

The Male of *Antonina crawii* Cockerell (Homoptera: Pseudococcidae)¹

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The genus *Antonina* Cockerell and a few similar genera (e.g. *Chaetococcus* Maskell) constitute one of the more aberrant groups in the Pseudococcidae. Unlike most other mealybugs, the adult females of these forms are legless, with reduced antennae, and frequently have the anal ring borne at the inner apex of a sclerotized tubular invagination.

No adult males of the species assignable to *Antonina* or related genera have been studied carefully. Although Green (1922) briefly described the male of his *A. zonata*, neither his description nor figure contains sufficient detail for adequate comparison with males of other mealybugs.

Three species of the *Antonina* group are known to be in Hawaii. Of these two, *Antonina graminis* (Maskell) and *Chaetococcus bambusae* (Maskell) are parthenogenetic (Brown, S.W., et al, unpublished). The third Hawaiian species, *A. crawii*, was found to be bisexual and a number of adult males were obtained from field-collected material confined in the laboratory. The adult male of this species is described below, as part of a continuing study of the males of the family Pseudococcidae, which, it is hoped, may eventually help to clarify phylogenetic relationships within this segment of the Coccoidea.

Antonina crawii Cockerell.

Antonina crawii Cockerell, 1900, PSYCHE 9(200): 70-72.—Ferris, G.F., 1948, In E. C. Zimmerman, INSECTS OF HAWAII 5: 156, fig. 90.

Adult male. Length of slide-mounted specimen about 1.2 mm.; all specimens macropterous. Antennae 10-segmented, about 380 μ total length; individual segments from scape outward 27:39:50:39:39:36:36:36:36:42 μ long respectively; segment 3 pedicellate (fig. 1,A). Antennae clothed with digitiform setae mostly around 16 μ in length, plus a few slender filamentous setae about 24 μ maximum length. Apical segment with 2 or 3 slightly thicker and longer digitiform setae on apical portion, penultimate segment sometimes with one such specialized seta. Apical segment with 3 elongate slender setae, around 30 μ in length, on apical portion, the apices of these not noticeably enlarged.

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Head without a discernible midcranial ridge dorsally above the well-developed lateral arms; with a relatively broad, well-defined dorsomedial sclerite with an arcuate or shallowly U-shaped band on its posterior margin. Ocular sclerites and eyes relatively small. Dorsal eyes close to margins of head, separated dorsally by a distance equal to about 4 times the diameter of one; diameter around 25μ . Ventral eyes located relatively close to anterior margin of head, a line through their centers situated a distance equal to less than one-fourth length of head behind anterior margin; somewhat elliptical in shape, about 23μ wide by about 29μ long. Secondary sclerotized areas present on head, one on posterolateral portion of dorsum behind each dorsal eye, and one on each side of venter behind each ventral eye and anterior to postocular ridge. Head with a few short, fine, filamentous setae $6-9 \mu$ long.

Venter of prothorax with an elongate sclerotized area of irregular outline extending anteriorly from the well-developed transverse prosternal remnant. A well-developed transverse metasternal remnant present; thoracic sclerotization otherwise normal.

Dermal disc pores each $5-6 \mu$ diameter, with 4 peripheral loculi, located one on each side on most of abdominal segments 2-7, occasionally absent on one or both sides of some segments, 2 or 3 discs on each side of abdominal segment 1; 1 or 2 submedially on either side of midventral line of abdomen; 1 or 2 on each side just behind anterior spiracle; 2 laterally on each side of membranous part of prothorax; apparently absent on head. Tail-forming pore clusters restricted to pair on abdominal segment 8; each cluster composed of around 30-35 stellate disc pores about 5μ diameter; each cluster surrounding a pair of elongate tail-forming hairs about 370μ long. Body clothed with a few fine filamentous setae, $10-16 \mu$ in length; without digitiform setae.

Penial sheath (fig. 1,B) about 105μ long, without discernible median lobes; posterior portion tapering to an evenly rounded tip $11-12 \mu$ wide at 9μ before apex. Aedeagus (fig. 1, C,D) slender, tip entire, slightly rounded in dorsal aspect, sharply pointed with a slight upward curvature in lateral aspect.

Legs moderately short; hind femora about 108μ long, hind tibiae about 130μ long, hind tarsus 56μ long, hind tarsal claw 19μ long; tarsi 2-segmented, basal segment small, triangular. Legs clothed with fine filamentous setae up to about 22μ maximum length; digitiform setae absent; two long and several smaller spines on posterior apex of each tibia.

Abdominal sclerotization well developed; large subquadrate dorsal sclerotized areas present on segments 6-8; progressively smaller dorsal plates on segments 5 and 4; a transverse sclerotized area on posterior margin of segment 3; and two small sublateral areas on posterior margins of segments 2 and 1. Abdominal venter with even larger areas of sclerotization, the largest and most strongly sclerotized areas on posterior abdominal segments 5 to 8, becoming somewhat smaller on anterior segments, but still discernible on all segments including the first. Dorsal ostioles not discernible.

Described from 6 slide-mounted specimens, University of Hawaii campus, Honolulu, Hawaii, Feb. 10, 1964, reared ex small bamboo, Beardsley.

Despite the rather aberrant morphology of the females of the genus *Antonina*, that of the adult male of *A. crawii* is fairly typical of the majority of mealybug males which I have examined (Beardsley, 1960). The only divergences from the normal pseudococcid pattern are found in such relatively unimpressive features as the slightly more anterior position of the ventral eyes, and the rela-

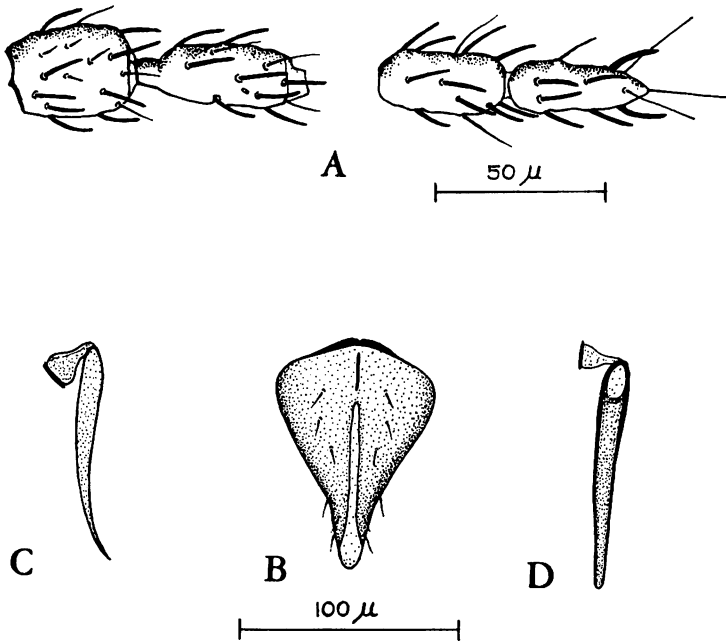


FIGURE 1. *Antonina crawii*, male: A, antenna, segments 2-3, 9-10; B, penial sheath, ventral aspect; C, aedeagus, lateral aspect; D, aedeagus, ventral aspect.

tively strong development of the prosternum and metasternum. The penial sheath and aedeagus seem perfectly typical. In contrast to the males of species in genera such as *Puto* and *Rhizoecus*, which, in certain structures, show rather striking departures from the usual type of pseudococcid male (Beardsley, 1962), the male of *A. crawii* is quite similar to those encountered in species assigned to the more characteristic genera of mealybugs such as *Pseudococcus*, *Dysmicoccus*, and *Trionymus*.

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