

# RECORDS AND NEW SPECIES OF COLEOPTERA FROM OKLAHOMA AND WESTERN ARKANSAS, WITH SUBSIDIARY STUDIES\*

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The present paper is the first portion of a report on the Coleoptera collected from June 15 to July 16, 1927, by the biological survey expedition in northeastern Oklahoma and western Arkansas in charge of Dr. A. I. Ortenburger of the University of Oklahoma. In addition there are included records of a number of species collected by Miss M. J. Brown in 1927 at Norman, Cleveland Co., and such previously published records as have come to the attention of the author since the preparation of the last list of Oklahoma in the previous article in this volume. Finally, in connection with some of the new species announced, there have been incorporated synopses of the *Enhydrini* (Gyrinidae) of America, and the species of *Alaus* (Elateridae) and *Strigodermella* (Scarabaeidea) of the Nearctic Region.

Only counties are cited in the list. The exact localities follow. In Oklahoma:

Adair Co.: Bunch, Watts.  
Craig Co.: Little Cabin Creek.  
Delaware Co.: Flint Creek, Grove.  
Hughes Co.: Weleetka.  
La Flore Co.: Kiamichi R. eight miles west of state line (June 15-28); Brazil Creek, Lee Creek, Poteau, extreme northeast portion of county (July 5-6).  
Latimer Co.: Red Oak.  
Osage Co.: Skiatook.  
Pittsburg Co.: Krebs.  
Rogers Co.: Claremore, Chelsea.  
Sequoyah Co.: Muldrow, Hanson, Little Skin Bayou, Sallisaw Creek.

## In Arkansas:

Crawford Co.: Van Buren.  
Montgomery Co.: Norman.  
Pike Co.: Glenwood, New Hope, Fallen Creek, along Highway 70.  
Polk Co.: Wickes, Potter, Mena, Ouashita.  
Scott Co.: Gate, Waldron, Fourche Lafave R.  
Sevier Co.: De Queen, Cassotot R.

The numbers before the species are those used in Leng's "Catalogue." The species name is followed by a number indicating the number of specimens involved, and this is followed by the date, locality record by county, and habitat. Unless otherwise noted, the county cited is in Oklahoma. An asterisk is placed before species not recorded from Oklahoma in previous lists from the state (Okla. Acad. Sci. VI, 1926, p. 143-148; Pub. Univ. Okla. Biol. Surv. II, 1930, p 7). Forty-five species and two varieties are so listed in this paper. A total of seventy species and three varieties are listed from Oklahoma and sixteen species from Arkansas.

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## CICINDELIDAE.

38. *Megacephala (Tetracha) virginica* (L.) 3; July 1; Pike Co., Ark.; under cover.  
 50. *Cicindela repanda* Dej. 4; July 6; Adair Co.  
 \*53. *Cicindela tranquebarica* Herbst., 1; Cleveland Co.  
 \*68. *Cicindela scutellaris* Say. 2; Nov.; Cleveland Co.  
 69. *Cicindela sexguttata* F. 1; June 19; La Flore Co.; open woods.  
 74. *Cicindela punctulata* Oliv. 9; June 19-July 5; La Flore Co.; open woods, sand and mud banks of road side pool.  
 \*96. *Cicindela circumpicta* Laf. Horn, Rep. U. S. Geol. Surv. for 1871, 1872, p. 384.  
 108. *Cicidela cuprascens* Dej. 15; July 5; La Flore Co.; sand and mud banks of road side pool.  
 108a. *Cicidela cuprascens* var. *macra* Lec. 3; same data.

I am inclined to agree with Leng (Tr. Am. Ent. Soc. XXVIII, 1902, p. 165) as to the invalidity of the var. *macra* Lec. The definitive character seems to be the presence of an acute elytral apex. In the present series of 7 females, none exhibit this. Of the 11 males from the same locality, 8 have the apex obtuse (fig. A) or even slightly rounded, 3 have the apex "acute" (fig. B). These last are designated for the present as *macra*, but the absence of females and the more or less evanescent nature of the character argue against the validity of the variety.

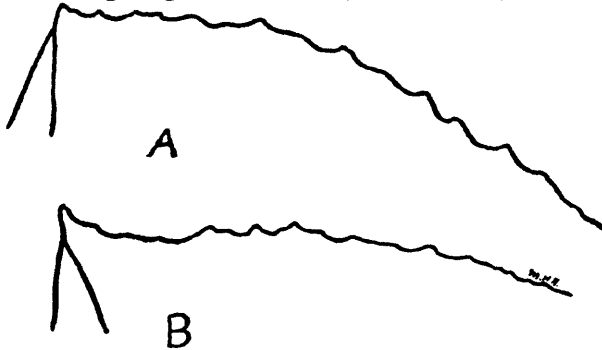


Fig. 1. Apex of Elytra of (A) *Cicindela cuprascens* Dej. and (B) *C. cuprascens* var. *macra* Lec.

## CARABIDAE.

180. *Calosoma scrutator* Fab. 2; Cleveland Co.  
 1484a. *Calathus opaculus obesulus* Csy. 1; Cleveland Co.  
 \*2075. *Triplectrus merula* Germ. 1; Cleveland Co.

## GYRINIDAE.

2671. *Dineutus* (*s. str.*) *vittatus* (Germ.) 9; June 21-July 1; Le Flore Co., Okla. (on Kiamichi R.); Sevier Co. (on Saline R.) and Pike Co., Ark.

----- *DINEUTUS* (*CYCLINUS*) *AMAZONICUS* sp. nov. female: length 10 mm.; form regularly oval, nearly as in *emarginatus* Say. Apices of elytra separately rounded, very feebly sinuate exteriorly, not serrate. Venter black, except two caudal abdominal sternites, which are rufescent. Propods black except trochanter and extreme proximal portion of femur. Profemur with a distinct tooth along the anterior ventral margin about 1.5 its total length from the distal end. Type: Sevier Co., Ark. Saline R. about 18 miles east of DeQueen. June 30, 1927 (H27-89).

The specific name is given with reference to the assumption that a female of a male characteristic. The species is most closely related to *emarginatus* Say, being separated from it and all other known species of the subgenus by the dentate female profemur. The male is unknown.

I make the announcement of this new species the occasion for presenting the following synopsis of the genera and species of Enhydrini inhabiting the new world. The bibliography is supplementary to that given by Ahlwardt, Coleop. Catal. 21, 1910, p. 4-11. The portion of the synopsis on *Dineutus* was, in part, written originally as a portion of my doctor's thesis, done under the direction of Professor Paul S. Welch of the University of Michigan. In its preparation I have borrowed freely from Roberts' key (Tr. Am. Ent. Soc. XIXI, 1895, p. 281-282, often quoting it verbatim).

## SYNOPSIS OF THE ENHYDRINI OF AMERICA

## KEY TO GENERA AND SUBGENERA

- A<sup>1</sup> Treternasuture complete; scutellum visible; broadly oval; Panama, Colombia, Brazil ----- *ENHYDRUS* Cast.  
 A<sup>2</sup> Treternasuture incomplete  
 B<sub>1</sub> Broadly oval to narrow; scutellum invisible ----- *DINEUTUS* MacL.  
 C<sup>1</sup> Broadly oval; over 12 mm. in length; Panama to Kans. and Mass. ----- subg. *Dineutus* (s. str.)  
 C<sub>2</sub> Broadly oval to narrow; under 12 mm. in length except in *longimanus* where the form is strongly narrowed anteriorly; Nicaragua and Antilles to Manitoba and Nova Scotia ----- subg. *Cyclinus* Kby.  
 B<sup>2</sup> More narrowly oval to narrow; scutellum visible; Andes ----- *ANDOGYRUS* Ochs

KEY TO SPECIES OF *ENHYDRUS*

- A<sup>1</sup> Elytra with striae impressed, except sutural stria which is obsolete at base; outer elytral intervals convex; color above metallic blue; length 18-22 mm. southern Brazil: Espirito Santo to Santa Catharina ----- *SULCATUS* Wied.  
 A<sup>2</sup> Elytra with striae unimpressed; elytral intervals flat.  
 B<sub>1</sub> Color above metallic blue or bronze; length 17-22 mm.; central Brazil: Matto Grosso ----- *TIBIALIS* Reg.  
 B<sub>2</sub> Color above shining black; length 11-16 mm. ----- *ATRATUS* Reg.  
 C<sub>1</sub> Elytral striae impunctate; Costa Rica, Panama ----- *type*.  
 C<sub>2</sub> Elytral striae crenately punctate; western Colombia ----- *var. Crenatosistriatus* Rég.

KEY TO SPECIES OF *DINEUTUS* (s. str.)

- A<sub>1</sub> Femora of male toothed; surface olive green; elytral apex subtruncate to truncate.  
 B<sup>1</sup> Elytra with a bronze vitta; venter black; length 12-15.5 mm.; Mexico, Kans., Okla., Ark., Ga. to Mass. ----- *CILIATUS* Forsberg.  
 B<sup>2</sup> Elytra entirely bronze; venter pale; length 13-16 mm.; Rabun Co., Ga. ----- *ROBERTSI* Leng.  
 A<sup>2</sup> Femora of male toothed; surface olive green; elytral apex subtruncate to truncate.  
 B<sup>1</sup> Elytral apex subtruncate, not serrate; length 14-15 mm.; Nicaragua to Arizona ----- *SUBLINEATUS* Cev.  
 B<sup>2</sup> Elytral apex truncate, serrate; length 15-19 mm.; Panama to Mexico ----- *TRUNCATUS* Sharp.  
 C<sub>1</sub> Subrhomboidal, smaller; outer angle of elytral truncate blunt; lateral margins less flattened, shining; aedeagus indistinctly carinate above, with indistinct side margins; Panama, Costa Rica ----- *type*.  
 C<sub>2</sub> More regularly oval, larger outer angle of elytral truncate sharp; lateral margins more flattened not shining; aedeagus distinctly carinate above, with distinct side margins; Mexico ----- *subsp. Mexicanus* Ochs.

KEY TO SPECIES OF *DINEUTUS* subg. *CYCLINUS*.

- A<sup>1</sup> Venter black or dark brown.  
 B<sup>1</sup> Male profemur toothed.  
 C<sup>1</sup> Form regularly oval; sutural angles of elytra rounded except in *metallicus*.  
 E<sup>1</sup> Body more broadly oval; elytral apex broadly rounded, not serrate, not sinuate exteriorly in either sex; length 9.5-10.75 mm.; Nicaragua, Mexico ----- *SOLITARIUS* Aube.  
 D<sup>2</sup> Body less broadly oval; elytral apex sinuate exteriorly in female.  
 E<sup>2</sup> Sutural angles of elytra rounded.

- F<sup>2</sup> Elytral apices not serrate; sutural angles broadly rounded; profemoral tooth strong.  
 G<sup>2</sup> Profemur of female not toothed; length 10-11 mm.; Fla. to Conn., Ind. ----- *EMARGINATUS* Say.  
 G<sup>2</sup> Profemur of female toothed; length 10 mm.; Ark. ----- *AMAZONICUS* sp. nov.
- F<sup>3</sup> Elytral apices finely serrate; sutural angles scarcely rounded; profemoral tooth weak ----- *CAROLINUS* Lec.  
 G<sub>1</sub> Anterior legs paler; setigerous punctures of profemur 7 in male, 8 in female; aedeagus shorter than lateral lobes, parallel at base, narrowed apically; elytral punctures and striae more distinct; length 9-10 mm.; Tex., La., Fla. ----- type  
 G<sup>2</sup> Anterior legs darker; setigerous punctures of profemur 6 in male, 7 in female; aedeagus as long as lateral lobes, gradually narrowed to apex; length 8.5-9 mm. Bahamas ---- \*subsp. *murchleri* Ochs.
- E<sup>2</sup> Sutural angles of elytra distinct, apices serrate, feebly sinuate in male, strongly sinuate in female; length 8.5-9 mm.; West Indies ----- *AMERICANUS* L.  
 C<sup>2</sup> Distinctly broadened behind; sutural angles produced, dehiscent; length 9.5-10 mm.; Tex., La., Ill. ----- *PRODUCTUS* Rbts.\*
- B<sup>2</sup> Male profemur not toothed.  
 C<sup>2</sup> Sutural angle rounded in male, produced and strongly dehiscent in female; hypomera testaceous; length 10-11 mm.; N. H. and N. J. to Mich., Ind., and Tex. ----- *HORNII* Rbts.  
 C<sup>2</sup> Sutural angles distinct in both sexes; hypomera black.  
 D<sup>2</sup> Form less robust; elytral apices scarcely sinuate in male, apex and exterior apical margin feebly sinuate in female; profemur broadly testaceous at base; length 10-11 mm.; N. M. and Colo. to Fla., Maine, and Dakota ----- *ASSIMILIS* Kby.  
 D<sup>2</sup> Form more robust; elytral apex distinctly sinuate in male, apex and exterior apical margin strongly sinuate in female; profemur narrowly testaceous at base; length 10-12 mm.; Nova Scotia and Manitoba to Ill. and Va. ----- *NIGRIOR* Rbts.
- A<sup>3</sup> Venter brown or testaceous; sutural angles of elytra distinct.  
 B<sup>1</sup> Male profemur toothed; elytral apices not or very feebly bisinuate.  
 C<sup>1</sup> Elytral apices serrulate.  
 D<sup>1</sup> Size medium; surface not highly polished, bronzed, moderately narrowed in front; under surface pitchy brown; serration fine; length 11-11.5 mm., Tex. La., Fla. ----- *ANALIS* Rég.  
 D<sup>1</sup> Size medium to small; surface very highly polished, not bronzed; strongly narrowed in front; under surface chestnut brown; serration distinct; length 9-12 mm.; Fla., Ga. ----- *SERRULATUS* Lec.  
 C<sup>2</sup> Elytral apices not serrulate.  
 D<sup>2</sup> Broad, narrowed in front; surface metallic, shining; length 10.5-13 mm.; Que. and Conn. to S. Car., Manitoba, Iowa, and Mexico *DISCOLOR* Aubé.  
 D<sup>2</sup> Narrow, very coxex; surface polished black; length 9-10.5 mm.; Tex., Fla., Va. ----- *ANGUSTUS* Lec.
- B<sup>3</sup> Male profemur not toothed; elytral apices bisinuate, serrulate, sutural angle and point between the sinuations produced and acute; length 10.5-16 mm.; Antilles ----- *LONGIMANUS* Oliv.  
 C<sup>2</sup> Upper surface with silky lustre; propods brownish; length 10.5-12.5 mm.; Cuba, Jamaica ----- subsp. *Cubensis* Ochs.  
 C<sup>2</sup> Upper surface metallic.  
 D<sup>1</sup> Propods brownish; Haiti ----- type.  
 D<sub>2</sub> Propods rufous; length up to 16 mm.; Porto Rico subsp. *portoricensis* Ochs.

\*Since this was written Ochs (Ann. Carnegie Mus. XIX, 1929; p. 126) has announced that all specimens of *productus* from other than Texan localities belong to allied species, which he has not described. The same paper (p. 124-127) contains notes on *Enhydrus tibialis* Reg. *Draentus emarginatus* Say, and subsp. *floridensis* nov., *D. carolinus* subsp. *murchleri* Ochs. and *D. longimanus* Oliv.

KEY TO SPECIES OF *ANDOGYRUS*

- A<sup>1</sup> Elytra alutaceous and punctate.  
 B<sup>1</sup> Elytral striae evidenced by vague longitudinal impressions or obsolete; form more broadly oval.  
 C<sub>1</sub> Broadly oval; length 16.5-18 mm., Colombia ----- *BUQUETI* Aubé.  
 C<sup>2</sup> More narrowly oval.  
 D<sup>1</sup> More oval, less narrowed in front; less convex; Venezuela, Colombia, Ecuador, Peru, Bolivia ----- *GLAUCUS* Aubé  
 E<sup>1</sup> Punctuation more distinct.  
 F<sup>1</sup> Elytral striae evident.  
 G<sub>1</sub> More oval; Bolivia ----- \*var. *depressus* Brullé  
 G<sup>2</sup> Less oval; Ecuador ----- \*var. *lojensis* Rég.  
 G<sub>3</sub> More elongate; Colombia, Venezuela ----- \*var. *colombicus* Rég.  
 F<sup>2</sup> Elytral striae obsolete.  
 G<sub>1</sub> More oval; Colombia ----- *type*.  
 G<sub>3</sub> More elongate; Ecuador, Venezuela ----- \*var. *planatus* Rég.  
 F<sup>2</sup> Punctuation less distinct; Peru ----- \*var. *peruvianus* Rég.  
 D<sup>2</sup> More narrow, more attenuate in front, more convex; length 12.5-14 mm.; Colombia, Venezuela ----- \**SEDILLOTI* Rég.  
 B<sup>2</sup> Elytral striae present as rows of punctures; form narrow; length 11-12mm.: Peru, Chile, Argentina ----- *SERIATOPUNCTATUS* Rég.  
 A<sup>2</sup> Elytra alutaceous, not punctate; elytral striae present as nearly obsolete rows of elongate punctures or striolae; form narrow; length 11-12 mm.; Chile, Brazil, Peru ----- *ELLIPTICUS* Br.

## TRIBE ENHYDRINI REG.

Leng. Cat. Col. Amer. n. of Mex. 1920. p. 81. Handlirsh, Schroeder's Handb. d. Ent. III, 1923, p. 554. Hatch, Pap. Mich. Acad. Sci. V, 1925, p. 440, 443-451; Bull. Brook. Ent. Soc. XXII, 1927, p. 90.

*Enhydrinac* Ahlworth. Winkler, Cat. Col. reg. pal. II, 1924, p. 237, Ochs. Ent. Blatt. XX, 924, p. 229, 233; Ent. Frankf. XXXX, 1926, p. 63.

Ent. Zeit. Frankf. XXXX, 1926, p. 62.

*Enhydrini* Ochs, Ent. Zeit. Frankf. XXXX, 1926, p. 63.

*Dineutini* Ochs, Ent. Zeit. Frankf. XXXX, 1926, p. 63 et seq.

*ENHYDRUS* CAST.

Hatch, Pap. Mich. Acad. Sci. V, 1925, p. 444-445; VII, 1926, p. 311 et seq. (morphology); Bull. Brook. Ent. Soc. XXII, 1927, p. 90.

*sulcatus* Wied. Hatch, Pap. Mich. Acad. Sci. VII, 1926, p. 311 et seq. (Morphology).  
*atratus* var. *crenatostrigatus* Rég. Zimmerman, Ent. Mitt. VI, 1917, p. 140.

*DINEUTUS* McL.

Blatchley, Col. Ind. 1910, p. 237, 241 (*Dineutes*). Wilson, Bull. Bur. Fish. XXXIX 1923, p. 268 (larva). Ochs, Ent. Blatt. XX, 1924, p. 233; Ent. Zeit. Frankf. XXXX, 1926, p. 61-74, 112-126, 129-140, 190-197 (phylogeny). Hatch, Bull. Brook. Ent. Soc. XX, 1925, p. 101-110 (ecology), p. 110 (larva); XXII, 1927, p. 90; Pap. Mich. Acad. Sci. V, 1925, p. 444-450 (phylogeny); VII, 1926, p. 311 et seq. (morphology).

SUBGENUS *DINEUTUS* (S. STR.)

Hatch, Pap. Mich. Acad. Sci. V, 1925, p. 447; VII, 1926, p. 344. Ochs, Ent. Zeit. Frankf. XXXX, 1926, p. 65 et seq.

*ciliatus* Forsberg. Ochs, Ent. Blatt. XXI, 1925, p. 174. Hatch, Bull. Brook. Ent. Soc. XXI, 1927, p. 27 (biology).

*vittatus* Germ. Blatchley, Col. Ind. 1910, p. 241. Hatch, Bull. Brook. Ent. Soc. XX, 1925, p. 106 (biology).

*robertsi* Leng, Jr. N. Y. Ent. Soc. XIX, 1911, p. 11.

*vittatus* Leng nec Germ., Jr. N. Y. Ent. Soc. XVIII, 1910, p. 81.

*truncatus* Chev. Zimmermann, Ent. Mitt. VI, 1927, p. 137. Ochs, Ent. Zeit. Frankf. XXXIX, 1925, p. 1. Hatch, Bull. Brook. Ent. Soc. XX, 1925, p. 104 (habitat).

subsp. *mexicanus* Ochs. Ent. Zeit. Frankf. XXXIX, 1925, p. 1.

SUBGENUS *CYCLINUS* KBY.

- Hatch, Pap. Mich. Acad. Sci. V, 1925, p. 447; VII, 1926, p. 344. Ochs. Ent. Frankf. XL, 1926, p. 66 et seq.
- carolinus* Lec. Leng and Mutchler Bull. Am. Mus. Nat. Hist. XXXVIII, 1918, p. 95. Ochs, Am. Mus. Nov. 125, 1924, p. 4; Ent. Zeit. Frankf. XL, 1926, p. 191.
- subsp. *mutchleri* Ochs. Am. Mus. Nov. 125, 1924, p. 2-4.
- emarginatus* Say. Blatchley, Col. Ind. 1910, p. 241. Leng and Mutchler, Bull. Am. Mus. Nat. Hist. XXXVIII, 1918, p. 95. Blatchley Bull. Am. Mus. Nat. Hist. XLI, 1919, p. 316.
- producanus* Rbts. Hatch, Bull. Brook. Ent. Soc. XX, 1925, p. 105 (habitat). *americanus* L. Ochs, Kol. Rund. XIII, 1927, p. 36.
- metallicus* Aubé. Ochs, Am. Mus. Nov. 125, 1924, p. 2, 4.
- asinimilis* K by. Osborn, Ent. Am. II, 1886, p. 63, (flight). Wickham, Bull. Lab. Nat. Hist. St. Univ. Iowa II (4), 1893, p. 330, pl. IX (larva); Can. Ent. XXVI, 1894, p. 39-41 (parasites of larva). Blatchley, Col. Ind. 1910, p. 241, 242, fig. 123. Weiss, Can. Ent. XLVI, 1914, p. 33-34 (hydrotropism). Leng and Mutchler, Bull. Am. Mus. Nat. Hist. XXXVIII, 1918, p. 95. Ochs, Kol. Rund. XIII, 1927, p. 36.
- americanus* F. (nec L.) Zimmermann, Ent. Mitt. VI, 1927, p. 137, Wilson, Bull. Bur. Fish. XXXIX, 1923, p. 302-308, fig. 84-94 (life history). Mac Gillivray, Exter. Ins. Anat. 1923, p. 131 (antenna) Turner, Biol. Bull. XLVI, 1924, p. 50-52 (hydrotropism). Hatch, Bull. Brook. Ent. Soc. XX, 1925, p. 104 (habitat), p. 110 (larva); XXII, 1927, p. 28 (larva). Smith, Psyche XXXIII, 1926, p. 156-161 (ecology).
- nigrior* Rbts. Zimmermann, Ent. Mitt. VI, 1917, p. 138. Hatch, Bull. Brook. Ent. Soc. XX, 1925, p. 104 (habitat), p. 109 (incubation); XXII, 1927, p. 28 (larva); Pap. Mich. Acad. Sci. VII, 1926, p. 311 et seq. (morphology).
- hornii* Rbts. Blatchley, Col. Ind. 1910, p. 241, 242. Zimmermann, Ent. Mitt. VI, 1917, p. 139. Hatch, Bull. Brook. Ent. Soc. XX, 1925, p. 104 (habitat), p. 109 (incubation); XXII, 1927, p. 28 (larva).
- longimanus* Oliv. Ochs, Am. Mus. Nov. 125, 1924, p. 2, 6; Ent. Zeit. Frankf. XXXX, 1926, p. 192.
- subsp. *portoricensis* Ochs. Am. Mus. Nov. 125, 1925, p. 5.
- subsp. *cubensis* Ochs. Ent. Zeit. Frankf. XXXX, 1926, p. 192.
- analis* Rég. Leng and Mutchler, Bull. Am. Mus. Nat. Hist. XXXVIII, 1918, p. 95.
- serrulatus* Lec. Leng and Mutchler, Bull. Am. Mus. Nat. Hist. XXXVIII, 1918, p. 95. Blatchley, Bull. Am. Mus. Nat. Hist. XLI, 1919, p. 316 (habitat). Dozier, Ann. Ent. Soc. Am. XIII, 1920, p. 362 (habitat).
- discolor* Aubé. Blatchley, Col. Ind. 1910, p. 241. Hatch, Bull. Brook. Ent. Soc. XX, 1925, p. 105 (habitat), p. 109 (incubation); XXII, 1927, p. 28 (larva). Brown and Hatch, Jour. Comp. Psychol. IX, 1929, p. 159-189 (behavior and ecology).
- angustus* Lec. Leng and Mutchler, Bull. Am. Mus. Nat. Hist. XXXVIII, 1918, p. 95.

*ANDOGYRUS* OCHS.

- Ochs, Ent. Blatt. XX, 1924, p. 236. Hatch, Pap. Mich. Acad. Sci. V, 1925, p. 444, 450 (*Andogyrus*); VII, 1926, p. 311 et seq. (morphology). Bull. Brook. Ent. Soc. XXII, 1927, p. 90.
- glauca* var. *peruvianus* Rég. Zimmermann, Ent. Mitt. VI, 1917, p. 141.
- seriatopunctatus* Rég. Hatch, Pap. Mich. Acad. Sci. VII, 1926, p. 311 et seq. (morphology).
- ellipticus* Br. Zimmermann, Ent. Mitt. VI, 1917, p. 141.

**PHYLOGENY OF THE AMERICAN ENHYDRINI:** I have previously sketched the major features of this event (Pap. Mich. Acad. Sci. V, 1925, p. 444-451). *Enhydrus* seems to have been the primitive genus of the tribe. From it rose *Dineutus* in Ethiopia and *Andogyrus* in the Andes. There is no basis for Ochs' tribe Dineutini. The line of cleavage is between *Enhydrus* and *Andogyrus*, and *Dineutus* and *Enhydrus* are really very closely related, as revealed by the general habitus, the wing venation, and the antennae.

The North American species of *Dineutus* (s. str.) probably represents a remigration from an Ethiopian center, and the subgenus *Cyclinus* is probably derived from *Dineutus* (s. str.). The center of origin of the species seems to lie in the neighborhood of the Mexico-Texas region.

Of the species of *Dineutus* (s. str.), *vittatus* Germ. with its rounded elytral apices seems most primitive, with *robertsi* Leng a localized off shoot. *Sublineatus* Chev., *truncatus* Sharp, and *truncatus mexicanus* are derivatives with progressively more specialized elytral apices. I am uncertain as to the interpretation to be placed on the dentate male profemur. Its occurrence in those species with truncate elytra would lead me to suspect it is derivative. Its occurrence in the primitive group of *Cyclinus*, would lead me to suspect that *Cyclinus* was derived from a *Dineutus* (s. str.) with a dentate male profemur—but with rounded elytral apices—the tooth being subsequently lost in the *assimilis* and *longimanus* groups. The American species of *Dineutus* (s. str.) may have a polyphyletic origin. The dentate male profemur is widely distributed, but it is not universal, in the old world species of the genus.

Of the species of *Cyclinus*, *solitarius* most closely resembles *Dineutus* (s. str.) both in distribution and habitus. It possesses an aggregate of characters which seem to be primitive for the subgenus: a regularly oval habitus, a rounded not narrowed anterior end, rounded sutural angles, non-serrulate elytral apices, non-sinuate elytral apex, a dentate male profemur, a non-dentate female profemur, and a black venter. The other species all lose one or more of these primitive features, as shown in the table, until *longimanus* is derivative in all but one respect.

Of the species, *amazonicus* and *emarginatus* are closely related to each other and to *carolinus*. *Nigrior* is closely related to *assimilis*, as is *analis* to *serrulatus*. While I believe that distinct sutural angles have arisen more than once in the history of the group, I suspect that all the species of *Cyclinus* with a pale venter are related. I cannot agree with Ochs (Ent. Zeit. Frankf. XXXX, 1926, p. 138) that *longimanus* should be placed in *Dineutus* (s. str.) rather than in *Cyclinus*. I find its nearest relative in *discolor*, and cite the following as evidence: its pale venter, its habitat on running water (both of these apply likewise to *Dineutus* (s. str.) *robertsi* Leng), its size which appears to be primitively smaller (on Cuba), becoming derivatively larger (on Porto Rico), its distinctly narrowed anterior end, and its spinose elytral apex, which is simply an exaggeration of the sinuate condition characteristic of several species of *Cyclinus* but entirely lacking in *Dineutus* (s. str.).

TABLE OF SPECIES OF *DINEUTUS* SUBG. *CYCLINUS*.

	oval shape	anterior end not narrowed	rounded sutural angle	elytral apex not serrulate	elytral apex not sinuate	male profemur dentate	female profemur not dentate	black venter
<i>solitarius</i>	P	P	P	P	P	P	P	P
<i>emarginatus</i>	D	P	P	P	D	P	P	P
<i>amazonicus</i>	D	P	P	P	P	P	D	P
<i>carolinus</i>	D	P	P	D	D	P	P	P
<i>americanus</i>	D	P	D	D	D	P	P	P
<i>productus</i>	D	D	D	D	D	P	P	P
<i>hornii</i>	D	P	½D	P	D	D	P	P
<i>assimilis</i>	D	P	D	P	D	D	P	P
<i>nigrior</i>	D	P	D	P	1½D	D	P	P
<i>analis</i>	D	P	D	D	D	P	P	D
<i>serrulatus</i>	D	D	D	1½D	D	P	P	D
<i>discolor</i>	D	D	D	P	D	P	P	D
<i>angustus</i>	1½D	D	D	P	D	P	P	D
<i>longimanus</i>	D	D	D	1½D	1½D	D	P	D

## HYDROPHILIDAE

\*----- *Tropisternus* (*s. str.*) *mexicanus* Cast. (d'Orychmont, Ann. Soc. Ent. Belg. LXII, 1922, p. 32, 33, fig. 4 (1)). 1; July 5; Le Flore Co.; in mud at bottom of a stagnant back water of the Arkansas R. Not previously recorded north of the region from Costa Rica to Mexico. According to d'Orychmont, *striolatus* Lec., recorded from Florida and Louisiana to Indiana, is closely related to *mexicanus*, perhaps is only a subspecies. *Mexicanus* may be separated readily from *striolatus*, which it otherwise resembles, by the shape of the central dark disc of the pronotum, which is longer than wide in *mexicanus*, wider than long in *striolatus*.

2807. *Tropisternus* (*Cyphostethus*) *lateralis* (F.) 1; July 5; Le Flore Co.; roadside pool.

## STAPHYLINIDAE

Subfam. *Silphinae*

\*2913. *Nicrophorus orbicollis* Say. 1; June 26; Le Flore Co.

2911. *Nicrophorus americanus* (Oliv.) 1; July 1; Pike Co., Ark.

## CATOPIDAE

\*2958. *Promaphagus consobrinus* Ill. 1; Cleveland Co.

## HISTERIDAE

\*6565. *Hister laevis* Germ. 2; June 20; Le Flore Co.

6596. *Hister abbreviatus* F. 1; June 28; La Flore Co.; dung.

*Saprinus otiosus* Lec. Horn (Rep. U. S. Geol. Surv. for 1871, 1872, p. 386) records "*Saprinus otiosus* Lec." from Indian Territory. I am unable to find a description of any such species, and am forced to conclude either that it is a *nomen nudum*, a manuscript name that was never validated by description, or a misprint, perhaps of *S. vitiosus* Lec.

## LYCIDAE

6925. *Calopteron terminale* (Say) 1; June 24; Le Flore Co.; sweeping vegetation along stream.

6926a. *Calopteron reticulatum affine* (Lec.) 1; July 1; Pike Co., Ark.



6929. *Caeniella dimidiata* (F.) 1; June 29; Polk Co., Ark.; sweeping among blackberries.

\*6944. *Plateros timidus* Lec. 2; July 1-8; Pike Co., Ark.; Adair Co., Okla.; in oak and hickory thicket.

\*..... *Plateros timidus* ab. *humeralis* nov. Corresponds closely with the description of *timidus* Lec. (Tr. Am. Ent. Soc. IX, 1881, p. 26), especially as regards the flattened antennae and the carina at the apex of the pronotum. It differs by the possession of evidently reddish humeri. Type: Adair Co., Okla. on Illinois R., 4 miles from Watts, July 9, 1927. Paratype: Le Flore Co., Okla. Two-thirds miles from Kiamini R. in piny and bushy woods, 8 miles west of state line, June 24, 1927.

\*6948. *Plateros sollicitus* (Lec.). 1; July 9; Adair Co.

#### CANTHARIDAE

\*7052. *Chauliognathus marginatus* F. 23; June 21-July 9; Adair Co., Le Flore Co., Sequoyah Co.; sweeping herbage, especially along streams; on blossoms of sumac. Two principal forms are present: (1) with entire elytral disc black, (2) with black spot more or less confined to the apical portion of the elytral disc.

#### CLERIDAE

\*7727. *Necrobia rufipes* (DeG.) 3; June 25; Le Flore Co.; sweeping.

#### OEDEMERIDAE

\*7770. *Copidita suturalis* Horn. ? Okla.

#### RHIPIPHORIDAE

\*7954. *Macrosiagon cruentum* Lec. 1 female; June 22; Le Flore Co.; on blossom of sumac. There are a pair of moderately evident foveae towards the base of the pronotum on either side of the meson.

#### MELOIDAE

\*8032. *Epicauta corvina* Lec. Horn, Rep. U. S. Geol. Surv. for 1871, 1872, p. 390.

#### ELATERIDAE

..... *Alaus (Calais) oculus* var. *oklahomensis* nov. The specimens formerly reported (Okla. Acad. Sci. VI, 1926, p. 144, Publ. Univ. Okla. Biol. Surv. I.) as *Alaus oculus* L. prove to be a form intermediate between *oculus* L. and *luciosus* Hope, and adequately distinguished from these forms in the subjoined key. Type: Dougherty, Murray Co., Okla. June 16, 1925 (OE 269). Paratype: Le Flore Co., Okla. June 21, 1927, in rotting stump in woods (H 27-23).

\*8572. *Alaus (Calais) myops* (F.) 1; June 24; Le Flore Co.; in rotten tree.

#### KEY TO NEARCTIC SPECIES OF *ALAUUS* ESCHL., SUBG. *CALAIS* CAND.

A<sup>1</sup> Elytral apices entire; "eye-spot" of pronotum larger.

B<sup>1</sup> Sides of pronotum evidently but feebly sinuate in front of middle.

C<sup>2</sup> "Eye-spot" broad, 75% to 85% as wide as long; pronotum and elytra with prominent patches of white scales ----- *OCULATUS* L.

D<sup>1</sup> "Eye-spot" subcircular.

E<sup>1</sup> Legs covered with both white and black hairs; pronotum less sinuate in front of basal angles, outer antennal segments less transverse, last abdominal sternites less densely punctate with more fine punctures intermixed; Mexico to Colo., Kans., and La.; ? Ont. var. *luciosus* Hope.

E<sup>2</sup> Legs covered with black hairs only; pronotum more sinuate in front of basal angles, outer antennal segments more transverse, last abdominal sternite more densely punctate with very few intermixed fine punctures; Ariz. ----- var. *zunianus* Csy.

D<sub>2</sub> "Eye-spot" oval; Okla. ----- var. *oklahomensis* nov.

D<sup>3</sup> "Eye-spot" obovate; Que. and Ont. to Fla., Tex., and Colo.; Cuba and B. C. (Vernon) ----- type.

C<sup>3</sup> "Eye-spot" narrow from 50% to 60% as wide as long. ----- *MYOPS* F.

L<sup>2</sup> Patches of white scales on elytra prominent; Que. and Mich. to Fla. Ala., and Okla. ----- type.

D<sup>2</sup> Patches of white scales on elytra obsolete; Canada, Vt.

----- var. *canadensis* Cand.

B<sup>2</sup> Sides of pronotum evenly arcuate in front of middle; elytra nearly black with patches of white scales obsolete; "eye-spot" broadly oval; Lower Calif. and N. M. to B. C. and Colo. ----- *MELANOPS* Lec.

A<sub>2</sub> Elytral apices deeply emarginate; "eye-spots" small, equidistant from each other and lateral margin; Cuba, Fla. ----- *PATRICIUS* Cand.  
*Zunianus* Csy. and *patricius* Cand. are known from descriptions only. For bibliography see Schenckling, Coleop. Catal. 80, 1925, p. 50-51; 88, 1927, p. 520-521.

## BUPRESTIDAE

9316. *Chalcophora virginianensis* (Drury) 2; July 1; Pike Co., Ark.  
 9374. *Buprestis rufipes* (Oliv.) 2; July 15; Craig Co.; copulating on leaf.

## COCCINELLIDAE

11158. *Ceratomegilla fuscilabris* (Muls.) 12; June 22-July 9; Adair Co., Le Flore Co., Okla.; Polk Co., Ark.; sweeping.  
 11173. *Hippodamia convergens* Guer. 2; June 25-July 5; Le Flore Co.; sweeping. One of the specimens has five spots on the elytron, the other has 6 spots.  
 \*11189. *Coccinella sanguinea* (L.) 7; June 25-28; Le Flore Co.; sweeping.  
 \*11217. *Chilocorus bivulnerus* Muls. 1; June 24; Le Flore Co.; in piny and brushy woods.

## SCARABAEIDAE

13040. *Canthon depressipennis* Lec. 7; June 28; Le Flore Co.; dung.  
 \*13044. *Canthon lecontei* Harold. 1; June 25; Le Flore Co.  
 13048. *Canthon laevis* Drury. 12; June 21-July 6; Adair Co., Le Flore Co., Sequoyah Co., Okla.; Scott Co., Ark.; cattle dung.  
 13050. *Canthon chalcites* (Drury) 5; June 21-July 9; Adair Co., Le Flore Co.; observed rolling ball of dung on hot path, June 21.  
 13086. *Onthophagus pennsylvanicus* Har. 3; June 21-28; Le Flore Co.; cattle dung.  
 \*----- *Onthophagus oklahomensis* Brown, Can. Ent. LIX, 1927, p. 129 (Payne and Grady Co.; Apr. 5-June 11; fresh dung on sand or sandy soil). 7; June 28-July 13; Le Flore Co., Delaware Co.; cattle dung.  
 \*----- *Onthophagus cynomysi* Brown, Can. Ent. LIX, 1927, p. 131 (Noble Co.; June 29, 1926; in burrow of prairie dog).  
 \*13203. *Aphodius tenuistriatus* Horn. Brown, Can. Ent. LIX, 1927, p. 166 (Okla.).  
 \*----- *Aphodius cynomysi* Brown, Can. Ent. LIX, 1927, p. 166 (Noble Co.; June 21-29, 1926; in burrows of prairie dog).  
 \*----- *Aphodius cavidomus* Brown Can. Ent. LIX, 1927, p. 167 (Noble Co.; June 21-29, 1926; in burrows of prairie dog).  
 \*13216a. *Ataenius abditus texanus* Harold. 1; Cleveland Co.  
 \*13227. *Ataenius figurator* Harold var. Horn, Tr. Am. Ent. Soc. XIV, 1887, p. 80 (Ind Terr.).  
 \*13232. *Ataenius stercorator* (F.) 2; La Flore Co.; cattle dung.  
 \*13686. *Macrodactylus angustatus* Beauv. 14; June 17-25; Le Flore Co.; sweeping herbage, especially along streams.  
 \*13732. *Anomala innuba* F. 2; June 19-21; Le Flore Co.  
 \*13739. *Spilota marginata* F. 1; June 17; Le Flore Co.  
 \*----- *STRIGODERMELLA OKLAHOMENSIS* sp. nov. Black, except the metallic green pronotum, the greenish metasternum and metacoxae, and the pale markings on the elytra, which are somewhat variable, ranging from discrete anterior and posterior spots, which may be much reduced, to a single spot covering most of the disc and divided across the middle by a row of three black spots (type). Head and pronotum coarsely and irregularly punctate, the pronotum with conspicuous smooth areas which are feebly alutaceous, the most conspicuous of these smooth areas being towards either side of the disc opposite the lateral angulation and just lateral of a vague depression and others on either side of the meson. Cephalad along the meson of the pronotum is a coarsely punctate sulcus which is continued caudad by a raised smooth area, on either side of which there is a coarsely punctate depression. Scutellum coarsely punctate, the disc nearly smooth. Elytra with about nine feebly punctate sulci (including the sutural and marginal sulci) about four of which attain the base between the suture and the humeral umbone. Length 5-6mm. Type: Male Le Flore Co., on Kiamchi R. eight miles west of the state line, June 22, 1927, sweeping herbage (H27-30) 48 male paratypes: June 21-28; Le Flore Co., same locality as type, sweeping grass. 1 paratype: July 4; Sequoyah Co.; one mile west of Muldrow.

As regards general form of head, pronotum, elytra, etc., I cannot find that this species differs from the other species of the genus, and hence, must regard these features as generic rather than specific in value. It is most closely related to *knausi* Brown (Bull. Brook. Ent. Soc. XX, 1925, p. 200), from which it is separated by (1) the prominent anterior mesal sulcus on the pronotum, (2) the unicolorous and (3) conspicuously green pronotum, (4) four instead of five striae attain the base of the elytron between the scutellum and humeral umbone, and (5) usually about four fairly distinct striae can be counted laterad to these—these lateral striae are said to be confused in *knausi*. One specimen out of my series of 50 has a faint indication of a pale spot towards the anterior angle of the pronotum and a violaceous pronotum.

KEY TO NEARCTIC SPECIES OF *STRIGODERMELLA*

- A<sup>1</sup>. Pronotum densely punctate and alutaceous throughout, obscure greenish or violaceous, not impressed along meson, unicolorous; 5.5 mm. long; Fla., N. C.-----  
----- *floridana* Ohaus.
- A<sup>2</sup>. Pronotum unevenly punctate, with appreciable smooth areas between punctures, more or less impressed cephalad along the meson.
- B<sup>1</sup>. Pronotum feebly impressed cephalad along meson; obscurely greenish or violaceous.
- C<sup>1</sup> Pronotum unicolorous, punctuation finer; length 4.6-5.2 mm.; N. J. to Fla.  
----- *pygmaea* F.
- C<sup>2</sup> Pronotum usually with a pale area on each side near anterior angle, punctuation coarser; length 6-6.7 mm.; Kans.-----*knausi* Brown.
- B<sup>2</sup> Pronotum strongly impressed cephalad along meson, unicolorous, bright greenish; punctuation coarser; length 5-6 mm.; Okla.-----*oklahomensis* nov.

My specimen of *floridana* Ohaus from Southern Pines, N. C. conforms to Casey's transcription (Mem. Col. VI, 1915, p. 60) of Ohaus' description, except that the pronotum is violaceous rather than greenish. For the present I prefer to consider my specimen conspecific with *floridana* rather than to describe it as new.

- 13757c. *Pelidnota lutea texensis* Csy. 1; Delaware Co.; July 13.
13800. *Ochrosidia rufifrons* Csy. 8; July 1-15; Adair Co., Osage Co., Rogers Co., Okla.; Pike Co., Scott Co., Ark.; under boards. The specimens previously listed as *O. immaculata* (Oliv.) (Okla. Acad. Sci. VI, 1926, p. 146) are conspecific with these.
13833. *Ligyrodes quadripennis* Csy. 1; July 2; Scott Co., Ark. Differs from *relictus* Say (1) by its quadrate elytra, which are together 1.5 longer than wide in *relictus*, and (2) by its evenly punctate scutellum, which is impunctate in my specimens of *relictus* except for a small group of punctures or strigulae towards either anterior angle.
13931. *Cotinis nitida* (L.) 17; June 27-July 16; Delaware Co., Le Flore Co., Osage Co., Sequoyah Co., Okla.; Polk Co., Ark.; under boards; sweeping vegetation.
- \*----- *Cotinis nitida* ab. *brunnea* nov. I apply this name to a specimen with elytra entirely brown, the pronotum with a green vitta either side of the meson. Type: Delaware Co., Okla. July 13, 1927 (H 27-248). Paratype: Bloomington, Ind. June 25, 1925 (J. A. Harris Jr.).
13942. *Euphoria (Haplophoria) clarki* Lec. 1; June 8; Comanche Co.
13946. *Euphoria (Haplophoria) kerni* Hald. 1; July 16; Osage Co.; under board.
13953. *Euphoria (s. str.) sepulchralis* (F) 3; June 20-22; Le Flore Co. Casey's subspecies of this appear to me to be of very doubtful validity.
14015. *Trigonopeltastes delta* (Forst.) 1; July 4; Sequoyah Co.; Sweeping herbage near stream.
- \*14016. *Trichotinus piger* (F.) 6; June 21-25; Le Flore Co.; sweeping vegetation, on blossoms of wild rose. Casey's *intermedius*, *reductus*, *rufobrunneus*, and *oberulus* are doubtfully distinct from *piger* F.

## LUCANIDAE

14037. *Lucanus elaphas* F. 1 female, June 30; Sevier Co., Ark.; under decaying log.
- \*14039. *Dorcus parallelus* Say. 1; June 18; Le Flore Co.; under log in open woods.

## PASSALIDAE

14064. *Passalus cornutus* F. 15; June 25-July 11; Adair Co., Delaware Co., Le Flore Co., Osage Co., Sequoyah Co., Okla.; Sevier Co., Scott Co., Ark.; under boards and logs and in rotten logs.

## CERAMBYCIDAE

\*14080. *Derancistrus taslei* Buq. 3; June 17; Le Flore Co.; flying near pine tree.

\*14084. *Prionus laticollis* (Drury) 1 male; June 28; La Flore Co.

14089. *Prionus (Neopolyarthron) imbricornis* (L.) 1 female; June 30, Sevier Co., Ark.

----- *Prionus (Neopolyarthron) imbricornis diversus* Csy. 4; July 10-13; Delaware Co.

## CHRYSOMELIDAE

\*15262. *Antipus (Anomoea) laticlavata* (Forst.) 30; June 19 (29 specimens)-July 4; Le Flore Co., Sequoyah Co.; sweeping. In preparing the table to the species of this subgenus given previously (Okla. Acad. Sci. VI, 1926, p. 147), Schaeffer's note (Jr. N. Y. Ent. Soc. XXVII, 1919, p. 323-324) was overlooked. Even in its light, however, it is impossible to regard the Oklahoma and Bowie Co., Tex. specimens as other than co-specific with *laticlavata* Forst., and it looks as though *hoegi* Jac. might be the immaculate form of this species. Schaeffer cites the more transverse antennal segments and more strongly sinuate male protibiae as distinguishing *hoegi* from *laticlavata*, but neither of these will separate Oklahoma from Michigan specimens. The male is distinguished from the female most readily by its enormously swollen mandibles, as well as by its more strongly curved protibiae. The black sutural margin of the elytra, when present, is dilated in the female, not so in the male, but may be absent in either sex. The color variations known to the author may be tabulated as follows.

KEY TO COLOR VARIETIES OF *ANTIPUS*

- A<sub>1</sub> Male: mandibles swollen at base; protibia more strongly curved.
- B<sup>1</sup>. Elytra with sutural and side margins dark, the sutural stripe not dilated.
- C<sup>1</sup> Scutellum dark.
- D<sub>1</sub> Legs dark except femora; Mich. ----- Col. var. A male.
- D<sub>2</sub> Legs paler except tarsi and protibia; Mich., Okla., ----- Col. var. B male.
- C Scutellum pale at apex; legs pale except tarsi and protibia; Okla. -----
- Col. var. C.
- C<sup>2</sup> Scutellum pale; legs pale except tarsi and protibia; Okla. -----
- Col. var. D.
- B<sub>2</sub> Elytra pale; scutellum dark; Bowie Co., Tex. ----- Col. var. E.
- A<sub>2</sub> Female: mandibles feebly swollen at base; protibia less curved.
- B<sup>2</sup>. Elytra with sutural and side margins dark, the sutural stripe dilated.
- C<sup>1</sup> Scutellum dark.
- D<sup>1</sup> Legs dark except profemora; Mich. ----- Col. var. A female.
- D<sup>2</sup> Legs dark except tarsi and profemora and anterior side of mesofemora; Mich. ----- Col. var. F.
- D<sup>3</sup> Legs dark except pro and mesofemora; Mich. ----- Col. var. G.
- D<sup>4</sup> Legs pale except tarsi and protibiae; Mich., Okla. ----- Col. var. B female.
- C<sub>2</sub> Scutellum pale; legs pale except tarsi and protibiae; Okla. ----- Col. var. H.
- B<sub>2</sub> Elytra immaculate; scutellum dark; legs pale except tarsi and protibiae (mesotibiae dusky); Okla. ----- Col. var. I.

\*15570. *Graphops nebulosus* (Lec.) 1; Cleveland Co.

\*15688. *Chrysomela auripennis* Say. 1; June 19; Le Flore Co.

15769. *Diabrotica duodecimpunctata* (F.) 6; June 22-July 4; Le Flore Co., Sequoyah Co., sweeping vegetation, especially along streams.

\*15906. *Disonycha triangularis* (Say) 1; Cleveland Co.

## CURCULIONIDAE

\*16754. *Hypers punctata* (F.) 1; Cleveland Co.

\*17156. *Curculio caryae* Horn. Chittenden, Ent. Amer. VII, 1926, p. 152 (Canadian, Okla.).

\*17162. *Curculio boculi* Chittenden, *ibid.*, p. 172 (Okla.).

\*17170. *Curculio strictus* Csy. Chittenden, *ibid.*, p. 167 (Perkins).

\*17176. *Curculio victoriensis* Chittenden, *ibid.*, p. 164 (Stonewall, Okla.). 1; Cleveland Co.