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KEY TO THE NEW WORLD CREMASTOCHEILINI, WITH NOTES AND
DESCRIPTION OF A NEW GENUS
(COLEOPTERA: SCARABAEIDAE)

HENRY F. HOWDEN, *Biology Department, Carleton University, Ottawa*

ABSTRACT—*Paracyclidius bennetti*, n. gen., n. sp. is described from Mayaro, Trinidad, and is included in a key to the New World genera of Cremastocheilini. Nomenclature and relationships in the tribe are briefly discussed and a lectotype for *Lissomelas flohri* Bates is designated.

The New World tribe, Cremastocheilini, is currently divided into eight genera, four of these, *Uloptera* Burmeister, *Lissomelas* Bates, *Psilocnemis* Burmeister, and *Paracyclidius*, n. gen. being monotypic. The other genera all contain six or more species, with the largest genus, *Cremastocheilus* Knoch, being divided into several subgenera. Three of the eight cremastocheiline genera have never been included in a key relating them to the other New World genera, and one of the purposes of this paper is to rectify this. I have not seen examples of *Uloptera*, the characters mentioned being from Burmeister's original description (1842). The characters of the North American genera, including illustrations of the genitalia, have been discussed by Cazier (1938, 1940), and a key to the North American species has been published by Potts (1945).

Biological information on the New World members of the tribe is scanty. *Genuchinus* Westwood has been collected in bromeliads in Mexico and in sotol, *Dasytirion Wheeleri* Wats., in Arizona. The only genus in which the behavior of some species have been carefully studied is *Cremastocheilus*. Cazier and Mortenson (1965) have done much of this work, including in their paper a summary of all of the biological information available for the genus. Specimens in many of the genera have been collected largely by "chance" and are poorly represented in collections.

Nomenclatorially there has been confusion in the spelling of *Cremastocheilus* (vs. *Cremastochilus*) and in the usage of two subgeneric names proposed by Mann (1914). *Cremastocheilus* Knoch (1801) was emended by Burmeister and Schaum (1840) to *Cremastochilus*. Subsequent usage has been irregular, the majority of recent papers utilizing the original spelling as recommended in the "International Code of Zoological Nomenclature." In 1914 Mann proposed *Myrmecotonus* as a subgenus of *Cremastocheilus* with *C. knochii* LeConte as the type. Subsequently a printed correction slip was sent out by the journal which stated: "For *Myrmecotonus* read 'Myrmeceicon' page 179 and 180." No explanation for this change was given, but one or both names

have since been cited as valid subgenera. Since *Myrmecotonus* is not preoccupied and since *Myrmeceicon* does not seem to be an emendation of spelling, the proposal of *Myrmeceicon* is invalid. Taxonomically *Myrmecotonus* is a rather poorly defined subgenus but, for completeness, is included in the subsequent key.

Lissomelas Bates (1889, p. 376) was described from a series taken at Ventanas (= Villa Corona) in Durango, Mexico, by Hoge and from Mexico City by Flohr. No type was selected by Bates and in order to avoid any possibility of confusion I hereby designate a male labeled "Ventanas, Durango, Hoge, *Lissomelas flohri* Bates ♂ [handwritten], B.C.A. Col., II (2) *Lissomelas flohri*." and with my label as lectotype. The specimen is in the British Museum (Natural History).

KEY TO THE GENERA AND SUBGENERA OF NEW WORLD CREMASTOCHEILINI

1. Posterior pronotal angles rounded, unmodified; anterior pronotal angles lacking indentation at inner edges 5
 Posterior pronotal angles spinose, acute, or with a deep groove and a knob-like protrusion; anterior angles acute with a deep inner groove usually containing a dense mat of setae. North America north of Isthmus of Tehuantepec **Cremastocheilus** Knoch 2
2. Fore tarsi with terminal segments not enlarged or twisted; vertex lacking a distinct carina on each side above eyes 3
 Fore tarsi with terminal two segments conspicuously enlarged and twisted; vertex with a distinct longitudinal carina above each eye. Arizona, California subgenus **Macropodina** Casey
3. Modified spines or knobs of hind pronotal angles not extending forward $\frac{1}{3}$ or more of length of pronotum (fig. 1) 4
 Modified posterior angles of pronotum with inner margin raised and extending forward onto disc, often dividing pronotal disc longitudinally into three unequal thirds (fig. 2). Mexico north to California and Nebraska subgenus **Trinodia** Casey
4. Posterior edge of mentum medially acutely angulate to abruptly rounded. Mexico and northward, largely west of Mississippi River
 subgenus **Myrmecotonus** Mann
 Posterior edge of mentum medially faintly to deeply notched. United States and Canada largely east of Mississippi River
 subgenus **Cremastocheilus** Knoch
5. Pronotal disc convex, sometimes irregularly so, but never with distinctly delimited fossae; anterior clypeal margin distinctly reflexed 6
 Pronotal disc with eleven distinctly delimited fossae, the surface of the fossae with arcuate rugae, surface between fossae smooth; anterior clypeal margin only slightly reflexed, broadly emarginate. French Guiana **Uloptera** Burmeister
6. All tarsal segments smooth, punctate or irregularly sculptured, but never with numerous, evenly spaced, longitudinal carinae; dorsal surface usually punctate or with head rugose or distinctly punctate 7
 All tarsal segments with numerous, evenly spaced, longitudinal carinae; dorsal surface (fig. 8) smooth, head sometimes faintly punctate be-

- tween eyes and vaguely tuberculate near clypeal margin. Western Mexico, Arizona **Lissomelas** Bates
7. Antennal scape nearly flat or convex, surface finely to heavily punctate or rugose; dorsal surface usually partly opaque or, if shining, with white cretaceous markings 8
Antennal scape concave, surface smooth and shining; dorsal surface shining, smooth between shallow, discrete punctures; punctures usually separated by more than their diameters. Southeastern United States; also reported from Mexico **Psilocnemis** Burmeister
8. Pronotal surface smooth or finely punctate. Body size large, 20 to 30 mm; cretaceous markings lacking 9
Pronotal surface distinctly punctate, body slender, size small to moderate, 9 to 15 mm; cretaceous markings usually present. South America north to Arizona **Genuchinus** Westwood
9. Anterior margin of clypeus bituberculate or with horn (figs. 5, 6) pronotum with lateral marginal bead; fore femur with anterior margin at apical third adjacent to tibia excavate to receive tibial tooth (fig. 5). South America **Cyclidius** MacLeay
Anterior margin of clypeus evenly arcuate (Fig. 7); pronotum lacking marginal bead; fore femur not excavate at apical third (fig. 3). Trinidad **Paracyclidius**, n. gen.

Paracyclidius, n. gen.

Type-species: *Paracyclidius bennetti*, n. sp., monotypic.

Size large, 23 mm. Head with reflexed portion of clypeus extending approximately 0.3 mm above posterior surface; reflexed portion evenly arcuate; anterior clypeal edge slightly convex, nearly perpendicular, approximately 0.8 mm thick; surface finely rugose; lower margin faintly sinuate. Surface of head behind reflexed clypeus coarsely reticulate; frons and posterior of vertex moderately tumid; no carinae or ridges present. Antenna 10-segmented; 3-segmented club 1.5 mm in length, outer surface of terminal segment with scattered, erect setae; scape large, triangular, 2 mm from base to apex; outer surface slightly convex from base to apex, shallowly punctate-rugose. Mentum largely concealing mouthparts; mentum shallowly concave in central four-fifths, then rounded and slightly convex to margins; posterior margin broadly V-shaped, its apex rounded, not thickened or perpendicular as in *Cyclidius*; surface of mentum finely tuberculate, near margins finely strigose. Pronotum somewhat orbicular except near and between anterior angles; marginal bead lacking; surface finely granulate, very dull, with scattered indistinct shallow punctures. Scutellum large, acutely pointed posteriorly; surface basally punctate, shining; apical three-fourths granular, dull, punctate, margins proximal to elytra delimited by a shining band of elongate punctures or strigae; surface of scutellum distinctly below plane of elytra. Elytra similar to those of *Cyclidius*, apical swellings vague; surface completely dull, granular; striae lacking, four intervals indicated by bands of shallow, faintly shining punctures; elytral disc evenly rounded to lateral and apical margins. Pygidium very convex, basal fourth granular, remainder shining, entire surface with scattered, coarse punctures. Ventral surfaces shining, prosternum strigose, coxal cavities closed; mesosternum with numerous small punctures; metasternum shallowly indented along midline, surface laterally with scattered, shallow crescentic punctures. Abdomen with six visible

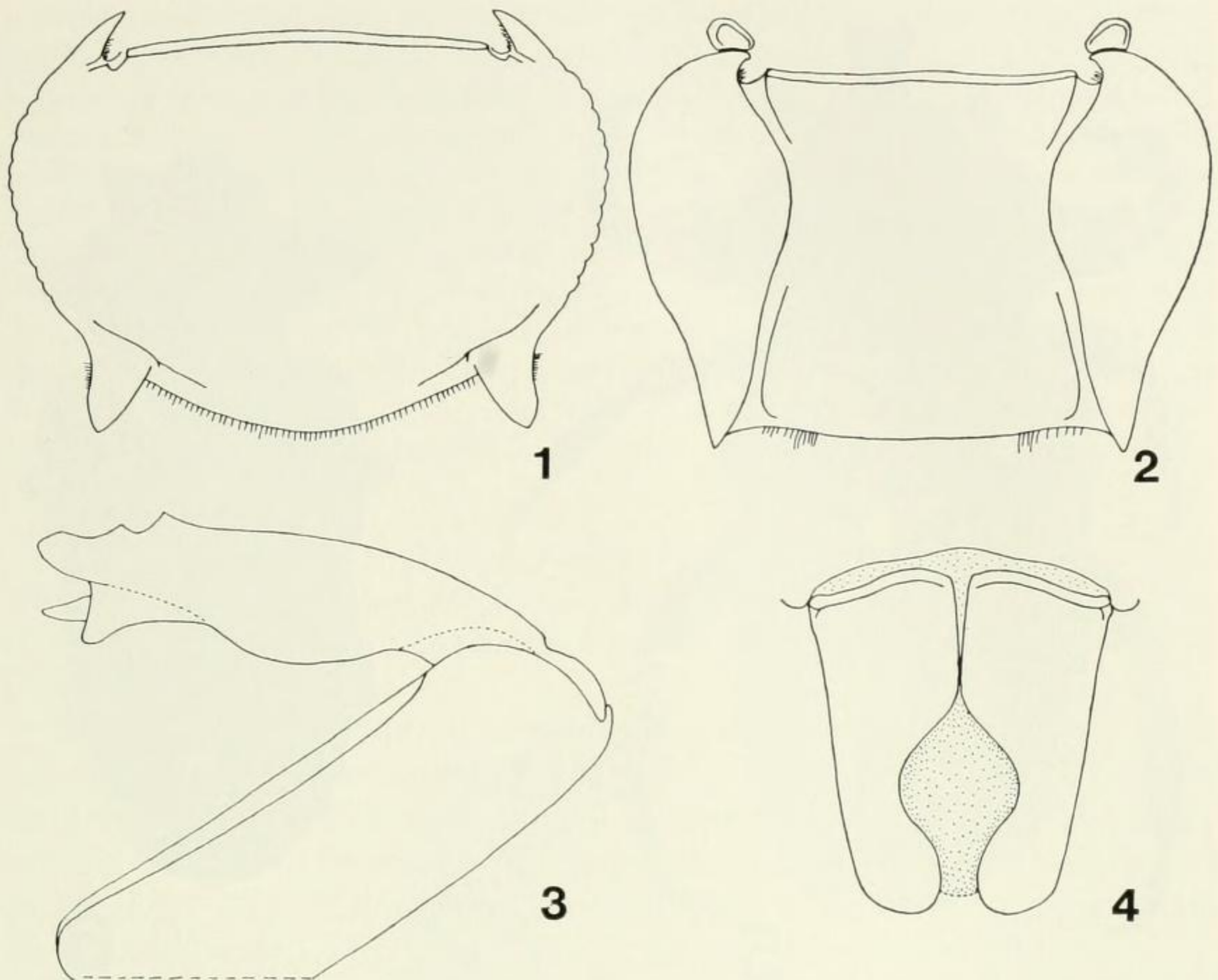


Fig. 1. *Cremastocheilus armatus* Walker, pronotum. Fig. 2. *C. (Trinodia) planipes* Horn, pronotum. Figs. 3-4. *Paracyclidius bennetti*, n. gen., n. sp.: 3, fore femur and tibia; 4, parameres of male genitalia.

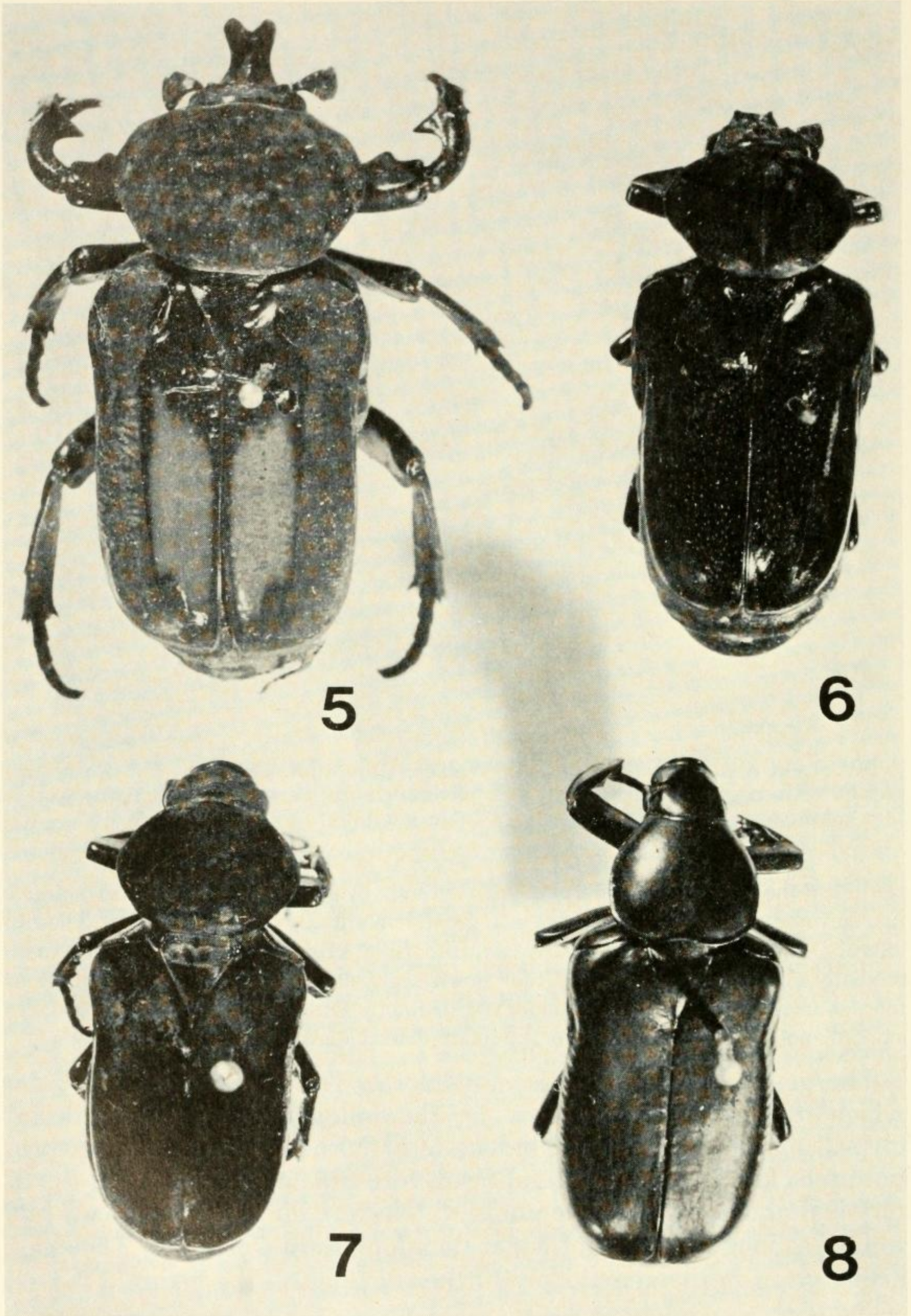
sternites; the penultimate sternite with lateral, oval indentations; apical spiracle not elevated above surface. Legs not greatly modified; fore femur (fig. 3) with anterior margin straight or nearly so; fore tibia (fig. 3) lacking distinct tooth medially on inner margin; basal four tarsal segments of fore leg approximately as long as or slightly longer than wide, not distinctly wider than long; tarsal surfaces smooth, not noticeably ridged or punctate; tarsal claws simple, stout.

The genus *Paracyclidius* is most closely related to *Cyclidius*, from which it can be distinguished by the following differences; dorsal clypeal margin arcuate, not bidentate or horned as in *Cyclidius*; pronotum lacking a distinct lateral bead; fore tibia and femur as in fig. 3; terminal abdominal spiracle not elevated; fore tarsi with segments one to four as long as wide, not wider than long as in *Cyclidius*. The characters given in the generic key further distinguish the genus.

***Paracyclidius bennetti*, n. sp.**

(Figs. 3, 4, 7)

Holotype. Male, length 23 mm, greatest width 10 mm. Shape as in fig. 7. Colour black, dorsally dull, ventrally shining. Head and vertex rugose or confluent



Figs. 5-8. Dorsal views of: 5, *Cyclidius nero* MacLeay; 6, *C. elongatus* (Oliv.); 7, *Paracyclidius bennetti*, n. gen., s. sp.; 8, *Lissomelas flohri* Bates.

punctate, the raised lines largely transverse medially, longitudinal laterally near antennal insertions. Pronotal surface distinctly granular, not dull as in *Cyclidius elongatus* (Oliv.); pronotal punctures inconspicuous, numerous and evenly spaced, separated by two to three diameters. Scutellum with dull, granular areas brownish black. Elytral surface more finely granular than pronotum; punctures in irregular rows vaguely indicating intervals, the punctures basally distinct, their bottoms flat, very finely granular, appearing lighter in colour (gray) than surrounding surface. Pygidium with scattered coarse punctures, the punctures more numerous and larger in basal fourth, smaller and separated by three or more diameters in shining apical three-fourths. Ventral surfaces as described in generic description. Fore femur and tibia as in fig. 3. Genitalia as in fig. 4, similar in general form to those of *Cyclidius* and *Lissomelas*.

Female. Unknown.

Type material. Holotype, male, Mayaro, Trinidad, W. I., June 1967, in arboreal ant nest, F. D. Bennett (Howden). Types in the Howden collection are presently housed in the Entomology Research Institute.

Remarks. *Paracyclidius bennetti* is quite distinct from any of the New World Cremastocheilini examined. It resembles most closely *Cyclidius elongatus* (Oliv.); it can be distinguished from this and other species by the characters mentioned under the generic description and in the key. Fig. 7 illustrates the differences in body form between *Paracyclidius* and *Cyclidius* (figs. 5, 6) and *Lissomelas* (fig. 8).

The species is named in honour of Dr. F. D. Bennett, who discovered it and very kindly presented it to the writer.

NOTES

Relationships among the New World Cremastocheilini have been, in part, discussed by Cazier (1938, 1940). In these papers Cazier discussed wing venation, the very similar genitalia, and characterized the North American genera. The three genera *Uloptera*, *Cyclidius* and *Paracyclidius* were not included. Specimens of *Uloptera*, as stated earlier, have not been examined, but based on Burmeister's (1840) description of body shape, particularly that of the pronotum, I suspect that its closest New World relative is *Psilocnemis*. The relationship is not close, but I have not seen any Old World genus that I would consider more closely related. *Cyclidius* and *Paracyclidius* are distinctly related, being very similar in body shape, size and genitalia, with *Paracyclidius* possibly having some affinities with *Lissomelas*, particularly in respect to the clypeus. *Lissomelas*, however, is quite distinct in its tarsal characters and in the shape of the pronotum. *Lissomelas*, *Psilocnemis* and, to a lesser degree, *Genuchinus* are rather similar in their pronotal shape. In this respect *Cremastocheilus*, with the modified hind angles of the pronotum, is more similar to some Old World genera than to any of the other New World forms. *Genuchinus* and

Lissomelas show some definite affinities to the Oriental genus *Callynomes* Westwood, the similarities being discussed by Cazier (1938).

On a zoogeographic basis Cazier stated (1938, pp. 80, 81) that "Herein is merely presented evidence which would tend to support the theory of the former existence of an Arctic Continent or the derivation of the North American species from the north by way of Bering Strait." The present study does not refute this, a past Beringian connection seeming to be all that is necessary to explain the relationships between the New and Old World Cremastocheilini.

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