

SUPPLEMENTARY NOTES ON THE COCCIDÆ OF CEYLON.

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PART IV.

(Continued from page 357 of Vol. XVI of this Journal.)

(With 39 text figures.)

The following notes and descriptions deal with new species of genera that were considered in the earlier parts of my Monograph. With the publication of part V, and the present paper, the list of Ceylon Coccidæ has been brought up to date. Other species, doubtless, remain to be discovered by any diligent collector. I should be glad to receive such novelties, with a view to the publication of further Supplementary Papers.

Aspidiotus ambalangoda, n. sp. (Fig. 1.)

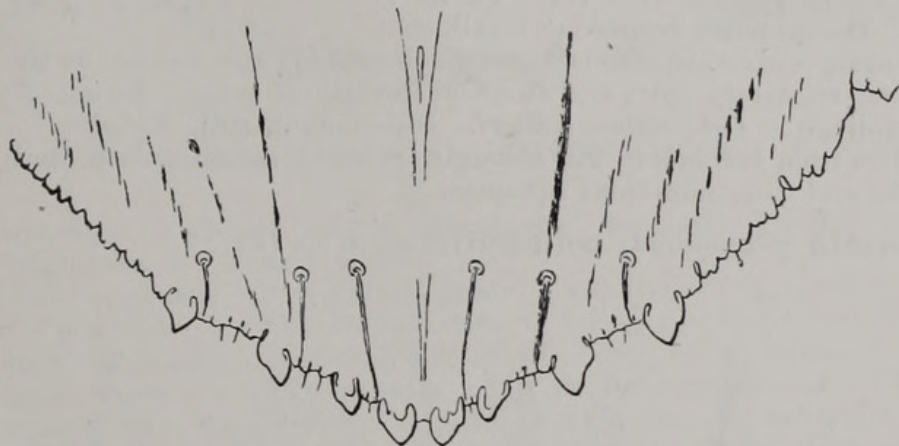


FIG. 1—*Aspidiotus ambalangoda*. Pygidium of adult ♀, × 450.

Puparium of female flattish, oblong, much longer than broad, usually tapering to each extremity. Colour brownish black; larval pellicle reddish, surrounded by a narrow pale ring; nymphal pellicle concealed. Dimensions of fully developed example 2.25 by 1.5 mm.

Adult female rather strongly chitinized; broadly rounded in front, pointed behind, with a well defined transverse groove between the prothoracic and mesothoracic segments. No circumgenital pores. Dorsal pores minute and inconspicuous. Median area of pygidium more densely chitinous, with faint traces of partial tessellation. Extremity of pygidium with four pairs of prominent, bluntly pointed lobes each of which has a more or less distinct notch on the outer side; median and first lateral lobes approximately equal in size; second and third lateral lobes larger, widely separate; margin beyond outer lobes strongly cristate. Margin without squames. Spines small and inconspicuous. Paraphyses six, elongate, slender, each with a circular knob at its inner extremity. Length 1.5 mm.

Disposed along the mid rib, on the upper surface of leaves of an undetermined shrub. *Ambalangoda*.

Somewhat resembling *Pseudaonidia nigra* Brain; but differing in the absence of circumgenital pores.

Aspidiotus calophylli, n. sp. (Fig. 2.)

Puparium of female pale brown, semi-translucent; flat, broadly ovate. Exuviae yellowish, sub-central.

Adult female turbinate; broadly rounded in front, acutely pointed behind. There is a slight lateral constriction demarking the thoracic from the abdominal areas. Segmental divisions strongly defined, especially those between the thorax and abdomen and between the abdomen and pygidium. Pygidium with three pairs of prominent lobes of which the median are the largest; median and first laterals distinctly trifoliate, second laterals bifoliate. Squames broad and deeply fimbriate; numerous, nine beyond the outer lateral lobe. Circumgenital pores in four groups; upper groups with from 15 to 23, lower groups with from 14 to 18 pores. Dorsal pores numerous, small, communicating with conspicuous ducts which are long and slender on the central area, but relatively short and stout on the lateral areas. Length 2 mm.

On foliage of *Calophyllum walkeri*. Namunakuli Hill, Badulla.

Differs from *pedronis* in the strongly marked segmentation and in the broader and more numerous squames.

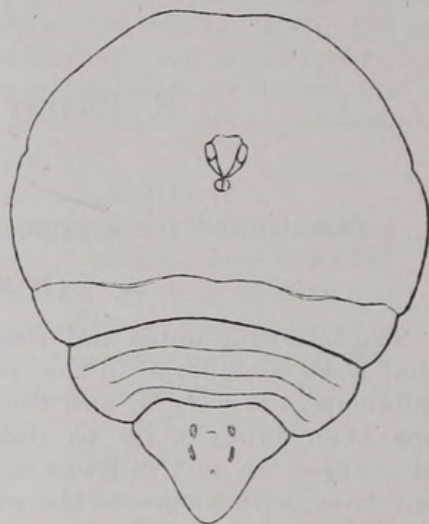


FIG. 2—*Aspidiotus calophylli*.
Adult ♀, × 30.

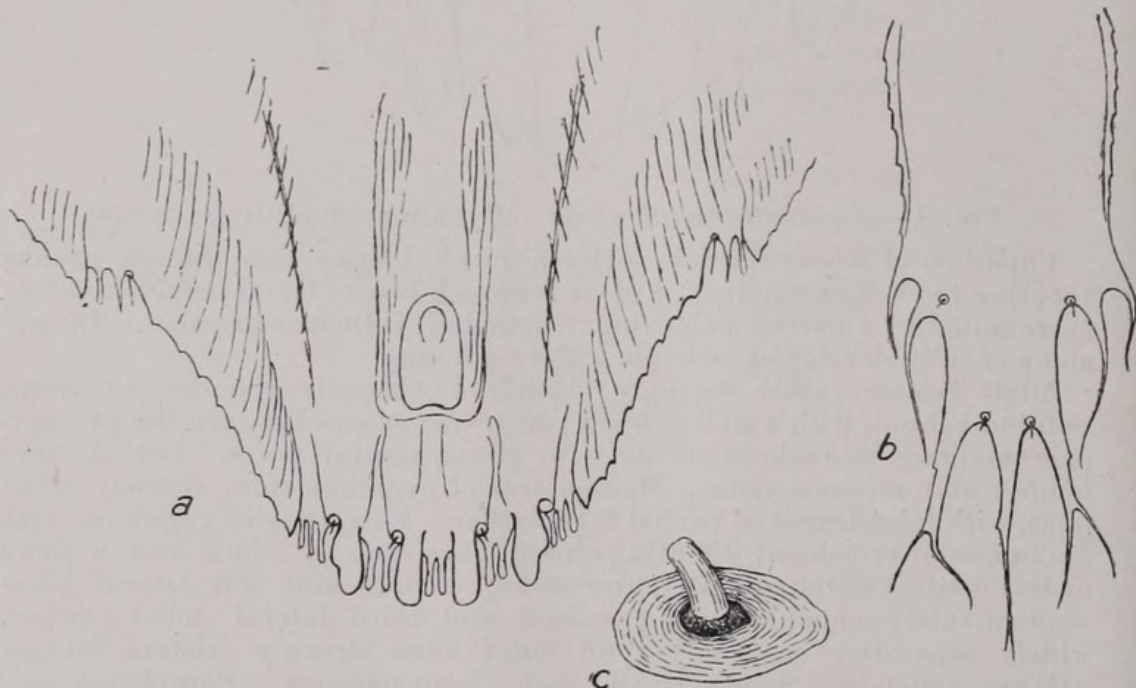
Aonidia (Greeniella) columnifera, n. sp. (Fig. 3.)

FIG. 3—*Aonidia columnifera*. (a) Pygidium of nymph. × 450.
(b) Pygidium of adult ♀, × 220. (c) Male puparium, × 10.

Puparium of female flattish, broadly oblate; dull castaneous; larval pellicle blackish, the central area occupied by a cylindrical column of dense, white wax which is often missing in old examples.

Male puparium (c) very thin and flat; grayish; larval pellicle as in the female.

Adult female broadly oblate, more or less crescentic in outline. Pygidium (b) narrow; without any vestiges of pygidial lobes; the posterior margin produced into long flagellate processes; the sides (towards the base) narrowly cristate. Length 1 mm.

Pygidium of nymphal pellicle (a) with two pairs of prominent lobes; the median lobes parallel sided, entire; the lateral lobes gibbous, emarginate on the outer side; lateral margins strongly cristate.

On the under surface of leaves of *Turpinia pomifera*. Hakgala. (Coll. T. Petch).

Aonidia mesochitinsa, n. sp. (Fig. 4.)

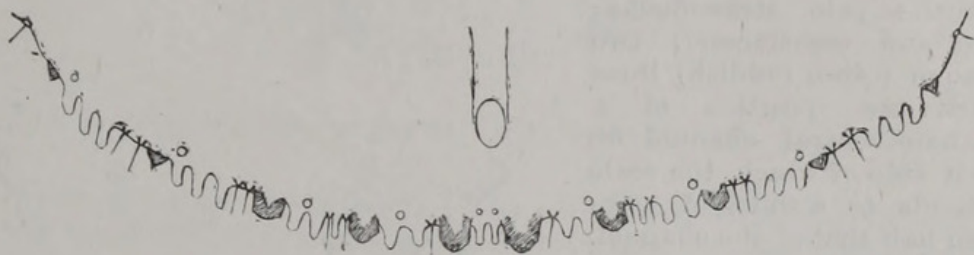


FIG. 4—*Aonidia mesochitinsa*. Pygidium of adult ♀. × 450.

Puparium of female bright castaneous; regularly ovoid, dorsal area slightly concave. Length 1 mm.

Adult female sub-circular, the pygidium not projecting, its outer margin evenly rounded. Cephalo-thorax with a large, circumscribed area more strongly chitinized. Anal orifice relatively large, at a distance from the posterior margin slightly greater than its longer diameter. Margin of abdomen with a close series of minute, bluntly conical tubercles. Margin of pygidium with five pairs of short but moderately broad lobes, of which the median are the largest, the others decreasing in size to the outermost; the three inner pairs obscurely notched on each side; the two outer pairs deltoid, entire; the fifth lobe is often missing on one or both sides. Squames short but relatively broad, emarginate. Spines projecting beyond the lobes. Length 0.5 to 0.6 mm.

On both surfaces of foliage of *Canthium montanum*. Hakgala. The puparia occupy distinct depressions which appear as raised spots on the opposite surface of the leaf.

Aonidia mimusopis, n. sp. (Fig. 5.)

Puparium of female small and inconspicuous; pale grayish ochreous, with a darker central area; broadly ovate, flat. Exuviae concealed by the secretionary covering.

Pygidium of adult female with two pairs of broad and prominent lobes, the apices nearer

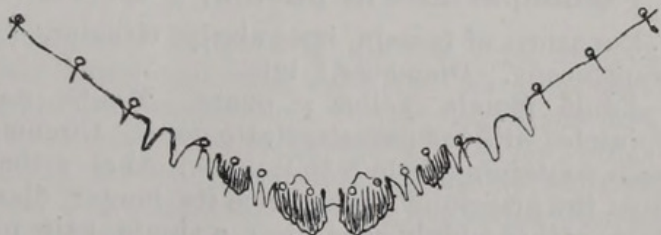


FIG. 5—*Aonidia mimusopis*. Pygidium of adult ♀, × 450.

the inner side, their outer margins coarsely serrate; a pair of small, squamiform processes between the median and lateral lobes, and three similar but larger processes beyond the lateral lobe; marginal spines moderately long. Length of insect 0.5 mm.

Pygidial margin of nymph with two pairs of stout, prominent lobes, each indented on the outer side. There is a conspicuous lunate pore between the median and lateral lobes, and two others, on each side, beyond the lateral lobes.

On *Mimusops hexandra*. Trincomali. (Coll. T. B. Fletcher). The puparia are disposed along each side of the mid rib, on the under surface of the leaf.

Lepidosaphes dilatilobis, n. sp. (Fig. 6.)

Puparium of adult female flattish; pale stramineous; thin and translucent; two opaque (often reddish) lines mark the position of a median ventral channel on each side of which the scale extends to a width of more than half that of the channel. Length 1.5 mm.

Puparium of male paler and of more regular outline; posterior half depressed and slightly concave. Length 1.25 mm.

Adult female of normal form. Margins of abdominal segments markedly produced; with many small pores, but without the usual spiniform squames. Pygidium bluntly conical; median and lateral lobes dolabriform, outwardly dilated, their bases extending inwards to a considerable distance. The lateral lobes are duplex, the outer lobule much smaller. The median and lateral lobes are separated by a single, stout, pore-bearing process. Circumgenital pores in five groups; median group with 2 pores, upper laterals with 3 or 4, lower laterals with 4; there is a considerable interval between the upper and lower lateral groups. Length 0.5 to 0.75 mm.

On undetermined shrub. Sigiriya and Ambalangoda. The scales are crowded, in irregular patches, on the undersurface of the leaves. Their presence is indicated by a purple-brown discoloration on the upper surface of the leaves.

Pseudoparlatoria pusilla, n. sp. (Fig. 7.)

Puparium of female irregularly circular, flat; pale yellow; thin and translucent. Diameter 1 mm.

Adult female yellow; ovate. Mouth parts large and conspicuous. Spiracles without parastigmatic pores. Circumgenital pores, in four groups, each containing from 8 to 9 pores. Anal orifice long ovate, at a distance from the margin of about twice its longer diameter. Median lobes trifoliate, rather widely separate; a single pair of duplex lateral lobes, the lobules simple; a pair of stout spiniform squames in the space between the median lobes, and a similar but smaller squame immediately outside both the median and lateral lobes. Marginal dorsal pores elongate, com-

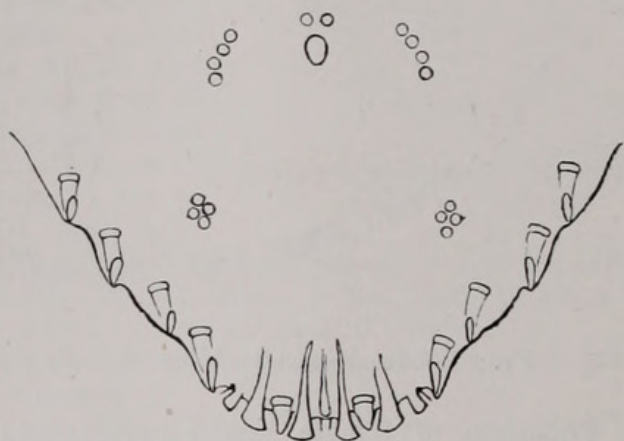


FIG. 6—*Lepidosaphes dilatilobis*.
Pygidium of adult ♀, × 450.

municating with short cylindrical ducts ; discal pores smaller, oval
Length approximately 0.5 mm.

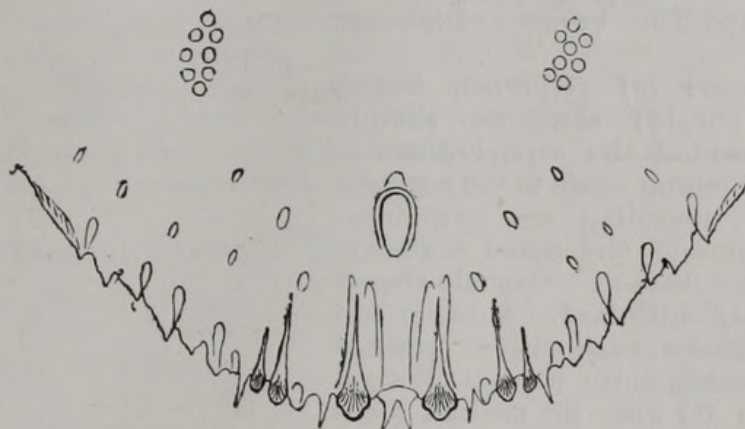


FIG. 7—*Pseudoparlatoria pusilla*. Pygidium of adult ♀, × 450

On *Theobroma cacao*. Peradeniya. The scales are extremely inconspicuous and are distributed, singly, at wide intervals, on the undersurface of the foliage.

Diaspis antiquorum, n. sp. (Fig. 8.)

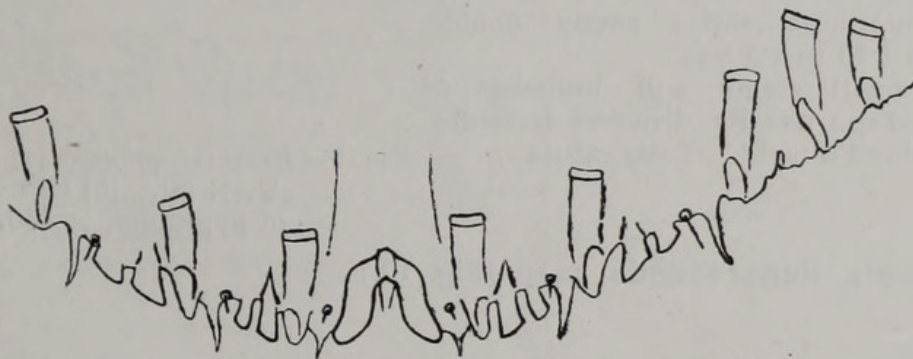


FIG. 8—*Diaspis antiquorum*. Pygidium of adult ♀, × 450.

Puparium of female sub-circular, moderately convex ; white, opaque ; exuviae eccentric, larval pellicle bright castaneous, nymphal pellicle concealed. Diameter 2.5 mm.

Adult female broadly ovate, narrower behind. Pygidium with median lobes recessed, divergent, their bases confluent, their free margins very obscurely serrate ; two pairs of duplex lateral lobes, the lobules of the first pair narrowly dolabriform, those of the second pair broadly so, the inner lobule of each pair with a short inward extension defined by slender but densely chitinous paraphyses. Circumgenital pores in five large groups with numerous pores. Length 1.25 mm.

On the fleshy branches of *Euphorbia antiquorum*. Elephant Pass. Associated with *Parlatoria mangiferae*.

Diaspis bambusae, n. sp. (Fig. 9.)

Puparium of female circular, moderately convex; white, opaque; exuviae eccentric, reddish brown. Diameter 2.5 mm.

Adult female (a) yellowish, tinged with dull purple; elongate, sharply contracted behind the cephalo-thoracic area, then widening again to the segment immediately preceding the pygidium; lateral margins of abdominal segments strongly protuberant. Cephalo-thorax rather densely chitinized. Anterior and posterior spiracles each with a crowded group of parastigmatic pores. Margin of pygidium (b) with the median lobes recessed, divergent, not serrated; two pairs of small, duplex, lateral lobes. Spiniform squames numerous and conspicuous on the base of pygidium and on lateral margins of the two previous segments. Circumgenital pores in five densely crowded groups which are almost confluent. Dorsal pores in four linear series, on each side; the innermost series containing 5 or 6 pores only, the outermost series partly double. Length 1.25 to 1.5 mm.

On small stems and branches of *Bambusa* sp.; usually disposed immediately behind a node. Yatiyantota.

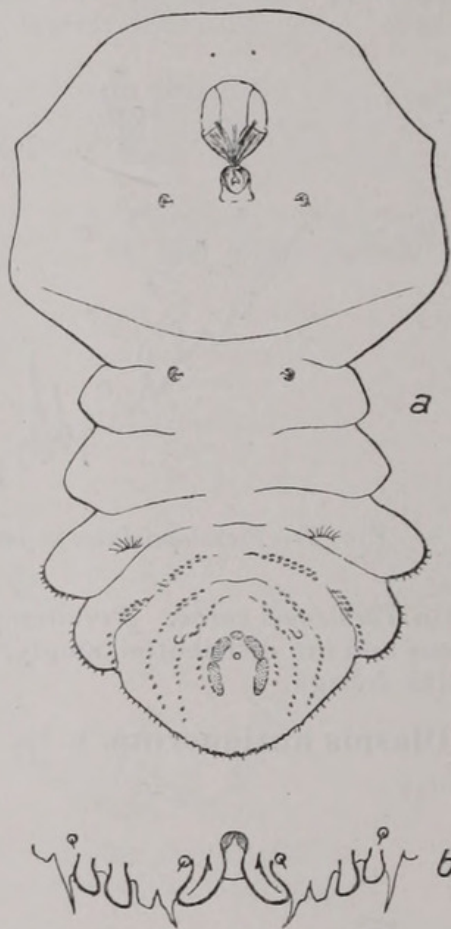


FIG. 9—*Diaspis bambusae*. (a) adult ♀, $\times 50$. (b) Extremity of pygidium, $\times 450$.

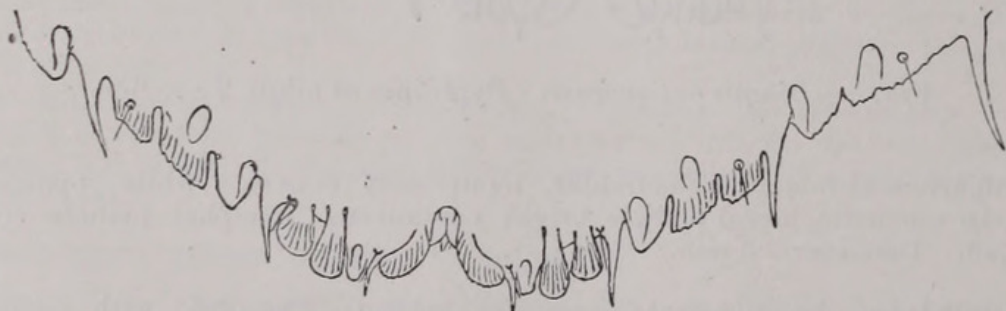
Diaspis heneratgoda, n. sp. (Fig. 10.)

FIG. 10—*Diaspis heneratgoda*. Pygidium of adult ♀, $\times 450$.

Puparium of female white, sometimes slightly tinged with ochreous; broadly ovate or sub-circular, flattish or moderately convex; exuviae reddish brown, eccentric, close to the margin of the scale, the larval pellicle occasionally projecting beyond the margin. Longer diameter 2.5 mm.

Puparium of male white; weakly tricarinate; accompanied by some loose, white, woolly matter. Length 1 mm.

Adult female turbinate in outline, the abdominal segments tapering evenly to the extremity of the pygidium. Parastigmatic pores at ante-

rior spiracles only. Pygidium with the mesal lobes relatively small, recessed, widely divergent, minutely serrate; first lateral lobes relatively large, duplex, prominent, each lobule rounded at apex, the outer lobule as broad as or broader than the inner one; second lateral lobes in the form of broad, cristate prominences. Circumgenital pores in five groups, median group averaging 8, upper laterals 18, lower laterals 23. Dorsal pores in four conspicuous linear series, with an additional pair adjacent to the circumgenital pores. Length 1.5 mm.

On foliage of undetermined tree. Heneratgoda.

***Diaspis orientalis*, n. sp.** (Fig. 11.)

Puparium of female white; sub-circular, flattish, rather thin; exuviae central or slightly eccentric, very pale stramineous. Diameter 2.5 mm.

Male puparia white; with a strong median and weak lateral carinae; sometimes masked by a loose covering of woolly filaments. Length 1 mm.

Adult female (a) oblong; sharply contracted behind the cephalo-thoracic area; the remaining segments narrowing, successively, to the pygidium. Cephalo-thorax and lateral protuberances of abdominal segments rather densely chitinized. Each spiracle with a small group of parastigmatic pores. Margin of pygidium (b) with the mesal lobes small, partly recessed, bluntly pointed, divergent, the inner edge obscurely serrate; lateral lobes duplex, the first pair prominent, small, the two lobules of approximately equal size, their apices rounded or bluntly pointed; second pair broader, each lobule with its apex at the inner side, their free edges serrate; margin

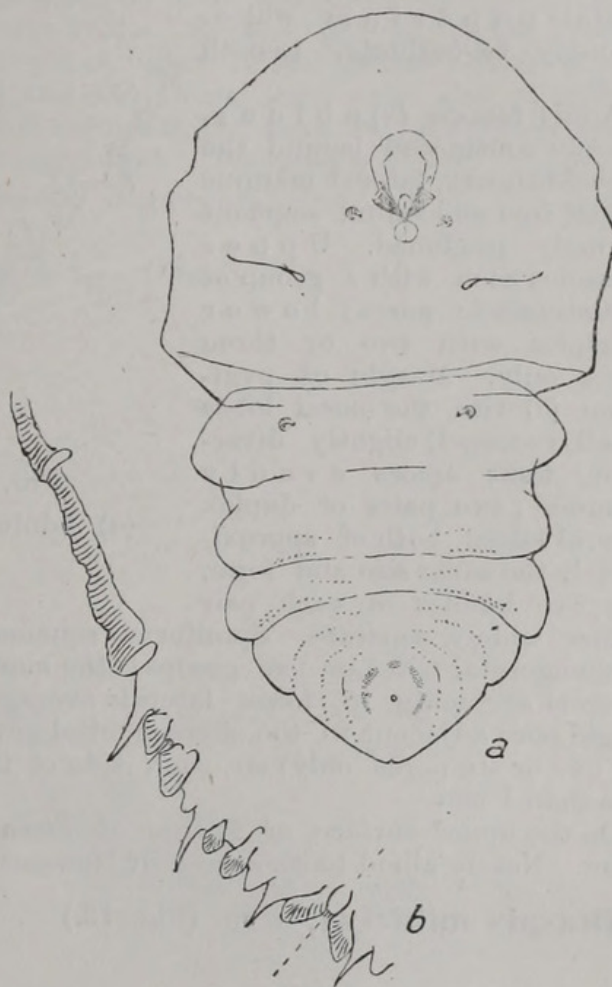


FIG. 11—*Diaspis orientalis*. (a) Adult ♀, × 50. (b) Margin of pygidium, × 450.

beyond the lobes strongly and deeply cristate. Circumgenital pores in five groups; the mesal group averaging 18, upper laterals 32, lower laterals 24. Dorsal pores numerous, extending on to the free abdominal segments; one or two close to the circumgenital pores, five curved linear series extending inwards from the margin, and four short series situated slightly above and overlapping the inner extremities of the longer series. Spiniform squames, on last abdominal segment and base of pygidium, small and inconspicuous. Length 1.25 to 1.5 mm.

On the undersurface of leaves of undetermined trees ; Maha Illuppalama and Galgammuwa. Also on *Sapindus* sp., Sigiriya. Received also from India, on *Hemigyroa* sp.

***Diaspis phoenicis*, n. sp. (Fig. 12.)**

Puparium of female broadly and irregularly ovate or sub-circular ; flattish ; white, thin and semi-translucent ; exuviae stramineous or very pale fulvous, eccentric, the larval pellicle often extra-marginal. Longer diameter 2 mm.

Male puparium white ; strongly tri-carinate. Length 1 mm.

Adult female (a) oblong, sharply contracted behind the cephalo-thorax, lateral margins of last free abdominal segment strongly produced. Upper spiracles each with a group of parastigmatic pores ; lower spiracles with two or three pores only. Margin of pygidium (b) with the mesal lobes small, recessed, slightly divergent, their apices evenly rounded ; two pairs of duplex lateral lobes, both of approximately the same size and form, the two lobules of each pair rather widely separate. Spiniform squames small and inconspicuous. Circumgenital pores in five groups ; the mesal group with 8 pores, upper laterals averaging 15, lower laterals averaging 13. Dorsal pores few ; a single pore adjacent to the circumgenital groups, and three curved series (of five or six pores only) on each side of the pygidium. Length slightly less than 1 mm.

On the upper surface of foliage of *Phœnix zeylanica* ; Maha Illuppalama. Nearly allied to *cinnamomi* of Newstead.

***Diaspis mihiriya*, n. sp. (Fig. 13.)**

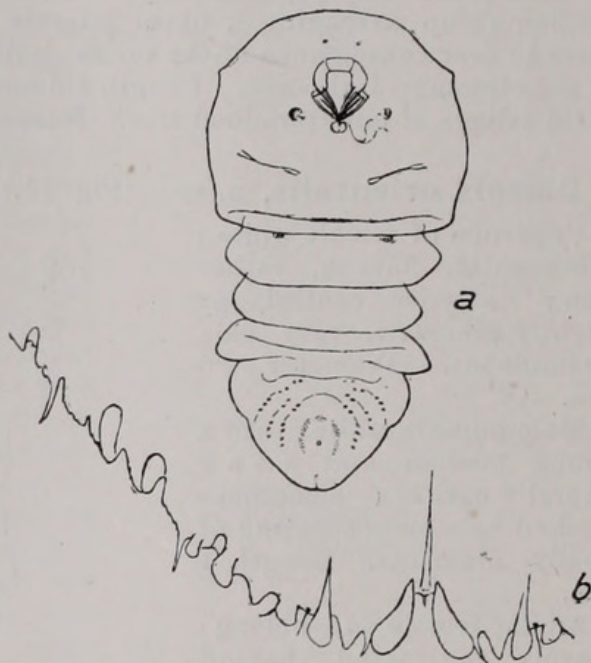


FIG. 12—*Diaspis phœnicis*.
(a) Adult ♀, $\times 50$. (b) Pygidium,
 $\times 450$.

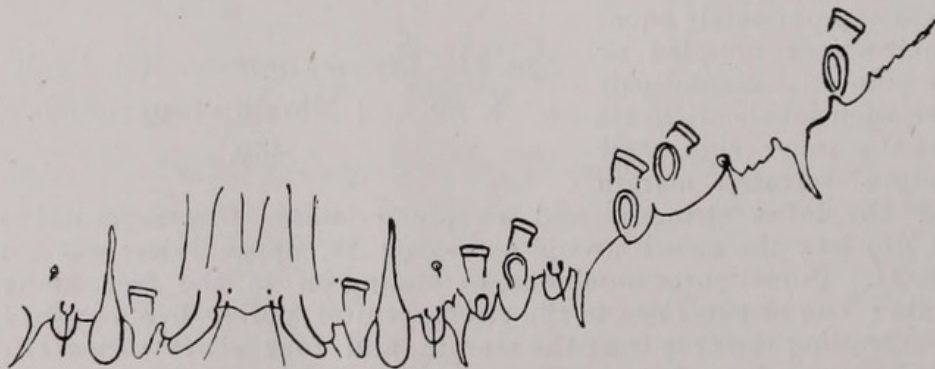


FIG. 13—*Diaspis mihiriya*. Margin of pygidium, $\times 450$.

Puparium of adult female pale ochreous, opaque; very irregularly circular or broadly ovate, very slightly convex; exuviae eccentric, often projecting beyond the margin. Average diameter 1.75 mm.

Male puparia snowy white, very obscurely tricarinate, thickly covered with dense white secretory matter which completely conceals the exuviae. Collected into close clusters of from 4 to 15, with their anterior extremities directed towards the centre of the cluster. Length 1.25 mm.

Adult female sub-circular, the pygidium broadly rounded; abdominal segments moderately protuberant. Spiracles small and obscure, without parastigmatic pores. Pygidium with the mesal lobes widely separate, recessed, narrow, excurved; lateral lobes duplex, each lobule rather broadly rounded, the inner lobule of the first pair projecting beyond the mesal lobes; a pair of long slender spines in the space between the mesal lobes, spiniform squames extending on to the margins of the free abdominal segments. Circumgenital pores in five crowded groups; mesal group of type individual containing 27 pores, upper lateral groups with 40 and 36, lower lateral groups with 31 and 33. Dorsal pores large and conspicuous, extending on to the abdominal segments, but those on the latter area of smaller size than those on the pygidium. Diameter 0.75 mm.

On foliage of *Dichopsis grandis*; Bogawantalawa.

Diaspis grandilobis, n. sp. (Fig. 14.)

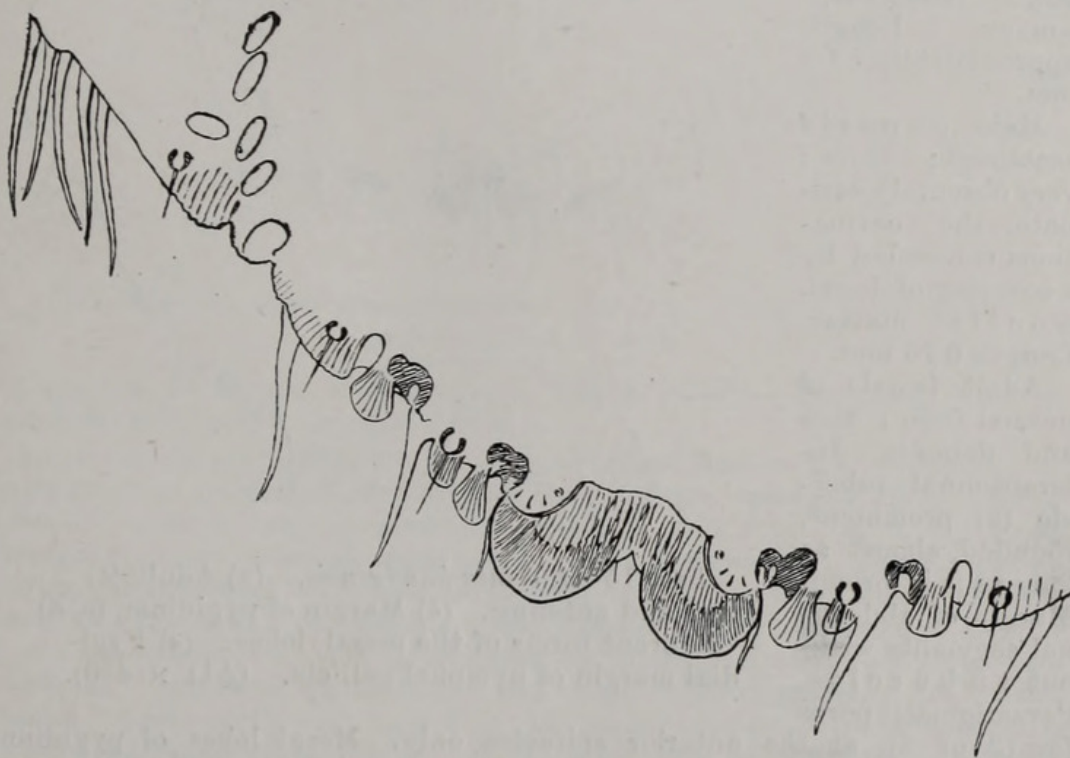


FIG. 14—*Diaspis grandilobis*. Margin of pygidium, $\times 450$.

Puparium of female similar to that of *pentagona*; colour creamy white, exuviae reddish. Diameter 2 mm.

Adult female. Form similar to that of *pentagona*. Parastigmatic pores at each spiracle, but more crowded at the anterior pair. Mesal lobes of pygidium very large and dense; their bases confluent; their free margins

prominent, broadly rounded, minutely but obscurely crenulate. Lateral lobes duplex, the outer lobule of the second pair represented by a broad cristate marginal prominence. A pair of short, dense broad paraphyses on each side, situated in the intervals between the lobes. Spiniform squames large and conspicuous, numerous on the base of the pysidium and on the margins of the abdominal segments. Circumgenital pores in five crowded groups, each group with from 60 to 80 pores. Dorsal pores extending on to the thoracic segments, those on the pygidium larger. Length 1.25 to 1.75 mm.

On the smaller branches of *Diospyros Thwaitesii*; Peradeniya. Near *flacourtiae*, but differing in the form of the mesal lobes and in the presence of prominent lateral lobes.

Fiorinia kandyensis, n. sp. (Fig. 15.)

Puparium of female consisting solely of the nymphal pellicle which is of a bright castaneous colour, with a darker median longitudinal fascia; elongate, moderately convex. Length approximately 1.5 mm.

Male puparia scattered; white; very obscurely carinate, the carinations concealed by a covering of loose, woolly matter. Length 0.75 mm.

Adult female of normal form; thin and delicate. Interantennal tubercle (a) prominent, rounded, almost as long as it is broad. Margin of abdominal segments without tubercles. Parastigmatic pores

few (2 or 3), at the anterior spiracles only. Mesal lobes of pygidium small, varying in form; often with a narrow, prominent process at the apex (b), or coarsely serrated (d), or bifid (c). Lateral lobes represented by irregular marginal incassations. Spiniform squames broad, tapering to a point. Spines setiform, unusually long and slender. Circumgenital pores forming an irregular arch containing between 60 and 70 pores. Dorsal pores few, small and inconspicuous, confined to the marginal area of the pygidium. Length approximately 0.75 mm.

On the undersurface of leaves of an undetermined shrub; Kandy.

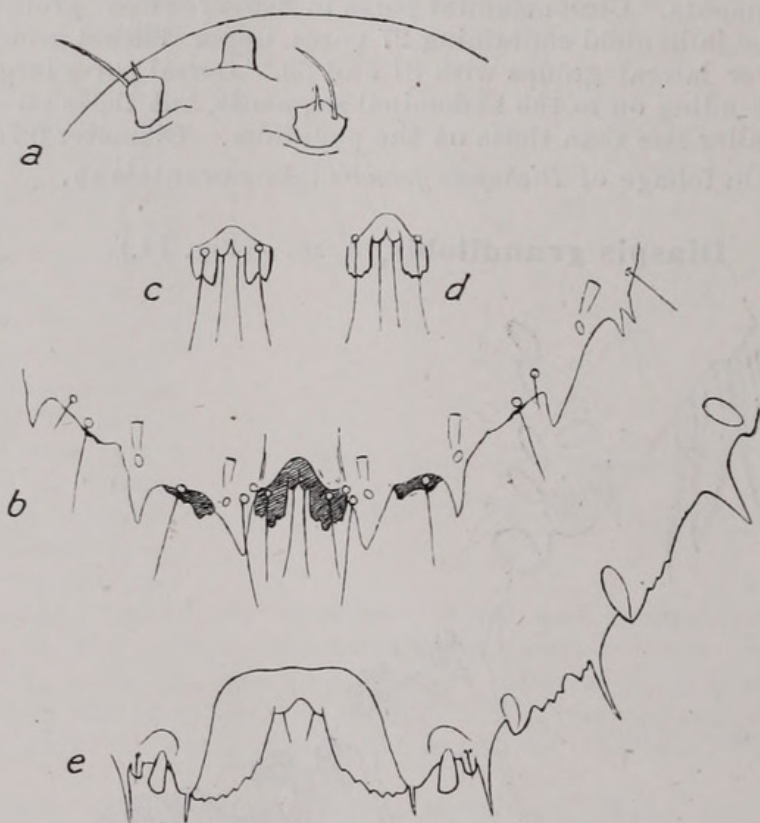


FIG. 15—*Fiorinia kandyensis*. (a) Adult ♀, frons and antennæ. (b) Margin of pygidium, (c, d) different forms of the mesal lobes. (e) Pygidial margin of nymphal pellicle. (All $\times 450$).

The species is well characterized by the unusually long setiform spines on the margin of the pygidium.

Chionaspis acuminata atricolor, n. var.

It will be convenient to give a varietal name to this very constant form.

The puparium is of a deep castaneous brown, that of the type form being ochreous or pale fulvous.

On foliage of *Carissa* sp., Maha Illuppalama; and on an undetermined plant, Kandy. Received also from Southern India, on *Carissa* and *Tamarindus*.

Chionaspis gynandropsidis, n. sp. (Fig. 16.)

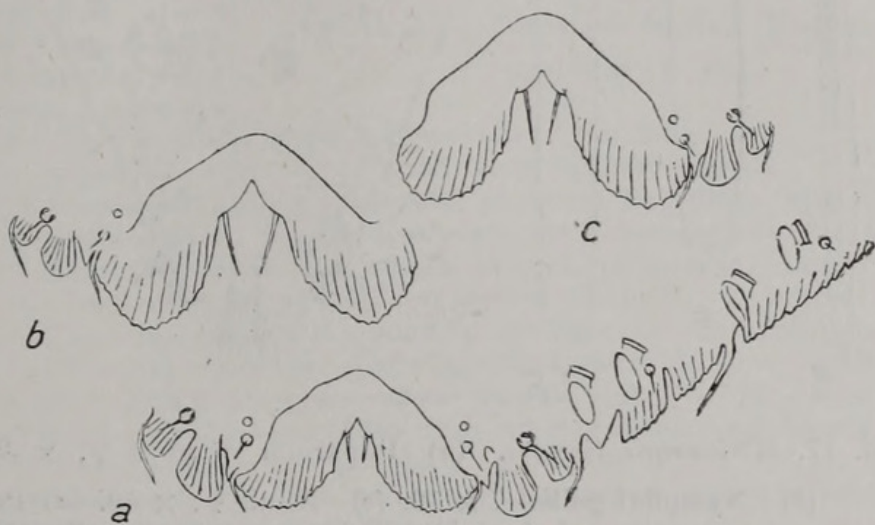
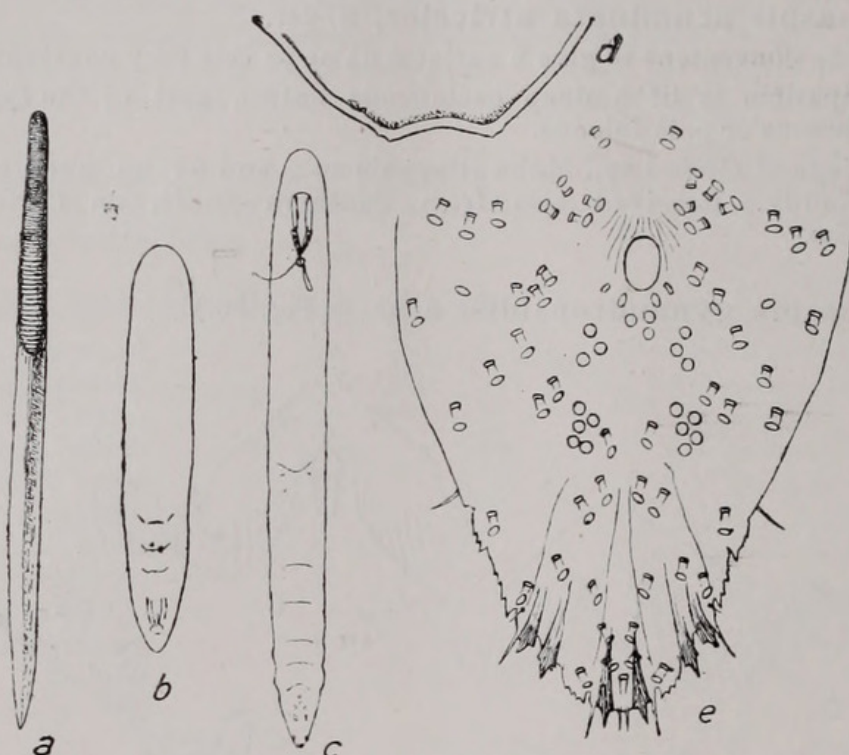


FIG. 16—*Chionaspis gynandropsidis*. (a, b, c). Various forms of the pygidial lobes, $\times 450$.

Puparium of female white, exuviae bright fulvous; elongate, sinuous, broadest posteriorly. Length 2.25 mm.

Adult female reddish yellow; ovate, broadest across the abdomen. A small group of parastigmatic pores at the anterior spiracles only. Mesal lobes of pygidium varying considerably in size and form (a, b, c), large, divergent, partly recessed, their bases confluent, their free margins finely serrate; first lateral lobes well developed, duplex, the inner lobule dilated, sometimes projecting beyond the mesal lobes (as at a), but usually shorter (b, c); second lateral lobes represented by broad, cristate, marginal prominences. Spiniform squames few and small. Circumgenital pores in five groups; mesal group with from 8 to 10 pores; upper laterals averaging 24; lower laterals averaging 23. Oval dorsal pores conspicuous, four linear series on each side of the pygidium, with similar but smaller pores grouped on the margins of the abdominal and thoracic segments. Length 1 to 1.25 mm.

On stems and branches of *Gynandropsis* sp.; Peradeniya. Very near *subcorticalis*, from which it may be distinguished by the much stronger development of the first lateral lobes, and by the smaller spiniform squames.

Chionaspis linearis, n. sp. (Fig. 17.)FIG. 17.—*Chionaspis linearis*. (a) Puparium of adult ♀, × 30.

(b) Nymphal pellicle, × 50. (c) Adult ♀, × 50. (d) Posterior extremity of larval pellicle, × 450. (e) Pygidium of adult ♀, × 450.

Puparium of female (a) white, the exuviae pale stramineous; very long and narrow, filiform, posterior extremity tapering to a point, secretory appendix with a median longitudinal ridge. Length 2 mm. Breadth approximately 0.1 mm. Nymphal pellicle (b) elongate, narrow. Posterior margin very similar to that of the adult insect. Length 0.75 mm. Posterior extremity of larval pellicle (d) without lobes or processes. Length 0.5 mm.

Adult female (c) long and slender; pale yellow. Pygidium (e) pointed with a mesal pair of narrow hastate lobes, rather widely separate, and two lateral lobes, of the same form, on each side. The lateral lobes are approximate to each other, but are separated by a considerable interval from the mesal lobes. Spiniform squames very slender. Margin weakly cristate for a short distance beyond the outer lateral lobes. Anal orifice relatively large, situated near the base of the pygidium. Circumgenital pores in five groups; mesal group 2 or 3, upper laterals 3, lower laterals 4 or 5. Oval dorsal pores associated with short ducts; numerous, scattered, not disposed in definite series. There is a single median pore between the mesal lobes. Length 1 mm.

On the margins of the leaves of a small species of Bamboo; Peradeniya. Allied to *annandalei*, from which species it differs, principally, in the possession of circumgenital pores.

Chionaspis tenera, n. sp. (Fig. 18.)

Puparium of female white; very thin and delicate; elongate, narrow, gradually widening to the middle and then more abruptly narrowing to the posterior extremity; with a median longitudinal channel due to the fact that the scale lies in the sunken median vein of the leaf. Larval pellicle pale stramineous; nymphal pellicle colourless, concealed.

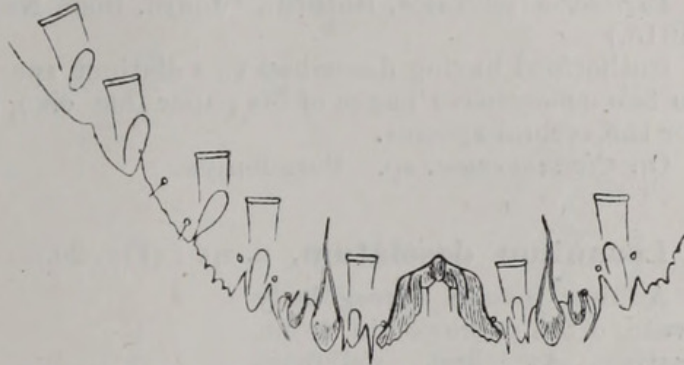


FIG. 18.—*Chionaspis tenera*. Margin of pygidium, $\times 450$.

Length 2.25. Greatest breadth approximately 1 mm.

Male puparium without, or with very obscure carinæ.

Adult female pale yellow; elongate, narrow. Pygidium with the mesal lobes narrow, recessed, widely divergent, their bases confluent, their free margins minutely serrate. A single pair of prominent, duplex, lateral lobes, the base of the inner lobule extended inwards. Spiniform squames few, small and inconspicuous; none on the base of the pygidium, or margins of abdominal segments. Circumgenital pores in five small groups; median group with 3 or 4 pores, upper laterals with 7 to 12, lower laterals with 10 to 15. Oval dorsal pores few, but large and conspicuous, in short series of 2 or 3 pores only. Length 1 to 1.5 mm.

Disposed along the sunken mid rib, on the upper surface of foliage of an undetermined shrub; Maha Illuppalama.

Parlatoria cingala var. **namunakuli**, n. var. (Fig. 19.)

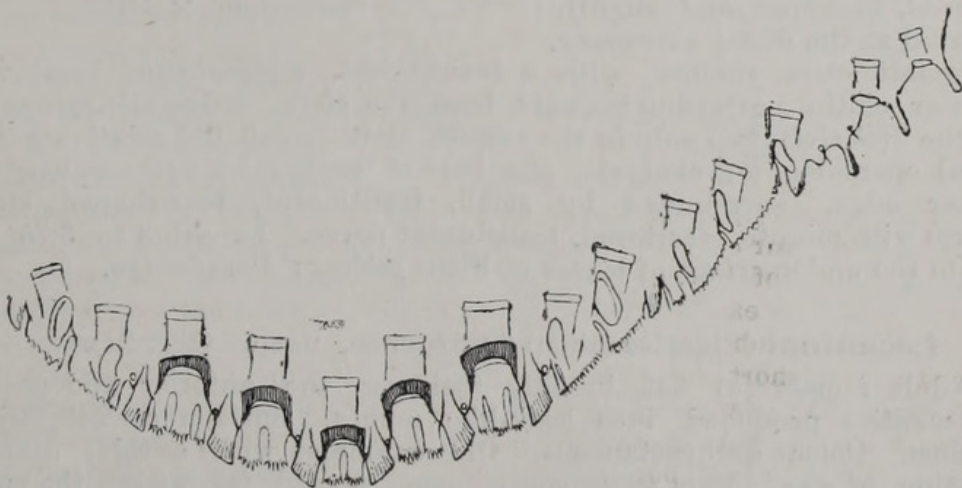


FIG. 19.—*Parlatoria cingala namunakuli*, Pygidium of adult ♀, $\times 450$.

Differing from the type in the structure of the outermost lobe on each side of the pygidium of the adult female. In typical *cingala* this lobe is large and broadly rounded. In var. *namunakuli* it is small and lanceolate. On leaves of an undetermined shrub: Namunakuli Hill, Badulla.

Parlatoria rutherfordi, nom. nov.

Parlatoria zeylanica, Ruthfd., 'Journ. Bom. Nat. Hist. Soc.' xxiv., p. 114, (1915.)

Rutherford having described two distinct species, under the same name, on two consecutive pages of his paper (loc. cit.), a new name is necessary for the second species.

On *Cinnamomum*, sp. Peradeniya.

Lecanium desolatum, n. sp. (Fig. 20.)

Adult female irregularly ovate, often narrowed in front, flattish. At first yellowish green, with an interrupted brown, medio-longitudinal stripe; the margin with a radiating series of narrow brownish streaks. In older examples the dorsum becomes suffused with reddish brown, leaving a broad, pale, median fascia. Dorsum pitted with polygonal depressions containing concentric, superimposed, waxy plates. Dead and dried examples uniformly pale castaneous. Antennæ 7-jointed; 3 and 4 equal, longest, the division between these two joints indistinct. Eye spots marginal. Tarsus about three-quarters the length of the tibia. Marginal setæ (a) curved, flattened and slightly dilated at the distal extremity.

Stigmatic clefts shallow, with a translucent, wedgeshaped break in the denser chitin projecting inwards from the cleft. Stigmatic spines three in the first cleft, two only in the second cleft, small but relatively stout. Anal operculum (b) elongate, the base of each valve twice as long as its outer edge, surrounded by small, translucent, tear-shaped streaks. Derm with minute, scattered, translucent pores. Length 3 to 3.75 mm.

On the undersurface of leaves of *Ficus gibbosa*: Peradeniya.

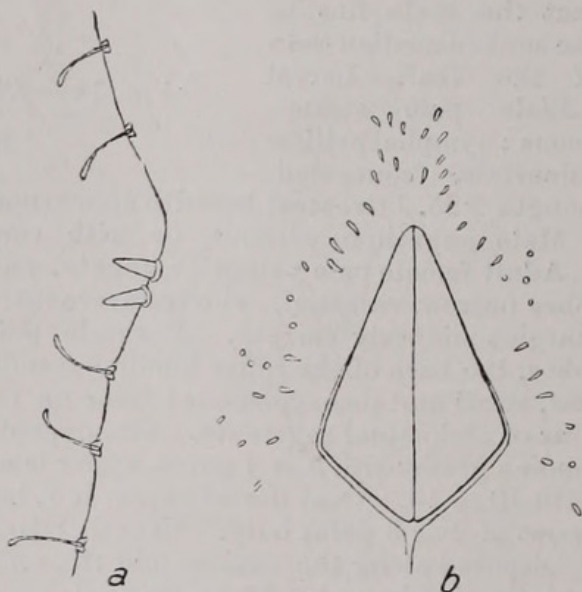


FIG 20.—*Lecanium desolatum*.
(a) Marginal setæ and stigmatic spines, $\times 450$. (b) Anal operculum, $\times 130$.

Lecanium (Platylecanium) fusiforme, n. sp. (Fig. 21).

Adult female (a) flat, broadly fusiform, the anterior and posterior extremities produced into beak-like points. Surface smooth, without carinæ. Colour dull castaneous. Old examples with a thin, colourless coating of wax. Eye spots conspicuous, placed far within the margin. Antennæ small, rudimentary, with from 3 to 4 joints. Limbs absent. Anal operculum (c) small, pointed, longer than broad, the base of each valve approximately equal to its outer edge. Marginal setæ minute, few, widely separate. Stigmatic clefts (b) deep, broadly rounded, margined inwardly with a narrow chitinous band. A long, slender, translucent streak extends inwards from each cleft. Stigmatic spines three, stout, long, all of approximately the same size. Marginal area with numerous, small,

rounded or irregular cells, followed by a sub-marginal zone of larger and and more crowded cells, the latter with a tendency to a polygonal form. Dorsum with small translucent pores, each set in a small, denser chitinous spot, the whole forming an obscurely tessellated pattern. Length 3.75 to 4.5 mm. Greatest breadth 2.5 to 3.5 mm.

On the upper surface of foliage of an undetermined shrub: Ambalan-goda.

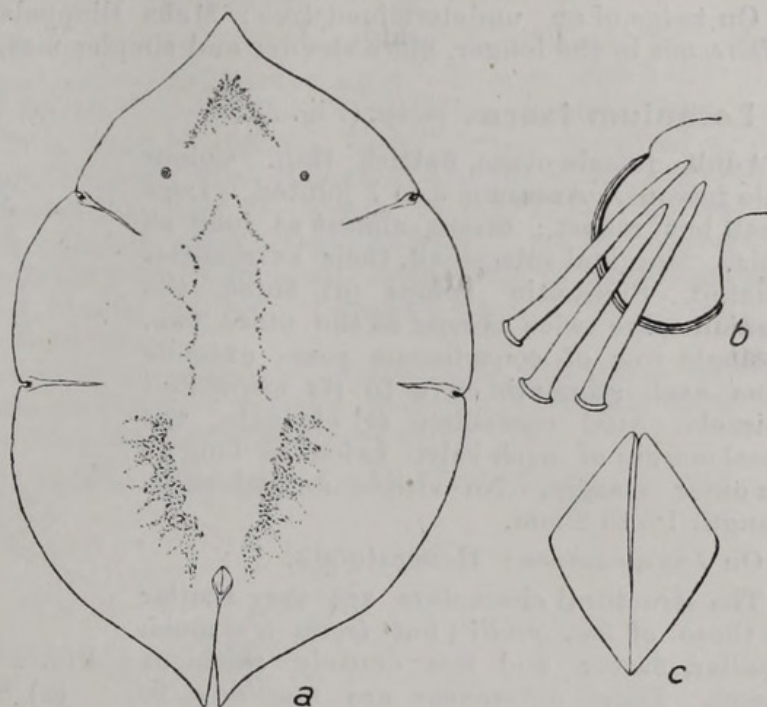


FIG. 21—*Lecanium fusiforme*. (a) Adult ♀, × 18. (b) Stigmatic cleft and spines, × 450. (c) Anal operculum, × 130.

***Lecanium illuppalamæ*, n. sp. (Fig. 22.)**

Adult female broadly ovate, moderately convex. Colour ochreous or reddish, mottled with brown. Antennæ 7-jointed; 3 and 4 longest and approximately equal. Limbs well developed; tarsus about three-quarters the length of the tibia. Anal operculatum typically quadrate (a), occasionally oblate (b). Marginal setæ unusually long; simple, except at the posterior extremity of the body, where some of them are deeply forked (e), the hindmost seta (one on each side of the anal cleft) is stouter and spiniform. Stigmatic clefts shallow, containing from 3 to 5 spines (c, d) of which the central one is very much longer than the others. Dermal cells small and inconspicuous; circular, scattered. Length 2.5 mm.

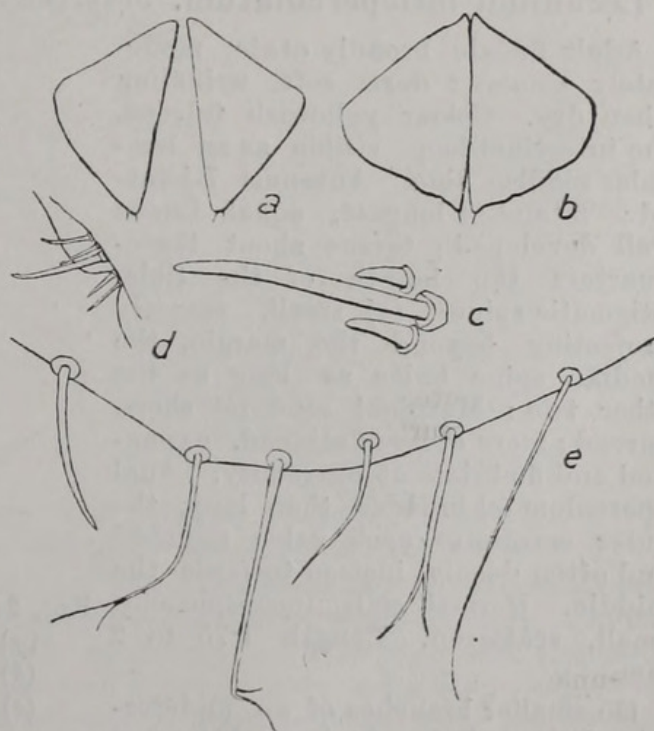


FIG. 22—*Lecanium illuppalamæ*. (a) Anal operculum, typical form, × 130. (b) Anal operculum, varietal form, × 130. (c, d) Stigmatic spines, × 405 and 220. (e) Posterior margin, with setæ, × 450.

On twigs of an undetermined tree; Maha Illuppalama. Differing from *discrepans* in the longer, more slender and simpler marginal setæ.

***Lecanium ixoræ*, n. sp. (Fig. 23.)**

Adult female ovate, flattish, thin. Colour pale fulvous. Antennæ 6 to 7 jointed. Legs small but robust; tarsus almost as long as tibia. Marginal setæ small, their extremities ciliated. Stigmatic spines (a) three, the median spine twice as long as the other two. A single row of conspicuous pores extends from each stigmatic cleft to its associated spiracle. Anal operculum (b) elongate, the basal margin of each valve twice as long as its outer margin. No visible dermal cells. Length 1.5 to 2 mm.

On *Ixora coccinea*; Heneratgoda.

The structural characters are very similar to those of *Lec. psidii*; but *ixoræ* is a much smaller, flatter and less densely chitinous insect. These differences are not due to immaturity. The specimens under examination were fully developed and contained ova. The complete absence of dermal cells is a distinguishing character.

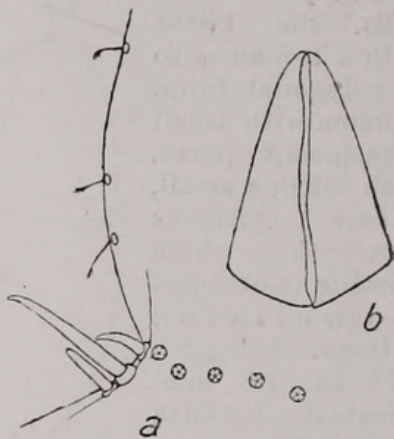


FIG. 23—*Lecanium ixoræ*.
(a) Stigmatic spines and marginal setæ, $\times 450$. (b) Anal operculum, $\times 130$.

***Lecanium latioperculatum*, n. sp. (Fig. 24.)**

Adult female broadly ovate, moderately convex; derm soft, wrinkling when dry. Colour yellowish fulvous, the intestinal loop visible as an irregular reddish line. Antennæ 7-jointed; 3 and 4 longest, equal. Limbs well developed; tarsus about three-quarters the length of the tibia. Stigmatic spines (a) small, scarcely projecting beyond the margin, the median spine twice as long as the other two; Marginal setæ (b) short, curved; more or less flattened, expanded and fimbriate at extremity. Anal operculum (c) broader than long, the outer margin of each valve rounded and often deeply incised towards the middle. Dermal cells inconspicuous, small, scattered. Length 1.75 to 2 mm.

On smaller branches of an undetermined shrub; Peradeniya. Attended by ants (*Ecophylla smaragdina*); and often included in their silken enclosures.

Examples from Batticaloa have the marginal setæ more slender and less distinctly fimbriate.

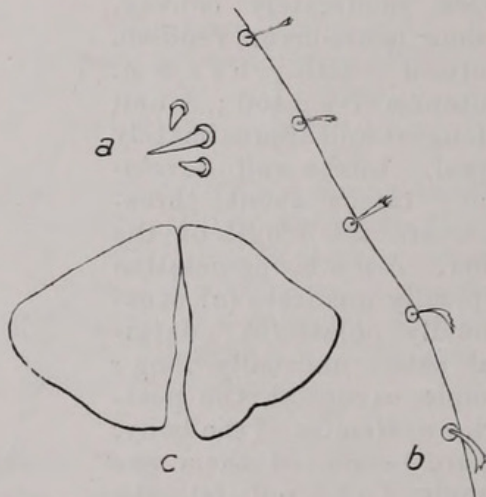


FIG. 24—*Lecanium latioperculatum*.
(a) Stigmatic spines, $\times 450$.
(b) Marginal setæ, $\times 450$.
(c) Anal operculum, $\times 130$.

Lecanium (Paralecanium) **limbatum**, n. sp.

Adult female broadly ovate; flat. Colour bright castaneous, the marginal area and a medio-longitudinal fascia darker. Dorsum with five or six inconspicuous hyaline streaks, on each side, extending inwards from the margin. Venter with a sharply defined, broad, denser marginal zone. Antennæ 6-jointed; 3rd longest, 6th elongated. Limbs small but fully developed; the tarsus less than half the length of the tibia. Valves of anal operculum sharply pointed, basal margin shortest. Margin minutely crenulate. Marginal flabellæ broadly rounded, overlapping. Stigmatic spines three, long and slender, bluntly pointed. Length 3 mm.

On *Ixora coccinea*; Batticaloa.

Differing from *calophylli* in the crenulate margin, in the absence of prominent quadrate processes beneath the flabellæ, and in the smaller number of hyaline streaks radiating inwards from the margin.

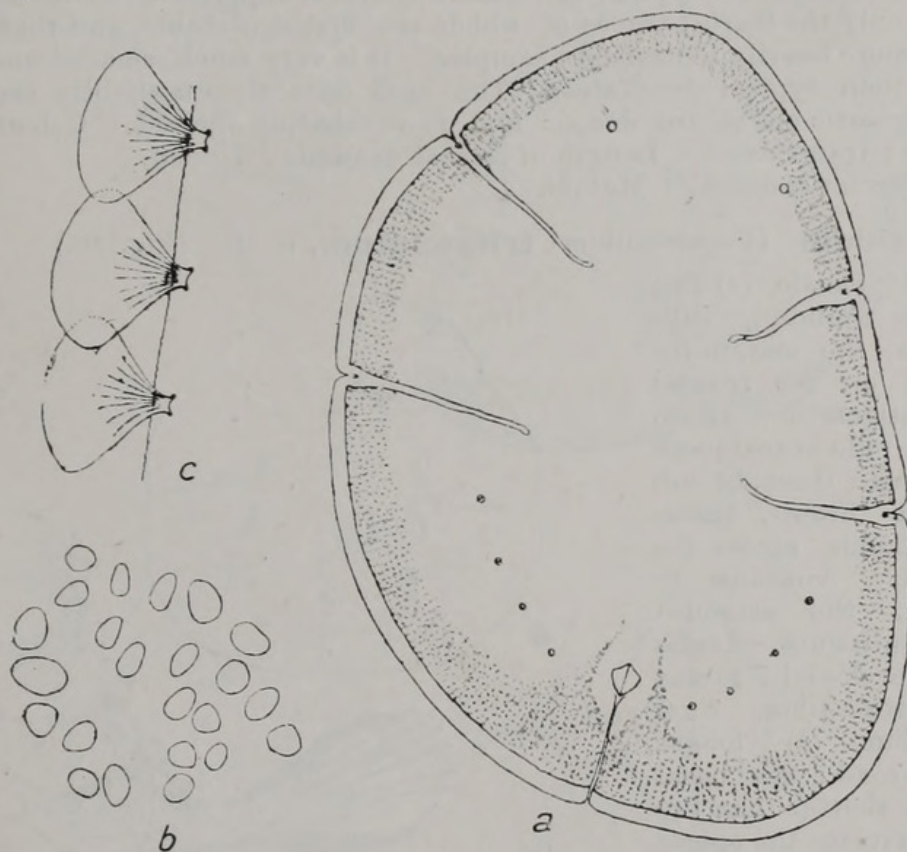
Lecanium (Paralecanium) **mancum**, n. sp. (Fig. 25.)

FIG. 25—*Paralecanium mancum*. (a) Adult ♀, dorsal aspect, $\times 18$
(b) Dermal cells, $\times 220$. (c) Marginal flabellæ, $\times 450$.

Adult female (a) flat, deltoid, with rounded angles, usually asymmetrical, always narrower in front. Colour dark castaneous, with a narrow hyaline border and with hyaline canals extending inwards from each stigmatic cleft. Dorsum with more or less well defined, thin, colourless, polygonal, waxy plates. Eye spots conspicuous; at some distance from the margin. Antennæ relatively short, articulation obscure. Limbs entirely wanting. Anal operculum sub-quadrate, the base of each valve slightly shorter than its outer edge. Stigmatic spines three, blunt, the median spine usually shorter than the other two. Marginal flabellæ (c) sub-triangular in form, the outer edge flatly curved, the converging sides approximately straight.

Margin, between the flabellæ, very obscurely crenulate. Derm of dorsum with definite series of minute pores, (associated with small setæ) demarking the areas occupied by the waxy plates. Submarginal area crowded with irregularly rounded dermal cells (*b*). A curved series of from four to five small groups of translucent vacuoles extends forwards from each side of the anal orifice. Length 4 to 4.5 mm. Breadth across abdomen 2.75 to 3 mm.

On *Calophyllum walkeri*. Namunakuli Hill, Badulla.

Lecanium piperis var. **namunakuli**, n. var.

Differing from the type in having 6-jointed antennæ, two of the segments being suppressed to form a single, long third joint. The stigmatic spines are in groups of 3 (instead of 4 or 5). Length 4 to 4.5 mm.

On *Piper* sp. Namunakuli Hill, Badulla.

Lecanium tessellatum var. **obsoletum**, n. var.

Differing from the type in the almost complete suppression of the tessellation, only the merest traces of which are distinguishable, and that only in the more heavily chitinized examples. It is very much smaller and less robust than typical *tessellatum*. The anal operculum is slightly smaller. The stigmatic clefts are deeper and more sharply incised. Colour pale fulvous; translucent. Length of largest example 1.75 mm.

On *Myrtus communis*: Matale.

Lecanium (Paralecanium) **trifasciatum**, n. sp. (Fig. 26.)

Adult female (*a*) flat, broadly rounded, sub-circular, the margin indented on the frontal and stigmatic areas. Colour pale translucent green, with three, broad, reddish brown, transverse bands across the dorsum. Antennæ 6-jointed, the articulations indistinct. Limbs well developed; tarsus longer than tibia. Anal operculum (*b*) longer than broad; the basal slightly shorter than the outer margin; the apices acutely pointed. There are two compact groups of pores on each side, on a level with the anal operculum. Stigmatic clefts (*c*) deep, their sides densely chitinous. Stigmatic spines three, cylindrical, blunt. A single row of pores extends from each cleft to its associated spiracle. Eye spots not distin-

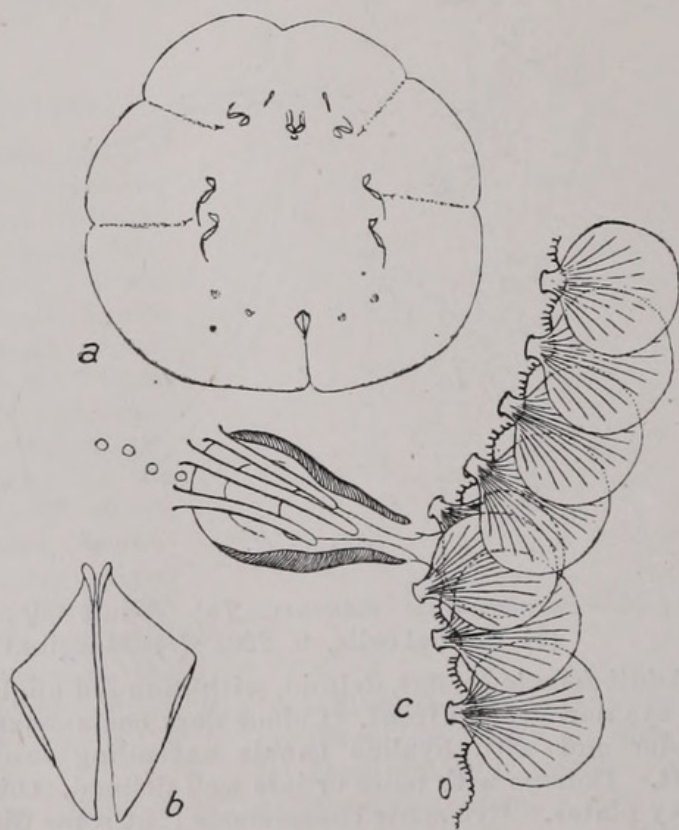


FIG. 26.—*Paralecanium trifasciatum*. (*a*) Adult ♀, $\times 18$. (*b*) Anal operculum $\times 130$. (*c*) Stigmatic cleft and marginal flabellæ, $\times 450$.

guishable. Margin (c) sinuous and obscurely crenulate; the flabellæ crowded, overlapping by nearly half their diameter. Diameter 2·25 mm.

On foliage of *Hemicyclea*: Batticaloa.

In form and general appearance closely resembling *P. expansum*, from which it is distinguished by the presence of well developed limbs. It is probable that the examples examined, though adult, were not fully developed and that the colouration may assume a more uniform tint in later life. If, at the same time, the insect increases in size the flabellæ would be more widely separated and would not overlap to the same extent.

***Lecanium tripartitum*, n. sp. (Fig. 27.)**

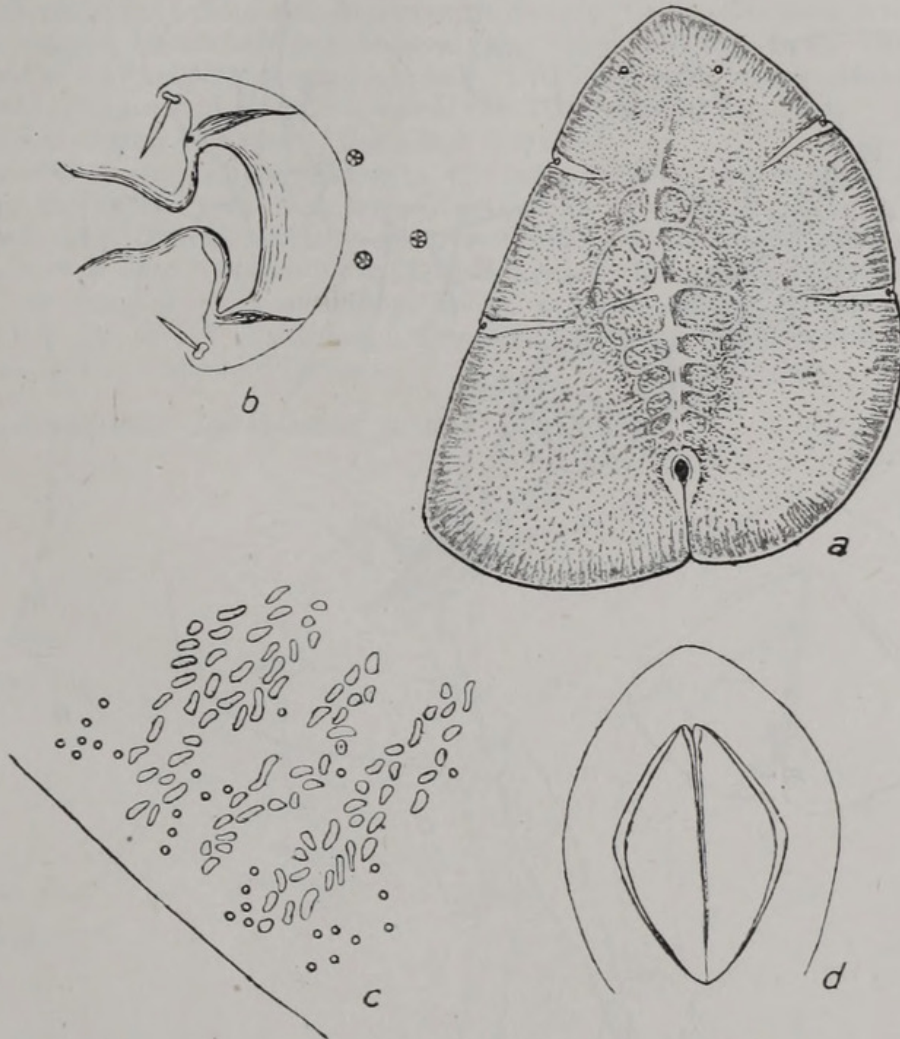


FIG. 27.—*Lecanium tripartitum*. (a) Adult ♀, dorsal aspect, $\times 10$. (b) Stigmatic cleft, $\times 450$. (c) Marginal area, with pores and dermal cells, $\times 80$. (d) Anal operculum, $\times 130$.

Adult female (a) bright castaneous; highly polished—as if coated with varnish; very flat, with shallow median longitudinal carina giving off, on each side, eight or nine inconspicuous branches which curve round and meet each other, enclosing a series of shallow sunken areas. Form deltoid, asymmetrical, rather sharply pointed in front, widest across the posterior extremity. Antennæ 6-jointed, 3 longest, 6 only slightly longer than 5. Limbs small but fully developed; tarsi of first and second legs shorter than the tibiæ, those of the third pair equal to the tibiæ. Stigmatic clefts (b) with a broad, lunate, strongly chitinized inner rim at each extremity of which is a single (occasionally two) lanceolate spine. Anal operculum

(d) lozenge-shaped: longer than broad; bordered by a broad, strongly chitinized, hoop-shaped band with sharply defined margins; valves with thickened margins; the whole surrounded by an irregular translucent space. Derm with scattered circular pores and numerous small, irregularly shaped, translucent maculæ (c). Length 5.5 to 5.75 mm.; greatest breadth 4.75 to 5 mm.

On foliage of *Calophyllum walkeri*; Namunakuli Hill, Badulla.

The character of the stigmatic clefts is peculiar, in which respect it approaches *L. marsupiale*, but from which it is otherwise very distinct.

***Lecanopsis ceylonica*, n. sp. (Fig. 28.)**

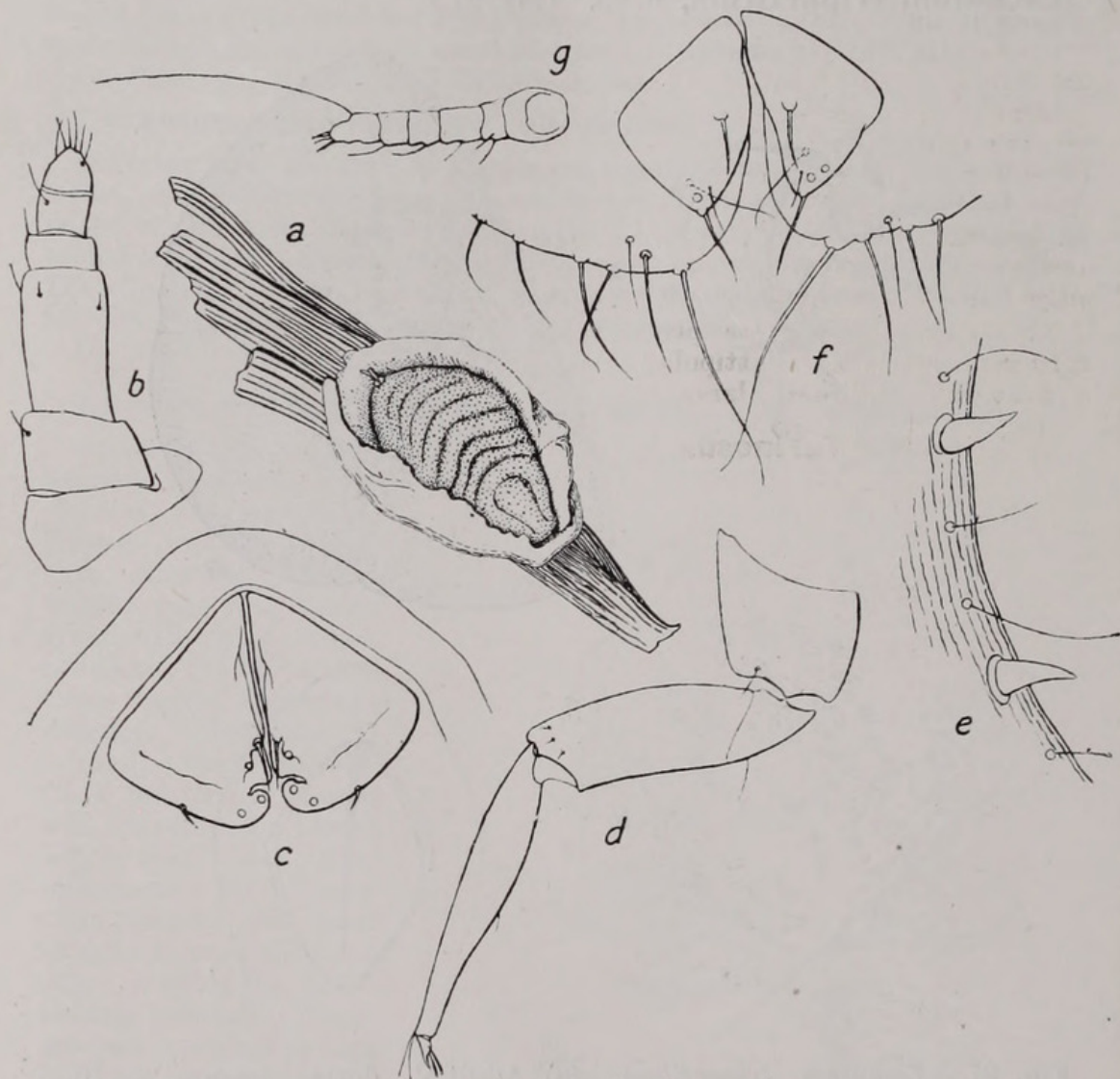


FIG. 28.—*Lecanopsis ceylonica*. (a) Adult ♀, in situ, $\times 12$. (b) Antenna, $\times 220$. (c) Anal operculum, $\times 130$. (d) Third leg, $\times 130$. (e) Stigmatic spines, $\times 220$. (f) Posterior extremity of early nymph, $\times 220$. (g) Antenna of larva, $\times 220$.

Adult female (a) surrounded and partially covered by a white felted test. Insect broadly ovate, narrower in front; strongly convex above; with a deep, transverse furrow behind the cephalothorax; the next two segments deeply, the remainder shallowly furrowed. Colour ochreous yellow, dull, opaque. Dorsum coarsely punctured, more particularly on the abdomen. Antennæ (b) short and stout, 6-jointed, the 3rd longer than the terminal three together. Limbs (d) well developed; the tibia

and tarsus completely fused together without trace of division. Tarsal digitules slender, minutely knobbed; ungual digitules slightly dilated. Anal operculum (*c*) oblate; the base of each valve longer than its outer edge, the apices incurved; a stout spiniform seta on the inner edge of each valve; three or four circular cicatrices, nearer the apex, suggest the earlier presence of other similar setæ; a broad, sharply defined densely chitinous hoop surrounds the upper half of the operculum. Margin with long, slender setæ, most of which (in the example under examination) are indicated by their basal sockets only. No stigmatic clefts; but the margin, opposite each spiracle, bears two, widely separate, stout, acuminate, irregularly conical spines (*e*). Derm without conspicuous cells, but with scattered circular pores and small setae. Length 2.5 mm.

Nymph with antennæ and limbs similar to those of the adult insect. Valves of anal operculum (*f*) with apices bluntly pointed and bearing a longish stout seta mounted on a small tubercle; a similar seta within the inner margin, about half way between the apex and the base, and indications of lost setæ on the apical half. Margin with many strong setæ, becoming longer and stouter towards the extremity of the body. Stigmatic spines similar to those of the adult insect.

Larva with stigmatic spines as in the later stages. Antenna (*g*) 6-jointed, the 6th with a very long lateral seta that exceeds the length of the antenna itself. Tarsus and tibia of approximately equal length. Margin with short curved setæ, increasing in length towards the posterior extremity.

At the base of a grass plant, below a large stone, on patna land; attended by ants. Pattipola. Described from a single adult female, and several nymphs and larvæ.

***Exaeretopus farinosus*, n. sp. (Fig. 29.)**

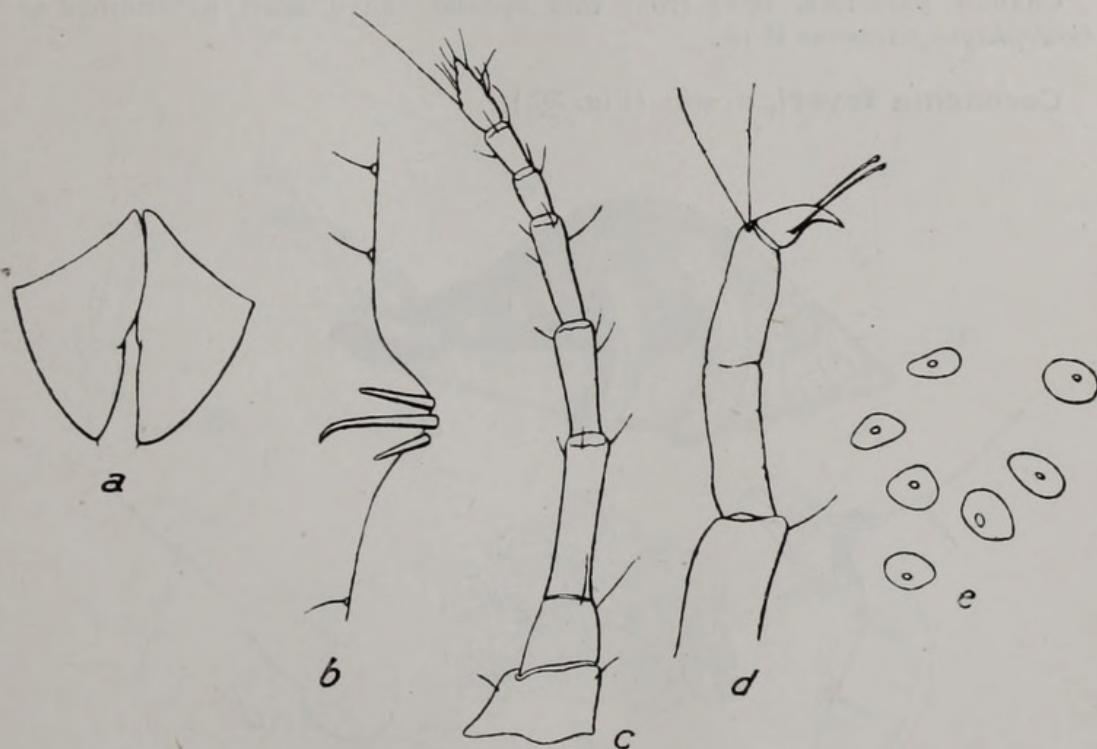


FIG. 29.—*Exaeretopus farinosus*. (a) Anal operculum, $\times 130$. (b) Stigmatic cleft, spines and setae, $\times 220$. (c) Antenna, $\times 130$. (d) Tarsus of anterior leg, $\times 220$. (e) Dermal cells, $\times 220$.

Adult female olivaceous or slaty gray; the dorsal surface thickly dusted with white, mealy secretion. Form elongate ovate, moderately convex; divisions of abdominal segments clearly defined, in the living insect

Antennæ (c) 8-jointed, 3, 4 and 5 elongate, 3rd longest—equal to the terminal three together. Legs well developed; the tarsus approximately half as long as the tibia, often more or less bowed; tarsus of anterior leg (d) usually with an incomplete division at about half its length; claw large, strong and falcate; tarsal digitules long and slender, minutely knobbed; unguis long, narrow, dilated at the extremity. Anal operculum (a) as broad as it is long; the basal margins slightly concave, the outer margins convex; apices bluntly pointed. Stigmatic clefts (b) shallow, with three stout spines, the median spine longest and curved at its extremity, the outer spines straight and bluntly pointed. Marginal setæ simple, slender, larger towards the posterior extremity of the body. Derm of dorsum crowded with irregularly circular or ovate, conspicuous cells (c), often filled with dark granular matter, moderately large, each cell opening onto the surface by a small oval pore. There is an irregular, medio-longitudinal series of small, discoid pores on the dorsum, extending from shortly in front of the anal operculum to the base of the abdomen. Venter with some longish, stout setæ, arranged in a double median series on the abdomen, somewhat scattered on the thoracic area, and in a transverse group below the point of insertion of the antennæ. Length 3.5 to 4.5 mm.

On the young stems and foliage of *Psychotria bisulcata*: Namunakuli Hill, Badulla.

This species has been assigned, somewhat doubtfully, to the genus *Exaeretopus*, in the type species of which there are no stigmatic spines. But the characters of the limbs and antennæ are more in accordance with that genus than with *Lecanium*. The absence of any ovisac precludes a position in *Pulvinaria* with which, otherwise, the characters are in close agreement.

Chalcid parasites, bred from this species, have been determined as *Coccophagus flavescens* How.

***Ceronema fryeri*, n. sp. (Fig. 30.)**

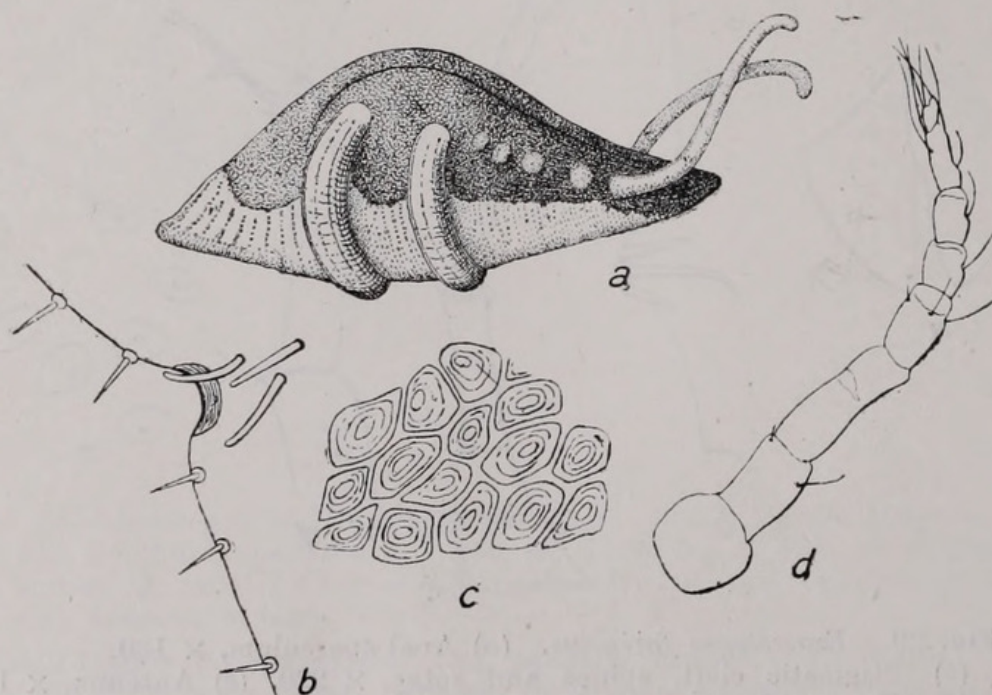


FIG. 30.—*Ceronema fryeri*. (a) Adult ♀, side view, $\times 7$. (b) Stigmatic cleft and spines, $\times 220$. (c) Dermal cells, $\times 130$. (d) Antenna, $\times 220$.

Adult female (*a*) ovate, highly convex, depressed posteriorly; with a strongly marked rounded tumescence on each side of the dorsum. Colour dull olivaceous brown, dusted with mealy secretion which is condensed into a thick covering on the marginal area. Dense, vertical, waxy bands, of an ochreous white colour, arise from the stigmatic areas on each side, extending far onto the dorsum. A long, stout, curling, white filament arises from near the posterior extremity, on each side, extending upwards and backwards. Several waxy spots, on each side of the abdomen, possibly mark the position of other similar filaments that have been lost. Derm deeply and closely pitted. Antennæ probably 8-jointed, normally; in the example under examination the antennae are 7-jointed (*d*), the long third joint showing indications of incomplete division. Limbs and antennae relatively small and weakly chitinized. Tarsus rather more than half the length of the tibia; tibiotarsal articulation very indistinct tarsal digitules slender, knobbed; ungual digitules slightly dilated. Anal operculum small, ovate, the base and outer margin of each valve together forming an even curve. Margin with a distant series of small, slender spines. Stigmatic clefts (*b*) shallow, inwardly bordered with a lunate chitinous plate; stigmatic spines three, rather slender, of approximately equal length. Dorsum closely crowded with large, irregularly polygonal, dermal cells (*c*). Length 8 mm.

On an unidentified shrub: Maha Illuppalama. Described from a single example collected by Mr. J. C. F. Fryer to whom I am pleased to dedicate this fine species.

***Ceronema iceryoides*, n. sp. (Fig. 31.)**

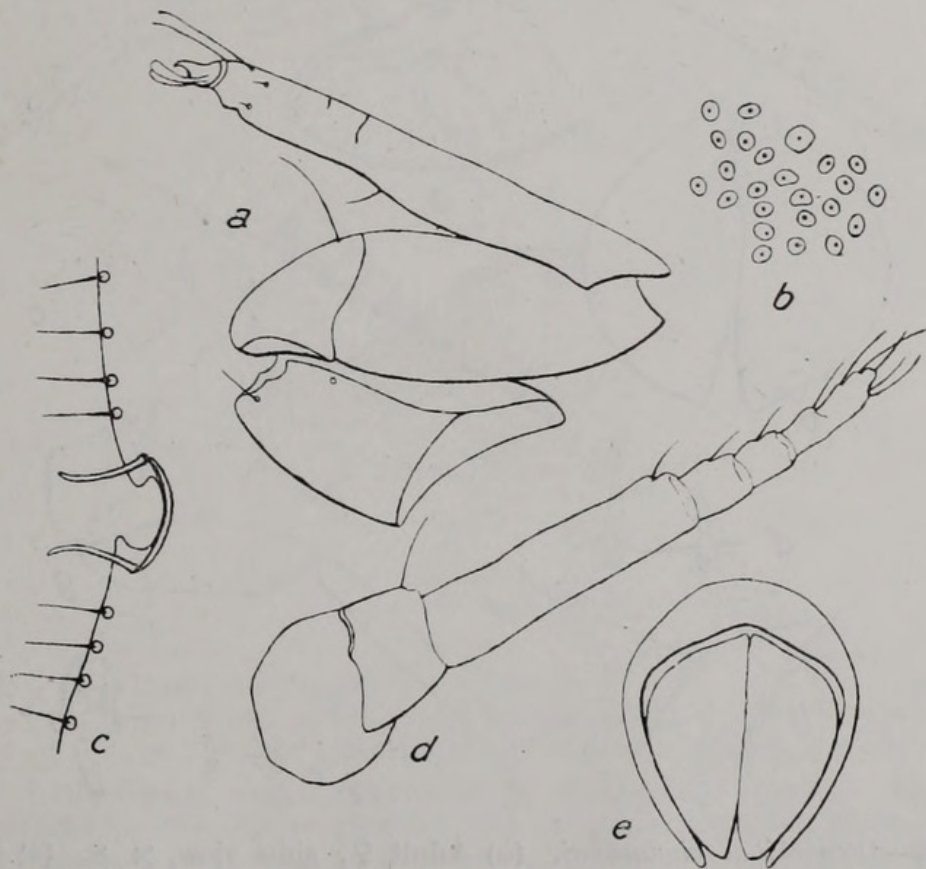


FIG. 31—*Ceronema iceryoides*. (*a*) Anterior leg, $\times 220$. (*b*) Dermal cells $\times 220$. (*c*) Margin, with stigmatic cleft, $\times 220$. (*d*) Antenna $\times 220$. (*e*) Anal operculum, $\times 130$.

Adult female superficially resembling *Icerya aegyptiaca*. Dorsum covered with cushions of pulverulent, white, waxy secretion; margin with a loose fringe of long, white, curling waxy processes. After denudation the insect is of a broadly ovate form, wider behind. Antenna (a) 6-jointed, the 3rd greatly exceeding the length of the terminal three joints together. Limbs (a) relatively small, but robust; tibio-tarsal articulation wanting or incomplete. The suppressed joint indicated by a slight infolding of the outer margin at about one third of the length from the distal extremity; claw stout and strongly falcate; tarsal digitules slender, knobbed; unguinal digitules broadly dilated. Stigmatic clefts (c) shallow but sharply defined; lunate; with a moderately stout, curved spine at each extremity of a narrow curved plate that borders the inner margin of each cleft. Margin with a close series of slender, spiniform setae. Anal operculum (e) obovate, the outer angles evenly rounded; almost completely encircled by a sharply defined, narrow, densely chitinous plate. Derm of dorsum crowded with small, circular or ovate cells (b), each cell enclosing a minute pore. Length of denuded insect 3.5 mm.

On an undetermined plant; Putalam.

Described from a single example that was put aside as a specimen of *Icerya aegyptiaca*. It was only after denudation, in potassium hydrate, that its Lecaniid character was revealed.

***Ctenochiton cinnamomi*, n. sp. (Fig. 32.)**

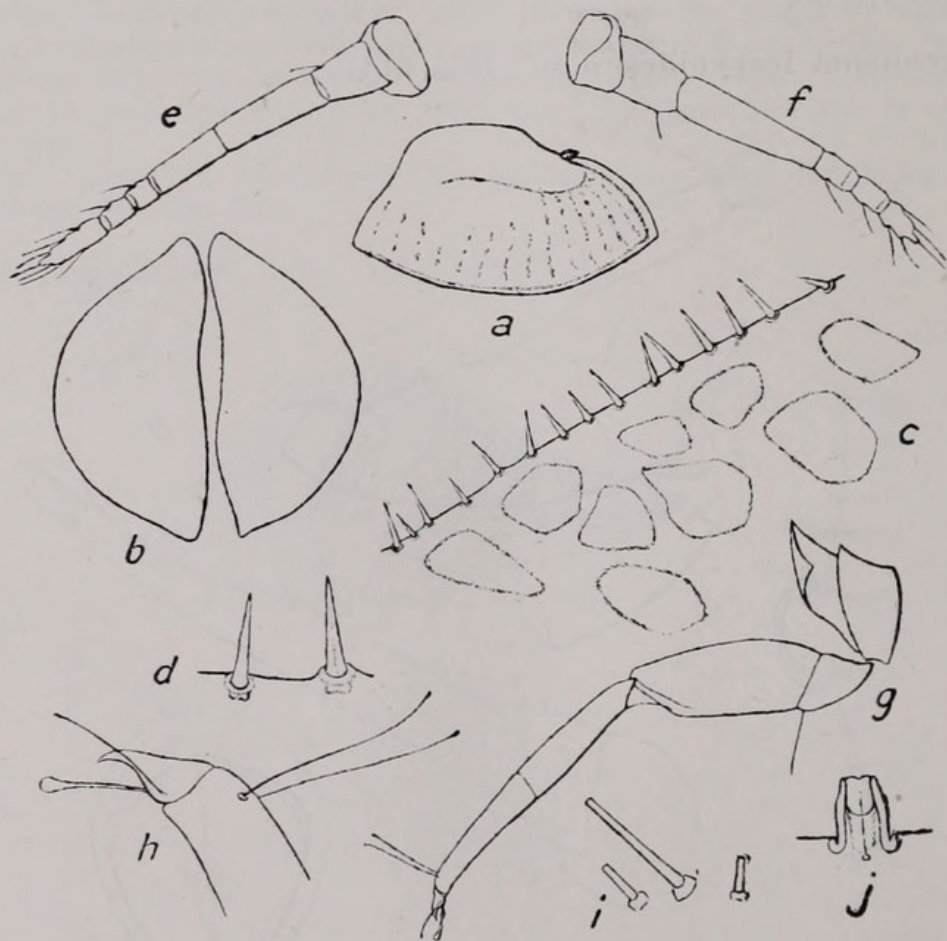


FIG. 32—*Ctenochiton cinnamomi*. (a) Adult ♀, side view, $\times 8$. (b) Anal operculum, $\times 130$. (c) Margin, with spines and dermal cells, $\times 220$. (d) Marginal spines, $\times 450$. (e) Antenna, 7-jointed form, $\times 130$. (f) Antenna, 8-jointed form, $\times 130$. (g) Mid leg, $\times 130$. (h) Foot, $\times 450$. (i) Stigmatic spines, $\times 450$. (j) Tubular pore, $\times 450$

Adult female (a) superficially resembling *Lecanium oleæ*, but without conspicuous carinæ. Sub-circular or broadly ovoid; strongly convex, apex flattened, sides sloping steeply; margins of anal cleft prominent. Colour dark purplish brown, closely studded with irregular, colourless, glassy granules, giving the insect a frosted appearance. Margin densely chitinous; irregularly indented and wrinkled. Antenna either 6 or 7-jointed; in the 6-jointed form (f) the 3rd equals or exceeds the length of the three terminal joints together; in the 7-jointed form (c) the 3rd and 4th are elongated. Legs (g) rather slender; the tarsus approximately equal to the tibia; tibia and tarsus together markedly longer than femur and trochanter; tarsal digitules slender, knobbed; ungual digitules unequal, one slender and the other broadly dilated at the extremity (h). Anal operculum (b) approximately circular, the base and outer margin of each valve forming an even curve; surrounded by a narrow, densely chitinated zone. Margin with a close fringe of stout, acute spines (c, d). No stigmatic clefts; but opposite each spiracle is a group of three slender, cylindrical, truncate spines (i), of which the median is more than twice as long as either of the other two. Derm with large, irregularly polygonal cells (e). There is a distant, submarginal series of large, prominent, tulenlar pores (j), and a few similar pores scattered over the dorsolateral area. Length (under compression) 3 to 4.5 mm.

On *Cinnamomum* sp., Colombo; and on an undetermined tree, Chilaw.

Ctenochiton fryeri, n. sp. (Fig. 33.)

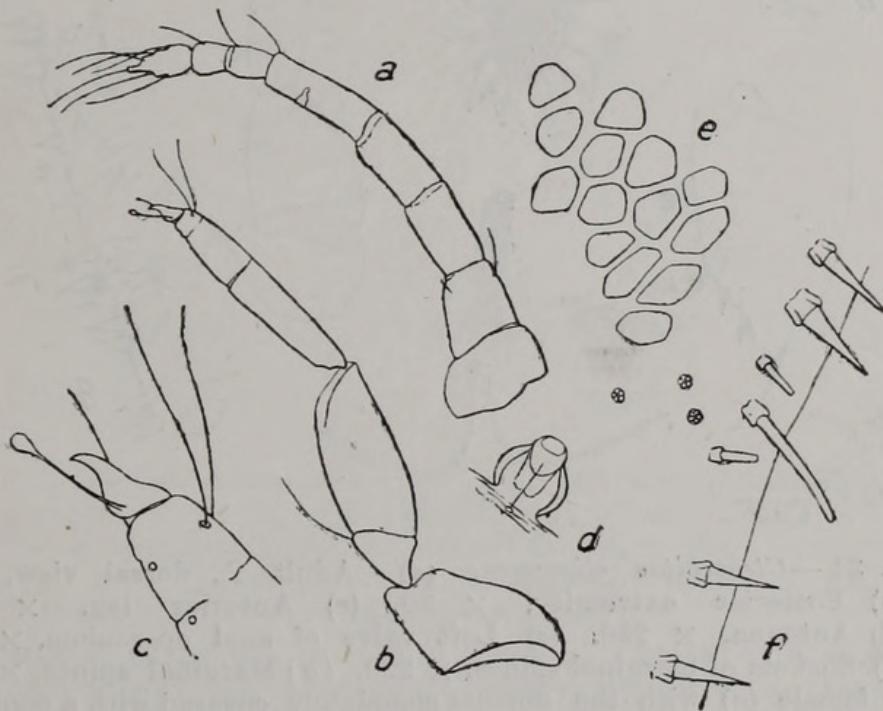


FIG. 33—*Ctenochiton fryeri*. (a) Antenna, $\times 130$. (b) Mid leg, $\times 130$. (c) Foot, $\times 450$. (d) Tubular pore, $\times 450$. (e) Dermal cells, $\times 220$. (f) Marginal and stigmatic spines, $\times 450$.

Adult female ovate, depressed or moderately convex. Colour pale castaneous; the dorsum studded with irregular, colourless waxy granules; the granules projecting, on the margin, in the form of irregular delticules. Antennæ (a) 8-jointed; the 5th longest and with an imperfect division which—if complete—would add a ninth joint; 6th and 7th shortest. Limbs (b) rather small, but well developed; tarsus approximately three quarters the length of the tibia; there is a false joint in the tarsus, shortly behind the digitules; tibia and tarsus together of same length as femur and tro-

chanter; tarsal digitules slender, knobbed; ungual digitules (c) unequal, one slender, the other stouter and distally expanded into a circular disc. Rostrum large and conspicuous. Margin (f) with a close fringe of stout, acutely pointed spines. No stigmatic clefts; stigmatic spines three, cylindrical, truncate, the median spine about three times as long as either of the other two. Dorsum crowded with moderately large, irregularly polygonal and rounded dermal cells (e). At intervals along the submarginal area, and distributed irregularly over the dorsum, are some conspicuous, prominent, globular, tubular pores (d). Anal operculum large; approximately circular; surrounded by a narrow, densely chitinous zone. Length 2.75 to 3 mm.

On the bark of an undetermined tree: Vavuniya. Collected by Mr. J. C. F. Fryer.

Closely allied to *Cten. cinnamomi*; but differing in the number of antennal joints, in the proportions of the tibia and tarsus, in the size of the dermal cells, and in the form of the tubular pores. (Compare figs. 32 and 33.)

***Ctenchiton olivaceum*. n. sp. (Fig. 34.)**

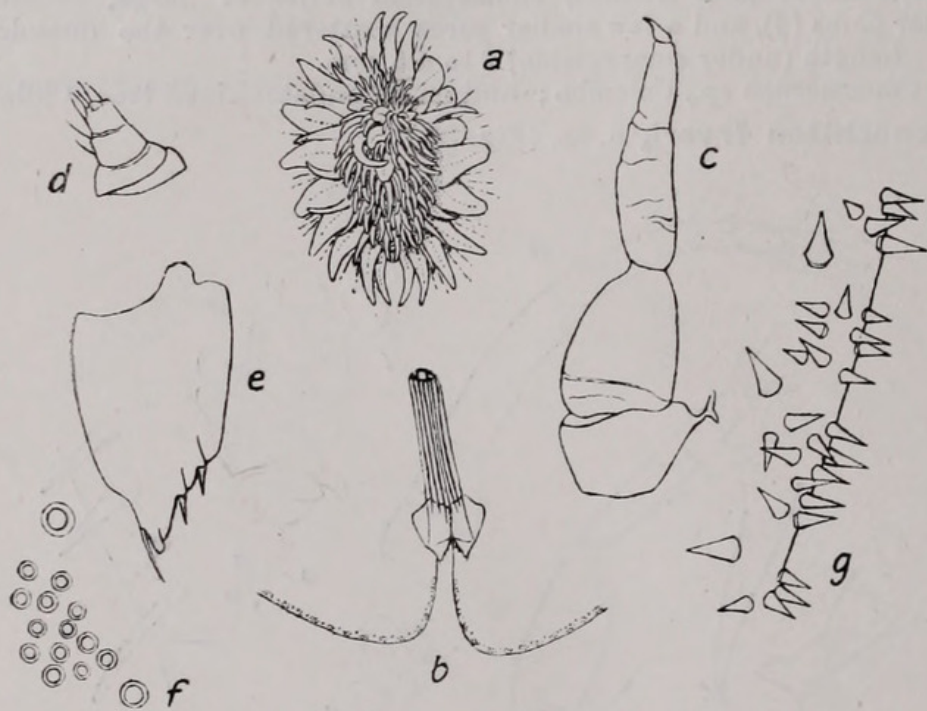


FIG. 34.—*Ctenochiton olivaceum*. (a) Adult ♀, dorsal view, $\times 4$. (b) Posterior extremity, $\times 30$. (c) Anterior leg, $\times 220$. (d) Antenna, $\times 220$. (e) Left valve of anal operculum, $\times 130$. (f) Sockets of marginal spines, $\times 220$. (g) Marginal spines, $\times 220$.

Adult female (a) with the dorsum completely covered with a confused mass of slender, translucent, waxy processes, most of which are directed backwards. There are three or four stouter, bluntly conical processes on the medio-thoracic area. Margin with a series of larger, tapering, broader and flatter processes interspersed with a few delicate, silky filaments. When placed in boiling potash the whole of this covering comes away, complete in one piece. Colour of secretory covering olivaceous green, darker on the median area. The sublying insect is of a pale castaneous tint. Antennæ (d) small and rudimentary, consisting of three or four confused joints. My single example has lost all but one anterior leg (e) which is small and wrinkled: femur unusually short, with the trochanter much compressed; tarsus about two-thirds as long as the tibia. The

digitules are missing (probably broken off). Anal ring with six very long setæ which are contained in an unusually long anal tube (b). Valves of anal operculum of irregular form (c), the extremity produced; two short spines on the apical half of the inner margin and a longish, stout seta immediately outside the apical point. Margin (g) with numerous stout, sharply pointed, conical spines arranged in small clusters with a single larger spine in each interval. The arrangement and relative proportions of these spines can be seen more clearly on areas where they have been displaced, leaving their sockets (f) exposed. No stigmatic clefts or specialized stigmatic spines. Overall dimensions 7 by 5 mm. Length of denuded insect 4.5 mm.

Described from a single example, on the undersurface of a leaf of *Pterospermum suberifolium*: Matale.

***Inglisia chelonioides*, Green. (Fig. 35.)**

Coccidæ of Ceylon, Vol. iv, p. 283 (1909).

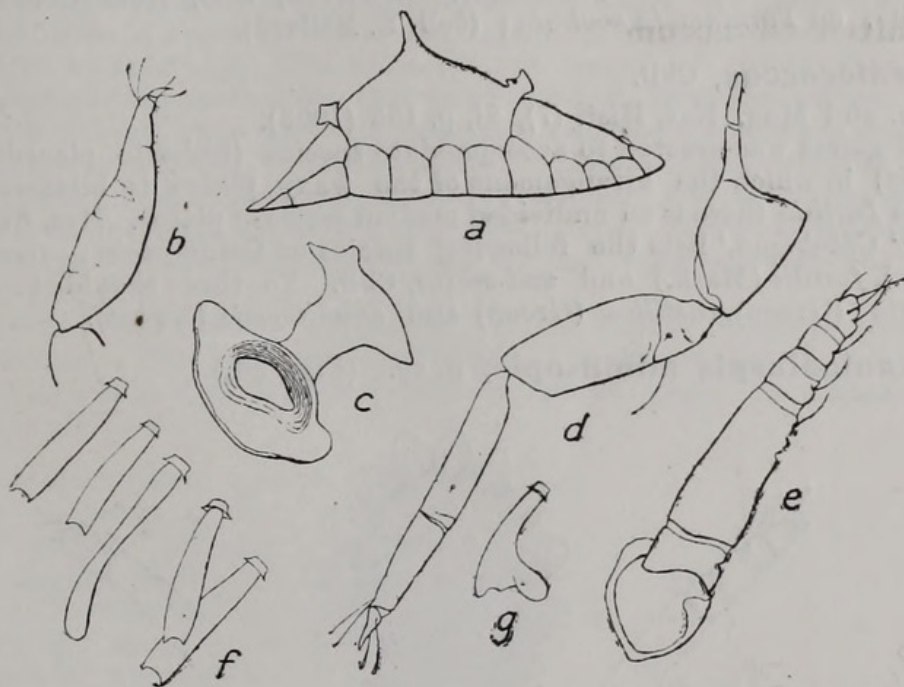


FIG. 35.—*Inglisia chelonioides*. (a) Adult ♀, after treatment with potash, $\times 6$. (b) Tibio-tarsal joint of mid leg, $\times 220$. (c) Posterior spiracle, $\times 220$. (d) Hind leg, $\times 220$. (e) Antenna, $\times 220$. (f) Marginal and stigmatic spines, $\times 450$. (g) Aberrant form of stigmatic spine, $\times 450$.

At the time of publication (loc. cit.) I was in possession of a single example only, which I was reluctant to destroy. I was able, therefore, to describe the external characters alone. I have, since then, obtained further material, both from Ceylon and from India, from which the following details have now been drawn up.

The denuded insect (a), after being boiled in potash, is of the form indicated on Plate CVII (of my Monograph). fig. 3, which shows a diagrammatic view of the area occupied by the body of the insect. The derm of the dorsum is densely chitinous; that of the venter very thin and delicate. At the centre of the dorsum is a prominent erect, horn-like process. At about midway between this and the anterior extremity is a smaller, irregularly tricuspid prominence; and, at about the same distance from the posterior extremity, is a similar process. The position of the waxy plates

of the living insect is sharply defined by densely chitinated infoldings of the derm. The antennæ (*e*) are 6-jointed; the 3rd elongated, almost equalling the total length of the remaining five joints; terminal joint short. Limbs relatively small and weakly chitinated: on the anterior and mid legs (*b*) the tibio-tarsal division is obscure or incomplete; on the third leg (*d*) the division is distinct, the tarsus being approximately three-quarters the length of the tibia. Ungual and tarsal digitules slender, the former slightly dilated towards the extremity, the latter minutely knobbed. Spiracles (*c*) large and conspicuous, rather densely chitinous. Anal operculum very narrow, twice as long as it is broad; each valve four times as long as the breadth, the base very short, the outer and inner margins of approximately equal length. Margin of body with a close series of flattened, ligulate spines (*f*), with concave extremities. Opposite each spiracle is a single longer, cylindrical (*f*) or irregularly expanded (*g*) stigmatic spine. Lateral areas with many small, inconspicuous, rounded dermal cells. Length 7 to 7.5 mm.

On *Pithecolobium dulce*: Colombo. Received, also, from Coimbatore, S. India, on *Parkinsonia aculeata*; (coll. E. Ballard).

Cardiococcus; Ckll.

Ann. and Mag. Nat. Hist. (7), xi, p. 155 (1903).

This genus was erected to accommodate species (hitherto placed under *Inglisia*) in which the arrangement of the waxy plates is bilateral. In typical *Inglisia* there is an undivided median series of plates. Mrs. Fernald, in her 'Catalogue,' lists the following species of *Cardiococcus*:—*forminifer* (Mask.), *fossilis* (Mask.) and *umbonatus*, Ckll. To these should be added: *bivalvata* (Green), *castilloæ* (Green) and *cenehiformis* (Newst).

Lecaniodiaspis mimusopis; n. sp. (Fig. 36.)

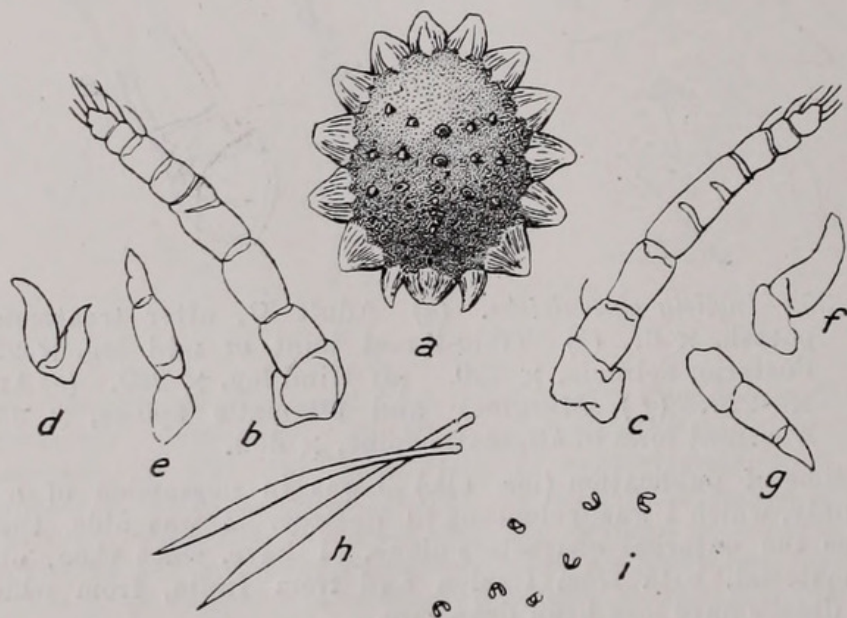


FIG. 36.—*Lecaniodiaspis mimusopis*. (a) Adult ♀, dorsal view, $\times 3$. (b, c) Antennæ, $\times 130$. (d, e) Anterior legs, $\times 130$. (f) Mid leg, $\times 130$. (g) Hind leg, $\times 130$. (h) Setæ from anal ring, $\times 220$. (i) Paired pores, $\times 450$.

Test of adult female (a) approximately circular; strongly convex. Colour dull pale brown. Surface so minutely granular as to appear

smooth. Margin with a continuous series of broad, flattened, triangular, whitish, waxy processes which (in the example under examination) number 15, the hindermost one being medially disposed, the remainder paired. Across the middle of the dorsum are three transverse series of five small, whitish, truncately conical, waxy points and, behind these, a short medio-longitudinal series of three similar points. Overall diameter of test 9.5 mm.

The structural characters of the insect itself were obtained from a single example, in poor condition, and are consequently incomplete. The two antennæ (*b*, *c*) are not symmetrical. In one (*b*) there are eight distinct joints and an incomplete division in the 4th. In the other (*c*) there are only 7 distinct joints, but the long 4th joint shows two incomplete divisions. In each case, if all the divisions were complete, there would be nine joints. The two terminal joints are very short. The legs are more or less rudimentary, but vary in the amount of their development. Of the first pair, one (*e*) shows complete division between the femur and tibia; while the other (*d*) consists of two joints only, a coxa and a fused terminal joint. This condition is repeated in the mid legs (*f*); but the hind limbs are distinctly 3-jointed (*g*). The spiracles are large and conspicuous. The anal aperture is supported by the usual bilobed chitinous plates. Anal ring with 8 stout, lanceolate setæ (*h*). The cribriform plates are small and irregular in form; but, owing to the poor condition of the material, their exact position and number cannot be determined. For the same reason I have been unable to locate any stigmatic spines. Dêrm closely studded with minute V-shaped or bilobed pores (*i*) and crowded with the usual tubular glands.

Described from two examples only, on the bark of *Mimusops hexandra*; Hambantota. This is, by far, the largest known species of the genus. Judged by external characters alone, the insect might be mistaken for a species of *Walkeriana*.

Asterolecanium gutta, n. sp. (Fig. 37.)

Test of adult female bright yellow, translucent, highly polished. The reddish ova, showing through the test, give it a maculate appearance. The shrivelled body of the insect is revealed as a deep brown patch at the anterior extremity. There is a fragmentary and rather inconspicuous fringe of pinkish filaments. Form of test approximately circular and hemispherical. Average diameter 3 mm.

The actual insect (*a*) is broadly pyriform, narrower behind, the anal segment slightly produced but without prominent anal lobes. There is a conspicuous, uninterrupted, marginal series of

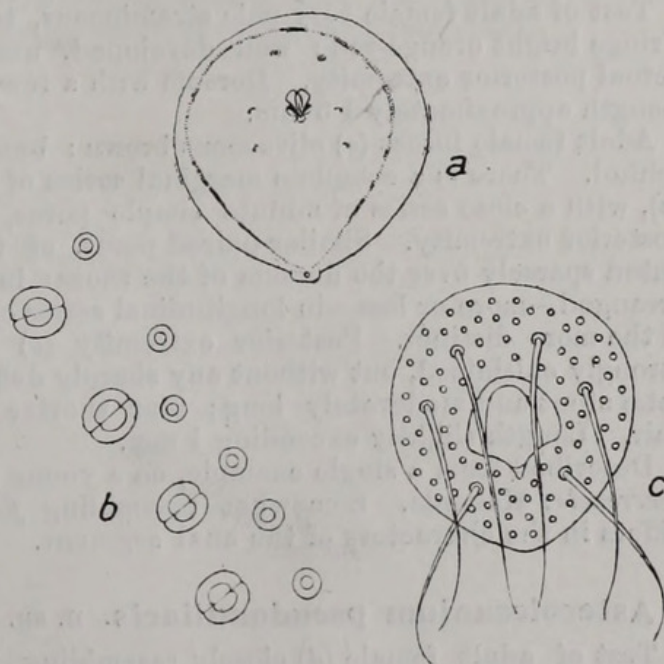


FIG. 37—*Asterolecanium gutta*. (*a*) Adult ♀ ventral aspect, $\times 13$. (*b*) Marginal pores, $\times 450$. (*c*) Anal ring, $\times 450$

paired and simple pores (b), both of which are unusually large. In places, particularly on the frontal area, the series tends to be irregularly double. There are no supplementary paired pores on the dorsum. The two halves of each pair are oblate and closely applied to each other, without any interval. Both paired and simple pores have thickened rims. Anal ring (c) broad and densely chitinous, closely studded with small circular pores, and bearing six stout setæ. Length 2 mm.

On young branches of *Calophyllum walkeri*: Pattipola. The yellow tests resemble small congealed drops of gamboge gum.

Asterolecanium loranthi, n. sp. (Fig. 38.)

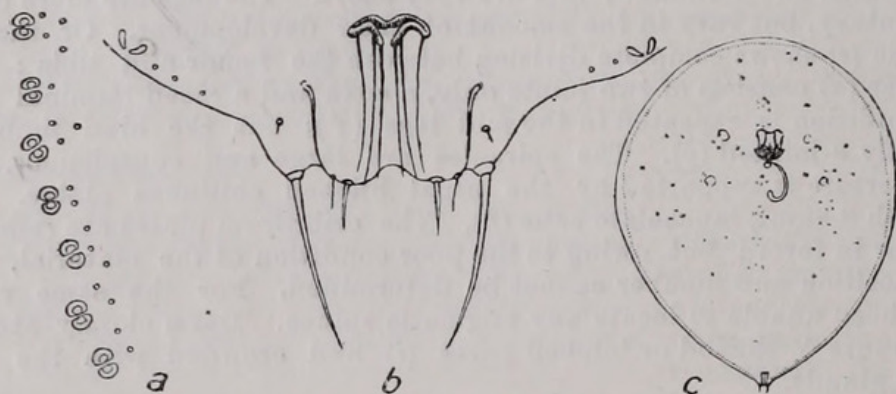


FIG. 38—*Asterolecanium loranthi*. (a) Marginal pores, $\times 450$. (b) Posterior extremity of adult ♀ , $\times 450$. (c) Adult ♀ , ventral aspect $\times 30$.

Test of adult female very pale stramineous, translucent, broadly ovate. Fringe bright orange-red; well developed, uninterrupted except at the actual posterior extremity. Dorsum with a few, scattered erect filaments. Length approximately 1.5 mm.

Adult female insect (c) olivaceous brown; broadly ovate, bluntly pointed behind. There is a complete marginal series of rather small paired pores (a), with a close series of minute simple pores, extending almost to the posterior extremity. Similar paired pores, of the same size, are distributed sparsely over the dorsum of the thorax in small, ill-defined groups, arranged—more or less—in longitudinal series of which the median series is the more distinct. Posterior extremity (b) indistinctly lobed; rather strongly chitinated, but without any sharply defined dorsal plates. Caudal setæ stout and moderately long; four shorter setæ between the caudal pair. Length slightly exceeding 1 mm.

Described from a single example, on a young branch of *Loranthus neelgherrensis*: Hakgala. Somewhat resembling *flavociliatum*, from which it differs in the characters of the anal segment.

Asterolecanium pseudomiliaris, n. sp. (Fig. 39.)

Test of adult female (d) closely resembling that of *miliaris*; but more delicate in texture and more irregular in outline. Very pale yellow, translucent; early adult examples with a median reddish line. Posterior extremity narrowed and tapering to a blunt point; with a low, rounded,

median carina. There are three longitudinal series of very slender and delicate colourless, glassy, double filaments on the dorsum. Marginal fringe colourless or slightly tinged with pink; irregular, usually incomplete, moderately long. Length 0.75 to 1.25 mm. Breadth across median area 0.4 to 0.5 mm.

Adult female insect (b) pale yellow; often deeply and irregularly indented on the cephalo-thoracic margins. Posterior extremity (c) rounded. Caudal setæ stout, crossed, set on small but distinct anal lobes. Anal ring with six setæ. There is a narrow, transverse, dorsal plate below the anal ring. Marginal paired pores (a) very small, distant from each other by more than their

own length; continuous to within a short distance of the posterior extremity. Ventral simple pores few, minute, at a considerable distance from the margin. Some larger paired pores occur on the dorsum, arranged in three longitudinal series, about ten in each series. Length 0.4 to 0.6 mm.

On foliage of *Bambusa* sp. Peradeniya.

Differs from *miliaris* in the presence of erect filaments on the test, and of supplementary paired pores on the dorsum of the insect.

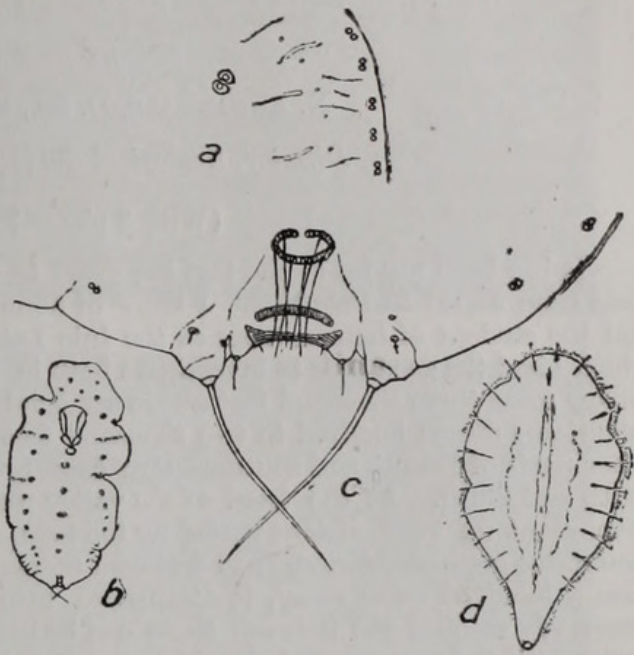


FIG. 39—*Asterolecanium pseudomiliaris*. (a) Marginal and discal pores, $\times 450$. (b) Adult ♀ , $\times 50$. (c) Posterior-extremity of adult ♀ , $\times 450$. (d) Test of adult ♀ , $\times 30$.



Green, Edward Ernest and Green, Edward Ernest. 1922. "Supplementary Notes on the Coccidae of Ceylon." *The journal of the Bombay Natural History Society* 28, 1007–1037.

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