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DESCRIPTIONS OF SOME NEW GENERA AND  
SPECIES OF COCCIDAE.

BY

F. LAING, M.A., B.Sc.

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## DESCRIPTIONS OF SOME NEW GENERA AND SPECIES OF COCCIDAE.

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The following descriptions are based upon material submitted to me by the Director of the Imperial Bureau of Entomology. These species form but a very small part of the material which has gone, through the continuous efforts of Dr. Marshall, towards the growth and enrichment of the National Collection of Coccidae, and I wish to record my very best thanks to him. To Mr. E. E. Green I am indebted for his unfailing courtesy, helpful comments and gifts of material from his private collection.

**Halimococcus nesiotus**, sp. n. (fig. 1).

Adult ♀ completely enclosed by a hard, rigid puparium which is concealed by a closely felted, cottony covering composed of very short fibres. Puparium deep reddish brown, narrow oval, rounded in front, tapering behind, low convex above, flattened ventrally along line of attachment to the leaf; with minute antennae on the frons composed of several small setae situated on a tubercle; dorsum with a median longitudinal carina, with a series of depressions in either side. Operculum not elevated, of a paler colour than the rest of the puparium. Microscopically the marginal area is studded with minute spicules. Length 0.7 to 0.9 mm.; breadth approximately 0.45 mm.

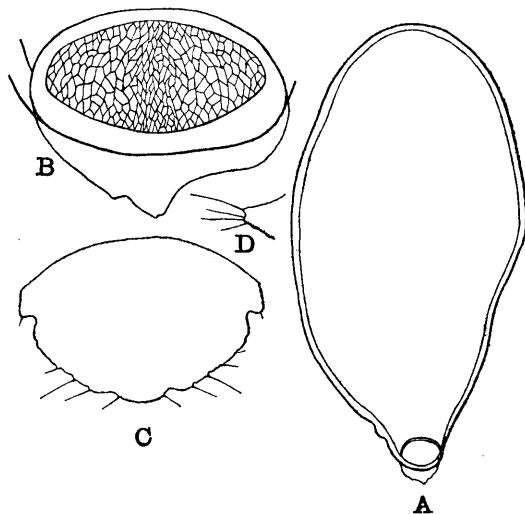


Fig. 1. *Halimococcus nesiotus*, Laing, sp. n.: a, puparium; b, operculum of puparium; c, anal segment of adult ♀; d, antenna of ♀.

Adult ♀ relatively of same shape as puparium which it approximately fills. Derm very delicate and it is extremely difficult to extract the female from the puparium. Antennae rudimentary, situated on tubercles with three long setae and one shorter and more delicate at apex. Rostrum strongly developed. Legs absent. Anal segment somewhat pygidiform, chitinous, of the same general shape as operculum of puparium; margin on either side with four setae directed laterally. Length 0.7 mm.

LORD HOWE ISLAND: on a species of palm (*H. W. Simmonds*).

**Phenacoccus trinidadensis**, sp. n. (fig. 2).

Adult ♀ elliptical, not quite twice as long as broad. Antennae 9-segmented, the proportions of the segments being in the ratio of 14, 14, 22, 18, 16, 14, 16, 14, 19; an 8-segmented form appears also to be present, the segmental proportions being 25, 26, 40, 30, 30, 30, 30, 38, the reduced number of segments not being due as far as can be judged to fusion, but to the actual dropping out of a segment between the third and seventh. Eyes conspicuous. Legs normal, tarsi less than half the length of tibiae; both pairs of digitules long, slender, reaching beyond apex of claw; claw strongly developed with a well-marked tooth a little nearer the apex than the base. Numerous dorsal short, sharp pointed slightly lanceolate spines present in an irregular transverse series about the middle of each abdominal segment but without regularity towards cephalic end and occasional long slender setae. Pores numerous, trilocular. Cerarii 36, the two interantennal pairs sometimes incompletely fused, resulting in one pair, all strongly chitinised, each chitinous area sharply defined; each cerarius with numerous short pointed spines with a tendency towards being lanceolate in shape, and large trilocular pores, not crowded together; anal cerarius with an average of about 20 spines, the spines on the remaining cerarii varying in number from 8 to 15; no auxiliary setae. Stigmata conspicuous with wide external opening. Dorsal osteoles scarcely noticeable, no ventral median osteole. Length 3.1 mm.; breadth 1.8 mm.

TRINIDAD: Toco Beach, on *Coccoloba uvifera* (C. L. Withycombe).

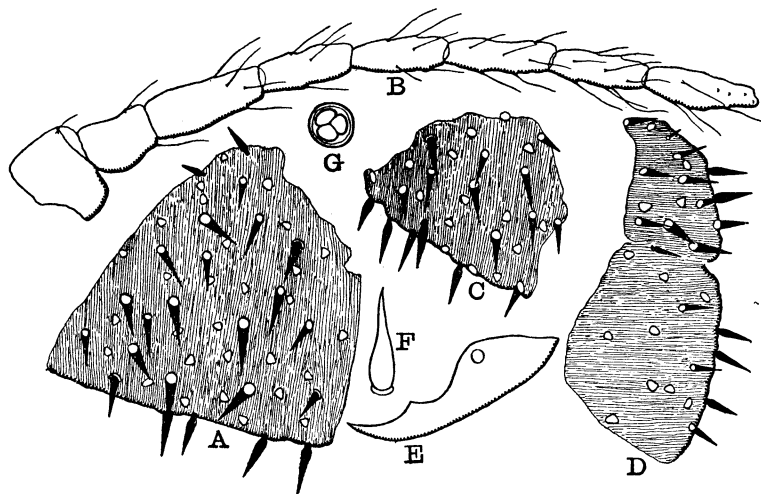


Fig. 2. *Phenacoccus trinidadensis*, Laing, sp. n.: a, anal cerarius; b, antenna (8-segmented form); c, fourth cerarius from anus; d, interantennal cerarii partly fused; e, claw of hind leg; f, type of body spine; g, trilocular cerarian pore.

**Pseudococcus hargreavesi**, sp. n. (fig. 3).

Adult ♀ ovate, slightly narrowed posteriorly, about one-third longer than broad. Labium elongate, pointed, longer than broad, as long as or slightly longer than the tentorium; 2-segmented, apical segment longer than basal. Antennae 8-segmented, all except the basal segment more or less elongate, 2, 3 and 8, considerably longer than the others; proportions of segments 30, 40, 35, 25, 28, 27, 27, 53. In addition to the usual slender setae there is a strong falcate spine at distal extremity of the 7th segment; a similar spine at about the middle of the 8th, and one if not two sinuous spines near its apical extremity. Limbs strongly developed, all of approximately

equal size; tarsus of hind limb one-quarter length of tibia. Claw without a denticle. Tarsal digitules slender, knobbed at the extremity; unguinal digitules slightly stouter, abruptly expanded at extremity. Hind coxae without conspicuous translucent pores. Cerarii conspicuous, consisting of 18 pairs, each set on a slight prominence; caudal cerarius rather strongly chitinised, the chitinous area sharply defined, the previous two or three cerarii more slightly and indefinitely chitinised. The interantennal

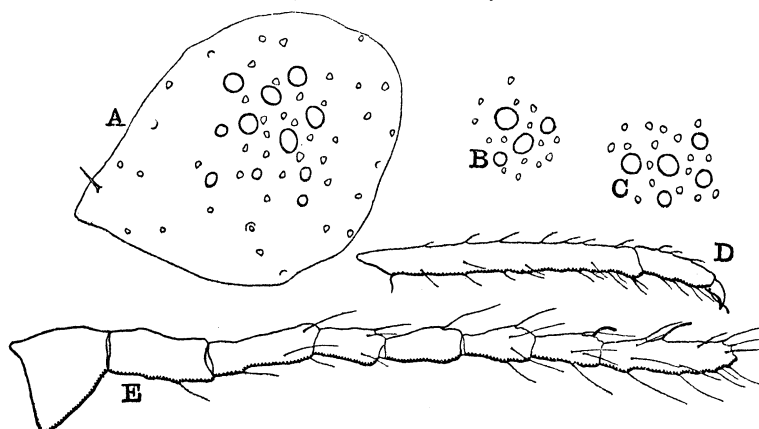


Fig. 3. *Pseudococcus hargreavesi*, Laing, sp. n.: a, anal cerarius; b, interantennal cerarius; c, antepenultimate cerarius; d, tibia and tarsus of posterior leg; e, antenna.

cerarii with three (sometimes there is another smaller one), the remainder with from four to six conspicuous circular discs which are probably the sockets of spines that have become detached, other smaller discs probably indicate the positions of missing auxiliary setae. (It is remarkable that not a single spine or auxiliary seta remains on some 18 specimens examined; even the caudal setae are missing and their position indicated by a large disc surmounted on the usual small tubercle.) A group of longish setae between the antennae and between the attachment of the limbs. Posterior spiracles considerably broader than the anterior. Dorsal osteoles rather pronounced, with thickened lips; medio-ventral osteole not apparent. Obscurely triangular pores distributed profusely over the whole body, not markedly clustered on cerarii. Discoid pores in a crowded series across the genital segment and in looser series across the preceding two or three segments. Length 2.75 to 3.25 mm.; breadth 1.75 to 2.25 mm.

UGANDA: Kampala, on *Bauhinia* sp. (*H. Hargreaves*).

Near to *P. crawii*, Coq., but differing from that species in the unusually long third antennal segment, and in having 18 pairs of cerarii instead of 17. Resembles *P. wistariae*, Green, in some respects, but the latter species has two spines only on the caudal tract.

#### ***Pseudococcus ugandae*, sp. n.**

Adult ♀ broadly ovate with small rounded caudal lobes, greatest breadth about three-quarters the length. Labium elongate, fully twice as long as it is broad; 2-segmented, relative proportions of basal to distal segments as 5 to 6. Antennae 8-segmented, scantily setose, an obscure division across the 8th segment suggests a tendency to a 9-segmented form; relative proportions of antennal segments 25, 29, 30, 20, 25, 20, 22, 45. Legs large and robust, third pair longest; tibia of hind pair nearly four times the length of the tarsus; tibia of first pair less than three times the length of the tarsus. Claw stout, without a denticle. Unguinal digitules extending

beyond the tip of the claw, dilated at the extremity; tarsal digitules long, slender, also dilated at apex, extending to tip of claw. Hind coxae without conspicuous translucent pores. Cerarii confined to the posterior 5 or 6 abdominal segments, each with one or two small, somewhat spear-shaped spines, the three posterior with two spines, and the two or three cerarii anterior to those usually with one. Caudal cerarius not markedly chitinised. Caudal setae scarcely longer than those of the anal ring. Body setae sparse except on the frontal area. Small triangular pores sparsely distributed. Large discoid pores crowded on posterior four segments of the abdomen; a few short tubular pores at intervals along the marginal area. Medio-ventral osteole dumb-bell shaped. Length 3.5 to 3.75 mm.; breadth 2.5 mm.

UGANDA: Kakumiro, on *Grevillea robusta* (*H. Hargreaves*).

This species has characters approaching but amply distinct from *P. eriogoni*, Ehrh.

***Farinococcus simmondsi*, sp. n. (fig. 4).**

Adult ♀ of a pale fulvous brown (in formalin), about one-third longer than broad. Margin not produced into prominent lobes except the interantennal and anal pairs which are a little more conspicuous. Antennae 7-segmented, segments in the proportions of 15, 13, 11, 16, 9, 10, 21. Eyes well defined. Legs well developed, the femur and trochanter together subequal to the combined length of tibia, tarsus and claw; tarsus a little more than half the length of tibia; unguis dilated at tip, tarsal digitules simple. Marginal ceriferous tracts ill-defined, more or less confluent

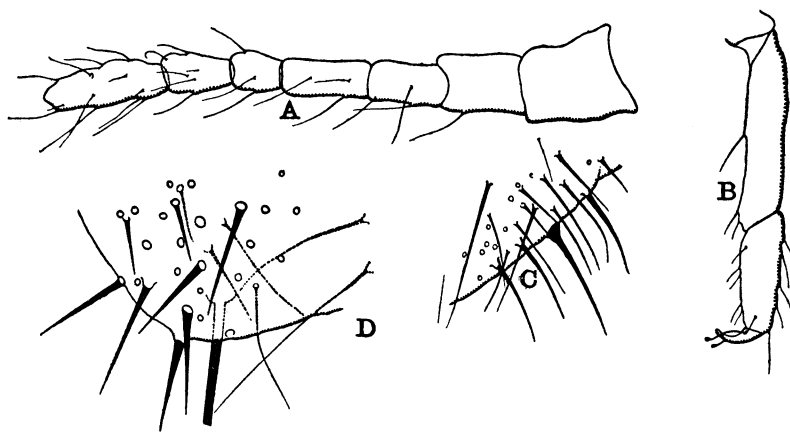


Fig. 4. *Farinococcus simmondsi*, Laing, sp. n.: a, antenna; b, tibia and tarsus of hind leg; c, antepenultimate cerarius; d, anal cerarius.

except at cephalic end where they are slightly demarked; each tract with from 6 to 10 long, sharply pointed spines varying in thickness, and with many spiniform setae. Derm with numerous strong setae and with minute pores; venter with similar pores but larger. Caudal setae not quite twice as long as anal setae. Both pairs of osteoles conspicuous. Length 2.2 mm.; breadth 1.7 mm.

NEW BRITAIN: Kokopo, on coconut (*H. W. Simmonds*).

*Tylococcus formicarii*, Green, and *T. simplicior*, Green, two species described from Ceylon should both be transferred to the genus *Farinococcus*, a disposition to which Mr. Green agrees.

**Kuwanina hilli**, sp. n. (fig. 5).

Females enclosed in small sacs massed together and covered over by the fibres of the host plant; walls of the sacs thin and brittle but hard, white both inside and out. Naked ♀ dark red in colour; stains KOH purple.

Adult ♀ subglobular. Antennae rudimentary, consisting of 4-5 spinose setae on a well-developed tubercle. Legs absent. General surface of derm covered with circular pores, medium in size; these pores, or pores of approximately the same diameter, thickly crowded, two to three rows deep around both pairs of spiracles. Lying immediately posterior to the hinder pair of spiracles is a large cribriform

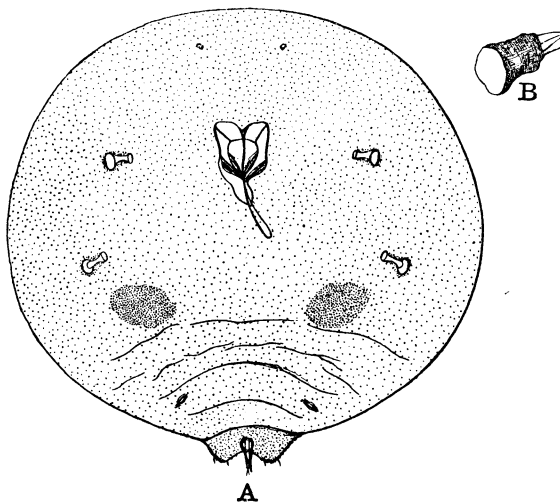


Fig. 5. *Kuwanina hilli*, Laing, sp. n. : a, adult ♀; b, antenna.

plate-area, not strongly demarked, broader than long, thickly crowded with circular pores of about half the size of the general body-pores. Posterior end of body indefinitely segmented, last segment slightly more strongly chitinised than the remainder of the body, rugulose, produced into two low lobes with anal ring in the hollow. Anal ring with six setae projecting beyond the adjacent lobes. A few scattered hairs around the margin and on the body. Total length subequal to breadth, 2.2 mm.

QUEENSLAND: Homehill, on Onion-weed (*G. F. Hill*).

**Ceroplastodes ritchiei**, sp. n. (fig. 6).

Adult ♀ oval in shape, not quite twice as long as broad. Antennae vestigial, composed of a base showing no signs of segmentation, and a bunch of strong setae at the apex, the longest seta shorter than the length of the antennal stump. Spiracles large, cylindrical; stigmatic spine single, very long, tapering; an irregular series of small circular pores connecting the base of the stigmatic spine with the spiracle. Legs vestigial, the different parts indistinguishable, with the claw present but very small; tarsal digitules thread-like, not reaching beyond the claw, present at least in the second and third pairs of legs. Abdominal segments very distinct. Dorsum with many small circular pores into which lead short cylindrical ducts. Ventral surface with many large circular glands of the disc type arranged transversely across the segments for some distance in front of and crowded posterior to the anal lobes.

Marginal spines in a single row, short, sharp-pointed, broad-based and situated at irregular intervals; one or two considerably longer spine-like setae on posterior margin; a marginal area adjacent to anal cleft spinulose. Anal plates widely separated with a very strong spine situated on a prominence, with a seta on either side, on inner margin. Length 3.5 mm.; breadth 1.9 mm.

TANGANYIKA TERRITORY: Government Experimental farm, Morogoro, on fruit of Soursop (*Anona* sp.) (*A. H. Ritchie*).

This is a typical *Ceroplastodes* with the exception of the vestigial character of the antennae and legs.

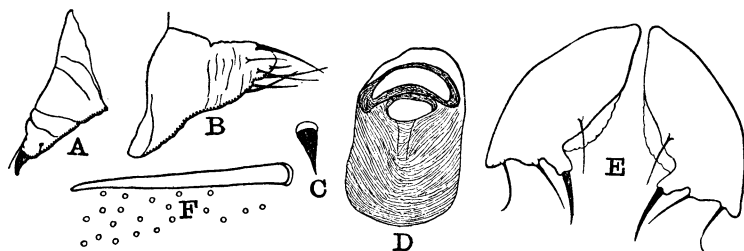


Fig. 6. *Ceroplastodes ritchiei*, Laing, sp. n.: a, rudimentary leg of adult ♀; b, antenna; c, marginal spine; d, spiracle; e, anal plates; f, stigmatic spine.

#### **Cyphococcus**, gen. nov.

Belonging to the COCCINAE. Very low convex, a rather broad median longitudinal dorsal area stretching from a little in front of anal lobes to near anterior end strongly demarked and showing segmentation well; no secretion (alcoholic material); a longitudinal row on either side of discal area and immediately exterior to it of four truncate conical protuberances resembling small molluscan shells of the genus *Puncturella*; these protuberances frequently broken off but the areas they occupy are visible. Adult ♀ with antennae and legs rudimentary; margin closely set with short, spear-shaped spines; stigmatic spines in clusters consisting of two sizes, a series of three or four large spines and a series of much smaller spines, both series of same general shape with rounded apices; anal ring setae ten in number. Dorsum with a continuous narrow belt of filiform pores and short sharp scattered spines stretching from immediately in front of anal plates to beyond the antennae, this belt coinciding with the discal area seen in the fresh adult; four lateral secondary sub-circular belts given off externally corresponding with the dorsal conical protuberances.

Genotype, *Cyphococcus caesalpiniae*, sp. n.

#### **Cyphococcus caesalpiniae**, sp. n. (fig. 7).

Adult ♀ pale castaneous brown (in alcohol), low convex, broadly ovate, a broad median dorsal longitudinal demarked area sharply pointed in front or else the two pointed ends scarcely meeting but running towards anterior margin to form a narrow sulcus, broadly rounded posteriorly, stretching from immediately in front of anal operculum to near cephalic margin; segmentation of this discal area strongly marked; external and adjacent to this discal area and medianly situated on either side are four conspicuous, truncate, dull black conical protuberances, vertically striated about 1 mm. high. Average size 12 mm. long by 9 mm. broad.

Adult ♀ with many dorsal vacuoles especially marked posteriorly and anteriorly where they are irregularly arranged, but laterally they are in more or less transverse bands; most of the vacuoles with the opening of a spinneret in or near its centre. Submedianly an oval, narrow continuous belt stretching from just in front of anal

operculum to slightly anterior to antennae consisting of an irregular double or treble row of conspicuous fairly closely packed filiform pores with at intervals short, sharp-pointed spines; on either side of main belt and external to it arise in the median area four similar bands, subcircular in form, with the spinnerets at less frequent intervals and not so conspicuous and apparently without the short spines: these belts coincide with the circumferences of dorsal protuberances. Margin closely set with strong, short, spear-shaped spines situated apart at a distance equal to or slightly less than length of a single spine; one or two spinnerets leading into base of each spine; large conspicuous, circular glands situated at remote intervals close to margin. Stigmatic spines in clusters consisting of two sizes, the larger of three spines the middle of which is longest, and the smaller of a bunch of a dozen or more (several may be

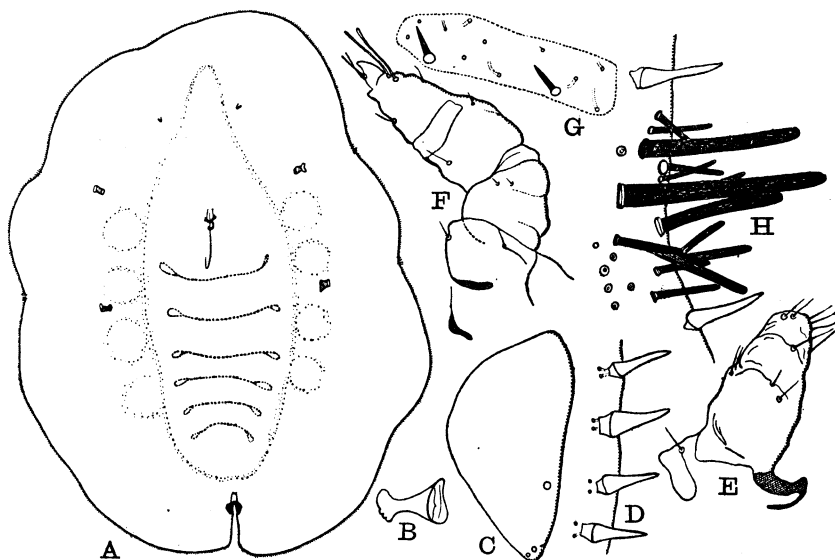


Fig. 7. *Cyphococcus caesalpiniae*, Laing, gen. et sp. n.; a, adult ♀; b, spiracle; c, anal plate; d, marginal spines; e, antenna; f, hind leg; g, a small part of the dorsal belt of filiform pores and spines; h, anterior spiracular spines.

broken off) of approximately equal size, all straight with rounded tips. Stigmata conspicuous, connected with a well-developed tracheal system. Antennae rudimentary, with a few spinose setae at apex. Legs rudimentary but each segment discernible, both unguis and tarsal digitules long, slender, apices knobbed. Anal lobes with outer angle well rounded, both outer margins subequal in length; two spines apically, one posterior to the other, a third near middle of inner margin; dorsal surface rather rugose; anal ring broad, closely perforated; ten well-developed anal setae. Total length approximately 13 mm., breadth 01 mm.

UGANDA: Kampala, on *Caesalpinia dasyrachis* (H. Hargreaves).

#### **Lecanium inopheron**, sp. n. (fig. 8).

Adult ♀ (in alcohol) pale castaneous brown, low to medium convex, elongate-ovate, widest across region immediately in front of anal operculum, middle portion of dorsum with from 5 to 6 well-marked transverse ridges, eyespots black, conspicuous, a short way in from margin. Average length 10 mm., breadth 8 mm.

Antennae 8-segmented, very slender, third segment waisted, second with a very long seta, eighth with five medium setae and a long apical one, other segments with



fcw; proportions of segments, 10, 63, 30, 25, 15, 11, 17. Legs normal, tarsi approximately half length of tibiae, the two together subequal to femur and trochanter; claw with a small basal tooth; tarsal digitules long, slender, knobbed, unguis digitules broadly dilated extending well beyond claw. Dorsum with translucent dermal spots, fairly conspicuous but not crowded; filiform spinnerets very plentiful. Posterior segments of abdomen well marked. Venter with circular discoid pores crowded around genital orifice and extending into four posterior segments, becoming absent anteriorly; a pair of long setae situated slightly cephalad of genital orifice. Marginal spines closely set, situated apart at a distance about equal to length of a single spine, strong, truncate at apex, in some specimens a duct clearly visible leading into base of each. Margin of anal cleft spinulose. Stigmatic cleft not very deep, with a prominence on either side giving a deeper and more sunken appearance to cleft; stigmatic spines of two sizes, the larger of 2 to 3, curved and with tips rather rounded, the smaller and more slender of about 4, with sharper tips. Stigmata with large mouths, cup-shaped. Anal lobes triangular, the two outer margins subequal and slightly shorter than inner, dorsal surface reticulate, several setae on central area, a short sharp pointed spine about the middle of inner margin, and two subapical ones, one of which is probably very long (all the specimens have this spine broken off short).

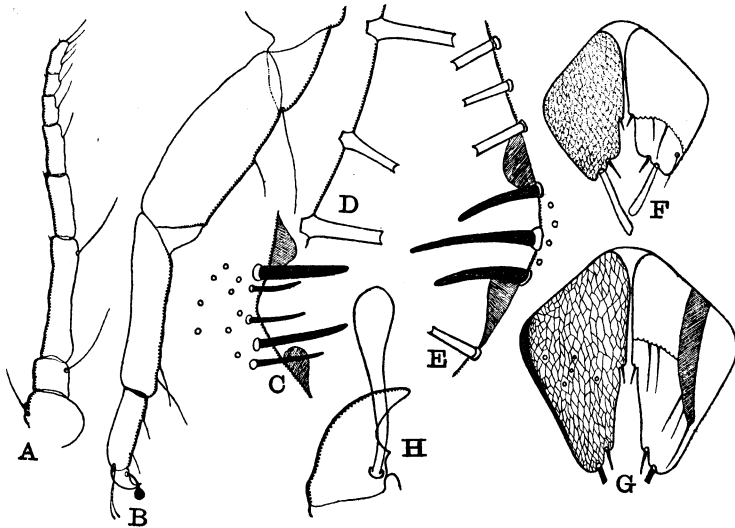


Fig. 8. *Lecanium inopheron*, Laing, sp. n.: a, antenna; b hind leg; c, anterior stigmatic spines; d, marginal spines; e, stigmatic spines of young adult; f, anal plates of young adult; g, anal plates of adult; h, claw of hind leg.

Immature specimens have 7-segmented antennae, three stigmatic spines, the middle of which is the longest, stigmatic clefts with prominences on either side, anal plates with a very long, rather broad, truncate, subapical spine, and other characters as in adult.

UGANDA: Kampala, on *Erythrina* sp. (*H. Hargreaves*).

Specimens which seem to be identical with *L. inopheron* in all respects except that they are slightly smaller and the antennae, if anything, slightly more robust have also been received from S. Nigeria (Ibadan) collected by Mr. O. B. Lean off American Cotton, and I have assigned them to this species.

*L. inopheron* is undoubtedly very closely allied to *L. filamentosum*, Newst., but differs from the latter species in the characters of the stigmatic cleft and the anal lobes.

**Platylecanium cocotis**, sp. n. (fig. 9).

Adult ♀ dark reddish brown, flat, longish-oval, slightly narrower in front than behind, length about one-half greater than breadth, a median longitudinal ridge of white, brittle secretion (which may cover the whole dorsum) present. Adult clearing in potash to a very light brown; dorsum with numerous small tubercular glands scattered irregularly on submarginal area, but running in transverse series across the dorsum, these glands with a seta at tip; about six series between the antennae and anal plates. Dorsal areolations distinguishable submarginally. "Cribriform plates" four, on each side of the anal plates, the most anterior pair with practically no small pores but with three rather large vacuoles, the other three pairs with both small pores and vacuoles. Ventrally, two semicircular rows of large pores, lying anterior to anal lobes, the anterior crescent of pores continuous, the posterior series irregularly double, interrupted medianly. Legs absent. Antennae rudimentary, one-segmented. Margin crenulated, marginal setae simple, sparse. Spiracular spines three, sometimes four, rounded at apex, sunk in a deep marginal incision; a well-marked channel running inwards from the spines to near the spiracles; a short series of pores connecting the end of the channel with the spiracles. Spiracles with the outer end widely expanded, inner end narrow. Anal plates triangular, together diamond-shaped, about  $240\mu$  long, surrounded by a strongly chitinised area. Length approximately 6 mm.; breadth 4 mm.

NEW HEBRIDES: Efaate, on Coconut (*H. W. Simmonds*).

This species would appear to be most closely related to *P. cribrigerum*, Ckll., but differs from that species in the shape of the anal plates, in certain differences in the margin and in the presence of areolations on the marginal area. From *P. asymmetricum*, Morr., it differs in the shape of the body and in the antennae.

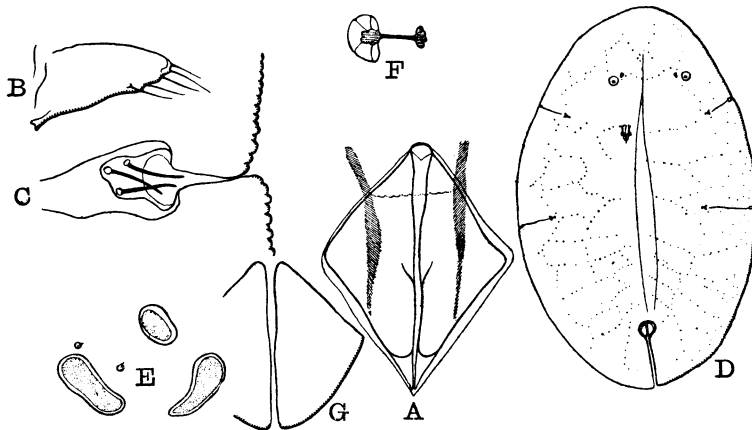


Fig. 9. *Platylecanium cocotis*, Laing, sp. n.: a, anal plates; b, rudimentary antenna; c, anterior spiracular spines; d, adult ♀; e, anterior-vacuoles of cribriform plate; f, spiracle; g, anal plate of *P. cribrigerum* (Ckll.) for comparison.

**Cryptostigma saundersi**, sp. n. (fig. 10).

Adult ♀ (in alcohol) with a pale yellowish brown longitudinal stripe and several lateral intertwining stripes on dorsum and also several semicircular ones on the declivity anterior to anal lobes; remainder of dorsum of a darker brown; a small dark brown to almost black area around anal plates. Ventral surface dark brown with a paler marginal area. Length (unmounted) approximately 7 mm., breadth from 5 to 6 mm.

Antennae rudimentary, one segment only apparent with indications of two more compressed subobsolete basal segments; numerous setae at or near the apex. Legs greatly reduced, femur and tibio-tarsus present but small; claw present and well developed; tarsal digitules simple, extending to beyond the claw; unguinal digitules short, slightly dilated at apex, reaching to a little beyond claw. Stigmatic clefts rather deep, without spines; the heavily chitinised collar at base of depressions thickly beset with small pores; the area between the mouth of the spiracle and the spiracular collar crowded with pores of disc type. Marginal spines small, conical, sharp-pointed, on broad bases. Ventral surface with two sizes of circular pores, the smaller scattered generally over the whole surface, the larger of the disc type scattered sparsely on marginal area and more crowded medianly, especially anterior to anal plates. Strong sharp setae from twice to three times the length of the marginal spines scattered sparsely over the surface but more numerous anterior to anal plates.

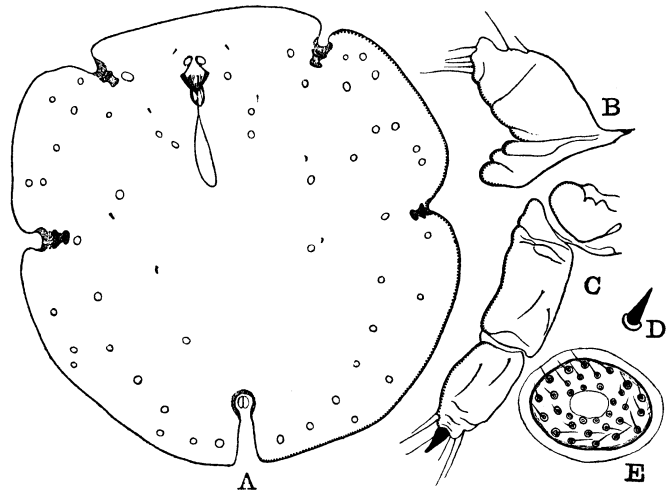


Fig. 10. *Cryptostigma saundersi*, Laing, sp. n.: a, adult ♀, to show distribution of "compound pores"; b, antenna; c, posterior leg; d, marginal spine; e, a "compound pore."

Dorsal surface with from three to four irregular longitudinal rows of "compound pores or plates" oval or subcircular in shape, each "plate" surrounded by a more or less distinct narrow clear area; the centre of the "plate" clear but sometimes filled with extraneous matter; the area between the thick rim and the central vacuole with from two to three irregular series of pores, the outer series having a seta arising from the centre of each pore. Whole dorsal surface covered with small circular pores of two sizes, the smaller bilocular, the larger of about twice the diameter and of the disc type. Anal plates surrounded by a heavily chitinised collar, each plate half ovate, rather deep, with five to six setae dorsally, and 10 to 12 around the apex and inner apical margin. Extreme length (mounted) from 8 mm. to 1 cm.; breadth 0.7 cm.

BRAZIL: Rio de Janeiro, on trunk of an undetermined tree, protected by ants belonging to an undescribed species of the genus *Azteca* (*L. G. Saunders*).

This very distinct species is readily separated by the numerous "compound pores" which are quite different in structure from those of *C. quinquepori*, Newst., the only other member of the genus possessing these structures.

**Chionaspis hargreavesi**, sp. n. (fig. 11).

Scale snowy white, more or less parallel sided, occasionally slightly expanded posteriorly, very highly convex, the perpendicular sides of the median part sometimes faintly constricted; ventral scale membranous, white, adhering closely to surface of leaf; larval exuviae of a bright orange brown. Length approximately 1 mm.

Adult ♀ (dried) very dark brown to almost black, much contracted, especially so in pygidial region where segments are humped up and highly convex. When treated with KOH ♀ ovate, rather narrow in front, widening out to its greatest breadth about middle, gradually contracting posteriorly, posterior very broad with margin almost straight; greatest width about half the length. Antennal tubercles with usually one long strong curved seta, occasionally two. Parastigmatic pores wanting. Pygidium with median lobes very remote, reduced to small conical projections with a small shoulder on outer margin; second pair of lobes separated from first pair by a distance equal to half that between the median lobes, about twice size of latter, hastate in shape, with rounded apices and deep triangular bases projecting into pygidium; third pair of lobes represented by small conical projections which may be slightly notched on outer margin immediately beyond second pair; a fourth pair of lobes probably present in form of still smaller conical projections at a distance equal to about three-quarters of that between median lobes; a gland spine immediately beyond first pair and another beyond third pair of lobes; a pair of marginal gland pores in the interval between first and second pair of lobes. Circumgenital pores absent. Total length 1.2 mm.; breadth 0.6 mm.

UGANDA: Masaka, on leaf of "Nzo" (*H. Hargreaves*).

Near to *C. amaniensis*, Ldgr., for which MacGillivray has proposed the generic name *Inchoaspis*.

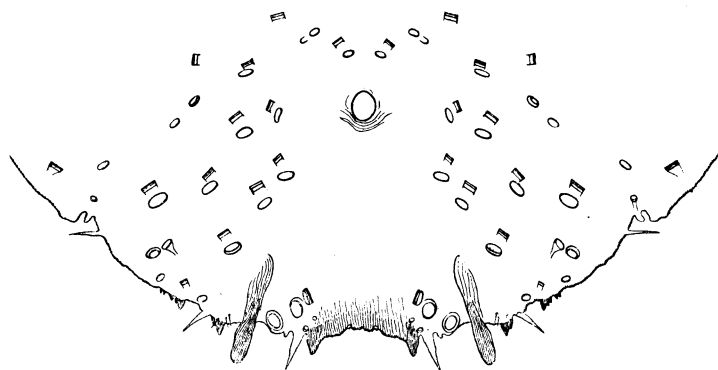


Fig. 11. *Chionaspis hargreavesi*, Laing, sp. n., pygidium of adult ♀.

**Phenacaspis australis**, sp. n. (fig. 12).

Scale snowy white, narrow in front, very broad posteriorly, sometimes almost subcircular; exuviae brownish fulvous, the larval exuvium darker than nymphal. Total length averaging 3 mm.; breadth 2 mm.

Adult ♀ elongate, narrow, approximately twice as long as broad, relatively narrower at cephalic end than caudal. Rudimentary antennae situated on small tubercles with a single long seta. Anterior spiracles with a small group of parastigmatic pores, usually four to five; these absent from the posterior pair. Margins of abdominal segments with numerous pores and spiniform squamae; the two posterior segments with a horizontal medio-lateral series of four to five spinnerets

and a lateral series of six to seven. Pygidium with three pairs of lobes; median pair widely divergent, prominent, inner margins entire; second and third pairs duplex, the second lobule of each pair much reduced. Two setae in the interval between the median lobes and a spiniform squama and a spine in the corresponding interval between each pair of lobes. Two series of dorsal gland orifices, the posterior group of each series composed of about six glands, the anterior of about four; a third series represented by two glands lying adjacent to the space between the anterior and posterior groups of circumgenital pores. Circumgenital pores in five groups, the formula approximately 19:15:7:18:21.

Length 1.6 mm.; breadth 0.7 mm.

AUSTRALIA: New South Wales, Sydney, on an unidentified plant, probably a species of *Eucalyptus* (Dr. G. A. K. Marshall).

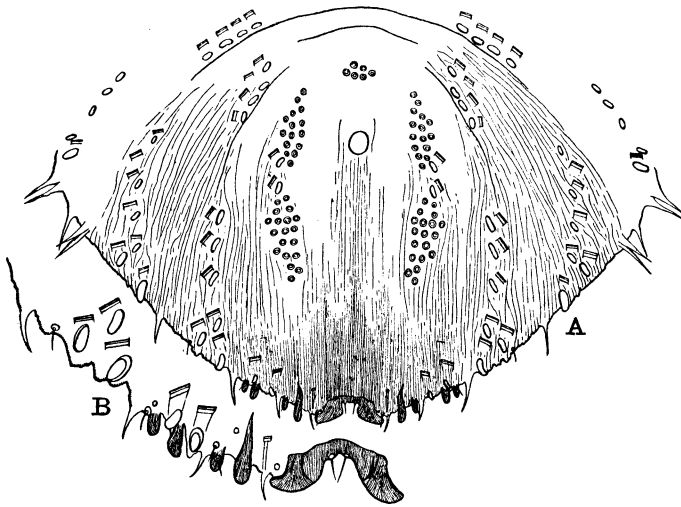


Fig. 12. *Phenacaspis australis*, Laing, sp. n.: a, pygidium of adult ♀; b, margin of same.

#### **Operculaspis** gen. nov.

Genus belonging to the *Aspidiotini*, resembling in shape members of the genera *Selenaspis* and *Pseudaonidia*, with a constriction between the pro- and mesothorax; abdominal segments distinct, the two posterior ones with a strong marginal spur; pygidium with on the ventral surface a large subcircular opening closed by means of an operculum hinged posteriorly, with one pair of lobes—the median—present, with a marginal fringe composed of long spiniform setae, and with two dorsal longitudinal tracts of setae merging in the pygidial fringe at the margin at a distance from the median lobes equal to the breadth of a median lobe and diverging backwards to considerably anterior to the operculum.

Genotype *Operculaspis crinitus*, sp. n.

In the shape of the covering scale from which the larval pellicles are absent and in the disposition of the male scales, situated often underneath the female puparia, this genus resembles *Conchaspis* but its affinities are entirely with such genera as *Selenaspis* and *Pseudaonidia*.

***Operculaspis crinitus*, sp. n. (fig. 13).**

Scale of adult ♀ white or greyish white, subcircular to broadly ovate, very moderately convex, very firm, rather brittle and thick; ventral scale present, closely adhering to bark of host plant, papery in texture in the young stage but hardening with age, and in mature individuals of about same thickness as dorsal scale. No trace of larval pellicles. Greatest diameter approximately 3 mm.

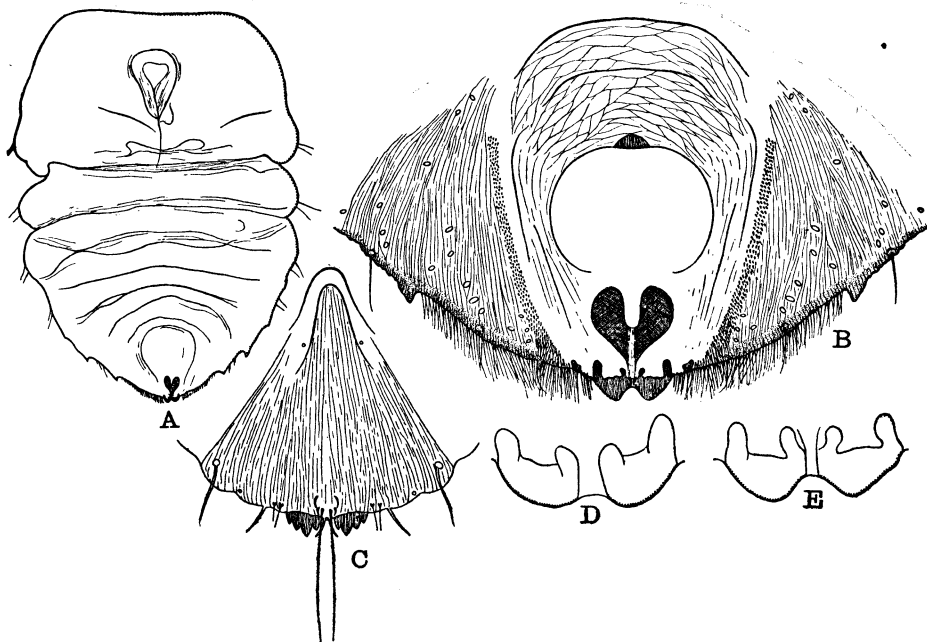


Fig. 13. *Operculaspis crinitus*, Laing, gen. et sp. n.: a, adult ♀; b, pygidium of same; c, pygidium of larva; d, e, slight variations in shape of median lobe of adult ♀.

Adult ♀ dark brown, rigid, strongly chitinised about a quarter longer than broad; broad anteriorly, narrowing almost to a point posteriorly; frontal margin slightly concave, cephalic portion of body almost rectangular; a deep marginal constriction between prothorax and mesothorax where greatest breadth is; abdominal segments distinct. Long slender setae at intervals around margin. Antennae represented by three or four setae upon a minute tubercle. Both pairs of spiracles with minute parastigmatic pores like punctures just distinguishable in the hard chitin stretching in an irregular double line from the spiracles towards margin. Rostral setae very long. Dorsal pores minute, difficult to distinguish, present at least on anterior abdominal segments in transverse series; dorsal setae on abdominal segments also present. The two abdominal segments immediately anterior to pygidium with strong marginal spurs on posterior edges. Pygidium with a single pair of median lobes, fused basally, broad, shallow, rounded apically, deeply incassated and thickened at both the outer and inner basal margins. Arising from between the lobes and running backwards into the pygidium is a prominent Y-shaped or bicornuate strongly chitinised process. Pygidial margin crenulated, closely set with a fringe of long slender setae. At a distance of slightly less than the breadth of a median lobe, on each side, dorsally arises a narrow spiniferous tract, confluent with pygidial fringe

setae at margin and running backwards in a slightly curved oblique direction towards anterior margin of pygidium, the spines decreasing in length until they become very short anteriorly. Ventral surface with a large subcircular median opening, lying immediately in front of the bicornuate process, and closed by an operculum which is hinged posteriorly. No circumgenital pores. Length approximately 1.7 mm.; breadth 1.3 mm.

The earlier stages before extreme chitinisation sets in show the long slender setae at frequent intervals around margin and scattered over the surface, the extreme length of rostral filaments, the distinct parastigmatic pores of about 20 stretched out towards the margin in an irregular row, the dorsal transverse series of circular pores on abdominal segments, and the conspicuous dorsal pygidial pores. The bicornuate chitinous process is not developed.

TANGANYIKA TERRITORY: Ngerengere, on a forest tree (*A. H. Ritchie*).

***Lepidosaphes marshalli*, sp. n. (fig. 14).**

Female puparium pale brown with usually a narrow paler margin, mytiliform, slightly curved, very broad posteriorly, the greatest breadth often approximately two-thirds the length; exuviae of a more yellow tint than the scale. Average length 3 mm.; breadth 2 mm.

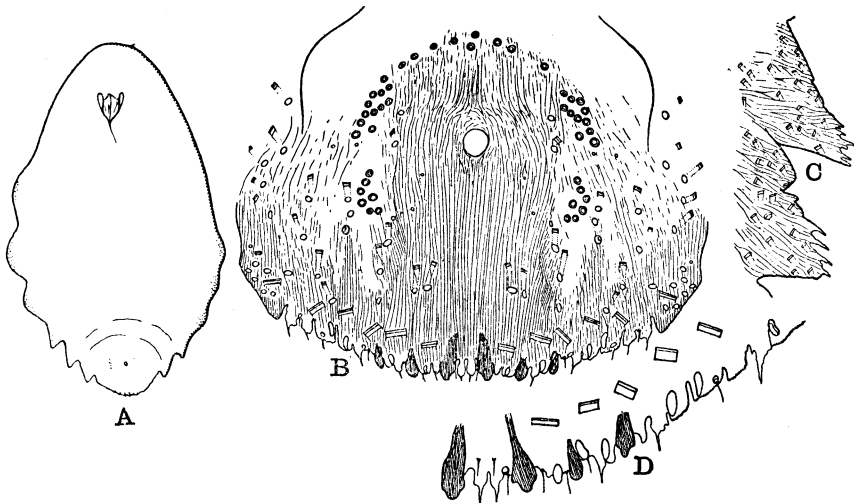


Fig. 14. *Lepidosaphes marshalli*, Laing, sp. n.: a, adult ♀; b, pygidium; c, lateral processes; d, margin of pygidium.

Adult ♀ longish oval, thoracic and abdominal segments well demarked, the posterior two abdominal segments produced laterally into unguulate processes armed with spiniform squamae; greatest breadth across first abdominal segment. Antennae composed of small tubercles with four long setae. Anterior spiracles with a crescent-shaped series of six to seven pores, which are absent from posterior pair. Marginal area of abdominal segments with numerous ducts. Pygidium very evenly rounded, with three pairs of lobes; median lobes rather widely separated, minutely notched on both outer and inner margins and extending basally rather deeply into the pygidium; the first lateral pair with the inner margin straight, the outer curved; the second pair more or less parallel-sided, the apex rather sharply oblique. A pair

of ligulate squamae produced at the tip into spiniform processes, between the median lobes and about six similar squamae beyond the third pair of lobes; in the intervals between the median and second and between the second and third pairs of lobes a spiniform squama and a broad shallow gland prominence. The median pair of processes beyond the third pair of lobes very broad, shallow, with the margin serrated, and bearing a large gland opening; margin beyond the sixth process projecting and bearing a gland orifice. Spines in the usual positions. Submarginally on either side of median line are six pairs of large tubular glands; dorsal gland openings numerous. Circumgenital pores in five groups with the formula 9:12:8:11:8. Total length 1.6 mm.; breadth 1 mm.

NEW ZEALAND: Wellington, Day's Bay, on *Freycinetia banksi* (Dr. G. A. K. Marshall).

Resembles *L. unguata*,<sup>1</sup> Green, in the presence of the unguate marginal abdominal processes, but otherwise amply distinct.

**Lepidosaphes diplasia**, sp. n. (fig. 15).

Scale snowy white, more or less straight, narrow in front, widening very gradually posteriorly, rather convex; larval exuviae varying from pale brown or slightly orange to dark brown through an admixture of extraneous matter from the stem of the plant.

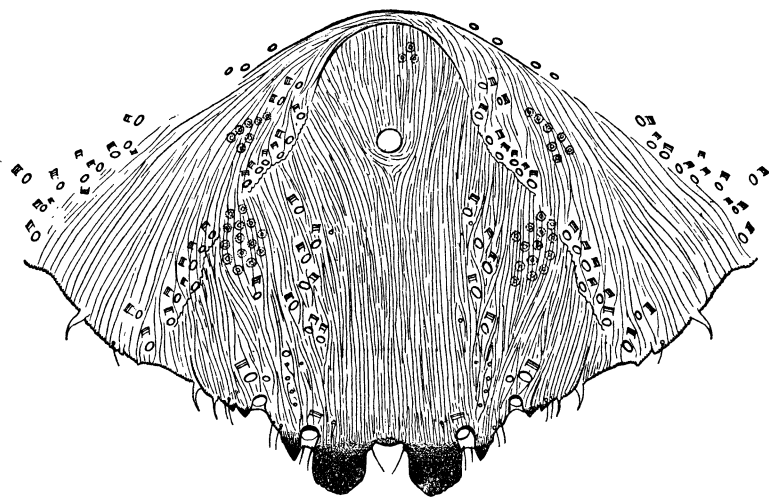


Fig. 15. *Lepidosaphes diplasia*, Laing, sp. n., pygidium of adult ♀.

Adult ♀ longish ovate, rather narrow in front, widening out gradually posteriorly till the greatest width is reached at a distance of two-thirds the length; greatest width from 2 to 2½ times length. Antennal tubercle with one very long curved seta. Anterior spiracles situated at the same level as apex of rostrum with from three to four parastigmatic pores at anterior outer angle; posterior spiracles without parastigmatic pores. Dorsal gland pores numerous, especially on marginal area, and reach forward to midway between anterior and posterior spiracles. Slightly posterior to anterior spiracles and lying on either side of ventral middle line are



two groups of small, sharp-pointed tubercles. Pygidium with median lobes very prominent, separated by a distance subequal to breadth of a single lobe basally parallel-sided with apex rather flat or very low conical and serrated; second pair of lobes consisting of conical projections; a third pair of lobes represented by a very low and often inconspicuous bicuspid projection; the usual spiniform setae present; a spiniform squama in the first and second intervals and one beyond the bicuspid projection. Circumgenital pores in five groups according to the formula 14:6:2-3:5:12. Two marginal gland orifices situated one above the other in the first and second intervals. Dorsal gland pores of first series usually asymmetrical, from five to seven in number, in second series the posterior and anterior vary from five to eight, the third series with the posterior from six to eight, and the anterior more scattered of from four to six. Length 1.2 mm.; breadth 0.5 to 0.6 mm.

TANGANYIKA TERRITORY: Nzuki, Tabora Area, on bark of "Mzagazi" (*A. H. Ritchie*).

Near to *L. machili*, Mask., but that species has the puparium dark brown.

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