

New Achilidae (Homoptera: Fulgoroidea) from Central America, South Africa and South East Asia

By

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(With 102 figures)

In the writer's "Generic Revision of Achilidae" (1950, Brit. Mus. (N. H.) Ent. Bull. 1 [1]) the definitions of genera, more than half of which were then known only from a single species, for the most part were based on characters of the type species. Examination of new and undescribed material since then has revealed that in some genera, at least, the shape of the head is more variable between species than has been allowed for in the definitions. Some new genera and species are described below, and the notes given with the descriptions are intended to relate them to concepts defined in the 'Generic Revision' cited above. The new taxa are compared with known taxa with which, on the basis of existing descriptions, they might possibly be confused; the comparisons do not necessarily imply a close phylogenetic relationship between the taxa compared. Until more is known about variation between species in the genera of Plectoderini, there are no reliable means of assessing the relative importance of characters as indicators of natural relationship at different levels.

The triangular facets that are sometimes developed between the vertex and the frons sometimes become so tilted downwards anteriorly or laterally as to appear as structures developed from the frons or the genae; they are, however, referred to throughout as the "lateroapical areolets of the vertex." The aedeagus comprises a tube, variously ornamented, which is traversed by a pair of strap-like phallic appendages that arise from a sclerotised ring at its base. The tube, or phallobase, usually has the upper surface more or less feebly sclerotised, the sides each developed as

distinctly sclerotised and often bearing a row of denticles on the lower or upper surface, or both, and the 'floor' of the tube is formed of two closely apposed lobes that often unite apically and may be reflected ventrocephalad.

The initials U.S.N.M. and B.M. (N.H.) used below mean the United States National Museum and the British Museum (Natural History), respectively. The writer is greatly indebted to Dr. D. A. Young, Mr. J. P. Doncaster, and the authorities of both these Museums for the privilege of examining this material.

Koloptera Metcalf

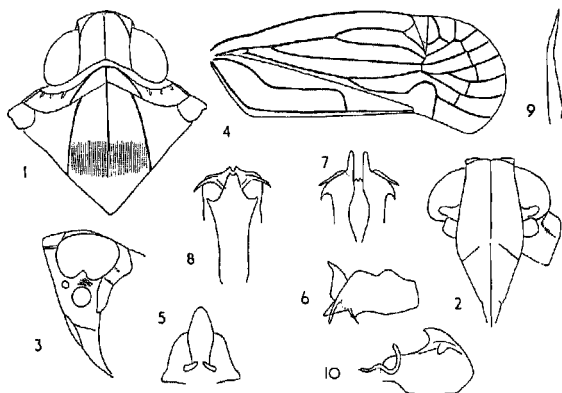
Metcalf 1938 Bull. Mus. comp. Zool. Harv. 82: 371. Orthotype
Koloptera callosa Metcalf

Both in the original definition and that given by the present writer (1950 Brit. Mus. (N. H.) Ent. Bull. 1: p 97) this generic concept is defined in part by the shape of the head. It has more recently been found, from examination of undescribed material from Central America, that there is a series of forms, undoubtedly closely related to *Koloptera callosa* Metc., that range, in the shape of the head, from the condition found in the type species to one approaching that in *Catonia*. The generic definition needs amendment. Of the head characters, the only features that appear to be constant are a frontal disc that is very flattened, or even slightly concave, and the presence of a sub-horizontal ridge on the side of the head between the eye and the anterior margin. This is normally easily seen, but in a species described as new below it serves as part of the boundary of a lateroapical areolet of the vertex.

Koloptera breviceps sp. n.

Figs. 1—10

Vertex as broad as long, anterior margin very shallowly rounded, a relatively large and strongly hollowed areolet on each side apically; frons a little longer in middle line than broad, disc flat in basal half, lateroapical areolets of vertex distinctly visible in frontal view of head. Pronotum with areolets laterad of median disc well defined anteriorly, less so posteriorly. Post-tibiae with one spine laterally, seven apically; basal metatarsal segment with six



Figs. 1—10. *Kolaptera breviceps* sp. n. 1, Head and thorax, dorsal view; 2, frons and clypeus; 3, head in profile; 4, tegmen; 5, anal segment of male, dorsal view; 6, aedeagus, right side; 7, apex of aedeagus, dorsal view; 8, aedeagus, ventral view; 9, distal portion of phallic appendages, dorsal view; 10, genital style, dorsal view.

spines. Tegmina with same shape and venation as in typical subspecies, but without a callus in apical cells of Sc and R.

Dark reddish brown speckled with testaceous. Tegmina, fuscous hyaline, corium traversed by two matt fasciae, dark reddish brown, and most of clavus matt, and of same colour; intervenal areas with sparse yellowish granules; no callus present near node. Wings infusate, veins concolorous.

Anal segment of male, in dorsal view, trapezoidal, broader than long, apical margin transverse. Aedeagus with phallobase rather broad and short, a pair of spinose processes ventrolaterally near apex directed lateroventrad, apical margin on each side of middle line produced caudad in a finger-like lobe, from base of which, on outer side, the margin is convex, curving cephalad to a short acuminate process directed cephalad; medially near apex dorsally a relatively large vertical triangular lobe; aedeagal appendages symmetrical, tapering throughout their length to acute apex, slightly divergent distally. Genital styles in ventral view subovate, inner margin sinuate, apical margin rounded, dorsal margin produced dorsad in two processes, one directed dorsally, the other laterodorsally.

Male: length, 3.6 mm; tegmen, 3.7 mm. Female: length 4.1 mm; tegmen, 5.0 mm.

Holotype ♂, Panama: Gatun Lake, Cano Saddle, 27. iv. 23 (R. C. Shannon) in U.S.N.M.

Paratype, 1♀, Trinidad Rio, 21. iii. 12 (A. Busck); 1♀ La Jolla, 26. iv. 51 (F. S. Blanton). This species is distinguished from the typical species by the shorter vertex, the absence of a callus in the tegmen, by coloration and by the form of the male genitalia.

Afrachilus gen. n.

Bodily form rather elongate. Head with eyes a little narrower than pronotum. Vertex horizontal, broader than long, anterior margin obtusely convex, lateral margins straight, posterior margin shallowly concave, disc flat, medially carinate, a pair of areoletts apically, frons about as long in middle line as broad, about as wide at apex as at base, in profile meeting vertex acutely, basal margin shallowly convex, lateral margin in anterior view almost straight, in profile weakly convex, disc flat, ecarinate medially, lateral margins carinate; clypeus about as long as frons, shallowly convex, ecarinate with lorae lying almost in same plane as disc of post-clypeal portion, rostrum surpassing mesotrochanters but not attaining posttrochanters, subapical segment longer than apical; antennae with basal segment cylindrical, widening distad, about as long as broad, second segment longer and wider than first, pyriform, rather compressed antero-posteriorly, apical margin very oblique; third segment narrowly cylindrical, with an arista, ocelli distinct, eyes narrowly reniform, deeply emarginate below. Pronotum moderately long, with anterior margin shallowly convex, posterior margin obtusely angulately emarginate, disc shorter in middle line than vertex, tricarinate, lateral carinae convex, not distinctly reaching to hind margin, a carina laterally on each side between eye and tegula, outer angle of lateral lobes, in anterior view, rounded, tegulae distinct; mesonotum rather longer than vertex and pronotum combined, broader than long, disc flat or weakly concave, lateral carinae complete, median carina incomplete, pro-tibiae a little shorter than profemora; post-tibiae laterally unarmed, apically with seven or eight teeth, basal metatarsal segment apically with two normal and six scale-like teeth, second segment rather explanate, with two normal and seven scale-like teeth. Tegmina almost four times as long as broad, Sc + R simple to nodal line,

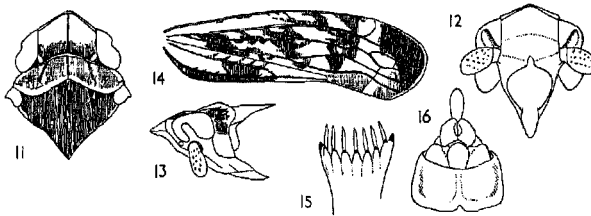
M forked close to subapical line of transverse veins, Cu 1 forked near middle of tegmen; clavus reaching distinctly beyond middle of tegmen, claval veins uniting a little basad of level of Cu 1 fork. Wings as long as tegmen, R distally strongly curved anteriorly. Abdomen relatively narrow, seventh sternite of female long; a subgenital lobe present medially between valvifers. Type species, *Afrachilus mirabilis* sp. n.

This genus is to be referred to the Plectoderini by reason of the form of the tegmen, in which the elongate common stem Sc + R is the only unusual feature, but, in this tribe, it occupies a very isolated position. The form of the clypeus recalls that in the Myconini, the shape of the antennae is unusual, and is to be compared with the condition found in *Haitiana*. The shape of the vertex, and to a less extent that of the pronotum, suggests that of a Gengid or of certain Issidae. The scale-like teeth on the post-tarsus are similar to those found in Cixiidae and Dictyopharidae. In the writer's key (Fennah 1950:47) the type species, by reason of the presence of lateropical areolets on the vertex, runs to couplet 122, but does not exhibit the venational character there given.

Afrachilus mirabilis sp. n.

Figs. 11—16

Vertex broader at base of middle line than long in middle (1.5 : 1), lateral margins straight, not diverging caudad, incurved at base, lateropical areolets each narrow and extending to middle line of frons; frons longer in middle than broad (about 1.2 : 1), an



Figs. 11—16. *Afrachilus mirabilis* gen. et sp. n. 11, Head and thorax, dorsal view; 12, frons and clypeus; 13, head in profile; 14, tegmen; 15, apical margin of second metatarsal segment; 16, female genitalia, ventral view.

indistinct transverse ridge between ocelli, basad of which disc is slightly depressed; antennae with basal segment relatively narrow, second bearing conspicuous sensoria. Pronotum with a single complete carina at each lateral margin, and two small pustules between this and lateral carina of disc; mesonotum with median carina distinct only in middle of disc, absent anteriorly and posteriorly.

Pale testaceous; a broad band transversely across frons pale, almost white; basal half of vertex, pronotum, except for carinae and lateral lobes, mesonotum, except for median carina and postero-lateral margins in part, fuscous-piceous; abdominal tergites in part, ventrites medially and narrowly along posterior margins, and anal style of female below, fuscous. Tegmina with corium wrinkled in transverse parallel striae between veins, thereby assuming a milky-hyaline appearance, two oblique fasciae arising on costal margin, the first near base, the second near middle, both extending to apex of clavus, an irregular fascia from apex of costal cell to M-Cu crossvein, apical areolets from stigma to cell M1 + 2, apical cell Cu 1 b, clavus in basal half between posterior vein and margin, and transversely at middle, fuscous; veins of corium pallid, interruptedly fuscous; of membrane concolorous. Wings sordid white, venation reddish brown.

Anal segment of female short, apical margin truncate, anal style narrowly ovate, subacute apically, flattened on ventral surface. Seventh sternite long, carinate laterally; subgenital plate slightly longer than broad, distally rather deeply rounded. Ovipositor with third valvulae thick, strongly curved, in repose contiguous along their distal margin.

Female: length, 4.9 mm, tegmen, 4.7 mm.

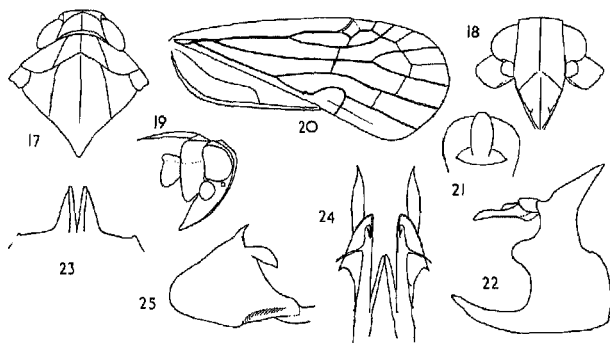
Holotype ♀, South Africa: Cape Town to Cape Point, 6—13. xi. 1930, (H. W. S i m m o n d s), B. M. (N. H.) 1931—83.

In the Cixiid genus *Oliarus* the occurrence of scale-like teeth on the apical margin of the post-tarsal segments is a character of specific or species group value, and accordingly, although *Afradulus* is the only example known of its occurrence in plectoderine Achilidae, the character is, for the present, not accorded much taxonomic weight.

Indorupex gen. n.

Vertex declivous, broader at base of middle line than long (more than 2:1), anterior margin convex, finely carinate, lateral

margins strongly diverging basad, posterior margin shallowly concave, disc not at all depressed, punctulate, and finely carinate medially, base of frons visible from above; frons longer in middle line than broad (scarcely 1.2 : 1), about as broad at base as at apex, basal margin transverse, lateral margins gradually diverging to below level of antennae, thence incurved to frontoclypeal suture, disc slightly convex, punctulate, a fine median carina present; clypeus as long as frons in middle line, post-clypeal portion medially and laterally carinate, in profile moderately convex, rostrum reaching to post-trochanters; antennae with second segment subglobose, ocelli distinct, eyes, in side view, deeply rounded, almost semi-circular in outline. Pronotum punctulate, appreciably wider than head with eyes, broad behind eyes, about as long in middle as vertex, anterior margin of disc shallowly convex, posterior margin shallowly concave, disc finely tricarinate, with lateral carinae reaching hind margin, no supernumerary carinae behind eyes, lateral margins with a single carina, fine and rather obscure; mesonotum slightly longer than broad, slightly convex, disc rather finely tricarinate; post-tibiae with one spine laterally and eight teeth at apex, basal metatarsal segment with seven teeth, second segment with six. Tegmina longer than broad (about 2.5 : 1), costal margin feebly convex, apical margin broadly rounded, commissural margin



Figs. 17--25. *Indorupex albivenulosus* gen. et sp. n. 17, Head and thorax, dorsal view; 18, frons and clypeus; 19, head and thorax, lateral view; 20, tegmen; 21, anal segment of male, dorsal view; 22, pygofer, right side; 23, medio-ventral process of pygofer; 24, distal half of aedeagus, dorsal view; 25, right genital style, lateral view.

forming a re-entrant angle of about 156 degrees at apex of clavus, apex of clavus situated at level of middle of tegmen, tegmina in repose with membrane moderately deflexed, Sc + R fork and union of claval veins slightly basad of Cu 1 fork, nine areoles at apical margin, each shorter than corresponding subapical areole.

Anal segment of male short. Pygofer with medioventral process deeply cleft medially.

Type species, *Indorupex albivenulosus* sp. n.

This genus differs from *Rupex*, to which the type species runs in the writer's key (1950 : 47), in the absence of supernumerary carinae on the pronotum and of subfoliate elevations on the tegminal veins. The vertex is relatively much broader than in *Rupex*, and the pronotum relatively longer behind the eyes. The post-tibiae in *Rupex* have seven teeth apically. From *Benella* and *Caffropyrrhyllis* it is separated by the shape of the vertex and pronotum and by the form of the tegminal venation, especially of vein Cu 1 b. In superficial appearance it most resembles *Pyrhyllis*, but lacks the impression on the anterior part of the disc of the vertex, and differs in the shape of vein Cu 1 b.

Indorupex albivenulosus sp. n.

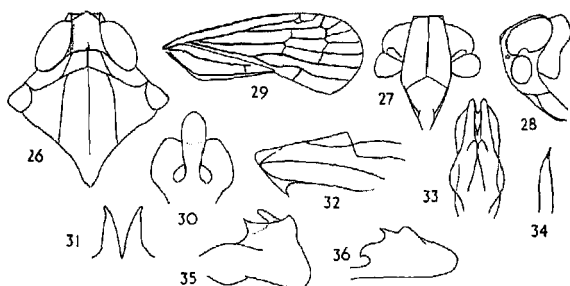
Figs. 17—25

Vertex broader at base of middle line than long (2.2 : 1); frons longer in middle line than broad (1.1—1.2 : 1). Head and pronotum more coarsely punctulate than mesonotum.

Frons, vertex and pronotum and tegulae, yellowish-brown; clypeus, pleura, lateral fields of mesonotum, legs and abdomen, reddish brown; disc of mesonotum castaneous. Tegmina fuscous, a small spot each on Sc + R, M, and Cu 1 at level of union of claval veins, a small spot on Sc and one on M at level of apex of claval fork of Sc at stigma, R-M and M-Cu crossveins, subapical line of transverse veinlets, all veins at junction with apical margin, anterior claval vein (PCu) at junction with posterior vein (1A), and a small spot at apex of clavus, ivory white. Wings subhyaline, suffused fuscous, becoming darker distad, veins fuscous.

Anal segment of male in dorsal view broadly rounded, rather broader than long. Pygofer moderately long, with dorsolateral angles rather abruptly produced caudad in a short subacute lobe, lateral margins produced mesocaudad at middle in a larger deeply

rounded lobe, ventral margin convex, produced dorsocaudad in a pair of processes, each triangular in ventral view, thickened on mesal margin, and separated from its fellow by a median cleft. Aedeagus tubular, dorsally with two narrow lobes that meet acutely; a small slender spinose process, directed laterad, on each side laterally near apex, arising from a sclerotised rod that bears a few teeth laterally, a short stout spinose process ventrally on each side slightly basad of the slender spine, phallic appendages symmetrical, each tapering distally to acuminate apex. Genital styles broadly subrhomboidal, apical margin long, oblique, subapical process on dorsal margin broad, directed laterad and weakly decurved, apical process narrow, directed dorsad and slightly curved cephalad distally. Seventh sternite of female in middle line, between apical margin and base of first valvulae, with a sclerotised pregenital lobe, so narrow as to appear as a short bar. Bursa copulatrix furnished with a T-shaped sclerite, with the lateral arms slender and curved, the median arm flattened, blade-like, distally acuminate.



Figs. 26—36. *Callinesia polita* sp. n. 26, Head and thorax, dorsal view; 27, frons and clypeus; 28, head in profile; 29, tegmen; 30, anal segment of male, dorsal view; 31, medioventral process of pygofer; 32, aedeagus, right side; 33, aedeagus, dorsal view; 34, apical portion of phallic appendage; 35, left genital style, ventral view; 36, the same, lateral view.

Male: length 2.8 mm; tegmen, 3.2 mm. Female: length 3.0 mm; tegmen, 3.6 mm.

Holotype. ♂, S. India: Malabar, Nadungayam, 200 ft., 16—22. ix. 38 (B. M.-C. M. Exped. to S. India), in B. M. (N. H.). 1 ♀,

Ceylon: Peradeniya, x. 1910, Brit. Mus. 1909—80, (presented by T. Bainbrigge Fletcher).

Callinesia Kirkaldy

Kirkaldy 1907 Bull. Hawaii. Sug. Ass. ent. Ser. 3 : 116, 118. Orthotype, *Callinesia pulchra* Kirkaldy.

Callinesia polita sp. n.

Figs. 26—36

Vertex as long in middle as broad at base of middle line; antennae with second segment subovoid, abnormally large, rather compressed, obliquely rounded-truncate at apex; rostrum reaching to mesotrochanters, apical segment about as long as subapical. Protibiae as long as profemora; post-tibiae with a very obscure spine at one third from base, eight spines at apex; basal post-tarsal segment with seven teeth apically, second segment with six teeth. Wings with R simple, M two-branched, Cu 1 with two branches.

Reddish-brown; frons in distal half, genae before antennae, lateral lobes of pronotum, pro- and mesotarsi and hind legs, light testaceous to pale stramineous; antennae black, or nearly so; intersegmental membrane of abdomen sometimes red. Tegmina translucent, corium polished, with Sc + R and claval veins narrowly and distinctly elevated, orange brown, membrane fuscous; basal margin of clavus and transverse veins at node, sometimes reaching to first fork of M, ivory-white.

Anal segment of male short, broader than long, lateral margins convex, apical margin shallowly excavate, anal style much surpassing apical margin. Pygofer short, in side view with lateral margin oblique, almost straight, dorsolateral angles not produced, medioventral process represented by a pair of rather narrow submedian processes, each tapering distad and curved slightly laterad distally, median line submembranous. Aedeagus subtubular, comprising in each half a long vertical fold dorsally and a horizontal fold laterally; in profile, dorsal margin moderately produced dorsad near middle in a rectangulate eminence, thence evenly descending to apex, apical margin oblique, distinctly produced ventrad in a short spine, which is unpaired and lies in axial line; phallic appendages long, strap-like, symmetrical, rather abruptly tapering near apex to acuminate tip. Genital styles moderately broad, in side view narrowest at base, with ventral margin sinuate, apical margin

convex, dorsal margin broadly produced in a weakly tricuspidate lobe as figured.

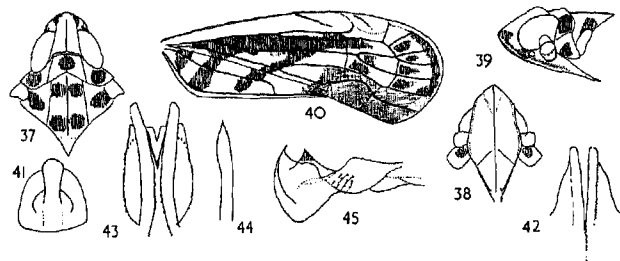
Male: length, 3.5 mm; tegmen, 3.7 mm. Female: length 3.3 mm; tegmen, 4.0 mm.

Holotype ♂, Philippine Is.: N. Viscaya, Imugin, 9352 (C. F. Baker), in U. S. N. M. Paratypes, 16 ♂♂, 14 ♀♀, same data; Samar I., 2 ♂♂ (C. F. Baker); Mindanao, Zamboanga, 2 ♀♀ (C. F. Baker); Butuan, 2 ♀♀, 10258 (C. F. Baker); Surigao (C. F. Baker); Basilan I., 1 ♀ (C. F. Baker); Luzon, Mt. Makiling, 1 ♀ (C. F. Baker). This species is distinguished from all others in the genus by the swollen second antennal segment, and by the polished tegmina with slightly elevated Sc + R and claval veins, as well as by coloration and the form of the aedeagus. (Dutch New Guinea): Cyclops Mts., Sabron, Camp. 2, 2000 ft., 2 ♀♀, vi. 1936 (L. E. Ch e e s m a n), B. M. 1936—271.

At first glance this species appears to be closely related to the Samoan *Cythna fusca* Muir. The latter, however, has protibiae that are distinctly shorter than the profemora, and the post-tibia is furnished with five spines apically, and the basal two segments of the post-tarsi each bear five teeth.

Callinesia pardalis sp. n.

Figs. 37—45



Figs. 37—45. *Callinesia pardalis* sp. n. 37, Head and thorax, dorsal view; 38, frons and clypeus; 39, head and thorax, lateral view; 40, tegmen; 41, anal segment of male, dorsal view; 42, medioventral process of pygofer; 43, aedeagus, dorsal view; 44, apical portion of phallic appendage; 45, left genital style, dorsal view.

Vertex slightly declivous, longer in middle line than broad at base of middle line (about 1.3 : 1), basal margin transverse, slightly indented medially, lateral margins carinate, straight, converging distad, apical margin deeply convex, disc rather depressed, median carina prominent, lateroapical facets obsolete; frons longer in middle line than broad, (1.2 : 1), basal margin convex, lateral margins sinuately expanding to below level of antennae, then incurved to frontoclypeal suture, disc flat, median area at base produced in a slight eminence, median carina fine, lateral margins slightly produced laterad; post-clypeal portion of clypeus tricarinate, with lateral marginal carinae more strongly elevated than median carina, rostrum reaching to mesotrochanters, second antennal segment subglobose, moderately large, ocelli distinct, eyes rather elongate, reniform. Pronotum moderately long, width of anterior margin of disc very slightly exceeding length of disc in middle line, lateral carinae of disc straight, attaining hind margin, no supernumerary carinae behind eyes, a single distinct carina laterally between eye and tegula, outer angle of lateral lobes almost rectangulate; mesonotum tricarinate, almost as long as broad; post-tibiae with one spine laterally, eight apically, basal metatarsal segment with six teeth, second segment with five teeth.

Pallid ochraceous or sordid creamy white, two rather large spots on side of head before eyes, pronotum with a spot on median portion of disc, a spot behind each eye, and a spot on each lateral lobe behind antennae, mesonotum with two spots anteriorly and two posteriorly on disc, and a larger spot in each lateral angle, and a large spot on mesopleura, piceous. Tegmina with corium sordid creamy white, membrane dilute fuscous; a narrow oblique line in costal cell, and a second such line at stigma, cell R from base to nodal line, two oblique transverse bands in basal half of clavus, and a band from inner angle of clavus to R near nodal line, a shorter band from claval apex to M at nodal line, a suffusion in each apical areole of R and M, and also submarginally, fuscous; veins concolorous or yellow in corium, sanguineous in membrane, transverse veinlets in M and Cu sordid creamy white. Wings hyaline, with dilute fuscous suffusion distally, veins yellowish basally, red distally.

Anal segment of male short, as broad at base as long, apical margin rounded. Pygofer moderately long, with dorsolateral angles strongly and narrowly produced, moderately inflected mesad, medio-

ventral processes large, each elongate-triangular, straight on inner margin, sinuately tapering on outer margin, apically rounded, the two processes separated by a deep narrow cleft that extends almost to base of pygofer. Aedeagus subtubular; ventrally produced at apex in a narrow acuminate lobe directed ventrocephalad, lateral lobes denticulate along upper margin, dorsal pair of lobes denticulate along basal two-fifths of inner margin, each lobe rounded apically and weakly deflexed; phallic appendages symmetrical, each abruptly decurved distally and terminating in a piceous spine. Genital styles as figured.

Male: length, 2.7 mm; tegmen, 3.1 mm.

Holotype ♂, Solomon Is.: Guadalcanal, Lunga, 29. iii. 1934 (R. A. Lever) in B. M. (N. H.).

This species is distinguished by the shape of the vertex and the apparent absence of lateroapical facets. On one side of the head of the type, with suitable lighting, a line can be discerned that might represent the lateral boundary of a facet, but even if it is regarded as such the shape of the anterior margin of the head is not close to that of the other species of the genus. In other respects agreement in generic characters is satisfactory.

Nephelesia gen. n.

Vertex strongly declivous, about as long in middle as broad at base of middle line, anterior margin of head transverse, of disc of vertex subacutely angulate, lateral margins weakly diverging caudad, moderately elevated, posterior margin shallowly excavate, disc depressed, medially carinate except in apical quarter, lateroapical areolets moderately broad; frons longer in middle than broad (about 1.2 : 1), lateral margins sinuately convex, expanding to below level of antennae, thence incurved to frontoclypeal suture, strongly produced laterad, disc in profile moderately convex, strongly medially carinate throughout; clypeus rather shorter than frons in middle line, carinate medially and at lateral margins; rostrum attaining post-trochanters; ocelli well developed, contiguous with eyes; antennae with second segment subglobose, not sunk in a depression. Pronotum moderately short, anterior margin of disc feebly convex, wider than length of disc in middle line, disc tricarinate, hollowed between carinae, lateral discal carinae longer

than median carina (about 1.5 : 1), straight, reaching hind margin, only moderately diverging basad, pronotum laterad of disc extensively overlapped by eyes, devoid of supernumerary carinae, two carinae on each lateral margin between eye and tegula, outer angle of lateral lobes subrectangulately rounded. Mesonotum broader than long, tricarinate, disc in side view feebly convex in anterior half; post-tibiae with one spine laterally, six or seven at apex; basal metatarsal segment with six spines, second segment with five. Tegmina longer than broad (about 2.8 : 1), Sc + R forked at about level of apex of clavus, M simple to level of R-M crossvein, Cu 1 forked approximately at same level as union of claval veins, Cu 1 b rather strongly bent just distad of level of claval apex. Wings with R simple, M with two branches.

Pygofer with medioventral process rather elongate, tapering distad, divided into two rami by a deep median cleft which extends almost to base of pygofer.

Type species, *Nephelesia candida* sp. n.

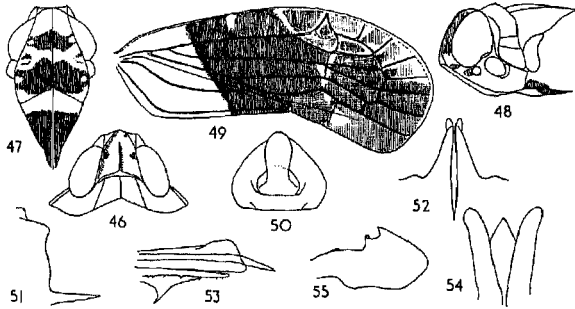
This genus is close to *Callinesia* and *Nephelia*, and in the writer's key (Fennah 1950) it runs to the former. It is separable from both, however, by the very distal position of the fork of Sc + R, the relatively larger ocelli, the rounder, less reniform, eyes and the relatively longer median carina of the vertex. The type specimen is altogether a smaller insect than examples of *Nephelia tristis* and *Callinesia pulchra*.

Nephelesia candida sp. n.

Figs. 46—55

Vertex as long in middle as broad at base of middle line.

Yellowish-fuscous; a transverse band across base of clypeus, a band across middle of frons and another across base of frons, lateral margins of frons except for four linear interruptions, sides of head, vertex except for two linear interruptions, and mesoscutellum, ivory-white, fore- and middle legs annulate with brown. Tegmina light yellowish-brown, basal third and two wedge-shaped marks in distal portion of costal cell, cross-veins R—M and M—Cu and a few spots adjacent, transverse vein between Cu 1 b and margin, and a faint line across middle of each apical cell of M and Cu, sordid white; first two apical cells of Sc, fuscous. Wings fuscous, with veins concolorous.



Figs. 46—55. *Nepholesia candida* gen. et sp. n. 46, Vertex and pronotum, dorsal view; 47, frons and clypeus; 48, head and thorax, lateral view; 49, tegmen; 50, anal segment of male, dorsal view; 51, pygofer, left side; 52, medioventral process of pygofer; 53, aedeagus, left side; 54, apical portion of aedeagus, dorsal view; 55, left genital style, ventral view.

Anal segment of male broader than long, almost semicircularly rounded, anal style slightly projecting beyond convex apical margin. Pygofer short, laterodorsal angles very feebly produced, medioventral process of posterior margin large, triangular, divided into two lobes by a very deep median cleft. Aedeagus with phallobase subtubular, dorsal surface medially not at all sclerotised, acute medially at apex; laterally, a pair of elongate lobes, each obliquely rounded apically; below these a pair of horizontal lobes each rounded distally and denticulate along lateral margin; ventrally a median lobe produced into spinose process directed ventro-cephalad; phallic appendages long, symmetrical, strap-like, each slightly deflexed near apex and acuminate at tip. Genital styles moderately broad, ventral margin sinuate, apical margin subangulately rounded, dorsal margin distally produced dorsad in a broad lobe bearing two spinose processes, the basal directed laterad, the distal dorso-cephalad. Pregenital sternite of female posteriorly feebly convex, almost straight.

Male: length, 3.5 mm; tegmen, 3.7 mm. Female: length 3.5 mm; tegmen, 3.8 mm.

Holotype ♂, Philippine Is.: Mindanao, Surigao (C. F. Baker) 17508, in U. S. N. M. Paratypes, 1 ♂, 1 ♀, same data, one paratype in B. M. (N. H.).

It is believed that this species is polytypic, as the tegminal markings of similar specimens from other islands vary to a point where they consist of a broad dark brown band occupying the middle third of an otherwise orange and orange-buff tegmen. The genitalia of these other forms have not yet been examined, and accordingly their taxonomic position is unknown.

Chronoba Stål

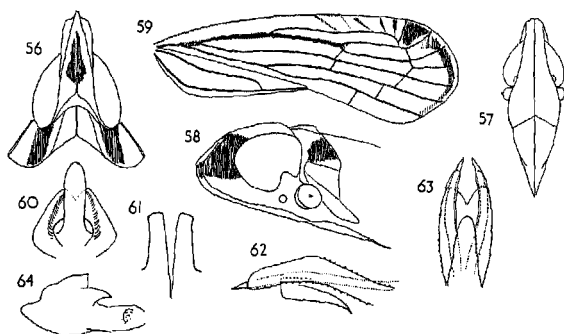
Stål 1859, Berl. ent. Z. 3 : 320. Haplotype, *Chronoba pallifrons* Stål 1859, *ibid.*

Chronoba verticalis sp. n.

Figs. 56—64

Vertex longer in middle than broad at base of middle line (2.8 : 1), median carina distinct on basal two thirds, absent from apical third, lateral margins foliate, giving off near middle a strongly foliate carina which runs to apex of head and unites with its fellow in middle line, a short and obscure transverse carina on each side from point of union to lateral margins of head. Post-tibiae with one spine laterally, seven apically, basal metatarsal segment with six teeth, second segment with five teeth.

Stramineous; a small spot at base of frons sometimes, a spot above eyes, and disc of vertex on each side of median carina, prono-



Figs. 56—64. *Chronoba verticalis* sp. n. 56, Vertex and pronotum, dorsal view; 57, frons and clypeus; 58, head and pronotum, lateral view; 59, tegmen; 60, anal segment of male, dorsal view; 61, medioventral process of pygofer; 62, aedeagus, right side; 63, aedeagus, dorsal view; 64, left genital style, dorsal view.

tal areolets behind eyes, mesonotal disc except for carinae, castaneous-ferruginous. Tegmina translucent, ashy-ochraceous, four to seven short oblique stripes along costal margin, a spot at basal angle of clavus and apical cells submarginally, fuscous; sometimes only costal cell pale ochraceous, remainder of tegmen hyaline, infuscate, with vein Sc + R overlain castaneous, remaining veins ferruginous or red.

Anal segment of male pentagonal, broader than long, apical margin short, angulately excavate, anal style strongly projecting beyond margin. Pygofer with laterodorsal angles very feebly produced, medioventral process of posterior margin large, bifid by a deep cleft into two elongate-rectangular lobes. Aedeagus with phallobase tubular, dorsal surface little sclerotised, apically deeply rounded, a pair of broadly strap-like lateral lobes ascending to middle of aedeagus, where they nearly meet dorsally, then descending and separating: ascending portion of each with both upper and lower margins denticulate, descending portion with margin entire, apex deeply rounded; ventrally, in middle line a single stout spinose process directed ventro-cephalad below aedeagus; phallic appendages symmetrical, narrowly strap-like, acuminate at tip. Genital styles narrow at base with a broad, coarsely setose, area on inner face, distally moderately broad, with dorsal margin produced into a lobe bearing two triangular processes, each acute at apex and directed cephalad.

Posterior margin of pregenital sternite of female transverse or very weakly convex.

Male: length, 3.8 mm; tegmen, 3.9 mm. Female: length, 3.7 mm; tegmen 4.2 mm.

Holotype ♂, Philippine Is.: Mindanao, Surigao, (C. F. Baker), 17510, in U. S. N. M. Paratypes, 2 ♀♀, same data, one paratype in B. M. (N. H.).

This species differs from *C. pallifrons* in the relatively greater width of the basal quarter of the frons, the vertex and the pronotal disc, and in the presence of two complete carinae on each lateral margin of the pronotum between eye and tegula. In *C. pallifrons* there is one complete carina and one incomplete at each lateral margin of the pronotum, and the median disc is sunken for its whole length into the excised posterior margin of the head. The two species also differ entirely in coloration.

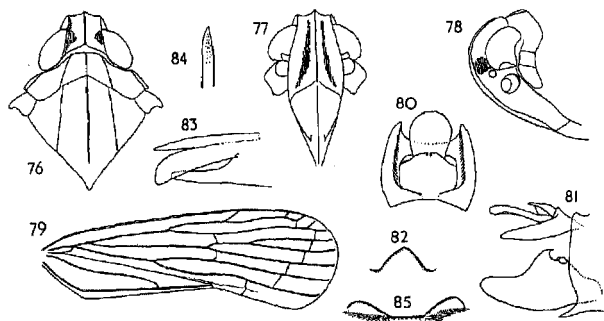
and by the union of the first two apical veins of M close to the sub-apical line of transverse veinlets. The coloration, which is very striking in the brilliant ground hue, is quite close in pattern to that exhibited by species of *Deferunda* Dist., especially in the suggestion of transverse striping of the clavus; the shape of the head differs from that of *Deferunda*, as does also that of the posterior branch of Cu 1 just beyond the level of the claval apex. There can be little doubt that *Deferunda* and *Caristianus* are closely allied. The presence of minute facets on each side of the middle line between the vertex and the frons raises the question whether this species should be referred to *Callinesia*. Species of the latter genus, however, differ in having the length of pronotum not covered by the eye relatively much greater, and also in having less elongate tegmina and less prominent venation.

Parakosalya Distant

Distant 1917, Trans. Linn. Soc. Lond. (Zool.) 17 : 286. Orthotype, *Parakosalya insularis* Distant, 1917 op. cit. : 287.

Parakosalya orientalis sp. n.

Figs. 76—85



Figs. 76—85. *Parakosalya orientalis* sp. n. 76, Head and thorax, dorsal view; 77, frons and clypeus; 78, head and pronotum, lateral view; 79, tegmen; 80, anal segment of male, dorsal view; 81, anal segment, pygofer and right genital style, lateral view; 82, medioventral process of pygofer; 83, aedeagus, right side; 84, apical portion of phallic appendage; 85, posterior margin of seventh sternite of female, ventral view.

Dark castaneous; head, hind margin and lateral fields of pronotum, tegulae and apex of mesoscutellum, yellow or stramineous, a round spot on sides of head before eyes and a spot in each compartment of vertex near base, fuscous-piceous. Tegmina wholly castaneous, membrane a little lighter, thinly powdered grey with wax. Wings hyaline, lightly infuscate distally, veins brown.

Anal segment of male short and broad, broader than long, apical margin widely excavate, anal style large, shortly spatulate, amply surpassing apical margin. Pygofer moderately short, ventral margin slightly excavate, medioventral process broadly triangular. Aedeagus with phallobase thin, pellucid, subtubular, comprising an elongate-triangular dorsal lobe, a pair of blade-like lateral lobes, each obliquely rounded apically, and a delicate keel-like ventral lobe, V-shaped in section; phallic appendages long, strap-like, symmetrical, acute at apex. Genital styles moderately broad, ventral margin shallowly convex, apical margin deeply rounded, dorsal margin produced dorsad at middle in a broadly triangular lobe, bearing a secondary bluntly triangular lobe, directed laterad, on its outer surface, dorsoapically terminating in a small rounded plate directed dorso-caudad.

Pregenital sternite of female strongly bent U-shape, posterior margin markedly concave.

Male: length, 5.0 mm; tegmen, 6.2 mm. Female: length, 4.9 mm; tegmen 6.2 mm.

Holotype ♂, Philippine Is.: Mindanao, Davao, (C. F. B a k e r) 10173, in U. S. N. M. Paratype, 1 ♀ Mindanao, Dapitan, (C. F. B a k e r) in B. M. (N. H.).

This species differs from *P. insularis* Dist. in the less impressed fronto-clypeal suture and in details of coloration.

Epirama Melichar

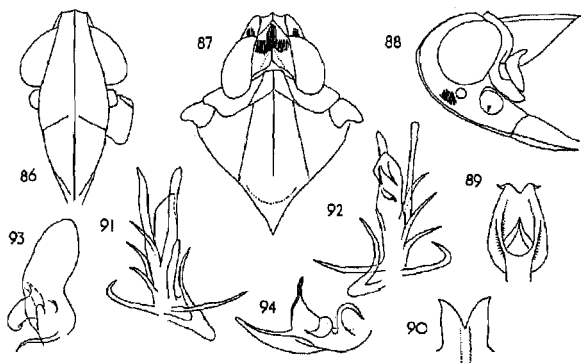
M e l i c h a r 1903. Homopteren-Fauna von Ceylon : 45. Haplo-type, *E. conspergata* Melichar, 1903, *ibid.*

Epirama francescoides sp. n.

Figs. 86—94

Vertex about as long in middle as broad at base of middle line, deeply hollowed out, medially carinate only in basal third, posterior margin angulately excavate, lateral margins converging anteriorly,

apical margin acutely angulate; frons at base recurving dorsad into vertex, its long laterobasal angles not separated off as facets by transverse carinae; rostrum surpassing post-trochanters, reaching to middle of postfemora when they are directed caudad.



Figs. 86—94. *Epirama francescoides* sp. n. 86, Frons and clypeus; 87, head and thorax, dorsal view; 88, head in profile; 89, anal segment of male; 90, medioventral process of pygofer; 91, aedeagus, dorsal view; 92, the same, ventral view; 93, left genital style, ventral view; 94, right genital style, lateral view.

Testaceous; a spot on each side of head above ocellus, disc of vertex in anterior half, dark castaneous; mesonotum and abdomen, lighter castaneous. Tegmina translucent, uniformly testaceous, veins concolorous. Wings lightly infumed, veins fuscous.

Anal segment of male moderately long, lateral margins weakly converging distad, apical margin deeply excavate, each lateroapical angle produced and deflexed in an acute process. Pygofer moderately short, lateral margins oblique, not produced, medioventral process broad, distally bifurcate, with limbs diverging and apically acute.

Aedeagus with phallobase subtubular, armed with a complex array of spinose processes; on right at base, three spinose processes, of which the basal is foliate for most of its length, bent ventrad through ninety degrees, and sinuate and acuminate distally; the remaining two processes spinose, directed laterocaudad; basally on left two spinose processes, one directed laterad (when aedeagus is

everted) the other, more ventral, directed laterocaudad, sides of phallobase produced caudad in an asymmetrical pair of long subcylindrical lobes, that of right side bearing a subspinose process dorsally at middle, that of left side swollen at corresponding level; phallobase ventrally keel-like, bearing three short stout spinose processes distally, directed ventrocephalad and to right; phallic appendages symmetrical, strap-like, evenly tapering to acute apex. Genital styles subspatulate, bent near middle, a slender process arising from inner edge near base, directed dorsad then laterad, a large biramous process on outer margin near middle, one limb distally bluntly rounded, directed laterad, the other tapering to acute apex, directed dorsad.

Male: length, 3.9 mm.; tegmen 4.9 mm.

Holotype ♂, Singapore, (C. F. Baker) 10 278, in U.S.N.M. Paratypes, 2♂♂, same data, one paratype in B. M. (N. H.).

This species is distinguished from *E. conspergata* Mel. by the shape of the head and by coloration. The male genitalia of *E. conspergata* have not been examined.

Rhotaloides gen. nov.

Head with eyes much narrower than pronotum. Vertex weakly declivous, longer in middle line than broad at base of median carina, distinctly produced before eyes, median carina prominent except at apex, disc shallowly hollowed out on each side, anterior margin subrectangulate, distinctly carinate, lateral margins about as elevated as median carina, posterior margin obtusely angulately excavate, base of frons visible from above, no lateroapical facets developed between frons and vertex; frons in profile strongly curved into vertex at base, otherwise almost flat, in anterior view longer than broad (about 2.1 : 1), with lateral margins sinuately diverging to below level of antennae, then only very slightly incurved to suture, basal margin transverse, median carina distinct, percurrent, disc longitudinally shallowly hollowed out between carinae; clypeus about as long as frons, with median carina and lateral margins correspondingly prominent; rostrum with apical segment about as long as subapical, slightly surpassing posttrochanters; antennae with first segment distinct, shortly cylindrical, second segment about three times as long as broad, eyes rather triangulate-ovate, narrowly excavate ventrally, extending ventrad behind antennae; ocelli prominent.

Pronotum long, disc only a little shorter than vertex, each lateral margin about as long as eye; disc tricarinate, lateral discal carinae straight or weakly convex, areas laterad of disc long, devoid of areolets, and not sloping forward below eyes, a pair of strong carinae on each side between eye and tegula, ventral margin of lateral lobes obtusely rounded; mesonotum slightly longer than vertex and pronotum combined, tricarinate, with lateral carinae weakly diverging basad, tegulae weakly bent, not carinate; protibiae slightly longer than profemora with trochanters, post-tibiae laterally with a spine two fifths from base, apically with five or six spines; basal metatarsal segment distally six-spined, second metatarsal segment five-spined.

Tegmina three times as long as broad, costal margin very slightly convex, sutural margin forming a re-entrant angle of 160° at apex of clavus, Sc + R fork slightly basad of Cu 1 fork and union of claval veins, M forked slightly distad of level of apex of clavus, stigmal cell long and narrow traversed by about three weak veinlets, M 1 + 2 forked at subapical line of cross veins, eight areoles at margin distad of stigmal cell; clavus terminating slightly basad of middle of tegmen. Wings with R shortly forked before apex, M with two branches at margin, Cu 1 with three.

Pygofer devoid of a medioventral process. Pregenital sternite of female with posterior margin strongly and evenly concave throughout.

Type species, *Rhotaloides andromeda*, sp. n.

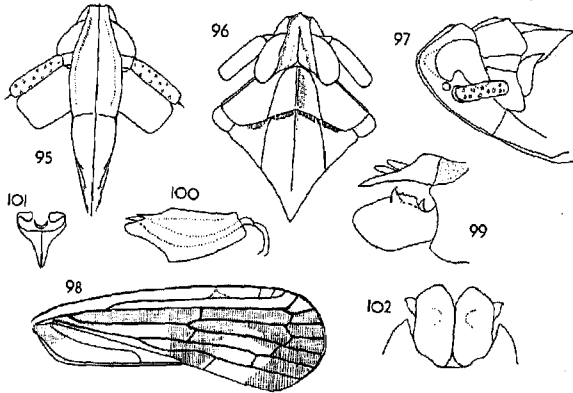
This genus runs to *Spino* in the writer's key, but differs entirely in the proportions of the head and the pronotum. It is apparently nearest to *Zathauma* Fenn. from which it is separated by the much longer pronotum and less declivous vertex.

Rhotaloides andromeda sp. n.

Figs. 95—102

Yellow; four suffused spots along anterior margin of mesonotum, fuscous. Tegmina hyaline, powdered white, a spot at base of clavus, a band from base to apical margin at R, giving off a branch to posterior margin just distad of apex of clavus, sordid yellow. Wings hyaline, powdered white.

Anal segment of male about 1.5 times as long as broad, lateral margins slightly diverging distally, apical margin deeply rounded,



Figs. 95—102. *Rhotaloides andromeda* gen. et sp. n. 95, Frons, clypeus and lateral lobes of pronotum; 96, head and thorax, dorsal view; 97, head and thorax, lateral view; 98, tegmen; 99, anal segment, pygofer and right genital style; 100, aedeagus, right side; 101, diagrammatic posterior view of aedeagus; 102, posterior ventral margin of pygofer and genital styles, ventral view.

anal foramen situated just basad of middle. Pygofer rather short, deeply and widely excavate dorsally, laterodorsal angles slightly produced, broadly rounded, setose, ventral posterior margin very shallowly excavate. Aedeagus comprising a narrow trough-like phallus (or fused phallic appendages), which traverses a laterally-compressed tubular phallobase, made up of a pair of horizontal dorsal lobes, directed caudad, and a deep keel-like ventral lobe with each upper margin folded into a longitudinal shallow trough. Genital styles rather short, relatively broad, ventral margin convex, apical margin deeply rounded, dorsal margin inflected near base in a short, bluntly pointed lobe, and produced dorsad at middle in a short, broader tricuspidate lobe, the basal cusp short, triangular and acute, the outer cusp broad, ledge-like, subrectangulately pointed at apex, the inner (mesad) cusp dilated into a short broad vertical lamella projecting mesad, shallowly convex on its mesal margin.

Pregenital sternite of female with posterior margin evenly concave.

Male: length, 4.8 mm; tegmen, 5.3 mm. Female: length, 5.3 mm; tegmen, 6.0 mm.

Holotype ♂, Singapore (C. F. Baker) 9353, in U. S. N. M. Paratypes, 13 ♂♂, 5 ♀♀, same data, one paratype in B. M. (N. H.).

The shape and relative sizes of the head and pronotum would suggest that *Rhotaloides* belongs with the Achilini, but both tegminal and wing venation and the position of the post-tibial spine are characteristically plectoderine. The shape of the second antennal segment is apparently unique in Achilidae. In general appearance and coloration this species superficially resembles a South American species of *Nelidia*, from which, however, it strongly differs in tegminal venation and in other generic characters.

Zusammenfassung

In dieser Arbeit werden 4 neue Gattungen der Plectoderini (Achilidae) beschrieben, jede ist auf einer neuen Art begründet. Diese 4 Gattungen mit den typischen Fundorten der Art sind: *Arachilus mirabilis* (Südafrika, Kap der Guten Hoffnung), *Indorupex albovenulosus* (Südindien, Malabar), *Nephetesia candida* (Philippinen, Mindanao) und *Rhotaloides andromeda* (Singapore). Außerdem werden weitere 7 neue Arten aus 6 anderen Gattungen beschrieben: *Koloptera breviceps* (Panama), *Callinesia polita* (Philippinen, N. Viscaya), *C. pardalis* (Salomon-Archipel, Guadalcanar), *Chroneba verticalis* (Philippinen, Mindanao), *Caristianus cardinalis* (Philippinen, Luzon), *Paraktosalya orientalis* (Philippinen, Mindanao) und *Epirama francescoides* (Singapore). Die Holotypen befinden sich im U. S. National Museum, Washington, D. C. oder im British Museum (Natural History), London.