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New Genera and Species of North American Cerambycidae

(Coleoptera)

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In the relatively brief interval since the publication of parts 2–5 of a monographic study of North American Cerambycidae (Linsley, 1962a, 1962b, 1963, 1964), a number of undescribed genera and species have been discovered which extend our knowledge of the nature and scope of the tribes Methiini, Elaphidionini and Clytini. Some of these have been described previously (Chemsak and Linsley, 1964a, 1964b). Others are characterized below. We also take the opportunity to describe a new subspecies of *Arhopalus rusticus* (Linnaeus) which represents a significant extension of the known range of that species.

Arhopalus rusticus hesperus Chemsak and Linsley, new subspecies

Color piceous to dark brown; antennae with second segment at least twice as long as apical width; pronotum distinctly impressed; posterior tarsi with third segment as long as broad; pubescence of elytra very fine, short, subdepressed. Length, 15–25 mm.

Holotype male (California Academy of Sciences) from PINYON FLAT, RIVERSIDE COUNTY, CALIFORNIA, 28 May 1960 (J. Geest); allotype female from Lower Covington Flat, Joshua Tree National Monument, Riverside County, California, 28 June 1961 (R. E. Somerby); paratypes as follows: 1 male, 1 female, Westgard Pass, 7,200 feet, Inyo County, California, 26 July 1962 (D. C. Rentz, C. D. MacNeill); 1 female, White Mountains Research Station, 10,150 feet, Mono County, California, 17 July 1961 (D. C. Rentz).

This subspecies may be separated from *A. rusticus montanus* (LeConte), from the southern Rocky Mountains and adjacent ranges of Arizona, Utah, Colorado, and New Mexico, by the darker coloration, broader third segment of the posterior tarsi, and the finer, shorter pubescence of the elytra.

A. rusticus has not been known previously from California. It apparently occurs along the east side of the Sierra Nevada from Mono County into montane areas of the northern Colorado Desert.

Haplidoeme Chemsak and Linsley, new genus

Form slender, elongate, depressed, sides parallel. Head large, front short; eyes moderately deeply emarginate, not embracing antennal insertions, widely separated above and below, lower lobe large; palpi short, unequal, slightly dilated at apex; antennae about as long as body, segments thickened and slightly expanded, second segment longer than broad, segments without acute tubercles or apical spines, basal segments with few apical setae. Pronotum slightly broader than long, subparallel, sides slightly rounded to subangulate before middle, apex and base not impressed; disk subopaque, vaguely punctate; prosternum not impressed, coxae subconical; intercoxal process narrow, laminiform, extending slightly behind coxae; episternum of metathorax narrowing behind. Elytra elongate, parallel sided, feebly costate; apices rounded; legs slender, femora not clavate; posterior tarsi with first segment longer than two following together, third segment feebly cleft.

TYPE SPECIES.—*Haplidoeme schlingeri* Chemsak and Linsley, new species.

This genus appears to have no clear affinities with other known Methiini. The thickened, expanded antennal segments are similar to those in *Pseudomethia* but *Haplidoeme* differs by the longer second antennal segment, elongate elytra, the eyes not embracing the antennal insertions, and the more rounded pronotum.

This genus shares a number of characters with *Haplidus* of the Hesperophanini. However, it appears to us to be clearly assignable to the Methiini.

Haplidoeme may be placed in Linsley's (1962b: 14) key to the Methiini as follows:

1. Elytra entire; anterior coxae separated by a narrow prosternal process 2
   Elytra abbreviated, or if (rarely) nearly as long as abdomen, anterior coxae contiguous, without prosternal process ..... *Coleomethia*, *Tessaropa*, *Pseudomethia*, *Styloxus*, and *Methia*
2(1). Pronotum rounded, unarmed at sides 3
   Pronotum tuberculate at sides ..... *Eudistenia* and *Vandykea*
3(2). Pronotum constricted or subparallel at base; palpi feebly dilated; intercoxal process of prosternum long 4
   Pronotum lobed at base; palpi broadly dilated; intercoxal process of prosternum short ..... *Malacopterus*
4(3). Antennae with basal segments not possessing acute tubercles; intercoxal process of prosternum not pointed at apex 5
   Antennae with basal segments armed with acute tubercles beneath, intercoxal process of prosternum pointed at apex ..... *Oeme*
5(4). Antennae with segments filiform; base of pronotum impressed; eyes embracing antennal insertions ..... *Paranoplium*
   Antennae with segments thickened; base of pronotum not impressed; eyes not embracing antennal insertions ..... *Haplidoeme*

Haplidoeme schlingeri Chemsak and Linsley, new species

(Fig. 1)

MALE.—Form slender, depressed; color testaceous, head and pronotum slightly darker; pubescence sparse, short and suberect and long and erect. Head broader than pronotum; antennal tubercles prominent, area behind concave, vertex subopaque, vaguely punctate; pubescence sparse, long, erect; eyes moderately deeply emarginate, upper lobes small, separated above and below by about twice diameter of antennal scape; antennae with segments thickened, third segment subequal in length to first, fourth subequal to third, fifth longer than fourth, eleventh longer than tenth, slightly appendiculate, basal segments shining, sparsely pubescent and ciliate at apices, segments from fourth subopaque. Pronotum broader than long, sides slightly inflated before middle, disk subopaque, vaguely, shallowly punctate; sparsely clothed with long, erect hairs; stridulatory plate of mesonotum evenly convex; scutellum small, rounded, glabrous; prosternum shallowly transversely rugulose; metasternum sparsely pubescent. Elytra over three times longer than broad, disk feebly bicostate; surface subopaque, shallowly, vaguely punctate; pubescence very short, sparse, suberect with longer, more erect hairs sparsely interspersed; apices rounded. Legs slender, moderately pubescent; posterior tarsi slender, first segment longer than following two together, third segment feebly cleft. Abdomen sparsely pubescent; last ventral segment broad, shallowly emarginate medially. Length, 10 mm.

FEMALE.—Antennae slightly shorter; abdomen with apex of last ventral segment subtruncate. Length, 10 mm.

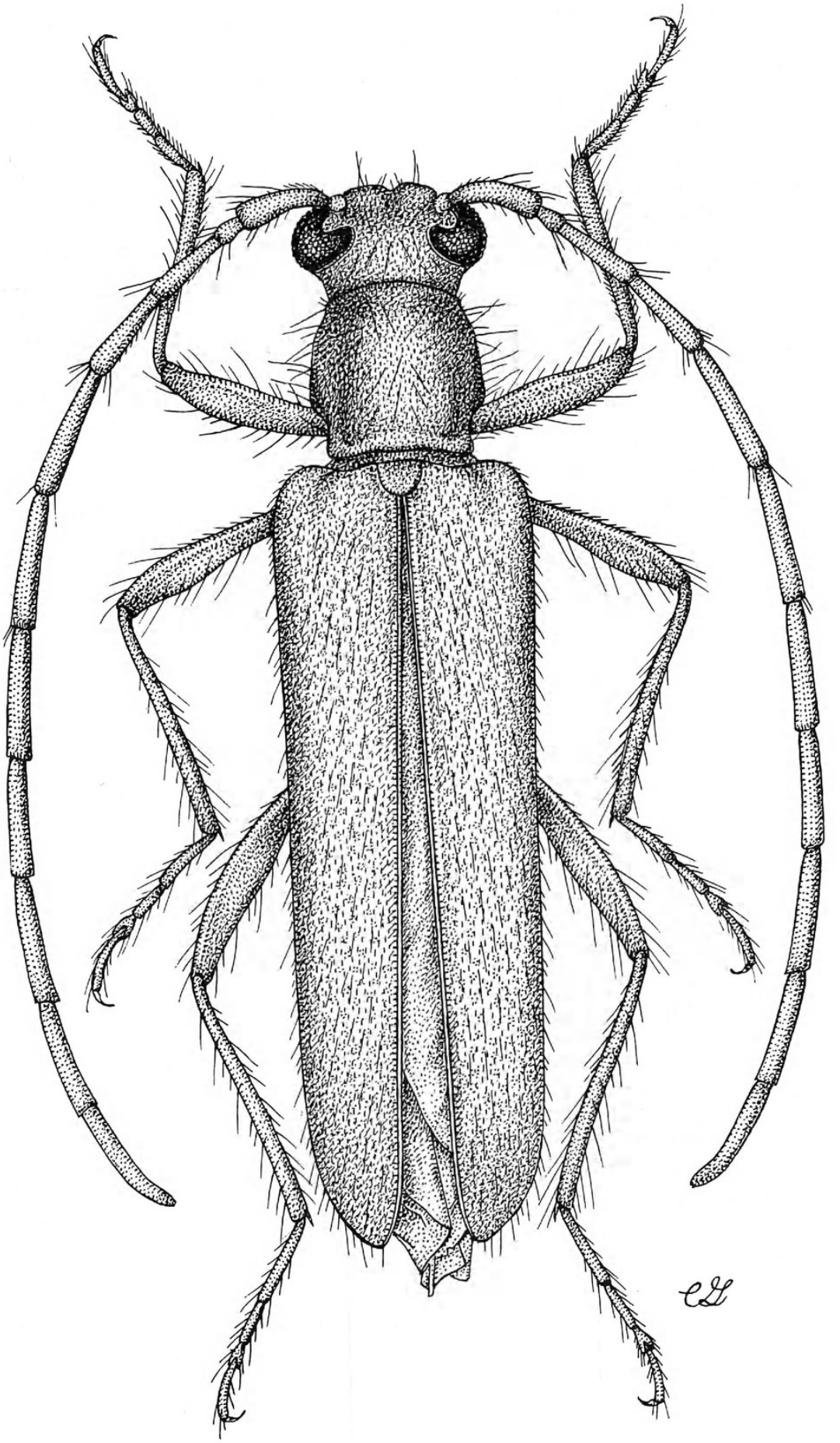
Holotype male, allotype female (California Academy of Sciences) and three female paratypes from DEEP CANYON, RIVERSIDE COUNTY, CALIFORNIA, 9 October 1963, at light (E. I. Schlinger, M. E. Erwin); 22 August 1963, at light (E. I. Schlinger); 30 June 1964, at white light (G. Ballmer, K. Brown).

This species resembles a small *Aneflomorpha* or *Haplidus*. Among the North American Methiini it is distinctive in the pale coloration, thickened, nontuberculate antennae, entire elytra, and rather feebly (for a methiine) emarginate eyes.

We take pleasure in naming this species after E. I. Schlinger who made available to us extensive collections of Cerambycidae from the vicinity of the Philip L. Boyd Desert Research Center, Deep Canyon, Riverside County, California.

Methia curvipennis Chemsak and Linsley, new species

MALE.—Form small, short; elytra pale brownish; pronotum, underside, and appendages darker brown, head fuscus; pubescence pale, fine, sparse. Head nearly as broad as elytra; eyes narrowly rounded beneath, separated by about diameter of antennal scape, separated above by less than diameter of third antennal segment, deeply emarginate, lobes connected by a single row of facets; vertex behind eyes opaque, distinctly punctate; antennae extending about five segments beyond elytra, scape with a moderate tooth at apex, segments three to five subequal in length, remaining segments gradually decreasing in length. Pronotum about as long as



broad, sides slightly subangulate at middle, barely impressed at base, not impressed at apex; disk flattened, subopaque, minutely reticulate punctate with scattered larger vague punctures each bearing a long curved seta; stridulatory plate of mesonotum with an elevated longitudinal ridge; prosternum shallowly impressed transversely, not inflated. Elytra slightly more than twice as long as broad, covering only first two abdominal segments, sides attenuated from slightly before middle, dehiscing at suture, apices rounded; disk partially subopaque, base very shallowly, coarsely punctate, punctures not evident toward apex; each elytron vaguely costate; pubescence fine, sparse, longer, and suberect at base. Legs slender, tibiae with bristling hairs. Abdomen shining, sparsely punctate, and pubescent; apex of last sternite emarginate. Length, 4–5 mm.

Holotype male (California Academy of Sciences) and two male paratypes from DEEP CANYON, RIVERSIDE COUNTY, CALIFORNIA, 20 June 1963, 24 June 1964, at light (E. I. Schlinger).

This species is related to *M. falli* Martin and *M. carinata* Linsley by possessing the ridged stridulatory plate of the mesonotum. *M. curvipennis* differs from *falli* in the noninflated, impressed prosternum, less broadly rounded sides of the pronotum, less prominent apical tooth of the antennal scape, and the single row of facets connecting the eye lobes. From *carinata* it may be distinguished by having the eyes narrowly rounded beneath, less widely separated eyes above and below, and connected by a single row of facets. *M. curvipennis* also possesses an apical tooth on the antennal scape.

Astromula Chemsak and Linsley, new genus

Form elongate, robust, a little depressed. Head narrower than prothorax; front short, moderately channeled medially, antennal tubercles barely elevated; genae short, acute; mandibles stout, arcuate; palpi subequal, apical segments feebly dilated; eyes deeply emarginate, coarsely faceted; antennae stout, short, extending to a little before middle of elytra in males, segments unarmed, noncarinate, barely excavated beneath. Prothorax broadly rounded at sides, not impressed basally nor apically; disk convex, without dorsal calluses; prosternum feebly transversely impressed, anterior coxal cavities slightly angulate externally; anterior intercoxal process arcuate, expanded apically, coxal cavities open behind by width of apex of prosternal process; intercoxal process of mesosternum deeply notched medially, cavities open to epimeron; episternum of metathorax broad in front. Elytra subparallel, without costae; apices rounded, unarmed. Legs short, stout; femora gradually enlarging; tibiae flattened, vaguely carinate; tarsi expanded, first segment of posterior pair shorter than following two together, third segment cleft to base. Abdomen normally segmented, last tergite exposed.

TYPE SPECIES.—*Astromula nitidum* Chemsak and Linsley, new species.

In the recent key to the genera of North American Elaphidionini

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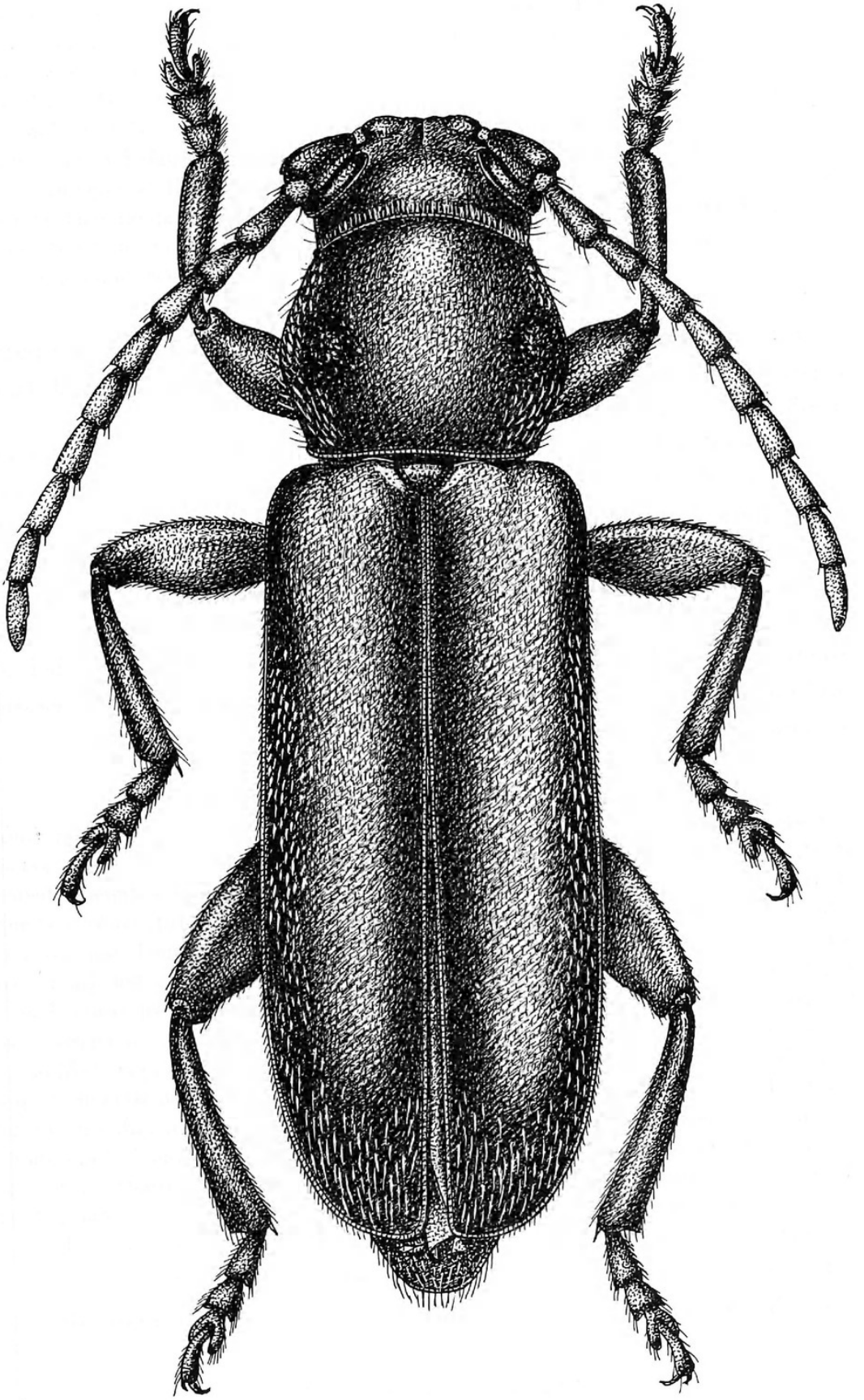
EXPLANATION OF FIGURE

Fig. 1. *Haplidoeme schlingeri* Chemsak and Linsley, female.



(Linsley, 1963), this genus would run out with *Micranoplium* and *Anoplocurius*, genera to which it is only distantly related. It is more closely related to *Eustromula*, from which it differs in the unspined antennae, the noncallused, subglabrous pronotal disk, the absence of pronotal pubescent patches, and the scarcely carinate tibiae.

Astromula nitidum Chemsak and Linsley, new species
(Fig. 2)

MALE.—Form elongate, robust, a little depressed; color dark castaneus; pubescence moderate, short, golden, subdepressed, and recurved. Head narrower than pronotum; front and vertex minutely, shallowly punctate, pubescence fine, depressed; antennae not extending to middle of elytra, segments without apical spines, scape stout, conical, with a dorsal, oval, confluently punctate area near apex, scape longer than third segment, third longer than fourth, fifth subequal to third, segments six to nine subequal, slightly shorter than fifth, tenth equal to fourth, eleventh longer than third, vaguely appendiculate, basal segments with a few long suberect apical hairs, segments from fourth flattened, densely clothed with short appressed pubescence. Pronotum broader than long, sides broadly rounded, apical and basal impressions absent; disk subglabrous, finely, sparsely, shallowly punctate, without calluses, punctures at sides coarse, confluent, rugose; pubescence at sides distinct, appressed and recurved with a few long erect hairs; prosternum impressed, rather finely, confluently punctate before coxae, intercoxal process slightly expanded at apex, coxal cavities open behind by about width of apex of intercoxal process; meso- and metasternum rather densely clothed with subdepressed golden pubescence; scutellum subglabrous. Elytra subparallel, over twice as long as broad; base rather finely, separately punctate, punctures becoming finer and denser toward apex; pubescence sparse, consisting of short, golden, recurved hairs; apices rounded, unarmed. Legs short, stout, densely pubescent; femora finely, densely punctate. Abdomen finely, densely punctate, densely clothed with depressed golden pubescence; apex of last sternite broadly subtruncate, apex of last tergite rounded. Length, 21 mm.

FEMALE.—Antennae slightly shorter; pronotum with a vague suggestion of an obtuse tubercle at sides; prosternum coarsely, confluently punctate before coxae; apex of last abdominal sternite rather narrowly rounded, apex of last tergite truncate. Length, 25 mm.

Holotype male (California Academy of Sciences) from SQUAW TANK, JOSHUA TREE NATIONAL MONUMENT, RIVERSIDE COUNTY, CALIFORNIA, 16 June 1960 (J. Geest, W. Schilling); allotype female from Lower Covington Flat, Joshua Tree National Monument, 12 July 1961 (D. Gillmore); two female paratypes from Valyermo, Los Angeles County, California, 8 July 1962 (D. E. Rich).

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EXPLANATION OF FIGURE

Fig. 2. *Astromula nitidum* Chemsak and Linsley, male.

This species superficially resembles *Eustromula validum* LeConte in size and facies. The two may be readily separated by the glabrous pronotal disk and absence of antennal spines of *A. nitidum*.

Tanyochraethes Chemsak and Linsley, new genus

Form slender, elongate. Head with front elongate, not carinate; vertex narrow, elongate; antennae slender, not spinose, shorter than body length in both sexes. Pronotum rounded, approximately as long as broad, apex narrower than base, disk convex, not carinate; prosternum barely impressed, intercoxal process slender, arcuate, expanded at apex, coxal cavities widely open behind; mesosternum with intercoxal process gradually declivous in front, not protuberant; episternum of metathorax more than four times as long as wide. Elytra subparallel or slightly attenuated; pubescence depressed, uniform or forming definite bands consisting of thicker, colored hairs; each elytron with an obtuse nonprominent subsutural carina over apical half; apices usually feebly undulate truncate, outer angle more strongly dentate than inner. Legs slender, rather elongate, posterior femora feebly dentate; posterior tarsi with first segment longer than following two together, apical segment cleft to base.

TYPE SPECIES.—*Tanyochraethes tildeni* Chemsak and Linsley, new species.

This genus differs from *Anthoboscus* Chevrolat (= *Clytanthus* Thomson) by lacking a frontal carina on the head, having a gradually declivous mesosternal process, and by the less prominent carinae and apical spines of the elytra. The shape of the mesosternal process and lack of an elongate apical spine of the elytra distinguish it from *Trichoxys* Chevrolat, and the more elongate front of the head and gradually declivous mesosternal process from *Ochraethes* Chevrolat.

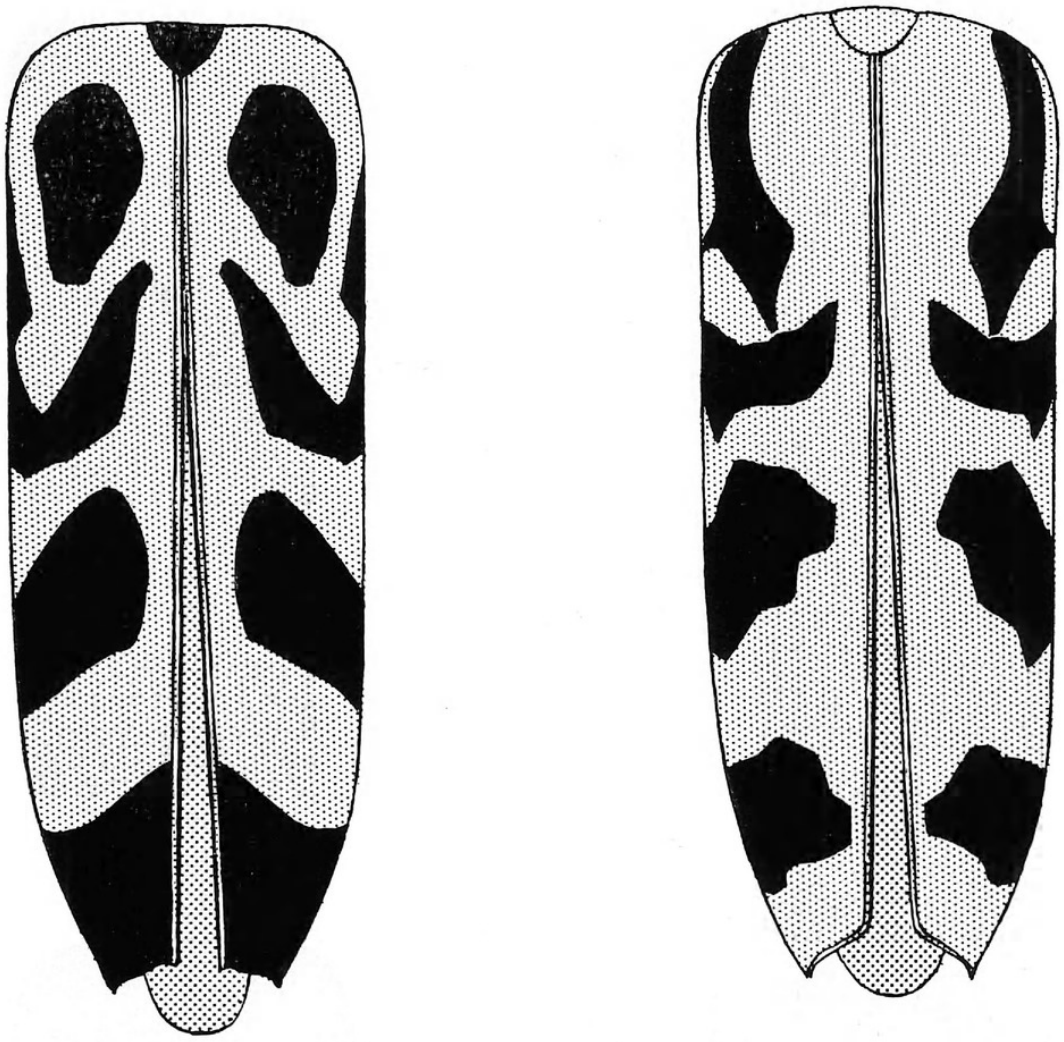
In addition to the new species described below, the Mexican and Central American species previously assigned to *Anthoboscus* (Blackwelder, 1946) should be included in *Tanyochraethes*. These are *T. anthophilus* (Chevrolat), *T. cinereola* (Bates), *T. clathratus* (Bates), *T. hololeucus* (Bates), *T. nigropunctatus* (Chevrolat), *T. ochrozona* (Bates), and *T. truquii* (Chevrolat) (see figure 4).

In Linsley's (1964) key to North American genera of Clytini *Tanyochraethes* will come out in the couplets involving *Clytoleptus*, *Sarosesthes*, *Ochraethes*, and *Triodoclytus*.

Tanyochraethes tildeni Chemsak and Linsley, new species

(Fig. 3)

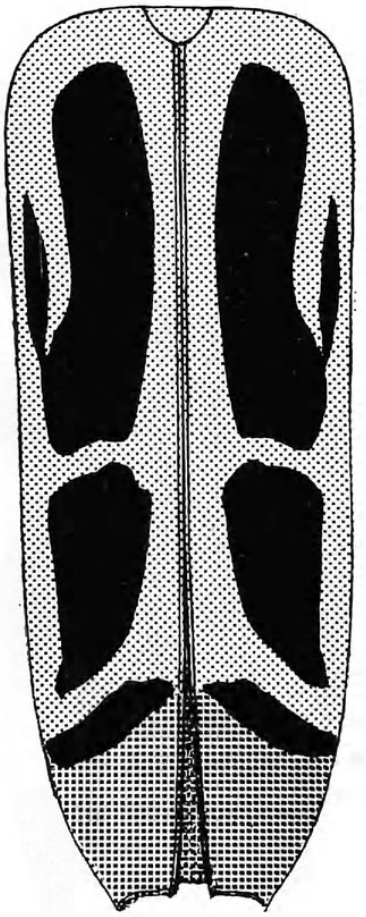
MALE.—Form elongate, sides subparallel; ground color black, pubescence grayish and yellow–orange; elytra with rather orange colored appressed pubescence forming a W-shaped stripe at basal one-third, a slightly oblique transverse band at middle, and an oblique band at apical one-third, suture broadly pubescent from scutellum to subapical band. Head with front elongate, vertex finely channeled between antennal tubercles; antennal tubercles small, subcontiguous; front and

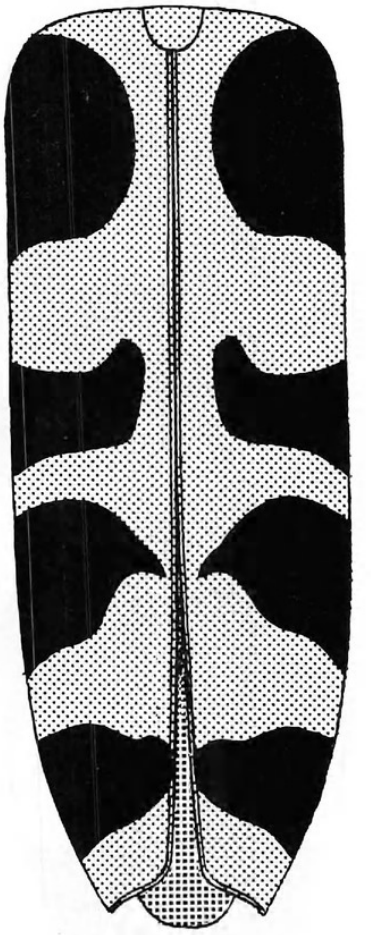


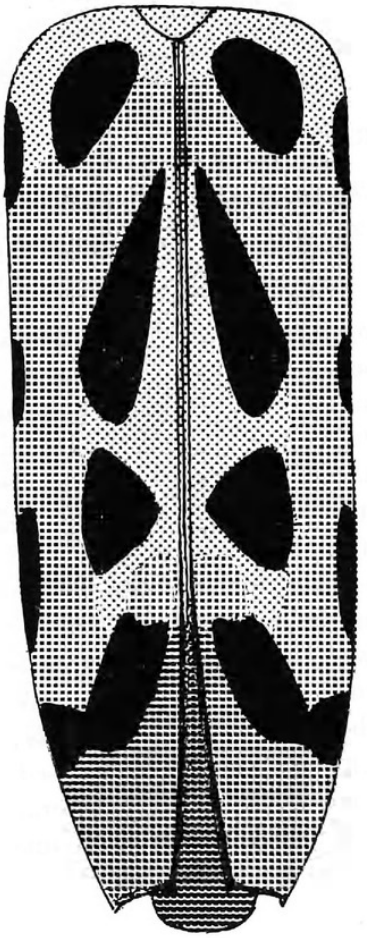
EXPLANATION OF FIGURE

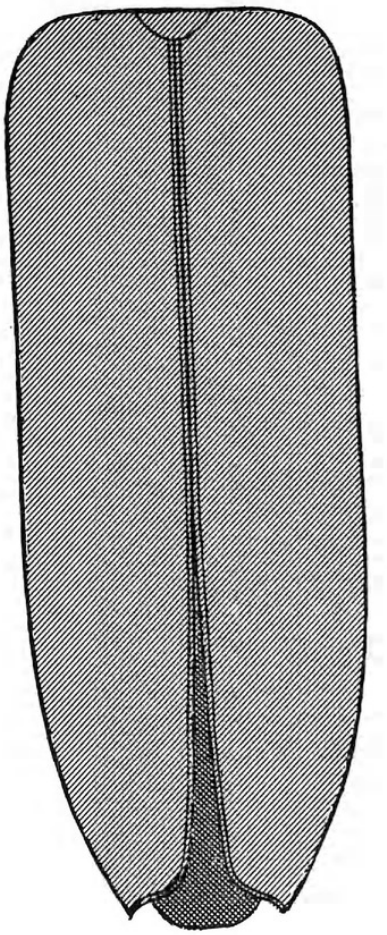
Fig. 3. Left: Elytral pattern of *Tanyochraethes tildeni* Chemsak and Linsley; right: typical elytral pattern of *T. smithi* Chemsak and Linsley.

vertex finely punctate, densely clothed with thick, appressed, grayish and yellow pubescence; antennae slender, extending to a little beyond middle of elytra, segments unarmed, scape slender, longer than third segment, third segment equal to fourth, fifth longer than fourth, sixth longer than fifth, seventh and eighth subequal to sixth, ninth and tenth shorter, eleventh equal to scape, basal segments moderately clothed with grayish recumbent pubescence, remainder densely pubescent, long coarse, darkened suberect hairs present internally from third segment but decreasing in number distally where they are confined largely to apices of segments, segments from sixth carinate along inside margin. Pronotum about as long as broad, sides rounded, apex narrower than base, base feebly impressed at sides; disk convex, densely, moderately coarsely and finely punctate, punctures subcontiguous, center with a small linear glabrous callus behind middle; pubescence grayish yellow, dense, appressed; prosternum barely impressed, densely clothed with gray recumbent pubescence; episternum of metathorax densely clothed with thick yellow and white recumbent pubescence; scutellum









narrowly rounded apically, sparsely pubescent. Elytra more than two and one-half times as long as broad, sides slightly tapering apically; punctures minute, dense; pubescent pattern consisting of a broad yellow and white basal band, an orangish sutural band extending from scutellum to base of subapical band, an orangish W-shaped band extending obliquely back from humeri to basal two-fifths and obliquely forward to join sutural band, an orangish oblique median band joining at sutural band, and a broader, oblique subapical orangish band, bands extending almost to margins and joined marginally by a narrow, thinner whitish band, apex with a broad band of sparse whitish pubescence; black spots densely clothed with fine recumbent black pubescence; apices feebly sinuate truncate, outer angle more strongly dentate than inner. Legs slender, femora moderately densely pubescent. Abdomen densely, finely punctate, densely whitish pubescent, first three sternites with a large patch of recumbent yellow pubescence at sides; apex of last sternite broadly, shallowly emarginate. Length, 12–14 mm.

FEMALE.—Antennae slightly shorter, not carinate; apex of last abdominal sternite rounded. Length, 13 mm.

Holotype male, allotype female (California Academy of Sciences) from WELDER WILDLIFE RESERVE, SAN PATRICIO COUNTY, TEXAS, 2 November 1963 (J. W. Tilden); 3 male paratypes with same data.

The pubescent pattern is quite uniform in all five specimens.

This species is named for J. W. Tilden who made the material available for study.

Tanyochraethes smithi Chemsak and Linsley, new species
(Fig. 3)

MALE.—Form slender, elongate. Color usually black, pubescence yellow, dense, appressed, usually forming an undulating pattern on elytra. Head with vertex finely channeled, densely clothed with appressed yellow pubescence with few long erect hairs interspersed; punctures fine, dense; antennae extending to about apical one-third of elytra, scape slender, longer than third segment, third segment subequal to fourth, fifth longer than fourth, sixth longer than fifth, subequal to scape, seventh and eighth equal to sixth, ninth and tenth subequal, shorter than eighth, eleventh subequal to scape, basal segments sparsely pubescent, with a few long suberect hairs internally, outer segments densely clothed with very short brownish appressed pubescence, segments six to at least nine usually with a fine internal carina. Pronotum about as long as broad, sides rounded; disk convex, densely moderately coarsely punctate, with a small basal glabrous spot at middle, sides more coarsely, separately punctate; pubescence yellow, dense, uniform, and depressed with a few long white erect hairs interspersed; prosternum feebly impressed, densely clothed with recumbent yellow pubscence; meso- and metasternum densely clothed with depressed yellow pubescence with a few long white erect hairs

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EXPLANATION OF FIGURE

Fig. 4. Upper left: Elytral pattern of *Tanyochraethes clathratus* (Chevrolat); upper right: *T. cinereola* (Bates); lower left: *T. truquii* (Chevrolat); and lower right: *T. hololeucus* (Bates).

interspersed; episternum of metathorax very densely clothed with yellow recumbent pubescence; scutellum densely pubescent. Elytra slightly less than three times as long as broad, sides subparallel; subsutural costae over apical one-half obtuse, not prominent; punctures minute, dense; dense yellow pubescence interrupted by four black spots, first obliquely arcuate, extending from humeri to basal fourth well away from suture, second submedian, arcuate, broader, extending from margins, separated by sutural yellow pubescence, third broadest, postmedian, extending obliquely from near suture to margins, fourth subapical, roughly triangular with the base at margins, dark areas clothed with black depressed pubescence; apices obscured by the long pubescence, feebly sinuately truncate, angles dentate. Legs slender, femora moderately densely pubescent. Abdomen finely shallowly punctate; sternites very densely yellow pubescent at sides, middle sparsely pubescent with a few long white hairs interspersed; apex of last sternite shallowly emarginate. Length, 9–13 mm.

FEMALE.—Antennae extending to about middle of elytra, noncarinate; apex of last abdominal sternite broadly rounded. Length, 8–12 mm.

Holotype male and allotype female (American Museum of Natural History) from 4 MILES WEST MAZAMITLA, JALISCO, MEXICO, 6,800 FEET, 16 October 1950 (Ray F. Smith); eleven paratypes (7 male, 4 female) with same data; one male paratype from Mazamitla, 3 September 1963 (A. E. Michelbacher).

This species is somewhat variable in the pubescent pattern of the elytra. In some cases the appressed yellow pubescence is suffused over most of the surface with the black markings greatly reduced. Also, in a few specimens the integument beneath the transverse yellow bands is brownish.

We take pleasure in naming this species for Ray F. Smith who collected the type series.

ACKNOWLEDGMENTS

The authors wish to acknowledge the support of the National Science Foundation through Grant GB-2326. Appreciation is also expressed to the following who made collections of Cerambycidae available for study: H. B. Leech, California Academy of Sciences; J. G. Rozen and P. Vaurie, American Museum of Natural History; E. I. Schlinger, University of California, Riverside; E. L. Sleeper, Long Beach State College, California; and J. W. Tilden, San Jose State College, California. Special thanks are extended to Celeste Green, Division of Entomology and Acarology, University of California, Berkeley, for preparing the illustrations, and to J. N. Knull for the loan of a type specimen of *Methia* from his collection.

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Additional Biological Notes on *Megachile concinna* Smith in Arizona[1]

(Hymenoptera : Megachilidae)

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The life history and nesting habits of *Megachile* (*Eutricharaea*) *concinna* Smith in southern Arizona were discussed by Butler and Wargo (1963). It was concluded at that time that *M. concinna* was not a potentially manageable pollinator in southern Arizona due to the reluctance of the bees to utilize artificial holes for nesting and the presence of a chalcid parasite. The successful management of *M. rotundata* (Fabricius) in northern areas, by Stephen (1962), Bohart and Knowlton (1964), and Hobbs (1964), prompted additional observations on *M. concinna* in 1964 reported in the present paper.

EMERGENCE OF BEES FROM STRAWS.—Field collections of leafcutter bees at Tucson indicate that spring generation adults become active during April and May. On 20 June 1964, bees hibernating in milk straws were collected from a research farm and a residence where they

[1] Journal paper. University of Arizona Agricultural Experiment Station technical paper No. 962.