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## Notes on Some California Myrmecophiles.

BY CHARLES THOMAS BRUES.

There have recently come into my hands, through the kindness of Dr. William M. Wheeler, some specimens of interesting myrmecophiles collected and observed by Dr. Harold Heath in California. One of them, a histerid beetle, belonging to the genus *Hetærius* has been previously well known, but I am enabled to record some additional facts concerning it; another, the larva of a syrphid fly is quite different from any of the hitherto described forms of myrmecophilous *Microdon* larvæ, and seems worthy of extended description.

### COLEOPTERA.

#### HISTERIDÆ.

***Hetærius tristriatus* Horn.** (Fig. 1.)

A male and female of this peculiar beetle were collected in

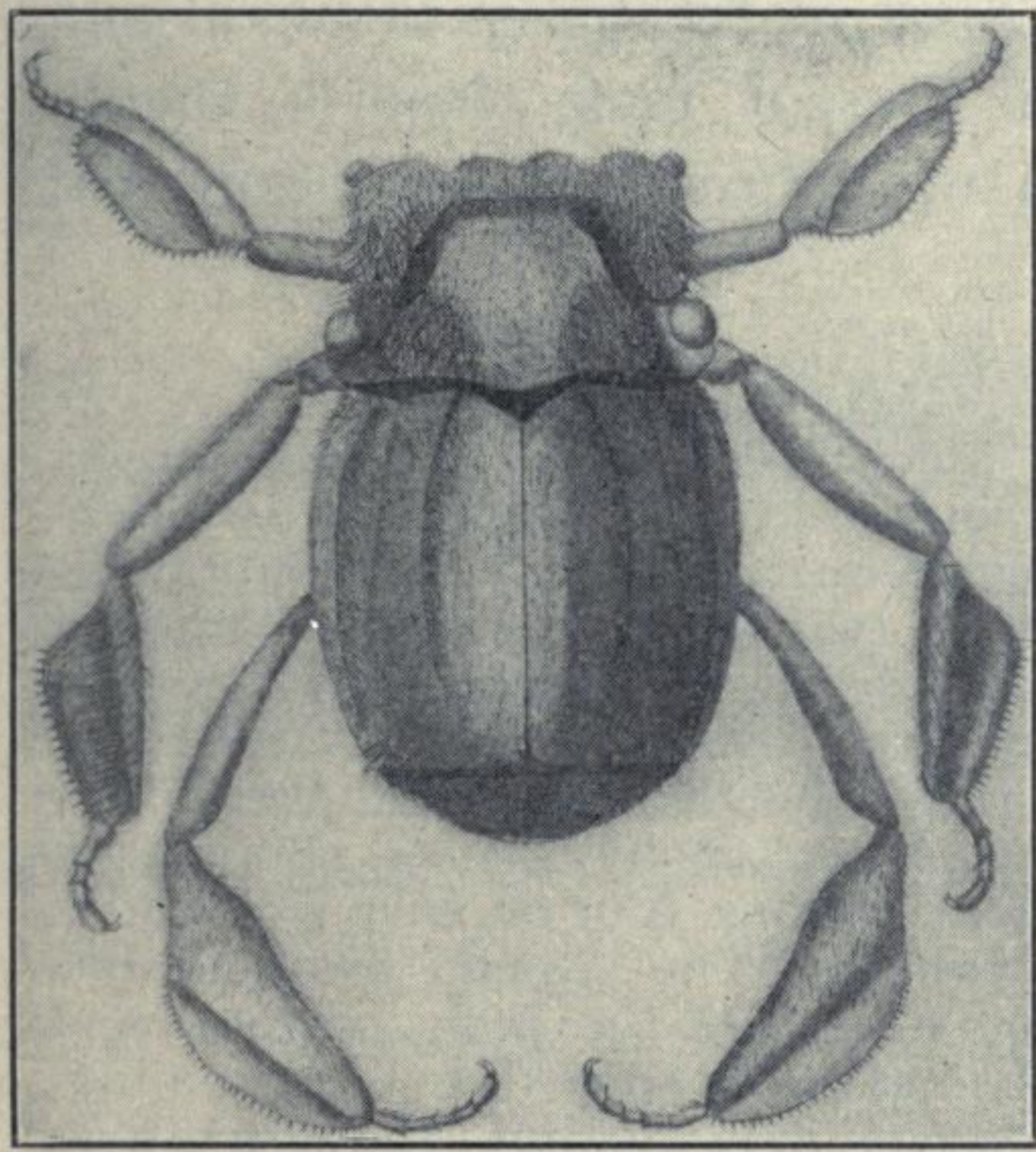


FIG. 1.

a nest of *Formica fusca* L., sub. sp. *subpolita* Mayr.,\* at Pacific Grove, Cal., during the early part of April, which is the only season of the year when these insects are to be found. Dr. Heath gives the following short note concerning their actions, "when first observed they were about an inch below the surface of the ground and were being jostled about in the excited mob of ants. To the latter they gave little notice, but rolled or tumbled over each other; and finally when

quiet had been restored, remained motionless for ten or fifteen

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\* Wasmann in his *Kritisches Verzeichniss der Myrmekophilen und Termitophilen* mentions *H. tristriatus* as occurring with *Formica fusca*, var. *subænescens* Em., in Colorado and with *F. obscuripes* For., in Washington; while Schwarz records it also as living in the nests of *F. schaufussi* at Helena, Montana.



minutes." Schwarz\* has observed the ants pick up another species of *Hæterius* and carry it to a place of safety in the depths of the nest. These beetles are evidently fearless of the ants, as they are well provided with the tufts of yellow glandular hairs characteristic of mymecophilous Coleoptera, besides being almost invulnerable on account of their very hard bodies and retractile legs.

## DIPTERA.

### SYRPHIDÆ.

A most remarkable dipterous larva was collected in a nest of *Monomorium minutum* Mayr., also at Pacific Grove during April. So much does it resemble the slug-like larvæ of the Syrphid fly, *Microdon*, that I have no hesitancy in considering it as a Syrphid larva. It is, however, so different in many respects from the larvæ of *Microdon* that it is, no doubt, a member of some other allied genus. Larvæ of *Microdon* occurring in as widely separated localities as France,† the United States, Mexico‡ and Paraguay,§ are of an almost identical and extremely peculiar type. The present form departs widely from this, as can be seen from the following description and appended figures.

#### DESCRIPTION OF THE LARVA. Fig. 2, *a*, *b*, *c*.)

Length 4.75 mm.—Broadly oval, much smaller and broadly convex above, flat below. Ventral surface separated from the dorsal by a delicate carina from which extends a delicate membrane. This membrane is traversed by a series of fine thickenings (see Fig. 1, *a*). At the anterior extremity of the ventral surface is the indistinctly tri-segmented oral papilla, behind which are irregular transverse rows of very small tubercles, interrupted at the middle and at the sides. Just exterior to the membrane is a single series of closely placed dart-shaped fleshy bristles, about 33 in number. Above these are other similar bristles, four on each side and a pair just each side of the anterior extremity. The stigmal protuberance is placed well up upon the posterior surface of the body; conical and sharply constricted at the base. Body elsewhere smooth but not shining. Color in life lemon-yellow; after preservation in alcohol yellowish brown above and fuscous below.

*Habitat*.—Nest of *Monomorium minutum* Mayr. Pacific Grove, California.

The occurrence of this enormous larva with such an extremely

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\* *Loc cit.*

† Poujade, Ann. Soc. Ent. France (6), iii, 1883, p. 23, pl. 1.

‡ Wheeler, Psyche, 1901.

§ Sharp, Cambridge Nat. Hist., Vol. vi, p. 502.



small ant as *Monomorium minutum* Mayr., seems very strange and is, perhaps, one of the most striking cases on record of a myrmecophile which is so much longer than the ant with which it makes its abode.

Dr. Heath gives in a letter the following ethological note concerning the relation with the *Monormorium*: "When I pulled over the stone under which this particular colony was concealed, my attention was attracted by a hemispherical light

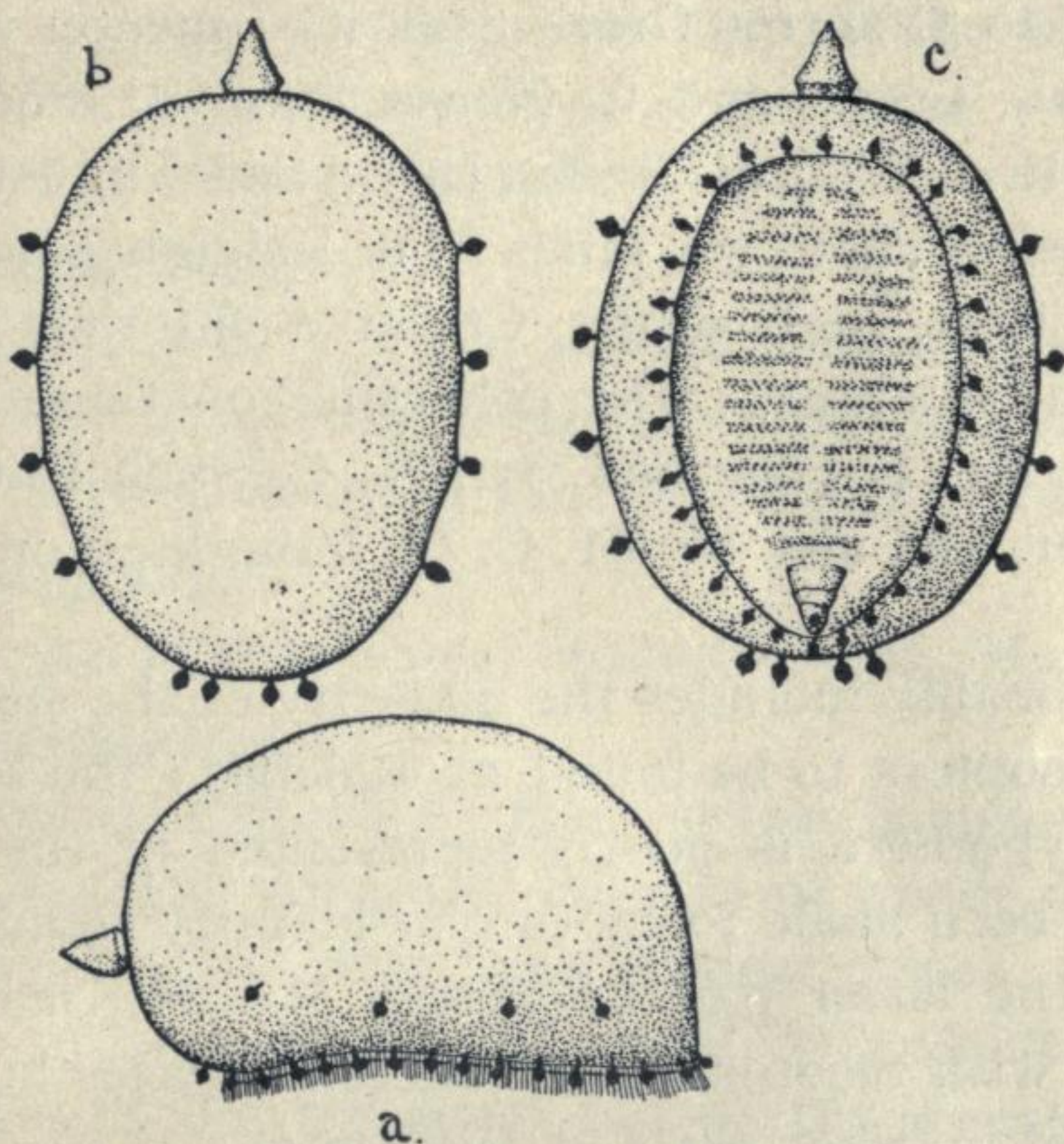


FIG. 2.

lemon-yellow colored mass, which was attached to the underside of the stone on the ceiling of one of the burrows. After the first stages of confusion had passed, and I had shaded the nest from the direct rays of the run, this body was the object of much attention on the part of the ants. For fully half an hour, from two to ten of them continually surrounded it or mounted themselves upon it, moving their antennæ with great rapidity. Occasionally one would attempt to carry it to a place of safety. This performance was continued for fully twenty minutes after all the larvæ had been transferred to a place of safety." From this account it is plainly evident that these huge and brilliantly colored animals live on quite peaceable terms with their diminutive hosts.



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