

Vol. 117. Pt. 4. Pp. 95-126.

6th August, 1965

TRANSACTIONS  
OF THE  
ROYAL ENTOMOLOGICAL SOCIETY  
OF LONDON

*World List* abbreviation : *Trans. R. ent. Soc. Lond.*

R. G. FENNAH

New species of Fulgoroidea (Homoptera) from the West Indies

PUBLISHED BY THE SOCIETY  
41 QUEEN'S GATE, LONDON S.W.7.

*Price* 16s. 0d.

# New species of Fulgoroidea (Homoptera) from the West Indies

By R. G. FENNAH

*Commonwealth Institute of Entomology*

## CONTENTS

	PAGE
I. Introduction . . . . .	95
II. Descriptions of and notes on the species . . . . .	95
III. References . . . . .	125

With 100 Text-figures

## SYNOPSIS

Three new genera and twenty-two new species of Antillean Fulgoroidea are described in the families Delphacidae, Tropiduchidae, Issidae and Flatidae. New generic and specific synonymies are established, the genus *Tangia* is restored, and a new name is proposed. New locality records in the Lesser Antilles are given for some known species, and the presence of *Euhyoletta* and *Capistra*, hitherto unknown north of the Lesser Antilles, is recorded in the Greater Antilles.

## I. INTRODUCTION

DESCRIPTIONS are given below of new species of West Indian Fulgoroidea belonging to the families Tropiduchidae, Issidae and Flatidae. The specimens on which they have been based came from a small collection sent for identification to Dr. W. E. China by Dr. J. Maldonado Capriles, from the accessions of the British Museum (Nat. Hist.) and from the writer's own collection.

The writer's thanks are tendered to Dr. Maldonado Capriles and also to Mr. J. P. Doncaster, Keeper of the Department of Entomology, for the privilege of studying the material in their charge.

The species of Tropiduchidae here recognised as new are all native to the Antilles, and the opportunity is taken of discussing some generic concepts that are based on species from this area. The descriptions of new Issidae are intended to supplement the writer's account of the species of the Lesser Antilles (Fennah, 1955). The Flatidae include the Flatoidini of the Lesser Antilles—the final group in the writer's enumeration of the Fulgoroidea of this archipelago—and a number of species from the Greater Antilles, chiefly in the genera *Cyarda* and *Euhyoletta*, the latter being here reported for the first time from this island group.

Bibliographic references not listed in Section III are cited in accordance with the usage in *A bibliography of the Homoptera (Auchenorrhyncha)* by Z. P. Metcalf (1948, N.C. State College of Agriculture and Engineering, University of North Carolina).

## II. DESCRIPTIONS OF AND NOTES ON THE SPECIES

### FAMILY DELPHACIDAE LEACH

#### *Toya* Distant

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

*Trans. R. ent. Soc. Lond.* **117** (4). Pp. 95–125, 100 figs. 1965.

*Toya boxi* (Muir & Giffard), **comb. n.***Delphacodes boxi* Muir and Giffard, 1926a : 32.*Toya venilia* (Fennah), **comb. n.***Delphacodes venilia* Fennah, 1959 : 261.

In comparing this species with *Delphacodes boxi* Muir & Giffard, which is known only from British Guiana, the writer omitted to state that in addition to the differences mentioned, *T. venilia* differs from *T. boxi* in having the spinose processes of the anal segment of the male situated at the apical margin, widely separated, stout basally and strongly pigmented, whereas in *T. boxi* they arise a little submarginally, are narrowly separated basally, are not stout and are very little pigmented. Moreover, notwithstanding the darker pigmentation on other parts of the body, the male of *T. boxi* has the inflected dorsolateral angles of the pygofer stramineous, whereas in *T. venilia* they are stramineous basally but ferruginous-castaneous at the apex itself.

The holotypes of this and other species and subspecies described in the writer's work cited above (*Punana dominicana*, *P. dolon*, *Burnilia spinifera antillana*, *Phrictopyga semele*, *P. nugax*, *Delphacodes venilia*, *D. philyra* and *D. iaxartes*) are in the British Museum (Nat. Hist.). Paratypes of all species except *Punana dolon* and *Delphacodes iaxartes*, including a male of *Phrictopyga nugax* inadvertently not listed in the original material, have now been deposited in the U.S. National Museum.

*Toya iaxartes* (Fennah), **comb. n.***Delphacodes iaxartes* Fennah, 1959 : 264.*Caenodelphax* gen. n.

Of moderately broad form, all carinae fine. Head with eyes not as broad as pronotum, vertex as long as broad or very slightly longer than broad, curving into frons, apparent anterior margin transverse, as long as basal margin, basal margin distad of middle of eyes; frons longer than broad (about 2.4 : 1), as wide apically as at base, widest at middle, lateral margins subparallel or weakly arcuate, median carina narrowly forked in its basal third to basal fifth; antennae with basal segment distinctly longer than broad, second segment longer than first (about 1.5 : 1), ocelli prominent, blemmata present, rostrum a little surpassing mesotrochanters, penultimate segment longer than apical. Pronotum in middle line about three-quarters of length of vertex in middle line, lateral discal carinae concave, not reaching hind margin. Mesonotum of macropterous form short, broader than long (about 1.3 : 1), total length twice that of mesoscutellum; basal metatarsal segment longer than other 2 segments combined; spur moderately narrow, flattened medially below, with 13-18 teeth on a moderately deep margin. Anal segment short. Pygofer rather short with posterior opening longer than broad, diaphragm rather broad, with a median vertical ridge. Aedeagus rather short, laterally compressed, orifice terminal.

Type species, *Liburnia teapae* Fowler.

This genus, of which the type species has hitherto been referred to *Delphacodes* (*s.l.*), is most readily distinguishable by the form of the male genitalia, but features that in combination are also distinctive are the narrow forking of the median carina of the frons in its basal portion, the very short discal portion of the mesonotum and the form of the calcar.

*Caenodelphax teapae* (Fowler), **comb. n.***Liburnia teapae* Fowler, 1905a : 135.BARBADOS: 3 ♂ (*E. F. Becher*), B.M. 1907-173, in B.M. (N.H.)*Caenodelphax philyra* (Fennah), **comb. n.***Delphacodes philyra* Fennah, 1959 : 262.

*Anchidelphax* gen. n.

Delicately built. Vertex quadrate, as long as broad or a little longer than broad, slightly narrower than eye, little surpassing eyes, anteriorly truncate, carinae distinct, uniting at anterior margin of head; frons longer than broad (about 2·6 : 1), widest at level of ocelli, lateral margins thence parallel, rostrum just surpassing mesotrochanters, basal segment of antennae longer than broad at apex (about 1·7 : 1), second segment longer than first (about 1·7 : 1). Pronotum as long as vertex, lateral discal carinae not reaching hind margin. Mesonotum of macropterous form rather short, broader than long (about 1·26 : 1), total length about 2·5 times length of mesoscutellum, disc narrow throughout; legs slender, calcar narrow, rather steeply tectiform, acute but not toothed apically, ventral surface flattened except at margins, which are low, about 16 fine teeth along margin. Pygofer short, ventro-laterally produced caudad in a pair of rounded lobes, no medioventral process or notch; aedeagus tubular, strongly decurved distad, orifice dorsal, fusiform.

Type species, *Megamelus albidens havanensis* Crawford.

Members of this genus are distinguished by the combined characters of delicate structure, narrow vertex little surpassing eyes, incomplete pronotal carinae, slender legs, narrow and almost solid calcar, pygofer with lobate posterior margins and strongly deflexed aedeagus. From *Laodelphax* this genus differs markedly in more delicate bodily conformation, and from *Toya* in the relatively narrower mesonotal disc.

*Anchidelphax havanensis* (Crawford), **comb. n.**

*Megamelus albidens havanensis* Crawford, 1914a : 622.  
*Delphacodes havanensis* Muir & Giffard, 1924a : 28.

BARBADOS: 1 ♂ (*E. F. Becher*), B.M. 1907-173, in B.M. (N.H.)

*Anchidelphax albidens* (Crawford), **comb. n.**

*Megamelus albidens* Crawford, 1914a : 622.  
*Delphacodes albidens* Muir & Giffard, 1924a : 28.

## FAMILY TROPIDUCHIDAE STÅL

*Pelitropis* Van Duzee

Van Duzee, 1908d : 474. Haplotype, *Pelitropis rotulata* Van Duzee, 1908d : 474.

*Pelitropis haitiana* sp. n. (figs. 1-5)

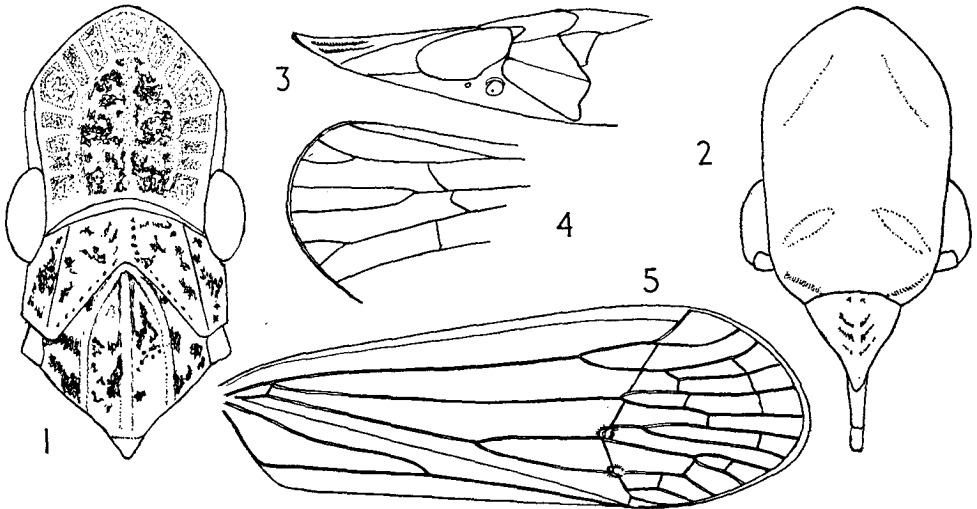
Vertex as long in middle line as broad at widest part, produced before eyes for not quite twice length of an eye, apical margin deeply rounded, lateral margins straight, converging basad, basal margin weakly concave, disc transversely weakly convex, slightly upcurved in anterior quarter, median carina obsolete, indicated only by colour-pattern; frons longer than broad (1·5 : 1), basal margin strongly convex, lateral margins feebly sinuate, almost straight, slightly converging distad, disc smooth, shallowly concave, ecarinate, weak traces of an oblique callus on each side in distal quarter; rostrum not attaining mesotrochanters; eyes elongate ovate, lateral ocelli present. Pronotum with anterior margin transverse, weakly convex, lateral margins straight, parallel to median carina, posterior margin deeply angulately excavate, disc tricarinate, lateral discal carinae straight, a little oblique, not quite attaining posterior margin; 2 carinae on each side between eye and tegula; mesonotum as long as broad, disc tricarinate with lateral carinae uniting with median carina anteriorly. Post-tibiae with 3 spines laterally and 5 apically, basal metatarsal segment with 5 spines. Tegmina as figured, a distinct eminence between *M* and *Cu<sub>1a</sub>* at nodal line, and a smaller eminence on *Cu<sub>1b</sub>* at nodal line.

Ochraceous-cinereous, sometimes with a greenish tinge on frons and vertex, dorsally finely marbled with dilute pinkish-brown and pink. Tegmina subhyaline, cinereous, weakly mottled with dilute brown; veins pink, in corium interruptedly bordered with fuscous.

*Female*: length, 7·5 mm.; tegmen, 6·4 mm. Total length to apex of closed tegmina, 8·0-8·5 mm.

*Holotype* ♀, HAITI: Morne à Cabrits, 26.xi.1929 (*J. G. Myers*), B.M. 1930-190, in B.M. (N.H.); *paratype* ♀, La Gonave Id., 25.vii.1931 (*J. G. Myers*), B.M. 1931-448, in B.M. (N.H.).

This species differs from *P. rotulata* Van Duzee and *P. insularis* Schmidt in its greater size, in the shape of the vertex, which is relatively longer than in either, and in the straight lateral carinae of the pronotal disc, these carinae being distinctly curved in both.



FIGS. 1-5.—*Pelitropis haitiana* sp. n.: (1) head and thorax; (2) frons and clypeus; (3) head in profile; (4) apex of wing; (5) tegmen.

### *Ladella* Stål

Stål, 1859a : 319. Haplotype, *Monopsis pallida* Walker, 1851a : 325.

Vertex more or less pentagonal, with lateral carinae convergent in their anterior portion, median carina shortly but distinctly forked at base, or posterior margin a little incised at middle, lateral margins not meeting lateral margin of frons, a callus at anterior margin; median carina of frons moderately sharp. Post-tibiae with 3 spines laterally, 5 teeth apically, basal metatarsal segment with 5 teeth. Tegmina with a well developed pre-costal area, with transverse veinlets, costal vein united with anterior margin of tegmen near base, fork of *Sc + R* slightly distad of *M* fork, which is slightly distad of *Cu* fork, nodal line of transverse veinlets distinct, all transverse veinlets distad of it irregularly scattered; common claval vein not longer than anterior claval vein.

The restriction of the generic concept implied in the supplementary description given above permits the segregation of a small group of species from Puerto Rico that differ from typical *Ladella* in characters of more than specific value.

### *Ladellodes* gen. n.

Vertex with lateral margins straight, parallel, anterior margin rounded, median carina simple, not forked at base, lateral margins meeting lateral margins of frons, a callus at anterior margin; median carina of frons moderately sharp. Post-tibiae with 3 spines laterally, 5 teeth apically, basal metatarsal segment with 5 teeth. Tegmina with a well developed pre-costal area with transverse veinlets, costal vein separate from anterior margin to base, fork of *Sc + R* and *Cu* fork at approximately same level, *M* fork very slightly distad of both, nodal line of transverse veinlets distinct, a regular line of transverse veinlets distad of this, in addition to irregular transverse veinlets; common claval vein longer than anterior claval vein.

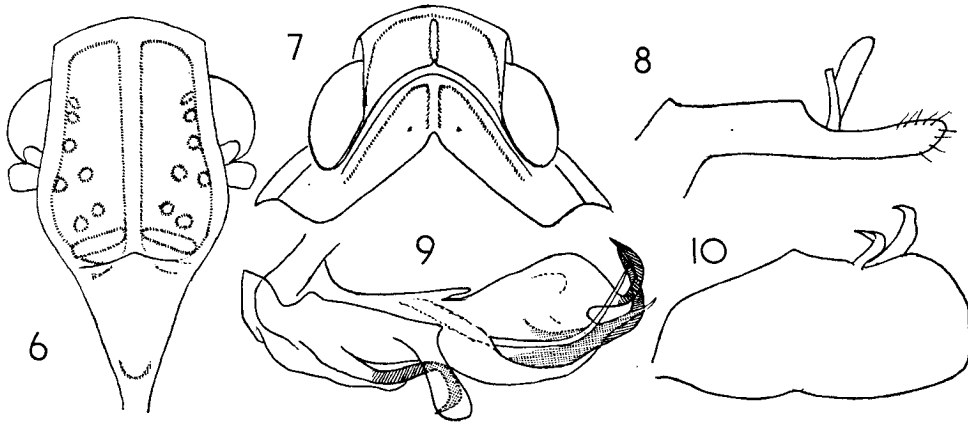
Type species, *Ladella stali* Fennah, 1949 : 57.

This genus is most readily separable from *Ladella* by the fact that the lateral margins of the vertex are parallel and separated from the margins of the frons and by differences in the tegminal venation. The most striking difference, however, is to be found in the structure of the aedeagus. This, in *Ladellodes*, is a relatively simple structure

with at most four spinose processes, whereas in *Ladella* it is highly complex and furnished with more than twice this number of spines (see Fennah, 1949, pl. 4, figs. 2, 3).

*Tangella* Metcalf & Bruner

Metcalf & Bruner, 1930a : 397. Orthotype, *Tangia kraatzi* Stål, 1859a : 318.



Figs. 6–10.—*Tangella pustulifrons* sp. n.: (6) frons and clypeus; (7) vertex and pronotum; (8) anal segment of male; (9) aedeagus, left side; (10) left genital style.

*Tangella pustulifrons* sp. n. (figs. 6–10)

Vertex twice as broad as long, anterior margin broadly convex, posterior margin correspondingly concave, with a very small median incision, lateral margins parallel, median carina distinct, not quite attaining apex; frons longer than broad, basal margin shallowly convex, with a thick callus, lateral margins broad, sinuately diverging to below level of antennae, then strongly incurved to frontoclypeal suture, median carina thick, uniting distally with 2 thick transverse carinae bordering frontoclypeal suture, each compartment of frons with about 6 pustules near lateral margin and distally; clypeus ecarinate, rostrum surpassing mesotrochanters, not quite attaining post-trochanters; antennae with second segment globose; ocelli small. Pronotum about as long as vertex, anterior margin rather deeply convex, posterior margin more shallowly angulate, lateral carinae of disc slightly convex, each more than twice as long as median carina, 2 carinae on each side behind eyes. Mesonotum as long as broad, lateral carinae united with median carina apically, parallel in basal half; post-tibiae with 3 spines laterally, 5 apically, basal metatarsal segment with 5 spines apically. Tegmina 3 times as long as broad, moderately deeply rounded distally; costa submarginal, leaving a narrow but distinct precostal area, devoid of transverse veinlets, *Sc + R* forked once at apical seventh of its length before nodal line, *M* forked once slightly basad of this level, *Cu<sub>1</sub>* forked once much farther basad, near middle of corium, nodal line of transverse veins straight, about 16 veins at apical margin between apex of *Sc* and apex of clavus, transverse veinlets irregular and obscure.

Stramineous, probably green in life; spines on hind legs black.

Anal segment of male moderately elongate, rather narrow, porrect caudad. Pygofer moderately long with dorsolateral angles rectangular. Aedeagus moderately long, strongly compressed laterally, a spatulate process on left just basad of middle, directed ventrad, a strongly curved spinose process, also directed ventrad, mesad of this at about same level; 3 spinose processes at apex, one arising dorsally on left, stout, directed dorsad, another arising rather more ventrally on right, also directed dorsad, almost parallel with that on left; a slender spinose process originating near middle of aedeagus and emerging between the stout apical processes, shallowly curving dorsocaudad. Genital styles broadly subovate, apical margin broadly rounded, dorsal margin elevated in an obtuse angle at middle; 2 spinose processes distad of this elevation, each directed dorsolaterad and curved cephalad at apex.

*Male*: length, 4.7 mm.; tegmen, 5.4 mm.

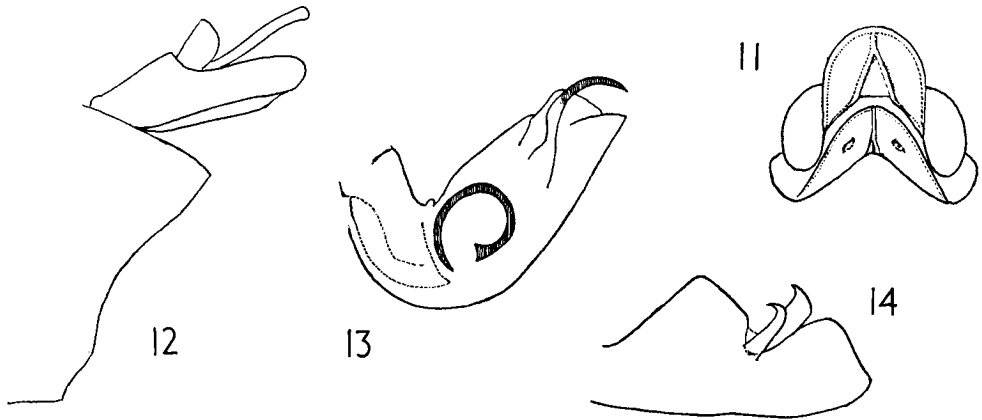
*Holotype* ♂, JAMAICA: Christiana, vii. 1961 (*J. Maldonado C.*), in coll. Maldonado C.

This species is distinguished from *T. kraatzi* Stål and *T. schaumii* Stål by the complete absence of transverse veinlets in the precostal area and by the presence of pustules on the frons.

*Tangidia* UhlerUhler, 1895a : 59. Haplotype, *Tangidia alternata* Uhler, 1895a : 60.*Tangidia vittata* sp. n. (figs. 11–14)

Vertex broader across base than long in middle line, 1·5 : 1 including, and 1·8 : 1 excluding, thickness of apical-marginal carina.

Sordid stramineous to tawny-yellow; basal margin of frons and lateral margins basally, lateral margins of vertex feebly, a short stripe before eyes and before antennae, carinae of pronotal disc feebly, and outer margin of lateral pronotal lobes, carinae of mesonotum narrowly, a round spot in each compartment of disc near base, and 2 irregular spots in each lateral field, and a spot at base of



FIGS. 11–14.—*Tangidia vittata* sp. n.: (11) vertex and pronotum; (12) anal segment and pygofer, left side; (13) aedeagus, left side; (14) left genital style.

post-tibiae, castaneous; a spot in each compartment of vertex, a series of spots on pronotum on disc and behind eyes, and a suffusion on anterior half of mesonotal disc, and abdominal terga, dilute fuscous. Tegmina subhyaline, tinged stramineous to tawny-yellow, a broad transverse band in basal fifth extending from costa to posterior claval vein, *Sc* + *R* just basad of fork, *M* at middle of corium, *Cu*<sub>1</sub> just distad of fork, *Sc* and *R* near nodal line, all veins near apical margin and transverse veinlets in membrane, castaneous. Wings hyaline, veins brown.

Anal segment, pygofer and genital styles as figured. Aedeagus laterally compressed with dorsal and ventral margins subparallel, rounded-truncate at apex, a rather slender spinose process arising on left side near middle of phallobase, curved dorsad, cephalad and finally ventrad; phallus with a slightly wider spinose process, rather sickle-shaped, arising at one-third from apex, directed caudad, and decurved apically.

Male: length, 4·1 mm.; tegmen, 4·6 mm.

*Holotype* ♂, ST. LUCIA: Micoud, 17. ix. 1935 (*H. E. Box*), in B.M. (N.H.).

This species differs from *T. montana* in having only a single spinose process on the phallobase, and from *T. alternata* and *T. fugax* in the form of the process of the phallus. The broad fascia across the base of the tegmina is not found in any of the other species, but it is not known at present whether it is a constant feature in *T. vittata*.

*Tangia* Stål gen. rev.

Stål, 1859a : 317. Logotype, *Monopsis viridis* Walker, 1851 : 325.

The writer has compared the type species of *Tangia* with that of *Neurotmeta* Guérin-Méneville (*N. sponsa* Guérin-Méneville) and he now considers it necessary to recall this genus from synonymy with *Neurotmeta* on account of the differences given below, which he regards as of generic value.

Lateral margins of frons not meeting lateral margins of vertex; median carina of vertex widely forked basally, distinctly before level of anterior margin of eyes; *M* in tegmina three-branched at level of nodal line; primary forks of *M* and *Cu*<sub>1</sub> and union of claval veins lying on an oblique straight line; 22 veins at apical margin; wings with *M* three-branched  
*Neurotmeta* Guérin-Méneville

Lateral margins of frons meeting lateral margins of vertex; median carina of vertex only minutely forked at base, this fork basad of level of anterior margin of eyes; *M* in tegmina two-branched at level of nodal line; primary forks of *M* and *Cu*<sub>1</sub> and union of claval veins not lying on a straight line, the last two at same level and the first distad; 15–18 veins at apical margin; wings with *M* two-branched. . . . . *Tangia* Stål

The following new combinations are proposed.

*Tangia bipatriata* (Fennah), **comb. n.**

*Neurotmeta bipatriata* Fennah, 1945 : 147.

*Tangia dominicana* (Fennah), **comb. n.**

*Neurotmeta dominicana* Fennah, 1945 : 148.

*Tangia litoralis* (Fennah), **comb. n.**

*Neurotmeta litoralis* Fennah, 1945 : 148.

*Tangia oreas* (Fennah), **comb. n.**

*Neurotmeta oreas* Fennah, 1945 : 147.

FAMILY ISSIDAE SPINOLA

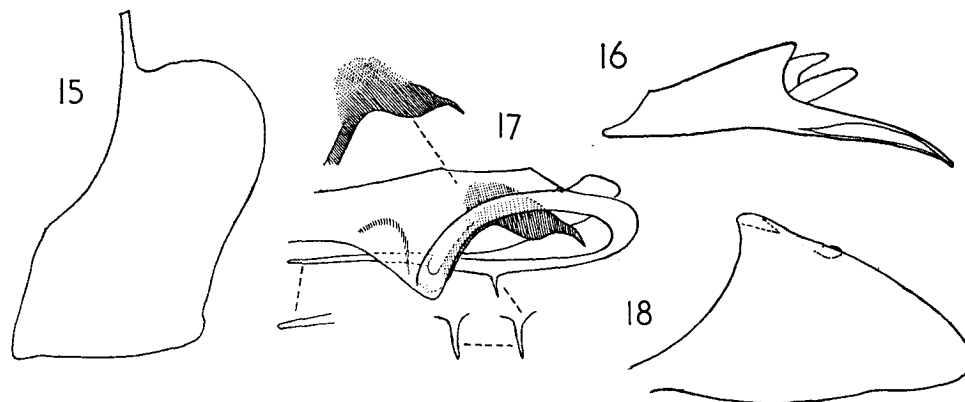
*Acanalonia* Spinola

Spinola, 1839a : 447. Haplotype, *Acanalonia servillei* Spinola, 1839a : 448.

*Acanalonia viriditerminata* (Lethierry) (figs. 15–18)

*Carthaea viriditerminata* Lethierry 1881a : 14.

Green; a single spot on humeral elevation of tegmina and a narrow submarginal line at anal angle, brown or piceous. Aedeagus with the small secondary appendage near middle of each of the long apical processes acuminate in lateral view, and almost acuminate in posterior view.



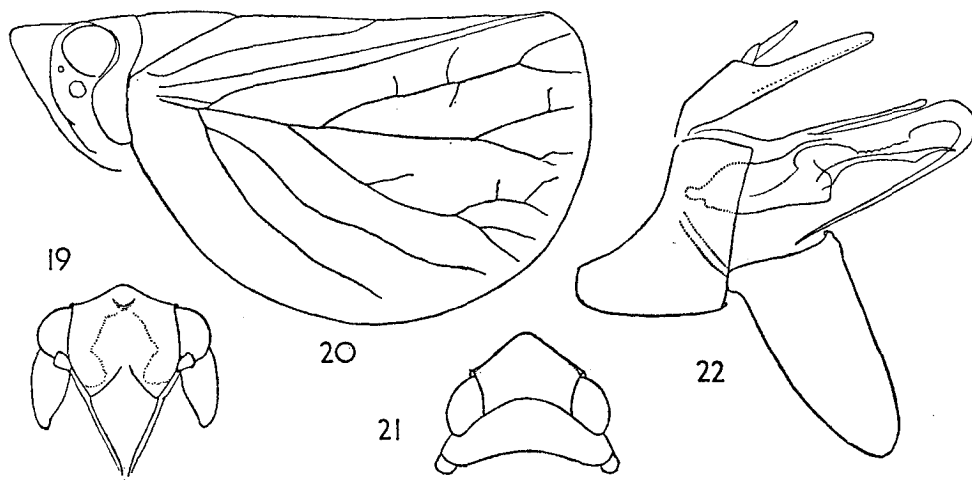
FIGS. 15–18.—*Acanalonia viriditerminata* (Lethierry): (15) pygofer, left side; (16) anal segment of male; (17) aedeagus, left side, with processes shown detached and enlarged, the appendage of the apical processes shown in lateral aspect on right and posterior aspect on left; (18) left genital style.



ANTIGUA: Sugar Loaf, 1 ♂, 1 ♀, 12.vi.1932 (*H. E. Box*).

The male specimen (in B.M. (N.H.)) differs from a male of the typical population from Guadeloupe only in having the secondary appendage of the apical processes almost acuminate, instead of obliquely truncate. If this trivial difference proves to be constant it might justify recognition of the Antigua population as a distinct subspecies. However, it is quite evident that the Antigua population is very closely allied to that of Guadeloupe, much more so than to that of the neighbouring island of Montserrat.

As usual in this genus, the tegmina of the female are broader than those of the male, and the costal margin is more convex.



FIGS. 19–22.—*Acanalonia mintho* sp. n.: (19) frons and clypeus; (20) head, thorax and tegmen, left side; (21) vertex and pronotum; (22) male genitalia, left side.

*Acanalonia mintho* sp. n. (figs. 19–22)

Vertex broader than long in middle line (1.6 : 1), much longer in middle line than at lateral margins, horizontal, anterior margin obtusely angulately convex, obscurely carinate, median carina present only near apex, frons broader than long in middle line, ecarinate. Tegmina in male widest near middle, with costal and apical margins forming an even curve to apex of clavus, in female widest distad of middle, with costal margin convex, apical angle rather deeply convex, apical margin shallowly convex. Post-tibiae apically seven-spined, basal metatarsal segment with 2 stout and 3 minute teeth.

Head, thorax and abdomen stramineous, probably green in life, eye red. Tegmina pale green.

Anal segment of male moderately long, in profile with lower margin straight, anal foramen slightly basad of middle, apical margin deeply rounded. Pygofer moderately long, laterodorsal angles subrectangulate, not produced, lateral margins vertical, weakly sinuate. Aedeagus moderately long, tubular, porrect caudad; dorsal margin produced distally in a rather long finger-like process, slightly swollen at its tip; a pair of moderately long processes arising ventrolaterally, directed caudad, each expanding in its distal quarter, then tapering to apex, which is acuminate, lightly pigmented, and very shallowly decurved; a pair of long slender acuminate processes arising dorsally, extending caudad then reflected ventrocephalad below aedeagus, the outer margin of each process at base minutely serrulate. Genital styles relatively long and narrow, in side view with ventral margin long, weakly convex, deeply rounding into apical margin, which is long and straight, dorsal margin weakly concave, relatively very short, dorsal process in form of a short blunt inwardly bent spine.

Pregenital sternite of female with posterior margin with three shallow indentations, the median a little deeper than the other two.

*Male*: length, 4.9 mm.; tegmen, 4.4 mm. *Female*: length, 5.3 mm.; tegmen, 5.0 mm.

*Holotype* ♂, GRENADA: Mount Gay Est. (leeward side), 1907 (*H. H. Smith*), in B.M. (N.H.). *Paratypes*: GRENADA: Grand Anse, south end, 1 ♀ (*H. H. Smith*); GRENADINES: Union I., 1 ♂, 1 ♀ (*H. H. Smith*); Bequia, 1 ♂ (*H. H. Smith*).

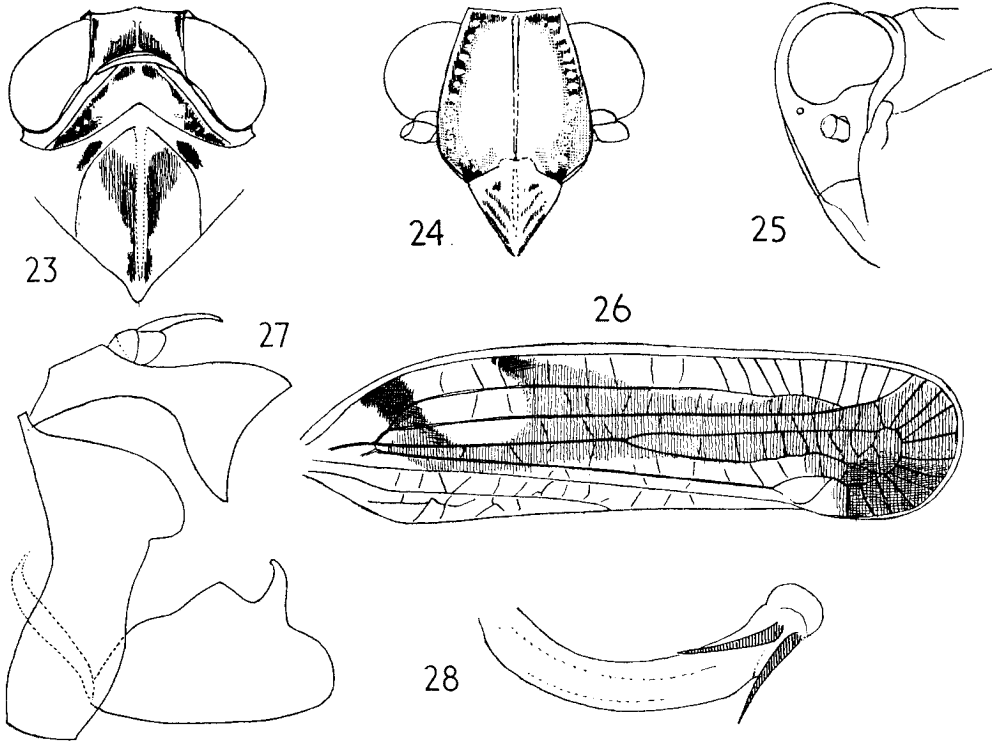
This species is nearest to *A. viequensis* Caldwell, but differs in the more strongly produced vertex and in the shape of the tegmina.

*Colpoptera* Burmeister

Burmeister, 1835a : 155. Logotype, *Colpoptera sinuata* Burmeister, 1835a : 155.

*Colpoptera galatea* sp. n. (figs. 23–28)

Vertex broader between eyes than long in middle line (2·3 : 1); frons in middle line only slightly longer than broad (1·1 : 1), widest below level of antennae.



FIGS. 23–28.—*Colpoptera galatea* sp. n.: (23) vertex, pronotum and mesonotum; (24) frons and clypeus; (25) head in profile; (26) tegmen; (27) pygofer, anal segment and left genital style; (28) aedeagus, left side.

Testaceous; frons in basal third, and dilutely in median third, and interruptedly submarginally, castaneous, sublaterally at apex, fuscous; clypeus laterally and sometimes dilutely distally, fuscous; disc of vertex except in middle line and in middle of each compartment, castaneous; antennae fuscous; pronotum infuscate anteriorly and posteriorly on disc and behind eyes, infuscate areas behind eyes darker and maculate with testaceous; mesonotum with at least median portion of disc (except in middle line), a suffusion between disc and lateral angle on each side, and a small wedge-shaped mark on each side just anterior to disc, fuscous; abdominal terga and sternites medially, castaneous fuscous, anal segment dark castaneous. Tegmina subhyaline, tinged sordid brownish-yellow, a broad vitta extending from basal seventh of corium to apical margin, castaneous, darker in costal cell at base and in apical cells of *Cu*, a clear ovate area at one-quarter from base extending towards middle of corium, longitudinal veins concolorous, transverse veinlets in corium sometimes so, sometimes pale ochraceous, transverse veinlets of clavus pallid ochraceous.

Anal segment of male in profile weakly declivous distad of anal foramen, lower margin concave, lateroapical angles broadly and strongly produced ventrad, acute at tip. Pygofer with dorsolateral angles each produced in a deeply rounded lobe. Aedeagus long, tubular, strongly curved upward distally, a pair of moderately long spinose processes arising dorsally at apex, directed cephalad, a pair of similar processes, not quite as long and a little more slender, arising ventrally at apex, directed ventrocephalad. Genital styles in side view subtriangular, ventral margin straight, dorsal margin

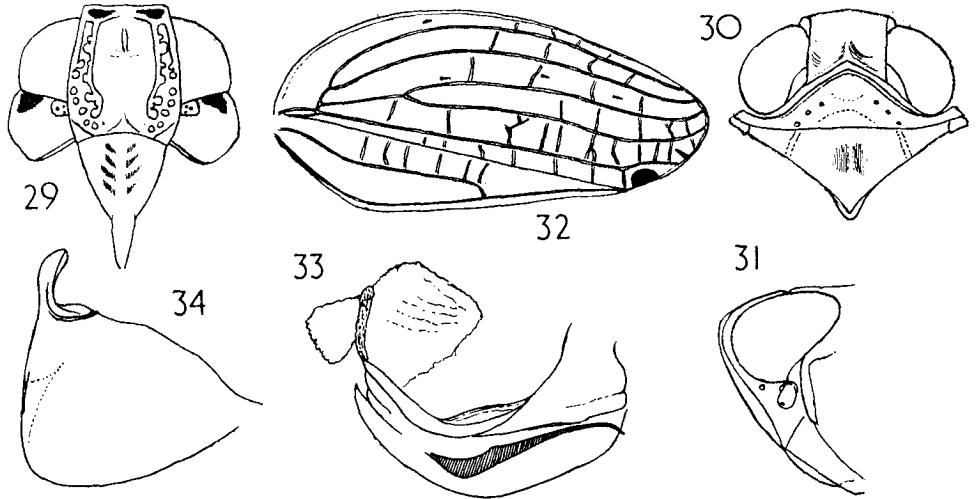
*Trans. R. ent. Soc. Lond.* 117 (4). Pp. 95–125, 100 figs. 1965. 4§

ascending and weakly convex from base to near middle, then abruptly descending to base of dorso-apical process; apical margin deeply convex, dorsoapical process relatively short and stout, shortly bifurcate distally with the anterior limb directed dorsad and the posterior laterad.

Anal segment of female moderately long, gradually narrowing distad of middle, apical margin short, convex. Pregenital sternite with posterior margin truncate, a short and broadly convex unpigmented setigerous eminence at middle.

*Male*: length, 3.4 mm.; tegmen, 4.5 mm. *Female*: length, 4.2 mm.; tegmen, 5.1 mm.

*Holotype* ♂, BARBADOS: St. John, 25–30.vii.1962 (*J. Maldonado C.*), in coll. Maldonado C. *Paratypes*: 2 ♀, same data (one paratype in British Museum (N.H.)).



FIGS. 29–34.—*Thionia anguillana* sp. n.: (29) frons, clypeus and lateral lobes of pronotum; (30) vertex, pronotum and mesonotum; (31) head in profile; (32) tegmen; (33) aedeagus, right side; (34) right genital style.

This species is the Barbadian counterpart of *C. thyone* Fennah, from St. Lucia. It differs in having the distal portion of the clypeus more frequently pale, the disc of the frons more generally clouded with fuscous, and the tegmina less heavily pigmented. In the male genitalia the aedeagus bears a pair of simple spinose processes dorsally, whereas in *C. thyone* the corresponding processes are rather laterally compressed (and so blade-like) and each bears a small accessory spine at its base; in the present species a pair of well developed spinose processes is present ventrally at the apex of the aedeagus, but no such processes occur in *C. thyone*.

#### *Thionia* Stål

Stål, 1859a: 321. Logotype, *Issus longipennis* Spinola, 1839a: 348.

#### *Thionia anguillana* sp. n. (figs. 29–34)

Vertex broader than long in middle line (1.3 : 1). Frons carinate and pustulate as shown in figure.

Light yellowish-brown; carinae of head, and legs, ochraceous; disc of frons in distal two-thirds and disc of mesonotum tinged ferruginous; a triangular spot on each side of frons basally, a subtriangular spot on lateral lobes of pronotum behind eyes, and post-tibial and post-tarsal spines, piceous. Tegmina subhyaline, light yellowish-brown, dilute and diffuse brown in intervenal areas, longitudinal veins reddish-brown, transverse veinlets ochraceous. Five more definite sublinear spots as shown in figure, and a distinct ovate spot at anal angle, piceous. Wings very weakly infusate, with fuscous veins.

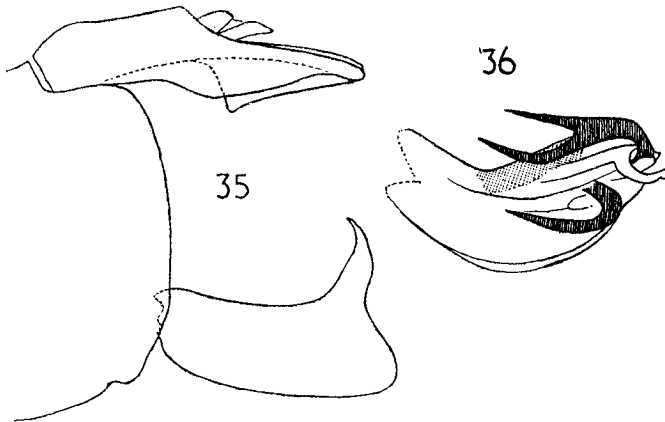
Anal segment of male moderately long, narrow, deeply rounded at apex, almost porrect caudad. Pygofer with posterior lateral margin shallowly convex. Aedeagus tubular, curved upward distally, in profile with a long spinose process on each side, each arising laterally at apical third, rather flattened

in its basal half, narrow and rounded in distal half, extending ventrolaterally to base of aedeagus, and shallowly decurved near its apex. Genital styles subtriangular in profile, expanding distad, ventral, apical and dorsal margins very weakly convex, dorsal process spatulate, apically bluntly rounded, a short concave subhorizontal flange externally near base, apical process twisted at right angles to axis of body.

*Male*: length, 4.1 mm.; tegmen, 4.6 mm.

*Holotype* ♂, ANGUILLA: north of Road Bay, 200 ft., 12.iv.1958 (*J. F. G. Clarke*), in B.M. (N.H.).

This species is near to *T. medusa* Fennah and *T. laodice* Fennah, but differs from both in coloration, and in the shape of the aedeagal spines and in that of the genital styles. From the Puerto Rican *T. ramosi* Caldwell, to which it bears some resemblance in the form of the aedeagus, it differs strongly in size, in coloration and in the shape of the genital styles.



Figs. 35-36.—*Riculiflata cinchonae* sp. n.: (35) pygofer, anal segment and left genital style; (36) aedeagus, left side.

#### FAMILY FLATIDAE SPINOLA

##### *Riculiflata* Fennah

Fennah, 1947 : 108. Orthotype, *Poeciloptera perpusilla* Walker, 1851a : 467.

##### *Riculiflata cinchonae* sp. n. (figs. 35, 36)

Vertex very short, extending to level of middle of eyes, anterior margin truncate, finely carinate, lateral margins slightly converging basad; base of frons visible from above; frons broader than long in middle line (nearly 1.4 : 1) wider at base than at apex, lateral margins rather strongly arcuate, obliquely elevated, median carina distinct in basal three-quarters, absent from apical quarter.

Pallid stramineous to orange-yellow; spines on post-tibiae and tarsi, black. Tegmina whitish to pale orange, veins and granules stramineous or orange, respectively. Wings whitish-hyaline. Body and tegmina lightly powdered white.

Anal segment of male moderately long, anal foramen at middle, lateral margins in side view sinuately convex, ventral surface in middle line produced ventrad in a triangular lobe with its lower basal angle rectangulate. Pygofer moderately long, dorsolateral angles subrectangulately rounded. Aedeagus tubular, rather stout, weakly curved upward distad, a pair of stout, moderately long, bifurcate processes arising dorsally at apex, directed cephalad; a pair of moderately long stout spinose processes arising subapically and lateroventrally, recurving cephalad. Genital styles moderately long, rather narrow, in side view with dorsal and ventral margins parallel, lower distal angle subacute, apical margin oblique; dorso-apical process rather long, stout at base, tapering distad, moderately curved cephalad at apex.

*Male*: length, 4.0 mm.; tegmen, 5.8 mm. *Female*: length, 4.8 mm.; tegmen, 6.0 mm.

*Holotype* ♂, JAMAICA: Cinchona, 2-25.viii.1923 (*C. C. Gowdey*), in B.M. (N.H.). *Paratypes*, 1 ♂, 3 ♀, same data.

This species is well distinguished from *R. perpusilla* by the pallid fore legs and middle legs, which in *perpusilla* are of a deep chocolate-brown. The orange tinge is very pronounced, and only one specimen had tegmina so pale as to resemble those of *perpusilla*. The male genitalia are strikingly different from those of *perpusilla*, but the present species is confirmed as a *Riculiflata* by having in the female the same narrow elongate third valvulae, distally armed with only a few spines.

#### *Psenoflata* Fennah

*Psenoflata* Fennah, 1947 : 107. Orthotype, *Ormenis brevis* Van Duzee.  
*Monoflatina* Metcalf & Bruner, 1948 : 72. Orthotype, *Monoflatina viridipennis* Metcalf & Bruner, syn. n.

#### *Psenoflata brevis* (Van Duzee)

*Ormenis albipennis* var. *brevis* Van Duzee, 1907a : 38.  
*Ormenis jamaicensis* Fennah, 1942 : 162.  
*Psenoflata brevis* (Van Duzee) Fennah, 1947 : 108.  
*Monoflatina viridipennis* Metcalf & Bruner, 1948 : 72, syn. n.

JAMAICA: 30.X.1917, 1 ♂, 1 ♀ (*R. H. Ritchie*), B.M. 1917-7, in B.M. (N.H.).

#### *Ormenina* Fennah

Fennah, 1947 : 114. Orthotype, *Poeciloptera paupera* Walker, 1858b : 119.

#### *Ormenina herbida* (Walker), **comb. n.**

*Poeciloptera* (?) *herbida* Walker, 1851a : 470.  
(*Ormenis*) *tessellata* Van Duzee, 1907a : 39, syn. n.

Walker's type specimen agrees perfectly with a specimen collected at Mandeville by Van Duzee (January–April 1906). In the type specimen one tegmen is damaged at the sutural angle, and the tip of the other is sharply bent over and lies closely against the lower surface and cannot be seen in dorsal view. It is doubtless on this account that Walker was led to describe the "fore wings" as "rounded at the tips", a statement that later led Van Duzee to doubt whether his own series should be ascribed to this species.

#### *Parthenormenis* Fennah

*Parthenormenis* Fennah, 1949 : 61. Orthotype, *Parthenormenis sanctaeursulae* Fennah, 1949 : 62.  
*Puertormenis* Caldwell, in Caldwell & Martorell, 1951 : 234. Orthotype, *Puertormenis* *virgina* Caldwell, 1951a : 235, syn. n.

The type of *Parthenormenis sanctaeursulae* has a depression across the base of the frons, as shown in the figure of *Puertormenis virgina* given by Caldwell (Caldwell & Martorell, 1951: fig. 43).

#### *Capistra* Fennah

Fennah, 1947a : 115. Orthotype, *Capistra montana* Fennah, 1947a : 115.

The species of this genus are most readily recognisable in the field by the low-pitched carriage of the tegmina, which recalls that of *Flatoides*. This character alone serves to distinguish it from *Melormenis*, but adults of *Capistra* differ also in having the basal margin of the frons relatively wider than the apical margin, in having the anterior margin of the tegmen rather markedly sinuate, the base of the clavus relatively more elevated, and, in the aedeagus, in possessing only a single pair of processes, these being the ventrolateral processes that originate at the apex and are forked once or twice. Unlike those of *Melormenis*, its species are usually found in upland vegetation. The following new combinations are proposed.

*Capistra basalis* (Caldwell), **comb. n.**

*Melormenis basalis* Caldwell, in Caldwell & Martorell, 1951 : 240.

*Capistra roscida* (Caldwell), **comb. n.**

*Melormenis roscida* Caldwell, in Caldwell & Martorell, 1951 : 239.

*Capistra zyxa* (Caldwell), **comb. n.**

*Melormenis zyxa* Caldwell, in Caldwell & Martorell, 1951 : 240.

*Capistra magna* (Caldwell), **comb. n.**

*Melormenis magna* Caldwell, in Caldwell & Martorell, 1951 : 242.

*Melormenis* Metcalf

Metcalf, 1938 : 395. Orthotype, *Ormenis antillarum* Kirkaldy (*Cicada quadripunctata* Fabricius, 1794).

*Melormenis basalis* (Walker), **comb. n.**

*Flatoides basalis* Walker, 1851 : 419.

*Ormenis antillarum* Kirkaldy, 1909 : 32, **syn. n.**

Aedeagus tubular, slightly curved upward distally, rounded at apex, a pair of long sabre-like processes arising laterally near apex, directed cephalad ventrolaterally, a pair of short flattened processes arising laterally one-quarter from apex, directed obliquely dorsocaudad, distally acuminate or obliquely truncate and serrulate; a minute unpaired median spine dorsally near base of aedeagus.

ANGUILLA: 1 ♂, 2 ♀, 24.iv.1941, on *Coccoloba uvifera* (F. S. DeLisle); NEVIS: 13 ♂, 19 ♀, 8.i.42 (R. G. Fennah); ST. KITTS: 8 ♂, 5 ♀, 23.i.1942, on *Acacia* and *Coccoloba uvifera* (R. G. Fennah).

Walker's type is a female from an unknown locality.

Males from Puerto Rico differ from those from Anguilla, St. Kitts and Nevis in the conformation of the lateral processes of the aedeagus. In those from Puerto Rico, the terminal portion of each of these processes is obliquely truncate on the caudal aspect and the oblique edge is distinctly serrulate; in males from Anguilla and the Leeward Islands, the apical portion of these processes tapers to a point and is not obliquely truncate or serrulate.

As *Melormenis basalis* Caldwell has been removed to *Capistra* prior to the proposal of the above synonymy, his specific name does not fall in homonymy.

*Ilesia* Fennah

Fennah, 1942 : 160. Orthotype, *Ormenis septempunctata* Fennah, 1941 : 196.

In this genus the anal segment of the female is exceptionally large, and the ovipositor has reduced and unarmed third valvulae. In *Flatormenis*, of which the holotype of the type species is a female, the anal segment is only of moderate size, and the third valvulae are furnished with stout teeth.

The following new combinations are now proposed.

*Ilesia nefuscata* (Caldwell), **comb. n.**

*Flatormenis nefuscata* Caldwell, in Caldwell & Martorell, 1951 : 231.

*Ilesia stylata* (Caldwell), **comb. n.**

*Flatormenis stylata* Caldwell, in Caldwell & Martorell, 1951 : 232.

*Ilesia duplicata* (Caldwell), **comb. n.**

*Flatormenis duplicata* Caldwell, in Caldwell & Martorell, 1951 : 232.

*Exoma* Melichar

*Exoma* Melichar, 1902a : 158. Haplotype, *Exoma viduata* Melichar, 1902a : 158.  
*Leoceris* Metcalf & Bruner, 1948 : 74. Haplotype, *Leoceris fuscus* Metcalf & Bruner, 1948 : 74,  
 syn. nov.

Frons a little longer than broad, basal margin as long as apical margin, lateral margins weakly convex, a longitudinal depression near each lateral margin, a depression along the middle area, with median carina absent or feeble; antennae with second segment with a small facet obliquely near apex; vertex short. Tegmina 2·3 times as long as broad, costal and sutural margins parallel, apical margin transverse, weakly concave near middle, apical and sutural angles broadly rounded, sub-symmetrical. Costal area wide at base, thence about as wide as costal cell, longitudinal veins prominent, *Sc* simple and sinuate at apex, *R* forking near middle, *M* forking basad of *R* fork, *Cu*<sub>1</sub> forking slightly distad of *M* fork, apical and subapical lines of transverse veinlets a little irregular but distinct, nodal line ill-defined, apical areoles short, only about twice as long as broad, about 3 rows of subequal cells basad of apical row; base of clavus somewhat elevated. Post-tibiae bispinose.

Anal segment of male deflexed through 40° distad of anal foramen, not angulate, apical margin shallowly V-shaped. Genital styles distinctly broad, dorsal margin straight, ventral and apical margins forming a deep curve with the apical angle as its tip; apical process a rather short stout rapidly tapering spine.

Ovipositor with third valvulae rather deep, distally rounded, setose, armed on distal margin with about 10 teeth.

Apart from the general plan of the male genitalia, the generic features that are most distinctive are the weak median depression of the frons, in which the median carina may or may not be developed, the three or four rows of short cells in the apical part of the tegmina, the subequal rounded angles and the feebly concave apical margin.

*Exoma robusta* Uhler, comb. n.

*Ormenis robusta* Uhler, 1901 : 515.

*Exoma viduata* Melichar, 1902a : 158, syn. n.

The ground colour of the tegmina is sometimes suffused with green. The writer has examined Uhler's material in the U.S. National Museum.

HAWAII: Morne à Cabrits, 8.viii.1931, 1 ♂, 1 ♀ (*J. G. Myers*).

*Euhyoptera* Fennah

Fennah, 1945 : 499. Orthotype, *Euhyoptera corticalis* Fennah, 1945 : 500.

*Euhyoptera maculipennis* sp. n. (figs. 37–39)

Frons a little broader than long (1·1 : 1). Antennae slightly bevelled on dorsal margin; ocelli distinct. Pronotum with a small acute eminence on each side behind eye, lateral lobes rounded apically; post-tibiae with 1 spine laterally, 2 spines apically and a row of 5 teeth between them, basal metatarsal segment apically with 2 spines and 5 teeth between them. Tegmina 3 times as long as broad at widest part, transverse veinlets of precostal area each with 2 or 3 rather weak granules, clavus with 3 distinct rows of granules and a short obscure fourth row, the first row extending to junction of claval veins. Costal margin convex in basal half, thence sinuate, apical angle rectangulately rounded, apical margin straight, sutural angle slightly obtusely rounded, commissural margin straight distad of claval apex.

Stramineous-buff; mesonotum mostly orange, with disc and a small spot on each side postero-laterally, dilute fuscous. Tegmina sordid ochraceous, a row of 5 round spots in costal cell, 2 small marks at humeral eminence, and 2 bold spots a short distance behind humeral eminence, piceous; 2 or 3 further spots at middle of corium, distal areolets adjoining anterior margin, and membrane, fuscous; veins concolorous except in region of subapical cells, where they are paler than the cells. Wings dilute fuscous, darker distally, with fuscous veins.

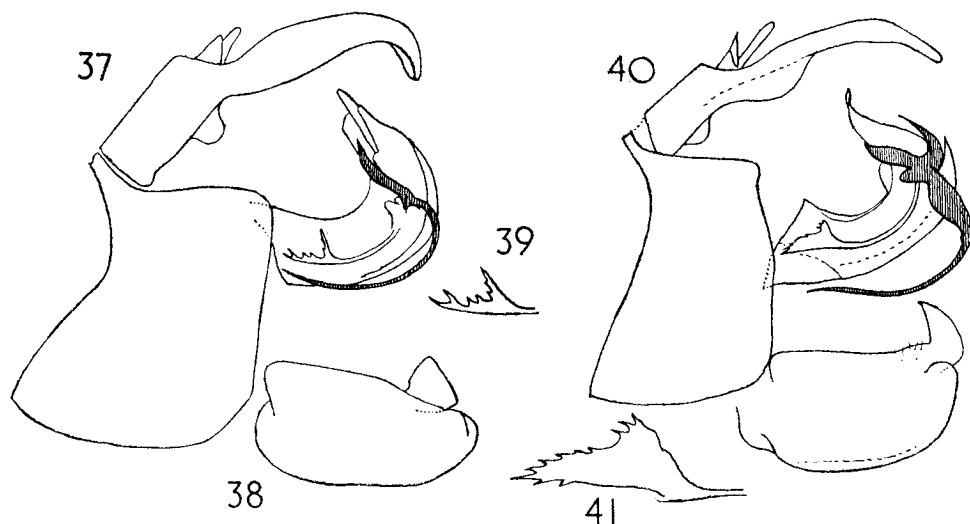
Anal segment of male long, moderately narrow, deflexed distad of anal foramen and more strongly so near apex, apical margin deeply incised, the incision extending rather less than half-way to anal foramen, a short lobe on ventral surface medially at one-third from base. Pygofer moderately long, with dorsolateral angles rectangulately rounded, not produced. Aedeagus tubular, curved upward distally, a flange on each side basally, with outer margin irregularly produced into spinose processes, and resembling a stag's horn; from this flange a sclerotised ridge extending along side of aedeagus to distal third; apical lobes of aedeagus each spatulate in posterior view, without an external spine; a long spinose process arising on each side at distal third, directed ventrad then curved cephalad, lying ventrolaterally to base of aedeagus. Genital styles moderately broad, ventral margin shallowly convex, apical margin short, strongly convex, separated from apical process by a short incision;

apical process almost equilaterally triangulate, slightly excavate anteriorly at base; dorsal margin of style almost straight.

*Male*: length, 3.9 mm.; tegmen, 5.0 mm. *Female*: length, 4.2 mm.; tegmen, 5.2 mm.

*Holotype* ♂, HAITI: Limbé, 29.vii.1931, 2098 (*J. G. Myers*), in B.M. (N.H.).  
*Paratypes*, 2 ♀, same data.

This species is aberrant in the form of the genital styles and in the single lateral post-tibial spine. The tegminal markings are rather similar to those found in the *acutissima* group of *Cyarda*, but the female genitalia show that this species is one of the Petrusini, whereas *Cyarda* is not.



FIGS. 37-41.—(37-39) *Euhyloptera maculipennis* sp. n.: (37) anal segment, pygofer and aedeagus, left side; (38) left genital style; (39) laterobasal flange of aedeagus, shown detached and enlarged. (40-41) *Euhyloptera priapus* sp. n.: (40) male genitalia, left side; (41) laterobasal flange of aedeagus, shown detached and enlarged.

#### *Euhyloptera priapus* sp. n. (figs. 40, 41, 42-45)

Vertex between eyes broader than long in middle line (3 : 1), anterior margin truncate or almost so. Frons broader at base than long in middle line (1.2 : 1), wider at base than at apex (1.4 : 1), disc shallowly hollowed. Post-tibiae laterally bispinose. Tegmina longer than broad (2.8 : 1), widest at one-quarter from base, narrowest at middle, almost as wide near apex as at level of humeral eminence, precostal area at widest part a little wider than costal cell, anterior margin strongly convex in basal third, thence sinuate, apical and anal angles broadly rounded, apical margin almost vertical, shallowly concave; base of clavus a little elevated, claval veins uniting at about one-quarter from apex, about 8 granules at point of union. Post-tibiae with 2 spines laterally, 7 apically, basal metatarsal segment with 2 spines and a row of 5 teeth between them.

Light testaceous or buff; frons, vertex, pronotum and tibiae except at lateral margins, dilute fuscous; mesonotum with disc and an obliquely transverse band in each lateral field darker castaneous-fuscous. Tegmina pale buff, 4 small spots in costal cell, a transverse line across humeral eminence, an obtusely triangular suffusion behind it, between *M* and *Cu*<sub>1</sub>, submarginal claval granules near base, a narrow line along sutural margin at base, and membrane, except veins, fuscous. Wings sordid white basally, dilute fuscous distally, veins fuscous.

Anal segment of male long, moderately narrow, strongly deflexed in distal third, apical margin deeply incised medially, the apex of each lobe acutely rounded. Pygofer moderately long with dorsolateral angles abruptly rectangularly rounded, not at all produced. Aedeagus tubular, curved upward distally, a minutely spiculate horizontal lobe on each side basally, and from this a sclerotised ridge extending along side of aedeagus to distal third; apical lobes of aedeagus each spatulate in posterior view, no spinose process present near their base; a long spinose process arising on each side of aedeagus in distal third, broad basally, and giving off a limb mesad that tapers caudad to an acuminate apex, then curved below aedeagus and rather abruptly narrowing, lying sublaterally below aedeagus almost to its base. Genital styles moderately broad, ventral margin shallowly convex, apical margin rather short, oblique, rather narrowly rounded near its dorsal end, and separated from

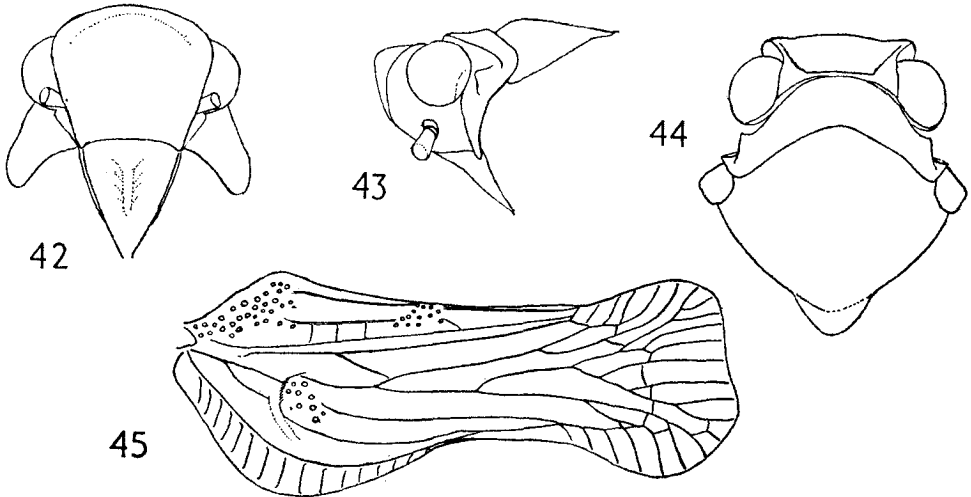


apical process by a moderately short incision, apical process relatively broad, produced dorsad, anterior margin almost straight, vertical, posterior margin rounded, dorsal margin of style basad of apical process straight.

*Male*: length, 4.2 mm.; tegmen, 5.5 mm.

*Holotype* ♂, HAITI: 20. viii. 1924 (*G. N. Wolcott*), in B.M. (N.H.).

This remarkable species is at once distinguishable from members of the genera *Cyarda* and *Acanthoflata* by the tegmina being relatively short and almost as wide at the apex as at the widest part, by the union of the claval veins being comparatively remote from the claval apex, and by the form of the male genitalia. From other species of *Euhyoletera*, it is separated by the shapes of the frons and vertex, and of the apical margin of the tegmen, and by the form of the genital styles and the aedeagal armature.



FIGS. 42-45.—*Euhyoletera priapus* sp. n.: (42) frons and clypeus; (43) head and thorax, lateral view; (44) vertex and pronotum; (45) tegmen.

*Euhyoletera haitiana* sp. n. (figs. 47, 48-51)

Frons slightly broader than long in middle line (1.1 : 1), a very shallow sulcus on each side, ecarinate medially; vertex very short, overlapped by pronotum, base of frons amply visible from above. Pronotum not extending to level of anterior margin of eyes, a weak eminence behind eye, not acuminate. Tegmina longer than broad (2.6 : 1), costal margin convex basally, thence weakly sinuate, precostal area at level of humeral eminence slightly narrower than costal cell, apical and anal angles rounded, the former a little more strongly than the latter, apical margin rounded truncate.

Testaceous; frons and pronotum with dilute fuscous suffusion, mesonotum dull orange-brown; mesopleura, mesocoxae and sometimes post-femora fuscous. Tegmina dilute fuscous, anterior margin narrowly pale ochraceous, pre-costal area basally, *Sc* + *R*, and clavus from base to middle, dark fuscous, *M* and *Cu* concolorous with cells; membrane fuscous, veins concolorous. Wings sordid white basally, dilute fuscous distally, veins fuscous.

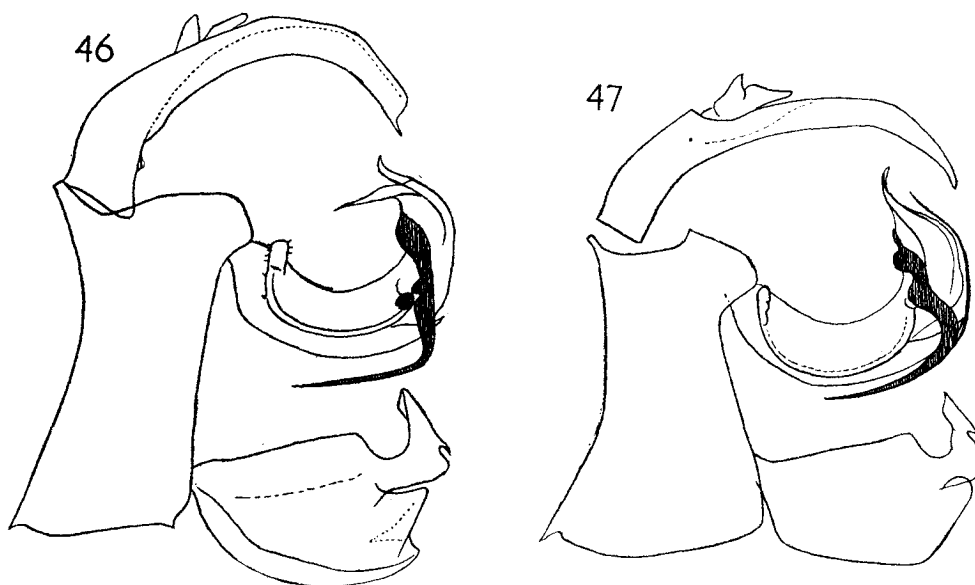
Anal segment of male long, narrow, deflexed distally, with a notch on apical margin extending half way to anal foramen. Pygofer with dorsolateral angles strongly produced caudad in a deeply rounded lobe. Aedeagus tubular, curved upward distally, a pair of short flanges basally, each minutely spinulose, and from the base of these on each side a sclerotised ridge curving ventrolaterally to distal third; apical lobes of aedeagus spatulate in posterior view, each with a small spine externally near base; a long spinose process on each side, arising subapically and curved mesoventrally then cephalad, giving off posteriorly at middle a very long slender filamentous process that lies along ventral surface of aedeagus to apex, and crosses its counterpart at about its mid-point.

Genital styles with apical process narrow, sickle-shaped, distally rounded and with a minute tooth at base posteriorly, directed ventrad, the whole process lying adpressed to apical margin to form a deep cleft.

*Male*: length, 4.0 mm.; tegmen, 5.2 mm.

*Holotype* ♂, HAITI: ix. 1929 (*J. G. Myers*), H. 51, in B.M. (N.H.).

This species is most readily recognisable by its size, tegminal shape and coloration, with veins *M* and *Cu* concolorous with the ground hue. The male genitalia are distinctive in that each of the apical lobes of the aedeagus has only a very small spine at the base.



Figs. 46, 47.—(46) *Euhyloptera simillima* sp. n.: male genitalia, left side. (47) *Euhyloptera haitiana* sp. n.: male genitalia, left side.

*Euhyloptera simillima* sp. n. (fig. 46)

Frons slightly broader than long in middle line (about 1.1 : 1), a very shallow sulcus on each side, ecarinate medially; vertex very short, overlapped by pronotum, base of frons amply visible from above. Pronotum not extending to level of anterior margin of eyes, a weak eminence behind eye, not acuminate. Tegmina longer than broad (about 2.7 : 1), costal margin convex basally, thence weakly sinuate, precostal area at level of humeral eminence as wide as costal cell, apical and anal angles rounded, the former a little more strongly than the latter, apical margin rounded-truncate.

Light fuscous; lateral margins of frons and vertex, sides of head and antennae, lateral lobes of pronotum posteriorly, tarsi and margins of tibiae, pallid buff; ventrites yellowish-brown, darker near margins. Tegmina fuscous; all veins, posterior half of clavus, and membrane dark fuscous.

Anal segment of male long, moderately narrow basally, widening distally, strongly and evenly deflexed distad of anal foramen, apical margin truncate, deeply incised medially, lateroapical angles each shortly produced in a spinose process. Pygofer moderately long with dorsolateral angles each produced caudad in a broadly quadrate lobe. Aedeagus tubular, curved upward distally, a flange on each side basally, with outer margin produced in minute spicules, from this flange a sclerotised ridge extending along side of aedeagus to distal third; apical lobes of aedeagus each spatulate in posterior view, with a moderately long spinose process arising externally near base directed cephalad; a long spinose process arising on each side at distad third, directed ventrad then abruptly curved cephalad. Genital styles moderately broad, ventral margin shallowly convex, apical margin short, strongly convex, separated from apical process by a short incision; apical process narrow, sickle-shaped, distally rounded and with a minute tooth at base posteriorly, directed ventrad.

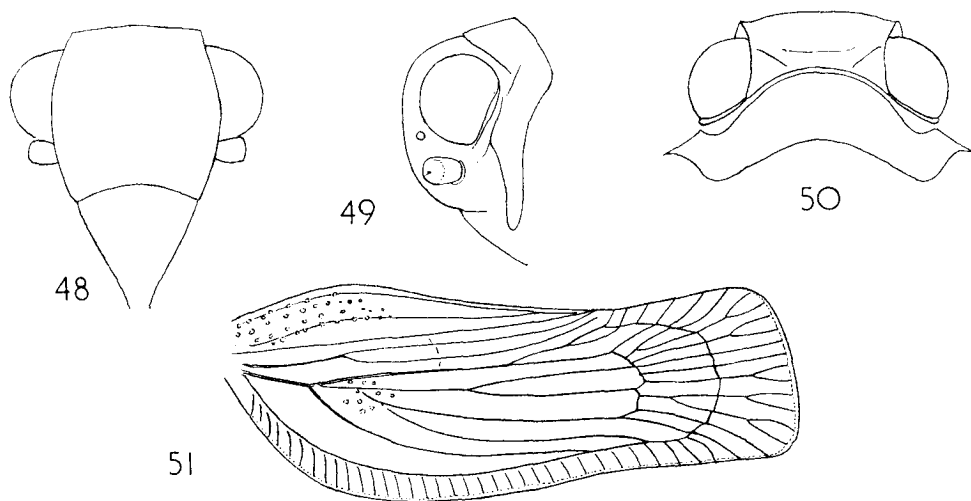
*Male*: length, 3.5 mm.; tegmen, 4.3 mm. *Female*: length, 3.0 mm.; tegmen, 4.8 mm.

*Holotype* ♂, HAITI: ix. 1929 (*J. G. Myers*), H. 42, B.M. 1930-190, in B.M. (N.H.)

*Paratypes*: 1 ♂ (H. 42), 2 ♀ (H. 38, H. 86), other data as above.

This species is very close to *E. haitiana*, and externally differs principally in the fact that all the longitudinal veins of the tegmina, particularly in the corium, are distinctly darker than the fuscous ground, whereas in *E. haitiana* veins *M* and *Cu*<sub>1</sub> are concolorous with the ground. In the male genitalia the aedeagus is furnished with a pair of stout

spinose processes dorsally at the apex, whereas these are very small in *E. haitiana*. The anal segment has the lateroapical angles narrowly acuminate produced; in *E. haitiana* they are rounded.



FIGS. 48-51.—*Euhyloptera haitiana* sp. n.: (48) frons and clypeus; (49) head in profile; (50) vertex and pronotum; (51) tegmen.

#### *Cyarda* Walker

Walker, 1858b : 121. Haplotype, *Cyarda difformis* Walker, 1858b.

#### *Cyarda walkeri* Metcalf

*Cyarda conformis* Melichar (not Walker), 1902a : 134.

*Cyarda walkeri* Metcalf, 1923a : 149.

It is not known what material provided the basis for Melichar's description of his interpretation of *Flatoides conformis* Walker, but it is evident that it refers to a species which occurs in Jamaica and of which the members are ten millimetres long. The evidence so far available indicates that, in the Greater Antilles, each of the large species of *Cyarda* is restricted to the island from which it was described, and it accordingly must be assumed that this species occurs only in Jamaica.

#### *Cyarda acuminipennis* Spinola (fig. 52)

*Poeciloptera acuminipennis* Spinola, 1839a : 422.

*Poeciloptera iniquipennis* Walker, 1858a : 107, *syn. n.*

Tegmina with apical angle rather broadly subacutely rounded, apical margin only moderately oblique, shallowly concave, anal angle broadly obtusely rounded, humeral eminence with a transverse piceous spot, and a second spot near to it, diffuse, V-shaped.

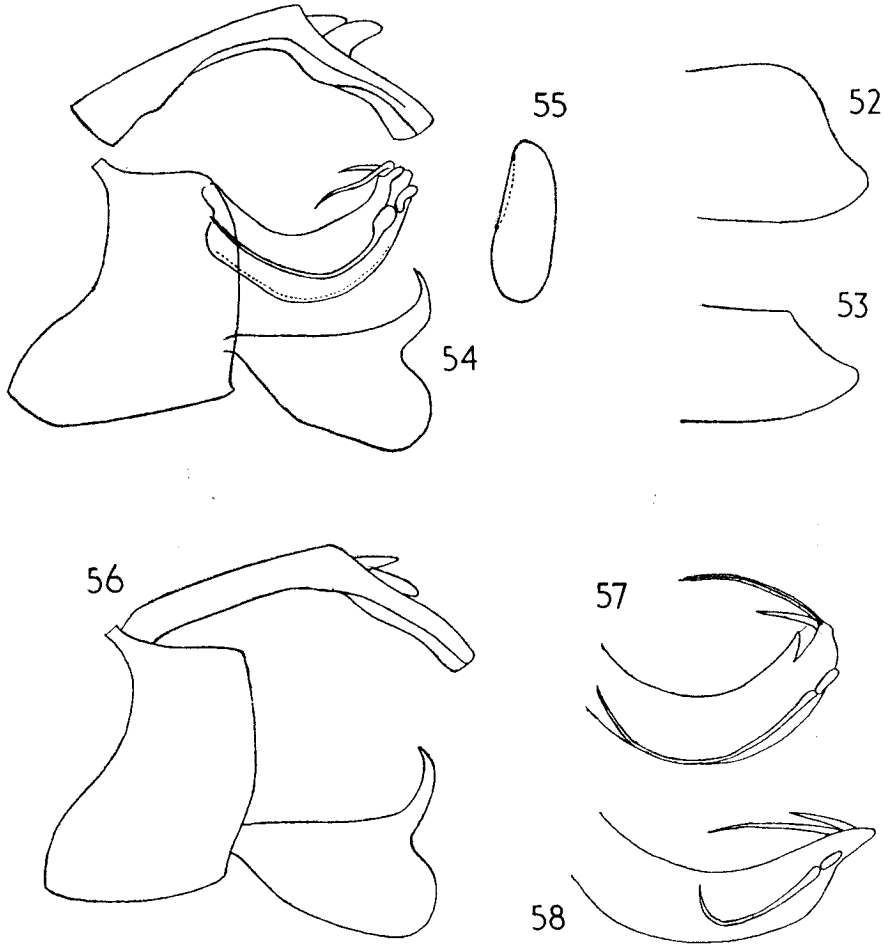
Anal segment of male relatively long, narrow, strongly deflexed in distal half, a moderately deep flange medially on ventral surface in distal half, lateral margins not produced ventrad. Aedeagus with a pair of flattened bifurcate processes at apex dorsally, and basad of these a pair of very long spinose processes, almost as long as aedeagus and crossing one another in middle line; a pair of long spinose processes arising laterally near apex, directed cephalad and lying closely against sides of aedeagus, moderately curved upward.

SANTO DOMINGO: Haina, 1920, 1 ♂ (*G. N. Wolcott*). This agrees with Spinola's description, including the markings on the tegmina, and is here taken as representing this species. The type specimen of *C. iniquipennis* (Walker) is a female from Haiti and its general form and markings indicate that it belongs to *acuminipennis*, with which it has accordingly been synonymised.

*Cyarda acuminipennis haitensis* Metcalf & Bruner, **stat. n.**

*Cyarda haitensis* Metcalf & Bruner, 1948 : 103.

The type locality of *C. haitensis* is Port au Prince, Haiti. A male and a female from this locality examined by the writer agree with the description and figure given by Metcalf and Bruner, and the male differs from the male from Santo Domingo only in the dorsal limb of the bifurcate aedeagal process being stouter and a little longer.



FIGS. 52-58.—(52) *Cyarda acuminipennis* (Spinola): apical margin of tegmen. (53) *Cyarda difformis* (Walker): apical margin of tegmen. (54-55) *Cyarda monae* sp. n.: (54) male genitalia, left side, with anal segment shown detached; (55) egg. (56-57) *Cyarda casuarinae* sp. n.: (56) pygofer, anal segment and left genital style; (57) aedeagus, left side. (58) *Cyarda sordida* sp. n.: aedeagus, left side.

*Cyarda minor* **nom. n.**

*Cyarda walkeri* Metcalf & Bruner, 1948 : 103 (not Metcalf, 1923).

Similar to *C. lycidas*, but smaller (total length of male 7.75 mm.) and, in the aedeagus, differing in the outermost pair of apical processes being relatively shorter than in *lycidas*, and in the ventrolateral pair of processes being more strongly recurved distally, so as to point caudad.

The species has so far been recorded only in the western half of Cuba. The total length of a male specimen is given as 7.75 mm. The name *walkeri* was proposed in

1923 by Metcalf for *conformis* Melichar, a species cited by Melichar only from Jamaica and stated to be 10 mm. long.

*Cyarda difformis* Walker (fig. 53)

Walker, 1858b : 121.

Female: length, 4.8 mm.; tegmen, 8.0 mm.

The type of this species, from Santo Domingo, is a female. The tegmina are pale buff and with two feeble brown spots behind the humeral eminence, and the principal veins are castaneous-fuscous. The shape of the apex is distinctive. The apical angle is acutely rounded, the apical margin is oblique and shallowly concave, and the anal angle is moderately obtuse and very abrupt.

*Cyarda monae* sp. n. (figs. 54, 55)

Vertex broader than long in middle line (2 : 1); frons longer in middle line than broad (about 1.2 : 1). Tegmina with apical angle very acutely rounded, apical margin very oblique, shallowly concave, anal angle distinct, obtusely subangulate.

Testaceous or tawny yellow; base of frons and disc of mesonotum, castaneous. Tegmina light orange-brown, about 5 very small spots in costal cell in second quarter of tegmen, humeral eminence and usually a short narrow oblique stripe behind it, and 4 or 5 ovate spots widely spaced between  $Cu_1$  and  $M$  in corium, dark fuscous; an irregular suffusion across cells  $Sc + R$  and  $M$  at middle, castaneous.

Anal segment of male rather long, narrow, deflexed through 70 degrees in apical half. Aedeagus with a deep ventral keel and with 3 pairs of spinose processes arising dorsally at apex, all directed cephalad, the apical pair short, very slender, and unpigmented, the inner pair relatively short and porrect, the outer pair rather more than twice as long as the inner, and shallowly curved mesocephalad distally; a pair of long spinose processes arising laterally at apex, shallowly curved and parallel to ventral margin of aedeagus in its basal third, then curved upward and becoming more shallowly so distally, reaching to basal fifth of aedeagus.

Anal segment of female short, ovate in dorsal view. Third valvulae of ovipositor armed distally with 12 teeth, 5 in a distal row, and 7 in a basal row.

Egg elongate ovoid, 0.8 mm.  $\times$  0.25 mm., in profile with sides subparallel, and with one pole more acutely rounded than the other, a seam extending from the more acutely pointed pole for about two-thirds of length of egg.

Male: length, 4.0 mm.; tegmen, 6.5 mm. Female: length, 4.0 mm.; tegmen, 7.0 mm.

*Holotype* ♂, JAMAICA: near Hope Gardens, 20.xi.1940, on *Lantana* (R. G. Fennah), in B.M. (N.H.). *Paratypes*, 14 ♂, 2 ♀, same data.

In the structure of the male genitalia this species is nearest to *C. fuscifrons* Metcalf & Bruner. It differs, however, in its relatively longer vertex, in the more strongly deflexed apical half of the anal segment, in the longer pair of apical spines not being at all sinuate, and in the apical portion of the lateral spines being less curved. In the tegmina the humeral eminence is castaneous-piceous, whereas it is very dilutely infuscate in *C. fuscifrons*; the first and second of the oval spots on  $Cu_1$  are separated by about half of the distance between the second and third, but by less than a third of the distance in *fuscifrons*; moreover, in the latter species the groups of granules distally in the clavus are marked by infuscation, but are not so marked in *C. monae*. *C. fuscifrons* has been taken on *Casuarina*, whereas *C. monae* was taken by the writer on *Lantana*. It is probable that it was this species that was taken by Van Duzee on *Lantana* in the same locality in 1906, and that was first attributed by him to *C. melichari* Van Duzee and subsequently to *C. acuminipennis* Spinola.

*Cyarda casuarinae* sp. n. (figs. 56, 57)

Vertex broader than long in middle line (1.7 : 1); frons longer in middle line than broad (slightly more than 1.1 : 1). Tegmina with apical angle acute, apical margin strongly oblique, not at all concave, meeting posterior margin distinctly, but in a very obtuse angle.

Sordid stramineous; base of frons and mesonotum, ferruginous. Tegmina light reddish-brown;

about 5 small spots in costal cell in basal half of tegmen, 5 larger ovate spots rather irregularly spaced between  $Cu_1$  and  $M$ , piceous; veins  $Sc + R$  and  $M$  at middle of tegmen, castaneous; sometimes diffuse castaneous marbling in this area; membrane fuscous, veins a little lighter. Wings dilute fuscous, veins fuscous.

Anal segment of male long, deflexed in apical half by  $45^\circ$ , apical half narrow, rather slender. Pygofer with dorsolateral angles subrectangulately rounded. Aedeagus with 3 pairs of spinose processes arising dorsally at apex, directed cephalad, one pair very short and slender, directed antero-laterad, the second moderately short, stout, the third about 3 times as long as the second; a pair of long spinose processes arising laterally subapically, directed ventrocephalad, then cephalad, and finally bent dorsocephalad, reaching near to base of aedeagus. Genital styles as figured.

*Male*: length, 3.7 mm.; tegmen, 5.5 mm.

*Holotype* ♂, JAMAICA: Falmouth, iv. 1960, on *Casuarina* (*F. D. Bennett*), in B.M. (N.H.). *Paratypes*, 4 ♂, same data.

This species is apparently close to *C. acutissima* Metcalf & Bruner but differs in the less strongly deflected distal half of the anal segment, and in the aedeagus, in the relatively lengths of the dorsal pairs of spinose processes, in the longest pair of processes not being sinuate, and in the relatively greater length of the ventrolateral processes. This species was collected on *Casuarina*, a host of *C. fuscifrons* Metcalf & Bruner in Cuba. It differs from *C. fuscifrons* in the relatively longer vertex, in the shape and relative lengths of the spinose processes of the aedeagus, and in the anal angle of the tegmina, which is less evident than in *C. fuscifrons*.

A female specimen from Kingston, Jamaica, listed by Metcalf and Bruner as a paratype of *C. acutissima*, is almost certainly to be referred to *C. casuarinae*.

#### *Cyarda sordida* sp. n. (fig. 58)

Vertex broader than long in middle line about (1.7 : 1); frons scarcely longer in middle line than broad at base. Tegmina with apical angle acute, apical margin not at all concave, almost confluent with sutural margin.

Tawny; discal area of vertex, pronotum and mesonotum, castaneous. Tegmina tawny, about 12 small round spots in precostal area and costal cell and 5 or 6 irregularly spaced between  $Cu_1$  and  $M$ , piceous, membrane infusate with veins a little lighter; area at base of clavus between granules fuscous-tawny, deepening basally to dark fuscous.

Anal segment of male long, deflexed in distal half through about  $65^\circ$ , apical half moderately narrow. Pygofer with dorsolateral angles subrectangulate. Aedeagus with 2 pairs of processes arising dorsally at apex, both directed cephalad, one pair short, the other slightly more than twice as long, and weakly incurved but not nearly meeting in middle line; a pair of long spinose processes arising laterally subapically, directed cephalad, then curved dorsad in apical third to point directly at the tips of the longer apical spines.

*Male*: length, 4.1 mm.; tegmen, 6.8 mm. *Female*: length, 4.8 mm.; tegmen, 7.2 mm.

*Holotype* ♂, U.S.A.: Florida (*H. Ashmead*), in B.M. (N.H.). *Paratypes* 3 ♀, same data.

This species is apparently close to *C. acutissima* Metcalf & Bruner. It differs in that the frons is narrower at the apex than at the base, and, in the aedeagus, in the longer dorsal spines being relatively stout and slightly incurved, not sinuate, and in the lateral spines being relatively straight in their basal two-thirds and more strongly curved in their distal third. It is also near *C. cubensis* Metcalf & Bruner, but differs in the frons being wider basally than apically, in the apical margin of the tegmina being straight, not at all concave, and in the anal angle being obscure. In the aedeagus, it differs in the longer pair of apical spines being shallowly incurved, not sinuate.

#### *Cyarda lycidas* sp. n. (figs. 59, 60)

Sordid stramineous, base of frons, vertex, pronotum and mesonotum, ferruginous-fuscous. Tegmina tawny; an obscure suffusion on humeral eminence and a more or less evident round spot very closely adjacent; 6 round spots in costal cell and 4, more distad, in precostal area, and 5 larger ovate spots irregularly spaced from  $Cu_1$  at base to  $M$  at level of node, piceous.

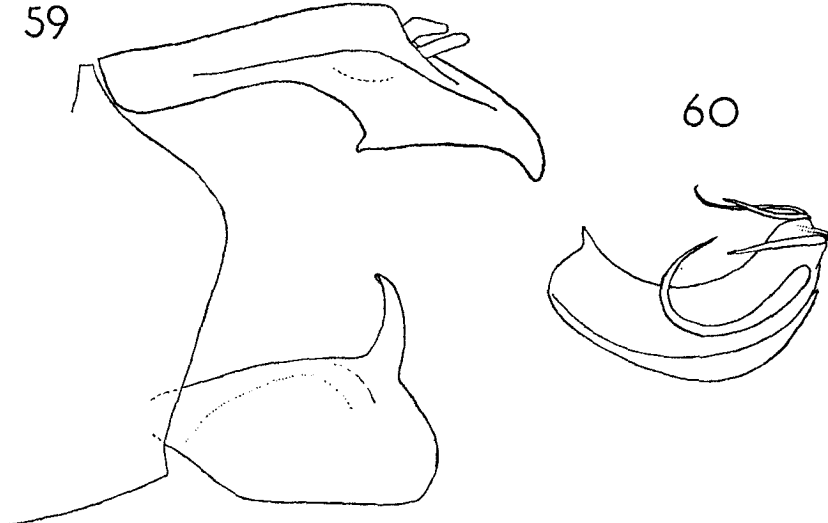
Anal segment of male moderately deflexed in distal half, rather widened distally and with lateral margins produced ventrad. Aedeagus with a moderately deep ventral keel and 3 pairs of spinose

processes dorsally at apex, all directed cephalad; the distal 2 processes of each side almost united at their base, the inner member relatively short and straight, the outer member moderately long and shallowly curved mesad; the dorsolateral pair of apical processes stout, about one-quarter as long as aedeagus; a pair of long spinose processes arising laterally before apex, directed cephalad and lying close against sides of aedeagus, for basal third of their length, then strongly recurved dorsad at middle and directed dorsocaudad at apex.

*Male*: length, 4.0 mm.; tegmen, 6.8 mm. *Female*: length, 4.8 mm.; tegmen, 8.0 mm.

*Holotype* ♂, CUBA: Soledad, 2.iii.1925 (*J. G. Myers*), B.M. 1937-789, in B.M. (N.H.). *Paratypes*, 1 ♂, 3 ♀, same data.

This species appears to be the geographical representative in Cuba of the Hispaniolan *acuminipennis*, from which it differs in the shape of the apical margin of the tegmina. The hood-like distal part of the anal segment of the male differs markedly from the narrow structure in *acuminipennis*, and there are no furcate processes at the apex of the aedeagus. This species appears to have been one of those assigned by Metcalf and Bruner to *C. acuminipennis* Spinola.



FIGS. 59, 60.—*Cyarda lycidas* sp. n.: (59) posterior margin of pygofer, anal segment and left genital style; (60) aedeagus, left side.

#### *Cyarda rex* sp. n. (figs. 61-65)

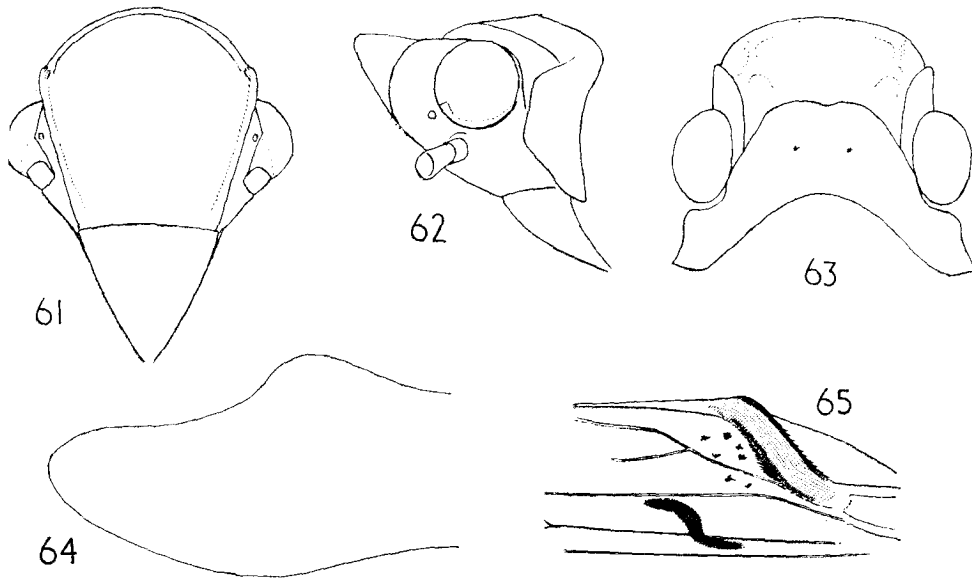
Vertex broader than long in middle line (nearly 2.4 : 1), frons as long in middle line as broad near base, distinctly broader at base than at apex. Head in profile acutely angulate. Tegmina with apical angle rather narrowly, but not acutely, rounded, apical margin strongly oblique and rather deeply concave, anal angle produced, obtusely rounded.

Ochraceous or light testaceous; frons, vertex and disc of pronotum with rather dilute fuscous suffusion; anterior margin of head, and mesonotum, ferruginous. Tegmina pale ochraceous, anterior half of corium distad of humeral eminence rather evenly suffused fuscous, with veins orange-brown, humeral eminence suffused dilute yellowish-fuscous, a short well-defined shallowly sinuate line between *M* and *Cu* behind humeral eminence dark fuscous or chocolate brown, veins in posterior half of corium and on clavus yellowish-brown, a single spot at claval apex, fuscous; membrane infuscate with veins concolorous, or a little paler.

*Female*: length, 6.7 mm.; tegmen, 11.0 mm. Total length to apex of closed tegmina, 12.2 mm.

*Holotype* ♀, CUBA: 1903 (*J. T. Barnes*), B.M. 1903-204, in B.M. (N.H.).

This species is distinguished by its large size, by the acutely angulate profile of the head, by the shape of the apical margin of the tegmina, and by the diffuse and light suffusion over the humeral eminence in combination with a short sinuate bold fuscous stripe behind it. It differs from *C. lycidas* in the proportions of the vertex and shape of the head in profile and in the shape of the tegmina. Unlike those of *C. lycidas*, the tegmina have no rows of spots in the costal cell or along *Cu*<sub>1</sub> and *M*.



FIGS. 61-65.—*Cyarda rex* sp. n.: (61) frons and clypeus; (62) head in profile; (63) vertex and pronotum; (64) apical margin of tegmen; (65) basal portion of corium of left tegmen, showing typical markings.

*Cyarda regina* sp. n. (figs. 66-67)

Vertex broader between eyes than long in middle line (2.6 : 1); frons as long in middle as broad near base, wider at widest part than at apex (2 : 1). Tegmina longer than broad (3.5 : 1), apical angle rather acutely rounded, apical margin distinctly concave, rather oblique, anal angle obtusely rounded.

Pale tawny; vertex light reddish-brown, pronotum dilute fuscous; mesonotum reddish-brown, a transverse band in each lateral field dilute fuscous. Tegmina pale tawny, sometimes with a light greenish tinge; 2 short sublinear spots overlying humeral eminence and 2, sometimes 3, spots behind it, castaneous-piceous; anterior veins of corium shortly distad of humeral eminence light to dark castaneous; tegmina distad of claval apex fuscous, veins concolorous or a little lighter.

Anal segment of male strongly deflexed in distal two-fifths, not widened distally, lateral ventral margins shallowly convex in basal half, a deeply convex median flange ventrally in distal two-fifths. Pygofer rather long, dorsolateral angles obtusely rounded. Aedeagus with a pair of bifurcate processes dorsally at apex directed cephalad, the anterior limb three-fifths length of the posterior; a pair of long, rather slender, spinose processes arising laterally at apex, directed cephalad, reaching almost to base of aedeagus and crossing one another in middle line distally; a pair of shallowly curved spinose processes arising ventrolaterally at one-third from apex, directed cephalad, scarcely reaching as far basad as middle of aedeagus.

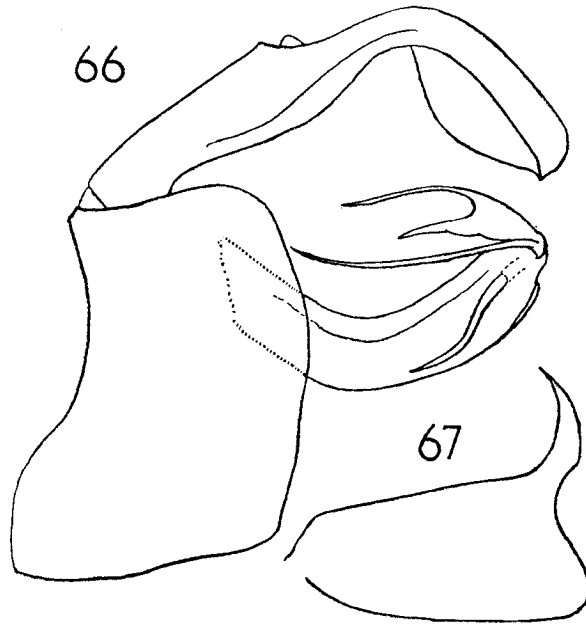
*Male*: length, 6.0 mm.; tegmen, 8.8 mm. *Female*: length, 6.5 mm.; tegmen, 10.2 mm.

*Holotype* ♂, HAITI: 20.viii.1924 (G. N. Wolcott), in B.M. (N.H.). *Paratype*, 1 ♀, same data, 1932-279.

This species is distinguished by size, by the presence of two or three distinct spots behind the humeral eminence, and by the strongly sinuate tegminal apex. In the structure of the aedeagal armature, the ventrolateral spines are relatively much shorter than in *C. acuminipennis*, and the dorsal limb of the apical bifurcate processes is relatively long. The anal segment differs from that of *C. acuminipennis* in having a remarkably deep median flange on the ventral surface.

The genus *Cyarda* Walker, as recognised at present, includes all Flatidae with a broadly produced vertex, tegmina that are at least 3.5 times as long as broad, and have an oblique sinuate apical margin, and an ovipositor in which the third valvulae are furnished with spines. It is now proposed to define three concepts within this group, separable as follows.





FIGS. 66-67.—*Cyarda regina* sp. n.: (66) pygofer, anal segment of male and aedeagus, left side; (67) left genital style.

- 1 Claval veins uniting very close to apex of clavus; more than six granules behind humeral eminence; antennae with second segment cylindrical, much longer than broad, and with an oblique facet dorsally at apex. Lateral margins of vertex curving evenly into lateral margins of frons. Mesonotum not at all bombinate anteriorly. Post-tibiae with six spines at apex . . . . . *Cyarda* Walker
- Union of claval veins remote from claval apex; not more than six granules behind or near humeral eminence; antennae with second segment not cylindrical, or, if so, not longer than broad, without an oblique facet dorsally at apex. Lateral margins of vertex meeting lateral margins of frons subrectangulately or acutely. Mesonotum more or less bombinate anteriorly. Post-tibiae with eight spines at apex . . . . . 2
- 2 Antennae with second segment subglobose, not or scarcely longer than broad, not bevelled apically. Post-tibiae with one spine laterally. Granulation on clavus restricted to base of cell between claval veins. Vertex not twice as broad as long in middle line . . . *Stenocyarda* gen. n.
- Antennae with second segment cylindrical, about as long as broad, bevelled apically on ventral (outer) margin. Post-tibiae with two spines laterally. Granulation on clavus extending along cell between claval veins almost to their union. Vertex twice as broad as long in middle . . . *Afrocyarda* gen. n.

*Stenocyarda* gen. n.

Vertex not twice as broad as long, apical margin carinate, strongly convex, lateral margins of vertex meeting lateral margins of frons subrectangulately, frons longer than broad, about as wide at base as at apex, antennae with second segment subglobose, not or scarcely longer than broad, not bevelled near apex, ocelli very prominent. Mesonotum rather bombinate anteriorly; post-tibiae with 1 spine laterally, 8 apically, basal metatarsal segment with 2 spines apically and a row of 5 or 6 small teeth between them. Tegmina more than 3 times as long as broad, wide basally, where anterior margin is strongly convex, then narrow for remainder of length with costal margin weakly sinuate; not more than 6 granules adjacent to humeral eminence; clavus with veins uniting much before apex,

at about middle of clavus, granulation almost completely restricted to base of clavus and to junction of claval veins.

Female with anal segment large. Ovipositor with third valvulae beset with teeth on posterior margin.

Type species, *Cyarda ocreata* Hesse, 1925a: 167.

This genus is distinguished by the characters given in the key above.

*Stenocyarda angustata* (Melichar), **comb. n.**

*Cyarda angustata* Melichar, 1902a : 135.

*Afrocyarda* gen. n.

Vertex extremely short, almost overlapped by pronotum, apical margin transverse, lateral margins of vertex meeting lateral margins of frons acutely, base of frons broadly visible from above; frons not longer than broad, wider at base than at apex, lateral margins arcuate; antennae with second segment short, only little longer than broad, cylindrical, distally truncate, and with outer (ventral) margin slightly bevelled; ocelli distinct. Mesonotum only moderately elevated anteriorly; post-tibiae with 2 spines laterally, 8 apically, basal metatarsal segment with 2 spines apically and a row of 7 teeth, each accompanied by a narrow scale, between them. Tegmina more than 3 times as long as broad, wide basally, where costal margin is convex, rather narrower, for remainder of length, with costal margin weakly sinuate; 4 to 6 obscure granules adjacent to humeral eminence, and usually fewer; clavus with veins uniting markedly before apex, at about two-thirds from base, granulation extending distad between claval veins almost to their junction.

Female with anal segment large. Ovipositor with third valvulae beset with teeth on posterior margin.

Type species, *Cyarda truncata* Hesse, 1925a: 168.

This genus is distinguished by the characters given in the key. It appears to have been derived from the same stock as *Stenocyarda*, and at present contains only the type species.

*Scarposa* Uhler

Uhler, 1895a : 72. Haplotype, *S. tumida* Uhler.

*Scarposa tumida* Uhler (figs. 68–76)

Uhler, 1895a : 73.

Head with eyes distinctly narrower than thorax. Vertex twice as broad as long, hollowed in middle, anterior margin sinuate. Frons about as long as broad, curved, broadly hollowed longitudinally on each side of middle line, median carina present in basal three-quarters, absent distally, lateral carinae feebly present in basal two-thirds, each passing into a distinct callused eminence at base; genae wide. Pronotum shorter than vertex, disc flat, anterior border convex, a depression on each side of middle line, a small blunt spine behind each eye. Post-tibiae bispinose. Tegmina slightly more than twice as long as wide at widest part, costal area as wide as costal cell, costal margin strongly convex to node, rather deeply and broadly concave at node, apical margin distinctly concave, commissural margin angulately bent at apex of clavus making tegmen appear constricted across nodal line, apical and sutural angles prominent, rounded; *R* forking distad of middle of tegmen, *M* forking at middle, *Cu* forking basad of *M* about midway along claval suture. Wings with apical angle acute (about 80°), rounded, *R* with a small fork near margin, *M* forked once.

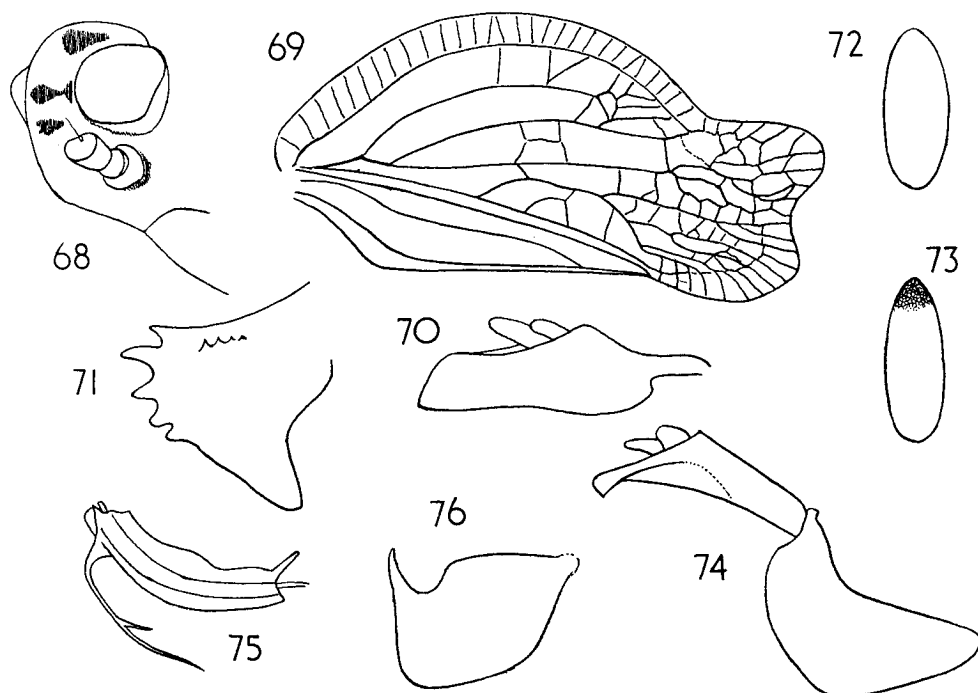
Male genitalia as figured.

Anal segment of female ovoid, apical margin entire, no percurrent groove along middle. Third valvulae large, dorsal margin straight, ventral margin deeply excavated, apical margin convex, armed with 4 stout teeth and a horizontal row of 3 or 4 small teeth on inner face below dorsal border.

Egg elongate ovoid, 1.0 mm. × 0.3 mm. smooth, slightly broader at one pole, minutely hexagonally reticulate at narrower end.

GRENADA: Grand Etang, in forest undergrowth, 1 ♀, 3.xi.1943 (*R. G. Fennah*).

This female agrees perfectly with a cotype from St. Vincent, and until comparison of male genitalia makes possible a more rigorous comparison of the forms from both islands it must be assumed that only one species is involved. The present oppor-



FIGS. 68-76.—*Scarposia tumida* Uhler: (68) head in profile; (69) tegmen; (70) anal segment of female, right side; (71) third valvula of ovipositor, left side, mesal surface; (72) egg, lateral view; (73) egg, frontal view, with detail of sculpturing shown at one pole; (74) anal segment and pygofer, right side (from lectotype); (75) aedeagus, right side (from lectotype); (76) right genital style (from lectotype).

tunity is taken of figuring the genitalia of the male cotype from St. Vincent, in the B.M. (N.H.). This bears the labels "*Scarposia tumida* Uhler, ♂" and "St. Vincent W.I., H. H. Smith, 1907-66 (det. Uhler)" and is here designated as the lectotype.

#### *Eurocalia* Van Duzee

*Eurocalia* Van Duzee, 1907a : 40. Haplotype, *Eurocalia collaris* Van Duzee, 1907a : 41. *Flatidula* Metcalf & Bruner, 1948 : 112. Orthotype, *Flatidula luella* Metcalf & Bruner, 1948 : 112, syn. n.

The writer has seen the type specimen of the Jamaican *Eurocalia collaris*. The frons is relatively shorter than that of *Flatidula luella*, but in generic characters, to which the double row of areolets in the middle part of the costal area appear to belong, the two species agree well.

#### *Flatoidinus* Melichar

Melichar, 1923a : 117. Orthotype, *Poeciloptera conviva* Stål, 1862e : 13.

#### *Flatoidinus monae* sp. n. (figs. 77-79)

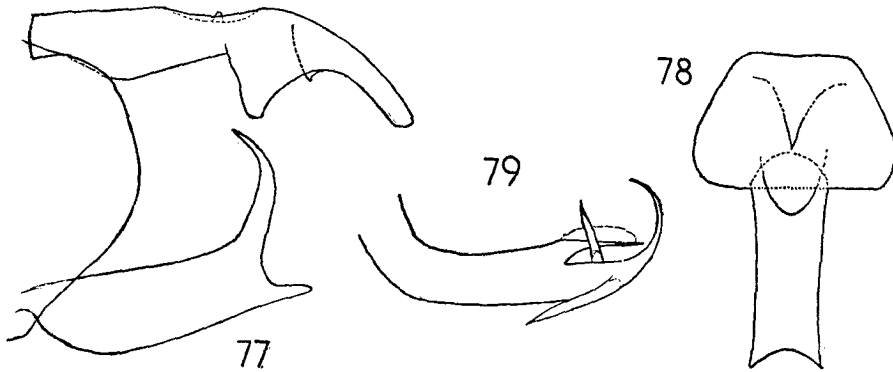
Vertex broader than long (1.4 : 1), obtusely subangulate anteriorly, sides of head in lateral view shorter than eye, only slightly acutely angulate anteriorly; frons longer than broad (1.1 : 1), median and lateral carinae very feebly indicated in basal two-thirds, absent distally. Pronotum with anterior margin convex, almost transverse medially, posterior margin shallowly excavated. Tegmina with costal area slightly convex, not undulate, apical margin rounded-truncate, sutural angle 85°, costal area about twice as wide as costal cell at one-third from base, apical line uneven but distinct, nodal line subparallel to apical margin, marked by irregular cross-veins; about 16 areoles along apical margin behind *R* to apex of clavus; *Sc* simple to apex, *R* forking five-twelfths from base, *M* forking basad of *R* fork, *Cu* forking just basad of *M* fork. Post-tibiae with 3 spines laterally.

Testaceous; apex of vertex and a stripe on each side of middle line, a spot near ocelli and a horizontal stripe before eyes, base of frons, a spot on each side of middle line of pronotum, and a row of spots extending to lateral margin, a pair of spots on anterior margin of mesonotum, an irregular spot on each side near tegulae, a pair of spots at base of lateral carinae, and base of scutellum, fuscous-piceous. Eyes grey with purple bands. Tegmina yellowish-testaceous; about 12 small spots, singly or in pairs, in costal area, a thin curved line from tegula to costa just in front of humeral callosity, a spot basad of humeral callosity, irregular linear spots on each side of *Sc*, a spot in basal half of *R*, one near *M* fork, one near *Cu* fork and at base of *Cu*, subapical areoles at base, apical areoles apically, fuscous-piceous. Wings milky, veins stramineous. Insect in life powdered greenish-grey.

Anal segment of male with 2 deflexed processes laterally. Aedeagus tubular with a ventral pair of straight spines arising subapically and directed anteriorly below aedeagus, apically a pair of slender spinose processes evenly curved upward and forward, arising distinctly basad of these a shorter and stouter pair curving outward and upward then inward and forward. Genital styles narrow with dorsal and ventral margins parallel, apical margin very oblique, apical process a long stout recurved spine.

Pregenital plate with an acute pointed eminence medially, without notches. Ovipositor with third valvulae beset with 14 spines in 2 rows, 5 spines in the outer row.

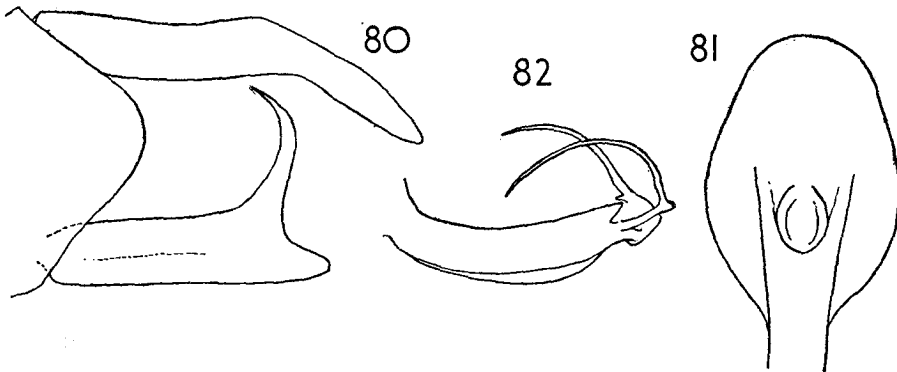
*Male*: length, 6.4 mm.; tegmen, 7.3 mm. *Female*: length, 7.2 mm.; tegmen, 8.3 mm.



FIGS. 77-79.—*Flatoidinus monae* sp. n.: (77) posterior margin of pygofer, anal segment of male, and left genital style; (78) anal segment of male, dorsal view; (79) aedeagus, left side.

*Holotype* ♂, JAMAICA: Hope, Mona Great House, 2.xi.1940, on jasmine (*R. G. Fennah*), in B.M. (N.H.). *Paratypes*, 3 ♂, 3 ♀, same data.

Males of this species were compared with the types of *Flatoides conformis* Walker and *F. cervinus* Walker from Jamaica, and of *F. punctatus* Walker (*Elidiptera*) from North America, and were found to differ from all in the shape of the aedeagus, and from the first two in the shape of the anal tube. It differs from all Cuban and Puerto Rican species in the shape of the anal segment and of the aedeagal spines.



FIGS. 80-82.—*Flatoidinus litoralis* sp. n.: (80) posterior margin of pygofer, anal segment of male, and left genital style; (81) anal segment of male, dorsal view; (82) aedeagus, left side.

*Flatoidinus litoralis* sp. n. (figs. 80–82)

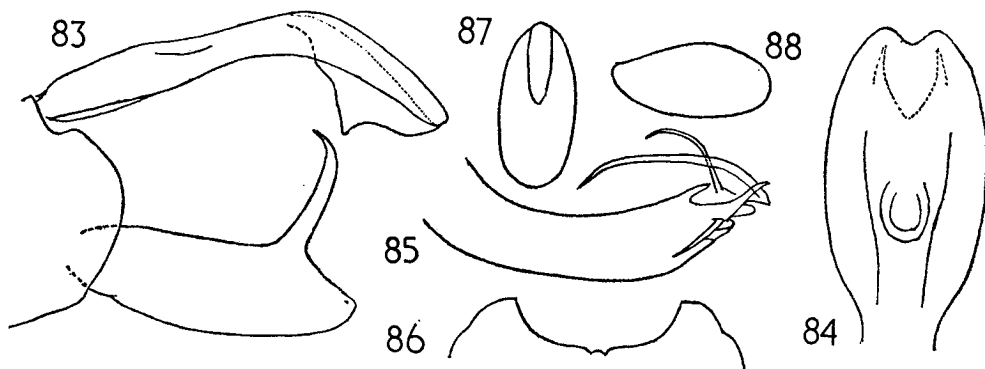
Greyish-testaceous; base of frons, 2 lines on genae before eyes, 2 longitudinal lines on vertex, pronotal pustules, basal half of tegulae, 4 small spots on disc of mesonotum and a smaller spot laterad, about 12 small spots on costal area and 7 on corium and a small spot at apex of each apical areole, fuscous.

Anal segment of male deflexed apically through 35°, apical margin entire, lateral and median lobes absent. Aedeagus tubular, a pair of spines arising at apex, curving dorsally to point anteriorly; a second pair, slightly shorter than preceding, and more slender, arising apically, directed vertically then curved anteriorly, with a distinct peg-like eminence on anterior margin near base.

*Male*: length, 7.4 mm.; tegmen, 8.1 mm.

*Holotype* ♂, ANTIGUA: Cades Bay, 6.viii.1943, on *Acacia* sp. (R. G. Fennah), in B.M. (N.H.). *Paratypes*, 2 ♂, same data.

This species is well distinguished from *caesalpiniae* by the absence of a median vertical flange in the apical half of the anal segment and by the shape of the vertical processes of the aedeagus.



FIGS. 83–88.—*Flatoidinus caesalpiniae* sp. n.: (83) posterior margin of pygofer, anal segment of male, and left genital style; (84) anal segment of male, dorsal view; (85) aedeagus, left side; (86) posterior margin of seventh sternite of female; (87) egg, frontal view; (88) egg, lateral view.

*Flatoidinus caesalpiniae* sp. n. (figs. 83–88)

Vertex broader than long (1.3 : 1), obtusely subangulate anteriorly, frons longer than broad (1.2 : 1), ecarinate. Pronotum scarcely as long as vertex, anterior margin convex, transverse medially, posterior margin concave. Post-tibiae bispinose. Tegmina with costal margin slightly convex, apical margin rounded, slightly oblique, sutural angle about 80°, costal area about twice as wide as costal cell at one-third from base of tegmen, apical line uneven but distinct, nodal line parallel to apical margin, irregular, a subapical line, incomplete anteriorly, near apical line, nodal series of areoles equal in length to apical and subapical combined, about 18 areoles along apical margin from *R* to clavus.

Pronotum testaceous, a black spot on each side of middle line, a row of darker dots extending to lateral margin; mesonotum testaceous with a broken line inside lateral carinae, a larger spot on basal margin outside lateral carinae, piceous. Vertex pale yellow, fuscous at apex, a short dark stripe on each side of middle line; frons, except at base, clypeus, genae and antennae, pale yellow, frons basally fuscous, a spot on antennae dorsally, a spot near each ocellus, and a horizontal stripe before eyes, fuscous-piceous; eye purplish, or grey with purplish bands. Tegmina stramineous, costal area with 12 small spots singly or in pairs, a large spot over humeral callosity (sometimes absent), a spot on each side of *Sc* near apex, a spot at node, one at *M* fork, and one behind *R* fork, a line of 4 or 5 spots from middle of tegmen to node, an irregular line of spots from apex of clavus across tegmen to beginning of apical line, an interrupted line from apex of clavus along and just distad of apical line, a triangular spot in each apical areole marginally, a spot adjoining *Cu* at one-third and another at two-thirds from base, about 4 spots on clavus adjoining commissural margin, fuscous. In some specimens the larger spots may appear as broken patches. Wings pallid, veins stramineous. Insect in life powdered greenish-grey.

Anal segment of male devoid of median ventral process near base, deflexed apical part about one-third of total length, folded into a subvertical plate distally with a small point at apex. Aedeagus with a pair of stout spines arising dorsally at apex and directed anteriorly for three-quarters of length of aedeagus; just basad of these a pair of transparent slender processes directed vertically upward

and curving anteriorly near tip; a pair of short spines ventrally directed ventrocephalad. Genital styles with dorsal and ventral margins parallel, apical margin very oblique, apical process a long curved spine.

Pregenital sternite of female broadly concave, with a small convexity medially, this weakly notched at each side. Anal segment short, broadly rounded. Ovipositor with third valvulae beset on distal margin with 22 teeth in a double row, triple for a short distance.

Egg oval in anterior view, rhomboidal in profile, flattened along opercular face, walls thick, very finely and minutely reticulate; length 1.0 mm., breadth 0.35 mm.

*Male*: length, 7.0 mm.; tegmen, 7.8 mm. *Female*: length, 8.8 mm.; tegmen, 9.6 mm.

*Holotype* ♂, MONTERRAT: Plymouth, 9.vi.1939 on *Acacia riparia*, *Tecoma leucoxylon* and *Caesalpinia bundacella* (*R. G. Fennah*), in B.M. (N.H.). *Paratypes*, 19 ♂, 32 ♀, same data (one paratype in U.S.N.M.).

This species is allied to *F. olivaceus* Metcalf & Bruner, but differs in phallic armature and form of the male anal segment.

#### *Flatoidinus caesalpiniae nevisanus* subsp. n.

Tegmina without a bold pattern of fuscous-piceous markings.

Aedeagus with longer dorsal spines relatively longer than in typical subspecies, and, in dorsal view, evenly curved outward; vertical filament evenly curved; spines arising on each side ventrally at apex, directed ventrocephalad, half as long as in typical subspecies.

*Holotype* ♂ of subspecies, NEVIS: Charlestown, i.1942, on *Acacia* sp. (*R. G. Fennah*), in B.M. (N.H.). *Paratypes*, 18 ♂, 31 ♀, same data.

This subspecies is distinguished from the typical subspecies by the absence of bold markings on the tegmina and by details of aedeagal ornamentation. In the typical subspecies, the longer dorsal spines, when viewed from above, are slightly sinuate and curve outward in their apical third, the vertical filament is bent almost subangulately, and the ventral spines are distinctly longer.

#### *Atracodes Melichar*

Melichar, 1902a : 174. Logotype, *Atracodes indutus* Melichar, 1902a : 225.

#### *Atracodes longifrons* sp. n. (figs. 89-96)

Vertex longer than broad between eyes (1.3 : 1); frons longer than broad (1.5 : 1), basal margin subacutely produced, a sulcus on each side laterally in basal half, lateral margins carinate, shallowly convex, slightly but abruptly produced laterad at level of antennae, no carinae on clypeus. Pronotum long, half as long as mesonotum without scutellum; mesonotum devoid of median carina, lateral carinae only feebly indicated at base. Post-tibiae with 3 spines before apex. Costal area wide, costal margin sinuate with 4 or 5 lobes, *Sc* simple, *R* forking three-eighths from base of tegmen, *M* forking markedly basad of *R* fork, *Cu*<sub>1</sub> forking slightly basad of *M* fork; base of *R* and *M*, *R* fork, *M* 1 + 2 and *R* and *M* near nodal line granulate, nodal line parallel to apical margin, marked by irregular cross-veins, apical line uneven but distinct; clavus granulate near base.

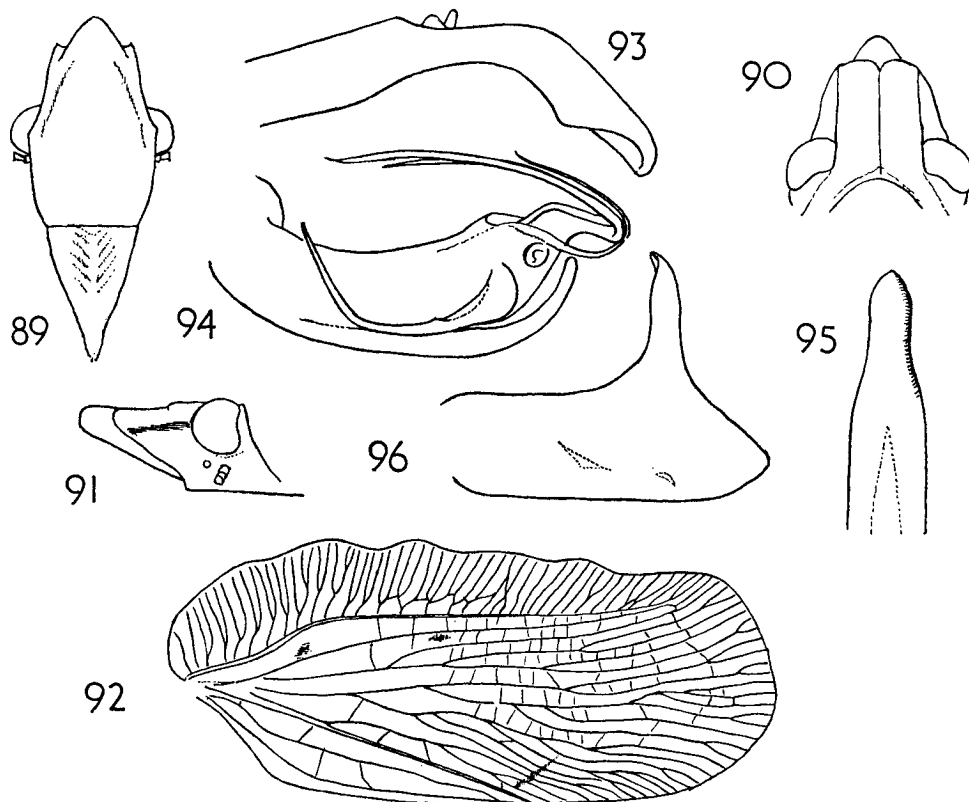
Vertex and frons pale yellow-brown, sometimes fuscous at junction; a dark horizontal stripe before eye, eyes brownish, banded with purple. Pronotum pale yellowish-brown, mesonotum darker, a large dark spot outside lateral carinae at base, a small spot on each side of middle line at base; legs testaceous. Tegmina stramineous; a small spot on humeral callosity, a spot between *Sc* and *R* just distad of *R* fork, a short curved line just distad of *R* fork and *M* fork, a spot behind costa at node, an oblique line from middle of nodal line to near apex of clavus, a spot in apical quarter of clavus, a series of small dots along commissural margin, and several spots between and on apical veins and in apical areoles near margin, piceous. Wings milky, veins pale. Insect in life powdered greyish-green.

Anal segment of male devoid of median ventral process, expanded laterally in apical quarter. Aedeagus with 3 pairs of spines dorsally at apex, one pair large, stout, extending anteriorly for two-thirds length of aedeagus, the second pair equally stout, and about two-thirds as long, the spines of each pair crossing one another distally, the third pair slender, less than half length of the first and lying behind and between the first and second pairs; a curved spinose process on each side ventro-laterally, directed anteriorly, then upward, but not recurved distally; apical margin of periandrium ventrally produced in a narrow lobe acutely rounded at apex. Genital styles with apical process a vertical spine slightly curved anteriorly in upper half.

*Male*: length, 10.5 mm.; tegmen, 12.8 mm. Length to tip of closed tegmina, 14.2 mm.

*Holotype* ♂, DOMINICA: 10.iii.1916, in B.M. (N.H.).

This species is distinguished by the angulate interruption of the lateral margins of the frons near the level of the antennae, and by the relative length and the degree of curvature of the aedeagal spinose processes.



Figs. 89-96.—*Atracodes longifrons* sp. n.: (89) frons and clypeus; (90) vertex; (91) head in profile; (92) tegmen; (93) anal segment of male, left side; (94) aedeagus, left side; (95) apex of ventral margin of phallobase, posteroventral view; (96) left genital style.

*Atracodes sanctaeluciae* sp. n. (figs. 97-100)

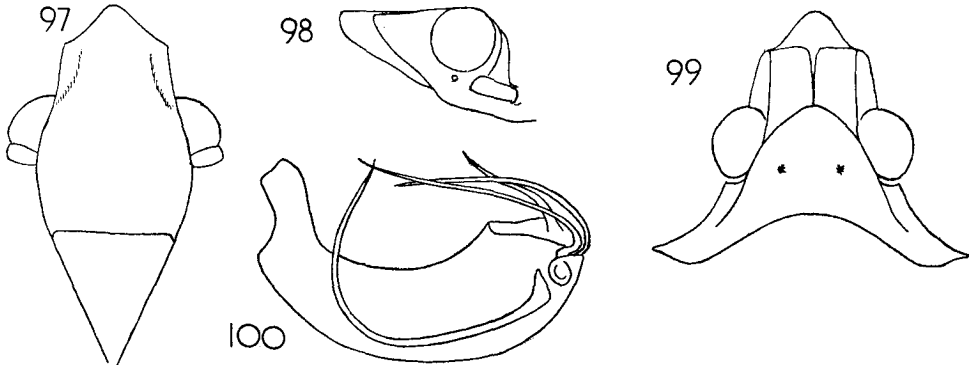
Vertex, including base of frons, slightly longer in middle line than broad between eyes (1.1 : 1), anterior margin of disc broadly convex with a distinct incision at middle. Frons longer in middle line than broad (1.5 : 1), produced dorsad in middle at base, lateral margins shallowly sinuate, not abruptly bent near level of antennae, disc ecarinate, a shallow sulcus on each side sublaterally. Mesonotum medially ecarinate, lateral carinae indicated only at base. Post-tibiae with 3 spines laterally, 6 apically, basal metatarsal segment with 2 spines and 5 small teeth. Tegmina with costal area nearly 3 times as wide as costal cell, costal area wide to node, costal margin sinuate, with 5 lobes, *Sc* simple, *R* forking at about three-eighths from base of tegmen, *M* forking basad of *R* fork, *Cu* forking slightly basad of *M* fork, nodal line indicated by rather irregular transverse veins, subparallel to apical margin; apical line of transverse veinlets uneven, subparallel to apical margin.

Dull green, heavily powdered greyish-white. Each compartment of disc of vertex at middle, base of frons, anterior margin of mesonotum and a small spot on each side of middle at base, fuscous. Tegmina green, subhyaline, anterior and apical margins narrowly, irregular spots in corium and a fascia from near apex of clavus to nodal line in *M*, ferruginous, the whole powdered greyish-white, with light reddish-brown lines arranged approximately as in *Atracodes indutus* Melichar (1902a, pl. 8, fig. 7).

Anal segment of male in profile rather narrow, deflexed in distal third, lateral margins weakly sinuate, a fine low ridge ventrally along middle line. Aedeagus with 3 pairs of slender spinose processes dorsally, 2 pairs each more than half as long as aedeagus, and arising at apex, the third shorter,

and arising subapically; a long upcurved spinose process arising laterally near apex, directed cephalad for half of length of aedeagus then strongly upcurved; phallobase ventrally with distal margin produced dorsocaudad in a narrowly subtriangular lobe. Genital styles with apical process vertical, slightly curved anteriorly in its distal half.

*Male*: length, 10.1 mm.; tegmen, 11.5 mm.



FIGS. 97-100.—*Atracodes sanctaeluciae* sp. n.: (97) frons and clypeus; (98) head in profile; (99) vertex and pronotum; (100) aedeagus, left side.

*Holotype* ♂, ST. LUCIA: Castries, 4.xi.1935 (*H. E. Box*), in B.M. (N.H.).

This species is distinguished from *P. lichenoides* Metcalf & Bruner, *P. tortrix* Guérin-Ménéville and *P. fasciculosus* Melichar by having an additional pair of processes on the aedeagus, and from *P. albus* Caldwell by the form of the aedeagal spines and of the genital styles. From *A. longifrons* Fennah, it is readily separated by the even, uninterrupted lateral margins of the frons and by the relatively longer and distally recurved lateroventral spines on the aedeagus.

### III. REFERENCES

- CALDWELL, J. S. & MARTORAL, L. F., 1951, Review of the Auchenorynchous Homoptera of Puerto Rico. II. The Fulgoroidea except Kinnaridae. *J. Agric. Univ. P. Rico* **34** (1950): 133-269, i-x.
- FENNAH, R. G., 1945, The Fulgoroidea, or lanternflies, of Trinidad and adjacent parts of South America. *Proc. U.S. Nat. Mus.* **95**: 411-520.
- 1947, Notes on West Indian Flatidae (Homoptera: Fulgoroidea). *Proc. biol. Soc. Wash.* **60**: 107-17.
- 1949, On a small collection of Fulgoroidea (Homoptera) from the Virgin Islands. *Psyche, Camb., Mass.* **56**: 51-65.
- 1959, Delphacidae from the Lesser Antilles (Homoptera: Fulgoroidea). *Bull. Brit. Mus. (nat. Hist.)* **8**: 245-65.
- METCALF, Z. P. & BRUNER, S. C., 1948, Cuban Flatidae with new species from adjacent regions. *Ann. ent. Soc. Amer.* **41**: 63-118.

(Manuscript received 12th February, 1965)