

A New Genus of Gall-Inhabiting Eriococcidae from Singapore (Homoptera: Coccoidea)¹

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Two new gall-inhabiting coccids, representing an undescribed genus of the family Eriococcidae, are described below. These insects were discovered by Mrs. Ming Anthony of Nanyang University, in the course of research on plant galls of Singapore (Anthony, 1970). Both species were collected from a native shrub, *Shorea pauciflora*, each inhabiting a particular type of gall. A third gallicolus coccid, apparently an undescribed species of *Beesonia* Green, was also collected by Mrs. Anthony on this host. Unfortunately, the available specimens of the latter are inadequate for proper diagnosis, and the species will not be described here.

Holotypes of the new species are deposited in the U. S. National Museum coccid collection, Washington, D. C.

Gallacoccus, new genus

Type species: *Gallacoccus anthonyae*, new species.

Recognition characters: Gall-inhabiting Coccoidea, apparently belonging to the family Eriococcidae. Adult females with body globular, unscerotized; slide mounted specimens oval or circular in outline; anal lobes not developed. Legs and antennae present, very small. Antennae 3-segmented, the two basal segments reduced to roughly crescent-shaped sclerites imbedded in the integument, apical segment apparently free. Legs with trochanters and femora partly or completely fused; remaining segments distinct; tarsal claws with or without a small denticle on inner face near apex. Labium very small, apparently one-segmented; eyes present, small. Anal opening small; sclerotized anal ring present, without pores or setae. Visible integumentary gland openings limited to quinquelocular pores (an occasional 4 or 6 loculate pore may be present), somewhat variable in size; tubular ducts absent. Body setae mostly short, fine, and very sparsely distributed; a few somewhat thickened spine-like setae present on posterior part of abdomen.

First instar larvae with short, distinctly three-segmented antennae. Legs with trochanter and femora partially fused; tarsal claws with a small denticle on inner face near apex. Labium apparently one-segmented. Dorsal derm somewhat sclerotized; with a meshwork of small plate-like areas, numerous small rounded protuberances; and sclerotized conical or

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oval pits apparently bearing minute gland orifices at their inner apices. Dorsum bearing marginal, submedian and intermediate longitudinal rows of conical spine-like setae. Anal opening very small or obscure, apparently enclosed by a non-cellular sclerotized ring.

Adult males with short three-to five-segmented antennae. Penial sheath and aedeagus of the eriococcid type.

There are around 15 genera of specialized, gall-inhabiting Coccoidea presently placed in the Eriococcidae. Of these *Gallacoccus* seems most similar to *Reynvaania* Reyne, a genus which contains single named species found in Java in galls on *Quercus lineata* (Reyne, 1954). Like *Gallacoccus* species, the adult female of *R. gallicola* is more or less circular in outline, lacks anal lobes, and is without tubular ducts or other glandular orifices except disc pores. *Reynvaania* differs from *Gallacoccus* in having legs completely absent, antennae reduced to a single segment, and the anal ring poriferous with six ring setae. Also, in *Reynvaania* there is a marginal row of small conical setae on the venter which is not present in *Gallacoccus*. Furthermore, unlike *Gallacoccus*, first instar *Reynvaania* have six-segmented antennae and a few ventral quinquelocular pores. The dorsal integument of the latter also apparently lacks the conspicuous sclerotized pits and meshwork characteristic of *Gallacoccus* crawlers.

Gallacoccus anthonyae, new species (Figs. 1-3).

Adult female. Body globular, slide-mounted specimens roughly circular in outline; holotype specimen 2.4 mm diameter. Antennae very small; two basal segments each represented by a roughly crescent-shaped sclerite; these apparently narrowly joined near their anterior ends; apical segment about 20 μ long, apparently free, bearing 5 moderately long fleshy setae on outer portion. Eyes present, very weakly sclerotized, about 18 μ diameter. Legs small and stout; femora and trochanters incompletely fused; tarsal claw without a denticle on inner face, basal portion noticeably expanded. Length of hind leg from base of coxa to claw tip about 160 μ ; claw about 20 μ long. Anal opening about 20 μ diameter, surrounded by a moderately broad, sclerotized rim, somewhat irregular in outline. Spiracular peritremes relatively large and strongly sclerotized; each spiracle with a semicircular concentration of quinquelocular pores distad of the opening. Quinquelocular pores 6.5 to 7 μ diameter, distributed in a broad marginal band on ventral surface from vicinity of prothoracic legs to posterior end of abdomen; absent on dorsum. Body setae short (mostly 8-10 μ long), fine, very sparsely distributed on dorsum and venter, most numerous in sublateral areas of venter; a few setae on posterior margin of abdomen somewhat longer (15-18 μ), slightly spiniform.

First instar larvae. Slide-mounted specimens about 0.45 mm long. Antennae three-segmented, about 42 μ long; apical segment bearing several

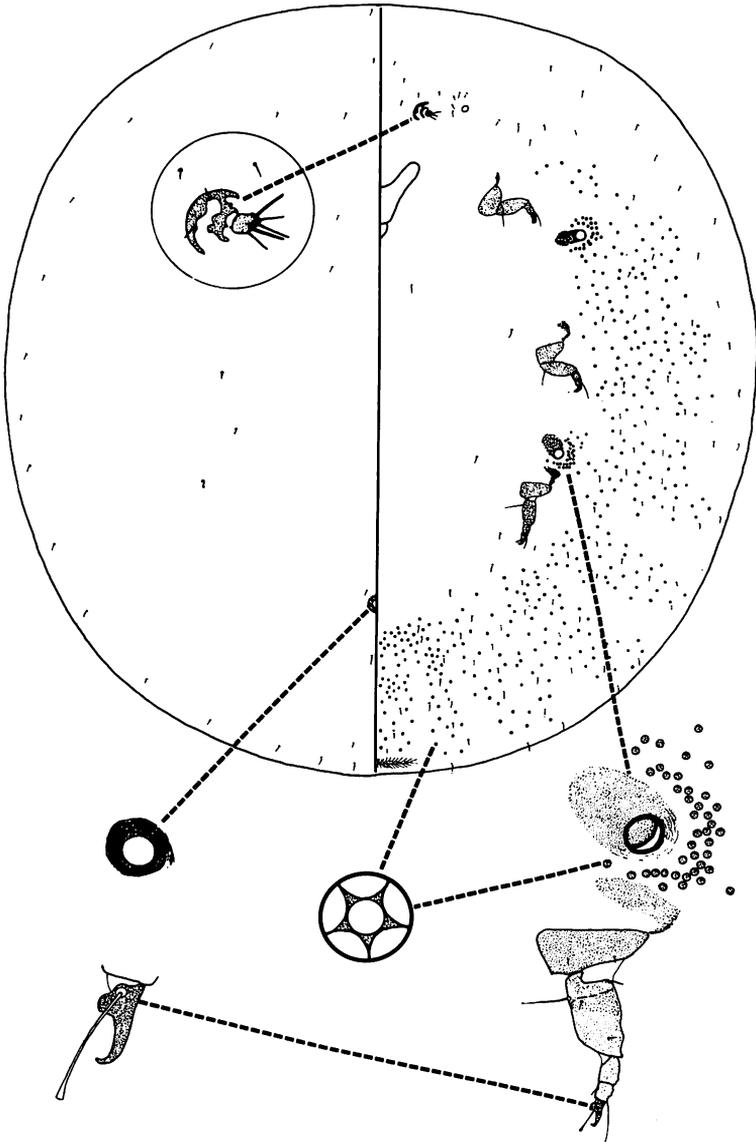


FIG. 1. *Gallacoccus anthonyae*, n. sp., mature female.

moderately long fleshy setae and one very long (about 60μ) slender seta. Tarsal claws about 20μ long. Anal opening very small, surrounded by a broad non-poriferous sclerotized ring. Dorsal surface covered with small variously shaped protuberances, most frequently in form of oval or elongate-

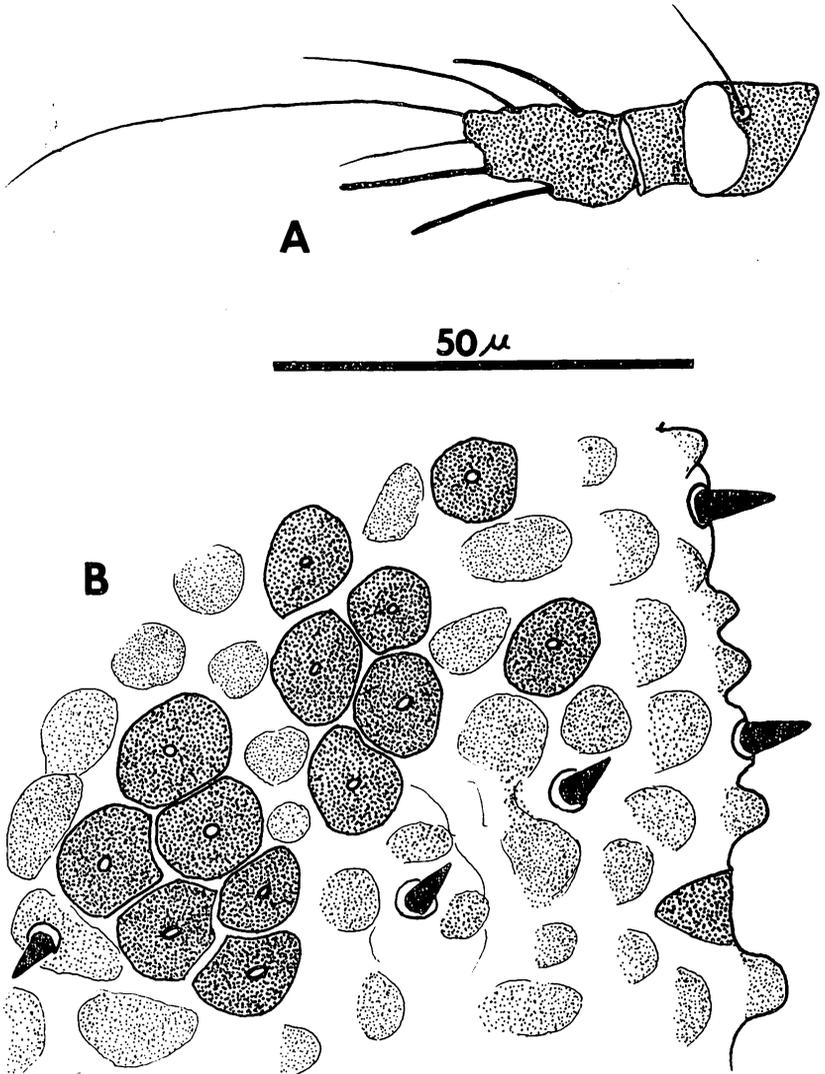


FIG. 2. *Gallacoccus anthonyae*, first instar larva. A) antenna, B) portion of dorsum of mesothorax.

oval, slightly sclerotized, low humps; these extending onto margins of venter where they tend to be smaller, and somewhat papilliform. Dorsum bearing numerous sclerotized conical pits, each apparently with a minute circular opening at inner apex; pits arranged in transverse rows on abdominal segments and interrupted bands several pits wide on thorax, plus a row of three pits on each side of head. Total number of dorsal

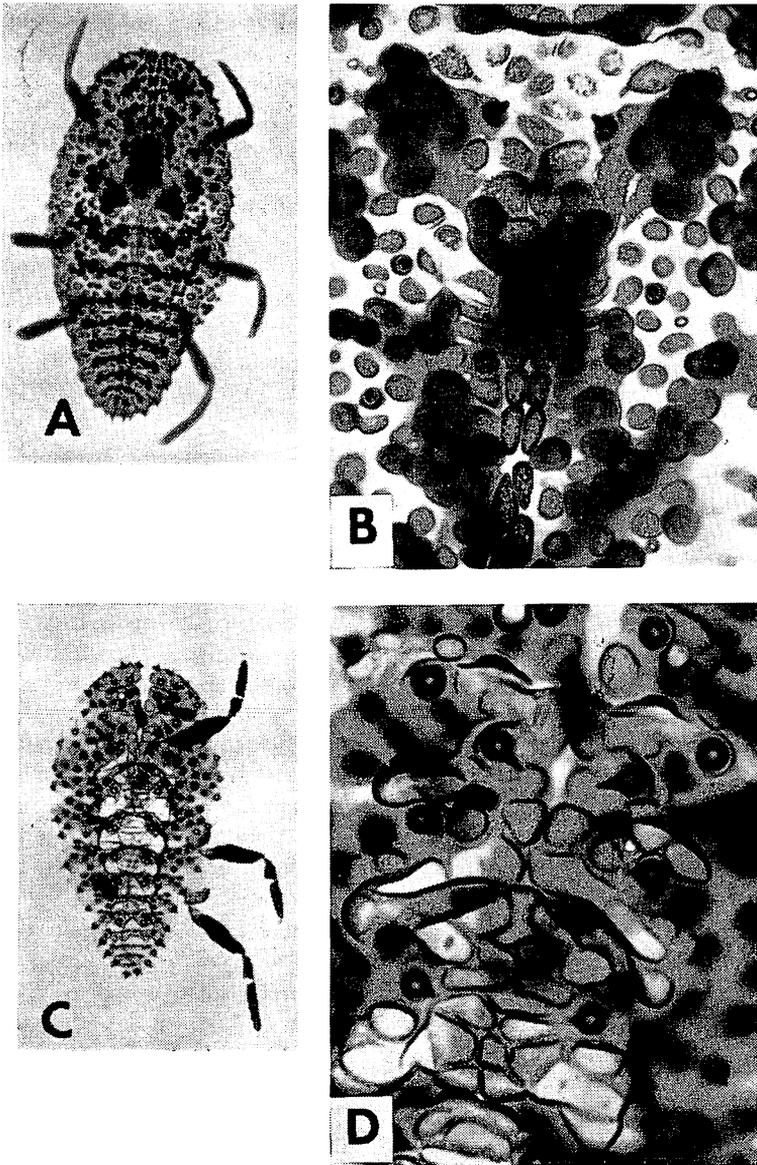


FIG. 3. A) *Gallacoccus anthonyae*, first instar larva. B) portion of dorsum of thorax of same. C) *Gallacoccus secundus*, first instar larva. D) portion of dorsum of thorax of same.

pits around 190; about 30 additional pits along margin of venter. Conical setae, about 10μ long, arranged approximately in six longitudinal series on dorsum; a submedian, sublateral and lateral series on each side; mar-

ginal series most complete, consisting of about 17 setae per side, one seta per segment on abdomen, the posterior two pairs more elongate (about $20\ \mu$); remaining series less complete, lacking setae on some of the posterior abdominal segments. Ventral derm largely membranous except for some narrow intersegmental sclerotized patches and a small patch behind the base of each antenna. Venter with 4 pairs of long slender setae.

Described from holotype and one paratype (mature females) and several first instar larvae: Bukit Timah Nature Reserve, Singapore, VII-1969, Mrs. M. Anthony, ex. galls on leaves of *Shorea pauciflora*.

The galls from which this species was obtained (designated as "Gall No. 23V" by the collector) resemble small fir cones and appear to be composed of a series of overlapping bract-like structures which are attached to a central axis. The coccids occupy small cavities at the base of one or more of these bracts.

Gallacoccus secundus, new species (Figs. 3-5).

Adult female. Body globular, broadly oval to circular in outline; 1.6 to 2.0 mm long. Antennae very small; two basal segments each represented by a roughly crescent-shaped sclerite; apical segment about $14\ \mu$ long, bearing 6 fleshy setae on apical portion. Eyes very weakly sclerotized, about $15\ \mu$ diameter. Legs with trochanters and femora apparently fused; hind leg from base of coxa to tip of claw about $160\ \mu$ long; claw $15\ \mu$ long, with a small denticle on inner face near apex, basal portion not strongly expanded. Anal opening about $22\ \mu$ wide, enclosed by a relatively narrow sclerotized ring. Spiracular peritremes small.

Ventral derm just behind each metacoxa with a small patch of weakly sclerotized slightly raised hump-like protuberances of variable size and shape. Quinquelocular pores, 5.5 to $7.5\ \mu$ diameter, distributed in a ventral submarginal band from the vicinity of the mesothoracic legs to the apex of the abdomen; and in loose concentrations mesad and laterocaudad of the anterior spiracles. Quinquelocular pores present on dorsum of abdomen over a wedge-shaped area with anterior apex at about level of mesothoracic legs. Body setae very sparsely distributed on dorsum and lateral portions of venter, mostly short (8 - $15\ \mu$ in length), slightly spiniform; somewhat longer (to $25\ \mu$) and more distinctly spiniform on posterior margin of abdomen and around anal ring.

First instar larva. Slide-mounted specimens about 0.40 mm long. Antennae 3-segmented, about $55\ \mu$ long; apical segment with several moderately long fleshy setae, and one very long ($50\ \mu$) slender seta. Tarsal claws about $23\ \mu$ long. Dorsum moderately sclerotized; integument of central portions of thorax and abdomen formed of a coarse cellular meshwork of irregularly shaped polygonal areas separated by narrow sclerotized bands; meshwork areas devoid of sclerotized pits. Dorsal areas laterad and cephalad of meshwork with numerous sclerotized pits with slit-like inner apices; total number of pits about 130. Areas between

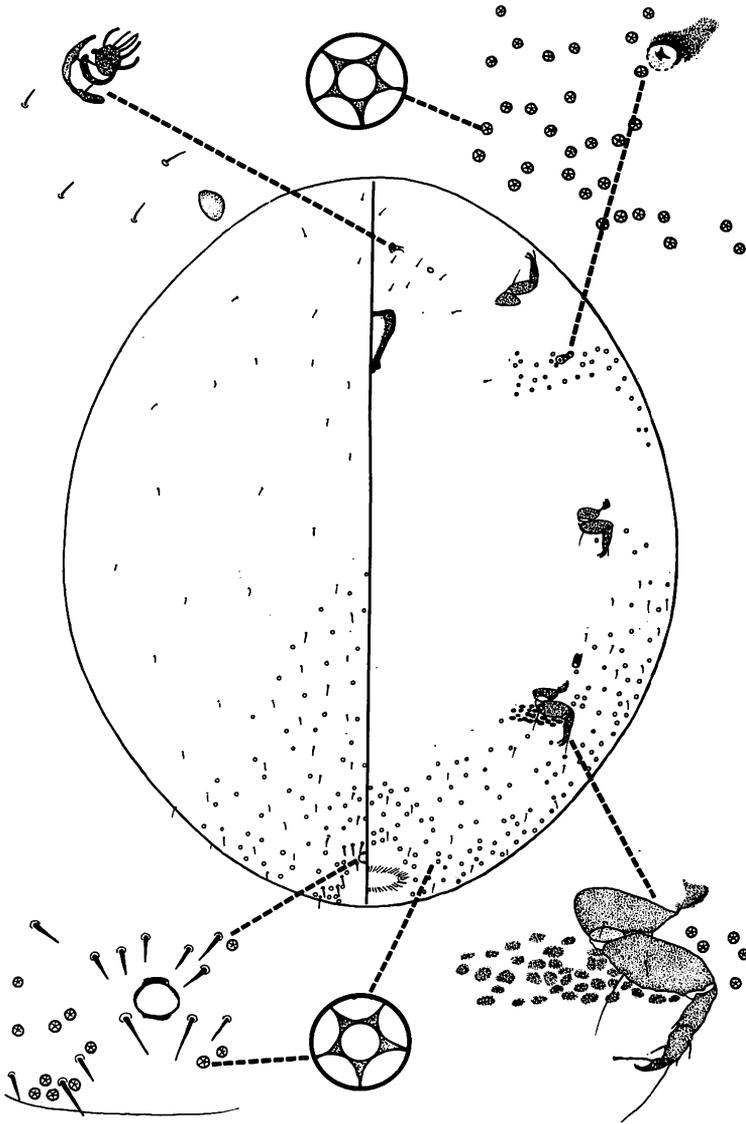


FIG. 4. *Gallacoccus secundus*, n. sp., mature female.

pits and extending onto lateral margins of venter with rounded, weakly sclerotized protuberances of variable size. Dorsum with about 70 well-developed conical setae, 12 to 15 μ long, arranged in a marginal series of 17 per side, a submedian series of 8 or 9 per side extending from head to fourth abdominal segment, plus two less complete more irregular series

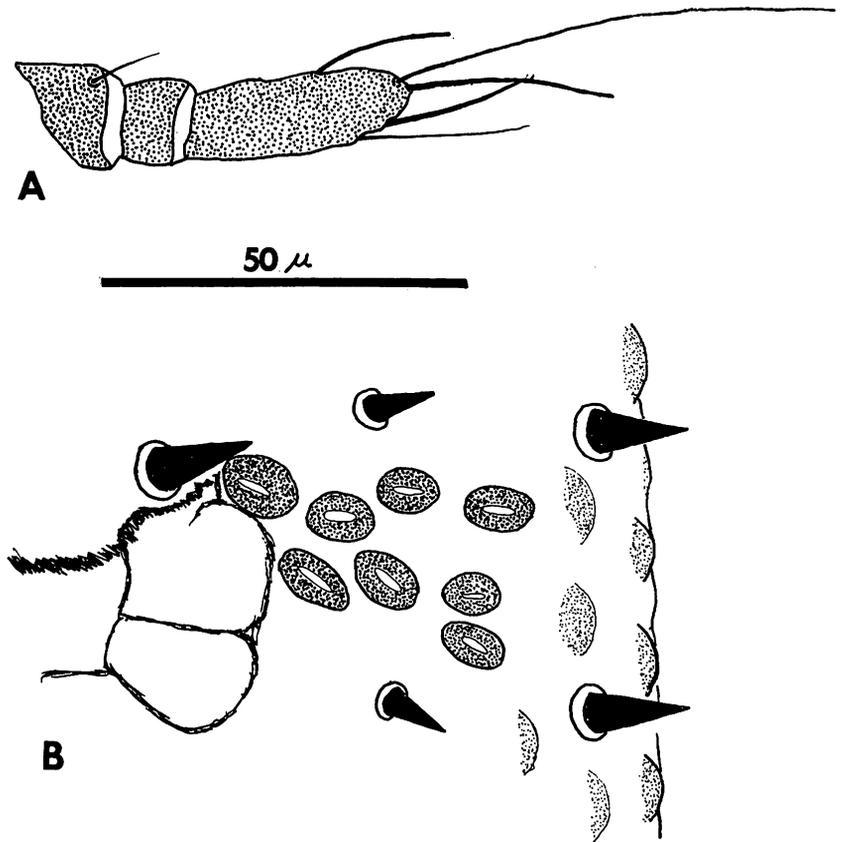


FIG. 5. *Gallacoccus secundus*, first instar larva. A) antenna, B) portion of dorsum of mesothorax.

between these. Ventral derm apparently unsclerotized. Anal opening obscure.

Described from holotype and two paratypes (adult females) and several first instar larvae: Bukit Timah Nature Reserve, Singapore, VII-1969, Mrs. M. Anthony, ex. galls on leaves of *Shorea pauciflora*.

Although generally similar to *G. anthonyae*, this species is easily distinguished from the former. In addition to characters given in the key below, *G. secundus* has a much narrower anal ring, and differently shaped tarsal claws. The unusual pit glands of the first instar larvae have tiny circular inner apices in *G. anthonyae* and slit-like apices in *G. secundus*.

The galls from which this species was obtained (designated "Gall No. 231" by Mrs. Anthony) are somewhat drupe-like in appearance, consisting of a globular fleshy basal portion with a beak-like apical projection. The

interior of the gall contains a single large cavity which the coccids occupy. These galls apparently may arise on small twigs, leaf petioles or leaf midribs.

KEY TO KNOWN SPECIES OF *Gallacoccus*

I. Adult females.

1. Quinquelocular pores present on dorsum of abdomen; an area of small, weakly sclerotized, rounded protuberances present behind each hind coxa; spiracular peritremes relatively small, hind pair without an associated concentration of quinquelocular pores.....*secundus*
- Quinquelocular pores absent on dorsum; without an area of small protuberances behind posterior coxa; spiracular peritremes relatively large, both pairs with concentrations of quinquelocular pores near openings.....*anthonyae*

II. First instar larvae.

1. Sclerotized pit structures with slit-like inner apices; central portion of dorsum of thorax without pits, the derm with conspicuous meshwork areas formed by irregularly shaped polygonal plates defined by narrow sclerotized bands.....*secundus*
- Sclerotized pit structures with circular or oval inner apices; pits present on central portion of thorax; derm in this region made up of small sclerotized protuberances separated by areas of unsclerotized derm.....*anthonyae*

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