

## STUDIES OF THE COCCOIDEA

### 8. THREE NEW GENERA AND SIXTEEN NEW SPECIES OF ASPIDIOTINI

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#### SUMMARY.

**New generic names proposed in the Aspidiotini are** *Diaspidopus*, *Diastolaspis*, and *Neoclavaspis*. **Species described as new are** *Aspidiotus queenslandicus*, *Chrysomphalus trifasciculatus*, *Clavaspis quadriloba*, *Diaspidiotus evexus*, *Diaspidopus distinctus*, *Diastolaspis novata*, *Greeniella capitata*, *G. ornata*, *Monacodiella parva*, *Myrtophila pseudadnatae*, *Neoclavaspis duplex*, *Pseudotargionia asymmetrica*, *P. isaensis*, *Remotaspidotus albus*, *R. reconditus*, and *R. squamosus*. **Fourteen of these species are from Queensland, and one each from Northern Territory and Victoria.**

#### *Aspidiotus queenslandicus* n.sp.

*Locality and host*.—Queensland: Beenleigh, on *Acronychia laevis* Forst., May 1956.

*Habit*.—Insects mostly single on leaf surfaces. Female scale circular, 2.5 mm. diameter, dark fawn in colour. Pellicles orange coloured.

*Recognition characters*.—Adult female membranous, broadly turbinate, length of slide specimen 1.8 mm., width 1.2 mm. Pygidium large, apex broadly rounded, with three pairs of parallel lobes. Median lobes longer than wide; margins subparallel but each with a large subapical indentation; apex rounded; separated by slightly more than a lobe's width. Second pair of lobes comparable to but smaller than the median lobes, with the subapical indentation less pronounced, separated by slightly more than a median lobe's width. Third pair of lobes similar to but slightly smaller than the second pair and separated by twice a second lobe's width. Basal scleroses not prominent, as long as but narrower than the median lobes. Paraphyses absent. Plates large and conspicuous; two in the median interlobal space, elongate, as long as the lobes, apically fimbriate; two in the first interlobal space and three in the second similar to those in the median space except the branching tending to become lateral; seven plates anterior to the third lobe, broad, the posterior five with latero-apical fimbriation, anterior two smaller and less branched, the posterior branch on all or most plates acicular and

(Figs. 1 and 2.)

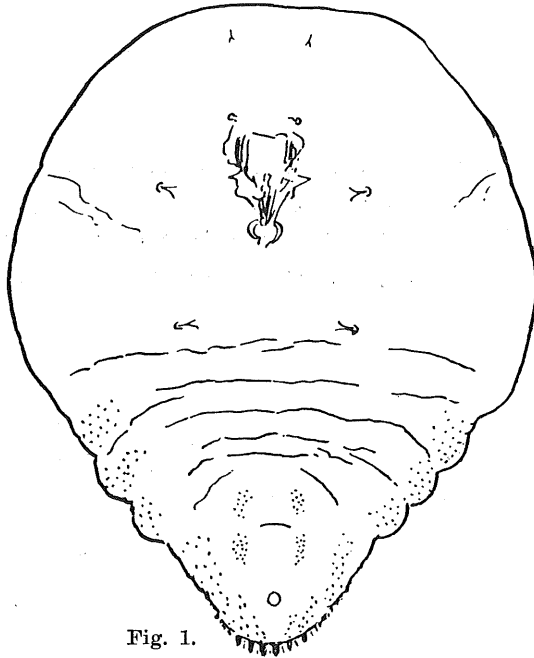


Fig. 1.

*Aspidiotus queenslandicus*. Outline of Body. ( $\times 50$ .)

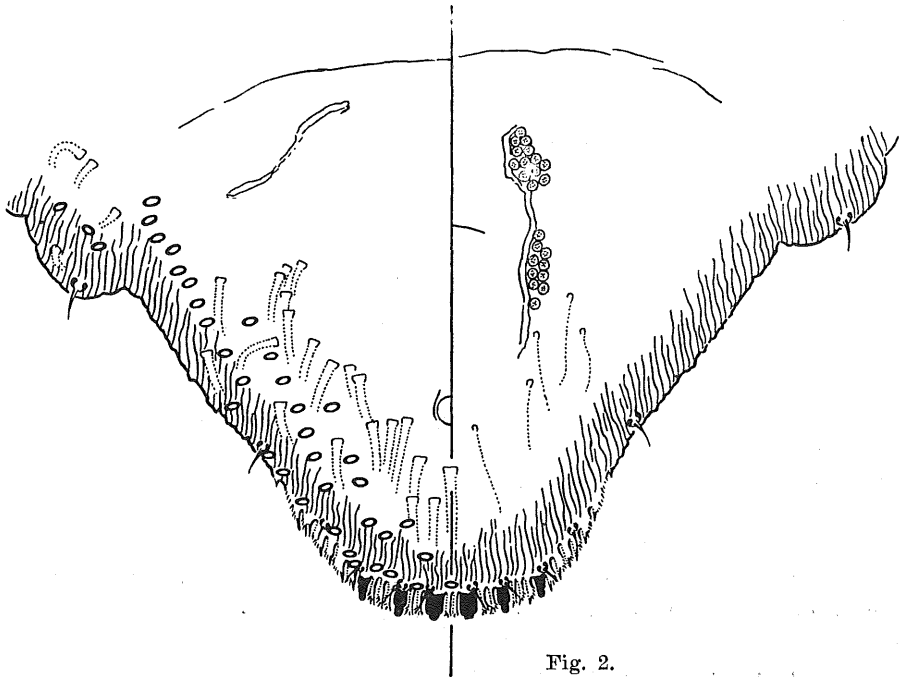


Fig. 2.

*Aspidiotus queenslandicus*. Enlargement of Pygidium. ( $\times 185$ .)

separated by a deep incision. Spines normal. Dorsal macroducts moderately long, three-quarters of the distance from the median lobes to the anal opening; one in the median area; three or four in the first duct furrow; seven in the second furrow; 10 in the third furrow; 12 in the fourth furrow; nine or 10 submarginally on the fourth abdominal segment; 12 to 14 on the third segment; and up to 16 on the second segment. Perivulvar pores in four groups, 12 to 14 in the anterior laterals and seven to 10 in the posterior laterals. Anal opening of moderate size, oval, four to five times its long axis from the median lobes. Vulva twice the distance of the anal opening from the lobes.

*Notes.*—In some specimens the plates in the median, first and second interlobal spaces are slightly longer than the median lobes. Dorsal macroducts on the prepygidial segments vary in number; there may be none or up to seven on the first abdominal segment. A small dome-like lateral tubercle may be present and the anterior pygidial margin may have some scattered small serrations. The basal scleroses are sometimes indistinct.

This species has some of the features of an *Octaspidiotus* but the absence of the fourth lobe excludes it from this genus. In the genus *Aspidiotus* it has affinity with *A. destructor* Newstead but differs in having macroducts on prepygidial abdominal segments.

Type Reg. No. T.5692 and paratypes Nos. T.5693 to T.5695 in the Queensland Museum.

***Chrysomphalus trifasciculatus* n.sp.**

(Figs. 3 and 4.)

*Locality and host.*—South Queensland: on *Eucalyptus* sp., Mar. 145.

*Habit.*—Insects numerous on bark of the tree trunk. Female scale circular, 1.5–2.0 mm. diameter, light fawn, pellicles orange coloured.

*Recognition characters.*—Adult female broadly pyriform to subreniform, membranous, length 1.0 mm., width 1.0 mm. Pygidium demarcated by dorsal longitudinal fingerprint thickening; apex broadly rounded, with three pairs of lobes and a slight marginal sclerotization in the position of the fourth lobe. Median lobes wider than long, separated by one-third of a lobe's width; inner margins subparallel, outer margins curved, apex broadly curved and entire. Second pair of lobes similar to but smaller than the median lobes and separated from them by one-third of a median lobe's width. Third pair of lobes smaller, triangular, apically pointed. Basal scleroses absent. Paraphyses in the median, first and second interlobal areas; short in the median area; twice as long as the median lobes in the first interlobal area, the inner wider than the outer and slightly longer; only the inner paraphysis distinct in the second interlobal area, as long as the median lobes. Plates present in the median, first, second

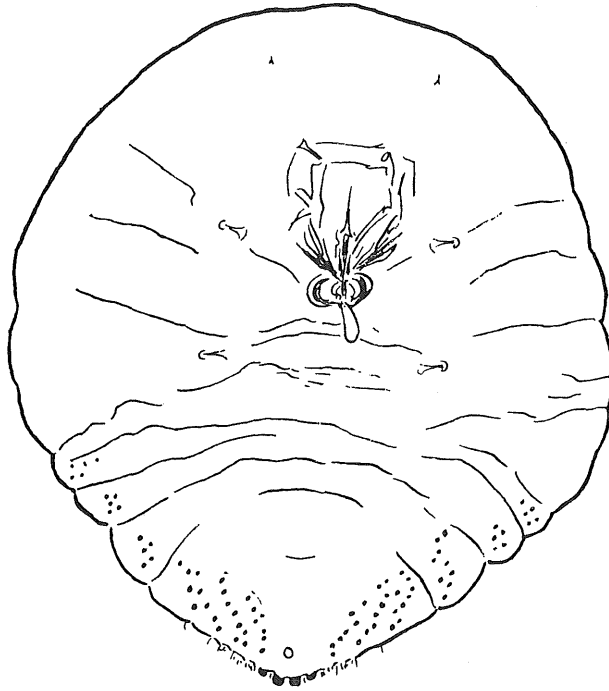


Fig. 3.

*Chrysomphalus trifasciculatus*. Outline of Body. ( $\times 120$ .)

and third interlobal spaces; two plates in the median space, slender and apically bifid; two plates in the first space, apically branched; three plates in the second space, the branching more lateral; three plates in the third space, more robust and branched. Dorsal macroducts more than three times the distance from the median lobes to the anal opening in the first duct furrow; duct heads moderately broad; orifices moderately large in segmental series, five or six in the first duct furrow between the paraphyses, seven in the second furrow, eight in the third furrow, nine on the fourth abdominal segment, five or six on the third segment and up to five on the second segment, with shorter and smaller ducts extending anteriorly near the margin. Median and lateral pygidial scars present but not prominent, paravulvar folds not strongly developed. Perivulvar pores absent. Anal opening small, slightly more than its own diameter from the bases of the median lobes, with a distinct anal groove. Vulva six times the distance of the anal opening from the median lobes.

*Notes.*—A small short thoracic tubercle with jagged apex discernible in some specimens. The sclerotization in the position of the fourth lobe may be indistinct; when present, the margin may be finely serrate. The number of ducts on prepygidial abdominal segments may vary from one to six on the second segment, from six to nine on the third segment and from seven to nine on the fourth segment. The outer paraphysis in the second interlobal area may sometimes be evident but is always smaller than the inner paraphysis.

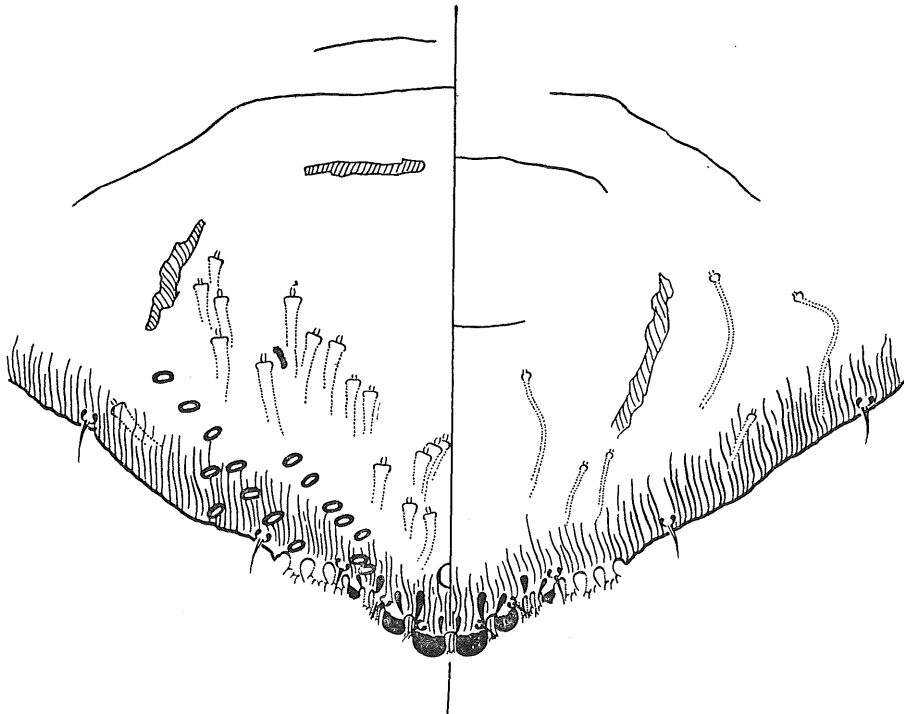


Fig. 4.

*Chrysomphalus trifasciculatus*. Enlargement of Pygidium. ( $\times 400$ .)

This species resembles *C. bifasciculatus* Ferris but differs in the absence of perivulvar pores and the presence of groups of dorsal ducts on three prepygidial abdominal segments.

Other material considered to be this species is labelled in the C.S.I.R.O. collection, Canberra, as follows (a) "A. (*Aspidiotus*) *aurantii*? Mask., Blue Gum, Wyong, McPherson, W.W.F." and (b) "*Aspidiotus fuscus* Crookwell, N.S.W."

Type Reg. No. T.5696 and paratypes Nos. T.5697 to T.5699 in the Queensland Museum.

#### ***Clavaspis quadriloba* n.sp.**

(Figs. 5 and 6.)

*Locality and host*.—Queensland: Yarraman, on *Owenia venosa* F. Muell., May 1947.

*Habit*.—Insects sparse on twigs of host, details of scale not available.

*Recognition characters*.—Adult female broadly turbinate, membranous, length 1.0 mm., width 0.75 mm. Pygidium large, apex obtuse with four pairs of lobes. Median lobes slightly convergent, almost contiguous apically, outer

margins indented, apex rounded. Second pair of lobes similar to but much smaller than the median lobes, separated from these by half a second lobe's width. Third pair of lobes smaller, as triangular points, separated from the second by almost a second lobe's width. Fourth pair of lobes subconical points, separated from the third lobes by more than the distance of the third from the median lobes. Basal scleroses arising from the inner basal part of the median lobes, longer than the lobes. Paraphyses in the first and second interlobal areas; the inner paraphysis of the first area more than twice the length of the median lobes and apically enlarged, the outer paraphysis indistinct, the

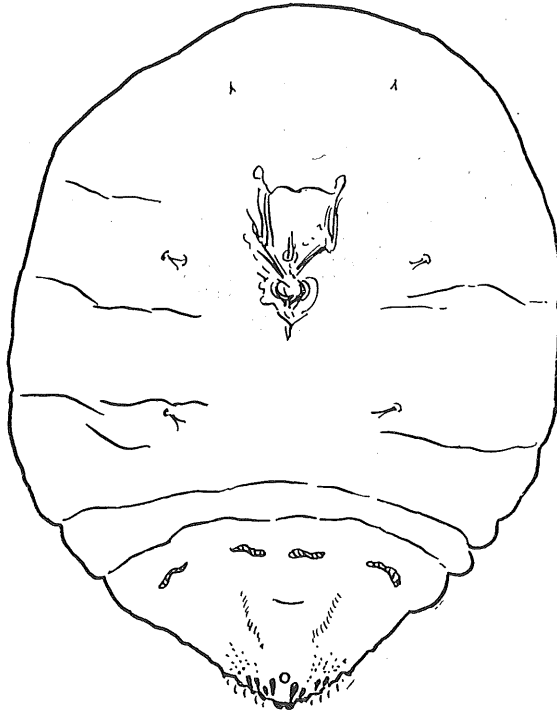


Fig. 5.

*Clavaspis quadriloba*. Outline of Body. ( $\times 95$ .)

pair in the second area equal in length, longer than the median lobes. Plates in the first, second and third interlobal spaces; two in the first space, slender, as long as the second lobes; two in the second space, longer than the lobes; three in the third space, broad and branched. Spines adjacent to the median lobes shorter than the lobes, other spines longer. Dorsal macroducts long, slender, reaching almost to the vulva in the first furrow; orifices in segmental series. Perivulvar pores absent. Median and lateral scars distinct. Paravulvar folds present but not prominent. Anal opening small, within the apices of the basal scleroses. Vulva five times the distance of the anal opening from the median lobes.

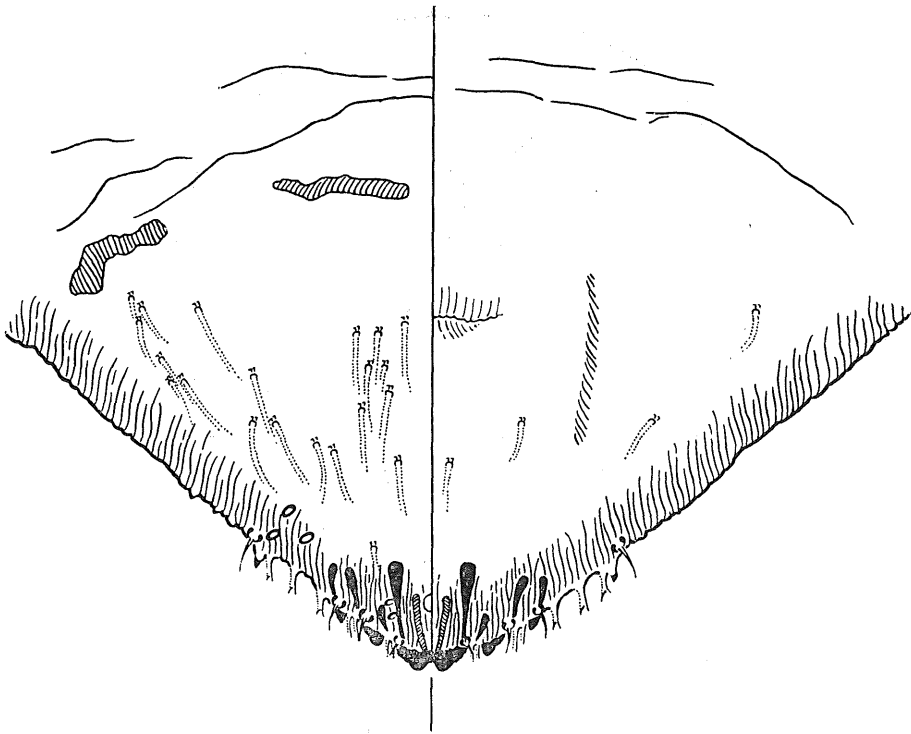


Fig. 6.

*Clavaspis quadriloba*. Enlargement of Pygidium. ( $\times 297$ .)

*Notes*.—The basal scleroses are more or less in the position of median paraphyses but they appear to be continuations of the median lobes.

This species has affinity with *C. subfervens* (Green) and *C. dentata* Ferris, but differs from *C. subfervens* in having four pairs of lobes and from *C. dentata* in having larger and branched plates in the third interlobal space.

Type Reg. No. T.5700 and paratype No. T.5701 in the Queensland Museum.

#### ***Diaspidiotus evexus* n.sp.**

(Figs. 7 and 8.)

*Locality and host*.—Northern Territory: Alice Springs, on *Ercmophila sturtii* R.Br., May 1954 (L. S. Smith).

*Habit*.—Insects mostly single on leaves and twigs. Female scale circular, 0.85 mm. diameter, dull white to light fawn colour, pellicles central, dark orange.

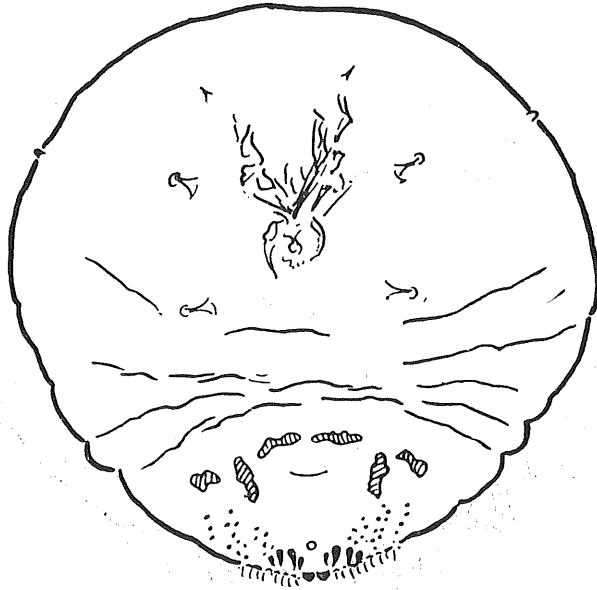


Fig. 7.

*Diaspidiotus evevus*. Outline of Body. ( $\times 145$ .)

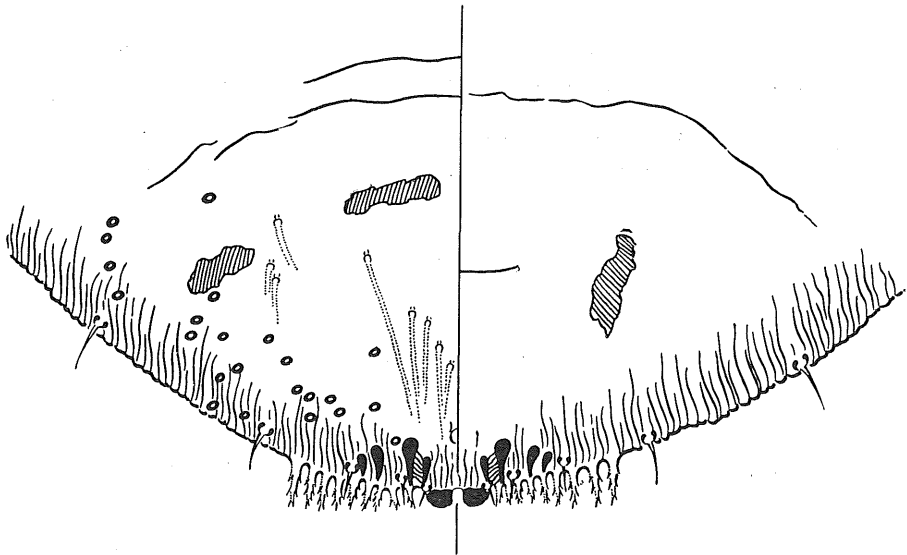


Fig. 8.

*Diaspidiotus evevus*. Enlargement of Pygidium. ( $\times 335$ .)



*Recognition characters.*—Adult female circular to broadly oval, membranous, length of slide specimen 0.7 mm., width 0.6 mm. Pygidium comparatively large, wide, apex broadly rounded with median pair of lobes only. Lobes as wide as or slightly wider than long, separated by one-third of a lobe's width; inner and outer margins almost straight, subparallel; apex as a rounded point between two indentations. Basal scleroses absent. Paraphyses in the first and second interlobal areas; the pair in the first interlobal area elongate, longer than the lobes, the outer with the apex slightly enlarged; paraphyses in the second interlobal area shorter than those in the first interlobal area. Plates in the first, second and third interlobal spaces totalling nine, longer than the lobes, longest anteriorly, of similar general shape, apices pointed, several short sharp lateral branches. Spines adjacent to the lobes as long as the lobes, other pygidial spines longer. Dorsal ducts long and slender, in the median area three times the distance of the anal opening from the bases of the lobes, heads small; duct orifices normal, in segmental series, two in the median interlobal area, two or three in the first interlobal area, six to eight in the second duct furrow and eight to 10 in the third furrow. Perivulvar pores absent. Paravulvar folds, median and lateral dorsal scars prominent. Anal opening small, two-and-a-half to three times the length of the lobes from the bases of the lobes. A small dome-shaped process marginally on the thorax.

*Notes.*—In some specimens the median lobes may be apically bluntly rounded with little indication of the indentations. This species morphologically has some resemblance to *D. liquidambaris* (Kotinsky), but differs from that species in general shape and the more robust plates which also have greater branching.

Type Reg. No. T.5702 and paratypes Nos. T.5703 and T.5704 in the Queensland Museum.

#### **DIASPIDOPUS** new genus.

*Generic type.*—*Diaspidopus distinctus* n.sp.

*Characters.*—Adult female subcircular, with a deep thoracic constriction. Pygidium with median lobes widely separated. Basal scleroses, paraphyses and plates absent. Elongate spine-like structures between the lobes. Groups of very large ducts or megaducts opening on pygidial apex. Dorsal ducts of moderate length. Perivulvar pores absent. Anal opening small. Pygidial margin serrate. Anterior spiracles with associated pores.

*Notes.*—This genus has relationship to *Pseudotargionia* and related genera with a deep thoracic constriction and heavy sclerotization, but the very large and long ducts or megaducts are unique.

**Diaspidopus distinctus** n.sp.

(Figs. 9 and 10.)

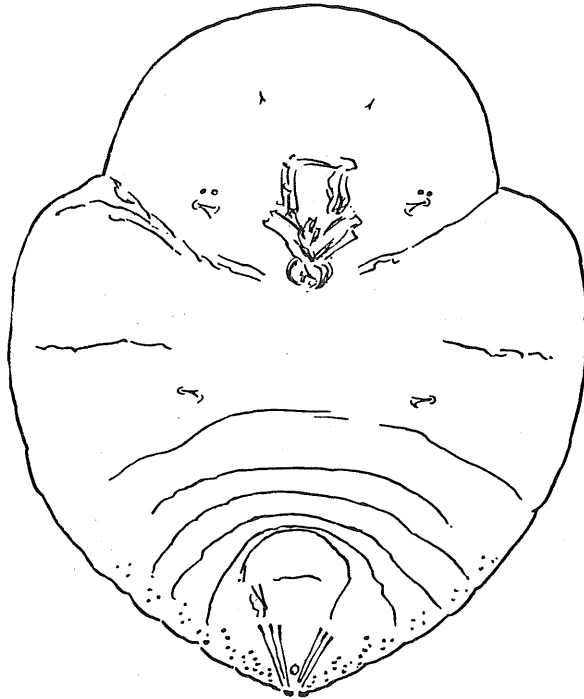


Fig. 9.

*Diaspidopus distinctus*. Outline of Body. ( $\times 120$ .)

*Locality and host*.—Queensland: Glenmorgan, on *Homoranthus virgatus* A.Cunn. ex Schau., July 1957 (A.W.S. May).

*Habit*.—Insects clustered in axils of the small leaves amongst loose cottony filaments. Scale of adult female circular, white, embedded in the mealy filaments, up to 0.8 mm. diameter, surmounted by orange coloured pellicles, loose meal up to 2.0 mm. diameter.

*Recognition characters*.—Adult female subcircular, with a large thoracic constriction; anterior portion dome-shaped; posterior portion much wider, almost three-quarters of a semicircle; length of slide specimen 0.6 mm., width 0.5 mm. Pygidium widely obtuse with median pair of lobes only. Lobes wider than long, inner margin basally constricted, outer margin basally enlarged and merging into pygidial serrations; apically broadly rounded; separated by one-and-a-half times a lobe's width. Basal scleroses, paraphyses and plates absent. A pair of elongate spine-like structures evenly spaced between the lobes, longer than the lobes, other spines shorter than the lobes. Two groups of three very large ducts or megaducts as long as the vulva is distant from the lobes, opening evenly by a jet-like orifices between the lobes, apical thickening surrounding orifices extends back along the ducts; normal

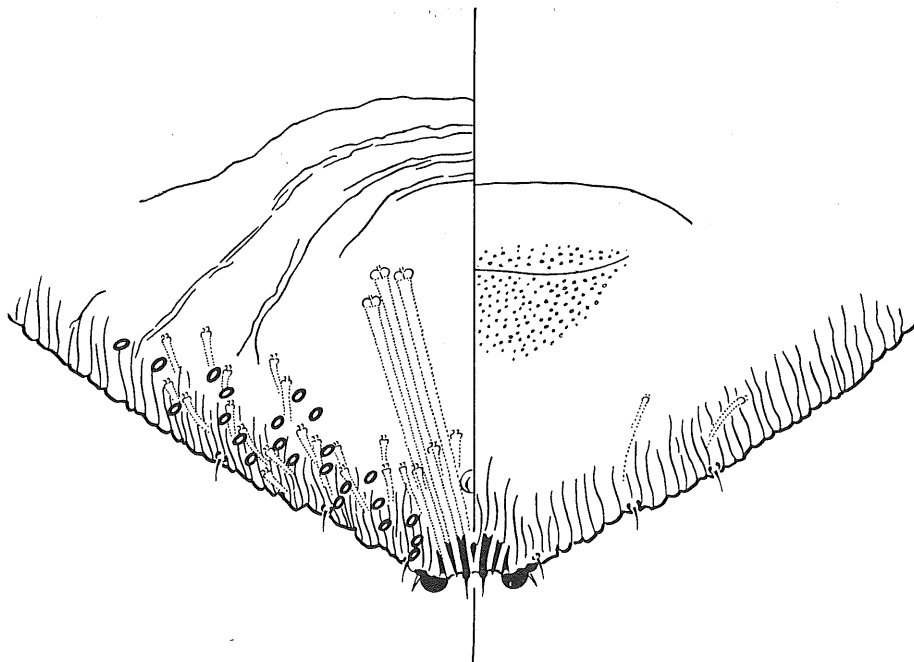


Fig. 10.

*Diaspidopus distinctus*. Enlargement of Pygidium. ( $\times 315$ .)

dorsal ducts numerous, in the median region exceeding the distance to the anal opening, orifices oblique, two or three on each side of the median interlobal area, three in the first duct furrow; five or six in the second furrow with three in an intermediate row; five in the third furrow with three in an intermediate row; some ducts on other abdominal segments and becoming smaller anteriorly. Perivulvar pores absent. Anal opening small, oval, two-and-a-half times the length of the lobes from the lobes. Vulva very wide, three times the distance of the anal opening from the lobes. Pygidial margin irregularly serrate. Anterior spiracles with two or three associated pores. Pygidium ventrally with a stippled sclerotization. Body of mature females heavily sclerotized.

*Notes*.—In some specimens a lobe-like structure occurs in the position of the second lobes but this is part of the marginal serration. The basal enlargement of the outer margin of the lobe may give the appearance of a large lateral indentation. Some specimens have a sharp, short but wide lateral thoracic spur. The rather large median ducts or megaducts possibly produce the mealy filaments associated with these insects. These ducts are unique in the family Diaspididae; otherwise the species has some relationship to the *Pseudaonidia* group. The second-stage female has two pairs of megaducts.

Type Reg. No. T.5705 and paratypes Nos. T.5706 to T.5708 in the Queensland Museum.

**DIASTOLASPIS** new genus.

*Generic type.*—*Diastolaspis novata* n.sp.

*Characters.*—Adult female with a deep thoracic constriction. Pygidium with median pair of lobes only; pygidial margin with serrations. Paraphyses in the first and second interlobal areas. Plates in the first, second and third interlobal spaces, mostly branched. Dorsal ducts long and slender. Perivulvar pores absent. Anal opening small. Anterior spiracles without associated pores. Pygidium dorsally with reticulate sclerotization.

*Notes.*—This genus has close affinity with *Pseudotargionia* but differs in having long ducts, a toothed pygidial margin, no pores associated with the anterior spiracles, contiguous median lobes and four longitudinal dense bands ventrally on the pygidium.

**Diastolaspis novata** n.sp.

(Figs. 11 and 12.)

*Locality and host.*—Victoria: Lake Hattah, on *Eucalyptus* sp., 1916.

*Habit.*—Insects scattered on foliage. Scale of adult female circular, diameter 1.5 mm., dark fawn in colour with a light fawn margin. First pellicle central, dark olive green; second pellicle covered with a pale suffusion.

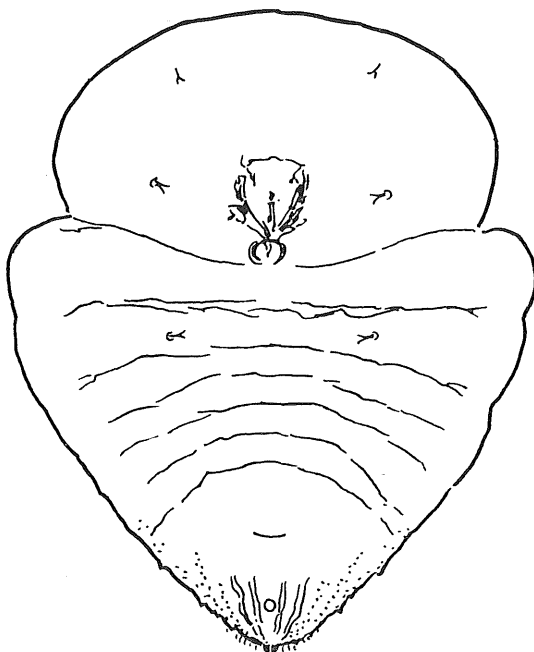


Fig. 11.

*Diastolaspis novata.* Outline of Body. ( $\times 70$ .)

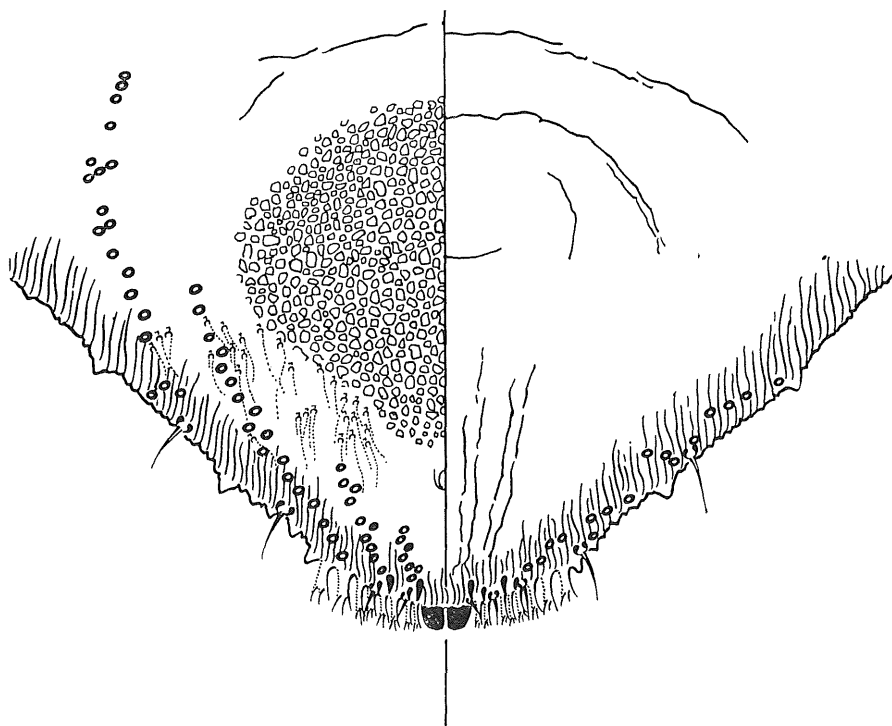


Fig. 12.

*Diastolaspis novata*. Enlargement of Pygidium. ( $\times 200$ .)

*Recognition characters*.—Adult female large, length of slide specimen 1.2 mm., width 1.0 mm., with a deep thoracic constriction; anterior portion dome-shaped; posterior portion sub-triangular with lateral sides slightly curved. Pygidium large, apex broadly rounded, with median pair of lobes only but margin with sclerotized teeth. Lobes as long as or slightly longer than wide, contiguous, outer margins convergent to each other, inner and outer margins simple, apex broadly rounded. Dense lobe sclerotization grades into body but definite basal scleroses absent. Paraphyses as small uneven pairs in the first and second interlobal areas. Spines adjacent to the lobes shorter than the lobes, other spines much longer. Plates in the first, second and third interlobal spaces; two plates in the first interlobal space, as long as the lobes, slender, branched; three plates in the second interlobal space, longer than the lobes, anterior plate slender, others variously branched; three plates in the third interlobal space apically branched, longer than the lobes, the posterior one slender, the other two wider. Dorsal ducts long, reaching beyond the anal opening in the median area, slender, heads small, orifices in segmental series with some intermediate orifices; six or seven orifices in the first duct furrow, 10 to 14 in the second, 18 to 20 in the third. Perivulvar pores absent. Anal opening small, oval, five times length of lobes from the bases of the lobes

Pygidium ventrally with four longitudinal scars radiating from the apex, dorsally with a reticulate sclerotization. Body of mature specimens heavily sclerotized. Anterior spiracles without associated pores.

*Notes.*—Pygidial segments, particularly 6 and 7, may have a pronounced sclerotized tooth with intervening serrations. The lobes may be so close as to appear yoked basally. The convergence of the outer margins of the lobes may give the lobes themselves the appearance of apical convergence. The anterior paraphysis in each interlobal area may be small and not obvious as a paraphysis.

Type slide and unmounted material in C.S.I.R.O. collection, Canberra; paratypes Reg. Nos. T.5709 and T.5710 in the Queensland Museum.

***Greeniella ornata* n.sp.**

(Figs. 13 to 15.)

*Locality and host.*—Queensland: Nambour, on *Callistemon salignus* (Sm.) DC., July 1956 (W.A. Smith.)

*Habit.*—Insects common, mostly lining the midrib of leaves. Scale of adult female circular, 0.9 mm. diameter, convex, black with margin dark fawn; second pellicle dark brown to black, completely covering adult female; first pellicle black, central, with a series of pale lateral filaments, and a pair dorsally.

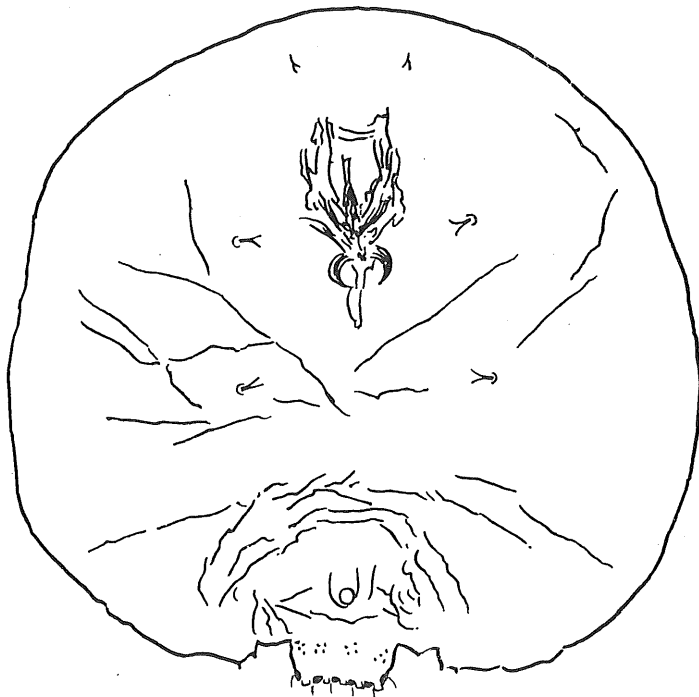


Fig. 13.

*Greeniella ornata.* Outline of Body. ( $\times 120$ .)

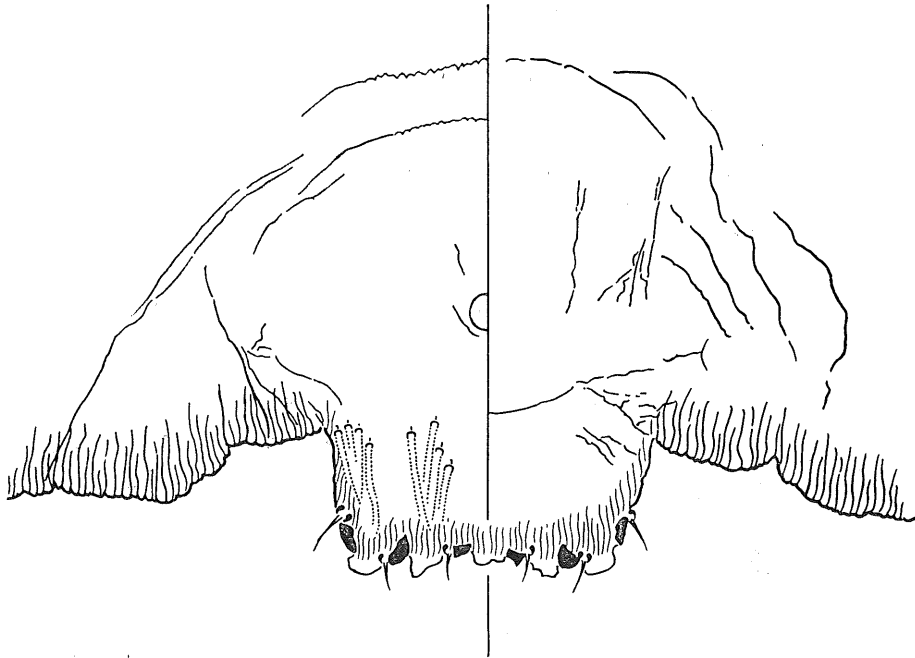


Fig. 14.

*Greeniella ornata*. Enlargement of Pygidium. ( $\times 330$ .)

*Recognition characters*.—Adult female membranous, circular except posteriorly, length of slide specimen 0.7 mm., width 0.7 mm. Pygidium with sides posteriorly convergent, apex truncated. Three pairs of irregular lobes approximately evenly spaced, the third pair anterior to the latero-posterior angles of the pygidium. Basal scleroses and paraphyses absent. Derm between the lobes irregular and not as normal plates. Spines prominent. Ducts long and slender, four in the first duct furrow, four or five in the second furrow; orifices at or near the margin. Anal opening round, five to six times its diameter distant from posterior margin. Vulva posterior to the anal opening. Perivulvar pores absent.

Second stage female broadly oval. Pygidium rounded with four pairs of lobes. Median lobes less than half as wide as long, margins entire and subparallel, apex rounded, separated by slightly more than a lobe's length. Second pair of lobes similar to the median lobes but twice as wide, separated from the median by a lobe's length. Third pair of lobes large, longer than the second pair, three times wider than long, margin finely serrate, separated from the second by the length of the latter. Fourth pair of lobes twice as wide as long, triangular, margin very finely serrate, separated from the third, half the width of the fourth. Basal scleroses absent. Paraphyses as an uneven pair in the second interlobal area, elongate. Plates in the median, first, second and third interlobal spaces. Two plates in the median space, simple,

slightly longer than the lobes; two plates in the first space, similar to those in the median space but apically slightly dilated; three plates in the second space, apically branched, three plates in the third space, slightly apically enlarged or branched; one or two small derm processes anterior to the fourth lobe and an uneven pair on the posterior marginal angle of the fourth abdominal segment. Anal opening round, twice the length of the median lobes distant from the lobes and in the posterior angle of two longitudinal thickened folds. Ducts slender and long.

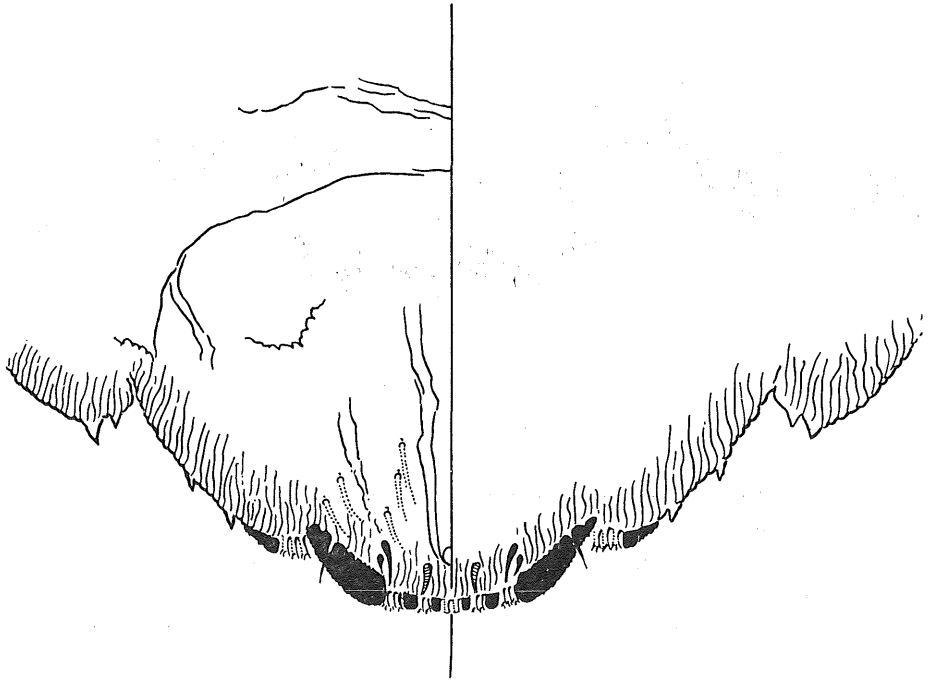


Fig. 15.

*Greeniella ornata*. Second-stage Female. Enlargement of Pygidium. ( $\times 350$ .)

*Notes*.—On some adult specimens there are a few small peg-like derm processes on the prepygidial abdominal margin. In the second-stage female there are sclerotic thickenings indicative of paraphyses in the first interlobal area.

This species resembles *G. truncata* (Green and Laing) but differs in the adult stage in that the pygidium is larger, prominent and set in a large body indentation. In the second stage *G. truncata* has more slender median lobes, the second lobes are large and not resembling the median and the third pair are only slightly larger than the second pair.

Type Reg. No. T.5711 and paratypes Nos. T.5712 to T.5714 in the Queensland Museum.



**Greeniella capitata** n.sp.

(Figs. 16 to 18.)

*Locality and host.*—Queensland: Brisbane River, on *Hemicyclia australasica* Muell. Arg., prior to 1900 (F. M. Bailey per L. S. Smith).

*Habit.*—Insects scattered along the midrib of leaves. Second pellicle circular, 0.75 mm. diameter, completely covering the adult body, convex, black with a slight greyish suffusion and a narrow fawn coloured margin; first pellicle central and black.

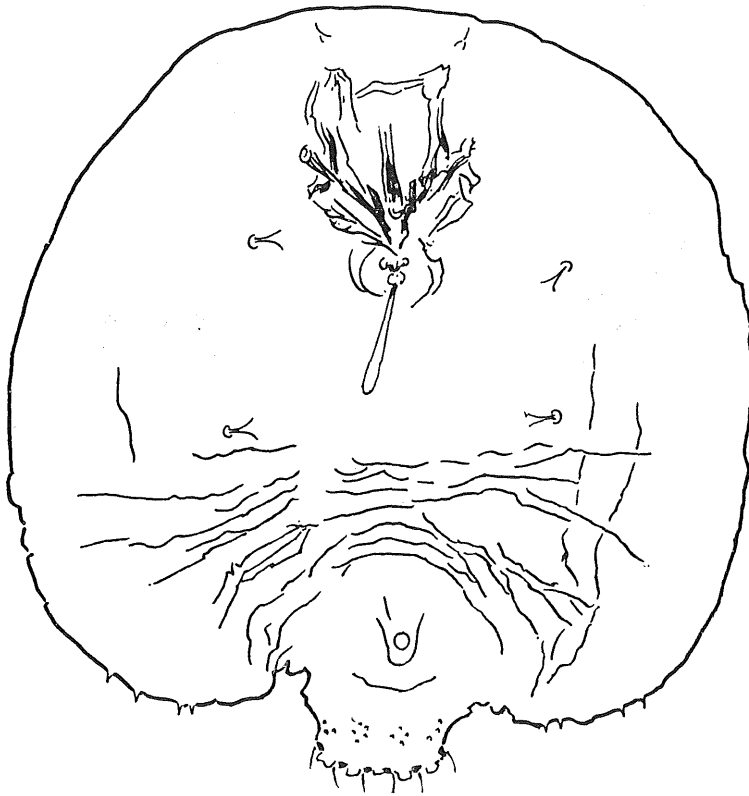


Fig. 16.

*Greeniella capitata.* Outline of Body. ( $\times 180$ .)

*Recognition characters.*—Adult female membranous, subcircular, length and width of slide specimen 0.5 mm. Pygidium with the lateral margins posteriorly convergent; apex truncated with three pairs of irregular and independent lobes, almost evenly spaced, the third pair anterior to the latero-posterior angles of the pygidium. Basal scleroses and paraphyses absent. Normal plates absent but irregular derm projections present in the median first and second interlobal spaces. Spines prominent. Dorsal ducts slender, reaching one-third of the distance from the lobes to the anal opening; six or

seven in the first duct furrow, three or four in the second; orifices at or near the margin. Anal opening round, seven times its diameter from the posterior margin. Vulva posterior to the anal opening. Perivulvar pores absent. Prepygidial abdominal segments with conical marginal processes.

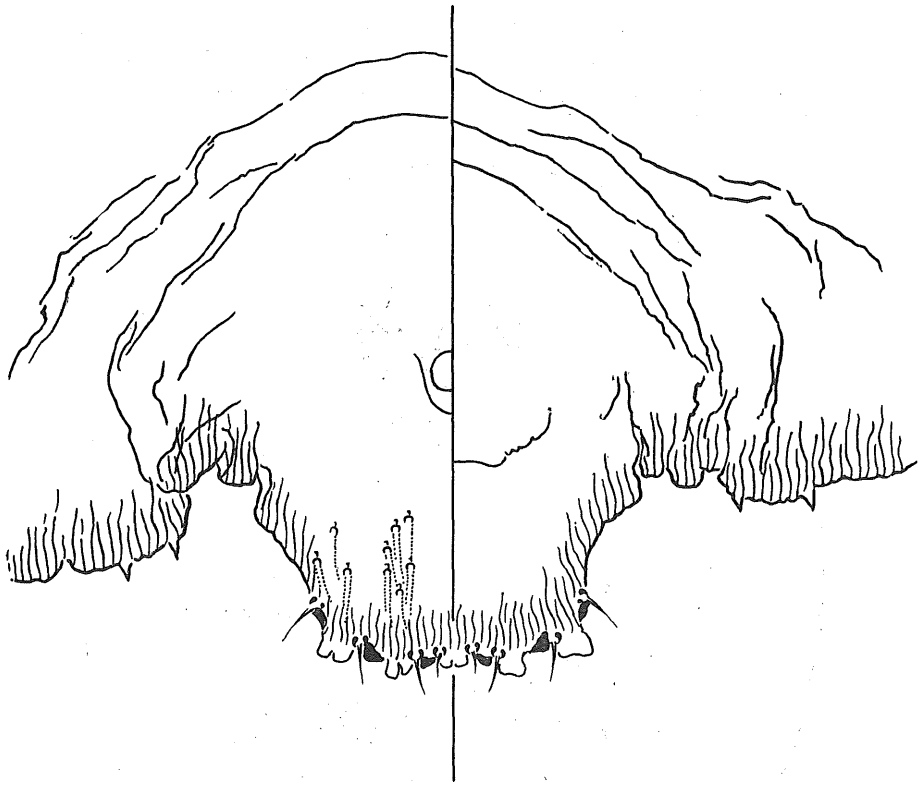


Fig. 17.

*Greeniella capitata*. Enlargement of Pygidium. ( $\times 390$ .)

Second-stage female broadly oval. Pygidium broadly rounded, with four pairs of lobes. Median lobes longer than wide, separated by a lobe's length; margins subparallel; apex rounded. Second pair of lobes as long as the median lobes and as wide or slightly wider than long; apex rounded; separated from the median lobes by slightly more than a median lobe's width. Third pair of lobes large, longer than the second pair, three times wider than long, margin finely serrate, separated from the second pair by the length of a second lobe. Fourth pair of lobes wider than long, triangular, margin finely serrate, separated from the third pair by one-half to two-thirds of a third lobe's width. Basal scleroses absent. Paraphyses single, on the inner side of the first and second interlobal areas. Plates in the median, first and second interlobal spaces; two in the median space, slightly longer than the lobes;

two plates in the first space, apex dilated; three plates in the second space, the median and third apically branched; three plates in the third space also with the median and third apically branched. Two derm processes occur beyond the fourth lobe and one posterior to the lateral angle of the fourth abdominal segment. Anal opening round, its own diameter distant from the median lobes and in the posterior angle of two longitudinal folds. Dorsal ducts slender and long.

The first-stage nymph has a reticulated pattern between the ocelli.

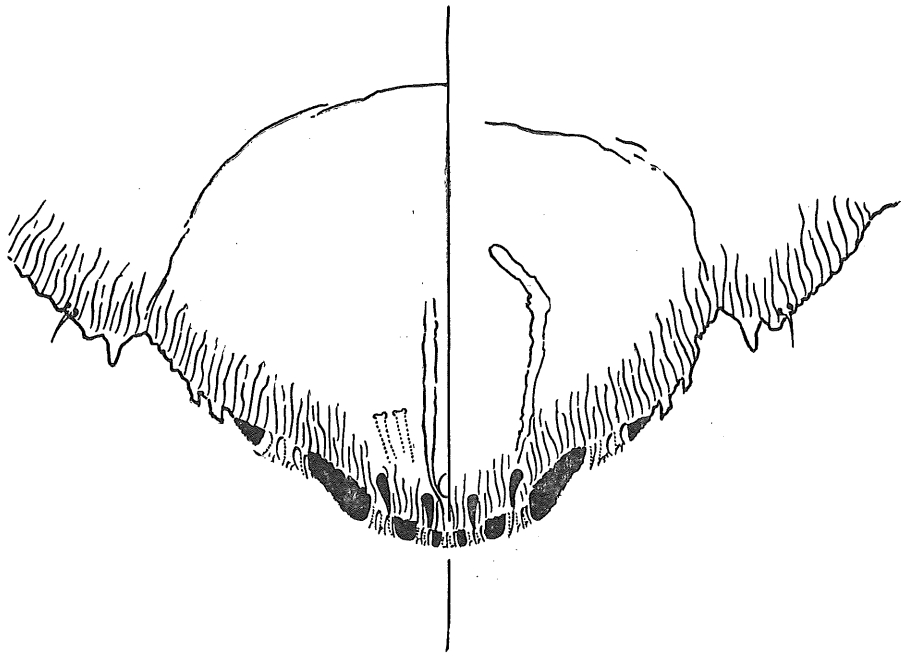


Fig. 18.

*Greeniella capitata*. Second-stage Female. Enlargement of Pygidium. ( $\times 385$ .)

*Notes.*—The specimens available did not show the pale filaments on the first pellicle normally occurring in this genus, possibly due to abrasion.

In some mature adult females the pygidium is in a large body indentation and the anal opening may be only six times its diameter from the posterior margin. The paraphysis sclerotization in the second-stage female is submarginal and may be apically divided.

The adult female of this species closely resembles that of *G. ornata*, but differs in that the latter has only four ducts in the first duct furrow and the marginal processes on the prepygidial abdominal segments are not noticeable or very small. The resemblance is also evident in the second-stage female

but the second pair of lobes are larger, the fourth pair of lobes are a greater distance from the third pair, the anal opening is closer to the lobes and the plates in the third interlobal space are more widely placed. The third lobes are marginally slightly concave or almost straight, while in *G. ornata* this margin is strongly convex.

Type Reg. No. T.5715 and paratypes Nos. T.5716 to T.5718 in the Queensland Museum.

***Monaonidiella parva* n.sp.**

(Figs. 19 and 20.)

*Locality and host.*—Queensland: Beerwah, on *Banksia robur* Cav., Apr. 1953 (R. P. Kleinschmidt).

*Habit.*—Insects sparse on the under leaf surface. Scales white, circular, 1.2 mm. in diameter.

*Recognition characters.*—Adult female broadly pyriform to subcircular, membranous, length of slide specimen 0.8 mm., width 0.7 mm. Pygidium apically broadly curved, with median pair of lobes only. Lobes slightly

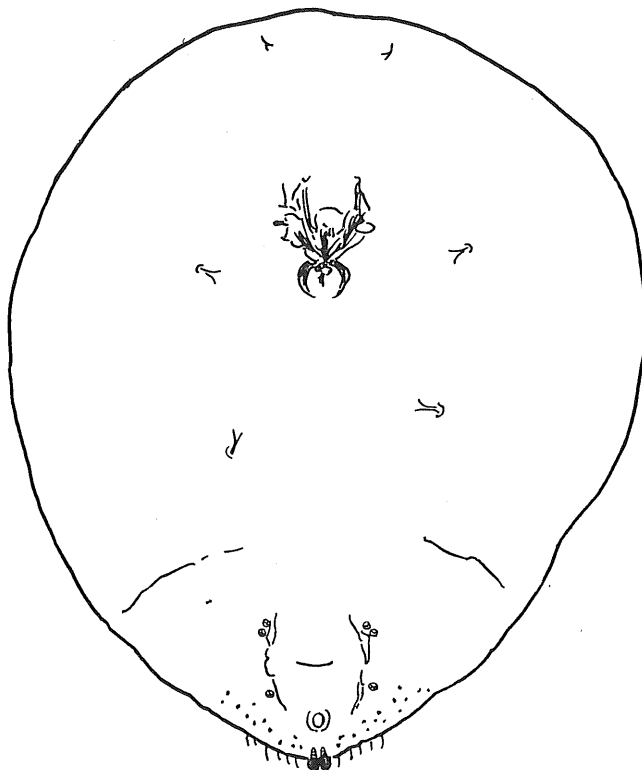


Fig. 19.

*Monaonidiella parva.* Outline of Body. ( $\times 120$ .)

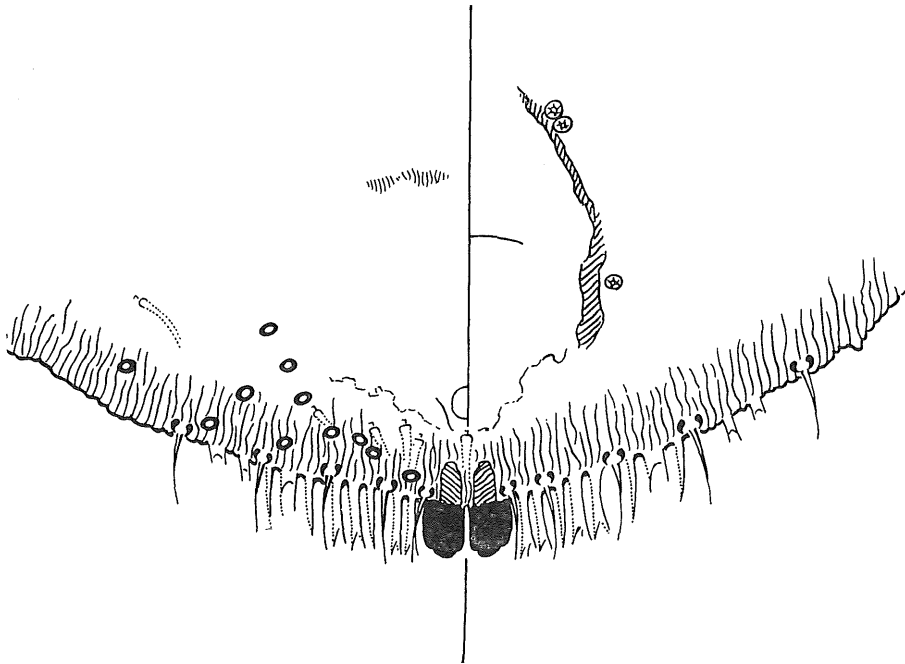


Fig. 20.

*Monaonidiella parva*. Enlargement of Pygidium. ( $\times 350$ .)

longer than wide, inner and outer margins subparallel, apex with two indentations. Basal scleroses as long as the lobes and one-half to two-thirds as wide. Paraphyses absent. Plates in the first, second, third and fourth interlobal spaces; two in the first space as long as or slightly longer than the lobes and slightly branched apically; three in the second space, first simple, the others apically branched; three in the third space and two in the fourth. Spines longer than the lobes. Dorsal ducts few, not in distinct segmental rows, length in the first furrow two-thirds of the distance between the lobes and anal opening; two or three in the first duct furrow; five in the second furrow with a few between the first and second furrows. Perivulvar pores in three or four groups; two pores in each of the anterior groups, one or two in the posterior groups. Anal opening moderately large, twice the length of the lobes distant from the lobes. Paravulvar folds broadly curved.

*Notes.*—One of the posterior groups of perivulvar pores may be absent. A small low dome-shaped lateral thoracic tubercle may be present.

This species resembles *M. cerata* (Maskell) but differs in having posterior groups of perivulvar pores, fewer dorsal ducts, and plates in the fourth interlobal space.

Type Reg. No. T.5719 and paratype No. T.5720 in the Queensland Museum.

***Myrtophila pseudadnatae* n.sp.**

(Figs. 21 and 22.)

*Locality and host.*—Queensland: Mt. Isa, on *Melaleuca bracteata* F. Muell., Feb. 1958 (H. J. Lavery).

*Habit.*—Insects mostly single on foliage. Scales circular, convex, dull whitish in colour, pellicles dark; 0.6 mm. diameter.

*Recognition characters.*—Adult female with a deep thoracic constriction, subcircular; anterior portion a raised dome-shape, lateral margins posteriorly convergent; posterior portion semicircular; length of slide specimen 0.5 mm., width 0.45 mm. Pygidium not differentiated, large, apex broadly rounded, with three pairs of lobes. Median lobes one-and-a-half times longer than wide, apically contiguous; inner margins straight, convergent; latero-apical margin curved, with fine indentations. Second pair of lobes shorter than the median lobes, linear, separated from the median lobes by more than a median lobe's width; third pair of lobes similar to the second, separated from the second by one-and-a-half times a median lobe's width. Basal scleroses absent. Paraphyses as a short pair in the first and second interlobal areas. Plates in the

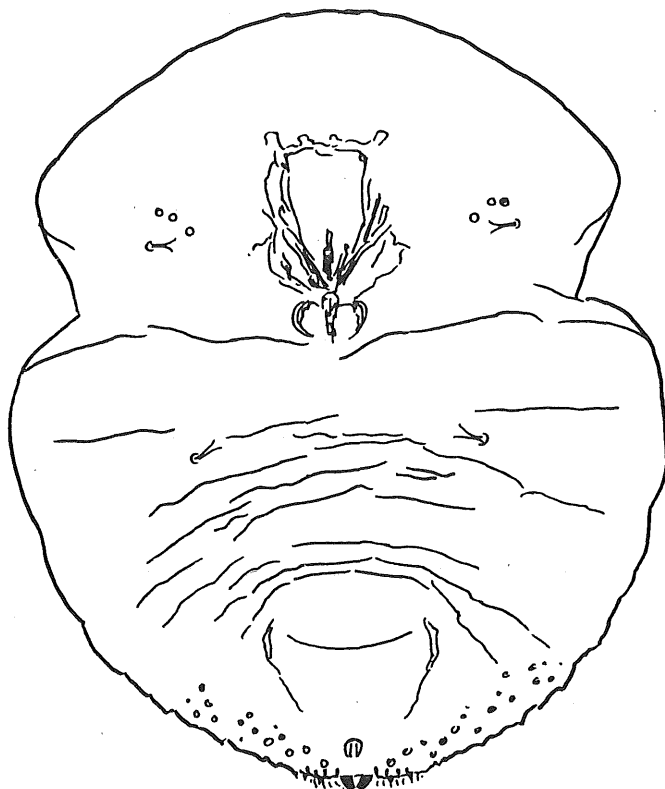


Fig. 21.

*Myrtophila pseudadnatae*. Outline of Body. ( $\times 180$ .)

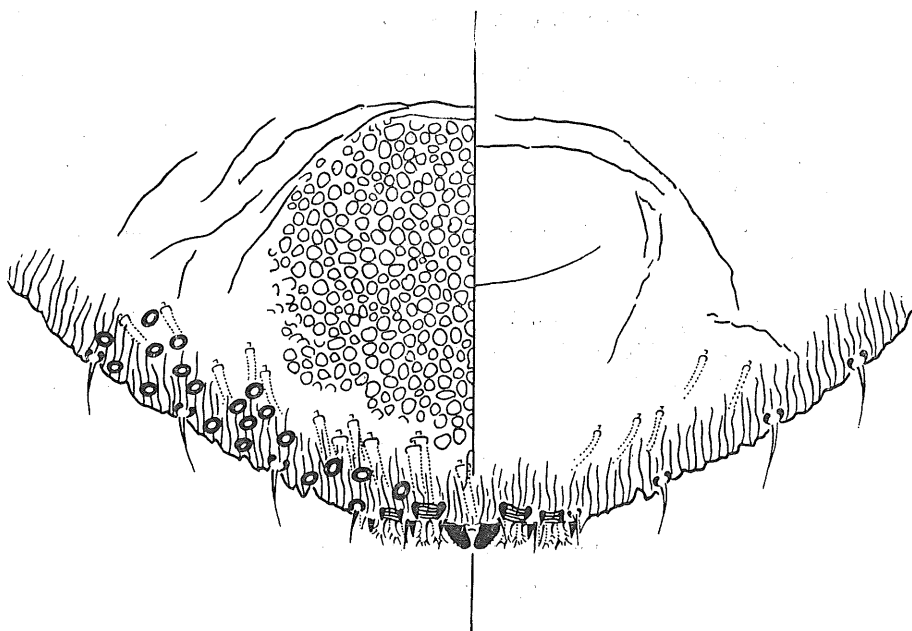


Fig. 22.

*Myrtophila pseudadnatae*. Enlargement of Pygidium. ( $\times 350$ .)

first, second and third interlobal spaces; two plates in the first space, as long as the median lobes, apically branched; three plates in the second space, the first acicular, the other two similar to those in the first space; one conical simple plate in the third space. Spines adjacent to the median lobes shorter than the lobes, other spines longer. Dorsal ducts few, short, just exceeding the distance of the anal opening from the lobes in the medial region; ducts and duct heads wide in the median area and in the first and second duct furrows, becoming progressively narrower anteriorly; one large duct in the median area, two large ducts in the first furrow, one slightly smaller between the first and second furrows, one large and one smaller in the second furrow, two between the second and third furrows, four in the third furrow, then three intervening and six in the fourth furrow; a few ducts submarginally on other abdominal segments and metathorax. Perivulvar pores absent. Anal opening in an elongate inverted V a lobe's length or slightly more from the bases of the median lobes. Vulva wide. Thoracic tubercle absent. Pygidium dorsally with a reticulate sclerotization, ventrally with a stipple-like sclerotization. Anterior spiracles with three associated pores.

*Notes*.—This species closely resembles *M. adnatae* but differs in having three pairs of lobes and in the median lobes being convergent and apically contiguous.

Type Reg. No. T.5721 and paratypes Nos. T.5722 to T.5724 in the Queensland Museum.

**NEOCLAVASPIS** new genus.

*Generic type.*—*Neoclavaspis duplex* n.sp.

*Characters.*—Adult female membranous, with median pair of lobes only, these being broad and basally yoked; plates absent; paraphyses indistinct; ducts sparse and slender; anal opening small, paravulvar folds co-linear with the dense arms diverging from near the apex; lateral and median dorsal scars prominent, the median scars duplicated.

*Notes.*—The species assigned to this genus has some resemblance to some species in the genus *Clavaspis* and also to some in *Quadraspidiotus*. This genus, however, differs from *Clavaspis* in not having strongly developed paraphyses in the first and second interlobal areas, and from *Quadraspidiotus* in not having the second pair of lobes developed.

**Neoclavaspis duplex** n.sp.

(Figs. 23 and 24.)

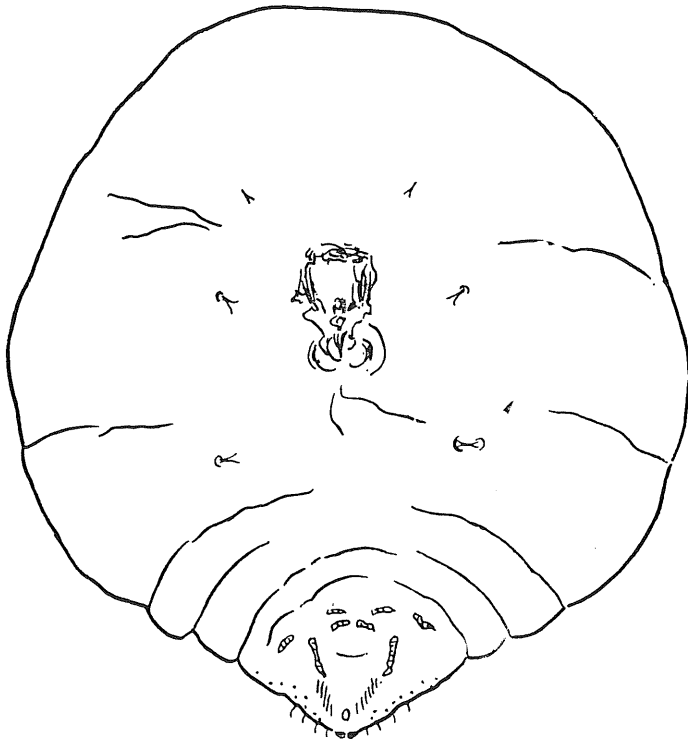


Fig. 23.

*Neoclavaspis duplex*. Outline of Body. ( $\times 70$ .)



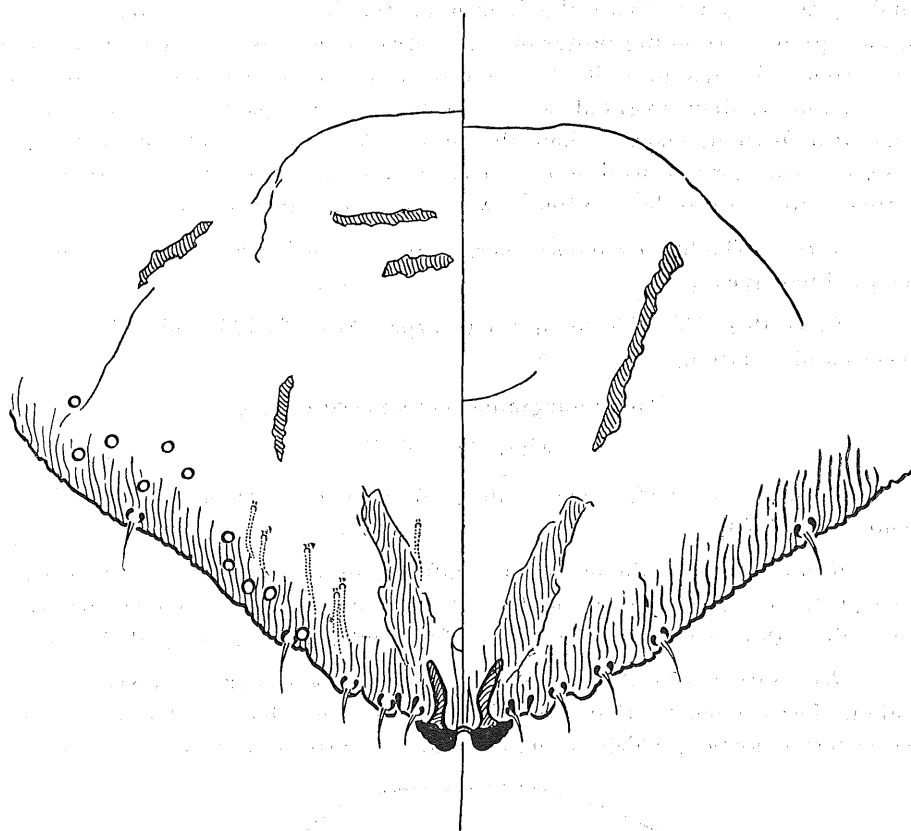


Fig. 24.

*Neoclavaspis duplex*. Enlargement of Pygidium. ( $\times 300$ .)

*Locality and host*.—Queensland: Texas, on *Eremophila mitchellii* Benth. Oct. 1954.

*Habit*.—Insects sparse on twigs. Scale of adult female circular, 1.6 mm. diameter, colour obscured by extraneous matter.

*Recognition characters*.—Adult female membranous, broadly pyriform to subcircular, length of slide specimen 1.35 mm., width 1.2 mm. Pygidium wide, apex obtuse, with median pair of lobes only. Lobes wider than long, yoked basally, separated by one-third of a lobe's width; inner margins curved; latero-apical margin strongly convergent to the rounded apices and with three small indentations. A thickening arising as a basal sclerosis from the central one-third of each lobe, longer than the lobes and the pair slightly divergent. Paraphyses as a faint short pair in the first interlobal area. Plates absent. Spines adjacent to the lobes shorter than the lobes, other spines longer than the lobes. Ducts sparse, very slender, heads small, in the median area longer than the distance from the lobes to the anal opening. Perivulvar pores absent.

Anal opening round, twice the length of the lobes distant from the lobes; an anal groove extending posteriorly to between the bases of the lobes. Vulva three times the distance of the anal opening from the bases of the lobes. Lateral and median pygidial scars distinct; second pair of median pygidial scars also distinct, shorter than the first. Paravulvar folds distinct, almost straight, posteriorly convergent. Arms of the radiating pygidial thickenings distinct and more or less co-linear with the paravulvar folds.

*Notes.*—The basal scleroses merge into the thickened arms radiating from the pygidial apex.

Type Reg. No. T.5725 and paratypes Nos. T.5726 and T.5727 in the Queensland Museum.

***Pseudotargionia asymmetrica* n.sp.**

(Figs. 25 and 26.)

*Locality and host.*—Queensland: Winton, on *Eucalyptus camaldulensis* Dehn., Apr. 1954.

*Habit.*—Insects single or in small colonies, individually subdermal in the leaf tissue, indicated by small oval surface pimples 0.75 mm. across. A few male scales present on the leaf surface, oval, dark fawn, pellicle dark.

*Recognition characters.*—Adult female subcircular, membranous, with a slight thoracic constriction; anterior portion dome-shaped, almost as large as the posterior portion, which is semicircular. Length of slide specimen 0.6 mm.,

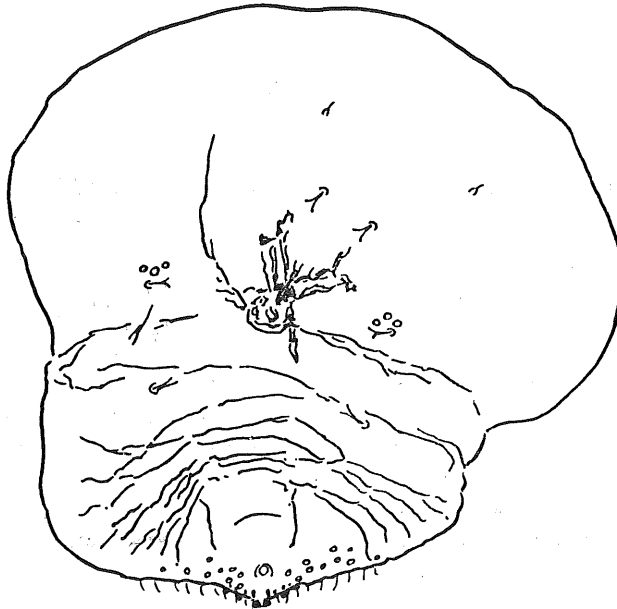


Fig. 25.

*Pseudotargionia asymmetrica*. Outline of Body. ( $\times 120$ .)

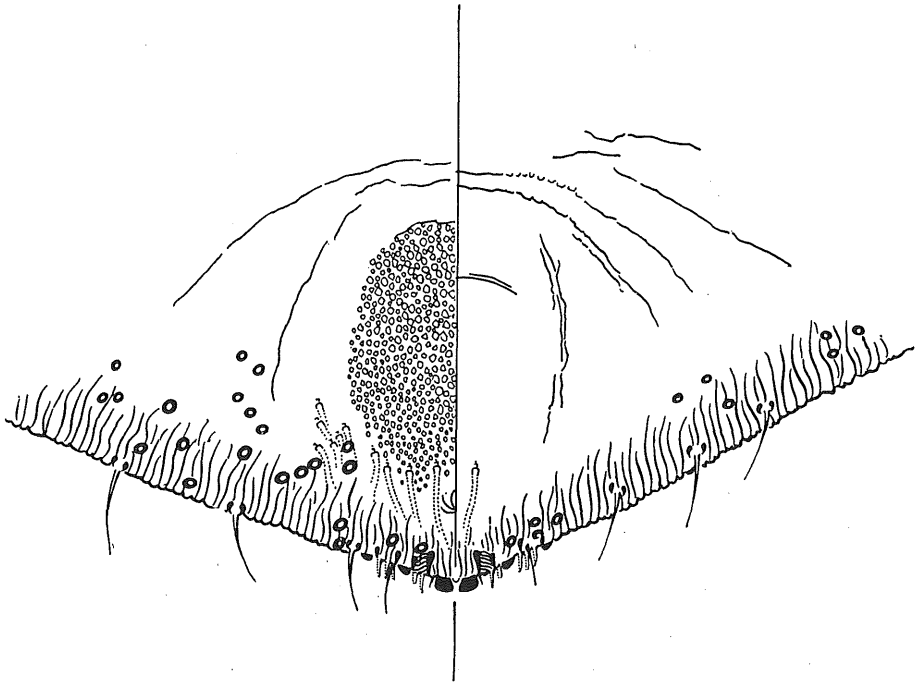


Fig. 26.

*Pseudotargionia asymmetrica*. Enlargement of Pygidium. ( $\times 315$ .)

width 0.6 mm. Pygidium not differentiated, apex broadly obtuse with two, sometimes three, pairs of lobes. Median lobes slightly wider than long, narrow basally; inner margins slightly convergent, outer margins curved, apex truncate or broadly rounded; contiguous or almost so. Second pair of lobes much smaller, triangular, apex rounded, separated from the median lobes by slightly more than a median lobe's width. Third pair of lobes small triangular points, separated from the second lobes by one-and-a-half to two times a median lobe's width. Basal scleroses absent. Paraphyses uneven in the first interlobal area, more definite on the inner side, as long as the lobes; similar but smaller in the second interlobal area. Spines adjacent to the median lobes shorter than the lobes, other spines very much longer, some up to five times the length of the lobes. Plates present in the first and second interlobal spaces; two in the first space, slender, as long as the lobes; three in the second space, slender, longer than the median lobes. Dorsal ducts slender, longer in the first furrow than the distance from the lobes to the anal opening, segmental series not distinct; three or four ducts in the first furrow with orifices between the paraphyses; orifices of other furrows somewhat dispersed. Anal opening small, oval, two-and-a-half times the length of the median lobes from the base of the lobes. Vulva four times the distance of the anal opening from the lobes. Paravulvar folds distinct. A fine reticulate sclerotization dorsally on the pygidium. Anterior spiracles with two or three associated pores.

*Notes.*—The third pair of lobes may be very small or indistinct on one or both sides of the pygidium. Older specimens are asymmetrical in that one side of the abdomen may be enlarged. Pores associated with anterior spiracles may vary from one to four.

This species resembles *P. comata* (Maskell) in having very long hair-like spines but the body constriction is smaller and divides the body into parts of almost equal size. The asymmetrical shape and subdermal position in the host leaves are not shown by other species in the genus.

Type Reg. No. T.5728 and paratypes Nos. T.5729 and T.5730 in the Queensland Museum.

***Pseudotargionia isaensis* n.sp.**

(Figs. 27 and 28.)

*Locality and host.*—Queensland: Mt. Isa, on *Amyema sanguinea* (F. Muell.) Danser, Jan. 1958 (H. J. Lavery).

*Habit.*—Insects mostly single on twigs. Female scale circular, 1.0 mm. diameter, light to dark fawn in colour, margin paler; second pellicle covered with light fawn secretion; first pellicle central, dark greenish brown.

*Recognition characters.*—Adult female subcircular with a deep thoracic constriction, anterior portion dome-shaped; posterior portion wider, semi-circular; length of slide specimen 0.7 mm., width 0.7 mm. Pygidium large,

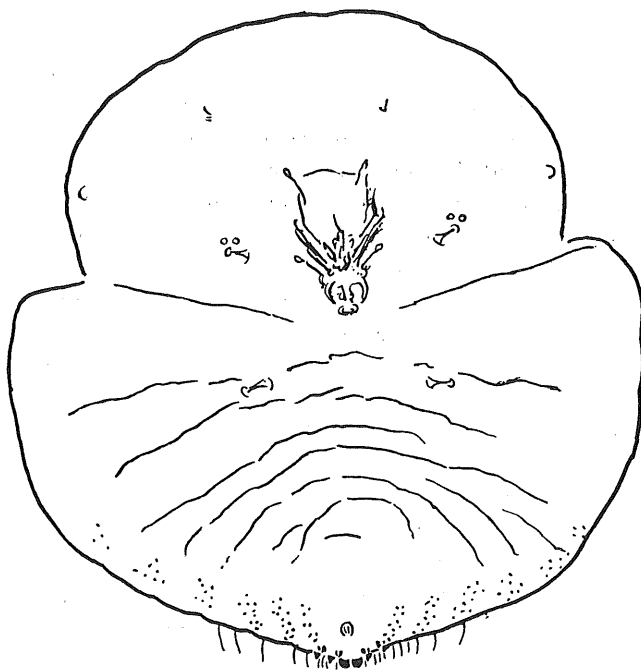


Fig. 27.

*Pseudotargionia isaensis*. Outline of Body. ( $\times 120$ .)

apex broadly obtuse, with three pairs of lobes. Median lobes as wide as long, more dense on basal angles, apically almost contiguous, lateral and apical margins curved. Second pair of lobes much smaller, triangular, separated from the median lobes by a second lobe's width. Third pair of lobes similar to the second pair but smaller, separated from the second by one-and-a-half

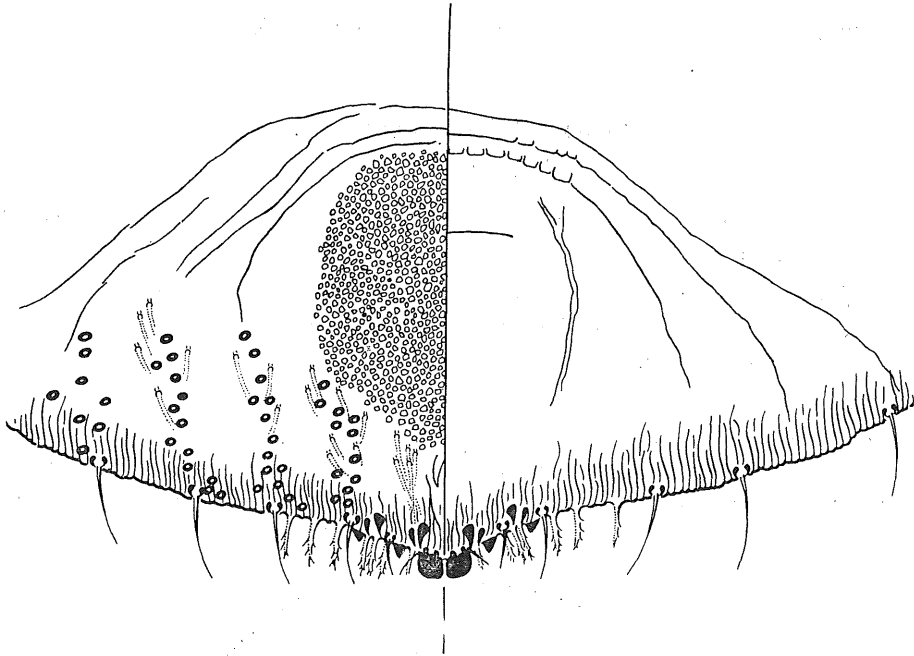


Fig. 28.

*Pseudotargionia isaensis*. Enlargement of Pygidium. ( $\times 295$ .)

times a median lobe's width. Basal scleroses absent. Paraphyses as a pair in the first and second interlobal areas, short, more prominent on the posterior side of each area. Plates present in the first, second and third interlobal spaces, slender and apically branched; one in the first interlobal space, as long as the median lobes; three in the second space, elongate, branched, longer than the lobes; three in the third space, similar to those in the second space. Spines long and hair-like. Dorsal macroducts of moderate length, just exceeding the distance from the median lobes to the anal opening in the median area; orifices in segmental series, 4 ducts in the median interlobal area, 5 in the first duct furrow with orifices between the paraphyses, 11 or 12 in the series of the second furrow, 14 to 16 in the third furrow and 13 to 15 in the fourth furrow, with less on anterior segments. Perivulvar pores absent. Anal opening small, in an inverted V, two-and-a-half times the length of the median lobes from the bases of the lobes. Anterior spiracles with two associated pores. Dorsal pygidial area with a fine reticulate sclerotization. Derm of

mature females with heavy fingerprint thickening. Prepygidial segments with a fine palisade pattern or posterior margins. Position of lateral tubercle demarcated by an oval area within the fingerprint sclerotization.

*Notes.*—This species has some resemblance to *P. asymmetrica* but differs in having normal body symmetry, and plates in the third interlobal space as well as in the first and second spaces.

Type Reg. No. T.5731 and paratypes Nos. T.5732 and T.5733 in the Queensland Museum.

**Remotaspidotus albus** n.sp.

(Figs. 29 and 30.)

*Locality and host.*—Queensland: Eulo, on *Santalum lanceolatum* R. Br., Oct. 1954 (L. S. Smith).

*Habit.*—Insects scattered on leaves. Scales white, convex, circular, 1.5 mm. diameter; second pellicle fawnish yellow with a white suffusion, first pellicle light olive green.

*Recognition characters.*—Adult female membranous, subcircular, length of slide specimen 0.6 mm., width 0.5 mm. Pygidium broad, median pair of lobes only. Lobes as wide as long, apically convergent and almost contiguous; inner and outer margins subparallel, inner concave, outer convex; apex truncated or concave. Basal scleroses as long as but narrower than the lobes.

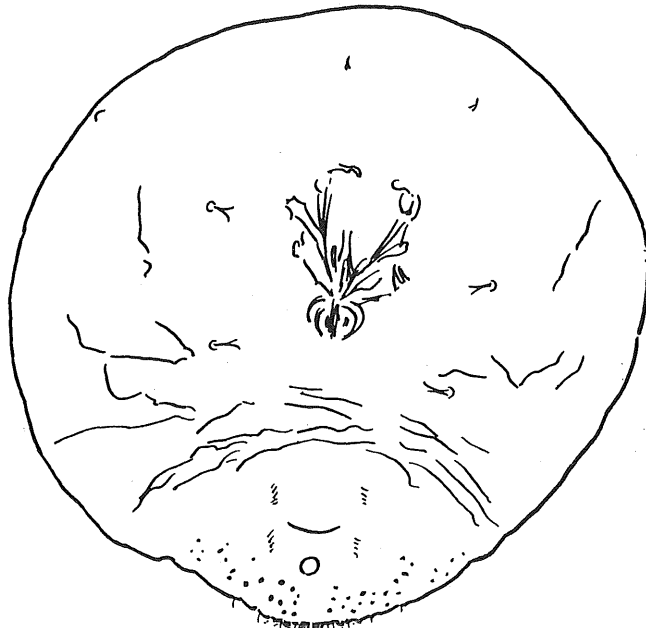


Fig. 29.

*Remotaspidotus albus.* Outline of Body. ( $\times 80$ .)

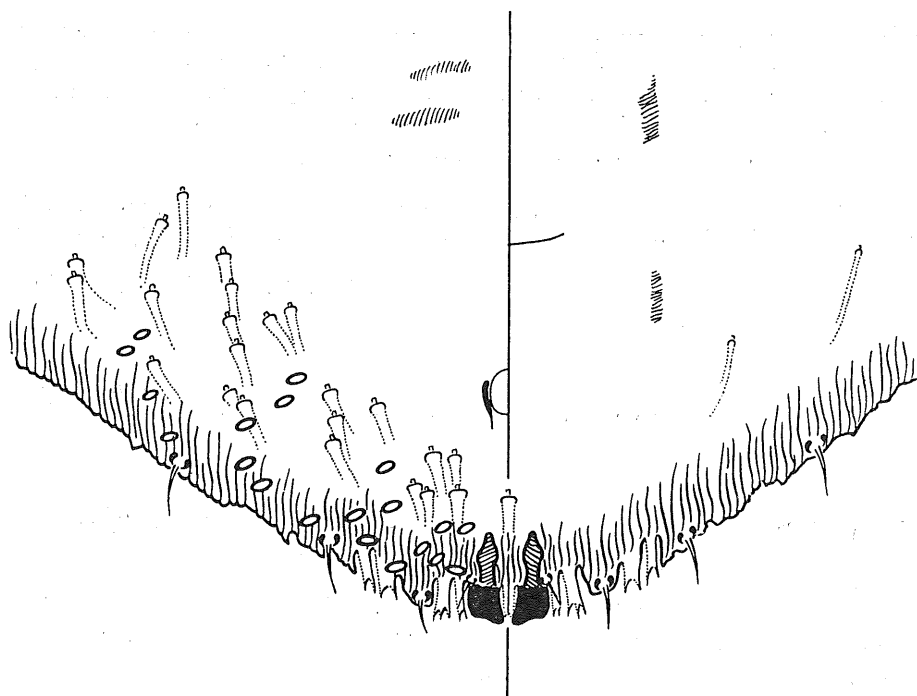


Fig. 30.

*Remotaspidotus albus*. Enlargement of Pygidium. ( $\times 395$ .)

Paraphyses absent. Plates in the median first and second interlobal spaces; two in the median space, as long as the lobes, slender and simple; two in the first interlobal space, as long as the lobes, mostly with two slender apical branches; two in the second interlobal space similar to those in the first space. Spines adjacent to the lobes shorter than the lobes, other spines slightly longer. Dorsal macroducts short, length half the distance from the lobes to the anal opening, in segmental series; one in the median interlobal area; three in the first furrow, two intervening between the first and second furrows; three in the second; one or two between the second and third with six in the third furrow; becoming smaller on the fourth and anterior abdominal segments. Perivulvar pores absent. Anal opening larger than a lobe, four times the length of a lobe from the bases of the lobes, and half the distance from the lobes to the vulva. Paravulvar folds not conspicuous, divided into widely separated short anterior and posterior portions. Median and lateral dorsal pygidial scars not conspicuous. Median dorsal pygidial scars in two pairs, anterior to the position of the vulva, not conspicuous. Spiracles small. A low broad dome-shaped marginal thoracic tubercle anterior to the anterior spiracles.

*Notes.*—The rims of dorsal duct orifices are slightly thickened. The ventral ducts are slender and inconspicuous, orifice rims are not thickened. The first and second interlobal spaces are in distinct depressions, making the

intervening marginal derm prominent but there are no lobes in these positions. The first plate in each of the first and second interlobal spaces may be fimbriate. This species resembles *R. coralinus* (Froggatt) but differs in having the paravulvar folds divided, the anal opening a greater distance from the lobes and the lobes more characteristically truncate.

Other material examined is from South Australia, on quandong, Nov. 1929 (J. Davidson), and New South Wales, Nyngan, on dogwood, June 1910.

Type Reg. No. T.5734 and paratypes Nos. T.5735 to T.5737 in the Queensland Museum.

**Remotaspidotus reconditus** n.sp.

(Figs. 31 and 32.)

*Locality and host.*—Queensland: Marmor, on *Eremocitrus glauca* (Lindl.) Swingle, Oct. 1955.

*Habit.*—Insects under a species of *Septobasidium*. Scale of adult female circular, 1.3 mm. diameter, fawn or greyish white in colour; pellicles dark orange.

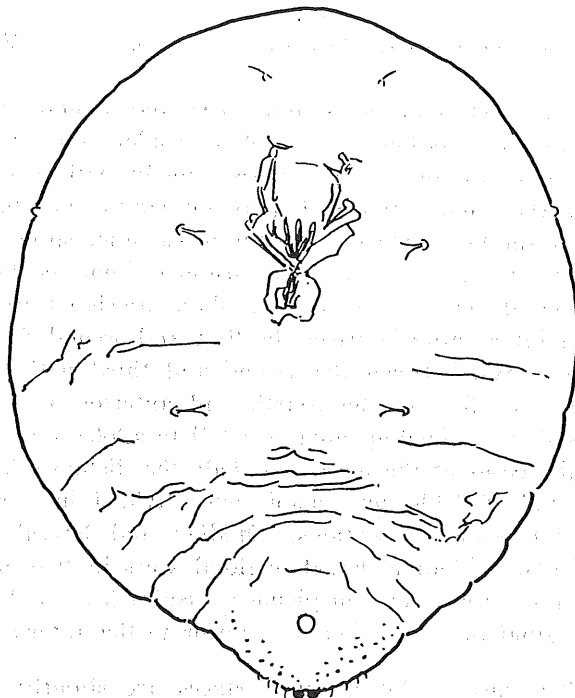


Fig. 31.

*Remotaspidotus reconditus*. Outline of Body. ( $\times 180$ .)



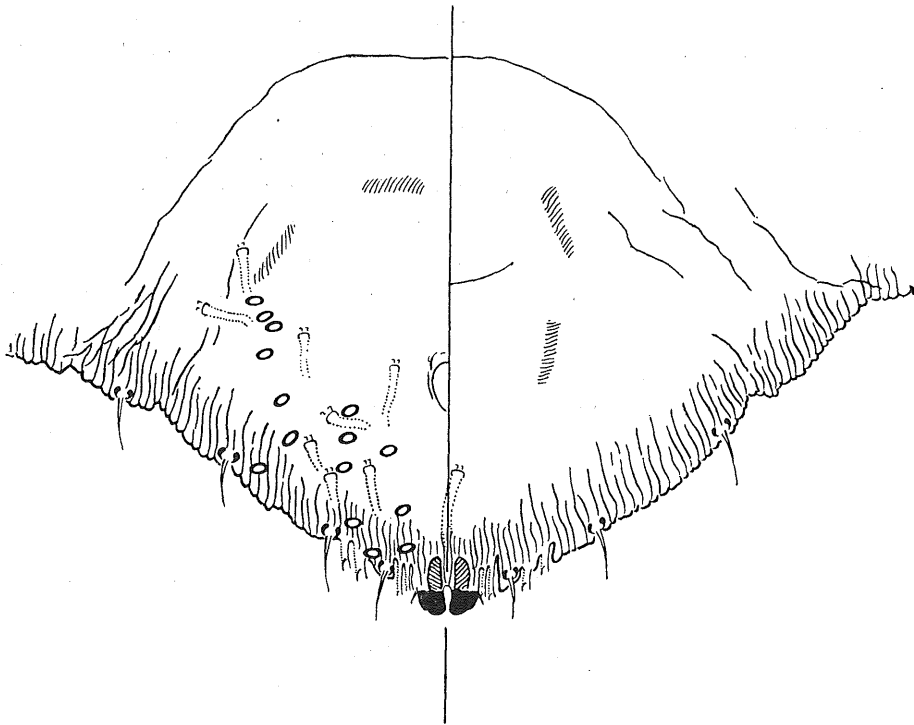


Fig. 32.

*Remotaspidotus reconditus*. Enlargement of Pygidium. ( $\times 400$ .)

*Recognition characters*.—Adult female membranous, broadly pyriform, length of slide specimen 1.0 mm., width 0.6 mm., Pygidium demarcated by longitudinal light fingerprint thickening, apex broadly rounded, median pair of lobes only. Lobes as wide as long, separated by less than one-quarter of a lobe's width; inner and outer margins almost parallel; inner margins slightly concave and slightly convergent; outer margins convex with a subapical indentation; apex rounded or truncated. Basal scleroses arising nearer the inner margin of the lobes, as long as or slightly shorter than the lobes, less than half the width of the lobes. Paraphyses absent. Plates in the first and second interlobal spaces; two plates in the first space, shorter than the lobes but in a deep dermal incision, linear, apices bifid; two plates in the second space, wider and shorter than those in the first space, bifid. Spines adjacent to the lobes shorter than the lobes, other pygidial spines longer than the lobes. Dorsal ducts short, slender, in the median region reaching for two-thirds of the distance from the lobes to the anal opening, segmental series not distinct; four or five orifices in the first duct furrow, about nine in the second furrow, others scattered anteriorly on abdominal segments. Anal opening oval, four times the length of the lobes distant from the lobes, two-thirds of the distance of the vulva from the lobes. Perivulvar pores absent. Lateral and median

pygidial scars absent or indistinct. Paravulvar folds divided, each portion short. A low dome-shaped process in the position of the lateral marginal thoracic tubercle.

*Notes.*—Sometimes the subapical indentation on the lobes is included in a concave or truncated apex typical of the genus. There are in some specimens indications of a pair of short simple plates in the median interlobal space but the lobes mostly are so close that these plates appear to be absent.

This species resembles *R. bossiae* (Maskell) but differs in having divided paravulvar folds, the lobes are closer and are not wider than long.

Type Reg. No. T.5738 and paratypes Nos. T.5739 to T.5741 in the Queensland Museum.

**Remotaspidotus squamosus** n.sp.

(Figs. 33 and 34.)

*Locality and host.*—Queensland: Texas, on *Eremophila mitchellii* Benth., Oct. 1954.

*Habit.*—Insects sparse on leaves and twigs. Female scales whitish in colour, circular, 1.0 mm. diameter; pellicles yellow.

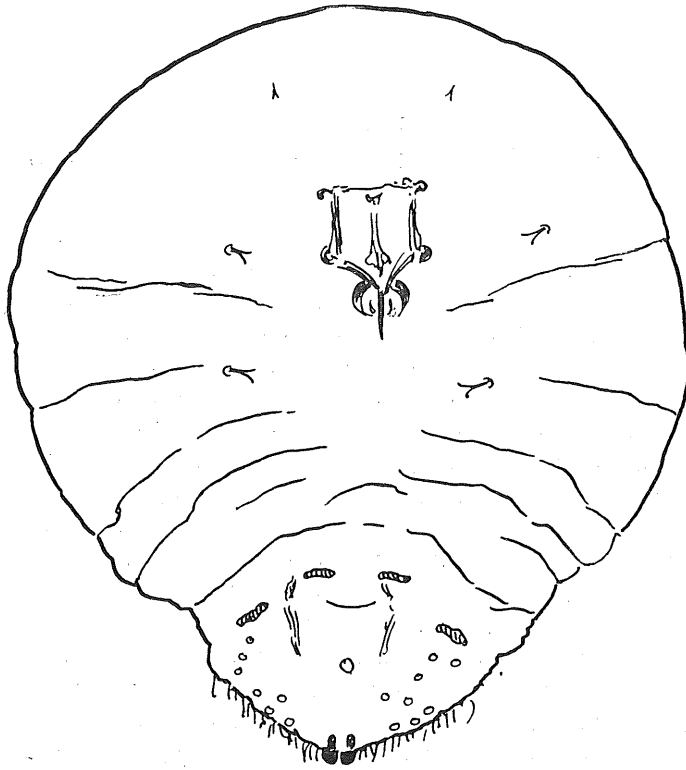


Fig. 33.

*Remotaspidotus squamosus*. Outline of Body. ( $\times 180$ .)

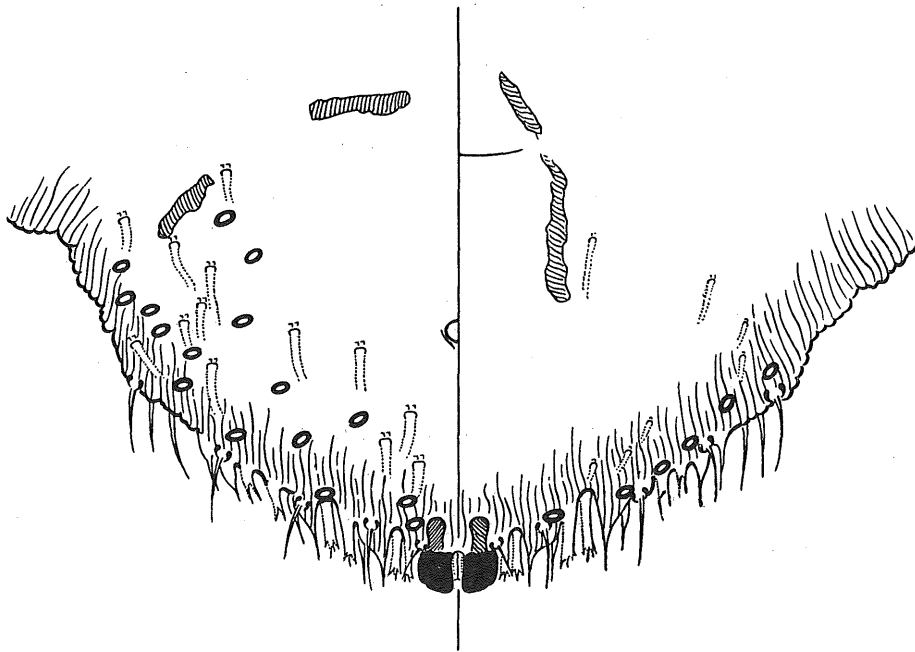


Fig. 34.

*Remotaspidotus squamosus*. Enlargement of Pygidium. ( $\times 450$ .)

*Recognition characters*.—Adult female subcircular to broadly pyriform, length of slide specimen 0.6 mm., width 0.45 mm. Pygidium broadly rounded with median pair of lobes only. Lobes slightly longer than wide, slightly narrowing basally on both margins, apically broadly truncated with a small latero-apical indentation, separated by one-quarter of a lobe's width. Basal scleroses arising centrally from the lobes, half as wide as and shorter than the lobes, apically broadly rounded. Paraphyses absent. Plates numerous; two in the median interlobal space, shorter than the lobes; three in the first interlobal space, as long as or longer than the lobes, the second in a deep derm incision. Four in the second interlobal space, longer than the lobes, the first and fourth simple, second and third apically branched, the third in a deep derm incision; four in the third interlobal space, slender but wide basally, the first and fourth simple, second and third bifid; three or four in the fourth interlobal space, slender and simple. Spines adjacent to the lobes as long as the lobes, other pygidial spines longer. Dorsal ducts sparse, length in the median area one-third to one-half the distance from the lobes to the anal opening; orifices normal, two in the first duct furrow, five or six well spaced in the second furrow, five or six in the third furrow. Ventral ducts with comparatively large orifices mostly near the pygidial margin, increasing in number on anterior segments with as many as 10 on the third abdominal segment. Anal

opening small, round, five times a lobe's length from the bases of the lobes. Vulva twice the distance of the anal opening from the lobes. Perivulvar pores absent. Paravulvar folds and lateral and median scars prominent.

*Notes.*—The prosoma is slightly sclerotized and of an asymmetrical shape in one specimen. A small dome-shaped thoracic tubercle may be evident.

This species varies in general appearance from others in the genus, especially in the number and shape of the plates, but the combination of other characters such as the lobes, basal sclerites and pygidial scars shows greatest affinity with the genus *Remotaspidotus*.

Type Reg. No. T.5742 and paratype No. T.5743 in the Queensland Museum.

#### ACKNOWLEDGEMENTS.

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