

Delphacidae from Madagascar and the Mascarene Islands (Homoptera : Fulgoroidea)

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With 12 Text-figures

SYNOPSIS

Notes are given on the taxonomy and distribution of Delphacidae in Mauritius and other islands of the Western Indian Ocean. Six genera, six species and two sub-species are described as new. Some conclusions are reached on the sources from which the Delphacid fauna of the Western Indian Ocean has been derived.

I. INTRODUCTION

THIS report is based mainly on a collection made in Mauritius by J. R. Williams. Though small, this collection has contributed significantly to our knowledge of the Delphacid fauna of the island and has permitted some conclusions to be reached about the sources from which it was derived.

In 1859, Stål described *Delphax maculigera* from Mauritius. In 1917, Jacobi reported the presence in Madagascar of a South African species, *Delphax lautipes* Stål, and described from the same island a new species, *Delphax capellanus*. In the same year Distant published an account of the Fulgoroidea collected by the Percy Sladen Trust Expedition to the Seychelles, led by Professor J. Stanley Gardiner. In this he described nine species, only one of which (*Nilaparvata mahensis*) was referred to a known genus; of the others, one, *Matutinus opulentus*, was placed by itself in a new genus, and the remaining six were accommodated in a second new genus *Opiconsiva* (*O. fuscovaria*, *O. colorata*, *O. insularis*, *O. derelicta*, *O. modesta*, *O. balteata* and *O. gloriosa*). In 1926, Muir recorded the occurrence of *Perkinsiella saccharicida* Kirk. in Mauritius.

Because of changing views on both generic and specific concepts in Delphacidae, this little fauna has had a chequered nomenclatorial history, part of which has already been dealt with elsewhere (Fennah, 1963). The remaining part is dealt with below under the species concerned. From the zoogeographical standpoint, the effect of the synonymy established was to discount the endemism of the Seychellese genera, and of most of the species, and to leave an impression of generic, and even specific, affinities with the Indian sub-continent, a relationship that had been tentatively suggested by Distant years before the nomenclatorial changes were considered. In the present study it has been possible to recognise clearly that the Delphacid fauna is overwhelmingly of African derivation, and that in this group there is no convincing evidence of a strictly Indian association other than in the common possession of Old World "wides".

II. GEOGRAPHICAL DISTRIBUTION

Apart from the African immigrants, there are two distinct elements in the fauna of Mauritius and the Seychelles, each represented by one or two species. The first of these, of which *Ugyops* is the most easily recognisable representative, is essentially an Indonesian and Western Pacific nature, and is not found in Africa or in Asia west of Malaya. This "Indonesian" fauna is represented in the Mascarenes in other groups, both of Fulgoroidea and of other insects: the Issid genus *Tylana*, for example, found in Mauritius and Réunion, is the only member of its subfamily, the Tonginae, west of Indonesia. The fauna of the islands contains species of which the affinities are as yet unsettled, and it is likely that as our knowledge of the Indonesian fauna increases, few more of these will be found to belong to this group.

The second element is of greater interest and, as far as the writer is aware, has not hitherto been recognised. Its presence is shown by two alohine genera, *Ambarnesia* and *Nesodryas*. The former appears to be an offshoot of the *Nesodryas* group; it is endemic in the Seychelles and, perhaps significantly, appears to be associated with *Stevensonia*, an endemic palm. The second is known elsewhere only in the Marquesas Islands and Hawaii. Our knowledge of the Western Pacific fauna is sufficiently complete to permit the conclusion to be drawn that the absence of Alohini west of the Society Islands is not attributable to deficiencies in sampling. Unlike *Ugyops*, which conforms to the distribution-pattern of Australasian migrant species in extending along the tropical eastern Asiatic seaboard and penetrating far into the Pacific, but not to the Society Islands, the Marquesas or Hawaii, *Nesodryas* is unknown in the Pacific islands in which *Ugyops* occurs. There is no evidence whatsoever to suggest that the Alohini of the eastern Pacific were once present in the western Pacific and have become extinct there. Equally there is no evidence that *Ugyops* (and other western Pacific "wides" such as tongue Issidae, cenchreine and otiocerine Derbidae) were once present in the Marquesas and Hawaii but have since died out. The evidence suggests that the Australasian species have never been established in the eastern Pacific, and the eastern Pacific species have never occupied the western Pacific, and the simple conclusion is that this area was invaded along two different routes. One of these is well known as an easterly progression into the Pacific from the south-east Asian seaboard and from Australasia, and, as certain of the genera involved also occur on the islands of the Western Indian Ocean, and not in continental Asia or in Africa, it may reasonably be assumed that there has also been a westerly progression from the same origin.

The absence of the genus *Nesodryas* from the western Pacific, however, discourages any hypothesis regarding an Australasian point of departure, or of a westerly movement from the eastern Pacific to the western Indian ocean.

The shortest line that can unite Hawaii and the Marquesas with Mauritius and the Seychelles passes almost directly over the South Pole, and that which unites the alohine *Iburnia* of St. Helena (the only member of the tribe in the Atlantic area) with its close relative *Nesosydne* of the eastern Pacific (Juan Fernandez, the Society Islands, Rapa, Marquesas Islands and Hawaii) also passes over Antarctica, which, in both cases, lies approximately at the mid-point.

If the Antarctic continent, in pre-glacial times, possessed an alohine fauna which included *Nesodryas* and *Nesosydne* (*sens. lat.*), and if distributional agencies similar to those that have produced the easterly and westerly advance of *Ugyops* from Australasia were then operative in the Southern Ocean, these genera would be expected to occur in the Southern Hemisphere wherever land with suitable food-plants and no hostile or competing species lay in the path of the available migration route.

Skottsberg has recognised elements in the floras of the Austral Islands, Society Islands, Marquesas Islands and Hawaii, and of Madagascar and the Mascarene Islands, that he considers to have been derived from a pre-glacial Antarctic flora.

The means by which such plants reached their present habitats might possibly have served also for the transport of insects, and the plants themselves, when established in a new territory, might reasonably be expected to have furnished at least one source of food to appropriate insect immigrants using the same route. (It should be noted that members of the Delphacidae, including Alohini, are often restricted to a certain type of plant association, but not to a particular species or genus of food-plant.) Perhaps the most striking feature of the present insect fauna of the western Pacific is its progressive impoverishment in an easterly direction, and it is this feature, in addition to the composition of the faunas, that has led to south-east Asia and its offshore islands being accepted as its immediate source. The persistence of this wedge-shaped numerical distribution, however, is made possible by the fact that migration has occurred entirely in low latitudes, in which the temperature does not vary greatly between the point of origin and the point of termination. If the area of origin were to suffer glaciation, however, and the ocean, for hundreds of miles, a major fall in temperature, only the narrow apex of the wedge would remain, and this, in itself, would provide no indication of the former existence of its broad base.

In the writer's opinion, it is not unreasonable to regard *Nesodryas* and *Nesosydne* as members of the apex of a similar former wedge of which the base has subsequently been destroyed by glaciation. In this instance the flora and fauna are to be considered as having radiated from the Antarctic continent, in which they may well have originated.

III. DESCRIPTIONS OF AND NOTES ON THE SPECIES

FAMILY DELPHACIDAE LEACH

Subfamily Asiracinae

Ugyops Guérin-Ménéville

Guérin-Ménéville, 1834 : 477. Haplotype, *Ugyops percheronii* Guérin-Ménéville, 1829, pl. 58, fig. 16.

The species from the Seychelles Islands described by Distant fall into two groups, and can be separated by the characters given in the following key.

Key to Species of Ugyops in the Seychelles Islands

- (1) (2) Submedian carinae of frons separate throughout, widest apart near middle of frons, a longitudinal castaneous line in each compartment of disc of frons; anal segment of female, in side view, as broad as long (3)
- (2) (1) Submedian carinae of frons united at least in apical quarter, widest apart near base of frons, a more or less distinct pattern of two longitudinal rows of large round spots in each compartment of disc of frons; anal segment of female, in side view, twice as long as broad (5)
- (3) (4) Second antennal segment of female twice as long as first (5)
- (4) (3) Second antennal segment of female not more than 1.5 times as long as first. *U. seychellensis* Dist. (1917 : 305)
- (5) (6) Second antennal segment of female scarcely 1.5 times as long as first; submedian carinae of frons uniting at one-third from apex; pattern of spots on disc of frons indistinct. *U. robustus* (Dist.) (1917 : 304)
- (6) (5) Second antennal segment of female fully 1.5 times as long as first (almost 1.6 times); submedian carinae of frons uniting at one quarter from apex; pattern of spots on disc of frons distinct. *U. facialis* Dist. (1917 : 305)

U. senescens Dist. (1909 : 44)

Ugyops robustus (Distant) comb. n.*Consualia robusta* Distant, 1917 : 304.

As indicated by the characterisation given in the key, this species is closely allied to *U. seychellensis*. In Distant's definition of his genus *Consualia*, of which the present species is the haplotype, there are no characters that set it apart from *Ugyops* as currently interpreted.

Ugyops senescens has been taken in the Amirantes Is., but no members of this genus have been recorded from Mauritius, Réunion, or Rodriguez, or from Madagascar. The genus is widespread in the western Pacific and Australasia, and occurs also in South and Central America. Geographically considered, the nearest species of *Ugyops* to the Seychelles are to be found in the Malay Peninsula and the westernmost islands of Indonesia.

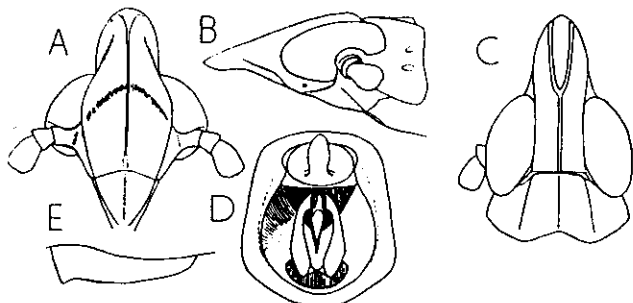


FIG. 1.—*Ambarvalia pyrops* Dist.: A, Frons and clypeus; B, head in profile; C, vertex and pronotum; D, male genitalia, posterior view; E, first valvifer of ovipositor.

Subfamily Delphacinae

Ambarvalia DistantDistant, 1917 : 306. Haplotype, *Ambarvalia pyrops* Dist.*Ambarvalia pyrops* Distant (fig. 1, A-E)

Distant, 1917 : 306.

Post-tibial calcar unusually small, with 3-6 teeth; anal segment of female narrow, ring-like, anal style moderately large, both sparingly ceriferous; ovipositor with third valvulae ceriferous laterally.

SEYCHELLES: Silhouette, Hauts lédres, 3 ♂, 3 ♀, 11. ix. 1952, on *Stevensonia* (E. S. Brown).

The short first antennal segment, the simple median carina of the frons and the form of the anal segment of the female associate this genus with *Nesodryas*, but the remarkable development of the apex of the head isolates the genus from all other Alohini, and indeed from all other Delphacidae.

Nesodryas KirkaldyKirkaldy, 1908 : 203. Orthotype, *Nesodryas freycinetiae* Kirkaldy, 1908 : 203.*Nesodryas antiope* sp. n. (fig. 2, A-K)

Vertex longer submedially than broad at base (about 1.2 : 1) subacutely rounding into frons, wide at apex as at base, lateral margins straight or shallowly concave, apical margin convex-truncal with submedian carinae slightly prominent, Y-shaped carina feeble, submedian carinae uniting at apex of vertex, basal compartment of vertex wider at hind margin than at greatest length (nearly 1.4 : 1) and than median length (1.5 : 1), frons in middle line longer than wide at widest part (2.1 : 1), wide at level of lower margin of eyes, lateral margins shallowly convex, median carina simple, clypeus

base distinctly wider than frons at apex, postclypeal disc broader at base than long (1.5 : 1), in profile weakly convex, anteclypeus in profile weakly convex, entire clypeus in profile moderately convex; rostrum with subapical segment surpassing mesotrochanters, apical segment attaining post-trochanters, length of rostrum equal to length of protibia; antennae attaining frontoclypeal suture, basal segment longer than broad (about 1.2 : 1), second segment longer than broad (2 : 1) and longer than first (2.4 : 1); ocelli distinct, small. Pronotum with disc as long in middle line as broad at anterior margin, lateral carinae convex, attaining hind margin. Total length of mesonotum longer than that of scutellum (2.8 : 1). Post-tibial spur with 6-12 teeth.

Pale stramineous; spines on post-tibiae and tarsi, black. Tegmina hyaline, slightly powdered white, a spot in *M* at junction with nodal line and veins at junction with apical margin, fuscous. Wings hyaline.

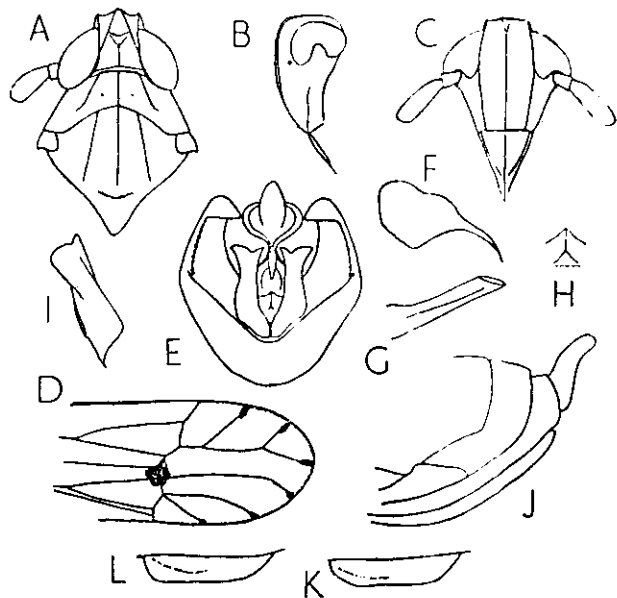


FIG. 2.—*Nesodryas antiope* sp. n.: A, Head and thorax; B, head in profile; C, frons and clypeus; D, apical portion of tegmen; E, male genitalia, posterior view; F, anal segment of male, lateral view; G, aedeagus; H, middle portion of diaphragm; I, genital style; J, apex of abdomen of female, lateral view; K, first valvifer of ovipositor (Mauritius); L, the same (Seychelles).

Anal segment of male short, ring-like, lateroapical angles contiguous, each produced ventrad in a slender spinose process. Pygofer moderately long, posterior opening as broad as long, dorsolateral angles narrowly produced, inflected mesad and ventrad; diaphragm with dorsal margin excavate, convex at middle; no medioventral process present. Aedeagus tubular, short, porrect dorso-caudad, orifice terminal, oblique. Genital styles moderately long, directed dorsad, in posterior view with inner and outer margins shallowly concave near middle, apical margin transverse, with outer and inner apical angles slightly produced, both acute.

Anal segment of female relatively large, with a ceriferous pad on lower surface. First valvifers of ovipositor as figured.

Male: length, 2.5 mm.; tegmen, 2.7 mm. Female: length, 2.7 mm.; tegmen, 3.0 mm.

Holotype ♂, MAURITIUS: Pte. D'Esny, ix. 1949, on coconut (*J. R. Williams*). Paratypes: 2 ♂, 3 ♀, same data as holotype. Holotype in British Museum (Nat. Hist.).

This species is well distinguished from others of the genus by the shape of the pygofer, aedeagus and genital styles.

Nesodryas antiope seychellensis subsp. n. (fig. 2, L)

Vertex longer submedially than broad at base (about 1.3 : 1) subacutely rounding into from apical margin convex with submedian carinae strongly prominent, basal compartment of vertex wider at hind margin than greatest length (1.2 : 1) and than median length (1.3 : 1), frons widest at middle, postclypeal disc shorter in middle than broad at base (1 : 1.3), anteclypeus in profile almost straight, in profile strongly convex, strongly impressed at frontoclypeal suture, inclined obliquely caudad, so that entire clypeus in profile is strongly convex; antennae just attaining frontoclypeal suture, basal segment longer than broad (1.8 : 1), second segment longer than broad (3.5 : 1) and longer than first (nearly 2.3 : 1). Pronotum with disc longer in middle line than broad at anterior margin (about 1.2 : 1), lateral carinae straight, not quite attaining hind margin. Total length of mesonotum longer than that of scutellum (2.2 : 1). Post-tibial spur with about seven teeth.

Stramineous; third valvulae of ovipositor slightly infuscate, spines on legs black. Tegmina hyaline, apparently lightly powdered white, a spot overlying the *R-M* and *M-Cu* cross-veins, and all veins dilutely near apical margin, fuscous, veins otherwise concolorous. Wings hyaline, with concolorous veins.

Anal segment of female relatively large, with a ceriferous pad on lower surface. First valvifers of ovipositor as figured.

Female: length, 2.5 mm.; tegmen, 2.8 mm.

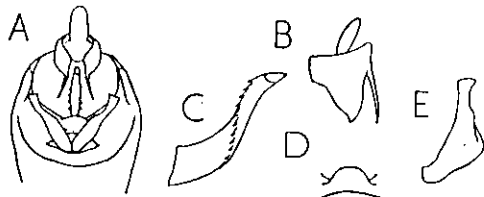


FIG. 3.—*Rhinodelphax ion* sp. n.: A, Male genitalia, posterior view; B, anal segment of male; C, aedeagus; D, median portion of diaphragm; E, genital style.

Holotype ♀, SEYCHELLES: Alphonse Id., 18. ix. 1937, on coconut (*D. Vesey-Fitzgerald*). *Paratypes*: 2 ♀, same data as holotype; locality unknown, 1 ♀, 13. xii. 1935 (*P. R. Dupont*). *Holotype* in British Museum (Nat. Hist.).

This subspecies differs from typical *N. antiope* in the relatively narrower vertex and frons, the strongly impressed frontoclypeal suture, the relatively more slender antennal segments, the straight lateral pronotal carinae, and the more abruptly rounded base of the first valvifer of the ovipositor. In the series before the writer the general body-colour is a little more pallid than in *N. antiope antiope*.

Rhinodelphax Muir

Muir, 1934 : 577. Orthotype, *Rhinodelphax hargreavesi* Muir, 1934 : 578.

Rhinodelphax ion sp. n. (fig. 3, A-E)

Vertex longer medially than broad at base (3 : 1), in profile angulately meeting frons, lateral margins weakly convex, almost straight, apical margin acutely rounded, submedian carinae absent, Y-shaped carina represented only by median stem, disc very weakly convex in distal half, basal compartment of vertex narrower at hind margin than median length (about 1 : 1.2), frons in middle line longer than wide at widest part (about 5 : 1), widest at a quarter from base, lateral margins feebly sinuate, almost straight, median carina simple; clypeus at base scarcely wider than frons at apex, postclypeal disc longer in middle than broad at base (nearly 1.5 : 1) in profile straight; anteclypeus in profile rather strongly curved caudad, so that entire clypeus in profile is moderately convex, rostrum about as long as clypeus, apex surpassing mesotrochanters; antennae short, not nearly attaining frontoclypeal suture, basal segment not as long as broad, second segment longer than first (2.6 : 1); ocelli prominent. Pronotum with disc longer in middle line than broad at anterior margin

(1.1 : 1), lateral carinae straight, just attaining hind margin. Total length of mesonotum longer than that of scutellum (2.5 : 1). Post-tibial spur with 17 teeth.

Fuscous; lateral margins and median carina of distal two-thirds of frons and disc of vertex except at base, testaceous; antennae, outer part of procoxae, median portion of pronotal disc and lateral lobes, median portion of mesonotal disc and mesoscutellum, ivory-white. Tegmina dull yellowish-hyaline, commissural margin ivory white, posterior two-thirds of membrane smoky brown. Wings sordid white with fuscous veins.

Anal segment of male moderately long, lateroapical angles only moderately separated, each produced ventrad in a spinose process. Pygofer moderately long, posterior opening longer than broad, dorsolateral angles not produced, diaphragm with dorsal margin a little produced caudad at middle in a shallowly convex lobe; medioventral process absent. Aedeagus rather short, tubular, shallowly sinuate in side view, orifice at apex, an oblique row of about 9 teeth on each side, ascending from ventral margin at one-third from base to dorsal margin just behind apex. Genital styles simple, moderately broad, tapering distally to a narrow truncate apex, each with inner margin produced mesad one-third from apex in a small obtusely angulate lobe.

Male: length, 3.2 mm.; tegmen, 3.1 mm. *Female*: length, 4.0 mm.; tegmen, 4.0 mm.

Holotype ♂, MADAGASCAR: L. Alaotra, x. 1954, at light (*J. R. Williams*). *Paratype*: 1 ♀, same data as holotype. *Holotype* in British Museum (Nat. Hist.).

This species differs from the African *R. hargreavesi* Muir in the relatively shorter vertex, in which the disc is flat, not hollowed out; in tegminal coloration, in the shape of the male genitalia (*R. hargreavesi* having very long and slender spines on the anal segment, and large genital styles dilated apically like those of *Sardia brunnea* Muir), in the shape of the first valvifers of the female, and in the relatively smaller and thicker post-tibial calcar, which is exceptionally large and foliate in *R. hargreavesi*.

Thymobares gen. n.

Head slightly narrower than thorax. Vertex as long submedially as broad or longer than broad (up to 1.7 : 1), rather narrower at apex than at base, lateral margins straight, apical margin convex-truncate with submedian carinae only weakly prominent, Y-shaped carina feeble, submedian carinae uniting at apex of vertex or at base of frons, basal compartment of vertex only a little wider at hind margin than greatest length; frons in middle line longer than wide at widest part (1.7 : 1 to 2 : 1), widest at middle, lateral margins convex, median carina simple or forked at base, frontoclypeal suture rather strongly impressed, clypeus at base rather wider than frons at apex, postclypeal disc a little broader at base than long, in profile shallowly convex, anteclypeus in profile distinctly convex, entire clypeus in profile moderately convex; rostrum rather short, apex a little surpassing mesotrochanters; antennae more or less reaching to frontoclypeal suture, basal segment a little longer than broad, second segment longer than first (about 2 : 1 or 3 : 1); ocelli present or absent. Pronotum with disc longer in middle line than broad at anterior margin (approximately 1.4 : 1), lateral carinae straight, concave basally, not attaining hind margin. Mesonotum tricarinate. Post-tibial spur moderately thin with about 11-22 teeth. Colour pale; genital styles castaneous. Anal segment of male short, lateroapical angles each produced ventrad then caudad in a long, slender spinose process. Pygofer rather long, posterior opening ovate, longer than broad, dorsolateral angles only weakly produced, lateral margins in profile oblique, a small medioventral process usually present. Aedeagus tubular, stout, moderately long, decurved distally. Genital styles rather simple, directed dorsad.

Type species, *Chloriona longispinus* Muir.

Species of this genus are distinguishable by the following characters in combination: a moderately long, *Kelisia*-like frons, a relatively long basal compartment of the vertex, relatively slender antennae, a narrow pronotal disc, a narrow spur and male genitalia with a moderately long tubular pygofer with a rather small posterior opening and a medioventral process, and an anal segment with recurved spinose processes. In the key of Muir (1915) (if the lateral carinae of the pronotal disc are considered as "straight") they run to *Kelisia*, but differ from members of this genus in the relatively longer antennae and the structure of the male genitalia.

Two other species, *Kelisia capensis* Muir (1929 : 202) and *Delphacodes ismenis* Fennah (1958 : 201) belong here, and are accordingly to be known as *Thymobares capensis* (Muir) comb. n. and *Thymobares ismenis* (Fennah) comb. n.

Thymobares longispinus (Muir) (fig. 4, A-F)*Chloriona longispinus* Muir 1929 : 206.

MAURITIUS: Vacoas, 1 ♂, 11.vii.1954 (J. R. Williams).

Oaristes gen. n.

Vertex longer submedially than broad at base (1.4 : 1 to nearly 2 : 1), subacutely rounding into frons, lateral margins straight, apical margin convex-truncate with submedian carinae weakly prominent, Y-shaped carina weak but distinct, submedian carinae uniting at apex of vertex, basal compartment of vertex only little wider at hind margin than greatest length; frons in middle line longer than wide at widest part (about 2.5 : 1), widest at middle or near apex, lateral margins almost straight beyond eyes, median carina simple, clypeus at base not wider than frons at apex; rostrum with subapical segment attaining mesotrochanters, apical segment about as long as subapical, attaining post-trochanters; antennae attaining level of frontoclypeal suture, basal segment longer than broad (about 2.6 : 1), second segment longer than first (about 2.5 : 1); ocelli distinct. Pronotum with disc longer in middle line than broad at anterior margin (about 1.5 : 1), lateral carinae straight, not attaining

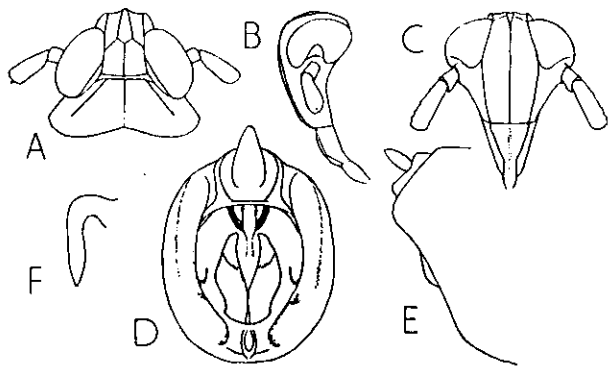


FIG. 4.—*Thymobares longispinus* (Muir): A, Vertex and pronotum; B, head in profile; C, frons and clypeus; D, male genitalia, posterior view; E, the same, lateral view; F, aedeagus, lateral view of apical portion.

hind margin. Mesonotum tricarinate. Post-tibial spur with about 21 teeth. Anal segment of male short, lateroapical angles each produced in a spinose or filiform process; these processes unequal in the known species. Pygofer moderately long, posterior opening longer than broad, dorsolateral angles strongly produced. Genital styles simple.

Female with pregenital sternite medially produced ventrocaudad or caudad in a distally rounded lobe.

Type species, *Chloriona snelli* Muir.

Members of this genus are distinguishable by the following features in combination: an elongate frons, a relatively long basal compartment of the vertex, distinctly long and slender antennae, transverse or irregular wrinkling at the apex of the vertex, many teeth on the post-tibial spur, and a pygofer with the hind margin strongly oblique and the dorsolateral angles strongly produced.

In the key of Muir (1915) the type species runs to *Chloriona*, but differs in the relatively narrower vertex, the form of the antennae, the structure of the male genitalia, and in the smaller bodily size. From *Leptodelphax* the present genus is separated by the relatively longer frons and antennae, and by the structure of the male genitalia.

To this genus belongs also *Oaristes distinctus* (Muir) comb. n. (*Stenocramus distinctus* Muir, 1929 : 196).

Oaristes snelli (Muir) (fig. 5, A-J)*Chloriona snelli* Muir, 1929 : 204.*Oaristes snelli mauritianus* subsp. n. (fig. 5, A-H)

Spine on right side of apical margin of male anal segment laterally compressed, wider distally than at base, abruptly bent caudad at apex. Genital styles slender, tapering distad, apical margin short, oblique. Frons medially at apex not at all infuscate.

Holotype ♂, MAURITIUS: Yemen, 20. iv. 1955, on grasses (J. R. Williams); paratype same data as holotype. Holotype in British Museum (Nat. Hist.)

The type of *O. snelli* (from Zanzibar) has a minute piceous spot at the extreme apex of the frons medially; the shorter of the spines on the anal segment is not curved caudad distally, and the genital styles are shaped as shown in figure 5.

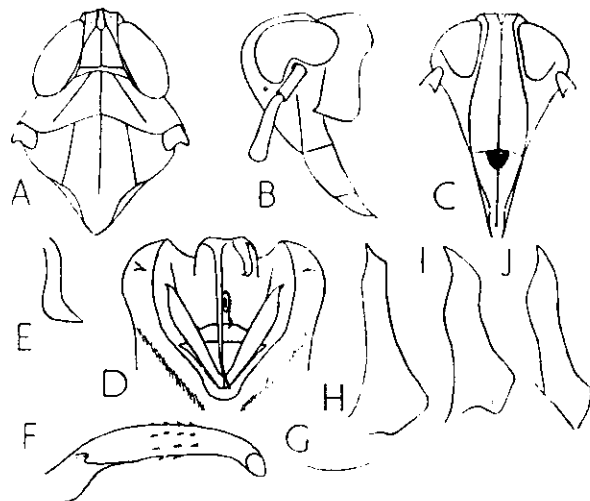


FIG. 5.—(A-H) *Oaristes snelli mauritianus* ssp. n.: A, Head and thorax; B, head in profile; C, frons and clypeus; D, male genitalia, posterior view; E, right spinose process of anal segment of male, lateral view; F, aedeagus; G, dorsal margin of middle portion of diaphragm; H, left genital style. (I) *O. snelli stachi* (Nast), left genital style. (J) *O. snelli snelli* (Muir), left genital style.

Leptodelphax stachi Nast (1958 : 895) from Madagascar (Ambodimanga), is closely allied and is here transferred to *Oaristes*. The aedeagus is of similar form in all three island populations, and the differences between them are not more than might be expected in a polytypic species. The writer proposes to regard them as such. The Madagascar *L. stachi* accordingly assumes the name *Oaristes snelli stachi* (Nast) comb. n.

Sogatodes FennahFennah, 1963 : 71. Orthotype, *Sogatodes molinus* Fennah, 1963 : 72.*Sogatodes elpenor* sp. n. (fig. 6, A-G)

Vertex longer submedially than broad at base (1.2 : 1), subrectangulately rounding into frons, rather narrower at apex than at base, lateral margins almost straight, apical margin truncate with submedian carinae strongly prominent, Y-shaped carina feeble, submedian carinae uniting on frons, basal compartment of vertex wider at hind margin than greatest length (1.5 : 1) and than median length (1.6 : 1), frons in middle line longer than wide at widest part (2.3 : 1), widest near middle,

lateral margins shallowly convex, median carina forked between eyes at one-quarter from base; clypeus at base not wider than frons at apex, postclypeal disc longer in middle line than broad at base (1.2 : 1), in profile almost straight, anteclypeus in profile moderately convex, curved caudad, so that entire clypeus in profile is shallowly convex; rostrum with apical segment surpassing mesotrochanters; antennae scarcely attaining frontoclypeal suture, basal segment longer than broad (1.7 : 1), second segment longer than first (1.7 : 1); ocelli distinct. Pronotum with disc longer in middle line than broad at anterior margin (1.3 : 1), lateral carinae almost straight, not attaining hind margin. Total length of mesonotum longer than that of mesoscutellum (about 2.9 : 1). Post-tibial spur with 18 teeth.

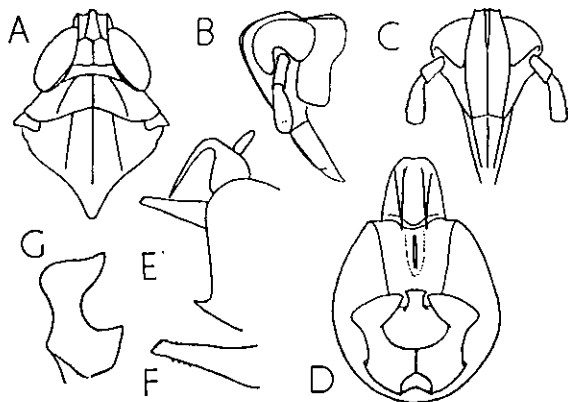


FIG. 6.—*Sogatodes elpenor* sp. n.: A, Head and thorax; B, head in profile; C, frons and clypeus; D, male genitalia, posterior view; E, the same, lateral view; F, aedeagus; G, left genital style.

Castaneous-piceous; median carina of frons, vertex, median portion of pronotal disc, mesonotal disc, lateral fields of pronotum, ivory white; antennae, legs, abdominal sternites at posterior margin, stramineous. Tegmina hyaline, faintly suffused fuscous between *Cu* and posterior margin to apex, veins concolorous. Wings hyaline with fuscous veins. The pallid coloration sometimes includes only a small area on pronotal disc and apex of mesoscutellum, lateral lobes of pronotum and tegulae.

Anal segment of male short, ring-like, lateroapical angles each strongly produced ventrad in a rather long, slender spinose process. Pygofer moderately long, posterior opening longer than broad, diaphragm with dorsal margin strongly excavate, at middle produced dorsad in a lobe, which is truncate distally; medioventral process present, small, triangular. Aedeagus moderately long, laterally compressed, tapering distad, orifice terminal, oblique; three minute teeth on dorsal margin just behind apex and four or five small teeth on ventral margin about one quarter from apex. Genital styles short, broad at base, constricted at middle and expanded apically, outer apical angle obtusely rounded, inner apical angle subacute, strongly produced mesad.

Male: length, 2.1 mm.; tegmen, 2.7 mm. Female: length, 2.5 mm.; tegmen, 3.1 mm.

Holotype ♂, MAURITIUS: Plaine Sophie, 22.vii.1954, sweeping low herbage (J. R. Williams); paratypes: 2 ♂, 2 ♀, same data as holotype; 1 ♂, Five Ways, 8.viii.1954 (J. R. Williams). Holotype in British Museum (Nat. Hist.).

The male genitalia recall those of *Sogatodes nauticus* (Muir) (1926b : 26).

Sogatella Fennah

Fennah, 1963 : 48. Orthotype, *Delphax furcifera* Horváth, 1899 : 366.

Sogatella kolophon insularis (Distant)

"*Delphax*" *kolophon* Kirkaldy, 1907 : 157.

Opiconsiva insularis Distant, 1917 : 303.

MAURITIUS: Trois Mamelles, 3 ♂, 13.vii.1954 (J. R. Williams). ÎLES GLORIEUSES: 1 ♂, 16-17.ix.1958 (R. Paulian). The species is also known from the Seychelles

Sogatella gemina Fennah

Fennah, 1963 : 65.

MAURITIUS: Trois Mamelles, 2 ♀, 13.vii.1954 (J. R. Williams). These are tentatively referred to this species on account of the structure of the head, bodily size and coloration. The type locality is in the Seychelles Is.

Sogatella colorata (Distant)

Opiconsiva colorata Distant, 1917 : 301.

MAURITIUS: Vacoas, 2 ♂, 4 ♀, 16.viii.1954 (J. R. Williams). This species also occurs in the Seychelles Is.

Sogatella albofimbriata (Muir)

Sogata albofimbriata Muir, 1926 : 33.

MAURITIUS: Plaine Sophie, 2 ♂, 22.vii.1954 (J. R. Williams). The type locality is Cape Province.

Sogatella nigeriensis (Muir)

Megamelus furcifer nigeriensis Muir, 1920 : 143.

MADAGASCAR: Tananarive, 3 ♂, ii.1952 (N. L. H. Krauss). ÎLES GLORIEUSES, 1 ♂, 16-17.ix.1958 (R. Paulian).

Matutinus Distant

Distant, 1917 : 278. Orthotype, *Matutinus opulentus* Distant, 1917 : 278.

Matutinus fuscipennis (Muir) comb. n.

Chloriona fuscipennis Muir, 1919 : 38.

MADAGASCAR: Tananarive, 1 ♂, ii.1952 (N. L. H. Krauss). This species is known also from Natal and Cape Province; the type locality is British Guiana.

Matutinus lautipes (Stål) comb. n.

Delphax lautipes Stål, 1858 : 319.

Megamelus lautipes [sic] Jacobi, 1917 : 530.

Jacobi has recorded the presence of this species in Madagascar.

Toya Distant

Distant, 1906 : 472. Orthotype, *Toya attenuata* Distant 1906 : 472.

Toya mahensis Distant comb. n.

Nilaparvata mahensis Distant, 1917 : 304.

MAURITIUS: Rose Hill, 5 ♂, 12.iii.1954, at light (R. Mamet). MADAGASCAR: Tananarive, 1 ♂, ii.1952 (N. L. H. Krauss).

Toya thomasseti (Muir) comb. n.

Delphacodes thomasseti Muir, 1925 : 466.

Opiconsiva modesta Distant, 1917 : 303.

Delphacodes distantii Metcalf, 1943 : 431.

MAURITIUS: Black River, 1 ♂, 1954, sweeping in low herbage (J. R. Williams). RODRIGUEZ: Rivière Pigeon, 1 ♂, xi.58 (R. Paulian and J. Vinson). The writer has seen males and females of this species taken in Ghana (Taf., Dec. 1960-Jan. 1961. (B. M. Gerard).)

Toya propinqua (Fieber) comb. n.*Delphax propinqua* Fieber 1866 : 525.RODRIGUEZ: Port Maturin, xi. 58 (*R. Paulian* and *J. Vinson*).*Toya salambo* sp. n. (fig. 7, A-G)

Vertex as long submedially as broad at base, obtusely rounding into frons, as wide at apex as at base, lateral margins straight, apical margin truncate with submedian carinae little, if at all, prominent, Y-shaped carina feeble but evident, submedian carinae uniting at apex of vertex, basal compartment of vertex wider at hind margin than greatest length (1.8 : 1) and than median length (2 : 1), frons in middle line longer than wide at widest part (2.4 : 1), widest at four-fifths from base, lateral margins straight, incurved near apex, median carina simple; clypeus at base not wider than frons at apex, postclypeal disc slightly longer than broad at base (nearly 1.1 : 1) in profile straight, anteclypeus in profile moderately curved caudad so that entire clypeus in profile is shallowly convex; rostrum about as long as clypeus, not quite attaining post-trochanters; antennae slightly surpassing frontoclypeal suture, basal segment longer than broad (about 1.5 : 1), second segment longer than first (2.2 : 1); ocelli distinct. Pronotum with disc a little longer in middle line than broad at anterior margin (nearly 1.1 : 1), lateral carinae straight, strongly diverging, not nearly attaining hind margin. Total length of mesonotum longer than that of scutellum (2.4 : 1).

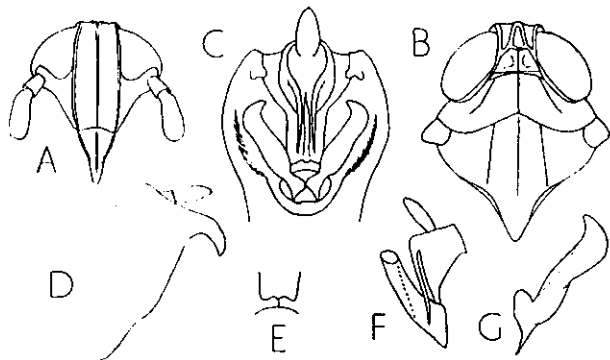


FIG. 7.—*Toya salambo* sp. n.: A, Frons and clypeus; B, head and thorax; C, male genitalia, posterior view; D, posterior margin of pygofer, lateral view; E, middle portion of diaphragm; F, anal segment of male and aedeagus, right side (spinose ornamentation on aedeagus seen by transparency); G, right genital style.

Fuscous; carinae of head, antennae except at apex of basal segment, basal compartment of vertex, pronotum, mesonotum and tegulae, testaceous. Tegmina hyaline, veins concolorous in corium, fuscous in membrane. Wings hyaline with fuscous veins.

Anal segment of male moderately long, collar-like, lateroapical angles rather close together, each produced ventrad in a long, slender spinose process. Pygofer moderately long, posterior opening as broad as long, dorsolateral angles strongly produced caudad, each deflected apically in a small rounded lobe; diaphragm with dorsal margin rectangulately excavate in middle portion, where it is very narrow, and slightly produced caudad in a small quadrate lobe; medioventral process absent. Aedeagus short, tubular, slightly curved, directed dorsocaudad, orifice terminal, a row of fifteen minute teeth extending obliquely from left side at two-fifths from base to dorsal margin at apex, an oblique row of about five small teeth on right side at middle. Genital styles moderately long, simple, rather broad, sinuate, produced mesad at base in a short rounded lobe, and also at apex in an acute lobe.

Male: length, 2.3 mm.; tegmen, 2.8 mm.

Holotype ♂, MADAGASCAR: Tananarive, ii. 1952 (*N. L. H. Krauss*). Paratype ♂, same data as holotype. Holotype in British Museum (Nat. Hist.). This species is near *Delphacodes hessei* Muir (1929 : 214), and *D. varia* Hesse (1925 : 171), but differs in the shape of the armature of the diaphragm and of the genital styles. These two African species are congeneric, and do not belong in *Delphacodes*. They are here transferred to *Toya* as *Toya hessei* (Muir) comb. n. and *Toya varia* (Hesse) comb. n.

Leptodelphax HauptHaupt, 1927 : 10. Orthotype, *Leptodelphax cyclops* Haupt.*Leptodelphax maculiger* (Stål)*Delphax maculiger* Stål, 1859 : 276.

The type locality of this species is Mauritius; it has also been reported from Madagascar (Nast, 1958). The genus is represented in Africa, in Cyprus and in Israel.

Opiconsiva DistantDistant, 1917 : 301. Orthotype, *Opiconsiva fuscovaria* Distant.*Opiconsiva fuscovaria* Distant

Distant, 1917 : 301.

This species is still known only from the type series from the Seychelles. Although the male genitalia bear a most remarkable similarity to those of *Sogata paludum* Kirkaldy, the large bodily size of members of this species, the shape of the head, bodily proportions and coloration form a combination that at present does not seem to be closely approached by any other species. The genus is certainly different from *Delphacodes*, under which it was suppressed by Muir, and must be regarded as distinct, at present containing only the type species.

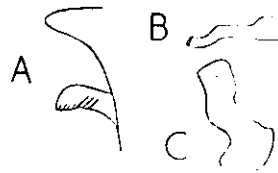


FIG. 8.—*Syndelphax capellanus* (Jacobi): A, Dorsolateral angle of pygofer and armature of diaphragm, lateral view; B, aedeagus; C, left genital style.

Syndelphax FennahFennah, 1963 : 15. Orthotype, "*Delphax*" *matanitu* Kirkaldy, 1907 : 155.*Syndelphax capellanus* (Jacobi) comb. n. (fig. 8, A-C)*Delphax capellanus* Jacobi 1917 : 530.*Sogata nigricaudata* Muir 1926 : 33 syn. n.

MAURITIUS: Vacoas, 1 ♂, 4.i.1955, at light (*J. R. Williams*). The type locality is Madagascar; that of *S. nigricaudata* is Port St. John, Pondoland.

Peregrinus KirkaldyKirkaldy, 1904 : 175. Orthotype, *Delphax maidis* Ashmead, 1890.*Peregrinus maidis* (Ashmead)*Delphax maidis* Ashmead, 1890 : 323.

MADAGASCAR: Nossi Bé, 1 ♀, 1954 (*R. Paulian*). RODRIGUEZ: Saint Gabriel, 250 m., 1 ♀, xi. 58 (*R. Paulian* and *J. Vinson*); Petit Butte, 1 ♀, xi. 58 (*R. Paulian* and *J. Vinson*). This species has previously been recorded in Rodriguez, and also in the Seychelles.

Perkinsiella KirkaldyKirkaldy, 1903 : 179. Orthotype, *Perkinsiella saccharicida* Kirkaldy.

Perkinsiella saccharicida Kirkaldy

Kirkaldy, 1903 : 179.

MADAGASCAR: Nossi Bé, 2 ♀, 1954 (*R. Paulian*). RÉUNION: Bretagne, 1 ♂, 18. vii. 1951, on sugar-cane (*J. R. Williams*). MAURITIUS: 1 ♂, 99-265 (*J. E. M. Brown*). This species has undoubtedly been introduced by man.

Thriambus gen. n.

Head not wider than pronotum. Vertex very little shorter submedially than broad at base (about 1 : 1.2), rather strongly rounding into frons, as wide at apex as at base, lateral margins weakly concave, apical margin truncate with submedian carinae markedly prominent, Y-shaped carina distinct, submedian carinae uniting on frons, basal compartment of vertex wider at hind margin than greatest length (about 2.3 : 1), and than median length (about 2.5 : 1), frons in middle line longer than wide at widest part (2 : 1), widest at about one-third from base, lateral margins straight, convergent distad below level of ocelli, median carina forked at about level of ocelli; clypeus at base not wider than frons at apex, in profile shallowly convex; rostrum with apical segment longer than subapical; antennae reaching slightly beyond frontoclypeal suture, basal segment cylindrical, longer than broad (about 1.5 : 1), second segment longer than first (about 2.0 : 1); ocelli distinct, almost contiguous

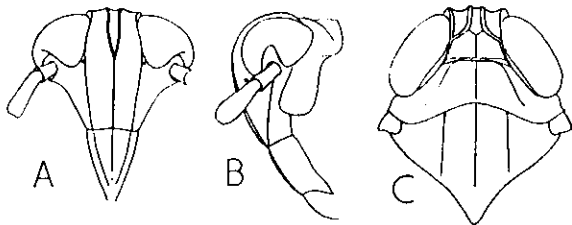


FIG. 9.—*Thriambus stramineus* (Muir): A, Frons and clypeus; B, head in profile; C, head and thorax.

with lateral margin of frons. Pronotum with disc shorter in middle line than broad at anterior margin (1 : 1.2), lateral carinae not attaining hind margin. Total length of mesonotum longer than that of scutellum (2.5 : 1). Profemora comparatively short, a little longer than procoxae (about 1.2 : 1); post-tibial spur thin, moderately large, with about 36 teeth. Anal segment of male very short, lateroapical angles moderately widely separated, each produced in a spinose process. Pygofer moderately long, posterior opening about as long as broad, dorsolateral angles not produced, lateral margins rounding into diaphragm, not sharply defined, diaphragm not deeply impressed, dorsal margin in part membranous, concave; pygofer, in side view, with ventral margin longer than dorsal, convex, but not strongly so; medioventral process comprising two widely separated spinose processes, with or without a median process. Aedeagus long, laterally compressed, reflected cephalad at apex in a flagellum. Genital styles simple, rather narrow and tapering distally, rectangulately or subacutely bent dorsad, sometimes produced caudad at point of flexure in a large granulate setiferous process. Pregenital sternite of female not sclerotised medially or produced in a lobe.

Type species, *Dicranotropis stramineus* Muir.

This genus is separated from *Dicranotropis* by the form of the post-tibial spur (which in *Dicranotropis* is short and bears less than fifteen very minute teeth), by the pattern of the male genitalia and by the non-sclerotised pregenital sternite of the female. From *Phyllostinus*, *Asiracina*, *Platypareia* and *Pelidae* it is separated by the short cylindrical basal antennal segment, and from *Peregrinus* by the head being relatively broader in relation to the thorax, and by the form of the male genitalia and of the pregenital sternite of the female. Other species that belong in this genus include *Thriambus vegetatus* Melichar comb. n. (*Peregrinus vegetatus* Melichar, 1912 : 133), *Thriambus pondolandensis* (Muir) comb. n. (*Dicranotropis pondolandensis* Muir, 1926 : 28), *Thriambus ephorus* Fennah comb. n. (*Dicranotropis ephorus* Fennah, 1958a : 198), *Thriambus nicias* Fennah comb. n. (*Dicranotropis nicias* Fennah, 1958b : 477) and *Thriambus idmon* Fennah comb. n. (*Delphacodes idmon* Fennah, 1958b : 484).

Thriambus stramineus (Muir) comb. n. (fig. 9, A-C)*Dicranotropis stramineus* Muir, 1929 : 200.

MAURITIUS: Yemen, 2 ♂, 2 ♀, 20. iv. 1955, on grasses (*J. R. Williams*); Vacoas, 1 ♂, at light, i. 1955 (*J. R. Williams*). The type locality of this species is in Zululand.

Nycheuma gen. n.

Head as wide as pronotum or slightly wider. Vertex shorter submedially than broad at base (about 1 : 1.2), scarcely surpassing eyes, moderately strongly rounding into frons, about as wide at apex as at base, lateral margins almost straight, apical margin transverse with submedian carinae moderately prominent, Y-shaped carina feeble, submedian carinae uniting on frons, basal compartment of vertex wider at hind margin than greatest length (about 2.2 : 1), and than median length (about 2.7 : 1); frons in middle line longer than wide at widest part (2 : 1), widest at level of ocelli, lateral margins straight and converging distad beyond this level, median carina forked at level of ocelli; clypeus at base a little wider than frons at apex, in profile shallowly convex; rostrum with apical segment about as long as subapical; antennae reaching slightly beyond frontoclypeal suture, basal segment cylindrical, longer than broad (about 2 : 1), second segment longer than first (about 2 : 1); ocelli distinct. Pronotum with disc shorter in middle line than broad at anterior margin (1 : 1.2), lateral carinae not attaining hind margin. Total length of mesonotum longer than that of scutellum (about 2.8 : 1). Profemora moderately long, longer than procoxae (about 1.7 : 1); post-tibial spur thin, moderately large, with about 20 teeth.

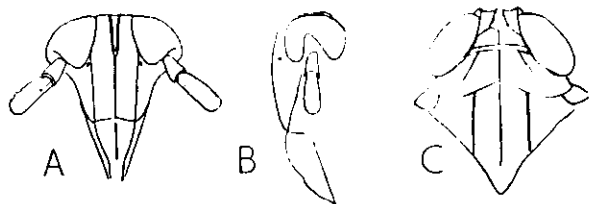


FIG. 10.—*Nycheuma capense* (Muir): A, Frons and clypeus; B, head in profile; C, head and thorax.

Anal segment of male short, lateroapical angles widely separated, each produced ventrad in a spinose process. Pygofer short dorsally, long and strongly convex ventrally, posterior opening about as long as broad, dorsolateral angles not produced, lateral margins rather feebly demarcated from diaphragm, diaphragm moderately deeply impressed with dorsal margin membranous; medioventral process present, small, sometimes complex. Aedeagus rather long, laterally compressed, reflected cephalad at apex in a flagellum. Genital styles simple, rather narrow, tapering distally, rectangulately or subacutely bent dorsad; if produced caudad at point of flexure, then lobe narrow and very small. Pregenital sternite of female not sclerotised medially or produced in a lobe.

Type species, *Dicranotropis capensis* Muir.

This genus is close to *Thriambus* and differs from *Dicranotropis* and the other genera listed in the same characters. From *Thriambus* it is separated by the relatively wider head, which is wider than the pronotum, and its anterior margin, which, when viewed from above, does not project beyond the anterior margin of the eyes, by the relatively longer profemora, the fewer teeth on the post-tibial spur, and the subglobular form of the lower surface of the pygofer. Other species of this genus include *Nycheuma idas* (Fennah) comb. n. (*Dicranotropis idas* Fennah, 1958b : 479) and *Nycheuma endymion* (Fennah) comb. n. (*Dicranotropis endymion* Fennah, 1958b : 481).

Nycheuma capense (Muir) comb. n. (fig. 10, A-C)*Dicranotropis capensis* Muir 1926 : 28.

MAURITIUS: Yemen, 2 ♂, 20. iv. 1955, on grasses (*J. R. Williams*). The species was described from Mossel Bay, Cape Province.

Examination of the type specimen has revealed that Muir was in error in describing the pygofer as having the "ventral margin entire, simple", as it has, in fact, a compact

group of three small processes medioventrally. The West African *N. idas* (Fennah) is very close to this species, and a final assessment of their relationship will have to await a study of material from intermediate areas.

Numatodes gen. n.

Head not as wide as pronotum, in profile subacute. Vertex longer than broad at base, basal compartment wider at hind margin than long in middle to fork of Y-shaped carina (about 2 : 1), frons fully twice as long as broad, widest near middle, median carina narrowly forked at about two-fifths from base; antennae with basal segment cylindrical, about as long as broad, second segment about three times as long as first; ocelli distinct. Pronotum with disc longer in middle line than broad at anterior margin, lateral carinae not attaining hind margin. Profemora longer than procoxae (about 1.3 : 1). Post-tibial spur moderately thin, with about thirty teeth.

Type species, *Numatodes antricauda* sp. n.

The deeply forked frontal carina and pattern of the male genitalia serve to place this genus in the *Dicranotropis* group. The short cylindrical first antennal segment

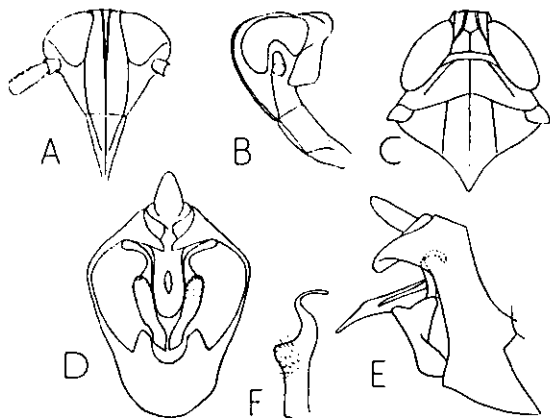


FIG. 11.—*Numatodes antricauda* sp. n.: A, Frons and clypeus; B, head in profile; C, head and thorax; D, male genitalia, posterior view; E, the same, lateral view; F, left genital style.

suffices to separate it from *Phyllodinus* and its allies. From *Dicranotropis* it differs in more delicate structure and in the thirty-toothed calcar. It is perhaps nearest to *Thriambus*, but stands apart in the relatively elongate vertex, the shape of the frons, the exceptionally short basal antennal segment and the pattern of the male genitalia. From *Numata* it differs in the relatively much shorter first antennal segment, in genitalic pattern and in bodily size.

Numatodes antricauda sp. n. (fig. 11, A-F)

Vertex longer submedially than broad at base (1.2 : 1), strongly rounding into frons, rather narrower at apex than at base, lateral margins almost straight, apical margin convex-truncate, with submedian carinae slightly prominent, Y-shaped carina moderately distinct, submedian carinae uniting on frons, basal compartment of vertex wider at hind margin than greatest length (1.7 : 1), and than median length (nearly 2 : 1), frons in middle line longer than wide at widest part (2.2 : 1), widest at two-thirds from base, lateral margins distinctly convex, median carina forked at two-fifths from base; clypeus at base not wider than frons at apex, postclypeal disc as long as broad at base, in profile almost straight, anteclypeus in profile moderately curved caudad, so that entire clypeus in profile is shallowly convex; rostrum surpassing mesotrochanters; antennae attaining frontoclypeal suture, basal segment as long as broad, second segment longer than first (3 : 1); ocelli distinct.

Pronotum with disc longer in middle line than broad at anterior margin (1.3 : 1), lateral carinae strongly diverging, not attaining hind margin. Total length of mesonotum longer than that of scutellum (2.5 : 1). Post-tibial spur with 32 teeth.

Testaceous; eyes and ocelli dull red, mesonotum just outside lateral carinae and pronotum immediately behind eyes, stramineous; legs and abdominal sternites, pale testaceous; genitalia, except pygofer dorsally, castaneous piceous, paler on ventral surface.

Anal segment of male moderately short, collar-like, lateroapical angles apparently not produced. Pygofer short, posterior opening as long as broad, dorsolateral angles strongly produced, acute at apex and inflected to meet in middle line, enclosing anal segment, lateral margins in profile concave, diaphragm with dorsal margin deeply excavate in a narrow U-shape, lateral margins of pygofer each lateroventrally produced dorsocaudad in a shallow triangulate lobe; medioventral process obsolete. Aedeagus rather long, tubular, laterally compressed, acute at apex, with a slender flagellum arising apically and extending cephalad above aedeagus. Genital styles large, basal portion stout, granulate, strongly setiferous; thence angulately bent cephalad at middle and recurved laterodorsad at apex, smooth, and tapering in apical third, subacutely rounded at tip.

Male (macropterous): length, 1.9 mm.; tegmen, 2.5 mm.

Holotype ♂, MAURITIUS: Vacoas, 13.iii.1955 (*J. R. Williams*); in British Museum (Nat. Hist.).

This species is well distinguished by the unusual form of the pygofer.

Cemus gen. n.

Vertex shorter submedially than broad at base, broadly and obtusely rounding into frons, as broad at apex as at base, lateral margins slightly concave, apical margin transverse with submedian carinae not prominent, Y-shaped carina distinct, submedian carinae uniting on frons, basal compartment of vertex wider at hind margin than greatest length (about 2.5 : 1), frons in middle line longer than wide at widest part (about 1.8 : 1), widest at level of ocelli, lateral margins straight, weakly convergent below this level, median carina forked at level of ocelli, clypeus at base slightly wider than frons at apex, postclypeal disc about as long in middle as broad at base; rostrum reaching to post-trochanters, with apical segment about as long as subapical; antennae reaching almost to level of apex of post-clypeus, basal segment longer than broad (more than 2 : 1), second segment longer than first; ocelli distinct, very close to anterior margin of gena. Pronotum with disc shorter in middle line than broad at anterior margin (about 1 : 1.3), lateral carinae concave, not attaining hind margin. Total length of mesonotum in macropterous form longer than that of scutellum (about 2.2 : 1). Fore and middle femora and tibiae a little compressed but not, or only feebly, foliately expanded. Post-tibial spur with about 30 teeth.

Abdomen of male with anterior margin of seventh sternum obtusely but distinctly angulate at middle. Posterior margin of eighth sternum shallowly convex throughout, median portion rather flattened. Anal segment of male short, ring-like, lateroapical angles more or less tumid, each produced ventrad in a slender spinose process. Pygofer short dorsally, long, and strongly convex ventrally, posterior opening relatively small, much longer than broad, dorsolateral angles feebly produced, strongly inflected; diaphragm long dorsoventrally, with dorsal margin weakly concave, deeply incised medially, medioventral process short, broader than long, quadrate. Aedeagus long, slightly decurved distad, with a long flagellum arising at apex, directed cephalad, and ornamented at middle of its dorsal margin with one or two processes. Genital styles simple, narrow, usually tapering distally to acute apex, directed dorsad, in posterior view only weakly diverging.

Type species, *Cemus leviculus* sp. n.

This genus is a member of the *Phyllodinus* group. It is separable from *Phyllodinus* by the many-toothed spur and the normal fore legs; from *Phacalastor* by the proportions and cylindrical shape of the first antennal segment, and by male genitalic structure, from *Asiracina* by the shape of the head, the normal fore legs, the relatively short first antennal segment, and the pattern of the male genitalia; from the closely allied *Peliades* it is separated by the relatively long common vein in the clavus, by the normal fore and middle legs, and by the shape of the seventh and eighth abdominal sterna, and from *Platypareia* by the proportions of the antennae, shape of the head, and structure of the male genitalia. Other species that belong here include *Cemus pulchellus* (Distant) comb. n. (*Pundaluoyna pulchella* Distant, 1912 : 190), *Cemus kirkaldyi* (Metc.) comb. n. (*Phyllodinus kirkaldyi* Metcalf, 1943 : 148), *Cemus sauteri* (Muir) comb. n. (*Phyllodinus sauteri* Muir, 1917 : 319), *Cemus granuliferus* (Stål)

comb. n. (*Delphax granulineris* Stål, 1854 : 246), and *Cemus nigromaculosus* (Muir) comb. n. (*Phyllodinus nigromaculosus* Muir, 1917 : 319).

All species of this genus are very similar, and their distribution suggested to the writer the possibility that they might represent a single polytypic species. In Micronesia, however, there is no doubt that two of these forms are sympatric in several islands (Fennah, 1956 : 111), and so cannot be regarded as less than specific rank. As the differences between them are not different in amount or kind from those between the other forms, all those listed above are here accepted as distinct species.

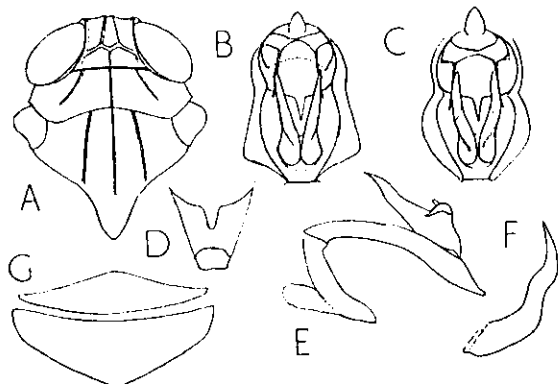


FIG. 12.—*Cemus leviculus* sp. n.: A, head and thorax; B, male genitalia, posterior view (lateral margins of pygofer omitted); D, median portion of diaphragm; E, aedeagus; F, genital style; G, sternite of seventh and eighth abdominal segments of male. *Cemus pulchellus* (Distant). C, male genitalia, posterior view (lateral margins of pygofer omitted).

Cemus leviculus sp. n. (fig. 12, A, B, D–G)

Pundaluoya pulchella Distant, 1917 : 301.

Vertex shorter submedially than broad at base (about 1 : 1.1), broadly and obtusely rounding into frons, as broad at apex as at base, lateral margins slightly concave, apical margin transverse with submedian carinae not prominent, Y-shaped carina distinct, submedian carinae uniting on frons, basal compartment of vertex wider at hind margin than greatest length (2.5 : 1), and than median length (3.4 : 1), frons in middle line longer than wide at widest part (about 1.8 : 1), widest at two-fifths from base, lateral margins straight below level of ocelli, weakly convergent, median carina forked at level of ocelli, clypeus at base slightly wider than frons at apex, postclypeal disc as long in middle as broad at base, in profile moderately convex, anteclypeus in profile strongly curved caudad, so that entire clypeus in profile is rather strongly convex; rostrum reaching to post-trochanters, apical segment about as long as subapical; antennae reaching almost to level of apex of postclypeus basal segment longer than broad (2.7 : 1), with a longitudinal carina below, second segment longer than broad (2.9 : 1) and longer than first (nearly 1.4 : 1), cylindrical; ocelli distinct, contiguous with anterior margin of gena. Pronotum with disc shorter in middle line than broad at anterior margin (1 : 1.3), lateral carinae concave, not nearly attaining hind margin. Total length of mesonotum in macropterous form longer than that of scutellum (2.2 : 1). Post-tibial spur with 30 teeth.

Fuscous; carinae of head and thorax, spots on frons, a suffusion along upper side of basal antennal segment and carina below it, second antennal segment in part, femora, tibiae and tarsi apically, and a suffusion along postfemora, stramineous; lateral lobes of pronotum and tegulae, creamy-white, Tegmina hyaline, veins concolorous with granules fuscous, a linear marginal spine in apical third of clavus, a crescentic band from node to anal angle, thence submarginally to apex of tegmen, a suffusion overlying apical branch of *R* in membrane and a suffusion overlying anterior branch of *M* in membrane, fuscous. Wings hyaline with fuscous veins.

Anal segment of male short, ring-like, lateroapical angles slightly tumid, each produced ventrad in a moderately long, slender spinose process. Pygofer with dorsolateral angles weakly produced mesad, obtuse, the apex not clearly defined; diaphragm with dorsal margin shallowly concave, deeply

incised and a little produced caudad medially; medioventral process in form of a shallow quadrate lobe. Aedeagus long, laterally compressed, slightly decurved distally, a broad flagellum arising at apex, directed dorsad and cephalad, widest at its middle where its dorsal margin is produced cephalad in a small peg-like process and strongly to left in a longer stout spinose process, flagellum tapering in its distal portion, acute at apex. Genital styles moderately long, tapering distad, in posterior view with inner margin straight.

Male: length, 2.7 mm.; tegmen, 3.0 mm.

Holotype ♂, SEYCHELLES Is.: Mahé, 1908–9 (*Percy Sladen Trust Seychelles Expedition*); in British Museum (Natural History).

One female, MAURITIUS: Vacoas, iii. 1954, at light (*J. R. Williams*) is tentatively assigned to this species.

This species differs from *Cemus pulchellus* (Distant) (as interpreted from a topotypic male, the type being female) (fig. 12, C) in the shape of the posterior opening of the pygofer and of its pale marginal area, and in the shape of the genital styles, which are not sinuate in posterior view, as they are in *pulchellus*.

IV. REFERENCES

- ASHMEAD, W. H., 1890, The corn Delphacid, *Delphax maidis*. *Psyche* 5 : 321–4.
 DISTANT, W. L., 1906, *Rhynchota. Heteroptera-Homoptera. The fauna of British India, including Ceylon and Burma*. 3, pp. i–xiv, 1–503. London.
 — 1909, "Sealark" Rhynchota. *Trans. Linn. Soc. Lond. Zool.* (2) 13 : 29–47, pl. 4.
 — 1912, Descriptions of new genera and species of Oriental Homoptera. *Ann. Mag. nat. Hist.* (8) 9 : 181–94.
 — 1917, Rhynchota. Part ii: Suborder Homoptera. The Percy Sladen Trust Expedition to the Indian Ocean in 1905, under the leadership of Mr. J. Stanley Gardiner, M.A. *Trans. Linn. Soc. Lond. (Zool.)* 17 : 273–322, pls. 49–51.
 FENNAH, R. G., 1956, *Homoptera: Fulgoroidea. Insects of Micronesia* 6, pp. 39–211.
 — 1958a, *Hemiptera: Fulgoroidea. In South African Animal Life*. 5 : 193–211.
 — 1958b, *Fulgoroidea from West Africa. Bull. de l'I.F.A.N.* 20 : 460–538.
 — 1963, The Delphacid species complex known as *Sogata furcifera* (Horváth) (Homoptera: Fulgoroidea). *Bull. ent. Res.* 54 : 45–79.
 FIEBER, F. X., 1866, Grundzüge zur generischen Theilung der Delphacini. *Verh. zool.-bot. Ges. Wien* 16 : 517–34, pl. 8.
 GUÉRIN-MÉNEVILLE, F. E., 1834, *Essai d'un nouvel arrangement des Hémiptères de la section des Homoptères, et révision de la tribu des Fulgorelles. In Voyage aux Indes-Orientales... Zoologie. Insectes*. 1834, pp. 445–80, pl. 3.
 HAUPT, H., 1927, Homoptera Palestinae I. *Bull. Palestine Agr. Exp. Sta.* 8 : 5–43, pls. 1–5.
 HESSE, A. J., 1925, Contributions to a knowledge of the fauna of South-West Africa. IV. A list of the Heteropterous Hemiptera of South-West Africa. *Ann. South African Mus.* 23 : 1–190, pls. 1–8.
 JACOBI, A., 1917, Die Zikadenfauna Madagascars und der Comoren. *Reise in Ostafrika... ausgeführt von Professor Dr. Alfred Voeltzkow. Wissenschaftliche Ergebnisse. Systematische Arbeiten*. 3 : 519–52, pls. 32–3.
 — 1928, Rhynchota Homoptera. 1. Fulgoridae und Cercopidae. Results of Dr. E. Mjöberg's Swedish Scientific Expeditions to Australia 1910–1913. *Arkiv Zool.* 19 (28) : 1–50.
 KIRKALDY, G. W., 1903, Miscellaneous Rhynchotalia, No. 7. *Entomologist* 36 : 179–81.
 — 1904, Some new Oahuan (Hawaiian) Hemiptera. *Ibid.* 37 : 174–9.
 — 1907, Leafhoppers supplement. (Hemiptera). *Bull. Hawaii. Sug. Ass. ent. Ser.* 3 : 1–186, pls. 1–20.
 — 1908, Homoptera. A list of the described Hemiptera (excluding Aleyrodidae and Coccidae) of the Hawaiian Islands. *Proc. Hawaiian ent. Soc.* 1 : 186–208.
 MELICHAR, L., 1912, Homoptera. In *Wissenschaftliche Ergebnisse der Zweiten Deutschen Zentral-Afrika-Expedition 1910–11*. 1, pp. 109–34, pls. 1–2.
 METCALF, Z. P., 1943, *Fascicle IV, Fulgoroidea. Part 3, Araeopidae. In General Catalogue of the Hemiptera* 4 (3) : 1–552. Northampton, Mass., U.S.A.
 MUIR, F., 1915, A contribution towards the taxonomy of the Delphacidae. *Canad. Ent.* 47 : 296–302.
 — 1917, Homopterous notes. *Proc. Hawaiian ent. Soc.* 3 : 311–38, pl. 6.
 — 1919, Some new American Delphacidae. *Canad. Ent.* 51 : 35–9.
 — 1920, On some African Delphacidae (Homoptera). *Bull. ent. Res.* 10 : 139–44.
 — 1925, On some Fulgorids (Hemiptera-Homoptera) from the Island of Rodriguez. *Trans. ent. Soc. Lond.* 1924 : 463–74, pls. 46, 47.
 — 1926a, On some new and little-known Delphacidae from South Africa (Fulgoroidea : Homoptera). *Ann. Mag. nat. Hist.* (9) 17 : 17–35.
 — 1926b, Contributions to our knowledge of South American Fulgoroidea (Homoptera). Part 1 The Family Delphacidae. *Bull. Hawaii. Sug. Ass. ent. Ser.* 18 : 1–51, pls. 1–5.
 — 1929, New and little-known African Delphacidae (Homoptera, Fulgoroidea) in the collection of the British Museum. *Ann. mag. nat. Hist.* (10) 4 : 186–222.
 — 1934, New and little-known Fulgoroidea (Homoptera). *Ibid.* 14 : 561–86.

- NAST, J., 1958, Homopterological Notes XII. On the genus *Leptodelphax* Hpt. with description of a new species from Madagascar (Delphacidae). *Act. Zool. cracov.* 2 (35) : 887-99.
- SKOTTSSBERG, C. J. F., 1960. Remarks on the plant geography of the southern cold temperate zone *Proc. Roy. Soc. Lond. (B)* 152 : 447-57.
- STÅL, C., 1854, Nya Hemiptera. *Öfvers. Vetensk. Akad. Förh. Stockh.* 11 : 231-55.
- 1858, Orthoptera och Hemiptera från södra Africa. *Ibid* 15 : 307-20.
- 1859, Hemiptera. In *Eugenes Resa* 4, pp. 219-98, pls. 3-4. Stockholm.

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