

MISCELLANEOUS STUDIES IN THE COLEOPTERA,
NO. 5¹

(TENEBRIONIDAE AND MELYRIDAE)

BY FRANK E. BLAISDELL, SR.

*Stanford Medical School and Associate in Research,
California Academy of Sciences, San Francisco, California.*

Recently it has been the author's good fortune, to have had the opportunity to study large series of *Eleodes*, from several geographical regions that yield species of great interest to the entomologist. I refer particularly to the Huachuca, Chiricahua and Graham Mountains of Arizona. The material necessitated the creation of two new subgenera of *Eleodes* as defined below, one of which was fore-shadowed in my Monograph of the *Eleodiini*.² A number of the Mexican species will have to be referred to these new subgenera.

I am indebted to the State Natural History Survey Division of Urbana, Illinois and, Herbert H. Ross, Systematic Entomologist, who submitted the material for study and determination. To the Oklahoma Agricultural and Mechanical College, Stillwater, Oklahoma and, John Standish of the Entomological Department, for the privilege of studying an interesting collection. Finally, a mass of most alluring specimens was received from the Entomological Museum of the University of Kansas, at Lawrence; Milton W. Sanderson negotiating the loan. In addition to the above, Mr. Owen Bryant, of Tucson, Arizona, submitted an abundance of valuable material for identification. Credit for the Melyridae described below will be given in the text. Paratypes of a number of the new forms described are deposited in the collection of the American Entomological Society.

¹ No. 1. *Can. Ent.*, LIII, pp. 129-132, (June, 1921). No. 2. *Pan-Pacif. Ent.*, III, pp. 163-168, (April, 1927). No. 3. *Pan-Pacif. Ent.*, VI, pp. 21-25, (July, 1929). No. 4. *Pan-Pacif.*, VI, pp. 57-62, (Oct., 1929).

² *Bul. 63 of the U. S. Nat. Museum.*

Tribe ELEODINI

Eleodes acuta Say subsp. **pernigra** new subspecies

Differential characters.—From *obscura* Say it is separated by the elytra being quite suddenly inflexed laterally and therefore very narrowly rounded at the sides, the margins acute at the humeri. From *suturalis* Say it is recognized by the pronotal disk being convex and not reflexed laterally.

Salient type characters.—Form of *acuta* Say, color deep black, without the reddish sutural area; surface more or less shining and smoother. The elytra of both sexes are usually more convex, especially in the female where the sides are more rounded. In both sexes the elytral striae are more finely punctate and the intervals obsoletely punctulate.

Male: In *pernigra* the form is narrower and more parallel, the abdomen is somewhat oblique to the horizontal plane of the sterna as in *acuta* Say; the elytral margins are more acute and the disk less convex.

Female: Larger, body less parallel and the sides more arcuate; elytra somewhat inflated and therefore more convex, lateral margins less acute to rounded. Abdomen horizontal, evenly and strongly convex.

Measurements.—(Types) Length 30 mm.; width 13 to 14 mm.

Holotype.—Female; Katherine, Texas; December 3, 1911; [Colln. State Natural History Survey Division, Urbana, Illinois].

Allotype.—Male; Sarita, Texas; December 4, 1911; [Deposited as above].

Paratypes.—4 ♂, 5 ♀; with same data. Distributed: Colln. State Natural Survey Division of Illinois, 6; Colln. of the author, 1 ♂, 1 ♀; Colln. American Entomological Society, 1 ♂.

Subgenus **ARPELEODES** new subgenus

The subgenera of the genus *Eleodes* are based chiefly on the primary genital characters, especially those of the female. In *Ardeleodes* these are therefore essential, along with the more or less depressed subovate form and more or less developed tarsal pubescent tufts or pads.

Form moderately elongate oblong-ovate, more or less depressed and subalbatoid in facies. Color black to piceous; luster dull to more or less shining. Protarsi and mesotarsi with tufts or pads of yellowish pubescence on the apices of the segments beneath, varying in the species. The tufts vary in a definite manner on the same tarsus, those of the first and second segments usually larger and entire obliterating the plantar grooves; those of the following segments are smaller and more or less divided on the

median line, leaving the plantar grooves more or less entire. On the mesotarsi the tufts are smaller, similar and confined to the apex of the segments, or reduced in number, the tuft of the first segment is always evident. Tufts not flat and varying in compactness. The segments bearing tufts are more or less thickened at apex beneath.

In the female the first segment of the protarsi and mesotarsi may be more or less thickened at apex beneath, a small tuft may or may not be evident; the marginal and apical spinules may be yellowish or blackish and the plantar grooves entire.

Profemora mutic and more or less sinuate at apex beneath; protibiae and mesotibiae more or less constricted at base. Protibial spurs similar in the sexes.

Genital characters.—Male: Edeagophore of the usual oblong-ovate depressed form. Female: Genital segment elongately triangulo-parabolic in outline. For the fuller discussion of the primary genital characters of the genotype, see the author's Monograph of the Eleodiini.³

GENOTYPE: *Eleodes (Blapyllis) tibialis* Blaisdell.

Genotype locality.—Baja California, Mexico.

Eleodes (Ardeleodes) tibialis Blaisdell

Diagnostic characters.—In the above mentioned Monograph, p. 316, it is stated as follows: "*Tibialis* is a unique and very distinct species in the United States fauna. It could not be recognized among the Mexican species given in the *Biologia*. Although aberrant it will have to constitute a group in the subgenus *Blapyllis*, until more material can be studied; it is not far out of place, as the first joint of the protarsi is clothed with yellow pubescence beneath and the genital characters are more in harmony here than elsewhere. It differs from all other species in its elongate, depressed and subnyctobatoid form; the protibiae are constricted at base in the typical form, but not in the oblong form." *Ardeleodes* is to be placed after *Blapyllis* in our lists.

Subgenus **STENELEODES** Blaisdell

Eleodes (Steneleodes) ornatipennis new species

Ornatipennis is a very unique departure from the entirely black color of all the other species. It should follow *longicollis* Lec. in our lists. The tufts of grayish setiform hairs at apices of the first two protarsal segments is quite unusual in the subgenus

³ Bul. 63, U. S. Nat. Mus., p. 315, 1909.

Steneleodes. The sharply defined bright red vitta on the suture cannot be due to immaturity as specimens fully chitinized and of deep black color have been seen; some specimens do show evidences of immaturity as in certain other species. The vitta in *ornatipennis* is without doubt the analogue of the diffuse redness observed in other species, but here the redness has become fixed and sharply defined. In all specimens that have the vitta it is entire and without evidence of diffuseness. It is true that the closely related *longicollis* sometimes shows diffuse redness along the suture, but there are also other evidences of general immaturity, especially in dead specimens blown about by the winds in arid regions; similar specimens have been seen of *militaris* Horn, collected in Lower California, Mexico.

I am indebted to the National Museum for the opportunity of studying and describing the allotype. The holotype has been in the author's collection for many years. The paratypes were a loan for study from the Museum of the university of Kansas.

The species in which the diffuse redness occurs in the sutural area of fully chitinized specimens are the following: *Eleodes acuta* Say, *suturalis* Say, *hispilabris* Say and *obsoleta* Say, and in which it varies in all degrees.

Form elongate, subfusiform (nearly as in *longicollis* LeConte) to ovate, about three and one-third times as long as wide. Color black, except a red vitta on the suture extending from the elytral base to apex and not involving the scutellum. Vitta at base is equal in width to the middle two-fourths of the pronotal base; its sides are straight, sharply defined and gradually convergent to the elytral apex. Fifth ventral abdominal segment more or less reddish, even in fully matured specimens; sometimes the fourth segment in less matured individuals. Surface smooth and polished, minutely and sparsely punctured.

Head relatively small, widest across the tempora and twice as wide as long before the post-ocular line; gradually narrowed behind the tempora, the latter noticeably more prominent than the eyes and distinctly more so than sides of the front; frontal suture distinct but not sharply marked, the oblique feeble; sides before the eyes rather broadly arcuate and moderately convergent, thence broadly sinuate with sides of the epistoma, the latter subtruncate at apex, the angles narrowly rounded. Frons slightly convex, very feebly impressed within the very slightly convex supra-antennal convexities, the latter impressed adjacent to the eyes, which are narrowly reniform and comparatively small, nearly flat and the facets very feebly convex; surface rather sparsely and irregularly punctate, punctures shallow

and not well defined, stronger and denser at the sides, where each bears a black and anteriorly directed seta. Antennae moderately long, extending to the pronotal base, slender; segments eight to eleven inclusive slightly wider, three to seven inclusive quite equal in width; second segment small and subannular, as long as wide; third elongate and very feebly obconical, four times as long as the second and equal to the fourth and fifth combined; fourth obconical and about twice as long as wide; segments five to seven inclusive equal in length, subconical and not quite twice as long as wide; eight to eleven inclusive slightly compressed, eighth triangular in outline and about as long as wide; ninth and tenth irregularly oval, slightly wider than long; eleventh short obovate, quite as long as wide and slightly oblique at apex.

Pronotum subquadrate a little wider than long, widest a little before the middle; apex truncate to slightly emarginate, angles distinct viewed from above and not in the least prominent; sides feebly arcuate, marginal bead fine; base broadly and moderately arcuate, angles well rounded, about one-eighth wider than apex, the latter about one-third wider than the head; disk strongly and arcuately convex from side to side, finely, sparsely and subobsoletely punctulate.

Elytra a little more than twice as long as wide and a little more than three times as long as the pronotum; base scarcely wider than the pronotal base, humeral angles sharply angulate but not prominent; sides broadly arcuate, converging in apical one-third to the narrowly rounded apex. Disk convex to somewhat flattened, strongly arcuate and declivous laterally with moderate inflexion; surface slightly alutaceous, sparsely punctate, punctures small and more or less feeble.

Abdomen sparsely punctate, punctures small and irregular, surface obsoletely rugulose. Legs moderately long, tarsi moderate in length and slenderness. Metatarsi about two-thirds as long as their tibiae. Femora not inflated, tibiae at times slightly arcuate.

Male: Narrower and subfusiform. Elytra widest at middle, less convex or not. Protarsi with apical tufts of moderately long setiform hairs at apex beneath which are grayish or blackish in color, closing the plantar grooves on segments one and two, which are thickened at apex beneath. Abdomen feebly convex and somewhat impressed along middle third on first three segments.

Female: Somewhat fusiform-ovate. Elytra widest at or slightly behind the middle and more or less convex. Abdomen moderately convex. Plantar grooves entire, except slightly obstructed at apex of segments one and two, by a tuft of longer spinules, narrowly divided on the median line.

Measurements.—(Types) Length 22 to 27 mm.; width 8 to 8.5 mm.

Holotype.—Female; New Mexico; (F. H. Snow); [Author's collection, Museum of the California Academy of Sciences, no. 4328]. Obtained by exchange in the 1980's.

Allotype.—Male; near the Papagochic River, Guerrero, Chiricahua, Mexico; (W. F. Foshag; 1934); [U. S. National Museum, Washington].

Paratype.—Two ♀; same data as holotype; [University of Kansas].

Subgenus **HOLELEODES** new subgenus

The species of *Holeleodes* are distinguished from those of the Subgenus *Steneleodes*, by the presence of well developed pads or tufts of pubescence on the under surface of the protarsi and mesotarsi. The primary genital characters indicate that *Holeleodes* should follow *Steneleodes* in our lists.

Form elongate subfusiform to subovate, facies resembling that of a small *Eleodes* (*Steneleodes*) *longicollis* LeConte. Elytra somewhat depressed to moderately convex. Color black, surface more or less polished, punctuation fine, not muricate. Profemora mutic, briefly sinuate beneath at apex.

Protarsi and mesotarsi of the male with three or four segments thickened at apex beneath and clothed with tufts of golden or fulvous pubescence; the tufts truncate and flat or with the hairs longer and less compact, more or less completely obliterating the plantar grooves. In the female the first two segments of the protarsi are less thickened beneath at apex and with apical tufts of yellowish or black spinules, obliterating the grooves. Primary genital characters show relationship with *Steneleodes*, which it should follow in our lists.

GENOTYPE: *Eleodes beameri* Blaisdell new species.

Genotype localities.—Huachuca and Chiricahua Mountains, Arizona.

***Eleodes* (*Holeleodes*) *beameri* new species**

Form elongate, subfusiform to subovate, facies of a small *longicollis* LeConte or a *gentilis* LeConte, a little more than three times as long as wide. Color deep black, faintly alutaceous; surface smooth and not in the least muricate.

Head relatively somewhat large, about twice as wide as long before the post-ocular line, equally wide across the tempora and sides of the front, eyes slightly less prominent; sides arcuately convergent anteriorly, broadly and feebly emarginate across the position of the oblique sutures; epistomal apex broadly and slightly emarginate, angles rounded. Frons feebly convex to plane, impressions and sutures obsolescent, rather sparsely punctate, punctures small and shallow.

Antennae moderately long, attaining the base of the pronotum when the head is retracted to the tempora, moderately slender and similar in the

sexes; last or distal four segments slightly compressed and a little wider than the preceding segments; second segment annular, nearly as long as wide; third elongate, quite cylindrical, three and one-half times as long as the second and at apex as wide as the fourth to the sixth inclusive, these being one-third longer than wide; seventh conico-triangular, as long as the sixth and about one-fourth wider; segments eight, nine and ten equal in length exclusive of the condyles, eighth triangular, as long as wide and one-fourth wider than the seventh; segments nine and ten spherical, equal in length and width, one-sixth wider than the eighth; eleventh short sub-conico-spherical, subacute at apex and as long as wide, about one-third longer than and equal in width to the tenth.

Pronotum subquadrate, a little wider than long, widest at middle and about one-sixth wider than the head; apex truncato-emarginate, angles narrowly rounded and not at all prominent; sides broadly arcuate in middle third, less so and slightly convergent anteriorly, straighter, convergent and rather feebly and broadly sinuate posteriorly to the obtuse angles, the latter not prominent; base broadly and not strongly arcuate, slightly wider than the apex, marginal bead rather wide and flat; disk evenly convex and noticeably declivous laterally, very minutely, sparsely and evenly punctate.

Elytra about twice as long as wide, two and one-fourth times as long as the pronotum; base scarcely wider than the pronotal base, humeri blunt and not in the least prominent; sides broadly and moderately arcuate, less so in apical fourth and convergent to the rather narrowly rounded apex. Disk less than moderately convex in the central area, laterally strongly and arcuately declivous with moderate inflexion; gradually and arcuately declivous in apical one-fourth; punctures very small, sparse, shallow and evenly placed throughout. Scutellum transverse, short and evenly arcuate at apex.

Abdomen finely, sparsely and evenly punctulate, feebly and loosely creased. First segment behind the coxae equal in length to the fifth and a little shorter than the second; on the median line about one-seventh of its length longer than the combined lengths of the third and fourth segments; third about one-fifth longer than the fourth. Legs moderate in length and rather slender.

Male: Narrower. Elytra more or less depressed to moderately convex. Abdomen moderately convex, flattened on middle third of first three segments. First four segments of the protarsi with flat dense pubescent pads, fulvous in color on apical two-thirds beneath and gradually diminishing in size from the first; plantar grooves absent on the first segment, poorly defined in basal third on the second, third and fourth, distinct on the fifth. Mesotarsi with similar but smaller pads on apical one-half of first three segments; plantar grooves distinct in basal one-half of second and third segments, obliterated on the first and distinct and entire on fourth and fifth segments.

Female: Broader. Elytra more convex, widest at or just behind the middle, somewhat inflated. Abdomen moderately convex. First three segments of the protarsi with apical tufts, black or slightly fulvous at apex and the plantar grooves absent. On the mesotarsi the apical tufts are more or less divided and the plantar grooves open.

Measurements.—(Types) Length 18 to 20 mm.; width 7 to 9 mm.

Holotype.—Male; Huachuca Mountains, Arizona; (P. A. Readio); [Colln. University of Kansas].

Allotype.—Female; Chiricahua Mountains, Arizona; July 8, 1932; (R. H. Beamer); [Colln. Univ. of Kansas].

Paratypes.—6 ♂, 3 ♀; with same data. Distributed: author's collection, 2 ♂; Colln. American Entomological Society 2 ♂; Colln. University of Kansas, 5.

With *beameri* in the subgenus *Holeleodes* also belong *bryanti*, *palmerleensis* and other species in Mexico.

Eleodes (Holeleodes) bryanti new species

Bryanti differs distinctly from *beameri* in the character of the pubescent pads or tufts of the protarsi and mesotarsi. In *beameri* the pubescence of the pads is shorter and the apical surface is flat or truncate; in *bryanti* the tufts are less compact, the hairs longer, the surfaces not truncate but formed by the irregular grouping of the hairs. In *beameri* the pronotal sides are most strongly arcuate in middle third, thence less arcuate and convergent to apex; posteriorly the sides are nearly straight and broadly, feebly sinuate to the basal angles.

It is very probable that the following Mexican species are to be associated with *beameri*: *Forreri* Champion, *laevigata* Solier, *solieri* Champion, *tenebricosa* Gemm. and *hepburni* Champion?

Form elongate subfusiform to subovate, about two and one-half times as long as wide. Color deep black, surface smooth, polished and not in the least muricate, punctures small, sparse and simple.

Head slightly widest across the oculo-temporal junction, slightly more than twice as wide as long before the postocular line; sides before the eyes arcuate and moderately convergent to the oblique sutures, being broadly emarginate with the straight and convergent sides of the epistoma; apex of the latter broadly and slightly emarginate, angles well rounded; labrum briefly and rather deeply emarginate at middle of apex, thence with the sides strongly arcuate; frons quite plane, broadly and feebly impressed

within the slightly convex supra-antennal convexities, punctures of the central area small and sparse, a little larger and less sparse laterally and on the epistoma, oblique sutures more or less evident, the frontal feeble to obsolescent; tempora and sides of occiput gradually convergent posteriorly. Antennae moderate in length, attaining the pronotal base, slender, distal four segments slightly wider than the preceding and feebly compressed; segments five to seven inclusive equal in width and length, about two-fifths longer than wide and somewhat obconico-cylindrical, fourth rather cylindrical and twice as long as wide; first segment stout, second annular, short and as long as wide; third elongate, very feebly obconical, four and one-half times as long as the second and twice as long as the fourth; eighth subspherical and a little longer than wide, ninth and tenth spherical, as long as wide; eleventh irregularly oval, little longer than wide and somewhat obliquely truncate at apex.

Pronotum about one-sixth wider than long, widest at middle; base quite equal in width to the length and a little wider than the apex, the latter about one-fourth wider than the head, arcuato-truncate and slightly sinuate within the angles, the latter obtuse and not in the least prominent; sides broadly and somewhat strongly arcuate, slightly less so posteriorly and feebly sinuate before the distinct and obtuse angles; base very broadly and less than moderately arcuate, marginal bead rather wide and flat; disk rather strongly and evenly convex, finely, sparsely and evenly punctate.

Elytra about a little less than twice as long as wide and almost three times as long as the pronotum; base feebly emarginate, scarcely wider than the pronotal base, humeri obtuse and not in the least prominent; sides broadly arcuate, more convergent in apical fourth to the rather narrowly rounded apex. Disk more or less convex, varying in the sexes, strongly arcuate and declivous laterally and rather rapidly inflexed; arcuately and somewhat gradually declivous in apical fourth; surface finely, sparsely and rather evenly punctate, microscopically granulate and with fine and obsolescent creases.

Abdomen finely and sparsely punctate. First segment on the median line quite equal in length to that of the fourth and fifth combined, behind the coxae equal in length to the third, the latter equal to the fifth and one-fourth longer than the fourth. Legs rather more than moderate in length and moderate in stoutness. Metatibiae about one-seventh shorter than their femur. Metatarsi two-thirds as long as their tibiae; first segment as long as the fourth and equal to the combined lengths of the second and third, the latter equal to each other. Protarsi and mesotarsi with golden-yellow pubescent tufts beneath.

Male: Form narrower and somewhat fusiform. Elytra more or less noticeably depressed to moderately convex, widest at middle. Abdomen less convex and more or less impressed in middle third of first three segments. First four segments of the protarsi with golden-yellow pubescent tufts beneath, the hairs are longer than in *beameri* and not truncate at apex; the segments are short, thickened beneath and the plantar grooves

obliterated, groove of the fifth segment normal; tuft more apical on each fourth segment and more or less divided on the median line. Tufts of the first three segments of the mesotarsi at apical one-half; those of the third and fourth segments are divided on the median line, with the plantar grooves distinct; groove of the fifth segment normal; tufts smaller and looser than on the protarsi.

Female: Form wider and more ovate. Elytra more strongly convex, slightly inflated at times, usually widest just behind the middle. Abdomen moderately convex. Protarsal segments one and two with small apical tuft of blackish or yellowish spinules or coarse hairs, closing the plantar grooves; the apical tufts of the third and fourth segments are blackish, divided and the grooves not obliterated, those of the fifth segment normal. The plantar grooves of the mesotarsi are distinct, although the first groove may be closed at apex by blackish spinules.

Measurements.—(Types) Length 20 to 23 mm.; width 8 to 9 mm.

Holotype.—Female; Graham Mountains, Arizona; August 12, 1933; (Owen Bryant); [Author's collection, Cal. Acad. Sci., no. 4329].

Allotype.—Male; with same locality; July 26, 1923; (Frank H. Parker); [Author's colln., Cal. Acad. Sci., no. 4330].

Paratypes.—3 ♂, 4 ♀; with same data. Distributed: Author's collection, 1 ♂, 1 ♀; Colln. American Entomological Society, 1 ♂, 1 ♀; Colln. Mr. Bryant, 1 ♂, 2 ♀.

Eleodes (Holeleodes) palmerleensis new species

This species has thicker integuments than either *beameri* or *bryanti*. The genital segment of the holotype is exposed and shows that the subgenus *Holeleodes* is related to *Steneleodes*. The types have been in the author's collection for about twenty-five years, waiting for others to be found and definitely settle the question of relationship.

Form elongate suboblong-oval to elongate subovate, about three times as long as wide. Color deep black. Surface smooth, finely alutaceous, body not in the least muricate. Luster shining to somewhat dull. Protarsi and mesotarsi with tufts of fulvous hairs beneath.

Head subequally widest across the temporo-ocular junction and sides of the frons, twice as wide as long before the post-ocular line, labrum not included; sides before the eyes moderately arcuate and converging to the position of the oblique sutures, there broadly and feebly emarginate with the straight and converging sides of the epistoma; the latter broadly and rather feebly emarginate at apex, the angles slightly obtuse; labrum briefly

and rather deeply emarginate at middle of apex, thence with the sides almost semi-circularly arcuate to base. Frons slightly convex, broadly and feebly impressed within the less than moderately convex supra-antennal convexities, oblique and frontal sutures fine and more or less evident; surface finely, irregularly punctate, punctures separated by a distance equal to one or twice their diameter, gradually larger and denser laterally and on the epistoma. Antennae moderate in length, about attaining the pronotal base, slightly stouter than in *beameri*; segments eight to eleven inclusive moderately compressed and slightly wider than the preceding; four to seven inclusive subequal in length and width, one-half longer than wide and subobconico-suboval in outline; second segment short, as long as wide, annular; third elongate, about three times as long as wide and four times as long as the second; eighth triangulo-subspherical and slightly larger than the seventh, ninth spherical and slightly wider than long, tenth slightly transverse and feebly, irregularly subovate, equal in width to the ninth; eleventh short obovate, a little longer than wide and subtruncate at apex.

Pronotum subquadrate, widest just in advance of the middle, apex truncato-emarginate, margin beaded, angles narrowly obtuse and not prominent; sides broadly arcuate in anterior two-thirds, more convergent and straighter toward base and slightly, broadly subsinuate, marginal bead fine; base truncato-arcuate, angles moderately rounded; basal bead broad and flat, obsolete in about middle third. Disk strongly convex from side to side, marginal bead not visible from above, very finely and sparsely punctate.

Elytra about twice as long as wide, two and one-half times as long as the pronotum; base feebly emarginate, not wider than the pronotal base to which it is adapted, humeri obsolete; sides broadly and less than moderately arcuate to the rather narrowly rounded apex. Disk less than moderately convex, strongly arcuate and declivous laterally with moderate inflexion; evenly and arcuately declivous in apical third; surface very finely and somewhat sparsely punctate, obsoletely and irregularly creased.

Abdomen finely and sparsely punctate. Legs moderate in length and stoutness; profemora distinctly sinuate beneath in about fourth; protibiae cylindrically constricted in basal sixth, thence rather abruptly parallel to apex. First segment on the median line a little longer than the combined lengths of second and third; behind the coxae equal to the length of the third and one-fourth longer than the fourth; second about one-fourth longer than the fifth. Each metatibia one-third of its length shorter than its femur. Metatarsi two-thirds as long as their tibia; first and fourth segments equal in length, second and third combined not quite as long as the fourth; second one-third longer than the third.

Male: Narrower in form. Elytra at middle scarcely wider than the pronotum. Legs somewhat stouter, profemoral apical sinuation stronger, thence more abruptly widened and almost subdentate; basal constriction of the protibiae as in the female. Protarsal segments one to three inclu-

sive distinctly thickened at apex beneath; pubescent tufts rather loose and a little longer, obliterating the plantar grooves; tuft of the fourth segment divided on the median line, groove short but evident; groove of the fifth entire. Segments of the mesotarsi less thickened beneath; tuft of first segment entire, those of the second, third and fourth segments apical, smaller and divided on the median line, grooves distinct. Abdomen moderately convex and flattened in middle third of first three segments.

Female: Larger and stouter. Elytra widest behind the middle and distinctly wider than the pronotum; sides more strongly arcuate. Abdomen more convex and horizontal. Legs less stout, especially the anterior and the tarsi more slender; profemoral apical sinuation less strong and the protibial basal constriction as in the male. First two segments of the protarsi more or less thickened at apex beneath and with tufts of spinules obliterating the grooves; on segments three and four the apical spinules are divided on the median line and the grooves normal. Mesotarsal grooves and apical spinules normal.

Measurements.—(Types) Length 21 to 24 mm.; width 7 to 8.5 mm.

Holotype.—Female; near Palmerlee, Arizona: (Mr. Harry Wenzel, Sr.), [Author's collection, California Academy of Sciences; no. 4331].

No paratypes.

Allotype.—Male; with same data; [Col. Acad. Sci., Author's colln.; no. 4332].

MELYRIDAE

Eudasytes sinuatus new species

Sinuatus can be quickly recognized from all the other members of the genus, by the sinuate sides of the pronotum behind the apical angles; the epipleurae are horizontal and the inner margins are distinct to the elytral apex.

Male: Form oblong-oval, about two and one-fifth times as long as wide. Color black; femora rufo-testaceous, tibiae, tarsi and antennae dark rufo-testaceous to slightly suffused with piceous. Luster more or less shining, elytra least so. Pubescence pale, moderate in length, not coarse, moderately dense but not obscuring the surface, somewhat less abundant on the pronotum; on the ventral surface finer and appressed, most noticeable on the apices of the segments; elytra with sparsely placed, nearly erect pale setiform hairs, those of the pronotum darker, finer, shorter and inconspicuous.

Head relatively small, widest across the eyes, about two-fifths wider than long before the post-ocular line; frons moderately convex, vertex strongly so, finely and rather densely punctate; articulating membrane and labrum dark, the latter relatively small. Eyes large and prominent, somewhat oval,

facets small, slightly convex and numerous. Antennae stout, in length equal to that of the pronotum, segments largest beyond the third, very gradually and slightly increasing in width; segments four to ten inclusive equal in length and obtusely prominent anteriorly; fourth, sixth and seventh about equal in width; fifth, eighth and ninth gradually a little wider than long, tenth widest; eleventh oval, a little more than one-half longer than wide and not as wide as the tenth; segment three obconical and two and one-half times as long as wide at apex; second stouter, obconical and a little longer than wide, first suboval and rather robust.

Pronotum about one-fourth wider than long, base and apex quite equal in width, the latter truncato-arcuate, marginal bead not strong, angles large and prominent antero-laterally, rather broad and evenly rounded; sides rather strongly sinuate behind the angles, thence broadly arcuate, becoming more or less distinctly sinuate before the base, margin irregularly subserrulate; basal angles almost right, moderately prominent and subacute; base moderately arcuate in middle two-fourths, becoming broadly and feebly sinuate laterally, marginal bead distinct. Disk moderately and evenly convex, impressed at the angles, especially the apical, lateral submarginal impression linear, bead not strong; punctures rather sharply defined, a little larger than on the frons, separated in the central area by a distance equal to two or three times their diameter, a little larger laterally and slightly denser.

Elytra widest across the rather large and well rounded humeri, about one-half longer than wide and a little more than twice as long as the pronotum; base broadly emarginate; sides parallel, straight and a little convergent to apical fourth, thence gradually and evenly arcuate to the obtusely rounded sutural angles, apices dehiscent at the suture. Disk somewhat flat and slightly convex, feebly impressed within the rather large humeral umbones; sides arcuately declivous to the rather narrow and flat margins, which are distinctly finely serrulate throughout to the apex. The tumid humeri cause the declivous sides to appear broadly sinuate in the middle two-fourths of the elytral length, the margin being visible from above. Punctuation rather dense, punctures small and the surface somewhat finely and transversely rugulose. Scutellum subquadrate, apex slightly arcuate and feebly impressed opposite the elytral suture.

Abdomen moderately convex, finely and densely punctate; fifth ventral segment truncato-sinuate at apex. Legs moderately short and somewhat slender; metatibiae equal in length to the metafemora; metatarsi nearly three-fourths as long as their tibia.

Measurements.—(Type) Length 3.5 mm.; width 1.8 mm.

Holotype.—Male; Yermo, San Bernardino County, California; May 28, 1935; (Otis); [Author's collection, Cal. Acad. Sci., no. 4333].

Paratypes.—2 ♂ ; with same data. Distributed: Colln. American Entomological Society, 1; Colln. Agricultural Quarantine Station, San Francisco, 1.

All types recorded under I-142 and E-19, in the above Quarantine Station. The author is indebted to Mr. P. C. Ting for the specimens.

***Trichochrous cupripilosa* new species**

This species is apparently very distinct. According to Casey's synoptic table the species is to be associated with *fulvitarซิส* Bland, *discipulus* Casey and *caseyi* Champ. (*femoralis* Casey), all of which have the legs more or less pale; by the color of the pubescence it might be referred to *fulvescens* Casey, which has piceo-testaceous legs and besides the fulvous hairs are "intermixed with numerous long bristling setae, blackish in color." In *cupripilosa* the legs are deep black and the pubescence is irregularly subrecumbent.

Male: Form parallel oblong-oval, about two and one-half times as long as wide. Color black. Pubescence of superior surface rather coarse, moderate in length and somewhat semierect, dense but not completely obscuring the surface and cupreous to pale flavate in color; black or erect setiform hairs entirely absent. Lateral pronotal fimbriae moderate in length, regular and recurved upward and backward; the hairs of the apical margin slightly coarser and inwardly curved from each side over the margin to center. Elytral fimbriae less closely placed, longer and regular. Hairs of the under surface of body, finer, moderate in length, appressed to the surface and plumbeo-cinereous in color.

Head moderately small, widest across the eyes, about two-thirds as wide as the pronotum; muzzle equal to one-half of the length before the post-ocular line. Frons slightly convex, shining, finely and not closely punctate. Eyes large, evenly convex, facets small and numerous. Antennae less than moderately stout, quite as long as the width of pronotal apex; segments three to seven inclusive feebly serrate anteriorly; first segment stout, second subglobular and equal in length to the fifth, fourth very slightly longer and subobconical, fifth a little larger, sixth and seventh slightly transverse, eighth to the tenth inclusive slightly incrassate and subquadrate; eleventh oval and twice as long as wide.

Pronotum transverse less than one-half wider than long; apex arcuato-truncate in moderate circular arc, angles more or less moderately rounded; sides feebly arcuate, parallel, very feebly and rather broadly sinuate before the obtuse basal angles, margin finely serrulate; base a little wider than apex, quite broadly lobed and distinctly sinuate in lateral sixths; disk evenly convex, finely and not closely punctate.

Elytra long, one-half longer than wide and about two and one-half times as long as the pronotum and a little wider; base broadly sinuate in middle two-fourths, humeri rounded; sides parallel, feebly arcuate, most so in apical fourth, apices separately rounded, slightly emarginate at the suture, margins finely serrulate; disk feebly convex becoming arcuately declivous laterally, punctures small and not densely placed. Scutellum subquadrate.

Under surface of body very finely and quite densely punctate. Fifth abdominal segment truncate at apex. Femora not stout, the metafemora about attaining the apex of the third abdominal segment. Metatarsi not quite as long as their tibia.

Female: Usually larger. Pronotum more transverse and one-half wider than long, base about one-fourth wider than apex. Antennae not serrate anteriorly, more slender with the distal three segments slightly stouter. Elytra about three-fourths longer than wide and nearly three times as long as the pronotum. Fifth abdominal ventral segment longer and rounded at apex.

Measurements.—(Types) Length 2 to 3 mm.; width 8 to 1.2 mm.

Holotype.—Male; Buckman's Springs, San Diego County, California; June 6, 1928; (C. C. Searl; on thistle and *Adenostoma* blossoms); [Author's collection, Cal. Acad. Sci., no. 4334].

Allotype.—Female; with same data; [Cal. Acad. Sci., no. 4335].

Paratypes.—14 ♂, 9 ♀; with same data. Distributed: Author's collection, 7; Colln. American Entomological Society, 6; Colln. Natural History Museum, Balboa Park, San Diego, California, 12.

The author is indebted to Mr. Ian Moore and Mr. Albert O. Watson for the loan of specimens from the collection of the Natural History Museum.

Listrus wyomingensis new species

This species differs from all of the others that have been described, by its habitat, and more irregular and less defined maculation. It is separated from *robustus*, a companion species, by being less robust and by the pronotal sculpturing. In *robustus* the pronotal punctation is discrete, comparatively coarse and well defined; the intervening surface is smooth and besides the areas of dark pubescence of the elytra, are larger and not well defined; in both species the color and pubescence are very similar. In *interruptus* LeConte the fifth ventral abdominal segment of the male is modified.

Form elongate, subovate, about two and three-fourths times as long as wide. Color black, except that the tibiae distally, tarsi and antennae, are nigro-piceous to slightly paler; third and fourth segments of the antennae usually pale. Luster moderately shining, slightly aeneo-purpurescent but variable. Pubescence not dense, rather coarse, moderate in length, sub-recumbent but not appressed to the surface; pale flavate in color, that of the maculae brown to blackish; on the under surface of body ashy and appressed to the surface. Maculae rather large and more or less indefinitely defined; on each elytron when discernable consisting of a parasutural just behind the scutellum, one at middle third and about middle of the elytron; two more or less incomplete fasciae, neither entire, one slightly oblique at about middle, the other posterior and transverse, both more or less constricted at middle, attaining the margin laterally, interrupted at the suture and there enlarged.

Head widest across the eyes, the width greater than that of the pronotal apex and twice as wide as long before the post-ocular line; frons scarcely convex, rather broadly but not deeply impressed laterally from the base of the connate epistoma, sutures obliterated; surface densely indented-punctate, punctures small. Antennae quite similar in the sexes, rather slender and moderate in length, about attaining the pronotal base, moderately compressed beyond the third segment; second segment subglobular but longer than wide, third slender and obconical, twice as long as wide; segments four to ten inclusive subtriangular and quite equal in length, except the eighth which is somewhat smaller; in both sexes the eleventh segment is largest, oval to slightly ovate, about a third longer than wide and equal to the combined lengths of segments five and six. Eyes slightly oval and very prominent, facets small.

Pronotum a little wider than long, similar in the sexes; apex slightly arcuato-truncate, angles rounded; sides slightly convergent anteriorly, evenly arcuate, continuously so with the broadly arcuate base; or the latter very feebly sinuate in lateral sixths and the angles slightly indicated, about one-fourth wider than the apex. Lateral margins serrulate and the fimbriae short and whitish. Disk rather strongly convex and densely indented-punctate.

Elytra twice as long as wide, a little more than three times as long as the pronotum; base more or less broadly emarginate; sides parallel; apex parabolically rounded, feebly emarginate at the sutures with the angles rounded. Disk moderately strongly convex, less so toward base, humeri rather narrowly rounded, umbones small, the surface slightly impressed within; sides at and just behind the humeri abruptly precipitous, thence gradually arcuately declivous as at apex; surface rather densely punctate, punctures small, distinct, separated by a distance equal to a little more than their own diameter and the intervals slightly uneven. Scutellum small, rounded at apex, not invested with whitish hairs.

Abdomen feebly convex, second segment as long as the fifth, third and fourth quite equal in length. Legs short, the metafemora straight, and not in the least inflated.

Male: Narrower and rather shorter than the female. Antennal segments beyond the sixth wider, more equal in width and more subserrate anteriorly. Apex of the fifth ventral abdominal segment quite broadly but not deeply sinuate, the depth of the sinus about equal to one-fifth of the length; not modified on the disk.

Female: Usually longer and slightly wider behind the middle. Antennal segments seven to ten inclusive not as wide as the fifth or sixth, the latter slightly subserrate anteriorly, eighth smallest. (*Vide supra* for characters common to both sexes.)

Measurements.—(Types) Length 3 to 3.5 mm.; width 1 to 1.3 mm.

Holotype.—Male; Grand Teton Peak, Wyoming; July 1936; (John E. Blum); [Author's collection, Cal. Acad. Sci., no. 4336].

Allotype.—Female; with same data; [Cal. Acad. Sci., no. 4337].

Paratypes.—4 ♂, 5 ♀, with same data. Distributed: Author's collection, 2; Colln. Mr. Blum, 5; Colln. American Entomological Society, 2.

Listrus robustus new species

Robustus is unique among the known species because of its rather stout form, coarse, discrete and subperforate punctation of the pronotal disk within the central area, and dense, asperate sculpturing laterally; the elytral maculae are large and indefinite, limited by the paler hairs as stated below. The companion species, *wyomingensis* is similar in its pubescence and maculation, and has the pronotal disk very densely indentato-punctate. *Listrus interruptus* LeConte has the secondary sexual characters well defined; the fifth ventral abdominal segment being modified on the disk at apex. In *robustus* the secondary characters are very poorly developed.

Form somewhat robust, slightly ovate, about two and one-half times as long as wide. Color black, tarsi and segments two and three of antennae more or less piceous. Luster dull, feebly aeneous. Pubescence not dense, surface well exposed; pale yellowish hairs of the elytra rather coarse, at the periphery and in an oblique line extending outward from the scutellum to the margin at middle as well as along the suture to the apex; maculae of recumbent and finer dark brown hairs, without definite limits; pronotum and head with similar arrangement of the pale and brownish hairs. Lateral fimbriae of the pronotum and elytra not very close set and grayish in color. Pubescence of the under surface of body recumbent and ashy in color, moderately dense, less so and not conspicuous on the sterna.

Head widest across the eyes, wider than long before the post-ocular line, muzzle moderately short; frons somewhat convex, feebly and rather broadly impressed laterally within the sides; epistoma connate with the frons, sutures obliterated, a feeble, rounded and smooth umbone at middle against its base; labrum truncate at apex. Surface rather sparsely punctate, punctures smaller than on the pronotum, distinct and well defined, separated by a distance equal to one or two times their diameter. Eyes rather small, strongly convex and prominent. Antennae moderately dissimilar in the sexes, in length about attaining the pronotal base and about equal in length to the pronotal width; first segment stout and subquadrate viewed from above exclusive of the condyle; second oval and scarcely longer than wide; third smallest, slender, subcylindrical to subconical and scarcely twice as long as wide; eleventh elongate oval, twice as long as wide and equal in length to the ninth and tenth taken together (*vide infra* under sexes).

Pronotum one-fourth wider than long, apex arcuato-truncate in moderate circular arc, angles broadly rounded; sides moderately arcuate, noticeably convergent anteriorly, margin serrulate, serrules rounded rather than acute; base broadly but not strongly arcuate, slightly and briefly sinuate laterally within the last serrule that marks the angles, otherwise obtusely rounded. Disk strongly and evenly convex, slightly impressed at the basal sinuations, coarsely, discretely and subperforately punctate, punctures separated by a distance equal to one or two times their diameter, intervals smooth and shining; punctures closer and the surface scabrous and duller laterally.

Elytra parallel to slightly wider behind the middle, one-half longer than wide; sides broadly and rather feebly arcuate, apex subparabolically rounded, sutural angles obtuse; base arcuately emarginate and adapted to the pronotal base, humeri rather prominent and rounded. Disk strongly convex, less so in basal one-half, arcuate and gradually declivous apically, as well as laterally in posterior one-half; abruptly declivous at and just behind the humeri, marginal fimbriae short; surface coarsely punctate as on the pronotum, punctures well defined and separated by a distance equal to one or two times their diameter; intervals rather smooth and shining with moderate evidence of slight irregularities, a fine parasutural stria is present, especially on the apical declivity of each elytron. Scutellum rather transverse, truncato-sinuate at apex, angles narrowly rounded.

Abdomen moderately convex, finely and rather densely punctate, especially on the fifth segment; pygidium margined with somewhat long bristling blackish hairs. Legs rather short; femora narrow, not in the least inflated; metatibiae as long as femur and trochanter.

Male: Rather more parallel. Antennae somewhat stouter, segments four to ten inclusive more triangular and quite equal in width and length; fifth slightly largest and more prominent before the middle anteriorly; fourth particularly triangular with sides converging from apex to base. Fifth ventral abdominal segment slightly shorter and less arcuate at apex.

Female: Less parallel. Antennae rather slender, segments four to ten inclusive rather triangulo-oval and more suddenly constricted basally; fifth

longer, more triangular anteriorly in apical three-fourths and quite petiolated basally; fourth rather oval in apical three-fourths and rather suddenly constricted basally; eighth somewhat swollen or more rounded anteriorly. Fifth ventral somewhat longer and more arcuate at apex.

Measurements.—(Types) Male: Length 3.75 mm.; width 1.5 mm. Female: Length 3.5 mm.; width 1.4 mm.

Holotype.—Male; Grand Teton Peak, Wyoming; July 1936; (John E. Blum); [Author's collection, Cal. Acad. Sci., no. 4338].

Allotype.—Female; with same data; [Cal. Acad. Sci., no. 4339].

Paratypes.—6 ♀; with same data. Distributed: Author's collection, 1; Colln. Mr. Blum, 3; Colln. American Entomological Society, 1; Colln., Dr. E. C. Van Dyke, collected at Homestead Inn, Mt. Hood, Oregon, July 3, 1927, 1.