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Synoptic revision of the United States scarab beetles of the subfamily Dynastinae, No. 5: Keys to tribes and genera

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ENTOMOLOGY.—*Synoptic revision of the United States scarab beetles of the subfamily Dynastinae, No. 5: Keys to tribes and genera.*¹ LAWRENCE W. SAYLOR, California Academy of Sciences.

This paper completes my studies covering a synoptic review of the United States dynastine scarab beetles, the preceding four parts having been published in this same JOURNAL.

A great deal of work, from a taxonomic standpoint, remains to be done in the American members of this tribe, especially in the Neotropical genera. Generic limits of such genera as *Ligyrrus* and *Stenocrates*, as well as many others, must be thoroughly studied and the relative importance of such characters as the front male claws (enlarged or not), the dentition of the mandibles, and the usual sexual dimorphism must be better understood.

In the present studies I have had the cooperation of many institutions and individuals in obtaining material, or submitting material for identification: United States National Museum, through the courtesy of Drs. Wetmore and Chapin; the extensive collections of the California Academy of Sciences through its director Dr. Miller and its entomological curators Drs. Ross and Van Dyke; American Museum of Natural History through its curator Dr. Cazier; and many private individuals, among them Drs. Cartwright, Ritcher, Reinhard, and Sanderson, as well as Dr. Dampf of Mexico City. I have also received material from the Paris Museum through Dr. Paulian, and from the British Museum through Dr. Hinton and Mr. Arrow, to all of whom I am indebted for numerous past favors.

SUBFAMILY DYNASTINAE

Diagnostic characters.—Tarsal claws always equal in size, or at least so on the middle legs (one claw of the front pair is frequently en-

larged in males of certain species); mandibles entirely corneous, and usually exposed beyond the clypeus (from dorsal view); mandibles frequently large and dentate externally; labrum hidden under the clypeus; clypeus more commonly acuminate apically, and dentate or edentate; scutellum normal, never greatly enlarged; sexes frequently dimorphic, the males frequently with tubercles or horns on either head or thorax or both, the females in many species likewise equipped; coloration usually some shade of black or brown, only very rarely with any metallic lustre; antennal club always relatively small and 3-segmented; ligula entirely connate with the mentum; abdominal spiracles diverging strongly behind; anterior coxae transverse, not prominent; stridulating organs frequently appear in many species, located on propygidium or inside the elytra; fifth ventral sternite and propygidium connate, the last spiracle on the suture between them; onychium between the tarsal claws commonly bisetose, varying to multisetose in certain genera.

KEY TO UNITED STATES TRIBES

1. Labial palpi inserted *behind* the mentum; body always *depressed* above; frequently with tubercles or horns on head or thorax; mid-disc of thorax often longitudinally im-pressed; hind tibia digitate or truncate at apex but not noticeably widened; first segment of hind tarsus with strong spine at apex; sexual differences hardly apparent. PHILEURINI
- Labial palpi inserted *at the sides* of the ligular part of the mentum; body never strongly depressed, usually evenly convex dorsally; head and thorax horned or not; sexual characters noticeable in last abdominal sternite or front tarsal claw in all instances. 2
2. Head and thorax in both sexes entirely *un-armed*, without tubercles or carinae or horns, and never depressed or foveate; claw with the onychium always bisetose (never more

¹ Received September 3, 1947.

than two cilia); stridulating organs absent; male front claws in many species either enlarged or larger than in female; antenna often larger in male than female; tarsi

cylindrical and usually elongate, never triangular; prosternal spine prominent behind the fore coxae.....CYCLOCEPHALINI
Head and thorax (either or both) armed with

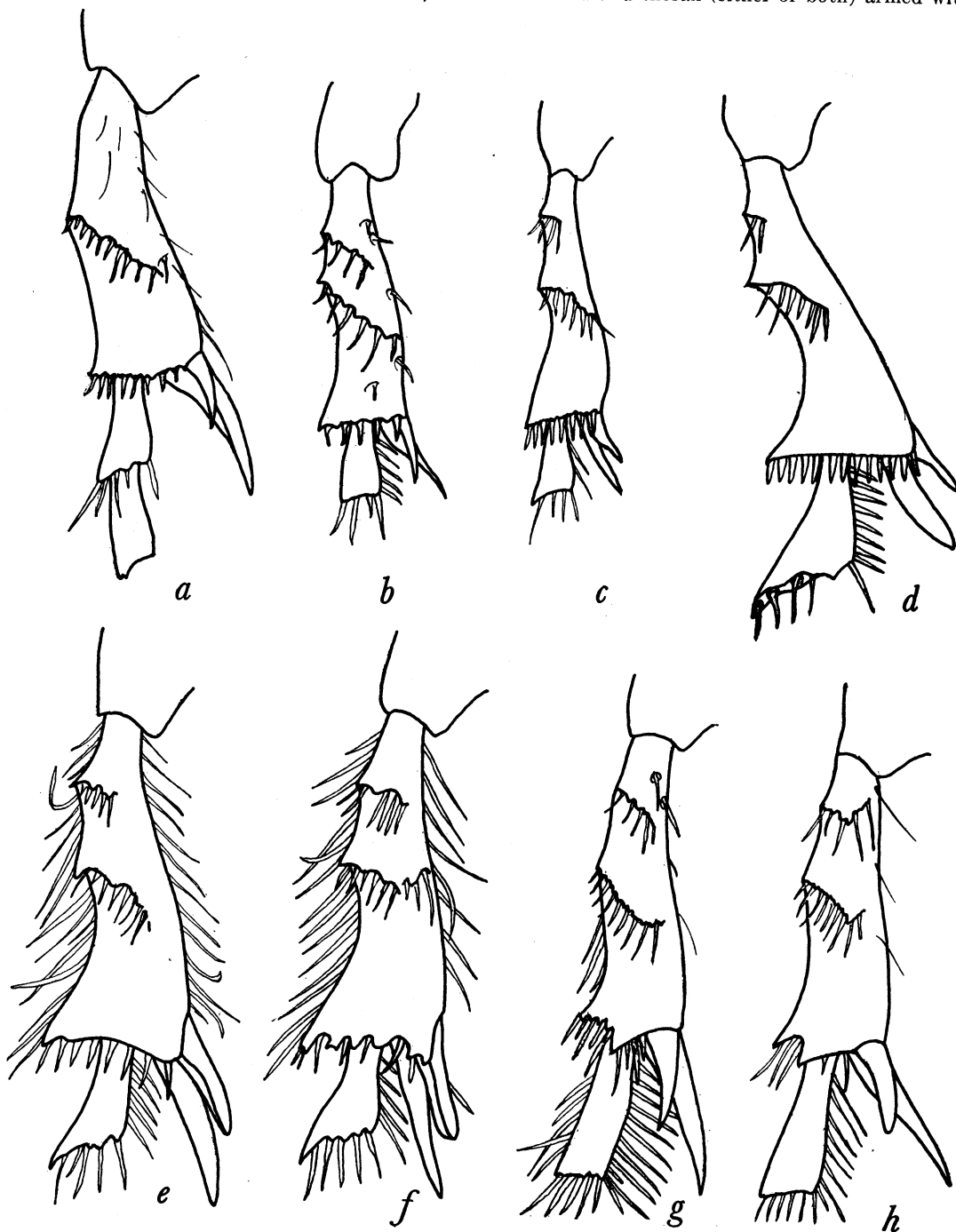


FIG. 1.—a, *Ligyrus relictus* Say: Hind tibia of male; b, *Euetheola subglabra* Schaeffer: Hind tibia of male; c, *Aphonus densicauda* Casey: Hind tibia of male; d, *Cheiroplatys clunalis* LeConte: Hind tibia of male; e, *Xyloryctes jamaicensis* (Drury): Worn hind tibia of male; f, same as e, fresh tibia; g, *Strategus antaeus* (Drury): Hind tibia of male; h, *Strategus mormon* Burmeister: Hind tibia of male.

- horns or tubercles (on fore margin of thorax if nowhere else) in both sexes, and frequently foveate (or with strong head carina and large, well-rounded mandibles as in *Aphonides*); claw with onychium bisetose to multisetose; stridulating organs variable; other characters variable.....3
3. Onychium between claws bisetose to plurisetose; tarsal segments, especially basally, frequently triangular in shape; fore tibia and tarsus of *same length* in both sexes; stridulating organs frequently present; dorsal surface always *unicolorous*; never spotted or with dense hair.....ORYCTINI
- Onychium between claws always with three or more setae apically; tarsal segments elongate smooth, never triangular, the basal segment usually with a strong apical spine; front tibia and tarsus a little longer in the male than in the female (very distinct in neotropical species, but must be carefully compared in United States species); stridulating organs absent; dorsal surface either clothed with a fine *velvety* short hair, or spotted and speckled, only rarely entirely unicolorous in some females.....DYNASTINI

The genera of the tribes Phileurini and Dynastini were covered in Part 4 of this series, and the genera of the tribe Cyclocephalini in Part 1.² The tribe Oryctini was discussed in Part 2³ and in Part 3⁴ and was completed in Part 4⁵; these eight United States genera of Oryctini may be separated as follows:

KEY TO GENERA OF UNITED STATES ORYCTINI

1. Apex of hind tibia *uneven*, with sharp angulations or teeth (see Fig. 1, *g*, *f*); head frequently with horn (male) or large tubercle (female) (this character will place those specimens with worn tibia as in some *Xyloryctes*, as in Fig. 1, *e*.....2
- Apex of hind tibia moderately to strongly expanded, with *very fine* serrations (not sharp teeth) or entirely smooth (see Fig. 1, *a*, *d*); head *never* with horns, at most with a strong to weak transverse carina or a small tubercle.....4
2. Clypeal apex acute and unidentate; mandibles large and exposed, and evenly *rounded*, never toothed; thorax never foveate or tuberculate; base of clypeus with a strong transverse carina (Texas and Arizona).....
-*Aphonides* Rivers
- Clypeus acute, bidentate or bluntly rounded (if acute, then the mandibles always distinctly emarginate or toothed externally,

- and thorax always foveate and tuberculate).....3
3. Mandibles usually hidden beneath the clypeus, or only edges exposed, and always unarmed externally; usually with 5 to 9 small teeth on outer apical margin of hind tibia.....
 -*Xyloryctes* Hope
 - Mandibles always large, always well exposed, always armed externally with teeth or else right-angled in outline (*cessus*); apical margin of hind tibia usually with 1 or 2 sharp angulations, or 3 or 4 teeth.....
 -*Strategus* Hope
 4. Clypeal apex acute, *unidentate*; clypeal base with an acute transverse carina; mandibles large and *tridentate*; thorax with fovea at midapex and a small tubercle in front of the fovea; color usually rufous.....
 -*Oxygryllus* Casey
 - Clypeal apex distinctly *bidentate*, or evenly truncate, or very bluntly rounded, never with a single sharp point (or if somewhat pointed, then the mandibles small and nearly hidden under the clypeus); color variable...5
 5. Clypeus with a distinct carina *just before* (i.e., practically *on*) the apex, this carina entire, or wide bidentate, or tridentate; front male tibia frequently edentate, the tibia unusually wide in both sexes and the emarginations between the external teeth very shallowly indicated, especially the two apical teeth...6
 - Clypeus carinate or not; if carinate the carina located quite a distance *before* the apex; front tibia always strongly tridentate...7
 6. Preapical clypeal carina *entire*, or *bidentate*; thorax and head tuberculate or not (Southwestern United States). *Cheiroplatys* Hope
 - Preapical clypeal carina strongly to weakly *tridentate*; thorax not tuberculate, head rarely so (Eastern United States).....
 -*Aphonus* LeConte
 7. Mandibles definitely tridentate externally, the basal tooth often worn and barely visible; thorax not more than two-thirds the length of the elytra; color rufous to rufopiceous or rufocastaneous.....
 -*Ligyrrus* Burmeister
 - Mandibles *bidentate* externally (do not count lacinia tooth as mandibular!); thorax about three-fourths length of elytra; color always black.....
 -*Euethola* Bates

SUPPLEMENT

Euethola subglabra Schaeffer

Since Part 2 of this series was published I have received a male specimen from Tepic, Mexico, from Dr. Chapin, of the U. S. National Museum; this has very worn mandibles and clypeus, but the genitalia are typical, and the thoracic puncturation is very minute and sparse but still visible on the center disc in a good light. I have also just recently mounted an additional pair (male and female) from "Compostella, Tepic, Nayarit, collected VI-24-40 at light by Morgan M. and L. W. Saylor"; these were mixed in with some un-

² Journ. Washington Acad. Sci. 35 (12): 378-386. 1945.

³ Ibid. 36 (1): 16-22. 1946.

⁴ Ibid. 36 (2): 41-46. 1946.

⁵ Ibid. 38 (5): 176-183. 1948.

mounted *Dyscinetus* material, which they greatly resemble superficially. The female has not been described before and I am designating this specimen as the *Allotype*: Very similar to male except that it is a little larger (16 mm), the minute thoracic punctures are entirely absent over most of the center-disc, the apical half of the pygidium is smooth and very sparsely punctate and the

apical half of the sixth sternite is entirely smooth and impunctate. It is interesting that nearly the entire abdomen (except for a single transverse setigerous row on each sternite near sides) and the metasternum (except at sides) are highly polished and entirely impunctate in both sexes. Both specimens remain in the Saylor Collection at the California Academy of Sciences.