in females of *luteus*. Ovipositor of moderate length, distad weakly recurved to the acute apex; there with lateral surfaces rugulose, the dorsal valves with a medio-longitudinal carina on sides, the ventral valves with a shorter longitudinal carina dorsad on sides; generally much as in *luteus* (in which species the ovipositor varies individually from elongate to comparatively short). Subgenital plate as in *luteus*; with two elevated lateral carinae produced distad to form rounded quadrate lobes, their inner margins forming a quadrate median emargination; surface of plate between the lateral carinae forming a deep broad longitudinal channel, lateral portions with surfaces concave. Preceding sternite as in *luteus*; with a slightly longitudinal, blunt conical projection mesoproximad. Sternite before that, as in *luteus*, with a large, very bluntly rounded median elevation. These two sternites are unspecialized in the other species of the genus except *schwarzi* Caudell, in which the sternite preceding the subgenital plate is alone specialized.

General coloration brown, maculate with blackish and grayish. Head, a broad medio-longitudinal area on occiput and pronotum, lower portion of pronotal lateral lobes and limbs paler. The broad medio-longitudinal band on pronotum shows decided constriction just caudad of the principal sulcus; it is margined with black, and has dark medio-longitudinal lines which are continued on the abdomen. Face and limbs finely strigate with blackish, a more definite fleck of this dorso-externally at end of inflated portion of caudal femora. These markings are much as in this color phase of *luteus*, except for the more pronounced constriction of the dorsal band. As both *luteus* and *notatus* develop also a distinc-

tive buff color phase with a medio-longitudinal black stripe the most conspicuous marking, we believe that that phase will also be found to occur in *hesperus*.

The measurements of a female paratype, taken near Little Lake, Owens Valley, California, August 6, 1931, by E. R. Tinkham, follow those of the allotype. Length of body ♂ 13.8, ♀ 16.8 and 17.3; length of pronotum ♂ 4.7, ♀ 4.8 and 5.1; caudal width of pronotum ♂ 3.2, ♀ 3.9 and 3.8; exposed length of tegmen ♂ 1.1; length of caudal femur ♂ 11.6, ♀ 13.2 and 15.1; width of caudal femur ♂ 2.6, ♀ 3 and 3.3; length of ovipositor 12 and 14 mm.

***Ateloplus splendidus* new species**

(Pl. II, fig. 3; pl. III, fig. 4.)

This is the largest and handsomest known species of the genus, exceeding *A. schwarzi* Caudell in size and distinctively marked with mars brown, ochraceous buff and light buff. Not only larger but also more robust than *schwarzi*, the greatest differences are shown by the male genitalia, in which closest general agreement is shown to the much smaller and very differently marked *A. notatus* Scudder, (see pl. III, fig. 5).

*Type*.—♂; Barstow, Mojave Desert, California. August 10, 1931. (E. R. Tinkham.) [Hebard Collection, Type No. 1239.]

Size very large and form very robust for the genus. Head full and rounded, the fastigium with dorsal surface moderately concave disto-dorsad, its width distinctly less than that of the first antennal joint. Pronotum very broad, short, evenly convex with lateral lobes shallow and even less deflexed than in the other species of *Ateloplus*; first transverse sulcus fine but decided, median sulcus similar but becoming very weak dorsolaterad; disk with cephalic margin truncate, caudal margin truncate with a trace of broad concavity mesad; lateral lobes with margin rounding broadly caudad with a short and very shallow humeral sinus indicated (obsolete in one paratypic male), convex callosity very extensive but very little raised. Tegmina projecting briefly beyond pronotum, all but caudal portion of stridulating area concealed by disk, deflexed exposed distal portion with a coarse network of veins, its margins convex. Prosternum unarmed. Ultimate tergite as in *luteus*; a small rounded projection (more acute in paratypes) present mesad on caudal margin on each side of a small meso-distal impression. Cerci very small, a cylindrical shaft which tapers very slightly with apex bluntly conical, its inner margin oblique to a small slightly curved tooth which is

directed meso-cephalad.<sup>6</sup> Titillatores of same general type as in *Pediocetes tinkhami* here described, but more divergent, slenderer and armed on outer margin with more numerous small teeth. Subgenital plate as in *notatus* except that the distal emargination is deeper; a very fine medio-longitudinal carina indicated only proximad, but very heavy rounded lateral carinae weakly convergent distad to the sockets of the very small, simple, cylindrical styles, these separated by a space over twice the length of one of them, this interval concave and almost as deep as broad (rounded rectangulate emarginate in one paratype, slightly broader rounded angulate emarginate in the other). Femora with all but external cephalic genicular lobes armed with one or two minute spines (external caudal also unarmed in allotype). Ventral femoral margins armed with spines (in the series) as follows; cephalic internal 2 to 5, cephalic external 0 to 1, median internal 0 to 1, median external 2 to 5, caudal internal 2 to 5, caudal external 3 to 7. Cephalic tibiae with dorsal surface armed with a single disto-external spine.

*Allotype*.—♀; near Coyote Wells, Imperial Valley, California. June 11, 1915. (H. Morrison.) [Hebard Cln.]

Generally similar to male in ambisexual characters, size much larger. Fastigial impression subobsolete. Pronotum even shorter with caudal margin of disk very broadly concave, humeral sinus very shallow but moderately extensive. Tegmina concealed by pronotum, represented by minute circular pads covered by a coarse network of veins. Ultimate tergite with a small meso-distal impressed area flanked by small blunt obtuse-angulate projections. Supra-anal plate triangular with apex convex, slightly wider than long. Ovipositor moderately elongate, almost as long as the comparatively short caudal femur, almost straight but showing very feeble curvature dorsad, base stout; apex with sides rugulose, dorsal valves there showing a subobsolete medio-longitudinal carina and ventral valves with a sharp carina slightly dorsad of a medio-longitudinal line. Subgenital plate moderately large, a medio-longitudinal carina indicated proximad, the apex irregularly rectangulate emarginate. Caudal femora distinctly shorter and stouter than in male.<sup>7</sup>

<sup>6</sup> This is much as figured by Caudell for the male he described as *notatus* from Bill Williams Fork, Arizona, (*Proc. U. S. Nat. Mus.*, xxxii, p. 370, fig. 55). That specimen actually represents a distinct species nearer *splendidus*. Males before us of *notatus* from Jacumba, California, are found to have the cerci of similar type but with apical tooth differently placed (see pl. III, fig. 5).

<sup>7</sup> The less impressed vertex and shorter heavier caudal femora do not appear to have much significance, even sexual, when we consider the large amount of individual variation shown by most species of the Decticinae of which large series are before us.

Head, pronotum and limbs light ochraceous buff heavily washed and maculate with bister as figured. The most conspicuous markings are a medio-longitudinal pair of very fine lines on head and pronotum (this intermittent on pronotum in allotype), continued on the abdomen as paired flecks on each tergite; a postocular pair of very fine lines on head; a broad dorso-lateral longitudinal suffusion on pronotum; subapical suffusions on cephalic and median femora, and a general microscopically tessellate suffusion over dorsal surface of caudal femora. Pronotum with ventral portions of lateral lobes cream color, this including more than half their area in males but decidedly less extensive in female. Tegmina bister, with veins, veinlets and in male the marginal field, cream color. Ovipositor ochraceous tawny with apex chestnut brown.

The measurements of the type precede those of one of the two male paratypes which bear the same data. Length of body ♂ 27.5 and 24.8, ♀ 28; length of pronotum ♂ 8.9 and 8.8, ♀ 8.2; caudal width of pronotum ♂ 7.2 and 6.7,<sup>8</sup> ♀ 6.8; exposed length of tegmen ♂ 3.3 and 3.8; length of caudal femur ♂ 21.2 and 19.4, ♀ 17.8; greatest width of caudal femur ♂ 3.9 and 3.8, ♀ 4.9; length of ovipositor 17.2 mm.

#### IDIOSTATUS Pictet 1888.

After detailed study of the ten valid species involved we find that Rehn and Hebard<sup>9</sup> were incorrect in believing that more than one recognizable genus was represented and, therefore, we now concur with Caudell who in 1907 placed *Cacopteris* Scudder 1894 as a synonym.

Caudell's treatment of *Idiostatus* improperly included *Cacopteris sinuata* Scudder 1899, a synonym of *Eremopedes bilineatus* (Thomas), and also *bilineatus*, a species referable to *Eremopedes* as conclusively shown by the present investigation.

---

<sup>8</sup> This dimension can not always be given definitely as in life. Sometimes, as in the present specimen, the pronotum has been somewhat compressed laterally in drying, while at other times it may be somewhat flattened out.

<sup>9</sup> 1920. Trans. Amer. Ent. Soc., XLVI, p. 251, footnote 17. Moreover, though *californicus* Pictet (a synonym of *hermanni* Thomas) is the genotype of *Idiostatus*, *aequalis* Scudder is the genotype of *Cacopteris* by original designation, and so *inermis* Scudder was improperly designated genotype of *Cacopteris* by Kirby in 1906.



The species of *Idiostatus* show the following characters. Size very large in *hermanii* (Thomas) and *elegans* Caudell, large in *variegatus* (Scudder), *rehni* Caudell and *magnificus* here described, considerably smaller in the other species. Cephalic tibiae with internal margin of dorsal surface armed with two spines in *nevadensis* (Scudder) and *aequalis* (Scudder), armed with one or two spines or unarmed in *hermanii*, unarmed in the others. Male tegmina with a striking spot in the outer apical angles in *nevadensis* and *aequalis*, immaculate there in the other species. Caudal femora with a striking proximal and median dark marking in *callimerus* Rehn and Hebard, there less conspicuously marked in *variegatus*, *magnificus*, *elegans* and *inermis*, (Scudder) more generally mottled or immaculate in the other species. Male ultimate tergite without a conspicuous meso-distal area of soft integument in *nevadensis*, *aequalis*, *callimerus* and *inyo* Rehn and Hebard, such an area conspicuously developed in the other species. Male cerci with a submedian external shoulder, these curving gradually inward to the acute apex in *nevadensis* and *aequalis*; with a distal and medio-internal tooth curved sharply inward (Anabroid) in *inermis*; with an internal tooth in the other species (the form of the cercus and development and position of the tooth different in each). In all species of which the females are known the distal margins of the ovipositor are very minutely but definitely denticulate, this distinguishing them from all other known species of the North American Decticinae. Ovipositor slightly decurved in *rehni* and *hermanii*; straight or slightly recurved in the other species. Apex of male abdomen strikingly marked with shining black in *magnificus*, *elegans* and *inermis*, such marking narrowly and less conspicuously shown in *variegatus* and absent in the other species.

Though subdivision into several genera appears to be unwarranted, the differentiation between many of the species of *Idiostatus* is very great indeed.

**Idiostatus magnificus** new species

(Pl. II, fig. 4; pl. III, fig. 6.)

This beautiful insect is closely related to *I. elegans* Caudell, differing in the smaller (though large) size, shorter limbs, very differently shaped male cerci (with shaft much more slender and inner tooth apical in position) and occiput, pronotum and abdomen more extensively darkened but markings of the caudal

femora less extensive (though considerable variation in the extent of such markings will probably be found to occur in each of these species).

*Type*.—♂; Cedar Peak, Warner Mountains, Modoc County, California. Elevation 8200 feet. August 25, 1922. (J. A. G. Rehn; scrambling about on bare rock fragments with a very few low Hudsonian Zone plants at base of lava pinnacle near summit.) [Hebard Collection, Type No. 1240.]

Size large for the genus, form very robust. Head broad, full, rounded; the fastigium with merest trace of medio-longitudinal sulcation, one and one-third times as wide as proximal antennal joint. Pronotum smooth; disk rounding evenly into the lateral lobes except in the produced caudal portion where distinct though broadly rounded shoulders occur; caudal production brief with caudal margin truncate, very feebly convex; lateral lobes considerably longer than deep, much as in *I. inyo* Rehn and Hebard, shallower than in *I. hermannii* (Thomas) or in Caudell's figure of *elegans*, humeral sinus extremely broad and shallow, subobsolete as in *inyo*, convex callosity obsolete. Tegmina extending beyond pronotum about two-thirds pronotal length, exposed portion reaching almost to stridulating vein, median area meso-caudad in stridulating field rounded quadrate, as broad as long and without veinlets. Prosternum unarmed. Penultimate tergite with soft integument in median section. Ultimate tergite transverse, with a large meso-distal section composed of soft integument and hirsute, the caudal margin rounding into a quadrate median emargination. Cerci stout, shaft slightly narrowest mesad, evenly moderately incurved; distal portion swollen, with a small acute apex and a sharp larger inner spine directed at a right-angle to the shaft and slightly incurved. Subgenital plate broad and ample without a median carina but with sharply rounded lateral carinae weakly convex-convergent to the small style sockets, between which the distal margin is rounded rectangulate emarginate. Styles very small, simple, slightly over twice as long as broad, separated by a distance over four times the length of one of them. Limbs short. Genicular lobes with cephalic of cephalic and median with two minute spines and caudal of median with one minute spine, the others unarmed. Ventral femoral margins armed with very minute spines as follows; cephalic internal 1 and 2, cephalic external 0, median internal 1 and 1, median external 0 and 3, caudal interna 15 and 6, caudal external 4 and 5. Cephalic tibiae with dorsal surface armed on outer margin only with a proximal, median and distal spine.

Generally pinkish buff becoming cinnamon buff dorsad. Post-ocular area and occiput to base of fastigium blackish brown.

Pronotum with large median section of lateral lobes blackish brown, this crossing the disk caudad before the caudal margin and invading the very faintly indicated transverse and medio-longitudinal sutures. Tegmina dorsad bister, laterad cinnamon, with veins conspicuously warm buff. Abdomen with first exposed tergite largely black, succeeding tergites each with several symmetrically arranged black spots which spots are less and less extensive caudad; last three tergites shining black, the first of these with brief proximal areas of cinnamon buff, the penultimate tergite with large soft area and the cerci cinnamon buff. Limbs and ventral surface pinkish buff; femora with blackish flecks, caudal femora with a large black suffusion dorso-proximad, a meso-dorsal fleck of black, an internal pre-genicular blackish streak and apices blackish brown. Tibiae with spines black and flecks of the same at their bases.

Length of body 24.2, length of pronotum 7.2, caudal width of pronotum 5.7, exposed length of tegmen 4.4, length of caudal femur 16, greatest width of caudal femur 3.8 mm.

#### IDIENOTUS Scudder 1900

This genus and the species *brunneus* Scudder were based on a single female from Folsom, California. The material now before us shows that five species occur in California. The first, known only from males, is found at Thrall in northern central Siskiyou County (these males were described as that sex of *brunneus* by Caudell in 1907). The second is known only from females from the lower portions of central California and we believe represents *brunneus*. The third, of which we have both sexes, is found in the Sierras in Mariposa and Tuolumne Counties. A fourth is represented only by an immature male from the Sierras in Fresno County and probably a female from Tulare County. The fifth we have in large series from the Tehachapi Mountains.

The males show extraordinary genitalic specialization, but the females are separable only by much less striking features of difference.

**Idienotus siskiyou** new species

(Pl. III, fig. 7)

1907. *Idienotus brunneus* Caudell (males not of Scudder, 1900), Proc. U. S. Nat. Mus., xxxii, p. 395, fig. 80. [♂; Thrall, California.]

Before it was known that a number of species of this genus occurred in California, it was perfectly logical for Caudell to have supposed that the males here treated represented the yet unknown

male of *brunneus*. We believe that males of that species will, however, show very different genitalic development.

In *siskiyou* the male is smaller and more robust than that sex of *I. tehachapi* here described, with development and organs of flight very similar but with ultimate tergite, cerci, titillators and subgenital plate very different.

*Type*.—♂; Thrall, Siskiyou County, California. July, 28, 1906. (A. N. Caudell.) [Hebard Collection, Type No. 1242.]

Size medium for the genus, form moderately robust. Head deep, width across cheeks proportionately distinctly less than in *tehachapi*; fastigium large, not sulcate, nearly twice width of proximal antennal joint; face microscopically shallowly and moderately impresso-punctulate. Pronotum short, disk flattened convex with lateral carinae percurrent, divergent cephalad from second lateral sulcus and divergent more strongly caudad from that point than in *tehachapi*, sulci very weak, caudal margin truncate; lateral lobes strongly declivent, deep, not as elongate as in *tehachapi*, humeral sinus broad and weak, convex callosity obsolete. Tegmina exposed as far as portions of stridulating vein, rounded, covered by a network of veinlets. Prosternum unarmed. Ultimate tergite produced mesad, with lateral margins broadly convex to a very small rounded median emargination which is preceded by a short fine medio-longitudinal sulcus. Cerci short, with a minute acute apex, internal portion very broadly lamellate with margin convex to a stout proximal tooth directed inward with apex curved cephalad. Titillators (in this specimen) with two adjacent short bluntly pointed apices projecting caudad briefly from an extensive mantle. Subgenital plate very ample, distad with a very fine medio-longitudinal and short broadly rounded lateral carinae, the latter terminating in the style sockets, distal margin rounded rectangulate emarginate. Styles simple, tapering, over three times as long as broad, separated by an interval distinctly greater than the length of one of them. Genicular lobes with the external unarmed, the internal each with a single minute spine except on one of the cephalic femora. Ventral femoral margins armed with minute spines as follows; cephalic internal 2 and 2, caudal external 2 and 0, others unarmed. Cephalic tibiae with dorsal surface armed on outer margin with a proximal, median and distal spine.

General coloration very dull cinnamon buff with numerous microscopic and inconspicuous flecks of dark brown on all but dorsum of head, lateral lobes of pronotum and limbs. Tegmina with very fine and weak mottling laterad. Abdominal tergites with a well spaced series of minute inconspicuous brown flecks

along their caudal margins. Caudal femora with disto-ventral section of enlarged portion extensively weakly darkened (a feature of color pattern apparently appearing in all the species of *Idionotus*).

The measurements of one of two paratypic males in the United States National Museum, which bear the same data as the type, of which Caudell figured the cercus in 1907, follow those of the type. Length of body 16.2 (abdomen retracted) and 20 (abdomen extruded), length of pronotum 6 and 6.2, caudal width of pronotal disk 4.3 and 3.9, exposed length of tegmen 3.6 and 2.3, length of caudal femur 20.5 and 20.6, width of caudal femur 4 and 4 mm.

Caudell discussed this insect at some length, stating that the three males secured were found stridulating in clumps of small oaks. Their song was described as a high pitched trill, the notes one hundred and fifty a minute.

***Idionotus tuolumne*** new species

(Pl. III, figs. 8 and 12)

The male of this species is smaller and more graceful than that of *I. siskiyou* here described, but has the cheeks slightly fuller, pronotal disk narrower, tegmina less extensively exposed and very strikingly different genitalia. In form and pronotal discal outline only it agrees more nearly with *I. tehachapi* here described.

The female closely resembles that sex of *I. brunneus* Scudder (see pl. III, fig. 11) differing mainly in the distinctly weaker mesocephalic constriction of the pronotal disk.

*Type*.—♂; El Portal, Mariposa County, California. Elevation 2000 feet. September 25, 1919. (M. Hebard.) [Hebard Collection, Type No. 1243.]

Size small, form graceful for the genus. Head much as here described for *siskiyou*, but proportionate width across cheeks intermediate between that dimension as found in *siskiyou* and *tehachapi*. Pronotum as described for *siskiyou* but disk proportionately narrower, the lateral carinae less strongly divergent caudad and the humeral sinus even weaker. Tegmina with less area exposed than in *siskiyou* or *tehachapi*; caudal portion of stridulating area visible, covered with a network of veinlets. Ultimate tergite as in *siskiyou* but with median emargination much broader, transverse, with no medio-longitudinal sulcation preceding it. Cerci moderately elongate, directed outward and evenly and quite strongly incurving and tapering to their acute apices, without lateral tooth or lamella. Titillators formed

by a pair of straight, exceedingly slender, adjacent aciculate processes. Subgenital plate less ample than in *siskiyou*, no medio-longitudinal carina present but with weak coarse rounded meso-lateral carinae converging to the style sockets, the distal margin between the latter acute-angulate emarginate and considerably deeper than wide. Styles simple, tapering, (less to more than) three times as long as broad, separated by a distance less than the length of one of them. Internal genicular lobes of median and caudal femora armed with a small spine, others unarmed. Ventro-cephalic margins of cephalic femora with a single minute spine, others unarmed. Cephalic tibiae armed as in *siskiyou*.

*Allotype*.—♀; Yosemite, Mariposa County, California. August 15, 1927. (W. B. Cartwright; in grass.) [U. S. National Museum.]

Size larger and more graceful than a female of *brunneus* before us.<sup>10</sup> Head similar. Pronotal disk proportionately narrower, the lateral carinae less strongly divergent caudad and the constriction meso-cephalad much weaker and broader as in this sex of *tehachapi* here described. Tegmina represented by large, evenly rounded, overlapping pads which project briefly beyond the pronotum. Penultimate tergite with caudal margin bluntly and very weakly obtuse-angulate produced mesad. Ultimate tergite with a median impression into which the supra-anal plate is fused, the lateral angles formed there by the caudal margin making small sharply angulate projections. Cerci as in *brunneus*; small, stout, tapering to the acute apex, distinctly over twice as long as proximal width. Ovipositor as in *brunneus* and as here described for *tehachapi*. Subgenital plate much as in *brunneus*; rather short, with margins curving to become transverse before rounding into a rounded median emargination.

Coloration as described for *siskiyou*, the microscopic brown flecks generally much thicker giving a finely mottled bister general appearance. Carinae of pronotal disk margined on lateral lobes with dark brown, the disto-ventral section of the enlarged portion of the caudal femora shining blackish brown.

The measurements of a paratype male from Sequoia, Tuolumne County, California, at 4452 feet, taken September 4, 1907, in the author's collection, follow those of the type. Length of body ♂ 17.2 and 18, ♀ 19; length of pronotum ♂ 4.8 and 5.2, ♀ 5.9;

<sup>10</sup> From Winters, Yolo County, California, August 6, 1929, (P. W. Oman), in the author's collection, (see pl. III, fig. 11).

caudal width of pronotal disk ♂ 3 and 3.7, ♀ 3.7; exposed length of tegmen ♂ 1.8 and 1.9, ♀ 1.3; length of caudal femur ♂ 16.7 and 17.3, ♀ 24; width of caudal femur 3.2 and 3.6, ♀ 4.1; length of ovipositor 18 mm.

The type was found on a road deeply covered with dust at night, with the aid of an electric torch. The spot was in the zone of oaks.

**Idionotus tehachapi** new species (Pl. II, fig. 5; pl. III, figs. 9 and 10)

The series shows this species to be the largest known of the genus. All the species of *Idionotus* are very similar in general appearance, the present being more slender than the others except *I. tuolumne* here described, the male tegmina projecting more strongly as in *I. siskiyou* here described and the male genitalia of a very different type from either of those species.

Females are much more difficult to distinguish, the present compared with that before us of *I. brunneus* Scudder (recorded in footnote under *tuolumne*) being larger and more slender, the ultimate tergite scarcely produced with margins rounded on each side of a median impression.

The coloration of all the present series is pale, as in the type of *siskiyou*. It is, however, evident that all of the species of *Idionotus* are of very similar coloration and generally heavier microscopic mottling may represent merely individual response to conditions of immediate environment.

*Type*.—♂; Paradise Valley, Tehachapi Mountains, Kern County, California. August 7, 1931. (E. R. Tinkham.) [Hebard Collection, Type No. 1244.]

Size large, form graceful for the genus. Head deep but cheeks considerably inflated, making the meso-ventral width very broad for the genus. Fastigium large, not sulcate, slightly less than twice width of proximal antennal joint. Face microscopically moderately impresso-punctulate. Pronotum as described for *siskiyou*, but like that of *tuolumne*, with disk proportionately narrower, the lateral carinae less strongly diverging caudad and the humeral sinus even weaker. Tegmina as in *siskiyou*. Ultimate tergite with caudal margin weakly but sharply obtuse-angulate produced mesad, this even weaker on preceding tergites (this blunter and very feebly indicated in the other species). Prosternum unarmed. Ultimate tergite not produced mesad, there with a transverse symmetrically trapezoidal impressed area (instead of the emargination found in *tuolumne*, the latero-

caudal apices so formed less acute than in that species). Cerci small, straight, cylindrical but strongly tapering to the apex which is bent inward at slightly more than a rectangle, this conical projection surmounted by a large feebly curved tooth; length of cercus approximately twice its basal width. Titillators springing from a transverse chitinous yoke, represented by two decurved adjacent cylindrical processes, each produced to terminate in a straight elongate spine directed ventrad. Subgenital plate as described for *siskiyou*, but with distal emargination broader and shallower, concave. Styles as in that species, separated by a distance approximately twice the length of one of them. Genicular lobes of femora with a minute spine (very rarely two) but external of cephalic usually and external of caudal often unarmed. Ventral femoral margins (in the series) armed with small spines as follows; cephalic internal 0 to 4 (usually 2), cephalic external 0, median internal 0 to 1 (very rarely), median external 0, caudal internal 1 to 6 (rarely), caudal external 0 to 3. Cephalic tibiae armed dorsad on outer margin with a proximal, median and distal spine.

*Allotype*.—♀; same data as type. [Hebard Collection.]

Very similar generally to the females of the other known species but larger and more elongate; larger with longer limbs than male. Head and pronotum similar to that sex, but the latter proportionately slightly more elongate (shorter than in male in most Decticid genera). Tegmina represented by large, evenly rounded, overlapping pads, which project briefly beyond the pronotum. Dorsal abdominal tergites as described for male, but the projections even weaker. Ultimate tergite with a small median impression to which the supra-anal plate is fused, the lateral angles formed there by the caudal margin rounded and not sharply angulate, in this feature showing strongest difference from *brunneus*.<sup>11</sup> Cerci as in *brunneus*; small, stout proximad, tapering to the acute apex, slightly over twice as long as proximal width. Ovipositor elongate, weakly recurved, margins unarmed, a longitudinal carina present at apex on sides of valves, mesad on the dorsal and dorsad on the ventral valves. Subgenital plate more elongate with distal margins more convergent than in the females of *brunneus* or *tuolumne*, with lateral apices rounded-rectangulate and between a small subrectangulate median emargination.

General coloration dull cinnamon buff, individually varying to more brownish but only slightly darker. Only under the

---

<sup>11</sup> In which the caudal margin of the ultimate tergite is produced in a small node on each side of the median impression.



microscope seen to be minutely, generally and remarkably evenly tessellate with brown, this often concentrating to make the distoventral section of the enlarged portion of the caudal femora solid brown.

A series of twelve male and four female paratypes bear the same data as the type, the extremes measuring as follows. Length of body ♂ 19.5 to 23.5, ♀ 20.8 to 24.5; length of pronotum ♂ 5.8 to 6.1, ♀ 6.2 to 6.5; caudal width of pronotal disk ♂ 4.1 to 4.2, ♀ 3.9 to 4.2; exposed length of tegmen ♂ 3.7 to 4.1, ♀ .7 to 1.3; length of caudal femur ♂ 21.7 to 23.7, ♀ 24 to 24.8; greatest width of caudal femur ♂ 4.1 to 4.7, ♀ 4.8 to 4.8; length of ovipositor 18.7 to 20.2 mm. The series averages nearer the maximum measurements.

#### STEIROXYS Herman 1874

Undoubtedly the most baffling genus of the Decticinae of the United States, we feel that complete revision should still await further material, though extremely large series are now available. At present, however, we can state definitely that the genotype, *trilineatus* (Thomas) occurs through the Rockies (except probably on their western slopes) from southern Alberta to northern<sup>12</sup> Colorado.

We here select the type locality of *S. pallidipalpus* (Thomas) as Copenhagen, Utah. The type was a female and a topotypic series of both sexes secured three miles north of Mantua in the Wasatch Mountains of Utah at 5800 feet by Rehn and Hebard shows that it is probably not the insect which has generally been so referred and that *S. hendersoni* Caudell, described from Dry Lake, Utah, at 5500 feet, is actually a synonym.

Fulton's *strepens* of the mountains of Oregon is apparently a very distinct insect.

---

<sup>12</sup> We have noted that Thomas' original record from "southeastern Colorado" is probably incorrect; *Proc. Acad. Nat. Sci. Phila.*, LXXXI, p. 406, (1929). In 1902 Scudder and Cockerell further quoted a record from northeastern New Mexico as having been published by Thomas which does not exist and is likewise, in our opinion, erroneous.

## EXPLANATION OF PLATES

### PLATE II

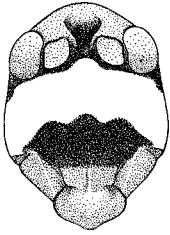
(Figures are enlarged  $\times 2$ )

- Fig. 1.—*Pediodyctes tinkhami* new species. Cephalic view of head. *Type*, male. Chinati Mountains, Texas.
- Fig. 2.—*Eremopedes covilleae* new species. Lateral view. *Type*, male. Twenty miles north of Chisos Mountains, Texas.
- Fig. 3.—*Ateloplus splendidus* new species. Lateral view. *Type*, male. Barstow, California.
- Fig. 4.—*Idiostatus magnificus* new species. Lateral view. *Type*, male. Cedar Peak, Warner Mountains, California.
- Fig. 5.—*Idionotus tehachapi* new species. Lateral view. *Type*, male. Paradise Valley, Tehachapi Mountains, California.

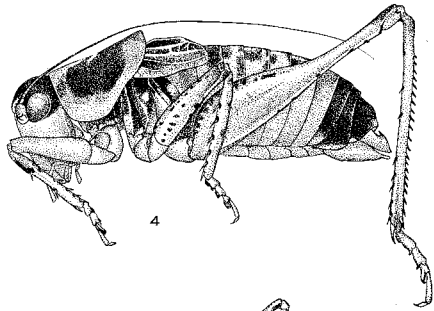
### PLATE III

(Figures all much enlarged.)

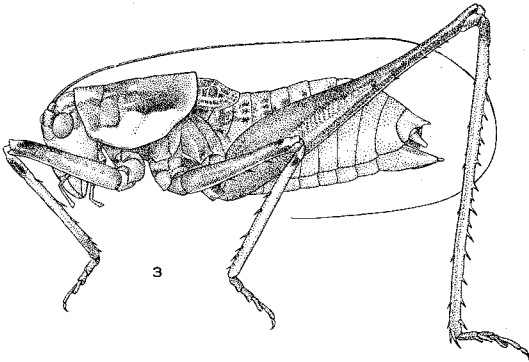
- Fig. 1.—*Pediodyctes tinkhami* new species. Dorsal view of distal portion of supra-anal plate and of the cerci. *Type*, male. Chinati Mountains, Texas.
- Fig. 2.—*Pediodyctes tinkhami* new species. Lateral outline of ovipositor. *Allotype*, female. Chinati Mountains, Texas.
- Fig. 3.—*Eremopedes covilleae* new species. Dorsal view of distal portion of supra-anal plate and of the cerci. *Type*, male. Twenty miles north of Chisos Mountains, Texas.
- Fig. 4.—*Ateloplus splendidus* new species. Dorsal view of distal portion of supra-anal plate and of the cerci. *Type*, male. Barstow, California.
- Fig. 5.—*Ateloplus notatus* Scudder. Dorsal view of distal portion of supra-anal plate and of the cerci. Male. Near Jacumba, California.
- Fig. 6.—*Idiostatus magnificus* new species. Dorsal view of distal portion of supra-anal plate and of the cerci. *Type*, male. Cedar Peak, Warner Mountains, California.
- Fig. 7.—*Idionotus siskiyou* new species. Dorsal view of distal portion of supra-anal plate and of the cerci. *Type*, male. Thrall, California.
- Fig. 8.—*Idionotus tuolumne* new species. Dorsal view of distal portion of supra-anal plate and of the cerci. *Type*, male. El Portal, California.
- Fig. 9.—*Idionotus tehachapi* new species. Dorsal view of distal portion of supra-anal plate and of the cerci. *Type*, male. Paradise Valley, Tehachapi Mountains, California.
- Fig. 10.—*Idionotus tehachapi* new species. Ventral view of subgenital plate. *Allotype*, female. Paradise valley, Tehachapi Mountains, California.
- Fig. 11.—*Idionotus brunneus* Scudder. Ventral view of subgenital plate. Female. Winters, California.
- Fig. 12.—*Idionotus tuolumne* new species. Ventral view of subgenital plate. *Allotype*, female. Yosemite, California.



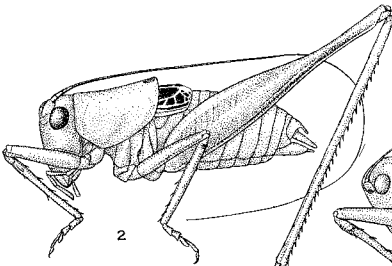
1



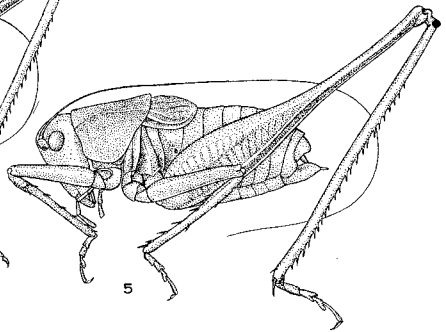
4



3

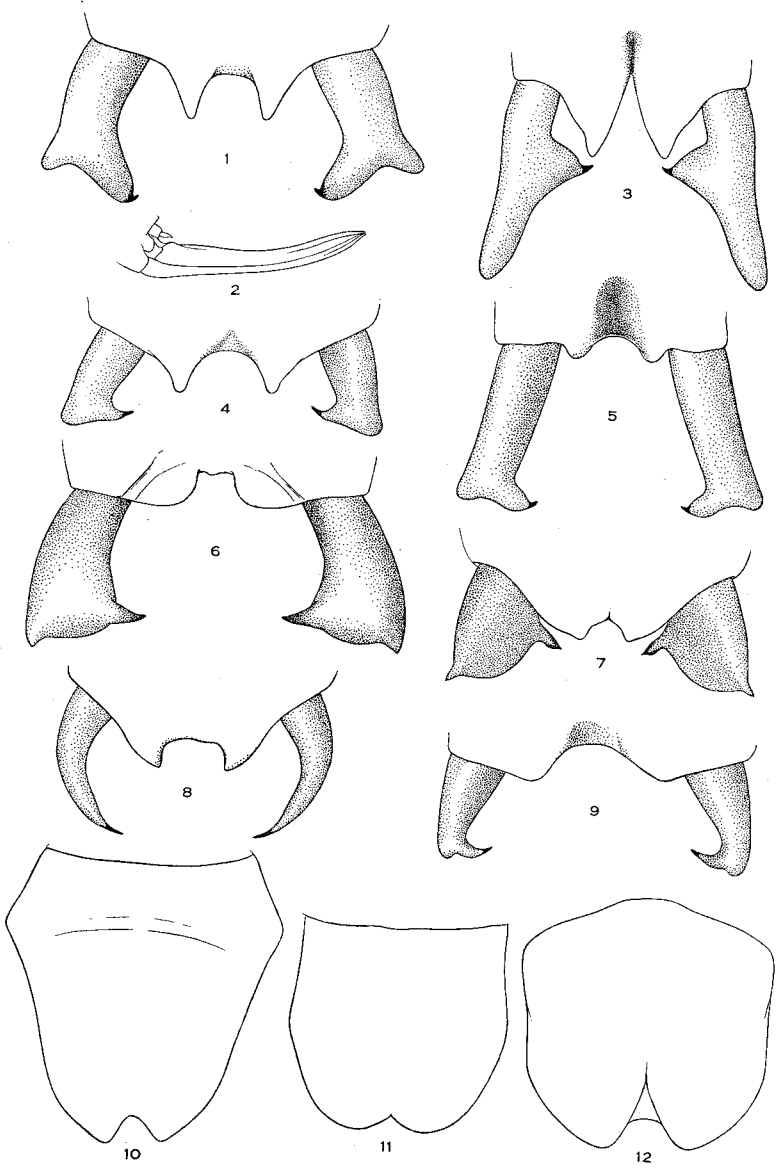


2



5

HEBARD—NORTH AMERICAN ORTHOPTERA



HEBARD—NORTH AMERICAN ORTHOPTERA