

## THE PSYLLIDÆ OF BORNEO

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ONE PLATE

Our knowledge of the psyllid fauna of Borneo is fragmentary and far from complete, as only a few localities on this large island have been visited by collectors. The most extensive collections in the group have been made by Prof. C. F. Baker. Several interesting forms have been captured there by Mr. Frederick Muir also.

There is presented here a list of all the Bornean Psyllidæ known to me, together with descriptions of several new species.

### PAUROPSYLLINÆ

*Pauropsylla udei* Rübsaamen.

A species very widely distributed throughout the East Indies and tropical Asia. Two specimens collected at Sandakan, Borneo (C. F. Baker).

*Paurocephala psylloptera* Crawford.

A single female specimen taken at Sandakan, Borneo (Baker), probably belongs to this species, although it is a little smaller than the average Philippine specimen and has somewhat darker forewings. This is a widely distributed species in tropical Asia and Oceania and is, therefore, subject to some variation. *Agonos-cena sauteri* Enderlein is a synonym of this.

*Macrohomotoma apsylloides* (Crawford).

*Pauropsylla apsylloides* CRAWFORD.

This species was at first referred to the genus *Pauropsylla* with some hesitation, but subsequent comparisons indicate its very close relationship to *Macrohomotoma gladiatum* Kuwayama, a Formosan species. In wing venation and cephalic characters it is very similar to Kuwayama's species, but differs a little in the female genitalia, in the Formosan species the genital segment being comparatively shorter.

A male specimen was taken at Sandakan, Borneo (Baker). The following description of the male genitalia supplements the



previous description of the species which lacked this: Forceps slender, moderately long, slightly clavate distad, not as long as height of anal valve; anal valve large, with a caudal projection about as long as height of anal valve.

The East African species of this genus (*M. nyasae* Newstead)<sup>1</sup> is remarkably similar in male and female genital characters but differs in minor wing venational features.

This genus appears certainly to be related to the Pauropsyllinae instead of to the Carsidarinae.

#### Genus TRIGONON novum

Head much deflexed, short, without genal processes; vertex triangular, converging in front to a narrow point at front ocellus; genæ extending laterad somewhat beyond vertex. Antennæ very long and slender, as long as body to tip of folded wings or longer. Eyes very large, hemispherical. Thorax strongly arched, hirsute. Forewings more or less transparent, rounded at apex, veins setiferous; pterostigma present.

Type of the genus, *Heteropsylla longicornis* Crawford.

The most distinctive features of this genus are the triangular vertex and excessively long antennæ. Two species are included, both from the South Pacific.

*Trigonon pacificum* sp. nov. Plate 1, fig. 6.

Related to *T. longicornis* Crawf., a South Pacific species, but much larger.

Length of body (female), 4.4 millimeters; length from head to tip of folded wing, 5.7. General color brown, with a pale stripe down center of thoracic dorsum and two black stripes on each side of mid line.

Head short, broad, sparsely hirsute; vertex strongly concave, posterior ocelli elevated; frons visible around front ocellus and beneath it to labrum; genæ large, nearly meeting over frons at one point just beneath front ocellus, not produced into conical processes or lobes, except for a very small tubercle on each gena opposite the labrum. Antennæ very long and slender, as long as body to tip of folded wings.

Thorax rather broad, stout, sparsely hirsute. Legs short; hind tibiæ stout, with a small spur at base and several spines at apex. Forewing fumate or slightly browned but transparent, narrowly rounded at apex, veins with short setæ, costa thick

<sup>1</sup> Ent. News 25 (1914) 62-65.



and densely hairy; each apical cell of wing brownish near apical margin, with a clear spot in each at margin.

Female genital segment very long and acuminate, longer than rest of abdomen, acute at apex.

BORNEO, Sandakan (*Baker*), 1 female.

*Diclidophlebia*<sup>2</sup> *oceanica* Crawford.

This very remarkable and apparently rare species was described from two specimens from the Philippines and one from Singapore. One specimen has been taken by C. F. Baker at Sandakan, Borneo, which is similar in all important respects and probably represents the same species. The Borneo specimen is a little larger, and the legs are somewhat more foliaceous. Wing venation differs only in minor characteristics. There are scarcely enough differences to warrant making a new species for the Borneo form.

*Tenaphalara juliana* Crawford.

An additional specimen (female) has been received from C. F. Baker. The female genital segment is moderately short, and stout at base; the apical one-third is abruptly narrowed and small, black in contrast to the orange color of the basal portion, acutely pointed.

The forelegs have a narrow black or brown stripe on inner side. Closely related to *T. malayensis*, but quite distinct from that species.

*Tyora ornata* (Kirkaldy).

*Nesiope ornata* KIRKALDY.

Walker's old genus *Tyora* has been misunderstood by subsequent students of this family, except by Scott who figured the species from Walker's type. *Tyora congrua*, Walker's type species, is not at all congeneric with certain Australian species referred to that genus, but appears to be identical with a South Pacific species described recently as *Carsidaroida heterocephala* Crawford and subsequently referred by me to Kirkaldy's genus *Nesiope*. In other words, *Nesiope* Kirkaldy, and hence *Carsidaroida* Crawford, become synonyms of *Tyora* Walker.

*Tyora* (*Nesiope*) *ornata* was first discovered in Fiji, but probably exists in other parts of the South Pacific, since it is now recorded from Borneo. One male was taken at Sandakan

<sup>2</sup> *Diclidophlebia* nom. nov. pro *Heteroneura* Crawford. The latter name is preoccupied in Diptera.



(*Baker*) which appears almost certainly to be identical with Kirkaldy's *Nesiope ornata*, of Fiji.

*Tyora hibisci* Froggatt and *T. indica* Crawford should be referred to *Mesohomotoma*, a genus erected in 1907 by Kuwamura for a species undoubtedly congeneric with the two mentioned above. *Udamostigma* was proposed by Enderlein in 1910 for Froggatt's *T. hibisci*, but *Mesohomotoma* has the right of priority.

#### Genus **TRIOZA** Foerster

The genus *Trioza* is not abundantly represented in the Old World Tropics. The members of this genus have the hind tibiae unspurred and the basal tarsus of the hind legs without apical clawlike spines; in the forewings the basal vein forks at one point into three veins. *Megatrioza* is a common genus in the Palæotropics, differing from *Trioza* chiefly in the armature of the hind tibiae. It is a curious fact that several other palæotropical genera of Triozinæ have the hind tibiae more or less armed as in *Megatrioza*.

Two closely allied but distinct species in Borneo have certain *Trioza* characters, but still are not typical members of that genus. Provisionally, however, they may be grouped in *Trioza*.

*Trioza insula* sp. nov. Plate 1, fig. 2.

Length of body, 2.3 millimeters (female); forewing, 3. General color light brown, eyes and part of vertex adjoining eyes black, a black spot on mesopleura. Head short in dorsal aspect, vertex smooth, without depressions, rounded forward and down, in front extending down narrowly on each side and beyond front ocellus between bases of genal cones. Genal cones half as long as vertex, conical, subacute, divergent. Antennæ about twice as long as width of head, moderately stout.

Thorax smooth, surface reticulately marked. Hind tibiae with a very small spur at base and three spines at apex. Forewing long and narrow, acutely pointed, hyaline, with a brown stripe along posterior margin from claval suture to apex; media and cubitus not forking from basal trunk at same point with radius; radius short. Hind wing a little more than half as long as forewing.

Female genital segment nearly as long as rest of abdomen, subacute at apex.

BORNEO, Sandakan (*Baker*), 1 female.



*Trioza papillata* sp. nov. Plate 1, fig. 3.

Very obviously related to *T. insula* but quite different in several respects. Insect much smaller, body, about 1 millimeter long; forewing, 2 millimeters long. Vertex as in related form, extending forward in front of front cellus; genal cones small, fingerlike or nipplelike in shape, separate at base and slender, acute. Antennæ black, twice as long as width of head. Legs small and slender. Forewings similar to *T. insula* in shape and venation, but smaller and without brown band. Female genital segment about as long as rest of abdomen, acute at apex.

BORNEO, Sandakan (*Baker*), 1 female.

*Megatrioza asiatica* Crawford.

This tropical Asiatic species appears to be present in Borneo, being represented in C. F. Baker's collection by four specimens which closely resemble specimens from other regions. These were taken at Sandakan, Borneo.

*Megatrioza eugenioides* Crawford.

This species appears to be rather widely distributed in tropical Asiatic regions. Several additional specimens have been taken by Baker at Sandakan, Borneo.

*Megatrioza grandis* sp. nov. Plate 1, fig. 1.

Somewhat similar to *M. gigantea* Crawford, but longer and slenderer. Length from head to tip of folded wings, 8 millimeters or more. Orange to light brown, few or no markings on body; legs and antennæ concolorous, wings slightly fuscous.

Genal cones shorter than vertex, broad and rounded, sparsely hairy. Antennæ nearly twice as long as width of head, slender. Thorax long. Legs long, rather stout; hind tibiæ with large spur at base and three short spines at apex. Forewing very long, three times as long as broad, subacute at apex; upper fork of media terminating at wing tip; cubitus forked distad of mid-point. Hind wings about half as long as forewings.

Male forceps nearly as long as anal valve, slender, curved, with a fringe of hairs on posterior margin; anal valve broad, posterior margin bulging caudad, with a fringe of long hairs.

BORNEO, Sandakan (*Baker*), 1 male.



*Leuronota attenuata* sp. nov. Plate 1, fig. 4.

Length of body, 2.2 millimeters; forewings, 4.0; length from head to tip of folded wings, 4.8. General color light brown with black irregular markings on thorax; forewings light brown, not transparent, thickly mottled with small black or brown spots.

Body narrow, long, dorsum not at all arched. Head porrect, vertex as long as broad, protruding forward in two short, blunt epiphyses; genal cones nearly as long as vertex, porrect, constricted at base, diverging, acute, hairy. Antennæ twice as long as width of head, slender.

Thorax with a sparse clothing of long hairs; tibiæ more densely hirsute; hind tibiæ with a spur at base and one long and three shorter spines at apex. Forewing opaque, long and narrow, acutely pointed at apex, strikingly mottled, veins setose. Hind wings nearly as long as forewings.

Male genitalia: Forceps about as long as anal valve, broad at apex, moderately stout; anal valve short, apex truncate, each side protruding a little caudad at apex.

BORNEO, Sandakan (*Baker*), 1 male.

*Leuronota microceras* (Crawford).

This was described as a *Cerotrioza* from one specimen taken in West Borneo (Mowong) by F. Muir. It is specifically quite distinct from the new species described above, but should be referred to the genus *Leuronota* instead of *Cerotrioza*.

*Arytaina pulchra* sp. nov. Plate 1, fig. 5.

Length of body, 2 millimeters; forewings, 2.5 millimeters. General color brownish; vertex, pronotum, and mesonotum light brown, the rest dark brown with irregular light markings and spots; forewings strikingly maculated with dark brown.

Head not strongly deflexed; vertex a little more than half as long as wide; genal cones nearly as long as vertex, divergent, porrect, subacute. Antennæ very long and slender, about as long as body to tip of forewings.

Thorax briefly pubescent. Legs slender, femora spotted with brown. Forewings broadest subapically, rather square at apex and narrowing toward base, transparent except on maculae, veins spotted. Hind wings nearly as long as forewings. In shape of forewings this seems to resemble species of *Diaphorina*, but is distinct in other characters.



Female genital segment short, both valves acutely pointed.  
BORNEO, Sandakan (*Baker*), 1 female.

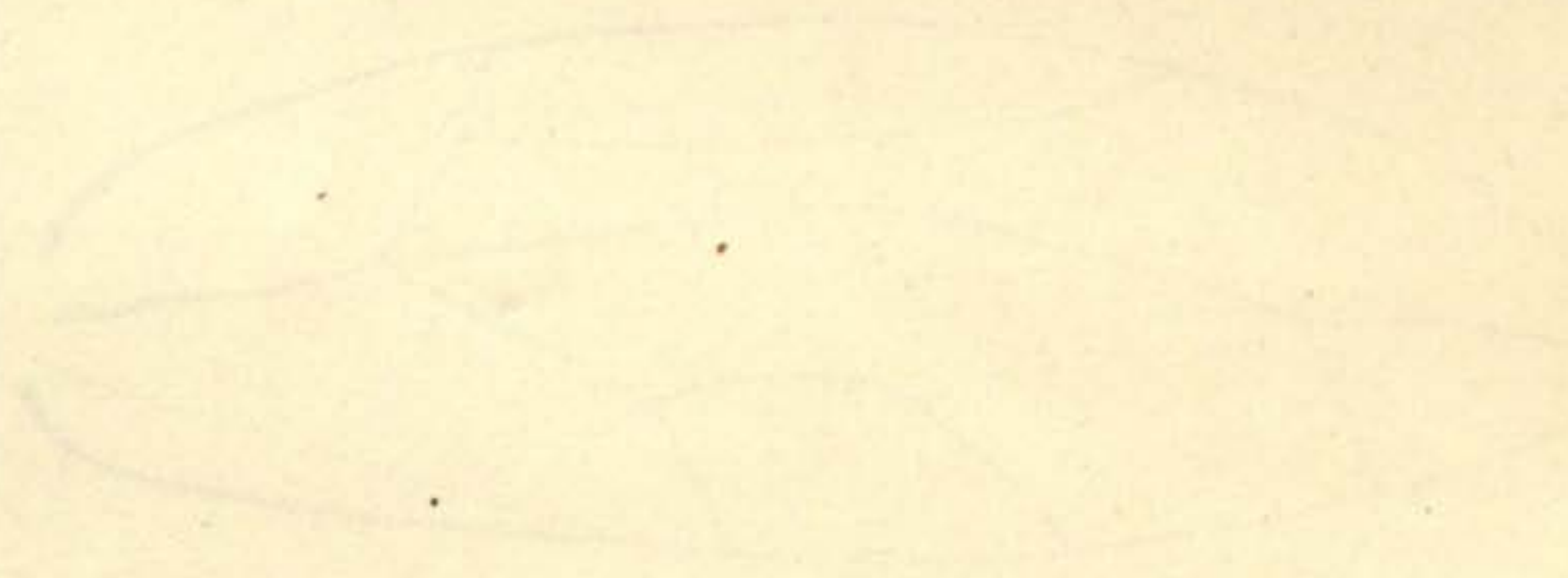
*Arytaina variabilis* Crawford.

Probably this is a widely distributed species, as it has been found in the Philipines, Malay Peninsula, and now in Borneo, all by C. F. Baker. The dark band on the hind margin of the forewing makes this an easily recognized species.

*Psylla fumosa* Crawford.

Six more specimens of this species have been collected by Baker at Sandakan, Borneo, all closely resembling the type, and bearing the same similarity to the Philippine species, *P. crenata*.





## ILLUSTRATION

### PLATE 1

Forewings of Psyllidæ. (Stippled areas represent solid coloration of wing membrane.)

- FIG. 1. *Megatrioza grandis* sp. nov.; original drawing, about  $\times 25$ .  
2. *Trioza insula* sp. nov.; original drawing,  $\times 35$ .  
3. *Trioza papillata* sp. nov.; original drawing,  $\times 28$ .  
4. *Leuronota attenuata* sp. nov.; original drawing,  $\times 24$ .  
5. *Arytaina pulchra* sp. nov.; original drawing,  $\times 28$ .  
6. *Trigonon pacificum* g. et sp. nov.; original drawing,  $\times 28$ .



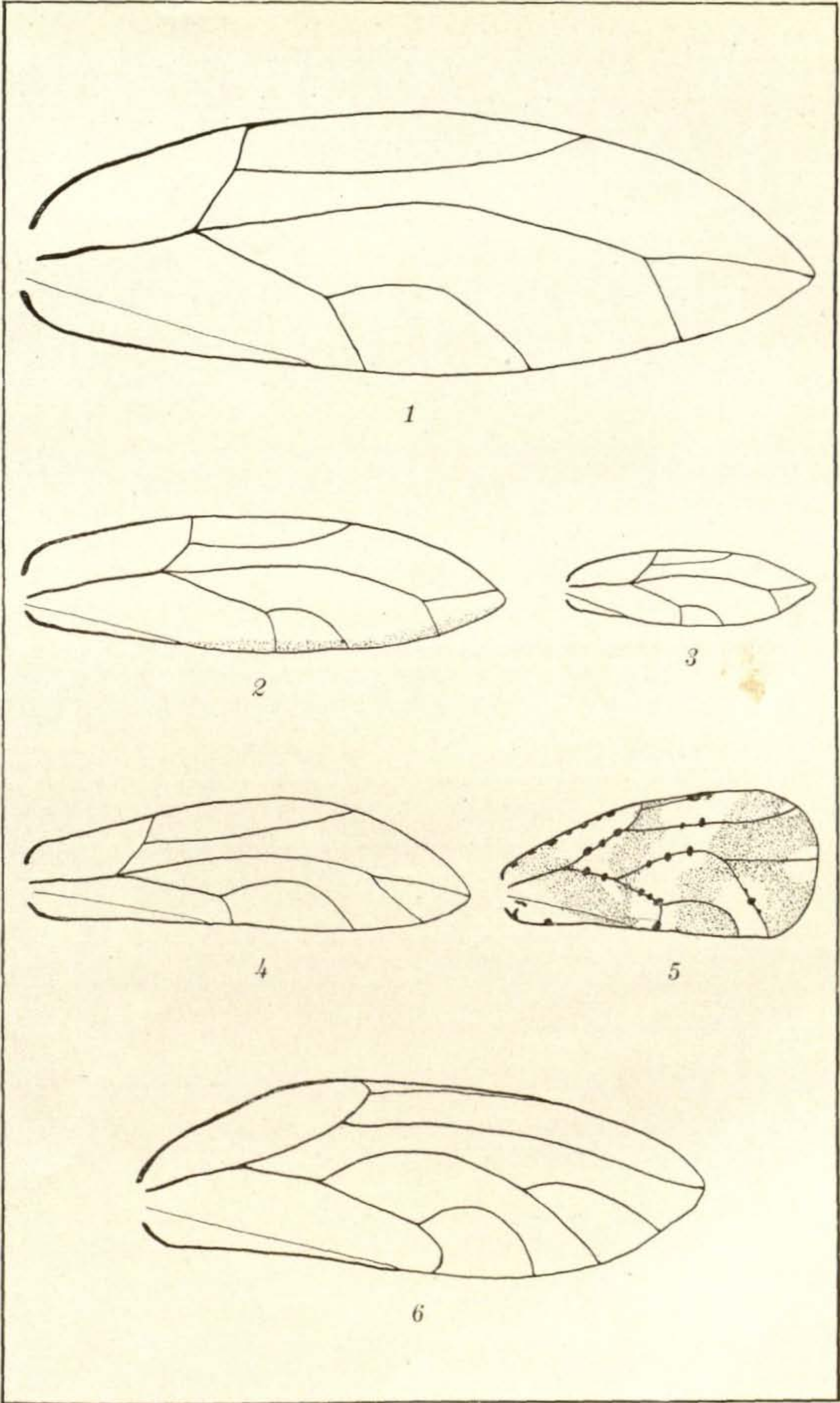


PLATE 1. FOREWINGS OF PSYLLIDÆ.



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