

THE DELPHACID SPECIES-COMPLEX KNOWN AS
SOGATA FURCIFERA (HORVÁTH) (HOMOPTERA: FULGOROIDEA).

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In 1899 Horváth erected the species *furcifera* in *Delphax* on the basis of a male specimen collected in Japan. Since then, specimens from other parts of the world, more or less similar in morphological features, have been assigned to this species, or have been described in new species which have subsequently been sunk in synonymy with *D. furcifera*. In the General Catalogue of Hemiptera, fasc. IV, part 3 (Metcalf, 1943), ten nominal species are listed in synonymy. The combined distribution of these is almost world-wide. In Japan, the species is well known as a pest of rice, and populations referred to it have been responsible for damaging outbreaks on this crop in Malaya (Miller & Pagden, 1930), Indo-China (Caresche, 1933) and Fiji (Lever, 1939).

The synonymy given in the General Catalogue of Hemiptera, under the combination *Liburnia furcifera* (Horv.) is based on that of Muir & Giffard (1924, p. 13) and includes *Liburnia albolineosa* Fowler, *Delphax kolophon* Kirk., *Sogata distincta* Dist., *S. pallescens* Dist., *Opiconsiva insularis* Dist., *O. derelicta* Dist., *O. balteata* Dist., *O. colorata* Dist., *O. gloriosa* Dist., *Delphax nigrigenis* Jacobi, and, as distinct subspecies, *Megamelus furcifer nigeriensis* Muir and *Sogata furcifera capensis* Muir.

Evidence has been obtained that populations representing *furcifera* and *kolophon* are morphologically relatively uniform throughout their western Pacific and eastern Asiatic range, and remain distinct in areas where they have been found to be sympatric, and on this account they have been recognised as distinct species (Fennah, 1956b, p. 117). Recently it has been found that counterparts of the Seychellese *O. colorata* and *O. insularis* occur in Mauritius, a circumstance which precludes the possibility of their being radiating subspecific forms endemic in the Seychelles and fairly recently derived from an immigrant *furcifera* (a view never formally advanced, but implicit in the current synonymy). These discoveries have seriously undermined the belief in the plasticity of *D. furcifera* that has led to the foregoing synonymy, and it has become necessary to examine the status of the remaining nominal species—an investigation which has gained in urgency from the uncertainty that has consequently arisen regarding the distribution of the economically important members of this complex.

From the standpoint of nomenclatorial stability it is unfortunate that a generic name for the concept under discussion has not yet been firmly established. The synonymy given above has been followed by some later authors (Caresche, 1933; Osborn, 1935); Matsumura (1935), Wolcott (1936) and Clausen (1940) cite the combination *Delphacodes furcifera* (Horv.) and Osborn (1926) *Delphacodes albolineosa* (Fowler). The list thus includes no less than six generic names, *Liburnia* Stål, *Delphax* (Latr., not F.), *Delphacodes* Fieb., *Sogata* Dist., *Megamelus* Fieb. and *Opiconsiva* Dist. Moreover, other species rather closely related to *furcifera* Horv. have been referred to *Dicranotropis* Fieb., *Stenocranus* Fieb., *Peregrinus* Kirk., *Kelisia* Fieb., *Chloriona* Fieb. or *Matutinus* Dist., and the last was sunk by Muir (1919a, p. 8) in synonymy with *Chlorionidea* Lw. In 1956, the writer erected *Sogatella* as a subgenus of *Chloriona* to accommodate the species *furcifera* until a more critical assessment of its relationships could be made.

It is not proposed to burden the present study with an account of the considerations which have led to the generic dispositions that follow. In the opinion of the writer only three concepts are immediately involved, and, on the basis of material so far seen, these are best regarded as distinct genera. They are *Matutinus* Dist., *Sogatella* Fennah and a genus described as new below. The first two stand well apart from the genera to which they have, respectively, hitherto been subordinated, and their real affinity is probably with *Sardia* Mel.

In the descriptions of species given below much use has been made of bodily proportions, and the following notes are offered to indicate the points from which measurements were taken, and to explain some of the terms used.

The *submedian length* of the vertex is taken along the line marked a-a in fig. 20, A, and is so taken to exclude the additional length given by the projection of the frontal carina. The width at the base of the vertex is taken along the posterior margin, and does not include the thickness of the lateral margins themselves. The *basal compartment* of the vertex is the portion bounded anteriorly by the arms of the Y-shaped carina and the basal part of the sublateral carinae; its *median length* is the length from the hind margin to the fork of the 'Y', and its *greatest length* that from the hind margin to the junction of the distal ends of the Y-shaped carina with the sublateral carinae. The frons is described as viewed at right angles to the plane of the disc: any appreciable departure from this position alters its apparent length and also the apparent length of the basal fork of the median carina. The basal tricarinate portion of the clypeus is measured between the bases of the lateral carinae, including the thickness of the carinae, and medially from the frontoclypeal suture to the level at which the lateral carinae terminate (fig. 20, i-i): for this part of the clypeus the term '*postclypeal disc*' is proposed, as it occupies a position corresponding to the median area of the Cicadoidean postclypeus. The distal, laterally ecarinate, part of the clypeus, on which traces of a median carina may sometimes be present, is here termed the *anteclypeus*. The length of the anterior margin of the pronotal disc is taken between the points at which the main directional line of each lateral discal carina intersects the anterior margin: in a few species these carinae curve strongly inward immediately before joining the anterior margin, and this deviation is ignored for purposes of measurement. In the description of the lateral pronotal carinae the expression "not quite reaching hind margin" is applied to the condition where the carinae closely approach the posterior margin, and, if produced, would immediately intersect it: it is not applied to the condition where they closely approach the hind margin, but are so curved laterad at their extremity that if produced further they would not intersect it, or at most would not do so for an appreciable distance. The length of the mesonotum is the total length measured along the middle line from the hind margin of the pronotum (when in a natural position) to the tip of the mesoscutellum; the length of the mesoscutellum is that from the tip of the posterior angle to the level of a line drawn between the lateral carinae at their points of junction with the posterolateral margin of the mesonotum.

Although it is mentioned only once in the present study, it is desirable to draw attention to a structure which varies, in presence or absence, or in degree of prominence, between species in DELPHACIDAE and CIXIIDAE. This is a miniature ocellus-like structure (for which the term *blemma* is here proposed) situated immediately above the ocellus and almost contiguous with it. The blemmata are often absent, and usually obscure, but sometimes quite evident, and rarely, if the ocelli are much reduced in diameter, may serve to create the impression of twin ocelli on each side of the head as, for example, in *Delphacodes atrior* (Fowler).

Examples of the species considered in this report from each of the territories mentioned below are in the collection of the British Museum (Natural History).

Family DELPHACIDAE Leach

Matutinus Dist.

Distant 1917, p. 278. Haplotype, *Matutinus opulentus* Dist.

Size moderate, about 3.5 mm. including tegmina; form slender, total length, including tegmina, about four times width at level of tegulae. Vertex much longer than broad at base (about 1.7:1), lateral margins carinate, parallel or weakly convergent distad, apical margin truncate with submedian carinae prominent, posterior margin transverse, submedian carinae distinct, sharp, arising from lateral margins basad of middle and converging distad, meeting at apex of vertex or at extreme base of frons, Y-shaped carina present but weak, basal compartment of vertex about 1.1 times as broad at base as long in middle line to fork of Y-shaped carina, vertex in profile very feebly convex, almost straight, rectangularly or subacutely rounding into frons, not parallel with anterior margin of eyes; frons longer than broad (about 2.6:1), basal and apical margins truncate, lateral margins carinate, weakly divergent for two-thirds from base, thence parallel to frontoclypeal suture; frons in profile flat or practically so, median carina sharp, percurrent, simple, or forked only at extreme base; clypeus about four-fifths as long as frons, postclypeal disc slightly longer than its basal width, lateral carinae apparently continuing line of lateral carinae of frons; anteclypeus medially carinate, not as long as postclypeal disc, entire clypeus in profile convex, postclypeal disc distinctly so or almost straight, anteclypeus strongly convex; rostrum moderately long, surpassing mesotrochanters, subapical segment longer than apical, apical segment in side view three times as long as broad; genae moderately broad, the obliquely transverse carina always distinct, lateral ocelli well developed, eyes reniform, incised below, but not very deeply so; antennae not attaining frontoclypeal suture, basal segment cylindrical, longer than broad at widest part (nearly 1.3:1), second segment longer than first (about 2.3:1). Pronotum in middle line distinctly shorter than vertex, anteriorly shallowly produced between eyes, posterior margin shallowly angulately excavate, disc tricarinate, with two impressions, lateral carinae strongly diverging basad, almost straight, not attaining hind margin, disc longer than broad at anterior margin (about 1.5:1) mesonotum broader than long (about 1.3:1) tricarinate, median carina becoming obsolete before scutellum, lateral carinae of disc markedly divergent, lateral margins sinuate; legs only moderately slender, profemora slightly longer than procoxae, post-tibiae longer than profemora; each approximately 11 times as long to insertion of tarsus as wide at middle, with two spines laterally and five apically, post-tarsi about as long as post-tibiae, basal segment as long as other two together, post-tibial spur thin, foliaceous, large, with a narrow, minutely setose, submarginal band and about 25 black minute teeth arranged in a more or less irregular row; spur as long as basal segment of post-tarsus, latter with five apical spines, second segment with four. Tegmina relatively long, about 3.5 times as long as wide, rather broadly rounded apically, Sc+R forked near middle of tegmen, slightly basad of, or about level with, entry of common claval vein into commissural margin, M forked at nodal line of cross-veins, Cu1 forked level with Sc+R fork, cell between claval veins narrow, about as long as common claval vein. Wings well developed.

Anal segment of male collar-like, with a pair of moderately long, rather slender spinose processes arising some distance apart on distal margin, directed ventrad. Pygofer moderately long, posterior opening ovate or lozenge-shaped, slightly longer dorsoventrally than broad, diaphragm with median portion usually produced dorsad.

Anal segment of female with lateral angles slightly produced caudad. Ovipositor moderately long, second valvulae rather stout, shallowly curved, dorsal

margin not elevated at basal end of row of teeth; teeth small, differing in form and inclination between base and apex of row (fig. 20, E).

Matutinus stands well apart from *Chlorionidea* in the proportions of the vertex and of the antennae, in the shape of the frons, in the proportions of the legs and the detailed structure of the spur, in the much larger ocelli, the relatively longer rostrum, and the form of the female genitalia.

***Matutinus opulentus* Dist. (fig. 11, B)**

Distant 1917, p. 278.

Opiconsiva gloriosa Distant 1917, p. 302, **syn. nov.**

Vertex longer submedially than broad at base (1.7:1), in profile distinctly projecting before eyes and subacutely rounding into frons, narrower at apex than at base, basal compartment as wide at hind margin as greatest length, and a little wider than median length (less than 1.1:1); frons in middle line longer than wide at widest part (2.6:1), widest at two-thirds from base, but lateral margins almost parallel in distal half, median carina simple to base; clypeus at base as wide as frons at apex, postclypeal disc as wide as long in middle line, anteclypeus in profile moderately convex, profile of entire clypeus rather shallowly convex, or impressed near middle; antennae reaching to frontoclypeal suture, basal segment longer than broad (nearly 1.3:1), second segment longer than first (2.4:1). Pronotum with disc longer in middle line than broad at anterior margin (slightly more than 1.5:1), lateral carinae almost straight, strongly diverging basad, not attaining hind margin; total length of mesonotum exceeding length of mesoscutellum (nearly 2.3:1). Post-tibial spur as long as basal segment of metatarsus, with 25 teeth.

Fuscous-piceous; lateral margins of frons and clypeus, vertex, except outside sublateral carinae, middle of pronotal disc, mesonotal disc and scutellum, and lateral fields of pronotum, pale yellow; posterior margin of tegulae, procoxae and mesocoxae laterally, and legs, except for a fuscous stripe on post-femora, pale testaceous or tawny. Tegmina hyaline, suffused fuscous except in region of node and claval apex, membrane more heavily infuscate and a distinct fuscous spot in clavus between common claval vein and margin; veins concolorous. Wings hyaline, veins fuscous.

Matutinus opulentus and *M. gloriosus* are based, respectively, on a single male and a single female taken in the same locality near Mahé, in the Seychelles. The female is now unfortunately without the abdomen, and the characters of the female genitalia given in the generic definition are based on those exhibited by females of the other species here attributed to the genus. These include *Matutinus vitticollis* (Stål) **comb. n.** (*Delphax vitticollis* Stål, 1855, p. 93), *Matutinus fuscipennis* (Muir), **comb. n.** (*Chloriona fuscipennis* Muir, 1919b, p. 38), *Matutinus neovitticollis* (Muir) **comb. n.** (*Sogata neovitticollis* Muir, 1926b, p. 32), and *Matutinus lautipes* (Stål) **comb. n.** (*Delphax lautipes* Stål, 1858, p. 319). Compared with most of the species discussed below, these are of relatively large size, but none equals the dimensions of *M. opulentus*, which has a body length of 2.8 mm., a tegminal length of slightly more than this, and a total length, with closed tegmina, of 3.6 mm.

***Sogatella* Fennah**

Chloriona (Sogatella) Fennah 1956a, p. 471. Type species, *Delphax furcifera* Horv.

Size small, 3.5-4.0 mm. including tegmina; form slender, total length, including tegmina, about four times width at level of tegulae. Vertex longer than broad at base, ranging from sub-equality to 1.4:1, lateral margins carinate, parallel or weakly convergent distad, apical margin truncate, with submedian

carinae slightly prominent, posterior margin transverse, submedian carinae distinct, sharp, arising from lateral margins near middle and converging distad, meeting in basal part of frons, Y-shaped carina distinct but not prominent, posterior compartment of vertex basad of this carina 1.5 to 1.8 times as broad at base as long in middle line to fork of Y-shaped carina; vertex in profile very shallowly convex, evenly or subacutely rounding into frons; frons longer than broad (2.4:1 to 2.8:1), basal and apical margins truncate, lateral margins carinate, almost straight or weakly convex, parallel or feebly divergent to apical third, then incurved; profile flat or shallowly convex, median carina of frons sharp, percurrent, narrowly forked basally; clypeus about as long as frons, postclypeal disc as long as its basal width, lateral carinae sometimes apparently continuing line of lateral carinae of frons, sometimes continuing line of oblique carinae of genae, in which event clypeus is basally wider than frons at apex; anteclypeus not quite as long as basal portion; entire clypeus in profile shallowly convex, sometimes rather strongly convex; rostrum short, attaining mesotrochanters but not post-trochanters, subapical segment slightly longer than apical; genae more or less broad, obliquely transverse carina always distinct, lateral ocelli well developed, eyes reniform, more or less deeply incised below; antennae little surpassing frontoclypeal suture, often scarcely attaining it, basal segment cylindrical, longer than broad at widest part, rarely twice as long; second segment longer than first, between 1.5:1 and 2:1, cylindrical, distinctly thicker than first. Pronotum in middle line slightly or distinctly shorter than vertex, anteriorly shallowly produced between eyes, posterior margin shallowly angulately excavate, disc tricarinate, with two impressions, lateral carinae of disc diverging basad, rarely straight and almost attaining hind margin, usually more or less concave and becoming obsolete distinctly before margin; mesonotum broader than long (1.2:1 to 1.4:1), lateral margins subangulately concave, disc tricarinate, median carina becoming obsolete before scutellum, lateral carinae more or less strongly diverging basad. Legs moderately slender, profemora slightly longer than procoxae, protibiae a little longer than profemora. Post-tibiae each approximately ten times as long as wide at middle, with two spines laterally and five apically, post-tarsi about as long as post-tibiae, basal segment as long as other two together, post-tibial spur thin, foliaceous, rather large, with a narrow, minutely setose, marginal band and 17-22 black minute teeth arranged in an even row, spur not nearly extending as far as the middle (basal) spine of the basitarsal apical series, basal metatarsal segment with seven spines, second segment with four. Tegmina relatively long, about 3.5 times as long as wide, more or less deeply rounded apically, Sc+R forked near middle of tegmen, level with entry of common claval vein into commissural margin, M forked at nodal line of cross-veins, Cul forked slightly distad of level of Sc+R fork, cell between claval veins as long as common claval vein. Wings well developed.

Anal segment of male collar-like, with a pair of moderately long, rather slender, spinose processes arising close to middle on distal margin, directed ventrad. Pygofer moderately long, posterior opening broadly rounded or lozenge-shaped, slightly longer dorsoventrally than broad, diaphragm moderately narrow at its middle; sometimes a very small medioventral process present. Aedeagus simple, tubular, usually sinuate, with two more or less complete rows of teeth, one obliquely on left side, orifice often terminal on left side. Genital styles relatively short, broad, flattened and distally furcate, or moderately long, straight and tapering, moderately diverging distad.

Female genitalia rather elongate and narrow. Seventh sternite not produced caudad in a lobe (pregenital lobe absent); ovipositor with third valvulae narrow, gradually and evenly widening in basal half; lateral pieces of eighth sternite (first valvifers), in ventral view, produced mesad at base in a rounded lobe, inner margin almost straight, distal margin very oblique and shallowly convex. Second valvulae

moderately broad, straight or curved in profile, dorsal margin distinctly elevated at basal end of row of teeth; teeth small, differing in form and degree of inclination between base and apex of row (fig. 20, D).

As thus defined, the genus is rather compact, and is readily separable from *Chloriona*, in which it was proposed as a subgenus, by the relatively shorter protibiae, bodily proportions, and the genitalic pattern in both sexes, and from *Matutinus*, which it most closely resembles, by bodily size, frontal proportions, and structure of the ovipositor. The present generic definition makes it necessary to discard the view, earlier expressed by the writer (1956b, p. 115), that *Delphax furcifera* Horv. and *D. vitticollis* Stål are "strictly congeneric".

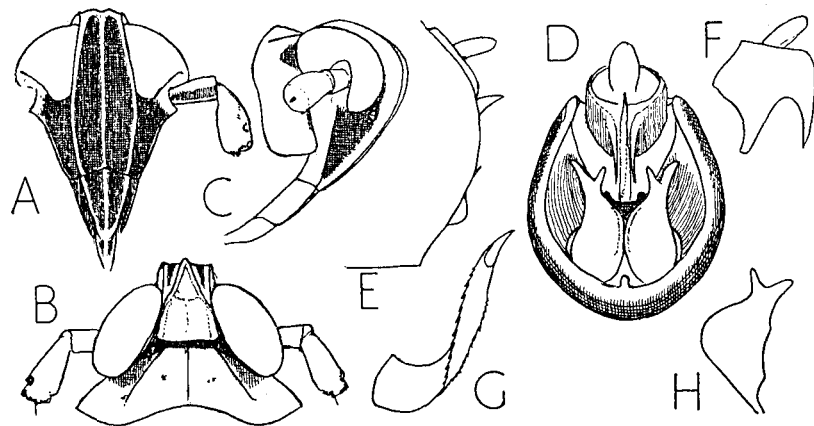


Fig. 1.—*Sogatella furcifera* (Horv.). A, Frons and clypeus; B, vertex and pronotum; C, head and pronotum, lateral view; D, male genitalia, posterior view; E, the same, lateral view; F, anal segment of male, lateral view; G, aedeagus; H, genitalic style.

***Sogatella furcifera* (Horv.) (fig. 1, A–H)**

Delphax furcifera Horváth 1899, p. 372.

Sogata distincta Distant 1912, p. 191.

Sogata pallescens Distant 1912, p. 192.

There are three specimens of *Sogata distincta* in the British Museum labelled "Pusa, Bengal. 10.vii.'09. C.S.M. Distant coll. 1911–383", and these apparently formed the series before Distant when he described the species. One of them, a male labelled "*Sogata distincta* Dist., type" and bearing a red-margined circular type label, is here selected as the lectotype. Of the original series on which *Sogata pallescens* was based, the British Museum possesses a series of eight specimens labelled "Chapra, Bengal, Mackenzie" "Distant coll. 1911–383", and a male labelled "Galle, Ceylon, T.B.F. 23.x.1908. Distant coll. 1911–383, *Sogata pallescens* Dist. type" and with a circular type label. This specimen is selected as the lectotype. The remaining specimens of the series are referable to *Nilaparvata*. The writer here follows the accepted synonymy, but considers that a study of more Indian series is needed. On the basis of material so far examined (three specimens from Pusa) *S. distincta* is distinguishable by its relatively large, glassy and colourless ocelli and by the evident presence of the blemmata, and, in facial view, by the oblique carinae of the genae lying

in the same straight line as the lateral margins of the clypeus. *S. pallescens* and *S. furcifera* have rather small red ocelli, no evident blemmata, and a distinctly angular junction, in facial view, between the oblique carinae of the genae and the lateral margins of the clypeus. In *S. pallescens*, however, the intermediate carinae of the vertex, which meet at its apex, form a distinctly more acute angle than in Japanese material of *S. furcifera*. Differences in the male genitalia of all three forms seem to be negligibly small. As far as present evidence goes, the Singalese and Indian material may be regarded as representing geographical subspecies of typical *S. furcifera*, and accordingly be named *S. furcifera distincta* (Dist.) and *S. furcifera pallescens* (Dist.), respectively.

The position of *Sogatella kyusyuensis* (Mats. & Ishihara) **comb. n.** (*Sogata kyusyuensis* Mats. & Ishihara 1945, p. 65) is obscure. The species is based on a coelopterous pair with infumed tegmina. It is provisionally accepted as distinct, separable on coloration.

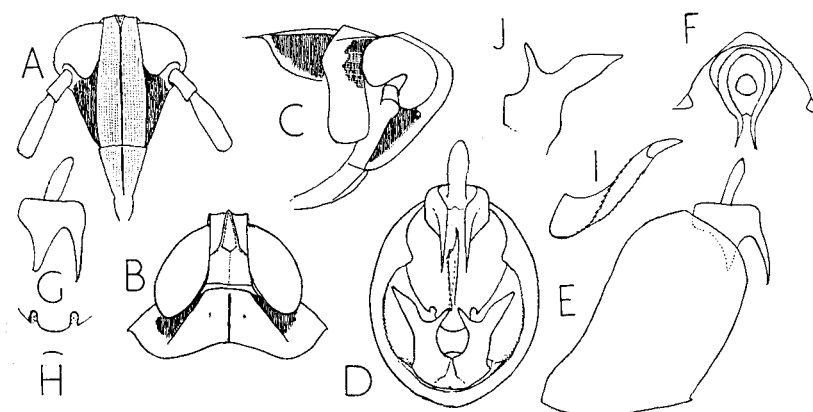


Fig. 2.—*Sogatella vibix* (Haupt). A, Frons and clypeus; B, vertex and pronotum; C, head, pronotum and mesonotum, lateral view; D, male genitalia, posterior view; E, the same, lateral view; F, dorsal margin of pygofer and anal segment, dorsal view; G, anal segment of male, lateral view; H, armature of diaphragm; I, aedeagus; J, genitalic style.

***Sogatella vibix* (Haupt) **comb. n.** (fig. 2, A–J)**

Liburnia vibix Haupt 1927, p. 13, pl. 2, fig. 10.

Vertex longer submedially than broad at base (about 1.7:1), subacutely but not abruptly rounding into frons, as wide at apex as at base, lateral margins straight, apical margin transverse, with approximated submedian carinae weakly prominent, anterior arms of Y-shaped carina distinct, median stem weak, submedian carinae only narrowly separated at apex of vertex, basal compartment of vertex wider at hind margin than greatest length (1.1:1) and than median length (1.2:1); frons in middle line longer than broad at widest part (between 2.4:1 and 2.5:1), widest slightly beyond middle, lateral margins only very shallowly convex, median carina simple, narrowly forked at extreme base; clypeus at base only slightly wider than frons at apex, postclypeal disc at base scarcely as broad as long in middle line, in profile very weakly convex, anteclypeus very shallowly convex, almost straight; antennae surpassing frontoclypeal suture, basal segment longer than broad at apex (about 1.5:1), second segment three times as long as broad at widest part, and nearly 2.4 times as long as first, both segments

approximately parallel-sided, not markedly expanding distad. Pronotum with disc longer in middle line than broad at anterior margin (nearly 1.3:1), lateral carinae straight, diverging laterocaudad, not attaining hind margin; total length of mesonotum almost 2.8 times length of mesoscutellum. Post-tibial spur about two-thirds of total length of basal metatarsal segment, with about 23 teeth on margin. Tegmina (macropterous) as in *S. kolophon*.

Head with carinae sordid white; disc of frons between carinae and disc of clypeus, sordid white, genae dark fuscous, antennae pale; median portion of disc of vertex and mesonotum, pronotum entirely, except immediately beneath eyes, tegulae and dorsolateral angles of pygofer, creamy-white, mesonotum with lateral carinae of disc and posterolateral margins, narrowly tawny; lateral fields of mesonotum and pleurites (at least in their middle portion), dark fuscous; fore and middle legs pallid, rather sordid, hind legs stramineous or greyish-white. Tegmina hyaline, a faint yellowish suffusion in clavus.

Anal segment of male moderately short, collar-like, lateroapical angles approximated but not contiguous, each produced ventrocephalad in a moderately long spinose process. Pygofer with posterior opening moderately broadly sub-hexagonal, about as broad as long dorsoventrally; dorsolateral angles typically inflected, in profile scarcely produced, obtusely rounding into posterior margin, a minute medioventral process present, diaphragm with dorsal margin deeply concave, median portion narrow with a pair of peg-like vertical processes, each longer than broad, the dorsal margin between them shallowly concave. Aedeagus generally similar to that of *S. kolophon*, with about 12 teeth in an oblique row on left and about eleven on lower margin. Genital styles as figured.

Fifteen males, ISRAEL: Rehovot, 24.x.1952, (*I. Harpaz*). 2 ♂♂, EGYPT: Siwa, 22.iv.1935, 25.v.1935 (*J. Omer-Cooper*) on tamarisk. Although the type specimen, from Benshemen, has not been seen, the proportions of the vertex given in the original description, and the incurred dorsolateral angles shown in its accompanying figure, together with the locality given (Palestine), leave little room for doubt that the population on which the above description is based is to be referred to this species.

Its members are recognisable by the strongly contrasting coloration, and by the cold hue of the fuscous portions of the body. Morphologically the most easily appreciable diagnostic character is the unusual slenderness of the second antennal segment.

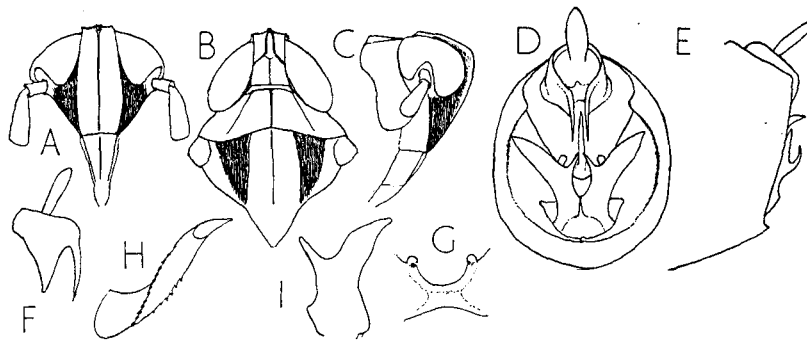


Fig. 3.—*Sogatella longifurcifera* (Esaki & Ishihara). A, Frons and clypeus; B, head and thorax, dorsal view; C, head and pronotum, lateral view; D, male genitalia, posterior view; E, the same, lateral view; F, anal segment of male, lateral view; G, armature of diaphragm; H, aedeagus; I, genital style.

Sogatella longifurcifera (Esaki & Ishihara) comb. n. (fig. 3, A-I)

Delphacodes longifurcifera Esaki & Ishihara 1947, p. 41.

Vertex longer submedially than broad at base (between 1.4:1 and 1.5:1), moderately declivous, subrectangulately rounding into frons, rather narrower at apex than at base, lateral margins almost straight, apical margin truncate with submedian carinae slightly prominent, anterior arms of Y-shaped carina distinct, median stem weak, submedian carinae only narrowly separated at apex of vertex, basal compartment of vertex wider at hind margin than greatest length (1.2:1) and than median length (1.4:1); frons in middle line longer than broad at widest part (2.3:1); widest in middle third, lateral margins only very shallowly convex, median carina simple, narrowly forked at extreme base; clypeus at base not wider than frons at apex, postclypeal disc at base not as broad as long in middle line (1:1.2), in profile very weakly convex, anteclypeus moderately convex; antennae attaining frontoclypeal suture, basal segment longer than broad at apex (1.3:1), second segment longer than broad at widest part (2.6:1) and longer than first (2.6:1), the second segment distinctly expanding distad. Pronotum with disc longer in middle line than wide at anterior margin (1.1:1), lateral margins straight, diverging laterocaudad, not attaining hind margin; total length of mesonotum 2.7 times length of mesoscutellum; post-tibial spur about two-thirds of total length of basal metatarsal segment, with about 20 teeth on margin. Tegmina (macropterous) as in *S. kolophon*, apical margin very deeply rounded.

Head with carinae creamy or white; disc of frons between carinae and disc of clypeus very lightly, or even moderately, suffused unevenly with fuscous; genae dark fuscous, antennae testaceous; median portion of disc of vertex and of mesonotum, mesoscutellum and pronotum except immediately behind eyes, white or creamy-white; tegulae and dorsolateral angles of pygofer, pale stramineous or sordid white; mesonotum with posterolateral margins tawny, sometimes irregularly suffused fuscous; lateral fields of mesonotum, and pleurites, at least in their middle portion, and abdomen, fuscous, fore and middle legs pallid, a little infumed, hind legs stramineous. Tegmina hyaline, with a very faint tawny-yellowish suffusion.

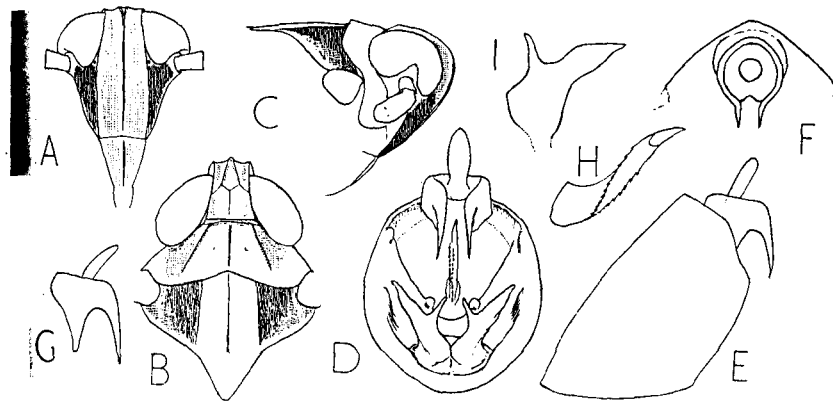


Fig. 4.—*Sogatella catoptron* sp.n. A, Frons and clypeus; B, head and thorax, dorsal view; C, head, pronotum and mesonotum, lateral view; D, male genitalia, posterior view; E, the same, lateral view; F, dorsal margin of pygofer and anal segment, dorsal view; G, anal segment of male, lateral view; H, aedeagus; I, genital style.

Male genitalia closely similar to those of *Sogatella vibix*. Pygofer with dorsolateral angles not inflected. Genital styles with mesal (inner) margin subrectangularly produced in basal half.

Twelve males and 19 ♀♀, FORMOSA: Taipei, from collections made in light traps operated over several years prior to August 1960 (Dr. Kwei-Shiu Lin); 2 ♂♂, 1 ♀, Tailoku, viii.15 (F. Muir).

This species, by reason of the relatively elongate form of the processes of the diaphragm, cannot be confused with any hitherto described other than *S. vibix*, which it strongly resembles. From this species, however, it can be separated readily by the proportions of the second antennal segment: in *S. longifurcifera*, this is of normal proportions (rather stout), and gradually expands from base to apex, whereas in *S. vibix* it is relatively slender and almost parallel-sided. The two species differ also in the proportions of the vertex and frons, and in the shape of the genital styles.

Sogatella catoptron sp.n. (fig. 4, A-I)

Vertex longer submedially than broad at base (between 1.3:1 and 1.4:1), obtusely angulately rounding into frons, wider at base than at apex (a little more than 1.2:1), lateral margins straight, apical margin truncate with submedian carinae weakly prominent, anterior arms of Y-shaped carina distinct, median stem weak, submedian carinae only narrowly separated at apex of vertex, basal compartment of vertex wider at hind margin than greatest length (1.4:1) and than median length (1.6:1); frons in middle line longer than broad at widest part (2.4:1), widest at middle, lateral margins shallowly convex, median carina simple, narrowly forked at extreme base; clypeus at base only slightly wider than frons at apex, postclypeal disc at base scarcely as broad as long in middle line, in profile very weakly convex, anteclypeus very shallowly convex, antennae just attaining frontoclypeal suture, basal segment longer than broad at apex (1.3:1), second segment twice as long as broad at widest part, and longer than first segment (1.8:1). Pronotum with disc as broad at anterior margin as long in middle line, lateral carinae straight, moderately strongly diverging laterocaudad, not attaining hind margin; total length of mesonotum 2.5 times length of mesoscutellum, post-tibial spur about two-thirds of total length of basal metatarsal segment, with about 23 teeth on margin. Tegmina (macropterous) as in *S. kolophon*.

Carinae of head, frons, clypeus, rostrum, vertex, pronotum, except behind eyes, tegulae, mesonotal disc and mesoscutellum and laterodorsal angles of pygofer, creamy-white; genae, a suffusion on pronotum behind each eye, a biconvex band across anterior end of mesonotal disc, lateral fields of mesonotum, except marginally, pleurites and abdomen and pygofer except dorsolaterally, dark fuscous; antennae testaceous, lateral carinae of mesonotal disc, and lateral margins, tawny-yellow; legs pallid, stramineous, often lightly infuscate distally. Tegmina hyaline, with faint testaceous suffusion, veins concolorous. Wings hyaline, veins concolorous distally, fuscous nearer base.

Anal segment of male short, collar-like, lateroapical angles narrowly but distinctly separated, each produced ventrocephalad in a moderately stout spinose process. Pygofer moderately long, with posterior opening broadly ovate, not quite as broad as long dorsoventrally, in profile with dorsolateral angles obtusely rounded, only weakly produced, not inflected mesad, diaphragm with dorsal margin deeply concave, median portion narrow with a pair of peg-like processes, each a little longer than broad, directed dorsocaudad and almost caudad, the dorsal margin between them distinctly concave. Aedeagus generally similar to that of *S. kolophon*, with ten or eleven teeth in an oblique row on left and about six along the ventral margin. Genital styles short, each with outer apical angle broadly and strongly produced, acute apically, inner apical angle produced in a

short and narrow process, lateral margins shaped as shown in figure (fig. 4, I), mesal margin obtusely angulately produced in its basal half.

Male (macropterous): length, 2.0 mm.; tegmen, 2.8 mm.

Holotype male and 4 ♂♂, ISRAEL: Rehovot, 24.x.1952 (I. Harpaz); 1 ♂, River Jordan, 1.xii.1935 (R. Washbourn) B.M. 1937-551. 2 ♂♂, 1 ♀, JORDAN: Jericho, 11.7.29, 16.7.29 (J. Tapilkh) "attracted to light". EGYPT: 4 ♂♂, Giza, v.1961, on cotton and on berseem, C.I.E. 17733; 2 ♂♂, Siwa Depression, 6.vii.1935, 2.ix.1935 (J. Omer-Cooper).

This species is distinguished from the sympatric *S. vibix* by the distinctly broader vertex and frons, by the stouter second antennal segment and by the shape of the head in profile. In coloration it differs from *S. vibix* in the generally more contrasting hues, and by the pattern on the mesonotum, on which the white stripe is distinctly bordered with tawny-yellow, and the anterior transverse fuscous band is exposed from below the hind margin of the pronotum in the form of two semi-circular areas. In the male genitalia, the pygofer of *S. catoptron*, viewed directly from above, is more broadly angulately excavate behind and on each side of the anal segment than in *S. vibix*. From *S. longifurcifera* it differs in its relatively broader vertex and anterior margin of the pronotal disc, in the profile of the head, and in the relatively more slender second antennal segment. In coloration it is separated from *S. longifurcifera* by the same characters of the mesonotal pattern as from *S. vibix*. In the male genitalia the differences most readily observable are in the profile of the laterodorsal angles of the pygofer and in the shape of the genital styles.

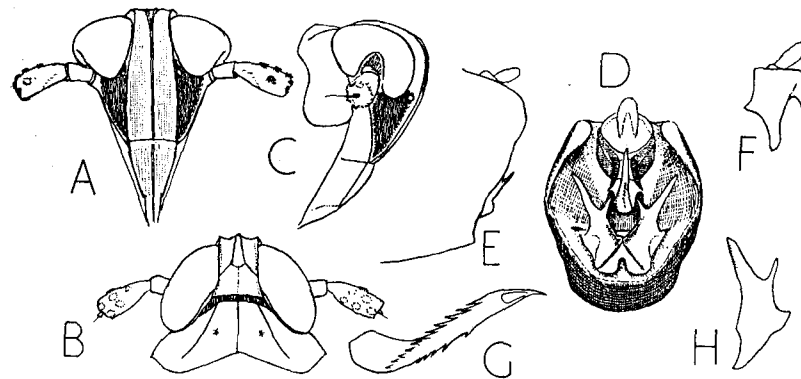


Fig. 5.—*Sogatella nigrigenis* (Jacobi). A, Frons and clypeus; B, vertex and pronotum, dorsal view; C, head and pronotum, lateral view; D, male genitalia, posterior view; E, the same, lateral view; F, anal segment of male, lateral view; G, aedeagus; H, genital style.

Sogatella nigrigenis (Jacobi) comb. n. (fig. 5, A-H)

Delphax nigrigenis Jacobi 1917, p. 530.

Vertex longer submedially than broad at base (about 1.3:1), slightly declivous, evenly rounding into frons, scarcely narrower at apex than at base, basal compartment of vertex wider at hind margin than greatest length (nearly 1.4:1), and than median length (nearly 1.3:1); frons in middle line longer than wide at widest part (between 2.3:1 and 2.4:1), widest at about three-quarters from base, lateral margins very weakly sinuate, almost parallel in distal third, median carina

forked at one-sixth from base; clypeus at base not, or negligibly, wider than frons at apex, postclypeal disc little, if any, broader than length in middle, anteclypeus in profile moderately strongly convex, profile of entire clypeus moderately strongly convex; antennae reaching to frontoclypeal suture, basal segment longer than broad (1.3:1), second segment longer than first (2.7:1). Pronotum with disc longer in middle line than broad at anterior margin (1.2:1), lateral carinae shallowly concave, diverging basad, not attaining hind margin; total length of mesonotum exceeding length of mesoscutellum (2.9:1). Post-tibial spur with about 20 teeth.

Stramineous; genae and abdomen, except at posterolateral angle of each sclerite, and an orange area dorsally at base, dark fuscous, pleurites, procoxae and mesocoxae, paler fuscous; lateral fields of mesonotum light orange-brown. Tegmina hyaline, a broad suffusion from base of clavus to anal angle, dilute fuscous, veins concolorous, commissural margin ivory-white. Wings hyaline with dilute fuscous veins.

Anal segment of male short, collar-like, lateroapical angles approximated but not contiguous, each produced ventrocephalad in a moderately long, stout spinose process. Pygofer with posterior opening broadly ovate, not quite as broad as long dorsoventrally, in profile with dorsolateral angles obtusely rounded, not or scarcely inflected; diaphragm with dorsal margin deeply concave, median portion relatively narrow, and narrow dorsoventrally, with a pair of small peg-like processes directed dorsad, each much nearer to one another than to lateral margin; a well-developed triangular medioventral process present. Aedeagus generally similar to that of *S. kolophon*, with about 12 coarse teeth obliquely traversing left side, and five or six teeth along ventral margin. Genital styles rather short, with outer apical angle produced almost twice as far as inner apical angle, and strongly directed upward; inner apical processes slender.

Three males, UGANDA: Kawanda, April, 1956, at light (*P. Whalley*). This species can be recognised by the occurrence, in combination, of very dark genae and light orange-brown lateral pronotal fields, and of a slightly declivous vertex

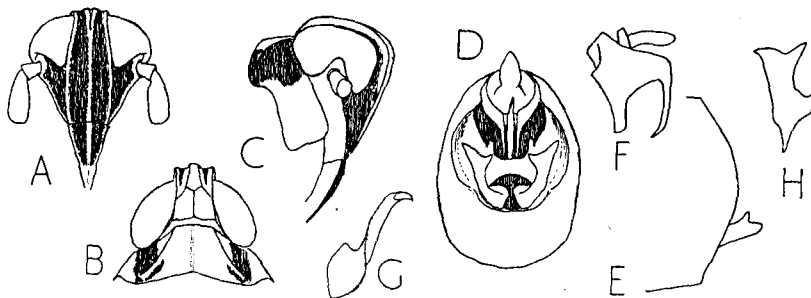


Fig. 6.—*Sogatella capensis* (Muir). A, Frons and clypeus; B, vertex and pronotum, dorsal view; C, head and pronotum, lateral view; D, male genitalia, posterior view; E, the same, lateral view; F, anal segment of male, lateral view; G, aedeagus; H, genital style.

and a frons slightly more than 2.3 times as long as broad: in the male genitalia it is characterised by the presence of a distinct, equilaterally triangular, median process on the ventral margin of the pygofer, and by the almost erect position of the outer distal process of the genital styles.

Sogatella capensis (Muir) comb. n. (fig. 6, A–H)

Sogatella furcifera capensis Muir 1929b, p. 212.

Vertex longer submedially than broad at base (1.2:1), strongly rounding into frons, slightly narrower at apex than at base, basal compartment of vertex wider at hind margin than greatest length (1.3:1), and than median length (1.5:1); frons in middle line longer than wide at widest part (nearly 2.4:1), widest at middle, lateral margins very weakly convex, median carina forked at about one-quarter from base; clypeus at base as wide as frons at apex, postclypeal disc as broad as length in middle, or nearly so, anteclypeus in profile shallowly convex, profile of entire clypeus shallowly convex; antennae reaching to frontoclypeal suture, basal segment longer than broad (1.5:1), second segment twice as long as first. Pronotum with disc longer in middle line than broad at anterior margin (1.3:1), lateral carinae weakly concave, rather strongly diverging basad, not attaining hind margin; total length of mesonotum exceeding length of mesoscutellum (2.6:1). Post-tibial spur with about 23 teeth.

Dark castaneous-fuscous; carinae of head, pronotum, except behind eyes, mesonotal disc, tegulae and mesepimeron posteroventrally, pale yellow or creamy; sides of clypeus suffused fuscous, legs testaceous. Tegmina milky-hyaline, a faint suffusion overlying clavus from base to apex, and a darker suffusion from nodal line at M, round posterior margin of membrane to apex of tegmen, fuscous, venation concolorous. Wings milky-hyaline, with dilute fuscous veins.

The type series appears to have included, perhaps with others, some half-dozen specimens standing under this name in the collection of the British Museum, and having been taken at Weenen (Natal), Ceres (Cape Province) and Okahandje (S.W. Africa). A male gummed on a card, and with the genitalia mounted on

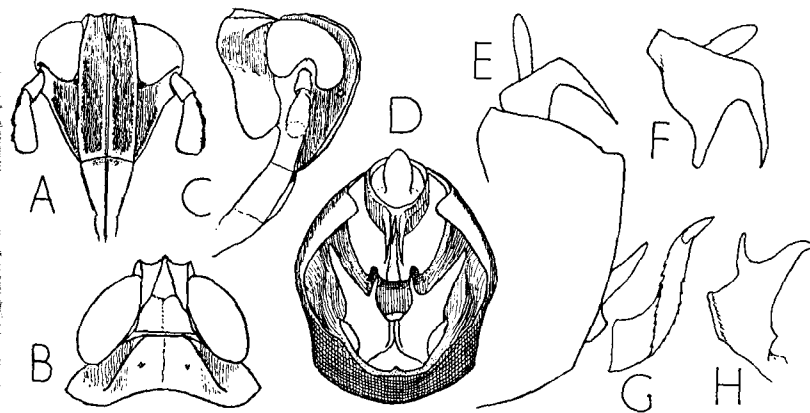


Fig. 7.—*Sogatella kolophon* (Kirk.). A, Frons and clypeus; B, vertex and pronotum, dorsal view; C, head and pronotum, lateral view; D, male genitalia, posterior view; E, the same, lateral view; F, anal segment of male, lateral view; G, aedeagus; H, genital style.

a separate card, and bearing a red-margined type label, and other labels with the data "Ceres, Cape Province, 2–21.iii.1921; S. Africa, R. E. Turner, Brit. Mus. 1921–150. *D. ferficera* [sic] Horv. *capensis* Muir ♂" is here selected as the lectotype.

Sogatella kolophon (Kirk.) (fig. 7, A-H; fig. 8, G)*Delphax kolophon* Kirkaldy 1907, p. 157.

Vertex longer submedially than broad at base (1.2:1), evenly rounding into frons. Slightly narrower at apex than at base, basal compartment of vertex wider at hind margin than greatest length (1.5:1), and than median length (1.8:1); frons in middle line longer than wide at widest part (about 2.2:1), widest at two-thirds from base, lateral margins almost parallel, median carina forked at one-seventh from base; clypeus at base slightly wider than frons at apex, postclypeal disc as broad as long in middle, anteclypeus in profile shallowly convex, profile of entire clypeus only moderately convex; antennae reaching to frontoclypeal suture, basal segment longer than broad (1.6:1), second segment twice as long as first. Pronotum with disc longer in middle line than broad at anterior margin (1.1:1), lateral carinae almost straight, strongly diverging basad, not nearly attaining hind margin; total median length of mesonotum exceeding length of mesoscutellum (nearly 2.6:1). Post-tibial spur with 19-21 teeth.

Testaceous or sordid stramineous; disc of vertex, pronotum and mesonotum, yellowish-white, lateral fields of mesonotum orange-brown, procoxae and meso-coxae, pleurites, abdomen, except laterally, and pygofer, fuscous. Tegmina hyaline, a faint suffusion in posterior half, fuscous. Wings hyaline, veins light brown.

The type locality for this species is Queensland. All male specimens from this area, as well as from elsewhere, were found to have the dorsolateral angles of the pygofer distinctly angulate. Through the kindness of Dr. John W. Beardsley of the Experiment Station of the Hawaiian Sugar Planters' Association, the writer's material was compared with the type, and the writer was afforded the opportunity of examining a paratype with the same label data as the type. It was established that the figures given by Kirkaldy (Pl. 15, figs. 9, 10) are untypical in respect of this detail. The species, strictly interpreted, is at present known from Queensland, Fiji, Formosa, Micronesia, and from the following new records:—HAWAII: 3 ♂♂, Ewa, Oahu, 10.3.61 (*J. W. Beardsley*) taken by sweeping (seen by courtesy of the collector), and CEYLON: 2 ♂♂, Maha Illupallama, 15.x.1962 (*M. D. de Silva*) on chilli, C.I.E. 18591.

Members of this species are most readily recognised by the proportions of the vertex, the sordid coloration of the intercarinal areas of the frons and clypeus (caused by diffuse infuscation of the ground colour) by the light orange-brown tint of the lateral fields of the mesonotum and the dilute fuscous suffusion along the posterior half of each tegmen.

Samples of three populations that show some variation from the Australian and south-west Pacific material of *S. kolophon* are here recognised as geographical subspecies.

Sogatella kolophon atlantica subsp. n. (fig. 8, F)

Vertex as long submedially as broad at base, basal compartment wider at base than greatest length (1.7:1), and than median length (2.0:1); frons in middle line longer than broad at widest part (nearly 2.4:1), wider at apex than at base (1.3:1); postclypeal disc as broad at base as long in middle line; antennae with basal segment longer than broad (1.8:1), second segment longer than first (1.4:1). Post-tibial spur with about 18 teeth.

Anal segment of male short, collar-like, lateroapical angles closely approximated but separate, each produced ventrocephalad in a moderately long spinose process. Pygofer with posterior opening ovate, a little longer than broad, in profile with upper margin slightly declivous, dorsolateral angle distinctly produced caudad, not distinctly inflected mesad; diaphragm with dorsal margin moderately broadly

concave, median portion with a pair of short vertical peg-like processes, the margin between them weakly sinuate; no medioventral process present.

Holotype male of subspecies and 1 ♂, ST. HELENA: Taylor's Flat, 10.iii.1936 (*H. F. D. Bartlett*) beaten from *Dicksonia arborescens*, B.M. 1936-406. 1 ♂, CAPE VERDE ISLANDS: S. Vincente, Rib. Juliao, 26.11-2.12.1953 (*Lindberg*). Type in British Museum (Nat. Hist.). The ground colour in this species is sordid ochraceous, and the darker markings more infuscate than in the typical subspecies. The two are readily separable by the shape of the pygofer, the upper half of the posterior margin in the former being produced distinctly further caudad than in the latter.

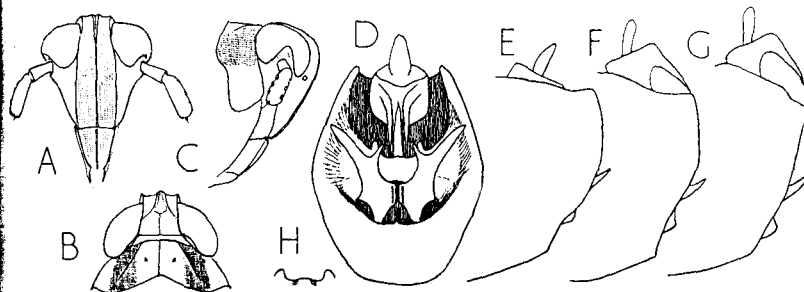


Fig. 8.—*Sogatella kolophon meridiana* (Beamer). A, Frons and clypeus; B, vertex and pronotum, dorsal view; C, head in profile; D, male genitalia, posterior view; E, the same, lateral view; H, armature of diaphragm. *Sogatella kolophon atlantica* subsp. n. F, Male genitalia, lateral view. *Sogatella kolophon kolophon* subsp. n. G, Male genitalia, lateral view.

Sogatella kolophon meridiana (Beamer) comb. n., stat. n. (fig. 8, A-E, H)*Delphacodes meridiana* Beamer, 1952, p. 111.

Anal segment of male moderately short, collar-like, lateroapical angles closely approximated but separate, each produced ventrocephalad in a moderately long spinose process. Pygofer with posterior opening ovate, slightly longer dorso-ventrally than broad, in profile with dorsal margin subhorizontal, dorsolateral angle distinctly produced caudad, distinctly inflected mesad; diaphragm with dorsal margin moderately broadly concave, median portion with a pair of short, vertical, peg-like processes, the margin between them distinctly sinuate; a medioventral process feebly indicated.

Three males and 1 ♀, MEXICO: Morales, Oacalco, 6.x.60 (*Alexandro Ortega*) on grass. 1 ♂, BRITISH GUIANA: 16.x.1961 (*G. D. Baxter*) on pangola grass, C.I.E. 17928. 3 ♂♂, BERMUDA: Agricultural Stn. 22.i.1936 (*L. Ogilvie*) ex *Lilium harrisii** and grasses.

Sogatella kolophon insularis (Dist.) comb. n., stat. n. (fig. 9, A-E)*Opiconsiva insularis* Distant, 1917, p. 303.

Vertex submedially as long as broad at base, or only very slightly longer than broad, rather gently rounding into frons, a little narrower at apex than at base, basal compartment wider at hind margin than greatest length (nearly 1.6:1) and than median length (2:1), frons in middle line longer than wide at widest part (nearly 2.5:1), widest at about two-thirds from base, lateral margins almost

* A synonym of *L. longiflorum ezimium*.

parallel in distal half, median carina forked at one-quarter from base; clypeus at base as wide as frons at apex, or negligibly wider, postclypeal disc as broad as long in middle, anteclypeus in profile only very weakly convex, profile of entire clypeus shallowly convex; antennae reaching to frontoclypeal suture, basal segment longer than broad (1.6:1), second segment longer than first (2.3:1). Pronotum with disc longer in middle line than broad at anterior margin (1.2:1),

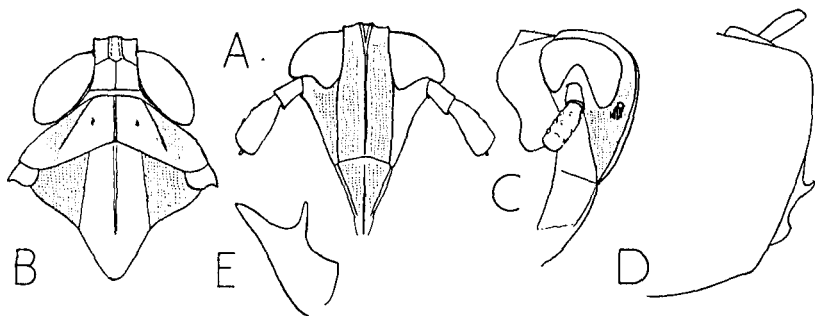


Fig. 9.—*Sogatella kolophon insularis* (Dist.). A, Frons and clypeus; B, head and thorax, dorsal view; C, head and pronotum, lateral view; D, male genitalia, lateral view; E, genital style.

lateral carinae straight, moderately diverging basad, not attaining hind margin; total length of mesonotum exceeding length of mesoscutellum (2.6:1). Post-tibial spur with about 21 teeth.

Stramineous; disc of vertex, pronotum and mesonotum, and lateral fields of pronotum, creamy-white; pronotum behind eyes, lateral fields of mesonotum and dorsal third of pygofer, testaceous; abdomen, except at lateral margins, and ventral two-thirds of pygofer, fuscous; a spot before ocelli, fuscous-piceous. Tegmina hyaline, a faint suffusion in posterior half of membrane, fuscous, veins concolorous. Wings hyaline, veins light brown.

The type material consists of two males, both gummed on cards and differing slightly in the proportions of the vertex. One of these, bearing a red-margined type label, and labels with the data "Seychelle Islands (*Percy Sladen Trust Expedition 1913-170*) 26, Silhouette, '08, Seychelles Exp.; spec. figd.; *Opiconsiva insularis* Dist., type" is here selected as the lectotype.

Sogatella nigeriensis (Muir) comb. n., stat. n. (fig. 10, A-H)

Megamelus furcifer nigeriensis Muir 1920, p. 143.

Vertex a little longer submedially than broad at base (1.1:1), evenly rounding into frons, slightly narrower at apex than at base, basal compartment wider at hind margin than greatest length (1.5:1) and than median length (1.8:1); frons in middle line longer than wide at widest part (2.3:1), widest about two-thirds from base, lateral margins almost parallel in distal half, median carina forked very close to base; clypeus at base of same width as frons at apex, postclypeal disc slightly longer than broad (1.1:1), anteclypeus in profile moderately convex; profile of entire clypeus moderately convex or interruptedly convex; antennae reaching to frontoclypeal suture, basal segment longer than broad (1.7:1), second segment twice as long as first. Pronotum with disc longer in middle line than

broad at anterior margin (nearly 1.4:1), lateral carinae almost straight, strongly diverging basad, not attaining hind margin; total length of mesonotum exceeding that of mesoscutellum (2.4:1). Post-tibial spur as long as basal metatarsal segment, with about 30 teeth.

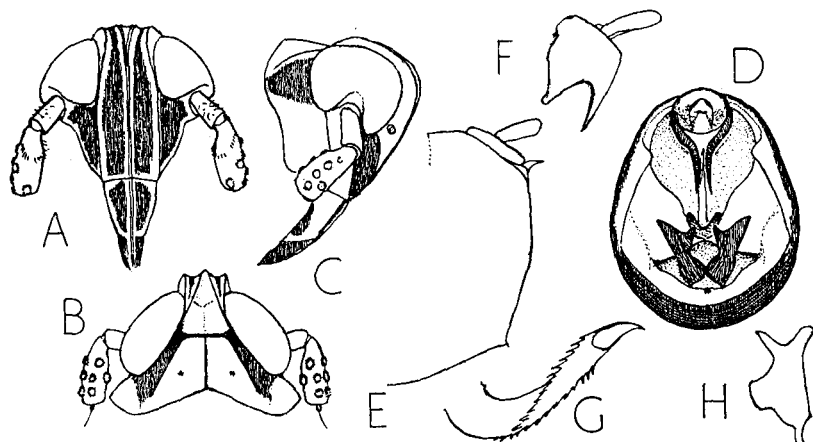


Fig. 10.—*Sogatella nigeriensis* (Muir). A, Frons and clypeus; B, vertex and pronotum, dorsal view; C, head and pronotum, lateral view; D, male genitalia, posterior view; E, the same, lateral view; F, anal segment of male, lateral view; G, aedeagus; H, genital style.

Dark fuscous; carinae of head, most of vertex, median portion of pronotal disc and lateral lobes of pronotum, median portion of mesonotal disc and mesepimeron posteroventrally, pale yellow; sides of clypeus and tegulae suffused dilute fuscous; legs stramineous, heavily suffused fuscous. Tegmina milky-hyaline, a linear spot in clavus between common claval vein and commissural margin, and a curved suffusion from nodal line at M, round posterior margin of membrane to apex of tegmen, fuscous; venation concolorous. Wings milky-hyaline, with dilute fuscous veins.

The type locality is NIGERIA: Ibadan, Oloke-Meji. In the present study the following material has been seen: 2 ♂♂, FRENCH WEST AFRICA: Agades, Aug.-Sept. 1957, on grass (*B. M. Gerard*). 1 ♂, EGYPT: Giza, v.1961, on cotton, C.I.E. 17738. 2 ♂♂, UGANDA: Sempaya, Ituri Forest, Bwamba (*P. E. S. Whalley*) 9.iv.1957, at light.

Apart from very obvious differences in the male genitalia, members of this species bear a close resemblance to those of *S. furcifera* from Japan, and the superficial morphological differences are scarcely appreciable without a side-by-side comparison. In coloration, however, the two are readily separable by the greater extent of infuscation in *S. nigeriensis*. In this species the pale stripe from the vertex to the apex of the mesoscutellum occupies only the middle part of the pronotal disc, and is correspondingly narrow on the mesonotal disc. In *S. furcifera* this stripe occupies the whole of the discal area on both pronotum and mesonotum.

Two males, MADAGASCAR: Tananarive, Feb. 1952 (*N. L. H. Krauss*) B.M. 1952-146, and 1 ♂, Iles Glorieuses, 16-17.ix.58 (*R. Paulian*), are referred to this species, but differ in the absence of any fuscous suffusion in the tegminal membrane, and in the presence, in this part of the tegmen, of brown veins, not

concolorous as in continental populations. This Malagasian population is here recognised as a distinct geographical subspecies on the basis of these tegminal characters and the name *Sogatella nigeriensis troilus* subsp. n. is here proposed for it. The holotype of this subspecies is a male from Tananarive, and is in the collection of the British Museum (Nat. Hist.).

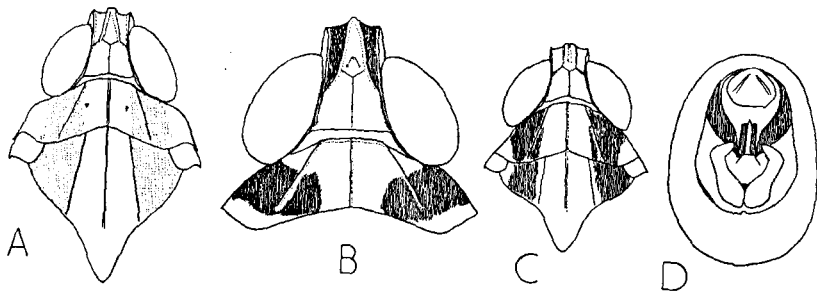


Fig. 11.—*Sogatella derelicta* (Dist.). A, Head and thorax, dorsal view. *Matutinus opulentus* Distant. B, Head and pronotum, dorsal view. *Sogatella gemina* sp.n. C, Head and thorax, dorsal view; D, male genitalia, posterior view.

Sogatella derelicta (Dist.) comb. n. (fig. 11, A)

Opiconsiva derelicta Distant 1917, p. 303.

Vertex longer submedially than broad at base (1.3:1), evenly and strongly rounding into frons, slightly narrower at apex than at base, basal compartment of vertex wider at hind margin than greatest length (1.5:1) and than median length (1.8:1); frons in middle line longer than wide at widest part (2.5:1), widest at apex, lateral margins very feebly diverging distad, almost parallel distad of middle, median carina forked at about one-eighth from base; clypeus at base scarcely wider than frons at apex, postclypeus as wide as long in middle, anteclypeus in profile shallowly convex, profile of entire clypeus moderately convex; antennae reaching to frontoclypeal suture, basal segment longer than broad (1.3:1), second segment longer than first (2.5:1). Pronotum with disc longer in middle line than broad at anterior margin (about 1.3:1), lateral carinae straight, moderately strongly diverging basad, not quite attaining hind margin; total length of mesonotum exceeding that of mesoscutellum (2.9:1). Post-tibial spur with 23 teeth.

Pallid stramineous; disc of vertex, median part of pronotal disc, and disc of mesonotum, creamy-white; lateral fields of mesonotum light tawny; abdomen faintly infuscate. Tegmina hyaline with a faint testaceous suffusion in posterior half, veins concolorous. Wings hyaline, veins light yellowish-brown.

The single Seychellese female on which this species is based is quite different from all other members of the complex here considered in the shape of the pronotum and mesonotum, and from most others in the light yellow tint of the ground coloration, on which the white median dorsal stripe is inconspicuous.

Sogatella colorata Dist. comb. n. (fig. 12, A-D)

Opiconsiva colorata Distant 1917, p. 301.

Vertex longer submedially than broad at base (nearly 1.2:1), obtusely and subangulately rounding into frons, almost as wide at apex as at base, basal compartment wider at hind margin than greatest length (1.4:1), and than median

length (1.6:1); frons in middle line longer than wide at widest part (2.3:1), widest at five-sevenths from base, lateral margins sinuate, median carina very narrowly forked in basal sixth; clypeus at base scarcely wider than frons at apex, postclypeal disc as broad at base as long in middle, anteclypeus in profile rather strongly convex, profile of entire clypeus shallowly convex; antennae distinctly surpassing frontoclypeal suture, basal segment much longer than broad (2.6:1), second segment almost twice as long as first (1.9:1). Pronotum with disc longer

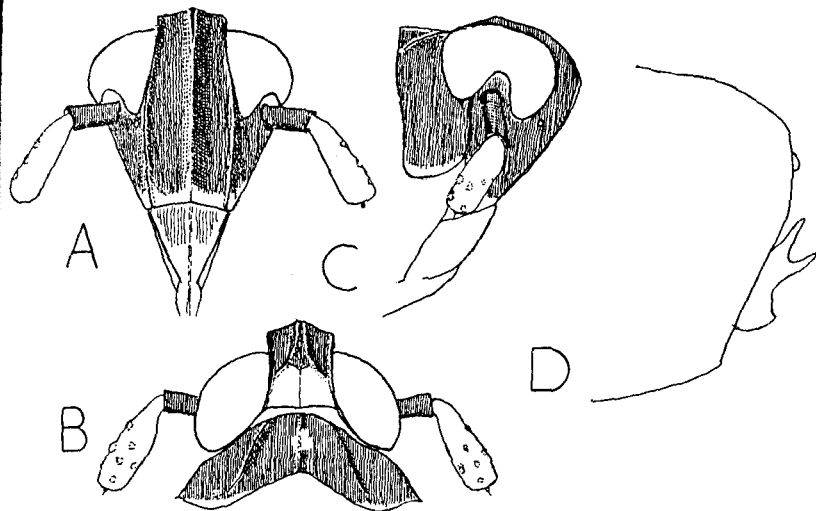


Fig. 12.—*Sogatella colorata* (Dist.). A, Frons and clypeus; B, vertex and pronotum, dorsal view; C, head and pronotum, lateral view; D, male genitalia, lateral view.

in middle line than broad at anterior margin (1.2:1), lateral carinae moderately strongly curved laterally basad, not attaining hind margin; total length of mesonotum exceeding length of mesoscutellum (2.8:1). Post-tibial spur with 18-20 teeth.

Orange-yellow, sometimes yellow or tinged with red; frons and genae, except apically (Seychelles), clypeus sometimes basally (Mauritius), basal segment of antennae (Seychelles), vertex except in middle of basal compartment, pronotum, except narrowly along middle line and distal margin of lateral lobes, mesonotum, except mesoscutellum and occasionally middle line, abdominal sclerites and pygofer, castaneous-piceous, polished. Tegmina dilute brownish-hyaline, a broad stripe in posterior half, parallel to posterior margin, extending from base to distal margin, fuscous; veins concolorous. Wings hyaline, with brown veins.

The type material in the British Museum of this boldly marked species comprises seven macropterous males and two coelopterous females. A male bearing a red-margined type label, and additional labels with the data "*Opiconsiva colorata* Dist. type; Silhouette '08 Seychelles Exp.; 29; Seychelle Islands (Percy Sladen Trust Expedition 1913-171)" is here selected as the lectotype. In addition the writer has examined a series of four macropterous males and five brachypterous females from MAURITIUS: Vacoas, 16 August 1954 (*J. R. Williams*) on *Oplismenus* sp. (Gramineae). These specimens differ from those of the typical series in having the apex of the frons and the basal portion of the clypeus heavily infuscate,

not yellow or orange-yellow: the frons and vertex appear to be relatively a little narrower, and the basal segment of the antennae is usually yellow, instead of usually being castaneous. On the basis of these differences the Mauritian population is here recognised as a distinct geographical subspecies, for which the name *Sogatella colorata nigrior* subsp. n. is proposed. The male holotype of this subspecies is in the collection of the British Museum (Nat. Hist.).

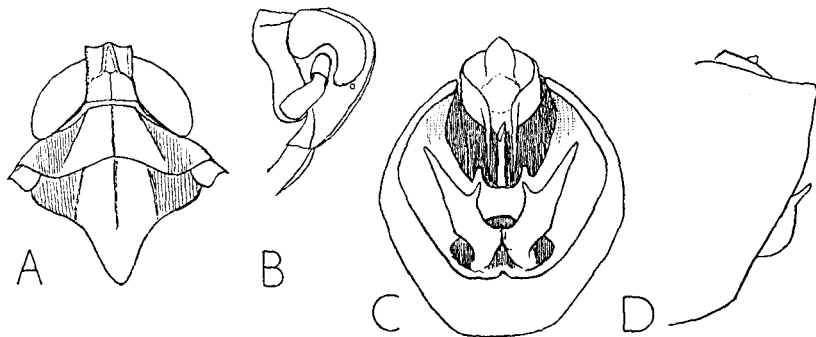


Fig. 13.—*Sogatella balteata* (Dist.). A, Head and thorax, dorsal view; B, head and pronotum, lateral view; C, male genitalia, posterior view; D, the same, lateral view.

Sogatella balteata (Dist.) comb. n. (fig. 13, A–D)

Opiconsiva balteata Distant (in part), 1917, p. 302.

Vertex as broad at base as long submedially, subrectangulately rounding into frons, only very little narrower at apex than at base, lateral margins straight, apical margin transverse, with approximated submedian carinae prominent, Y-shaped carina distinct, submedian carinae passing separately on to frons, basal compartment of vertex wider at hind margin than greatest length (1.4:1), and than median length (1.6:1). Frons in middle line longer than broad at widest part (2.4:1), widest at one-quarter from apex, lateral margins feebly convex, median carina simple, narrowly forked at one-fifth from base, clypeus at base very slightly wider than frons at apex; postclypeal disc slightly broader than long in middle line (1.1:1), in profile almost straight, anteclypeus in profile strongly convex. Antennae reaching to frontoclypeal suture, basal segment longer than broad (2:1), second segment longer than first (1.9:1). Pronotum with disc longer in middle line than broad at anterior margin (not quite 1.2:1), lateral carinae straight or feebly concave, strongly diverging laterocaudad, not attaining hind margin. Total length of mesonotum nearly 2.3 times that of mesoscutellum. Post-tibial spur about three-fifths as long as basal metatarsal segment, not reaching as far as insertion of second segment, with 17 or 19 teeth. Tegmina (macropterous) with Sc + R fork slightly basad of Cu 1 fork.

Head, except for testaceous suffusion on frontal disc between carinae, pronotum, except for a dilute fuscous suffusion behind eye, stramineous, mesonotum with disc pallid stramineous, scutellum sordid white, lateral fields fuscous; tegulae testaceous; fore and middle legs dilute testaceous, hind legs stramineous; abdominal sclerites fuscous, testaceous marginally and dorsally at base; pygofer and genital styles testaceous with fuscous suffusion. Tegmina yellowish-hyaline, a dilute fuscous suffusion between fork of Cu 1 and apex of tegmen.

Anal segment of male moderately short, ring-like, lateroapical angles approximated but not contiguous, each produced ventrocephalad in a moderately long slender spinose process. Pygofer with posterior opening rhomboidal-ovate, as broad as long dorsoventrally, in profile with laterodorsal angles shortly acutely produced, not, or only very feebly, inflected mesad; diaphragm with dorsal margin concave, median portion pigmented dark castaneous, with a pair of short peg-like vertical processes, and the dorsal margin between them weakly convex. Aedeagus apparently similar to that of *S. kolophon*. Genital styles as figured.

Male (macropterous): length, 1.7 mm.; tegmen, 2.8 mm.

One male, SEYCHELLE ISLANDS (*Percy Sladen Trust Expedition, 1930–170*). The specimen is gummed on a card, and bears a red-margined type label and the additional labels "spec. fig.", the locality data given above and number "97" and the name "*Opiconsiva balteata* Dist. type". This specimen is here selected as the lectotype.

This species appears to be very closely allied to *S. insularis*, from which it is distinguished by the relatively wider vertex, the shallowly concave pronotal hind margin (as contrasted with an obtusely angulate margin), the more strongly diverging lateral mesonotal carinae and, in side view, the level dorsal margin, the relatively larger mesoscutellum, and by the uninflected laterodorsal angles of the pygofer.

Sogatella gemina sp. n. (fig. 11, C, D)

Opiconsiva balteata Distant (in part), 1917, p. 302.

Vertex longer submedially than broad at base (1.6:1), evenly rounding into frons, fully as wide at apex as at base, basal compartment of vertex wider at hind margin than greatest length (1.1:1), and than median length (slightly more than 1.2:1), frons in middle line longer than wide at widest part (2.1:1), widest at two-thirds from base, lateral margins moderately convex, median carina distinctly narrowly forked in basal quarter, in distal three-quarters apparently simple, but not distinctly so in type; clypeus at base distinctly wider than frons at apex, postclypeal disc broader than long in middle (about 1.2:1), anteclypeus in profile weakly convex, profile of entire clypeus moderately convex; antennae reaching to frontoclypeal suture, basal segment longer than broad (nearly 1.8:1), second segment twice as long as first. Pronotum with disc longer in middle line than broad at anterior margin (about 2.3:1), lateral carinae straight, moderately diverging basad, distinctly reaching hind margin; total length of mesonotum exceeding length of mesoscutellum (2.4:1). Post-tibial spur with about 18 teeth.

Pale stramineous; intercarinal areas of frons, sides of head immediately before eyes, pronotum behind eyes, lateral fields of mesonotum, and abdominal terga, ferruginous or dilute fuscous, abdominal ventrites and pygofer, dilute yellowish-brown; carinae of frons, genae below ocelli, vertex, pronotum except behind eyes, and mesonotal disc with scutellum, sordid white.

Anal segment of male short, ring-like, lateroapical angles each produced ventrocephalad in a moderately long spinose process. Pygofer with posterior opening narrowly ovate, longer dorsoventrally than broad, in profile with dorsolateral angles obtuse, not at all produced, and margin at this point not inflected mesad, ventral margin at middle very slightly produced caudad in a rounded lobe; diaphragm with dorsal margin subtriangulately elevated in middle, with a minute excavation at middle. Aedeagus moderately short, straight, with two or three teeth in distal half on left side, and a short row of three or four teeth ventrally, orifice terminal, oblique, directed dorsad. Genital styles moderately short, approximately S-shaped, rather broad in basal half, narrowed near middle, outer apical angle smoothly rounded, inner angle acute.

Male: length, 1.8 mm.; tegmen, 2.5 mm.

Holotype male, SEYCHELLE ISLANDS: Mahé, 1908-09 (*Percy Sladen Trust Expedition 1913-170*) "40." Type in British Museum (Nat. Hist.). This specimen is the residual member of the pair which formed the type series on which *Opiconsiva balteata* was based. It differs from the lectotype of *balteata*, and from Distant's figure (Pl. 51, 8, 8a) in the proportionately longer vertex, the long fork of the median carina of the frons, and the absence of produced and inflected dorsolateral angles on the pygofer, as well as in other details of the male genitalia. The genitalia show some similarity to those of *Sogatella sternalis* Dist., but in the latter species the spinose processes of the anal segment arise on the ventral surface and curve laterally distad, the genital styles are less sigmoid, the orifice of the aedeagus is lateral and subterminal, and the dorsolateral angles of the pygofer are distinctly more produced caudad.

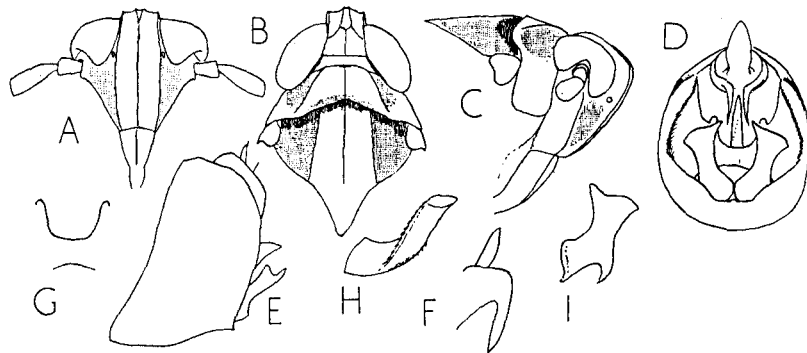


Fig. 14.—*Sogatella manetho* sp. n. A, Frons and clypeus; B, vertex and pronotum; C, head, pronotum and mesonotum, lateral view; D, male genitalia, posterior view; E, the same, lateral view; F, anal segment of male, lateral view; G, armature of diaphragm; H, aedeagus; I, genital style.

Sogatella manetho sp. n. (fig. 14, A-I)

Vertex longer submedially than broad at base (1.3:1), in profile subangulately rounding into frons, a little narrower at apex than at base, lateral margins slightly concave, apical margin truncate with submedian carinae weakly prominent, Y-shaped carina feeble, submedian carinae uniting at apex of vertex or at extreme base of frons, basal compartment of vertex wider at hind margin than greatest length (1.6:1), and than median length (1.8:1); frons in middle line longer than wide at widest part (about 2.4:1), widest in middle third, slightly constricted between eyes, and weakly narrowing near frontoclypeal suture, median carinae simple, forked at extreme base, clypeus at base slightly wider than frons at apex, postclypeal disc longer than broad at base (about 1.5:1), anteclypeus in profile only moderately convex, antennae reaching to frontoclypeal suture, basal segment longer than broad (1.8:1), second segment longer than first (1.8:1). Pronotum with disc longer in middle line than broad at anterior margin (not quite 1.2:1) lateral carinae straight or weakly convex, strongly diverging basad, not quite attaining hind margin. Total length of mesonotum three times as long as that of scutellum. Post-tibial spur with about 26 teeth.

Pallid stramineous or creamy-white; genae and mesepisterna and unguis fuscous-piceous; anterior border of mesonotum, metathoracic tergites and abdominal terga, fuscous, the posterior terga sometimes with paler longitudinal bands; mesonotum laterad of disc, dull orange or fuscous; male genitalia dilute

fuscous, or pallid with only spines of anal segment, aedeagus and genital styles apically, ferruginous. Ovipositor with third valvulae pallid, first and second valvulae castaneous. Tegmina yellowish hyaline with concolorous veins, a spot on margin near apex of clavus and a narrow suffusion from M fork along transverse veins, then to anal angle, dilute fuscous. Wings hyaline with fuscous veins.

Anal segment of male moderately short, collar-like, a pair of moderately long, rather flattened, spinose processes arising submedially at apical margin, directed ventrad. Pygofer with posterior opening subrhomboidal, slightly longer dorso-ventrally than broad, in profile with dorsolateral angles not at all prominent, and dorsal margin curving broadly and evenly into posterior margin, margin not at all inflected mesad, diaphragm with dorsal margin rather broadly concave, median portion pigmented castaneous, with a pair of short, vertical peg-like processes, the margin between them concave, no medioventral process on lower margin, or at most only a feeble indication of one. Aedeagus of similar pattern to that of *S. kolophon*, but relatively shorter, with a row of 12-13 coarse teeth dorsally sloping across left side, and a row of about six coarse teeth ventrally. Genital styles as figured.

Male (macropterous): length, 2.6 mm.; tegmen, 3.0 mm. Female (macropterous): length, 3.3 mm.; tegmen, 3.6 mm.

Holotype male, 14 ♂♂ and 28 ♀♀, SOUTHERN RHODESIA: Causeway, Salisbury, (? July) 1961 (*D. J. W. Rose*) on Napier fodder. Type in British Museum (Nat. Hist.).

This species is distinguished by the combination of characters given below in the key, and in the male genitalia by the spinose processes of the anal segment being laterally compressed, by the relatively short and coarsely toothed aedeagus, and by the sinuate apical margin of the genital styles, and the rather bluntly rounded outer apical angle.

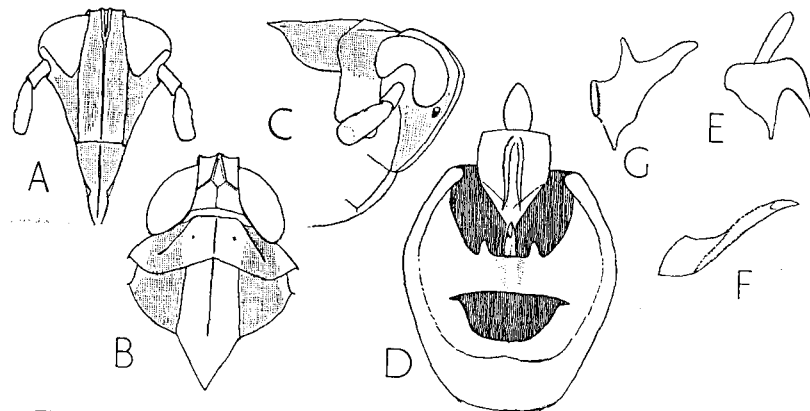


Fig. 15.—*Sogatella nebris* sp. n. A, Frons and clypeus; B, head and thorax, dorsal view; C, head, pronotum and mesonotum, lateral view; D, anal segment and pygofer, posterior view; E, anal segment of male, lateral view; F, aedeagus; G, genital style.

Sogatella nebris sp. n. (fig. 15, A-G)

Vertex longer submedially than broad at base (1.2:1), evenly rounding into frons, as wide at apex as at base, lateral margins slightly concave, apical margin

truncate with submedian carinae a little prominent, Y-shaped carina feeble, submedian carinae passing separately on to frons, basal compartment of vertex wider at hind margin than greatest length (1.5:1), and than median length (1.7:1); frons in middle line longer than wide at widest part (2.5-2.6:1), widest in distal third, lateral margins straight and gradually diverging for three-quarters of length from base, then weakly incurved to suture, median carina forked in basal fifth, clypeus at base distinctly wider than frons at apex, postclypeal disc as long as broad at base, anteclypeus in profile strongly curved caudad, so that entire clypeus in profile is distinctly convex, antennae reaching to frontoclypeal suture, basal segment twice as long as broad, second segment twice as long as first. Pronotum with disc longer in middle line than broad at anterior margin (nearly 1.2:1), lateral carinae almost straight, strongly diverging basad, not nearly attaining hind margin. Total length of mesonotum longer than that of scutellum (2.5:1). Post-tibial spur with 19-21 teeth.

Head stramineous, disc of frons between carinae, disc of clypeus and anterior portion of genae suffused testaceous; pronotum pale stramineous, a light reddish-brown suffusion behind each eye, darker on portion overlapped by eye; mesonotum light reddish-brown with disc stramineous, apex of scutellum ivory-white, pleurites and coxae ochraceous or fuscous, legs stramineous, protarsi and mesotarsi distally tinged orange-brown; abdomen dorsally fuscous, ventrally sordid ochraceous or fuscous with posterior margin and posterolateral angles of sternites stramineous or ivory, pygofer and male genitalia fuscous, female genitalia stramineous or dull ivory-white. Tegmina yellowish-hyaline, a broad suffusion in posterior half of membrane distad of Cu 1 fork dilute fuscous, commissural margin of clavus narrowly ivory-white.

Anal segment of male moderately short, collar-like, a pair of moderately long spinose processes arising submedially at apical margin, directed ventrad. Pygofer with posterior opening subrhomboidal, slightly longer dorsoventrally than broad, in profile with dorsolateral angles shortly acutely produced, distinctly inflected mesad, diaphragm with dorsal margin rather broadly concave, median portion lightly pigmented castaneous, with a pair of short vertical peg-like processes, the margin between them concave; a small medioventral process present on ventral margin of pygofer. Aedeagus of similar pattern to that of *S. kolophon*. Genital styles as figured.

Male (macropterous): length, 2.2 mm.; tegmen, 3.0 mm. Female (macropterous): length, 2.7 mm.; tegmen, 3.5 mm.

Holotype male, 9 ♂♂, 3 ♀♀ and 4 mutilated specimens, SOUTH AFRICA: Pondoland, Port St. John (*R. E. Turner*) 25-31 March 1923, Brit. Mus. 1923-241; 2 ♂♂, Transkei, Umtata (*R. E. Turner*) 18 February-18 March 1923, Brit. Mus. 1923-189; 1 ♂, Zululand, Eshowe (*R. E. Turner*) 6-31 May, 1926, Brit. Mus. 1926-232; 2 ♀♀, Natal, Weenen (*H. P. Thomasset*) April, 1924, Brit. Mus. 1925-265. Type in British Museum (Nat. Hist.).

This species is distinguished from others of the *kolophon* facies by the proportions of the frons and vertex.

Sogatella petax sp. n. (fig. 16, A-H)

Vertex longer submedially than broad at base (not quite 1.3:1), subrectangulately rounding into frons, as wide at base as at apex, lateral margins very feebly sinuate, apical margin transverse or shallowly convex with approximated submedian carinae weakly prominent, anterior arms of Y-shaped carina distinct, median stem obsolete, submedian carinae meeting at apex of vertex, basal compartment of vertex wider at hind margin than greatest length (1.3:1) and than median length (1.5:1); frons in middle line longer than broad at widest part (2.5-2.6:1), widest in middle third, lateral margins very shallowly convex, almost

parallel, almost equally incurved at base as at apex, median carina simple, narrowly forked at extreme base; clypeus at base very distinctly wider than frons at apex, postclypeal disc at base as broad as long in middle line, in profile almost straight, anteclypeus strongly convex; antennae just attaining frontoclypeal suture, basal segment longer than broad at apex (1.4:1), second segment longer than first (1.6:1). Pronotum with disc longer in middle line than broad at anterior margin (nearly 1.4:1), lateral carinae straight, moderately strongly diverging laterocaudad, not attaining hind margin; total length of mesonotum 2.4-2.5 times

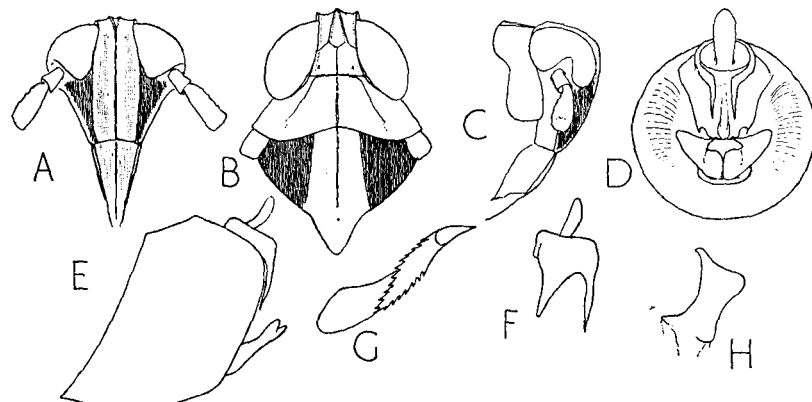


Fig. 16.—*Sogatella petax* sp. n. A, Frons and clypeus; B, head and thorax, dorsal view; C, head and pronotum, lateral view; D, male genitalia, posterior view; E, the same, lateral view; G, aedeagus; H, genital style.

length of mesoscutellum. Post-tibial spur about five-sevenths of total length of basal metatarsal segment, with about 28 teeth on margin. Tegmina (macropterous) as in *S. kolophon*.

Stramineous; vertex, pronotum and mesonotum medially rather paler stramineous; genae, and sometimes frons laterally, lateral fields of mesonotum, pleurites and abdominal sternites anteriorly, diffuse castaneous or ferruginous-fuscous; eyes piceous, ocelli yellow or red; a small spot on genae below ocelli, black. Tegmina uniformly yellowish-hyaline, veins concolorous, posterior margin of clavus pale, almost white. Wings hyaline, veins orange-brown.

Anal segment of male short, ring-like, posterior margin incomplete medially, lateroapical angles distinctly separated, each produced ventrocephalad in a moderately long and rather stout spinose process. Pygofer rather long, with posterior opening broadly ovate, about as broad as long dorsoventrally, in profile with dorsolateral angles obtuse, only weakly produced, not inflected mesad; diaphragm only weakly impressed, its lateral margins ill-defined, dorsal margin deeply concave, median portion narrow, with a pair of peg-like vertical processes, each not longer than broad, and the dorsal margin between them shallowly concave. Aedeagus generally similar to that of *S. kolophon*, with about 12 rather coarse teeth in an oblique row on left and about seven along the ventral margin. Genital styles short, each with outer angle only little produced, broadly rounded, inner apical process weakly curved mesocephalad at apex.

Male (macropterous): length, 2.0 mm.; tegmen, 2.9 mm. Female (macropterous): length, 2.5 mm.; tegmen, 3.3 mm.

Holotype male, 2 ♂♂ and 1 ♀, EGYPT: Giza, v.1961, on berseem, 40, C.I.E. 17738. B.M. 1962-1; 1 ♀, Siwa, 21-22 May 1935 (*J. Omer-Cooper, Armstrong College Expedition*) B.M. 1935-354, and 1 ♀, JORDAN: Jericho, 16 July 1929 (*J. Tapilkhi*) Brit. Mus. 1930-230, are tentatively assigned to this species. The species is well distinguished by the shape of the male genital styles in conjunction with the immaculate clavus. Less readily it can be recognised by the proportions of the head and the coloration.

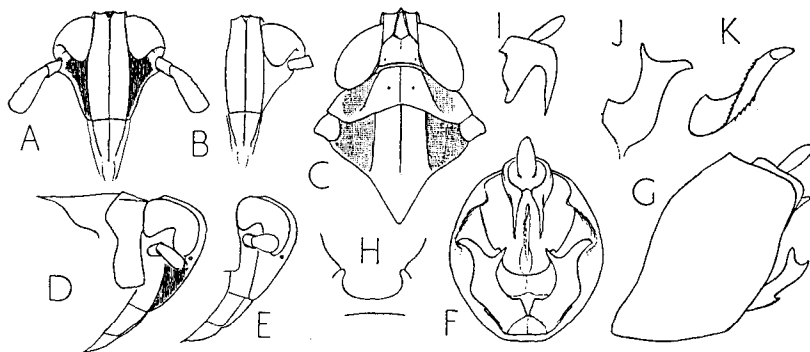


Fig. 17.—*Sogatella camptistylis* sp. n. A, Frons and clypeus; C, head and thorax, dorsal view; D, head, pronotum and mesonotum, lateral view; F, male genitalia, posterior view; G, the same, lateral view; H, armature of diaphragm; I, anal segment of male, lateral view; J, genital style; K, aedeagus. *Sogatella nigrigensis* (Jacobi) (given for comparison). B, Frons and clypeus; E, head, lateral view.

Sogatella camptistylis sp. n. (fig. 17, A-K)

Vertex longer submedially than broad at base (nearly 1.4:1), evenly and deeply rounding into frons, wider at base than at apex (1.1:1), lateral margins straight, apical margin transverse with approximated submedian carinae prominent, Y-shaped carina feeble, submedian carinae united at apex of vertex, basal compartment of vertex wider at hind margin than greatest length (1.3:1), and than median length (1.4:1); frons in middle line longer than wide at widest part (between 2.4 and 2.5:1), widest at two-thirds from base, lateral margins very weakly convex, median carina simple; clypeus at base not wider than frons at apex, postclypeal disc slightly narrower at base than long in middle line (nearly 1:1) in profile very shallowly convex, almost straight, anteclypeus moderately convex; antennae scarcely attaining frontoclypeal suture, basal segment longer than broad (about 1.4:1), second segment fully twice as long as first. Pronotum with disc longer in middle line than broad at anterior margin (1.5:1), lateral carinae straight or very weakly concave, strongly diverging laterocaudad, not attaining hind margin; total length of mesonotum 2.5 times length of mesoscutellum; post-tibial spur three-quarters of total length of basal metatarsal segment, with 24 teeth on margin. Tegmina (macropterous) as in *S. kolophon*.

Stramineous; genae, pleurites and greater part of procoxae and mesocoxae and abdomen, except at posterolateral angle of each sclerite, and an orange area dorsally at base, dark fuscous; basal compartment of vertex, disc of pronotum and medial area of mesonotal disc, ivory-white; lateral fields of mesonotum light orange-brown. Tegmina hyaline, a broad suffusion overlying posterior half, dilute fuscous, distinctly darker in membrane, veins concolorous. Wings hyaline, veins dark fuscous.

Anal segment of male short, ring-like, lateroapical angles approximated but not nearly contiguous, each produced ventrocephalad in a moderately long and distinctly stout spinose process. Pygofer with posterior opening broadly ovate, not quite as broad as long dorsoventrally, in profile with dorsolateral angles obtuse, little produced caudad and not inflected; diaphragm with dorsal margin deeply concave, median portion relatively broad, dorsoventrally narrow, with a pair of inconspicuous peg-like processes directed caudad, each nearer to the lateral margin than to one another, no medioventral process present. Aedeagus generally similar to that of *S. kolophon* with about 20 fine teeth in an oblique row on left and about five along the ventral margin. Genital styles relatively long, with inner margin strongly concave and rectangulately produced mesad near base, outer margin convex, outer and inner apical angles approximately equally produced, laterad and mesad, respectively, the inner process more slender than the outer.

Male (macropterous): length, 2.0 mm.; tegmen, 2.9 mm.

Holotype male, UGANDA: Kawanda, 28.vi.1957 (*P. E. S. Whalley*) at light. Type in British Museum (Nat. Hist.).

This species superficially resembles *S. nigrigensis* (Jac.), but differs in the slightly more acute profile of the apex of the head and in the relatively longer frons. In genitalic structure they stand well apart: in the pygofer of *S. camptistylis* the peg-like processes on the upper margin of the diaphragm are very widely separated, and rather inconspicuous, whereas in *S. nigrigensis* they are rather prominent and close, each being nearer to the other than to the lateral margin. In the latter species, too, there is a rather small but quite distinct medioventral process, equilaterally triangular in ventral view: in *S. camptistylis* no medioventral process is developed. Moreover, the teeth on the aedeagus of *S. camptistylis* are more numerous and individually smaller than those in *S. nigrigensis*. From *S. capensis* the present species stands apart in having a proportionately shorter vertex and a generally paler coloration.

Sogatodes gen. n.

Size small, about 4.0 mm. including tegmina; form slender, total length, including tegmina, four times width at level of tegulae. Vertex longer than broad at base (about 1.2:1), lateral margins carinate, parallel or weakly converging distad, apical margin truncate, with submedian carinae slightly prominent, posterior margin transverse, submedian carinae distinct, sharp, arising from lateral margins near middle and converging distad, meeting in basal part of frons, Y-shaped carina distinct but not prominent, posterior compartment of vertex basad of this carina about 1.5 times as broad at base as long in middle line to fork of Y-shaped carina; vertex in profile very shallowly convex, almost straight, evenly rounding into frons, almost parallel with anterior margin of eyes; frons longer than broad (2.2:1 to 2.5:1), basal and apical margins truncate, lateral margins carinate, weakly convex, divergent to middle then parallel; frons in profile straight or only very shallowly convex, median carinae sharp, percurrent, narrowly forked near base, and sometimes at level of middle of eyes; clypeus not quite as long as frons, postclypeal disc as long as its basal width, lateral carinae apparently continuing line of oblique carinae of genae; anteclypeus not quite so long as basal portion, entire clypeus in profile shallowly convex, basal portion almost straight; rostrum distinctly short, not longer than protarsus, attaining mesotrochanters, subapical segment slightly longer than apical, apical segment only twice as long as broad in side view; genae more or less broad, the obliquely transverse carinae always distinct, lateral ocelli well developed, eyes reniform, moderately deeply incised below; antennae not, or scarcely, attaining frontoclypeal suture, basal segment cylindrical, a little longer than broad at widest part, second

segment longer than first (about 2:1), cylindrical, distinctly thicker than first. Pronotum in middle line slightly shorter than vertex, anteriorly shallowly produced between eyes, posterior margin shallowly angulately excavate, disc tricarinate, with two impressions, lateral carinae of disc diverging basad, almost straight, but not attaining hind margin, disc only slightly longer in middle line than broad at anterior margin (about 1.1:1); mesonotum, with tegulae, broader than long (1.5:1), tricarinate, median carina becoming obsolete at scutellum, lateral carinae of disc parallel or nearly so, lateral margins subangulately concave; legs moderately slender, profemora slightly longer than procoxae, post-tibiae longer than profemora. Post-tibiae each approximately ten times as long as wide at middle, with two spines laterally and five apically, post-tarsi about as long as post-tibiae, basal segment as long as other two together, post-tibial spur thin, foliaceous, rather large, with a narrow minutely setose sub-marginal band and about 20 black minute teeth arranged in an even row; spur not extending as far as the middle (basal) spine of the basitarsal apical series, basal metatarsal segment with seven spines, second segment with four. Tegmina relatively long, about 3.5 times as long as wide, more or less deeply rounded apically, Sc+R forked near middle of tegmen, level with, or just basad of, entry of common claval vein into commissural margin, M forked at nodal line of cross-veins, Cu 1 forked level with Sc+R fork, cell between claval veins as long as common claval vein. Wings well developed.

Anal segment of male collar-like, with a pair of moderately long, rather slender spinose processes arising close to middle on distal margin, directed ventrad. Pygofer moderately long, posterior opening broadly rounded or lozenge-shaped, slightly longer dorsoventrally than broad, diaphragm moderately narrow at its middle, sometimes a very small medioventral process present. Aedeagus simple, tubular, orifice terminal or subterminal, genital styles relatively short.

Anal segment of female in profile with hind margin concave. Ovipositor relatively long, second valvulae very slender, sinuate, evenly and minutely toothed on dorsal margin, which is not appreciably elevated at basal end of the dorsal row of teeth (fig. 20, C). See p. 167.

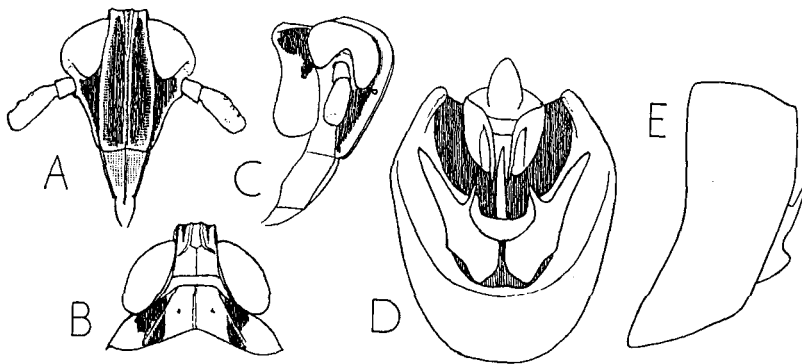


Fig. 18.—*Sogatodes molinus* gen. et sp. n. A, Frons and clypeus; B, vertex and pronotum, dorsal view; C, head and pronotum, lateral view; D, male genitalia, posterior view; E, the same, lateral view.

***Sogatodes molinus* sp. n. (fig. 18, A-E)**

Vertex longer submedially than broad (1.3:1), evenly rounding into frons, only very little narrower at apex than at base, lateral margins straight,

apical margin transverse with submedian carinae not prominent, Y-shaped carina feeble, submedian carinae passing separately on to frons. Basal compartment of vertex wider at hind margin than greatest length (nearly 1.3:1), and than median length (1.4:1); frons in middle line longer than wide at widest part (2.5:1), widest slightly distad of middle, lateral margins feebly convex, median carina simple, narrowly forked in basal third or quarter, clypeus very slightly, but distinctly, wider at base than frons at apex, postclypeal disc as long in middle line as broad at base, almost straight in profile, anteclypeus weakly convex in profile, antennae just reaching to frontoclypeal suture, basal segment longer than broad (about 1.3:1), second segment more than twice as long as first (about 2.2:1). Pronotum with disc longer in middle line than broad at anterior margin (1.2:1), lateral carinae straight, strongly diverging laterocaudad, almost attaining hind margin, if not doing so. Total length of mesonotum exceeding length of meso-scutellum (2.6:1). Post-tibial spur with 19-24 teeth.

Head mostly ivory-white, each compartment of disc of frons, and anterior compartment of genae, fuscous, the pigmentation not extending close to margins; clypeus stramineous between carinae. Pronotum ivory-white, abruptly and deeply infuscate behind each eye; mesonotum with disc ivory-white, lateral fields dark fuscous outside lateral carinae of disc, becoming suffused with ochraceous near lateral angles, tegulae sordid white, pleurites and coxae fuscous, fore and middle legs with dilute fuscous suffusion, apical segment of tarsi darker, hind legs pallid stramineous, abdomen fuscous, yellow dorsally at base and narrowly pale yellow or creamy at lateral and posterior margins of terga, male genitalia castaneous-fuscous, dorsolateral angles of pygofer sordid white. Tegmina hyaline, faintly infused, a spot in clavus between common claval vein and commissural margin piceous, transverse veins narrowly, and a broad suffusion following margin between claval apex to apex of tegmen, fuscous or fuliginous.

Anal segment of male moderately short, ring-like, lateroapical angles moderately separated from each other, the marginal area between them membranous, each produced ventrocephalad in a moderately long spinose process. Pygofer with posterior opening broadly ovate, as broad as long dorsoventrally, or slightly broader than long, laterodorsal angles in profile weakly produced, obtusely angulate, very weakly inflected mesad; diaphragm with dorsal margin deeply concave, median portion pigmented castaneous, with a pair of short vertical peg-like processes, the margin between them straight, or nearly so; medioventral process absent. Aedeagus of similar pattern to that of *S. kolophon*. Genital styles as figured.

Male (macropterous): length, 2.0 mm.; tegmen, 2.8 mm.

Holotype male, 20 ♂♂ and 3 ♀♀, MEXICO: Morales, Oacalco, 6-x-60 (*Alexandro Ortega*) on *Panicum purpurascens*. Type in British Museum (Natural History), paratype ♂, ♀ in U.S. National Museum, remainder of series in collection of the Rockefeller Foundation (Agricultural Sciences) Calle Londres, Mexico 6, D.F.

This species is readily distinguished by the characters listed in the key. From *Sogatodes albolineosus* it is well separated by the shape of the aedeagus. From *Sogatella kolophon meridiana*, apart from the key characters and coloration, it differs in small points of detail not easy to appreciate without side-by-side comparison. The legs are comparatively less slender than in *S. k. meridiana* whereas the inner apical process of the genital styles is distinctly more slender; in *S. k. meridiana* the dorsal margin of the armature of the diaphragm is feebly convex at the middle line, whereas it is not in *Sogatodes molinus*. In the former species the pygofer has a minute medioventral process, but in *S. molinus* there is no trace of such a process. The specific name is from the Latin adjective *molinus*.

The genus *Sogatodes* is distinguished by the form of the ovipositor, which is more slender than in either *Matutinus* or *Sogatella*, and is deeply curved dorsad

in its basal half and straight or weakly re-curved distally: the teeth on the upper margin are numerous, even, and extremely small, and the basal end of the row is not at all elevated, so that the entire dorsal margin forms a single even curve parallel to the ventral margin. Members of the genus may also be recognised, but with less reliability, by the characters of the thorax: the pronotal carinae are usually straight, and only just fail to reach the posterior margin; the mesonotal carinae are usually parallel in the anterior half: at most they are only weakly divergent.

This genus also includes *Sogatodes cubanus* (Crawford) **comb. n.** (*Dicranotropis cubanus* Crawford 1914, p. 594), *Sogatodes biangulatus* (Muir) **comb. n.** (*Sogata biangulata* Muir 1929a, p. 84), *Sogatodes orizicola* (Muir) **comb. n.** (*Sogata orizicola* Muir 1926a, p. 27), *Sogatodes approximatus* (Crawford) **comb. n.** (*Megamelus approximatus* Crawford 1914, p. 622), and provisionally *Sogatodes brazilensis* (Muir) **comb. n.** (*Sogata brazilensis* Muir 1926a, p. 26), *Sogatodes nauticus* (Muir) **comb. n.** (*Sogata nautica* Muir 1926a, p. 26), *Sogatodes anomalus* (Muir) **comb. n.** (*Sogata anomala* Muir 1926a, p. 27), and *Sogatodes alboineosus* (Fowler) (*Liburnia alboineosa* Fowler 1905).

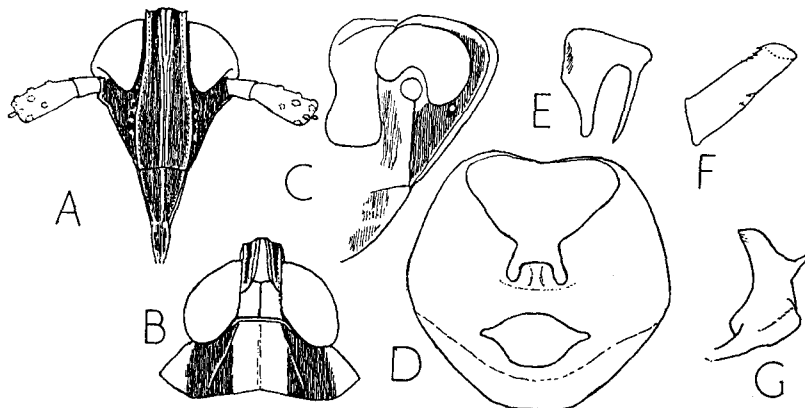


Fig. 19.—*Sogatodes alboineosus* (Fowler). A, Frons and clypeus; B, vertex and pronotum, dorsal view; C, head and pronotum, lateral view; D, pygofer, posterior view; E, anal segment of male, lateral view; F, aedeagus; G, genital style.

***Sogatodes alboineosus* (Fowler) comb. n. (fig. 19, A-G)**

Liburnia alboineosa Fowler 1905, p. 135, Pl. 13 figs. 14, 14a, b.

The type material comprises two males with a deeply forked frontal carina, a female with a simple frontal carina, and not conspecific with the preceding, and a further male with genitalia entirely different from those of the foregoing males. A male specimen bearing a red-margined circular type label, and other labels with the data "B. C. A. Homopt. 1. *Liburnia alboineosa* Fowler type. Teapa, Tabasco. H.H.S." is here selected as the lectotype.

Separation of members of this artificial "furcifera complex" on superficial characters is not easy, and the material so far examined does not give a comprehensive picture of the geographical distribution of each component: it is clear that, for each, many new places of occurrence remain to be discovered and geographical distribution can at present be of only limited assistance in identification. In the hope that it will prove of practical use in the field, a tentative

synoptic comparison of the species on superficial characters is given below. In order to keep it as simple as possible no attempt has been made to show natural relationship by means of the dichotomies, or to include species which, though closely related to those in the key, have not so far been confused with *furcifera* and also are sufficiently distinct on genitalic characters to escape such confusion.

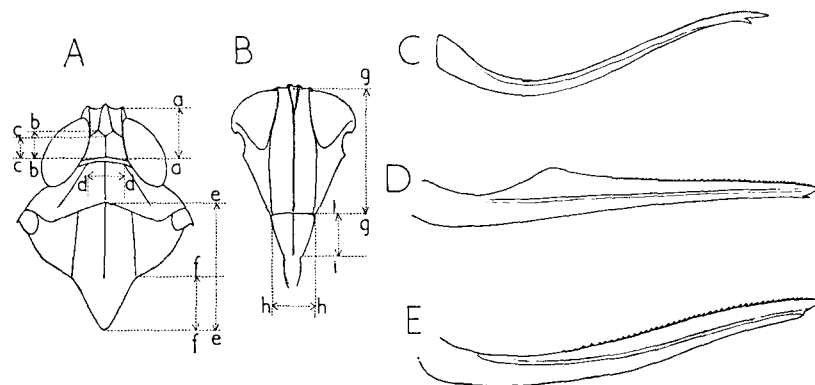


Fig. 20.—A, Head and thorax of a Delphacid, dorsal view (schematic): a-a, submedian length of vertex; b-b, greatest length of posterior compartment of vertex; c-c, median length of posterior compartment of vertex; d-d, width of anterior margin of pronotal disc; e-e, total length of mesonotum; f-f, length of mesoscutellum. B, Frons and clypeus of a Delphacid (schematic): g-g, length of frons; h-h, width of postclypeal disc; i-i, length of postclypeal disc. C, *Sogatodes molinus* sp. n. Second valvula of ovipositor. D, *Sogatella furcifera* (Horv.), the same. E, *Matutinus vitticollis* (Stål), the same.

KEY TO SPECIES.

- (1) (2) Vertex, in profile, abruptly acute-angulately rounding into frons, not nearly parallel with anterior margin of eyes; length of male, without tegmina, usually not less than 2.5 mm. (3)
- (2) (1) Vertex usually rounding into frons subrectangulately or obtusely; if subacutely, then not abruptly; length of male, without tegmina, usually less than 2.5 mm. (7)
- (3) (4) Median carina of frons forked in basal third (5)
- (4) (3) Median carina of frons simple, or almost so
Matutinus opulentus Dist.
- (5) (6) Genae below eyes pallid; costal cell of tegmina semi-hyaline throughout ... *Sogatodes dorsolineatus* (Beamer) **comb. n.** (1952, p. 112)
- (6) (5) Genae below eyes fuscous; costal cell of tegmina fuscous from base to stigma *Sogatodes alboineosus* (Fowler)
- (7) (8) A fuscous spot in clavus at level of union of claval veins, between common vein and margin (9)
- (8) (7) No fuscous spot in this position (15)
- (9) (10) Sublateral carinae of vertex continuing separately on to frons, and uniting there near level of middle of eyes; lateral carinae of pronotal disc almost attaining posterior margin; lateral carinae of mesonotum parallel *Sogatodes molinus* sp. n.

- (10) (9) Sublateral carinae of vertex uniting at apex of vertex, or, if continuing separately on to frons, uniting very near its base; lateral pronotal carinae not nearly reaching posterior margin; lateral carinae of mesonotum not parallel (11)
- (11) (12) Vertex, in profile, almost straight, deeply rounding into frons; total length of mesonotum less than 2.4 times length of mesoscutellum *Sogatella furcifera* (Horv.)
- (12) (11) Vertex, in profile, with upper margin shallowly convex; vertex rounding gradually and obtusely into frons; total length of mesonotum not less than 2.4 times that of mesoscutellum (13)
- (13) (14) Frons and clypeus stramineous *Sogatella manetho* sp. n.
- (14) (13) Frons and clypeus, with exception of carinae, fuscous *Sogatella nigeriensis* (Muir)
- (15) (16) Lateral carinae of pronotal disc straight, almost attaining posterior margin, if not actually doing so (17)
- (16) (15) Lateral carinae of pronotal disc straight or curving laterad basally, not nearly reaching posterior margin (19)
- (17) (18) Frons with lateral margins parallel in distal half, or practically so, widest at apex; lateral margins of frons and oblique carinae of genae contiguous at level of frontoclypeal suture *Sogatella derelicta* (Dist.)
- (18) (17) Frons with lateral margins convex, widest apart two-thirds from base; lateral margins of frons and oblique carinae of genae appreciably separated at their junction with frontoclypeal suture *Sogatella gemina* sp. n.
- (19) (20) Antennae amply surpassing frontoclypeal suture, basal segment much longer than broad (2.6:1); colour black and orange *Sogatella colorata* (Dist.)
- (20) (19) Antennae not or scarcely surpassing frontoclypeal suture, basal segment relatively shorter; colour not as above (21)
- (21) (22) Total length of mesonotum less than 2.5 times median length of mesoscutellum measured from apex to level of junction of lateral carinae with lateral margins *Sogatella balteata* (Dist.)
- (22) (21) Total length of mesonotum not less than 2.5 times median length of mesoscutellum (23)
- (23) (24) Frons not less than 2.5 times as long as broad (25)
- (24) (23) Frons less than 2.5 times as long as broad (33)
- (25) (26) Frons three times as long as broad; post-tibial spur with about 30 teeth; no pale median stripe on head and thorax *Delphacodes dogensis* Ishihara (1952, p. 47)
- (26) (25) Frons relatively shorter, not more than 2.7 times as long as broad; a pale mediodorsal stripe on head and thorax (27)
- (27) (28) Frons more than 2.6 times as long as broad; its greatest width more than 1.5 times its narrowest width (29)
- (28) (27) Frons less than 2.6 times as long as broad, its greatest width less than 1.5 times its narrowest width (31)
- (29) (30) Tegmina uniformly yellowish- or brownish-hyaline *Sogatella panicicola* (Ishihara) **comb. n.** (1949, p. 51)
- (30) (29) Tegmina hyaline with a fuscous suffusion in anal angle *Sogatella elegantissima* (Ishihara) **comb. n.** (1952, p. 45)
- (31) (32) Vertex not more than 1.2 times as long as broad at base; median carina of frons forked in basal quarter *Sogatella nebris* sp. n.
- (32) (31) Vertex distinctly more than 1.2 times as long as broad at base; median carina of frons simple *Sogatella petax* sp. n.

- (33) (34) Frons more than 2.4 times as long as broad; pygofer without a medioventral process (35)
- (34) (33) Frons less than 2.4 times as long as broad, pygofer with a medioventral process (37)
- (35) (36) Vertex not more than 1.5 times as long submedially as broad at base; second antennal segment stout; tegmina suffused fuscous posteriorly *Sogatella camptistylis* sp. n.
- (36) (35) Vertex more than 1.5 times as long submedially as broad at base; second antennal segment slender, three times as long as broad; tegmina not at all infusate *Sogatella vibix* (Haupt)
- (37) (38) Vertex only a little longer submedially than broad at base (less than 1.2:1) (39)
- (38) (37) Vertex distinctly longer submedially than broad at base (at least 1.2:1) (41)
- (39) (40) Intercarinal areas of frons dark fuscous *Sogatella capensis* Muir
- (40) (39) Intercarinal areas of frons not dark fuscous ... *Sogatella kolophon* (Kirk.)
- (41) (42) Vertex less than 1.4 times as long submedially as broad (43)
- (42) (41) Vertex not less than 1.4 times as long submedially as broad ... *Sogatella longifurcifera* (Esaki & Ishihara)
- (43) (44) Lateral fields of mesonotum dark fuscous; pygofer without a medioventral process *Sogatella catoptron* sp. n.
- (44) (43) Lateral fields of mesonotum tawny or orange-brown; pygofer with a distinct medioventral process *Sogatella nigrigenis* (Jacobi)

Summary.

Ten nominal species of DELPHACIDAE have hitherto been regarded as synonymous with *Sogata furcifera* (Horv.), which is notorious as a pest of Gramineae crops in eastern Asia. In a recent study it was established that two members of this complex represented distinct species, and it was accordingly considered necessary to re-examine the status of the remainder: the results of such a study are reported in this paper. The members of this complex now recognised as distinct species number more than twenty: some are restored from synonymy and others are described as new, and all, as appropriate, are referred to one of three genera, *Matutinus* Distant, *Sogatella* Fennah (here accorded generic status) and a new genus, *Sogatodes*. Most of the species in the complex are redescribed and a key is given for the separation of all.

Acknowledgements.

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ERRATUM

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Page 72, after line 31, at end of description of *Sogatodes* gen. n., insert "Type species, *Sogatodes molinus* sp. n.". This citation of *Sogatodes molinus* as the type species of the new genus *Sogatodes* was omitted from the printed text as a result of an undetected printing error and its publication here validates the genus.
