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Some Records of Indo-Malayan Psyllidae.

BY

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***Pauropsylla udei* Rübs.**

Rübsaamen : Ent. Nachr. **25**, 262, 1899 (Sumatra).

Kieffer : Ann. Soc. Scient. Bruxelles, **29**, 167, 1905.

Crawford : Philippine Jour. Sci. D. **10**, 258, 1915 (*P. bakeri* sp. n. Philippines).

Crawford : Idem. **15**, 145, 1919 (Philippines).

Uichanco : Idem. **14**, 546, 1919 (*P. montana* sp. n. MS. in Philippines).

Uichanco : Idem. **18**, 263, 1921 (Philippines).

V. Leeuwen : Bull. Jard. Bot. Buitenzorg, (3) **6**, 129, 1924 (Singapore, Kuala Lumpur, Penang, Java, Hongkong).

I assign for the present a series of 13 specimens bred from galls found on an unidentified tree at Kuala Lumpur, on the 29-i-1925 by G. H. Corbett and B. A. R. Gater, to *P. udei* Rübs. because they are inseparable on morphological grounds from that species. I have one specimen purporting to be *P. udei* for comparison from Sumatra ; this is shining black with narrow pale intersegmental bands on the abdomen. Neither Rübsaamen nor Kieffer refer to the colour but Crawford (*l. c.* 1919) states that it may vary from dark reddish to chocolate brown. Uichanco, however, gives a very detailed description (*l. c.* 1921) and states that the insect as it occurs in the Philippines is dark yellowish brown with certain parts light brownish yellow. Crawford, describing *P. bakeri*, now treated as a synonym of *P. udei*, says it is chocolate brown to black. The Malayan specimens have the head and thorax a deep shining black,

with the abdomen some shade of red-brown, from quite pale to fuscous-red, and they would therefore appear to be intermediate in colouring between the Philippine and Sumatran ones. It may be that there is a certain amount of colour variation within the species but it is worth while drawing attention to the fact that V. Leeuwen describes two distinct galls on *Ficus variegata*, both said to be caused by *P. udei*, one absolutely glabrous, the other covered with long hair-like growths. It is more likely that these two types of galls are made by very similar, but distinct, species and it may be possible to correlate the makers with these colour differences noted in the various descriptions. Moreover, Rübsaamen stated, when describing *P. udei*, that the galls occurred on a member of the Rubiaceae and it has since been assumed that he was wrong and that the plant was a *Ficus*. I am not in a position to clear up the muddle.

***Pauropsylla beelsoni* sp. n.**

(Fig. 1.)

♀. Antennae with segments 1, 2, 3, except the extreme tip, and the basal three-fourths of 4, pale yellowish, the whole of the remainder dark brown to black; eyes black, ocelli reddish; head dark castaneous brown to black, with the general lobes pale yellowish; pronotum, dorsulum and mesonotum very pale honey brown to dark brown, with the median area of the latter darker; mesoscutellum and pseudonotum yellowish white; tegmen hyaline with a little pale brown alongside the main vein at the base; nerves pale brown; the whole of the abdomen a uniform dark brown; legs pale yellowish, with the apices of the tibiae, and the tarsal segments partially, dark; mesosternum dark to pitch black, the pro- and meta-sternum pale yellow; abdominal sternites dark brown with narrow intersegmental bands of paler brown.

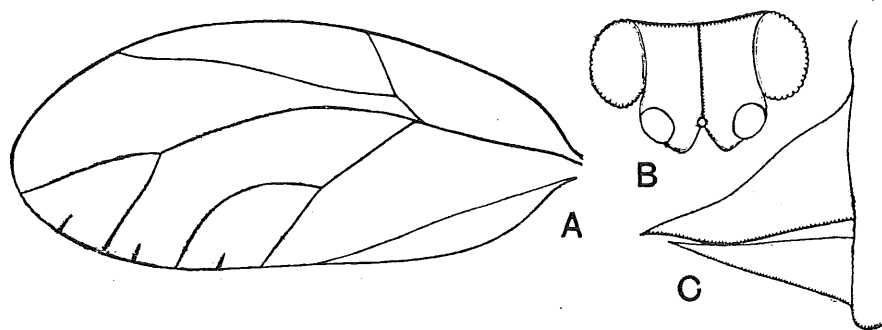


FIG. 1.—*Pauropsylla beelsoni* sp. n. A, B, C, Tegmen, head, and genitalia of adult ♀.

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The single ♂ available for study may not have the fully mature colouring, for apart from the head, the whole of the upper surface is considerably paler, the abdomen especially being very much lighter; the genitalia are so collapsed that the shape of the various parts cannot be distinguished.

Whole insect very robust, both from head to tail and from above downwards. Antennae reaching slightly beyond the metathorax, or twice the breadth of the head, including the eyes; head slightly deflexed, with the median area sunk, the median line forming a narrow sulcus, the part around the lateral ocelli elevated, the genal lobes shallow, forming between them a narrow concavity; whole head covered sparsely with rather long hairs: pronotum forming a narrow, ring-like segment; dorsulum and mesonotum strongly arched, the breadth of the former not quite so great as that of the head, including the eyes, the front margin strongly convex, almost sub-conical, with a few longish, pale hairs in front; mesoscutellum sub-rectangular; pseudonotum with the front and hind margins parallel, the front slightly shorter than the rear; tegmen rounded apically, the length approximately $2\frac{1}{2}$ times the breadth, the radius, medius and cubitus arising almost from one point, there being just a suspicion of a cubital petiole; abdomen (in ♀) considerably broader than long, if the ovipositor be excluded; ♀ genitalia with the dorsal valve considerably longer than the ventral; hind tibiae with two strong black apical spines. Length 3 mm.; length of tegmen 4 mm.

Dehra Dun; Rangarhwa, 6-iii-1927, ex galls on *Litsea polyantha* (G. D. Bhasin, per Forest Research Institute, Dehra Dun).

The single nymph present in the collection (with broken antennae and badly parasitized) is a warm reddish brown, with the legs, especially the front pair, much paler. Its condition unfortunately was such as to prevent its being figured.

This species belongs to the same group of the genus *Pauropsylla* as *P. triozyptera* Crawford.

***Pauropsylla stevensi* sp. n.**

(Fig. 2.)

Antennae pale yellow, the basal two segments pale brownish, the apices of segments 3-7, 8, except for a narrow basal area, and the whole of 9 and 10, deep black; head and prothorax pale brown, the former with a median fovea on each half of the vertex, the latter with two spots on each lateral area, dark; dorsulum and mesonotum deep castaneous brown, the former with a large dark, biconvex patch, divided down the middle,

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on anterior margin; mesonotum with a pale median longitudinal streak; metanotum dark brown; all the pleurites of thorax yellowish; tegmen hyaline, the veins pale brown, blackish at the forkings, and where each

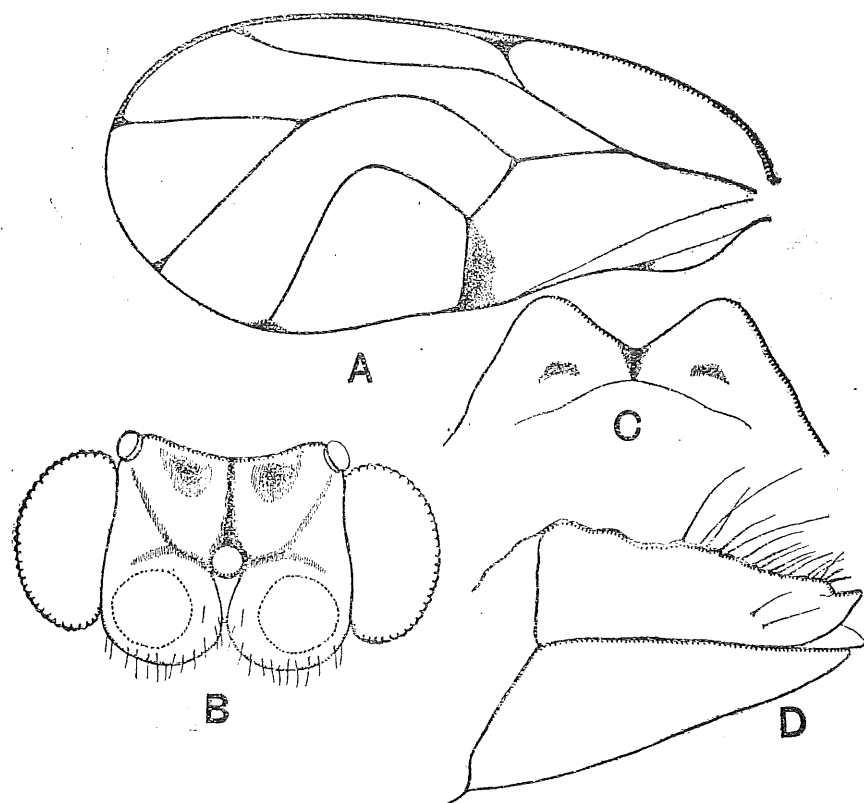


FIG. 2.—*Pauropsylla stevensi* sp. n. A, Tegmen; B, Head; C, Saddle-shaped prominence on pseudonotum; D, ♀ genitalia.

joins the margin, a rather extensive pale brownish area alongside Cu_2 ; abdomen above very dark brown with a pale greenish-yellow median longitudinal stripe, below mainly yellowish-green; legs pale yellowish brown, the second tarsal segment at least blackish.

Antennae a little more than twice length of head (including eyes); head with posterior margin deeply arcuate; each half of vertex subquadrate, with a deep fovea in the middle and towards posterior margin, whilst the area lying behind a line from the median to the lateral ocellus slightly elevated; thorax slightly arched; dorsal surface of whole thorax finely but irregularly striated; meta-pseudonotum with a saddle-shaped prominence; length of tegmen just over twice the breadth; front tibia

with a close fringe of setose hairs forming a half whorl on the inner side; apex of hind tibia with a similar comb, but forming a three-quarter whorl; first tarsal segment of the hind leg with two apical black spines; ♀ genitalia rather short, the upper valve projecting slightly over the ventral. Length 4 mm.; length of tegmen 4 mm.

Darjeeling; Gopaldhara, 4,500 feet (*H. Stevens*).

Pauropsylla nigra Crawf.

Malacca: ex galls on leaves of *Mangifera indica*, 8-xii-1925 (*G. H. Corbett*).

I have assigned this material to Crawford's species after comparison with the type, a ♀ and unique, which was found in the laboratory at Pusa. Crawford's description is adequate for recognition. It would appear as if the ♂ had usually the abdominal sternites pale yellowish and not dark as they are in the ♀.

Phacopteron lentiginosum Buckt.

Dehra Dun: ex galls on *Garuga pinnata* and *Schleichera trijuga*; Tonkin, Hoabinh (*R. V. de Salvaza*).

There is no doubt of *Phacosema* Kieff. being a synonym of *Phacopteron* Buckt.

Tenaphalara malayensis Crawf.

Fed. Malay States: Kuala Lumpur, 1924, feeding on *Durio zibethinus* (*G. H. Corbett*).

*Phyllopecta** *gardneri* sp. n.

(Fig. 3.)

General colour green and black (all the specimens have been preserved in alcohol, thus causing the green to fade to a pale clay-colour). Antennal segments 1 and 2 shaded with black, 3-7 with black tips, 8 distally, and the whole of 9 and 10, black; the extreme apical border of the genal cones, a narrow ring around the antennal insertions, and a median fovea on each half of the vertex, dark; a small spot on the extreme lateral margin of pronotum, black; dorsulum with a lunulate dark area on either

* I agree with Ferris (*Can. Ent.* 58, 16, 1926) that *Megatrioza* Crawf. should be treated as a synonym of *Phyllopecta* Zacher, and I treat it so here. Ferris, however, spells Zacher's genus as *Phyllopecta*, a printer's error probably.

side of the median line, the patch, in front, paler in the centre, and sometimes showing signs of interruption at the middle; mesonotum, on each half, with two longitudinal dark areas, the outer usually with its basal third partially or completely separate and the posterior portion with a pale narrow streak, the inner not quite reaching the front margin, and two sub-circular spots on the lateral margin, one in front and one

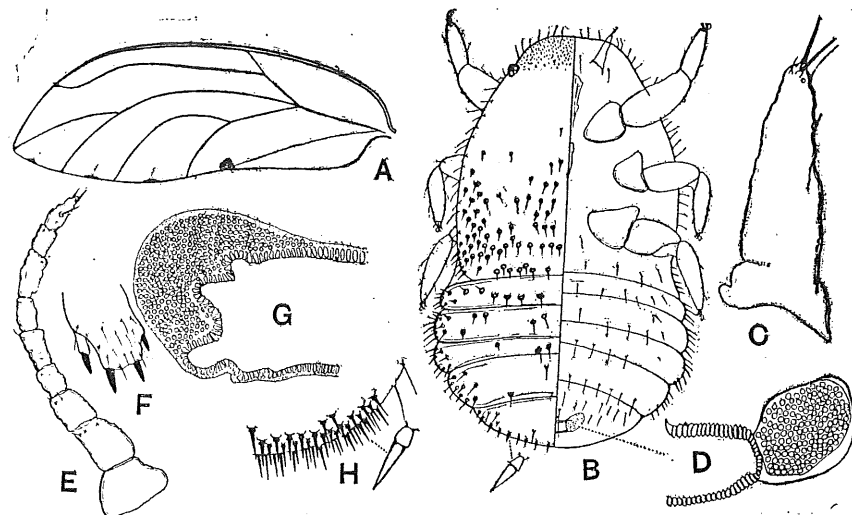


FIG. 3.—*Phyllopecta gardneri* sp. n. A, Tegmen, F, Apical spines of hind tibia of adult; B, Larva (? second stage), C, and D, its antenna and circum-anal ring; E, Antenna, G, Circum-anal ring, H, Part of fringe of setae on margin of last abdominal segment of nymph.

adjoining the wing insertion; abdominal segments with a varying amount of black, from quite a narrow area on the margin of each tergite to leaving but a narrow median green area; legs with the tarsal segments and a small area on the tibiae distally, dark, but there may be quite a considerable quantity of shading; tegmen with the apices of the veins slightly marked with black, a spot at the apex of the anal vein, and midway on the margin of the three posterior cells, jet black. Under surface mainly dark brown.

Antennae not quite twice the length of the head, including the eyes; genal cones with long pale hairs, the inner margins more or less parallel, the length scarcely reaching that of the vertex; lateral ocelli elevated; the median fovea deep; the hind margin of head rather deeply arcuate; dorsulum almost biconvex, the length and breadth sub-equal; tegmen with a length equal to $2\frac{1}{2}$ times the breadth; ♂ genitalia:—outer margin

of anal valve with a sparse fringe of white hair, the outer and basal margins sub-equal; claspers simple, incurved apically; ♀ genitalia:—valves rather short, the dorsal extending slightly beyond the ventral, the hind tibiae with 3 black apical spines, and a very strong, black-tipped, sub-apical spur, but no basal one. Length 3 mm.; length of tegmen 3.5 mm.

Larva (? second instar): material preserved in alcohol, but the general colour is probably green, with paler green legs,* and the abdominal segments, on the upper surface, barred with black. On the dorsal surface of the posterior half of the thoracic region are irregular rows of short, strong, sharp, spines, affixed to the body by conspicuously thickened bases; around the margin of the abdominal segments are also stout, sharp, spinose setae, more or less clustered together in bunches, but on the margin of the last segment these are replaced by sectasetae. Length 1.1 mm.

Nymph (final stage): of the typical Triozine form, but peculiar in that the sectasetae are confined to four dense rows on the apical margin of the last abdominal segment; on the remainder of the body and wing-pad margins there are long slender setae. Length 2.5 mm.

Gall: sub-globular, flattened somewhat from side to side, narrowing slightly at the point of contact with the leaf; smooth surface; unicellular. The galls may appear on both surfaces of the leaf, but judging from those in front of me most are on the lower surface. Exit from the gall is by a small circular opening on the other surface of the leaf from the gall. Length sub-equal to breadth, 4 mm.; thickness 3 mm.

Punjab: Ghazighat, Multan, ex leaf-galls on *Populus euphraticus* (R. N. Mathur, per Forest Research Institute, Dehra Dun).

Phyllopecta palaquii sp. n.

(Fig. 4.)

General colour very dark brown, metascutellum pale straw, all the tarsi dark, abdomen of a slightly lighter shade than the head and thorax, tegmina and wings transparent, without markings, veins brown; the head, thorax and legs clothed with rather long whitish hairs.

Whole insect very robust and heavily built; head at right angles to the body, each half of vertex sub-rectangular, the length a little greater than the breadth, a rather wide and deep median fovea which is con-

* NOTE.—The colour of the young living larva is yellowish with the appendages darker and eyes reddish-brown; in the later stages the colour deepens to yellowish-brown. The adults emerge in January and February; the formation of galls coincides with the appearance of new leaves in February and early March.

tinued to the hind margin by a shallow sulcus, hind margin only slightly arcuate, lateral ocellus elevated, genal lobes scarcely formed, the front

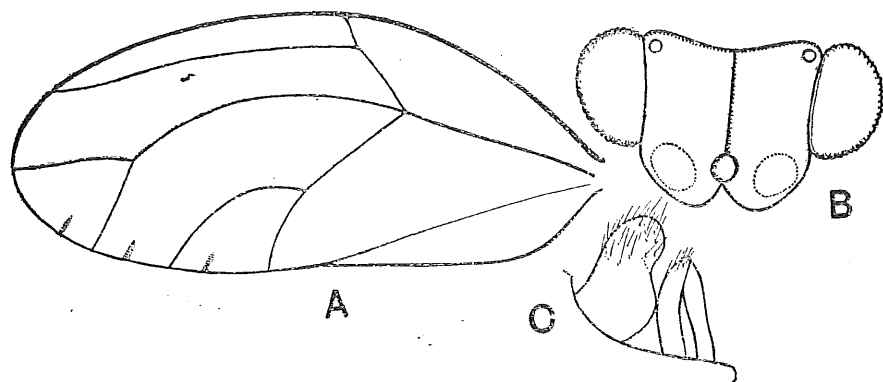


FIG. 4.—*Phyllopecta palaquii* sp. n. A, Tegmen; B, Head; C, ♂ genitalia.

margin curving gently outwards from the median ocellus. Thorax strongly arched; pronotum ring-like; dorsulum well-developed, markedly biconvex, the length about three-fourths the breadth, the hind margin straight medianly, the surface finely striate transversely; mesonotum considerably wider than the head, the breadth about thrice the length, both front and hind margins deeply curved, sub-parallel, the median part of the latter where it joins the scutellum more or less straight; scutellum sub-rectangular, large, the breadth twice the length, the surface, along with that of the mesonotum, finely and minutely papillate; metascutellum rhomboidal, the front margin slightly shorter than the hind, surface finely reticulate. Tegmen rounded apically, the length approximately $2\frac{1}{2}$ times the breadth, no pterostigma, both marginal cells comparatively small, the first slightly larger than the second. Hind leg with the tibia short, unarmed basally, but with a very stout sub-apical spur and two black apical spines. Margin of anal valve of ♂ distinctly shouldered at the middle. Length 3 mm.; length of tegmen 4.2 mm.

Malaya: Batu Gajah, 6-xii-1927, ex galls on *Palaquium gutta* (G. H. Corbett).

Described from 2 ♂♂, both of which have the antennae partially broken off; the remaining segments are a paler brown than the head. The species probably comes closest to *P. hirsuta* (Crawf.), but the differently shaped tegmen should be sufficient to separate the two.

I have not seen the gall and cannot say whether this species is the maker of one of those recorded by van Leeuwen (Bull. Jard. Bot. Buitenzorg (3), VI, p. 140, 1924).

Phyllopecta mallotica (Crawf.).

Dehra Dun: ex galls on *Mallotus philippinensis*.

I have compared this series with the type specimen, found at Fort de Kock, Sumatra, which arrived at the British Museum in fragments, and find that beyond slight variations in colour there are no characters by which to separate these particular specimens. Crawford's description appears in the En. Mitteil., 17, 426-425, 1928. This extends the known range of the species considerably. Though *Phyllopecta pallida* (Uichanco), described from leaf-galls on the same host-plant in the Philippines is very closely related, apart from the conspicuous difference in size, the neuration of the tegmen provides a character which renders the separation of the two easy.

Arytaina fasciata sp. n.

(Fig. 5.)

♂. Antennae pale yellowish brown, segment 1 slightly shaded, the apices of 3-6 black, 7-10 wholly black except the extreme base of 7 which is slightly paler. Head pale yellowish grey, the margin of the genal cones, and a spot lying above and to the side of the median ocellus, black; the median area on each half of vertex with a darker shaded fovea; eyes and ocelli pinkish-red. Pronotum concolorous with head, two rather faint sub-median spots and a well-defined black lateral one; ground colour of dorsulum and mesonotum the same as the head, this being, in the former, covered, except for a narrow margin around the

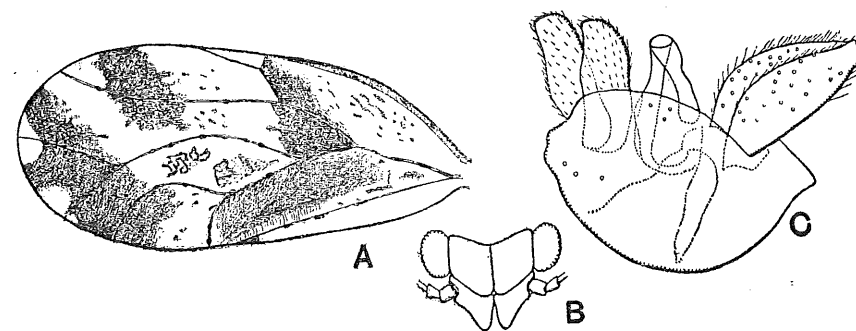


FIG. 5.—*Arytaina fasciata* sp. n. A, Tegmen; B, Head; C, ♂ genitalia.

lateral and posterior borders, by a dark brown area partially divided down the middle, and in the latter overlaid by the same shade of dark brown except for two well-defined sub-median and a more ill-defined

sub-lateral stripe ; scutellum pale yellowish brown ; tegmen semi-hyaline with two well-defined transverse brown bands, a sub-basal which expands and fills most of the anal cell, and an apical which stretches from near the apex of Rs to the middle of the first marginal cell, with two circular clear areas on the margin of the second marginal cell ; another brown sub-apical area stretching from the costa into the radial cell ; brown spotting in all the cells ; veins more or less spotted with black ; wing hyaline ; legs pale brown, the femora shaded with darker brown, both tarsal segments with a certain amount of black ; abdomen wholly dark brown.

Antennae slender, the length approximately twice the width of the head, including the eyes ; general cones sub-conical, two-thirds the length of the vertex ; vertex rhomboidal in shape, a sulcus stretching diagonally from the anterior lateral angle to the median line posteriorly, the posterior ocelli elevated ; thorax very slightly arched, the pronotum about six times as broad as long, the dorsulum considerably smaller than the mesonotum, with a gently arched anterior margin and the median part of the posterior straight ; tegmen almost twice as long as broad, the veins elevated slightly above the membrane. Length 1.75 mm. ; length of tegmen 2 mm.

Sinde Valley, 7,500 feet, on Walnut.

In its colouring this species approaches that found generally amongst members of *Diaphorina*, but the shape of the genal cones and the much longer and more slender antennae at once cuts it off from that genus. The heavily fasciated tegmen and the darkest body colouring distinguish it from *A. punctipennis* Crawford.

***Petalolyma basalis* (Walk.)**

This species should be added to Ramakrishna Ayyar's List of the Psyllidae recorded from India and Ceylon (Rec. Ind. Mus. XXVI, 621-625, 1924). Crawford (Broteria, XXII, p. 70, 1925) makes the curious error of assigning S. America as the home of this species. The type specimen is still in the British Museum and the label states clearly that the specimen is from "N. India".

***Psylla obsoleta* Buckt.**

In Ramakrishna Ayyar's List of the Psyllidae recorded from India and Ceylon (Rec. Ind. Mus. XXVI, p. 623, 1924) *Psylla obsoleta* Buckt. is placed in the genus *Psylla* ; it should be transferred to *Trioza* for it is clear from the figure Buckton gives that it belongs to that genus and it was so treated in Aulmann's Catalogue.

