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## SOME ALEYRODIDAE FROM JAPAN

(Homoptera)

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*Aleuroclava trochodendri* n. sp.

Pupa case: Black, strongly sclerotized. Body almost subcircular, slightly longer than wide, constricted across the cephalothorax. Mesonotum faintly defined, a longitudinal narrow pale part present at each end of transverse suture, which part is narrowed anteriorly, located along the submarginal area and almost reaching the level of eye spots; 8th tergite longer than the 7th, the latter as

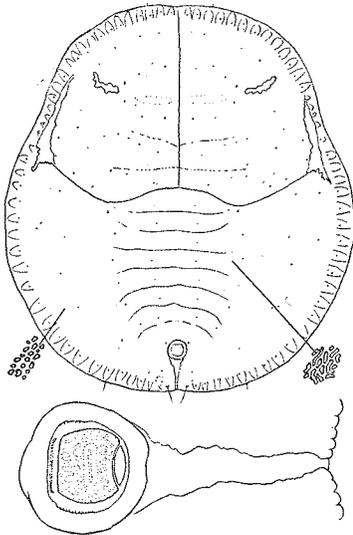


Fig. 1.

*Aleuroclava trochodendri* n. sp.Pupa case, and vasiform orifice  
and caudal furrow.

long as the 6th; lateral ridges of tergites absent; pockets separated. Dorsum densely with minute polygonal designs over the whole surface, these designs almost granular on the submarginal area, wanting in the caudal furrow; dorsal setae very minute, normal in number, 8th abdominal setae laterad of the base of vasiform orifice, caudal setae longer, a little apart from the body margin. Eye spots narrow, far separated from the body margin, uneven at the margin. Submarginal area not defined from the dorsal disk, with many darker stout ridges around the body, which are about 20 on each side of cephalothorax, not well defined, and smaller near the posterior part of cephalothorax; submarginal pores distinctly apart from the body margin, about 13 on the cephalothorax and about 18-20 on the abdomen on each side. Marginal teeth minute, very short, rounded, about 24 between the anterior marginal setae. Thoracic tracheal clefts or combs wanting; tracheal folds rather narrow, indistinct. Vasiform orifice small, rounded, wider than long, much thickened at the margin, very slightly concave at the hind end. Operculum wider than long,

occupying most of the orifice, with faint irregular markings. Caudal furrow paler, well defined, narrowed posteriorly, about 1.5 times as long as the vasiform orifice, without distinct designs. Body about 1.1 mm. in length.

Host: *Trochodendron aralioides*.

Ōdaiga-hara (about 500 m. above sea level), Nara Prefecture; 2 pupa cases (15. VIII. 1956, R. TAKAHASHI).

This species is different from *Aleurotuberculatus* TAKAHASHI in wanting thoracic tracheal clefts and is referred to *Aleuroclava* SINGH previously recorded from India. Readily distinguished from *Aleuroclava complex* SINGH by the broader body with distinct eye spots and by the dorsum without scattered papillae.

*Aleurolobus iteae* n. sp.

Pupa case: Black, strongly sclerotized, with wax on the dorsum and margin.

Body elliptical, not constricted, about 1.4 or 1.5 times as long as wide. Transverse suture extending cephalad at the lateral part, reaching the level of hind margin of pronotum, extending to the margin of dorsal disk; 7th tergite distinctly shorter than the 6th; lateral ridges of 2nd, 3rd and 4th tergites developed, slender, those of the 3rd longer, reaching the margin of dorsal disk; pockets not distinct. Dorsal disk smooth, not reticulated, without granules, with many pale straight lines arising from the margin; these lines discernible in specimens treated with potash, variable in length, not branched; similar lines also present on the basal part of submarginal area; dorsal setae minute, normal, 8th abdominal setae distinctly posterior to the base of vasiform orifice; caudal setae minute, apart from the hind end, not reaching the margin. Eye spots wanting. Submarginal area defined except on the posterior part, submarginal furrows not wavy, not branched, not reaching the basal part, about 33 between the front end of body and thoracic comb on each side; submarginal pores many, in a row, distinctly apart from the margin; many similar pores scattered on the basal half of submarginal area, setae not evident. Marginal crenulations very short, distinctly bilobed at the tip. Thoracic tracheal combs a little protuberant, with 3 or 4 teeth almost similar to other marginal crenulations; caudal comb slightly protuberant, with 4 small teeth. Thoracic tracheal

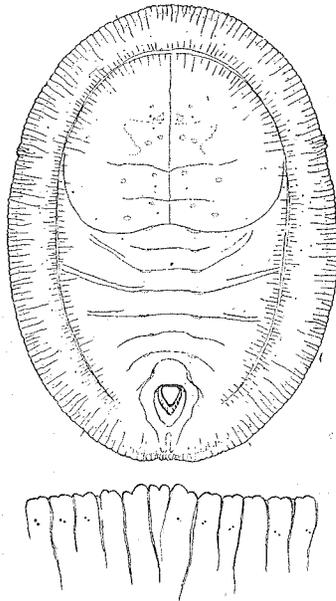


Fig. 2.

*Aleurolobus iteae* n. sp.

Pupa case, and thoracic tracheal comb and marginal area.

folds rather wide, distinct, without granules. No dorsal defined area present adjacent to the tracheal combs. Vasiform orifice about 1.4 times as long as wide, distinctly shorter than the width of submarginal area, rounded at the apex, with some lateral ridges. Operculum as long as wide, subcordate, occupying about two-thirds the orifice. Lingula not exposed, pointed apically, reaching the hind margin of operculum, with a pair of long setae. Caudal ridges much apart from the lateral margin of vasiform orifice, not reaching the hind end of body. Caudal furrow narrow, indistinct, not reaching the hind end of body. Body about 1.4 mm. in length.

Host: *Itea japonica*.

Ōdaiga-hara (1000 m.), Nara Prefecture; some pupa cases (15. VIII. 1956, R. TAKAHASHI).

Related to *Aleurolobus asari* WÜNN, but differs chiefly in the marginal crenulations distinctly bilobed at the tip. Different from *A. japonicus* TAKAHASHI in the transverse suture extending much cephalad on each side, the tracheal combs less protuberant, the marginal crenulations bilobed apically, many pale lines arising from the margin of dorsal disk and from the basal margin of submarginal area, and in the lateral ridges of abdominal tergites developed.

*Aleurolobus shiiae* n. sp.

Pupa case: Black, bluish, shining, without wax, strongly sclerotized. Body subcircular, a little longer than wide, not constricted, not indented at the hind end. Transverse suture reaching the level of hind margin of mesonotum, nearly extending to the margin of dorsal disk; abdomen without lateral ridges of tergites, 7th tergite distinctly shorter than the 6th, pockets not distinct, depressed markings indistinct, but small transverse intersegmental markings present in pairs on the abdomen. Dorsal disk distinctly reticulated on the unsegmented area, with about 28 submarginal minute pores in a row on each side, about 13 of which are on the cephalothorax and 5 of them are anterior to the eye spot; dorsal setae minute, wanting on the basal abdominal segment, 8th abdominal setae distinctly posterior to the base of vasiform orifice; caudal setae minute, anterior to the submarginal row of pores, laterad of the cluster of sculptures at the hind end of body. Eye spots small, separated from the margin of dorsal disk, sometimes obscure or wanting. Suture between the dorsal disk and submarginal area reaching the caudal ridges; submarginal furrows not branched, reaching the basal margin of submarginal area; about 6 or 7 small paler parts present along each of these furrows on the outer half of submarginal area; 9 very minute setae present in a row along the basal margin on each side, 4 of which are on the cephalothorax and 5 are on the posterior part of abdomen; submarginal pores about 60 on each side, in a row distinctly apart from the body margin, about 20 anterior to the thoracic tracheal comb on each side; about 56 similar pores scattered on the submarginal area on each side. A dense cluster of small polygonal dorsal sculptures present above the thoracic tracheal fold on the submarginal area, the cluster rather broad, widened towards the base, a little se-

parated from the basal margin of submarginal area, 8 or 9 sculptures wide at the basal part, but 4 sculptures wide at the distal part; a similar, but much smaller cluster arising also from the caudal comb, which is not reaching the dorsal disk, narrowed anteriorly, reaching the caudal furrow, and 5 sculptures wide at the posterior part. Marginal crenulations small, very short, about 40-45 anterior to the thoracic comb on each side; marginal setae not discernible. Thoracic tracheal combs small, not protruding beyond the body margin, with 3 teeth\*; median tooth knobbed, narrower than other marginal teeth; caudal comb similar. Vasiform orifice small, cordate, shorter than the 8th tergite, a little longer than wide, not reaching the hind end of dorsal disk, with 9 lateral ridges. Operculum similar in shape to the orifice, occupying most of it. Lingula

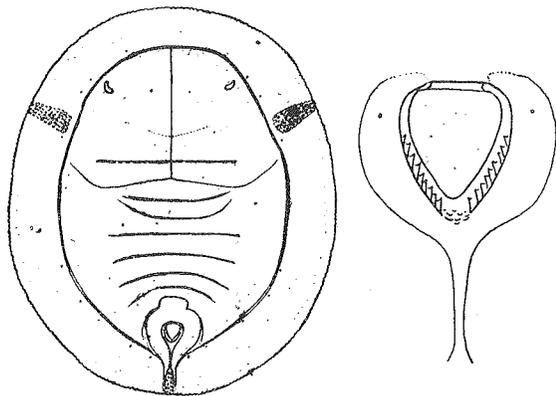


Fig. 3. *Aleurolobus shiiae* n. sp.

Pupa case, and vasiform orifice and caudal furrow.

concealed. Caudal furrow much expanded basally, reaching the base of vasiform orifice, very slender posteriorly. Caudal ridges obscured on the posterior part. Body 1.6-1.7 mm. in length.

Host: *Shiia cuspidata*, on the upper side of leaf.

Amanosan, Osaka Prefecture; many specimens (3. V. and 1. VI. 1957, R. TAKAHASHI and M. SORIN).

This species is allied to *Aleurolobus taonabae* KUWANA, differing, however, in the following characters: Submarginal thoracic clusteres of sculptures much broader, broadened basally, a little separated from the basal margin of submarginal area; the sculptures not elongated, polygonal, small; a smaller similar cluster also present at the hind end. Eye spots smaller, sometimes absent. Submarginal furrows not branched, with some small paler parts on the outer half of submarginal area. Dorsal pores more in number.

\* Thoracic combs sometimes with 6 teeth.

*Bemisia lonicerae* n. sp.

Pupa case: Slightly pale yellowish in life, darker broadly on the marginal zone in stained specimens. Ovate, broadest at the metathorax, narrower posteriorly, distinctly constricted across the thoracic combs, shallowly indented at the hind end. Mesonotum defined, transverse suture short, 6th tergite distinctly longer than the 5th, as long as the 8th; the 7th obscured at the median area, pockets thin, separated; lateral ridges of tergites wanting. Median segmented area broader than the lateral unsegmented area, with some indistinct rounded lateral tubercles; basal 3 tergites with a large median rounded tubercle; dorsum somewhat corrugated on the unsegmented area; dorsal setae minute, but those on the head, mesonotum and basal abdominal segment sometimes very long, the

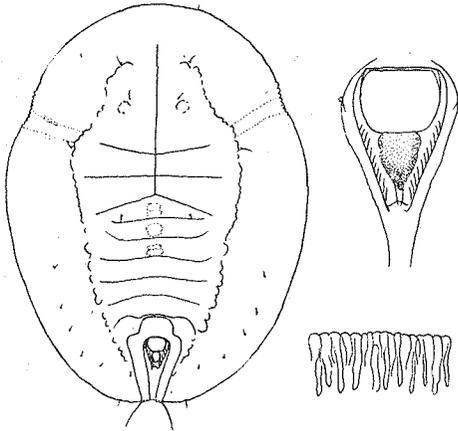


Fig. 4. *Bemisia lonicerae* n. sp.

Pupa case, vasiform orifice, and marginal area.

anterior 2 pairs reaching beyond the body margin; 8th abdominal setae minute, much shorter than half the operculum, much posterior to the base of vasiform orifice, nearly at the level of midlength of operculum, close to the orifice; caudal setae long, almost at the hind end, space between them slightly narrower than the width of vasiform orifice. Marginal teeth minute, very short, rounded, irregular in shape and size; a rather short irregular ridge arising from each marginal tooth, which is variable in length; submarginal pores few, much separated from the body margin. Tracheal combs with 12-18 distinct teeth, which are much larger than, but similar in shape to, other marginal teeth and more sclerotized. Thoracic tracheal folds distinct, moderate in width, expanded distally, scarcely broadened basally, with minute dots over the whole length except along the marginal area of body; about 5 teeth present at the distal end of the furrow; caudal tracheal fold not distinct, a cluster of minute spinules and designs present

just behind the vasiform orifice on the venter, which is not reaching the hind end. Vasiform orifice about 1.3 or 1.4 times as long as wide, scarcely concave at the lateral margin, slightly longer than the caudal furrow, with about 10 lateral ridges. Operculum slightly shorter than half the orifice, broader than long, normal in shape. Lingula rather abruptly knobbed, the knobbed part exposed, a little longer than wide (about 1.3 times as long as wide), distinctly tapering from near the base, pointed apically, slightly concave at the lateral side, without tubercles, with a pair of subapical setae. Anterior marginal area of vasiform orifice not defined. Caudal furrow distinct, gradually expanded anteriorly, much narrower than the vasiform orifice, without distinct markings. Caudal ridges weakly developed, reaching the hind end in some individuals. Body about 1 mm. in length.

Hosts: *Lonicera japonica*, *Ajuga decumbens*.

Hirao near Kuroyama, Osaka Prefecture, some pupa cases on *Lonicera* (10. IV, 1956, M. SORIN); Taishi, Osaka Prefecture, a few on *Ajuga* (IV, 1957, M. SORIN). Described from specimens on *Lonicera*.

This species is closely related to *Bemisia puerariae* TAKAHASHI, but differs as follows: Eighth abdominal setae minute, located much posterior to the base of vasiform orifice. Vasiform orifice slightly longer than the caudal furrow. Space between the caudal setae a little narrower than the vasiform orifice (nearly as wide as the orifice in *B. puerariae* TAKAH.). Differentiated from *Bemisia gossypiperda* MISRA and LAMBA by the a-little longer caudal furrow, the cephalothorax constricted across the combs, the shorter knobbed part of lingula, and by the teeth of thoracic combs being larger than other marginal teeth.

*Bemisia alni* n. sp.

Pupa case: Broadly dusky on the lateral area of dorsal disk and along the margin. Body broad, but distinctly longer than wide, narrower anteriorly, constricted across the cephalothorax, broadest at the basal part of abdomen, slightly indented at the posterior margin. Mesonotum defined, transverse suture extending to the hind margin of mesonotum at the lateral part, not reaching the body margin; 7th tergite very short at the median area, 8th longer than the 6th, pockets not distinct; lateral ridges of tergites wanting. Median segmented area broader than the lateral unsegmented area, with distinct rounded tubercles along the lateral part, and with a median similar tubercle on the basal 6 tergites; all these tubercles with polygonal designs. Dorsum corrugated, dorsal setae minute, 8th abdominal setae a little posterior to the base of vasiform orifice; caudal setae minute, slightly apart from the margin, distance between them nearly as long as the width of vasiform orifice. Submarginal pores in an irregular row, about 13 on the cephalothorax, about 20 on the abdomen on each side; tergites at the middle part of abdomen with 2 paired pores near the median and also near the lateral tubercles on each side. Marginal teeth minute, short, but distinct and more sclerotized on the lateral part of cephalothorax and between the posterior marginal setae; these teeth over 40 on each side of cephalothorax, the

series reaching the abdomen; those between the posterior marginal setae over 50; rather short, but distinct submarginal ventral ridges and furrows arising from these sclerotized marginal teeth; dorsal submarginal ridges and furrows indistinct. Thoracic tracheal folds moderate in width, expanded at the body margin, with granular designs; caudal tracheal fold much expanded and wider than the vasiform orifice at the hind end, with similar designs. Vasiform orifice stout, blunt at the apex, slightly concave at the lateral margin, about 1.25 times as long as wide, with about 5 lateral ridges; anterior marginal area not defined. Operculum filling about half the orifice, broadly rounded apically. Lingula distinctly knobbed, the knobbed part rather stout, blunt at the apex, slightly sinuate

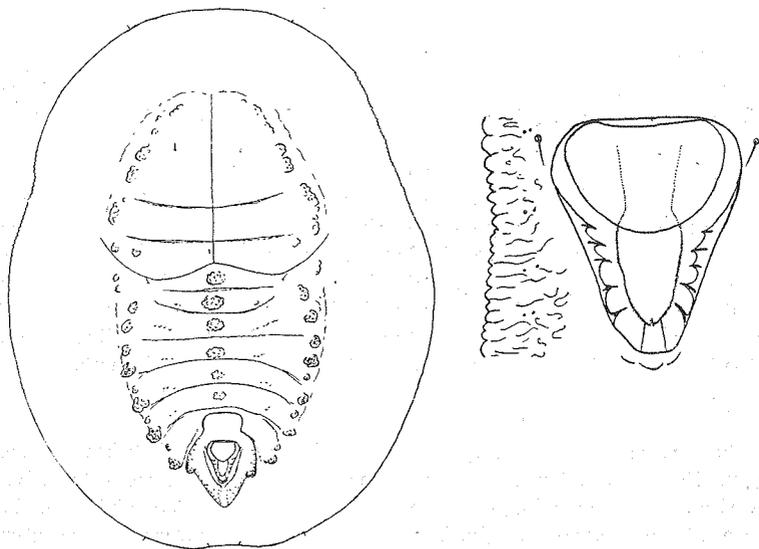


Fig. 5. *Bemisia alni* n. sp.

Pupa case, and marginal area of dorsum  
and vasiform orifice.

at the lateral margin, gradually tapering, without tubercles, with a pair of apical setae. Distance between the vasiform orifice and hind end of body about 1.5 times as long as the orifice. Caudal furrow wanting. Caudal ridges sclerotized, not smooth, not reaching the hind end. Body about 1.3 mm. in length.

Host: *Alnus* sp.

Taishi, Osaka Prefecture, 3 pupa cases (3. XI. 1956, R. TAKAHASHI and M. SORIN).

This species resembles *Bemisia yanagicola* TAKAHASHI in the shape of body and colour, but differs in the absence of lateral ridges of tergites, the presence of caudal setae, the stouter vasiform orifice, and in other characters. Readily

distinguished from *B. shinanoensis* KUWANA by the broader body, the shorter vasiform orifice, the stouter lingula, and by the colour.

*Heterobemisia* n. g.

Closely related to *Bemisia* QUAINANCE and BAKER, but differs in the following characters:

Pupa case: Marginal crenulations arranged in 2 rows. Operculum longer, subcordate. Caudal furrow abruptly expanded on the anterior part.

Genotype: *Heterobemisia alba* n. sp.

*Heterobemisia alba* n. sp.

Pupa case: White. Elliptical, about 1.4 times as long as wide, broadest at the base of abdomen, scarcely constricted across the cephalothorax, scarcely indented at the hind end. Transverse suture not reaching the margin, 7th tergite very short, 8th longer than the 6th, pockets separated; lateral ridges of tergites wanting. Dorsum smooth, without tubercles and designs; median segmented area wider than the lateral unsegmented area, 8th abdominal setae minute, a little posterior to the base of vasiform orifice; caudal setae minute, a little removed from the body margin, not reaching the margin, distance between them much shorter than the width of vasiform orifice. Marginal teeth minute, very short, rounded; submarginal furrows moderate in length, arising at intervals of 2 or 3 marginal teeth, about 19 between the anterior marginal setae, about 30 between the thoracic comb and front end of body on each side, about 13 between the posterior marginal seta and hind end of body; ridges

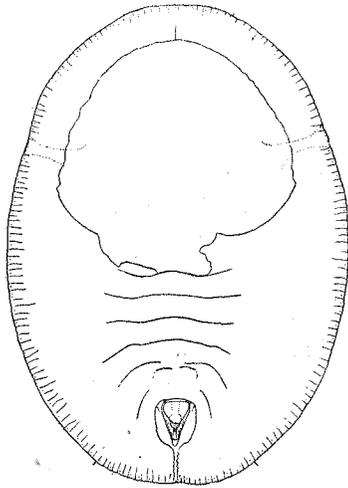


Fig. 6.

*Heterobemisia alba* n. sp.

Pupa case.

between these submarginal furrows forming broadly rounded crenulations in a row along the body margin. Submarginal pores about 50 on each side, in an irregular row, present mostly at intervals of one submarginal ridge. Thoracic tracheal combs small, with about 5 minute teeth which are almost similar to, or slightly smaller than, other marginal teeth, not protuberant beyond the body margin. Caudal comb not distinct. Thoracic tracheal folds rather broad, without dots; caudal fold broad, much broadened at the base, scarcely with spinules. Vasiform orifice triangular, about 1.5 times as long as wide, blunt and rounded at the hind end, longer than the 8th tergite, as long as the distance between the

orifice and hind end of body, with some lateral ridges; anterior marginal area defined. Operculum subcordate, bluntly pointed apically, nearly as long as wide, filling a little over half the orifice. Lingula abruptly swollen on the distal part, the swollen part a little exposed, stout, but longer than wide, tapering, pointed at the apex, without tubercles, with a pair of large stout subapical setae, which are reaching the hind end of the orifice. Caudal furrow narrow, but abruptly much expanded on the anterior part, extending to the base of vasiform orifice; distal narrow part distinctly shorter than the orifice, with indistinct markings. Caudal ridges absent. Venter without spine-like setae. Body about 1.25 mm. in length.

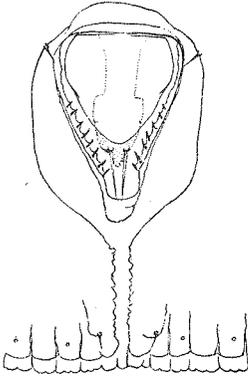


Fig. 7.

*Heterobemisia alba* n. sp.  
Vasiform orifice and caudal region of pupa case.

1956, M. SORIN).

Previously known from Formosa. Close to *Pealius rubi* TAKAHASHI, differing as follows:

Host: *Itea japonica*.

Ōdaiga-hara (1000 m.), Nara Prefecture; some pupa cases damaged by a parasite (15. VIII. 1956, R. TAKAHASHI).

*Pealius polygoni* TAKAHASHI.

Dept. Agr., Govt. Research Inst. Formosa, Rept. no. 63, p. 59 (1934).

Host: *Polygonum thunbergii*.

Kuroyama near Osaka, some specimens (10. IX.

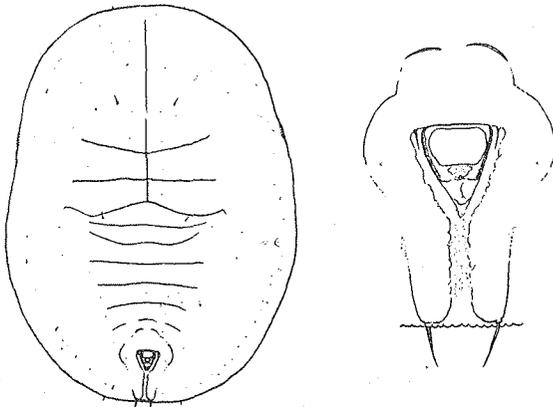


Fig. 8. *Pealius polygoni* TAKAH.

Pupa case, and vasiform orifice and caudal ridges.

Pupa case: Caudal furrow longer, as long as, or longer than, the vasiform orifice and its pit taken together, not broadened anteriorly. Caudal ridges not distinct. Anterior marginal area of vasiform orifice not defined. Eighth abdominal setae at the level of anterior margin of vasiform orifice, as long as, or shorter than, the orifice. Thoracic segments and 4th tergite without setae.

Dorsal setae variable in length.

The material, upon which this paper is based, is preserved in the author's collection.