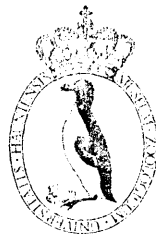


# Steenstrupia

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## The Tropicuchidae collected by the Noona Dan Expedition in the Philippines and the Bismarck Archipelago (Insecta, Homoptera, Fulgoroidea)

[Noona Dan Papers No. 110]

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*Abstract.* Fourteen species, twelve of which are new to science, are recorded and described in the genera *Leptovanua* (5), *Oechalina* (1), *Epora* (3), *Tambinia* (1), and *Neocatara* (2). A key to the genera of Tropicuchidae of Borneo, New Guinea and the Philippines and a key to the species of *Peggioga* are presented.

The collecting-stations of the Noona Dan expedition (Petersen, 1966) sited in southern Palawan and its outlier Balabac, and in Tawi-Tawi, enabled samples to be taken of the fauna on the two approaches to the Philippine Islands from Borneo, and those in the Bismarck Islands permitted corresponding sampling of the fauna on the north-western approach to the Solomon Islands from New Guinea.

The Tropicuchid Fulgoroidea, with which this report is concerned, were represented in the collections by twenty-one specimens, belonging to seven genera and fourteen species, twelve of which are new to science. Members of this family speciate readily in isolation, and it is the genera rather than the species that are likely to be of value to the zoogeographer.

### *Key to genera of the Tropicuchidae of Borneo, New Guinea and the Philippine Is.*

1. Nodal line of transverse veinlets basad of middle of tegmen, or tegminal veins setose below ..... 2
- Nodal line of transverse veinlets distad of middle of tegmen, or absent ..... 5
2. Pronotum with a single carina between eye and tegula ..... 3
- Pronotum without a lateral carina ..... 4
3. Pre-costal area narrow, with widely separated transverse veinlets; all veins on corium and membrane setiferous ..... *Stacoti*

- Pre-costal area absent, or at most present only as a narrow seam; only transverse and apical veins setiferous ..... *Leusaba*
- 4. Tegmina with Cu 1 forked on corium; veins of membrane setiferous ..... *Paricana*
- Tegmina with Cu 1 not forked on corium; veins not setiferous ..... *Pseudoparicana*
- 5. Tegmina coriaceous, clavus not separated from corium ..... *Hieracia*
- Tegmina not coriaceous, clavus separated from corium ..... 6
- 6. Post-tibiae with two spines laterally ..... 7
- Post-tibiae with more than two spines laterally ..... 10
- 7. Post-tibiae with six or more spines at apex ..... *Neommatissus*
- Post-tibiae with less than six spines at apex ..... 8
- 8. Frons visible from above ..... *Garumna*
- Frons not visible from above ..... 9
- 9. Vertex with carinae callused; one complete and one incomplete carina laterally between eye and tegula; tegmina with corium granulate. Anal style of female long, surpassing ovipositor ..... *Kallitaxila*
- Vertex with carinae fine, not thickened; a single carina laterally on pronotum between eye and tegula; tegmina with corium not or only feebly granulate. Anal style of female very small, not surpassing ovipositor ..... *Tambinia*
- 10. Post-tibiae with four spines laterally ..... 11
- Post-tibiae with three spines laterally ..... 12
- 11. Median carina of frons broad basally, narrowing distad; pro- and mesotibiae not compressed ..... *Catullia*
- Median carina of frons broad, not narrower at apex than at base; pro- and mesotibiae a little compressed ..... *Catullioides*
- 12. Post-tibiae with seven spines apically ..... 13
- Post-tibiae with less than seven spines apically ..... 14
- 13. Claval veins uniting basad of middle of commissural margin of clavus; pronotum with median carina simple ..... *Isporisa*
- Claval veins uniting distad of middle of commissural margin of clavus; pronotum with median carina double ..... *Epora*
- 14. Vertex distinctly longer than pronotum and mesonotum combined .. 15
- Vertex not longer than pronotum and mesonotum combined ..... 16
- 15. Frons with a pair of oblique intermediate carinae in addition to median carina ..... *Rhinodictya*
- Frons with only median carina ..... *Peggioga*
- 16. Frons with a pair of oblique intermediate carinae in addition to median carina ..... *Leptovanua*
- Frons with only median carina ..... 17
- 17. Tegmina with Sc, R and M forking near base and forking again repeatedly before nodal line ..... *Thymbra*
- Tegmina with Sc, R and M not forking close to base, or subdividing greatly before nodal line ..... 18
- 18. Sc + R forked in middle of corium ..... 19
- Sc + R forked basad of middle of corium ..... 21

- 19. Tegmina with nodal line oblique ..... *Neocatara*
- Tegmina with nodal line transverse, not oblique ..... 20
- 20. Vertex quadrate or pentagonal ..... *Tropiduchus*
- Vertex short, rounded anteriorly ..... *Varma*
- 21. Sc + R forked once in corium ..... 22
- Sc + R forked twice in corium ..... *Ficarasa*
- 22. Vertex short, pentagonal ..... *Thaumantia*
- Vertex bluntly triangularly produced ..... 23
- 23. Tegmina with subapical line nearer to nodal line than to apical margin; claval veins uniting distad of middle of commissural margin of clavus ..... *Oechalina*
- Tegmina with subapical line nearer to apical margin than to nodal line; claval veins uniting at middle of commissural margin of clavus . *Daradax*

*Leptovanua* Melichar, 1914

Type species, *L. suturalis* Melichar, 1914.

Pronotum with median carina paired or obscurely and finely grooved, a single carina on each side between eye and tegula. Post-tibiae with three spines laterally, five apically; basal metatarsal segment with five teeth apically. Genital styles of male asymmetrical, fused together in middle line to form an elongate boat-like structure, a stout narrowly cylindrical process arising dorsally on left slightly distad of middle, twisted laterad and decurved in its apical third.

Species of the genus have been recorded from Indonesia (Sumbawa), the Moluccas, the Solomon Islands and Micronesia.

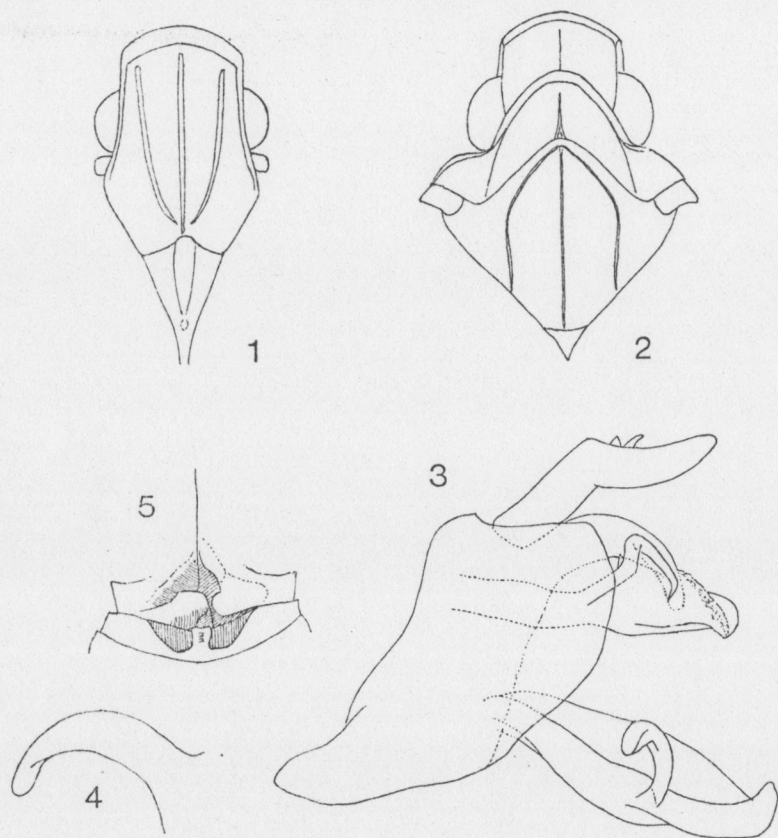
*Leptovanua valokana* sp. n. Figs. 1-5

Types. Bismarck Is., NEW BRITAIN: holotype ♂, Valoka, 13.vii.1962; paratypes ♂, ♀, same loc., 6. and 7.vii.1962. - In the Zoological Museum, Copenhagen.

*Description.* ♂♀. Vertex broader at level of base of median carina than long in middle (nearly 1.9 : 1) and at sides (1.5 : 1), finely medially carinate. Frons longer in middle line than broad at widest part (about 1.35 : 1). Pronotum with two carinae, sometimes contiguous, in middle line. Tegmina with veins of R and M not branching in subapical cells, but branching in apical cells.

Pale green, fading to stramineous after death; median carina, anterior and lateral margins of vertex, median carina of pronotum and of mesonotum, post-scutellum, third abdominal tergite laterally, and fourth to seventh tergites in middle line frequently red. Tegmina greenish-hyaline, cell between posterior claval vein and hind margin sometimes dilutely suffused with red; margin of tegmen at humeral angle and a minute spot in membrane just distad of claval apex, and about three small faint spots in M and R just distad of nodal line of cross-veins, sometimes fuscous.

♂. Anal segment of male bilaterally symmetrical; apical margin excavate, anal foramen situated near middle. Pygofer asymmetrical, with left side produced throughout in a broadly rounded lobe, with margin inflected mesad near



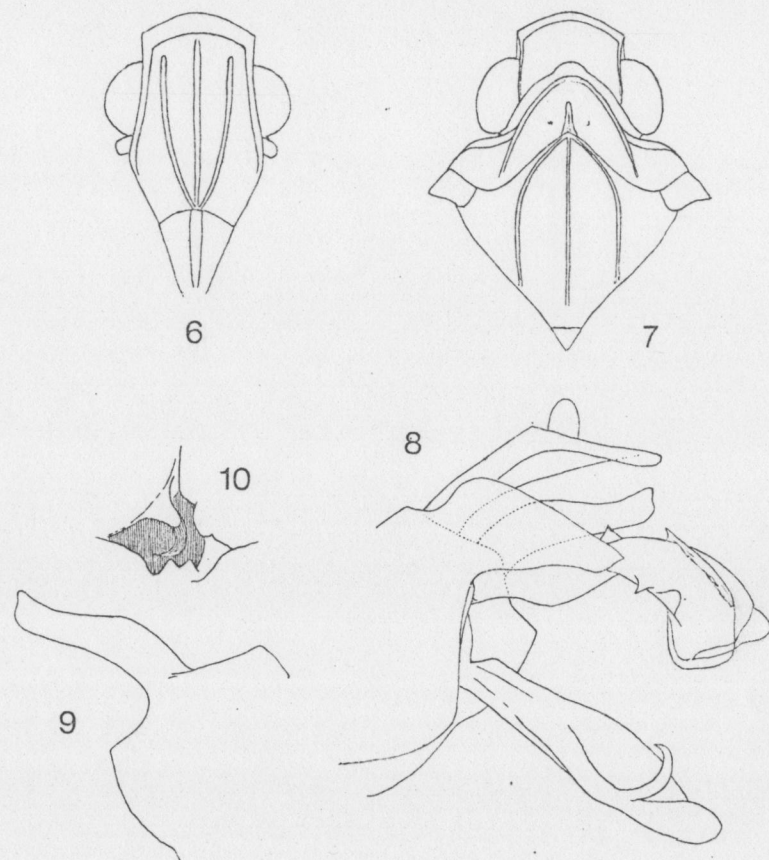
Figs. 1-5. *Leptovanua valokana* sp. n. 1) Frons and clypeus; 2) head and thorax, dorsal view; 3) male genitalia, left side; 4) dorsolateral angle of right side of pygofer; 5) pregenital sternite and base of ovipositor.

dorsolateral angle, which is obtusely rounded; right side not produced except at dorsolateral angle where it is strongly produced caudad in a long stout, almost spiniform, process that curves ventrad distally. Aedeagus long, tubular, expanded in distal half to twice its basal width, submembranous and dorsally hollowed out in apical third, a stout spinose process arising dorsally at two thirds from base directed to left and slightly decurved in its distal half, a small shallowly knoblike callus on mesal side at its base. Genital styles as figured, a relatively long shallow lobe on inner surface of left half near middle line at apex.

♀. First valvifers of ovipositor produced mesad at base in two unequal lobes, as figured. Pregenital sternite in posterior half depressed on each side of middle, so that middle line remains elevated as a broad ridge.

♂: length, 9.0 mm, tegmen, 10.0 mm. ♀: length, 9.5 mm, tegmen, 11.0 mm.

Remarks. This species is nearest to *suturalis* Melichar (from Shortland Id.)



Figs. 6-10. *Leptovanua manusensis* sp. n. 6) Frons and clypeus; 7) head and thorax, dorsal view; 8) male genitalia, left side; 9) dorsolateral angle of right side of pygofer; 10) median part of posterior margin of pregenital sternite, and base of ovipositor.

but is much larger (the total length of *suturalis* from head to apex of folded tegmina is given by Melichar as 5.0 mm in the male and 6.5 mm in the female).

*Leptovanua manusensis* sp. n. Figs. 6-10

Types. Bismarck Is., MANUS: holotype ♂, paratype ♀, Lorengau, 18.vi.1962; paratype ♀, 1932 (N. E. H. Caldwell). - Holotype and a paratype in the Zoological Museum, Copenhagen, the other paratype in the British Museum (Nat. Hist.).

Description. ♂♀. Vertex broader at level of base of median carina than long in middle (1.9 : 1) and than at side (nearly 1.5 : 1), feebly or distinctly medially carinate. Frons longer in middle line than broad at widest part



(1.5 : 1), oblique carinae not quite meeting median carina apically. Pronotum with median carina narrowly grooved, not attaining anterior margin. Tegmina with veins of R and M forking both in subapical and apical areoles.

Pale green; anterior margin of vertex, and head and thorax in middle line, red, spines on hind legs black-tipped. Tegmina hyaline, veins green, a faint suffusion on each vein immediately distad of nodal line, and a faint suffusion on subapical line of transverse veinlets, brown, sometimes a suffusion at basal angle of clavus, not including posterior claval vein, fuscous or piceous, powdered with white.

♂. Anal segment bilaterally symmetrical, rather slender, in side view narrow and tapering distad of anal foramen, apical margin deeply excavate, anal foramen situated at middle. Pygofer asymmetrical, dorsolateral angle of left side strongly produced caudad in a triangular lobe, bluntly pointed at its apex, left margin slightly excavate at its base, then straight to base of genital styles; dorsolateral angle of right side produced caudad in a narrow sinuate lobe as long as corresponding process on left, lateral margin below this obtusely angulately produced. Aedeagus long, sinuate, expanding and deflexed in distal third, a triangular lobe on dorsal margin at middle, and a short stout spine near lower margin on left at two-thirds from base. Genital styles as figured, a shallow lenticular lobe on inner surface of left half near middle line.

♀. First valvifers of ovipositor each produced mesad at base in a lobe, that of right valvifer shorter than broad at base, and with distal margin more or less excavate, that of left valvifer almost two-branched, with a shallow rounded lobe about as large as that on right valvifer, and a narrow almost tubular branch extending mesocephalad into cavity at base of ovipositor. Pregenital sternite with posterior margin abruptly excavate in middle third, and with a pair of small tubercles, each pointed at apex, in middle line.

♂: length, 6.8 mm; tegmen, 9.4 mm. ♀: length, 8.5 mm; tegmen, 10.0 mm.

*Remarks.* This species differs from *suturalis* in size and from *valokana* in the proportions of the head, the shape of the male genitalia and of the lobes on the valvifers of the ovipositor.

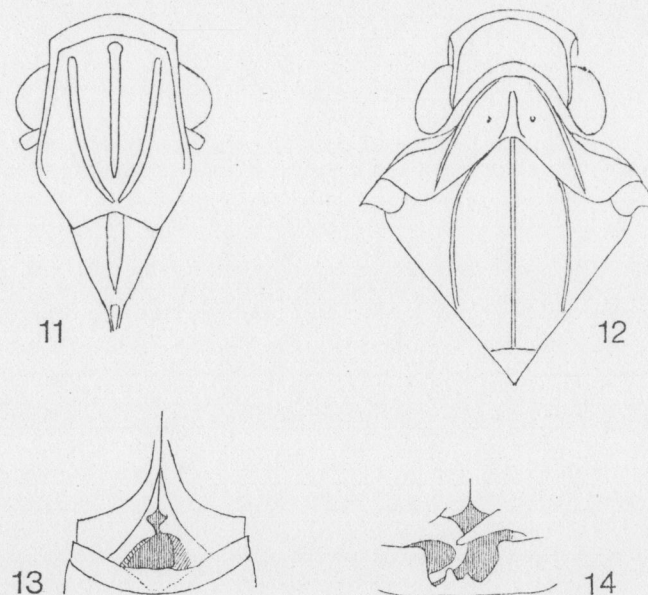
*Leptovanua yalomana* sp. n. Figs. 11–13

*Holotype* ♀, Bismarck Is., NEW BRITAIN: Yalom, 1000 m, 22.v.62. – In the Zoological Museum, Copenhagen.

*Description.* ♀. Vertex broader at level of base of median carina than long in middle (1.7 : 1) and than at sides (2.3 : 1), distinctly medially carinate; frons longer in middle line than broad at widest part (1.3 : 1), oblique carinae not quite meeting in middle line distally, median carina well developed in basal two-thirds of frons, absent in apical third. Tegmina with veins of R and M branching just distad of nodal line, and branching at, but not distad of, subapical line of transverse veinlets.

Pale green, fading to stramineous after death, spines on hind legs black-tipped. Tegmina hyaline, veins green, a faint suffusion on each distad of nodal line, and a faint suffusion on subapical line of transverse veinlets, brown.

First valvifers of ovipositor each produced mesad in a small triangular lobe,



Figs. 11–13. *Leptovanua yalomana* sp. n. 11) Frons and clypeus; 12) head and thorax, dorsal view; 13) pregenital sternite and base of ovipositor.

Fig. 14. *Leptovanua mussauana* sp. n. Pregenital sternite and base of ovipositor.

as figured, the lobes not quite symmetrical. Pregenital sternite with posterior margin, including middle line, depressed in its median third.

Length, 9.0 mm; tegmen, 10.5 mm.

*Remarks.* This species differs from *valokana* in the proportions of the head, the absence of a median carina distally on the frons, and the shapes of the lobes on the first valvifers of the ovipositor and of the hind margin of the pregenital sternite. In the tegmina, the veins of R and M branch in the subapical cells just distad of the nodal line, and fork again at the subapical line of transverse veins, whereas in *valokana* the veins of R and M do not branch in the subapical cells, but do so distad of the subapical line.

*Leptovanua mussauana* sp. n. Fig. 14

*Holotype* ♂, Bismarck Is., LUF (Hermit Is.): 27.vi.1962. – In the Zoological Museum, Copenhagen.

*Description.* ♀. Vertex broader at level of base of median carina than long in middle (2.25 : 1) and than at sides (1.8 : 1), median carina distinct. Frons longer in middle line than broad at widest part (1.3 : 1), oblique carinae just or scarcely meeting median carina apically, median carina complete. Tegmina with veins of R and M branching immediately distad of nodal line; only one or two veins branching in apical areoles.

Pale green, fading to stramineous after death, spines on hind legs black-tipped. Tegmina hyaline, veins green.



First valvifers of ovipositor each produced mesad in a long finger-like lobe, as figured, that of right valvifer directed mesoventrad, that of left valvifer directed mesodorsad, then curving laterad, a small rounded lobe, produced ventrocephalad, at base of this process. Pregenital sternite abruptly rectangularly excavate in median two sevenths of width, posterior margin at middle produced caudad in an unequal pair of minute conical processes, each acute apically.

Length, 9.0 mm; tegmen, 10.0 mm.

*Holotype* ♀, Bismarck Is., MUSSAU: Talumalaus, 22.i.1962. – In the Zoological Museum, Copenhagen.

*Remarks.* This species is distinguishable by the proportions and carination of the frons and vertex, by the distal venation of the tegmina and the structural details of the first valvulae and of the pregenital sternite. In genitalic structure it is nearest to *manusensis*, but differs in the shape of the processes on the valvifers and in the more rectangular margin of the excavation of the pregenital sternite. It also differs from this species in the relative positions of the forks of Sc+R, Cu 1 and the junction of the claval veins.

*Leptovanua eremita* sp. n. Figs. 15–18

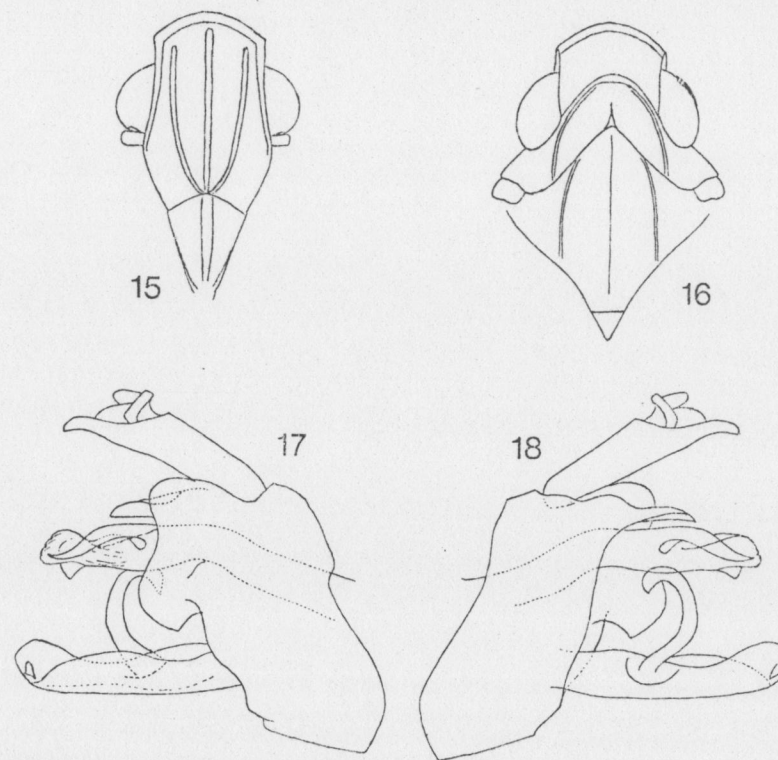
*Description.* ♂. Vertex broader at level of base of median carina than long in middle (1.8: 1) and than at sides (1.5: 1), median carina obsolete. Frons longer in middle line than broad at widest part (1.38: 1), oblique carinae not meeting median carina. Pronotum with median carina distinctly grooved, not attaining anterior margin. Tegmina with veins of R and M in subapical cells forked closely adjacent to nodal line, and not forked in apical cells.

Pale green, fading to stramineous after death; anterior margin and sides of vertex, red, spines on hind legs black-tipped. Tegmina hyaline, veins green, a faint suffusion on each vein distad of nodal line and a fainter suffusion on subapical line of transverse veinlets, brown; posterior claval vein and commissural margin sometimes red.

Anal segment of male bilaterally symmetrical, moderately long, tapering distad of anal foramen; apical margin short, convex; anal foramen situated distad of middle. Pygofer asymmetrical, dorsolateral angle of left side strongly produced caudad in a narrow twisted lobe, left margin below this weakly sinuate; dorsolateral angle of right side and dorsal half of right margin strongly produced caudad in a subquadrate lobe with its distal angles rounded and its distal margin sinuate. Aedeagus long, slightly deflexed at two fifths from base, a stout sinuate acuminate process directed caudad, dorsally at apex, below this a membranous, broadly trough-like lobe. Genital styles as figured, a long process, recurved apically, arising on left at middle, directed dorsad and curving cephalad, a small thin bluntly-rounded lobe on inner surface of left half of genital styles at apex.

Length, 7.0 mm; tegmen, 7.7 mm.

*Remarks.* This species is distinguishable by the proportions and carination of the frons and vertex, by the distal venation of the tegmina and the structural details of the male genitalia. In the relatively larger process on the left side of



Figs. 15–18. *Leptovanua eremita* sp. n. 15) Frons and clypeus; 16) head and thorax, dorsal view; 17) male genitalia, right side; 18) the same, left side.

the fused genital styles this species differs strikingly from *valokana* and *manusensis*.

*Oechalina* Melichar, 1914

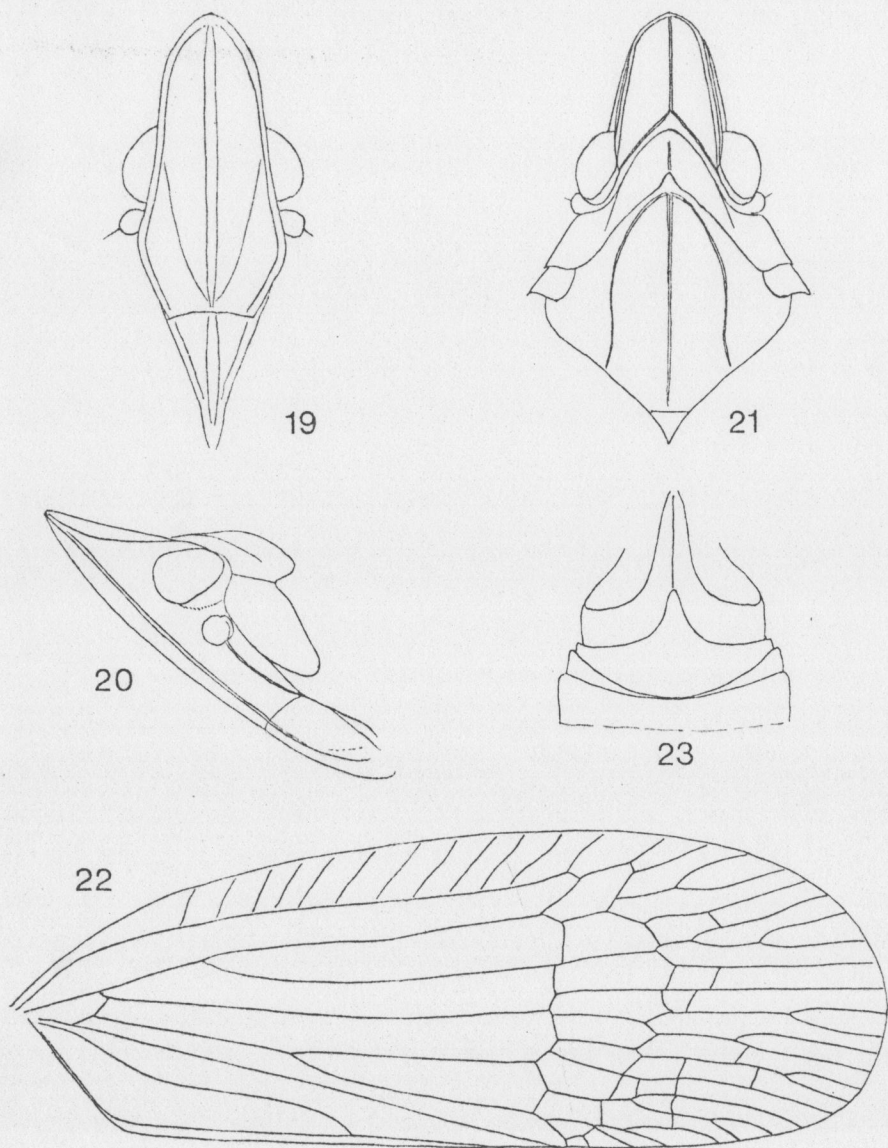
Type species, *O. stativa* Melichar.

Lateral margins of lateral lobes of pronotum almost straight. Post-tibiae with three spines laterally, six apically, basal metatarsal segment with six spines distally. This genus is so far known only from New Guinea.

*Oechalina polyxo* sp. n. Figs. 19–23

*Types.* Bismarck Is., NEW BRITAIN: holotype ♀, Valoka, 11.vii.1962; paratype ♀, same loc., 8.vii.1962. – In the Zoological Museum, Copenhagen.

*Description.* ♀. Vertex at widest part broader than long in middle line (1.15:1). Frons longer in middle line than broad at widest part (1.75:1). Tegmina with Sc + R fork, Cu 1 fork and union of claval veins lying in the same oblique line, costal area with 13–14 cells, and distad of these about 24 cells adjoining margin between node and apex of clavus, a few irregular transverse veinlets



Figs. 19–23. *Oechalina polyxo* sp. n. 19) Frons and clypeus; 20) head, lateral view; 21) head and thorax, dorsal view; 22) tegmen; 23) pregenital sternite and base of ovipositor.

in apical cells, distance between nodal line of transverse veinlets and subapical line about half that between subapical line and apical margin.

Pale green; carinae and margins of vertex, pronotum and mesonotum red,

dorsal surface of abdomen reddish brown, post-tibial spines black-tipped. Tegmina milky-hyaline, veins green.

Ovipositor with first valvifers each with a small spatulate lobe directed ventrocephalad. Pregenital sternite with posterior margin strongly produced caudad in a triangular lobe with concave sides.

Length 10.5 mm.; tegmen, 11.2 mm.

*Remarks.* This, the third species of the genus, differs from *stativa* Mel. in the proportions of the vertex, and from both this species and *subacta* Mel. in the fewer transverse veinlets in the tegminal membrane, as well as in the markedly fewer apical areoles. The green colour of the frons is darker in two narrow lines that occupy positions corresponding to the intermediate carinae in *Leptovanua*, but they are not accompanied by any modification of the smooth surface of the disc.

*Epora* Walker, 1857

Type species, *E. subtilis* Walker.

Frons parallel-sided, with lateral margins and median carina thickened. Pronotum with two submedian carinae and two carinae at each side, the upper entire, the lower formed of two incomplete carinae that overlap at middle. Post-tibiae with three spines laterally, seven spines at apex, basal metatarsal segment with six to eight spines apically.

Male with pygofer bilaterally symmetrical. Genital styles separate, symmetrical. Tegmina with costal area wider than costal cell, with transverse veinlets. Sc + R forked distad of middle of tegmen, Cu 1 forked in basal quarter, claval veins uniting at middle of clavus.

Members of this genus so far recorded have been assigned to one of two species, *montana* Distant, from India, and *subtilis* Wlk. from Malaya, Indonesia and the Philippine Islands. Three new species are recognised below, and there can be little doubt that members of other new species have in the past been assigned to the Bornean *subtilis*.

*Epora laticeps* sp. n. Figs. 24–29

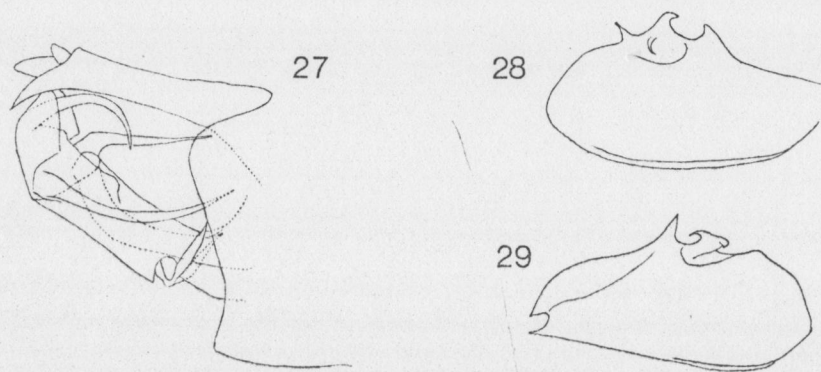
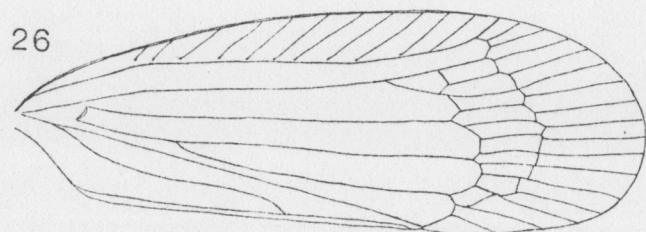
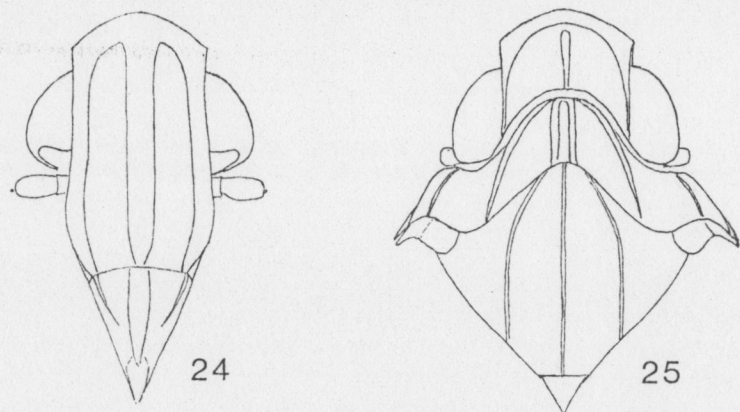
*Holotype* ♂, Philippine Is., PALAWAN: Tagembung, 1150 m, 20.ix.1961. – In Zoological Museum, Copenhagen.

*Description.* ♂. Vertex broader at level of base of median carina than long in middle (1.6 : 1), distinctly medially carinate. Frons longer in middle line than broad at widest part (1.6 : 1). Basal metatarsal segment with six spines apically. Tegmina with cell Sc short, one fifth as long as vein Sc + R measured from basal cell; Cu 1 forking much basad of level of union of claval veins.

Pale green, spines on hind legs black-tipped. Tegmina hyaline with veins green.

Anal segment of male elongate, tubular, anal foramen in apical fifth, latero-apical angles acutely produced. Pygofer with dorsolateral angles slightly produced caudad, broadly subrectangulately rounded. Aedeagus long, tubular in basal threequarters, curved upward in distal quarter; a long spinose process arising dorsally at three quarters from base, directed dorsocephalad. A process arising on left of aedeagus at middle, curving ventromesad and forking into

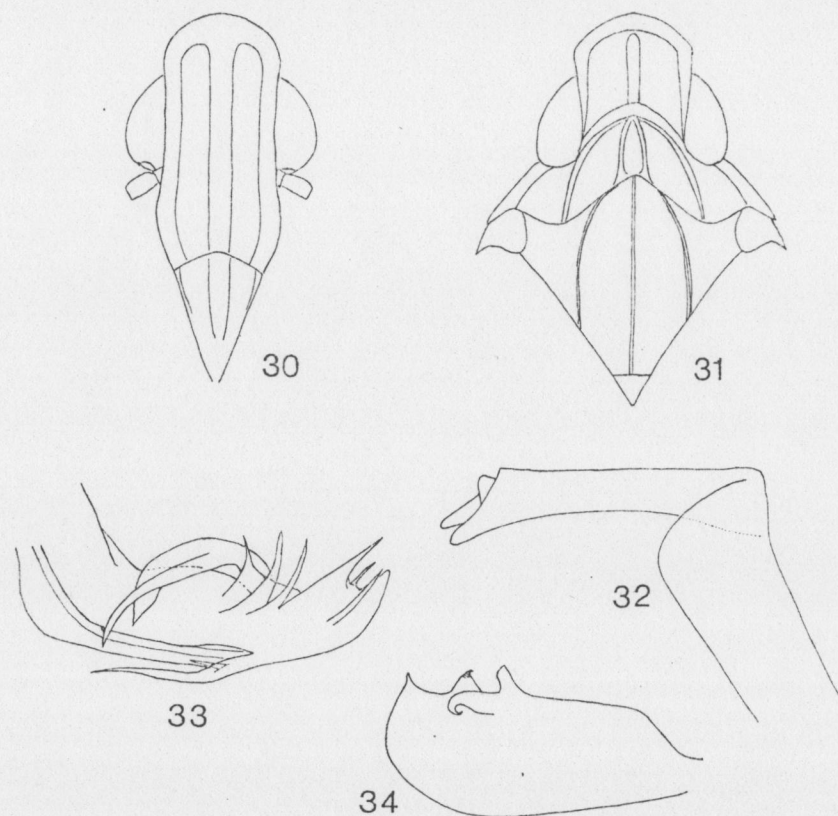




Figs. 24-29. *Epora laticeps* sp. n. 24) Frons and clypeus; 25) head and thorax, dorsal view; 26) tegmen; 27) anal segment of male, posterior margin of pygofer, and aedeagus, right side; 28) right genital style, dorsolateral view; 29) left genital style, lateral view.

two spine-like branches, which are recurved dorsad, one on each side of aedeagus. A long spinose process arising on right at threequarters from base, curved dorsocephalad, a long curved process dorsally at apex. directed dorsad and curving cephalad and to right.

Genital styles bilaterally symmetrical, shaped as figured.



Figs. 30-34. *Epora stenops* sp. n. 30) Frons and clypeus; 31) head and thorax, dorsal view; 32) anal segment of male; 33) aedeagus, left side; 34) right genital style.

Length, 7.0 mm; tegmen, 7.2 mm.

*Remarks.* This species differs from *montana* Distant in the proportions of the frons and vertex and from *subtilis* Wlk. in the shape of the dorsolateral angles of the pygofer, which in the latter species are acutely rounded, and in the more closely apposed lower lateral marginal carinae of the pronotum, which in the type of *subtilis* are separated by a gap more than half as wide as that between the upper marginal carina and the uppermost of the lower two, and are thus developed as three carinae, of which the lowest is incomplete anteriorly and thicker than the others.

*Epora stenops* sp. n. Figs. 30-34

*Holotype* ♂, Philippine Is., PALAWAN: Uring-Uring, 25.viii.1961. - In the Zoological Museum, Copenhagen.

*Description.* ♂. Vertex broader at level of base of median carina than long in middle (1.2 : 1), distinctly medially carinate. Frons longer in middle line than



broad at widest part (nearly 1.9 : 1). Basal metatarsal segment with seven or eight spines. Tegmina with cell Sc short, about one sixth as long as vein Sc + R measured from basal cell. Cu 1 forking much basad of level of union of claval veins.

Pale green, spines on hind legs black-tipped. Tegmina hyaline, with veins green.

Anal segment of male elongate, tubular, anal foramen in distal sixth, lateroapical angles each shortly produced and tapering to a blunt point. Pygofer with dorsolateral angles only a little produced, broadly rectangularly rounded. Aedeagus tubular and straight in basal two thirds, slightly bent upward in distal third, a long spinose process arising at right in apical third, directed cephalad and lying near ventral margin of aedeagus, a small spine arising near its middle; a lobe arising dorsally near middle with three spinose processes, directed dorsad, at its base, produced in a narrow process directed cephalad, then curving ventrocephalad, above aedeagus, with its left distal margin produced in a slender pigmented spine; apex of aedeagus furnished with three rather short spinose processes, all directed caudad. Genital styles as figured.

Length, 6.8 mm; tegmen, 7.0 mm.

*Remarks.* This species differs markedly from the sympatric *laticeps* sp. n. in the proportions of the vertex and frons, and in the structure of the aedeagus.

*Epura themisto* sp. n. Figs. 35-39

*Types.* Philippine Is., TAWI TAWI: holotype ♂, Tarawakan, 22.x.1961; paratype ♂, Lapid Lapid, 19.xi.1961. - In the Zoological Museum, Copenhagen.

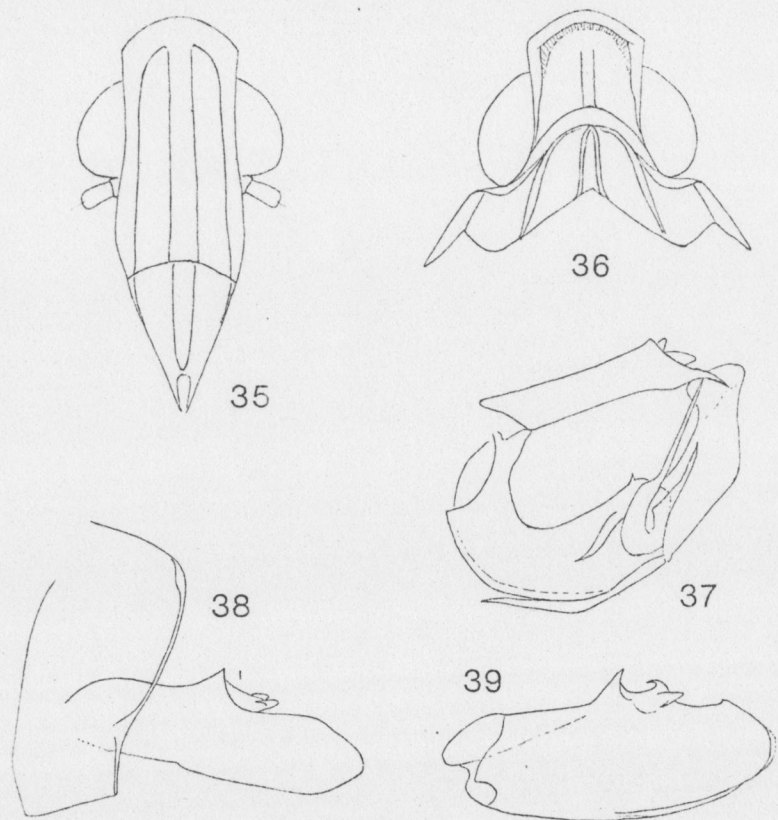
*Description.* ♂. Vertex broader at level of base of median carina than long in middle (1.1 : 1), distinctly medially carinate. Frons longer in middle line than broad at widest part (2.1 : 1). Basal metatarsal segment with six spines apically. Tegmina with cell Sc moderately long, not quite half as long as vein Sc + R measured from basal cell (1 : 1.85), Cu 1 forking only moderately basad of union of claval veins.

Pale green, spines on hind legs black-tipped. Tegmina hyaline, with veins green.

Anal segment of male elongate, tubular, anal foramen in distal quarter, lateroapical angles each shortly produced and tapering to a blunt point. Pygofer with dorsolateral angles only a little produced, broadly subrectangularly rounded. Aedeagus tubular, deeply curved in its basal half, weakly ascending in its distal half; a long spinose process arising ventrally on left at two-thirds from base, directed cephalad and slightly curving laterad near apex; a shorter spinose process arising dorsally on left at two-thirds from base, directed ventrocephalad; three spinose processes arising at two-thirds from base directed caudad, two of them curved upwards, subequal in length and moderately dilated in their basal two thirds, the third much longer, straight, evenly tapering distad. Genital styles as figured.

Length, 7.1 mm; tegmen, 7.3 mm.

*Remarks.* This species is distinguishable by the proportions of the frons and vertex, and by the relatively elongate subcostal cell in the tegmina.



Figs. 35-39. *Epura themisto* sp. n. 35) Frons and clypeus; 36) vertex and pronotum, dorsal view; 37) anal segment of male and aedeagus, left side; 38) pygofer and left genital style; 39) left genital style in slightly dorsolateral view.

*Peggioga* Kirkaldy, 1905

Type species, *P. formosa* Kirkaldy.

*Key to species:*

1. Vertex scarcely exceeding combined length of pronotum and mesonotum.  
New Guinea ..... *solitaria* Melichar
- Vertex markedly exceeding combined length of pronotum and mesonotum ..... 2
2. Width of precostal area of tegmen not or little exceeding thickness of anterior marginal vein, lateral carinae of median disc of pronotum almost meeting posterior margin; lateral marginal carinae of pronotum thick ..
- ..... 3
- Width of precostal area of tegmen amply exceeding thickness of anterior marginal vein, lateral carinae of median disc of pronotum not nearly meeting posterior margin; lateral marginal carinae of pronotum not thick ..
- ..... 5

3. Anterior branch of Cu 1b simple from subapical cell to apical margin, so that apical cell Cu 1b is not subdivided by veinlets. Dorey ..... *simplex* Fennah
- Anterior branch of Cu 1b forked between subapical cell and apical margin, so that apical cell Cu 1b is subdivided by one or more veinlets
4. Precostal area of tegmen not wider than thickness of anterior marginal vein, posterior subapical cell giving off three branches of Cu 1b, the most anterior of which forks remote from apical margin. Morty ..... *nigrifinis* Walker
- Precostal area a little wider than thickness of anterior marginal vein; posterior subapical cell giving off two branches of Cu 1b, the anterior of which forks shortly before reaching apical margin. Amboina ..... *amboinensis* Fennah
5. Apex of head, in anterior view, with a pair of large circular depressions separated by a narrow septum of callus; transverse veinlets in precostal area oblique. Pygofer with left dorsolateral angle obtuse, not or scarcely produced; aedeagus with only a very short process ventrally on left (figs. 42 and 43). Solomon Is. .... *lungana* Fennah
- Apex of head, in anterior view, without large depressions, median area broadly callused; transverse veinlets in precostal area not oblique. Pygofer with left dorsolateral angle subacutely produced caudad; aedeagus with a rectangularly deflexed flattened acuminate process laterally on left (fig. 40 and 41), New Britain ..... *formosa* Kirkaldy

*Peggioga formosa* Kirkaldy, 1905. Figs. 40,41

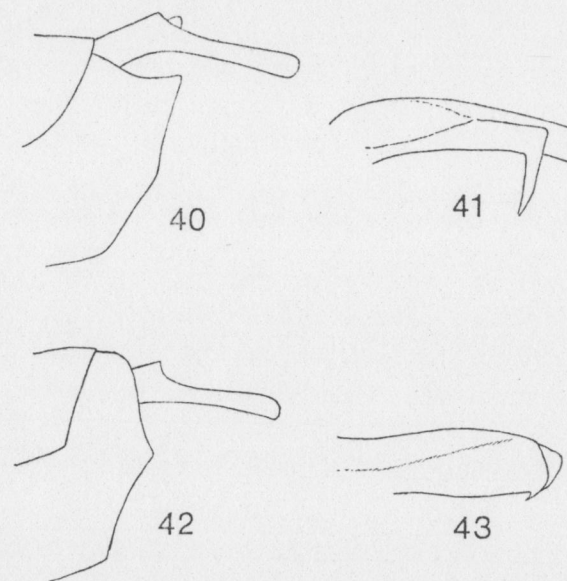
*Material.* Bismarck Is., NEW BRITAIN: 1 ♂, Keravat, on *Hibiscus*, 7.v.1968 (F. R. Wylie, 198, C.I.E. coll. A.2891).

*Remarks.* Kirkaldy cited Lifu as the type locality. However, the type and co-type (from the Willey collection) in the British Museum (Natural History) are labelled "New Britain". In a recent study of the Fulgoroidea of New Caledonia and the Loyalty Is. I found no representatives of *Peggioga*, and listed *formosa* only in reference to Kirkaldy's statement. Since doing so I have seen the present male from New Britain that agrees in all respects, including details of genitalic structure, with the type of *formosa*. As the collection studied by Kirkaldy had been made in Birara (New Britain) and Lifu, the locality cited on the label of the type must be considered correct, and in view of the high degree of endemism shown by other species of the genus, it would now appear most improbable that *formosa* occurs in the Loyalty Islands.

*Tambinia* Stål, 1859

Type species, *T. languida* Stål.

One or two carinae between eye and tegula, if two, the upper one very feeble; hind margin of pronotum angulately excavate. Post-coxal process spatulate, papery, post-tibiae with two spines laterally. Tegmina with corium not granulate, subapical cells longer than apical, Cu 1 forking basad of union of claval veins.



Figs. 40, 41. *Peggioga formosa* Kirk. 40) Anal segment and pygofer, left side; 41) aedeagus, left side. – Figs. 42, 43. *Peggioga lungana* Fennah. 42) Anal segment and pygofer, left side; 43) aedeagus, left side (all freehand sketches from undissected genitalia of type specimens).

The genus has been recorded from India, Ceylon, Burma, Malaya, China, New Guinea, Australia, Formosa, Japan, the Bonin Islands and Micronesia.

*Tambinia pitho* sp. n. Figs. 44–49

*Holotype* ♂, Philippine Is., TAWI TAWI: Tarawakan, 5.xi.1961. – In the Zoological Museum, Copenhagen.

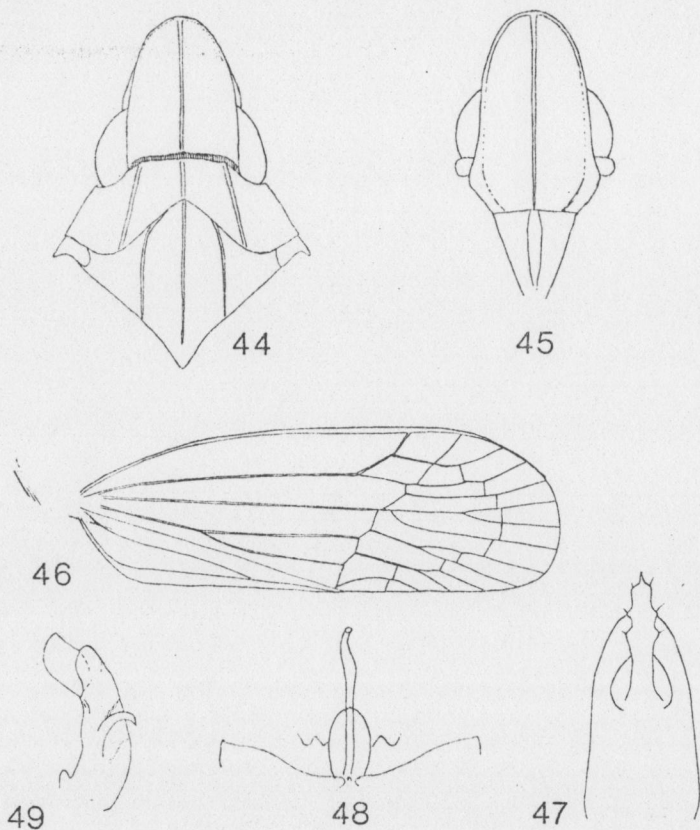
*Description.* ♂. Vertex longer in middle line than broad at level of base of median carina (1.1 : 1), and than pronotum in middle line (about 2.5 : 1); frons longer in middle line than broad (1.5 : 1), disc shallowly tectiform in basal half, flat in distal half. Post-tibiae with five spines apically, basal meta-tarsal segment with five spines. Tegmina longer than broad (2.9 : 1) with Sc + R fork level with apex of clavus. Sc with two cells before nodal line. Cu 1 forking basad of level of union of claval veins.

Stramineous, probably green in life; post-tibial spines black-tipped.

Anal segment moderately long, apical margin deeply rounded and style rather long and narrow, distinctly surpassing margin, three small setae on each side, each on a small eminence. Pygofer with lateral margins straight. Aedeagus rather long, narrowly tubular, slightly sinuate, orifice at apex. Genital styles moderately long, each with a stout spinose process arising dorsally just basad of middle, directed dorsad and curved cephalad at apex, inner (ventral) margin of styles at base produced in a small triangular lobe, then uniting with a large median ovate lobe that is finely reticulate and slightly pigmented.

Length, 4.0 mm; tegmen, 4.4 mm.





Figs. 44–49. *Tambinia pitto* sp. n. 44) Head and thorax, dorsal view; 45) frons and clypeus; 46) tegmen; 47) anal segment of male, dorsal view; 48) aedeagus, inner portion of base of genital styles, and ventral margin of pygofer, ventral view; 49) left genital style, dorsal view.

*Remarks.* This species, the only one so far reported from the Philippines, is distinguishable by the proportions of the vertex and the frons, and by the shape of the male genitalia. In general appearance it broadly resembles *guamensis*, but differs in the carination of the pronotum, the number of spines on the hind legs, in the shape of the post-coxal process and in the structure of the male genitalia.

*Neocatara* Distant, 1910

Type species, *Catara subdivisa* Walker, 1870

Members of the genus have been recorded from the Moluccas and the Philippine Is. The occurrence of a species in New Britain, reported below, suggests that the genus is present in New Guinea also.



Fig. 50. *Neocatara ramnes* sp. n. Posterior margin of pregenital sternite at d base of ovipositor. – Fig. 51. *Neocatara deucalion* sp. n. Pregenital sternite and base of ovipositor.

*Neocatara ramnes* sp. n. Fig. 50

*Holotype* ♀, Philippine Is., BALABAC: Dalawan Bay, 12.x.1961. – In the Zoological Museum, Copenhagen.

*Description.* ♀. Vertex broader at widest part than long in middle line (3 : 1). Frons longer than broad (nearly 1.5 : 1), all carinae broad. Post-tibiae with three spines laterally, six apically, basal metatarsal segment with six teeth.

Yellowish brown, tinged with green, lateral and anterior margins of vertex, lateral margins and median carina of frons, and median carina of clypeus, orange-red. Tegmina brownish-hyaline, costal area and costal cell, a diffuse oblique fascia across basal third, a second overlying nodal line, and an area including apical areoles in M and veins, except in nodal line, slightly darker. Costal margin reddish brown. Wings hyaline, becoming slightly infuscate in distal third, veins dark fuscous.

Ovipositor with first valvifers each strongly produced ventrocaudad in an acuminate triangular lobe, that of left side longer than its counterpart on right; posterior margin of valvifers near sides each slightly produced in a small eminence, with 1–3 small setae arising from it. Pregenital sternite with posterior margin shallowly concave in median third, the corners of the emargination not at all angulate.

Length, 7.6 mm; tegmen, 8.8 mm.

*Remarks.* This species differs from *philippinensis* Distant in the absence of pallid speckling on the frons near its lateral margins, and in the shape of the processes on the valvifers, those of *philippinensis* tapering abruptly and curving mesad.

*Neocatara deucalion* sp. n. Fig. 51

*Holotype* ♀, Bismarck Is., NEW BRITAIN: Valoka, 11.vii.1962. – In the Zoological Museum, Copenhagen.

*Description.* ♀. Vertex broader at widest part than long in middle line (3 : 1). Frons longer than broad (1.6 : 1), carinae not broad but median carina markedly elevated and broader than lateral carinae. Post-tibiae with three spines laterally, six apically, basal metatarsal segment with six teeth.

Dark yellowish-brown, with slight green tinge; about 25 round spots in each compartment of frons paler than ground; anterior margin of vertex, lateral margins of frons and median carina of frons and vertex, red; irregular



spots before eyes and around ocelli, on ventral margin of lateral lobe of pronotum, on each side of median compartments of mesonotum basally, in lateral fields of mesonotum, and on procoxae and mesopleura, fuscous. Tegmina rather dark yellowish brown, an oblique fascia from costal margin in basal third to clavus near union of veins, dull castaneous, a suffusion overlying nodal line at R and M, and extending over apical areoles, fuscous, veins concolorous. Wings hyaline, dilute fuscous in distal third, veins fuscous.

Ovipositor with first valvifers each strongly produced mesocaudad in a subtriangular lobe, each with inner margin bent ventrad and slightly produced caudad in a blunt point, the two lobes not quite symmetrical, as figured; posterior margin of valvifers not produced in an eminence near sides. Pregenital sternite with posterior margin shallowly excavate in median third, the corners of the emargination obtusely angulate.

Length, 7.0 mm; tegmen, 8.0 mm.

*Remarks.* This species differs from *subdivisa* Walker in the shape of the processes of the valvifers.

#### *Catullia* Stål, 1870

Type species, *C. subtestacea* Stål, 1870.

Anterior margin of vertex shallowly convex. Protibiae rather slender; a black spot on mesopleura below tegmen; post-tibia with four spines laterally, seven apically, basal metatarsal segment with eight teeth. Tegmina with Cu 1 fork distinctly distad of union of claval veins, the latter basad of middle of claval suture.

The genus is represented in Indonesia, Viet-nam, the Philippine Islands, China and Japan.

#### *Catullia subtestacea palawana* ssp. n. Figs. 52, 53

*Holotype* ♂, Philippine Is., PALAWAN: Pinigisan, 600 m, 1.ix.61. — In the Zoological Museum, Copenhagen.

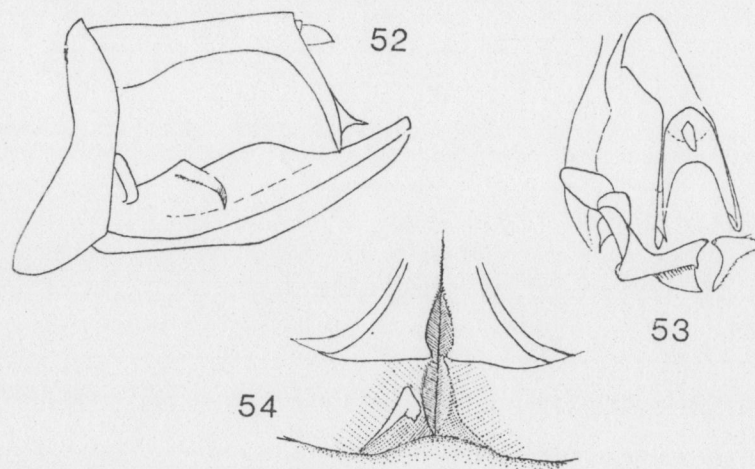
*Description.* ♂. Tegmina longer than broad (3.4 : 1).

Light yellowish brown, middle line of vertex, pronotum and mesonotum and a band from behind eye to lateral margin of mesonotum near tegula, orange-red. Tegmina hyaline, a suffusion partly covering apical cells of Sc and R, a linear suffusion from nodal line in M to apex of tegmen, and a fainter suffusion inside margin distad of apex of clavus, fuscous, veins light yellowish brown, darker in fuscous areas. Wings hyaline, veins light yellowish brown.

Genitalia generally as in typical subspecies. Aedeagus with three spinose processes on right distally directed caudad, the outer two arising from the same lobe, and one medially, directed caudad, and slightly decurved and one on left side distally, broad at its base, tapering rapidly distad and slightly decurved at its tip. Genital styles in side view as figured.

Length, 4.9 mm; tegmen, 7.0 mm.

*Remarks.* This subspecies differs from members of the Luzon population in the proportions of the tegmina and in the less elevated lateral lobe on the genital



Figs. 52–53. *Catullia subtestacea palawana* ssp. n. 52) anal segment of male, pygofer and genital style, left side; 53) anal segment, left genital style and apex of right genital style, posterior view slightly from left.

Fig. 54. *Catullioides albosignatus* (Distant). Posterior margin of pregenital sternite and base of ovipositor.

styles. *C. subtestacea* has also been recorded from Java, Sumatra, Viet-nam (Tonkin) and southern China (Chekiang).

#### *Catullioides* Bierman, 1910

Type species, *C. rubrolineatus* Bierman, 1910. Syn.: *Barunoides* Distant, 1912; type species, *B. albosignatus* Distant.

Anterior margin of vertex distinctly and evenly convex. Protibiae slightly dilated; a black spot present on mesopleura; post-tibia with 3–4 spines laterally, 7 apically, basal metatarsal segment with 7 or 8 teeth. Tegmina with Cu 1 fork level with or slightly basad of claval veins, the latter distad of middle of claval suture.

#### *Catullioides albosignatus* (Distant, 1906). Fig. 54

*Material.* Philippine Is., MINDANAO: ♀, Sapamoro, 22.xii.1961.

*Remarks.* This specimen has tegmina that are dull yellowish-hyaline and traversed from base to apex by a broad fuscous band with ill-defined edges. *C. albosignatus* has been recorded from India, Ceylon, Indonesia, the Philippine Islands, Formosa and Japan.

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*Correction.* ("Stenstrupia", 1: 67,68). The first two lines under the heading: *Leptovanua mussauana* sp.n. on p. 67 belong under the heading: *Leptovanua eremita* sp.n. on p. 68.