

THE CICADELLIDAE OF CUBA

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The present paper is one of a series of papers on the homopterous fauna of Cuba (Metcalf and Bruner 1925a, 1925b, 1930a). The homopterous fauna of Cuba has been sadly neglected but we hope to publish systematic reviews of all the families. At the time this paper was prepared the literature recorded 5 species of Cicadellidae from Cuba. The present paper records no less than 32 species and varieties.

HISTORY

The earlier writers, notably Walker (1851b) and Signoret (1853a, b, c; 1854a, b, c, d; 1855a, b, c, d), contributed greatly to our knowledge of this family especially in relation to the Cuban fauna. Guerin-Meneville (1856a, 1857a) mentions but a single species. Osborn (1926a) mentions the economic relations of three Cuban species.

Melichar (1924a, 1925a, 1926a, 1932a) started a monograph of the genera and species of this family but unfortunately this has not been completed and many new genera he proposed in his keys have not been established. Osborn (1926b) reviewed the Neotropical species and described many new species from South America and he also (Osborn 1935a) reviewed the species from Porto Rico and the Virgin Islands, several species being common to Cuba.

CLASSIFICATION

This group has been variously classified as a tribe, subfamily and family. Baker (1923a) was the first, to clearly establish this group as a family and in our opinion it is entitled to this rank. It may be distinguished from the other jassids by

the following characters: Body not greatly flattened; ocelli on the crown; lateral clypeal sutures continued onto the crown.

The following key will aid in the differentiation of the generic and subgeneric groups.

KEY TO THE GENERA OF CUBAN *CICADELLIDAE*

- A. Anterior tibiae sulcate or dilate apically; tegminae narrow not covering lateral margins of abdomen. Antennal ledges prominent. Subfamily *Proconiinae* (No members of this subfamily have been found in Cuba).
- AA. Anterior tibiae slender, terete or prismatic; antennal ledges not prominent; tegminae broad. Subfamily *Cicadellinae*
- B. Tegminae reticulate apically.-----Tribe
Draeculacephalini
- C. Crown flat with a definite edge; face in profile nearly straight. -----*Draeculacephala* Ball
- CC. Crown and face conically produced margins rounding; face in profile inflated.-----
Carneocephala Ball
- BB. Tegminae not reticulate apically.-----Tribe
Cicadellini
- C. Radius branching forming a distinct first radial cell ----- 1
1. Three large anteapical cells.----- 2
1. With one or two subapical cells.----- 4
2. Head broader than pronotum, obtuse anteriorly; eyes prominent ----- 3
2. Head not as broad as pronotum, conically produced anteriorly; eyes not prominent.-----
Hortensia Metcalf and Bruner
3. Anterior margin of crown continuing the outer margin of the eyes; pronotum about two-thirds as long as broad, the anterior lateral angles rounded continuing the curve of the anterior margin.-----*Poeciloscarta* Stal.
3. Anterior margin of crown not continuing the outer margin of the eyes; pronotum nearly twice as broad as long, anterior lateral angles distinct.-----*Cicadella* Dumeril
4. With two large subapical cells, first radial and medial *Ciminius* Metcalf and Bruner
4. No anteapical cell save first radial.----- 5
5. Crown elongate broadly rounded on anterior margin.-----*Entogonia* Melinchar
5. Crown much broader than long.-----*Kolla*
Distant

- CC. Radius unbranched before apical cells; antepical cells small or very small----- 1
1. Head conically produced; tegminae attenuated caudad *Lucumius* Metcalf and Bruner
1. Head not conical; tegminae broadly rounded caudad ----- 2
2. Crown elongate; male aedeagus simple with a pair of posterior processes-----
Hadria Metcalf and Bruner
2. Crown usually much broader than long; male aedeagus complex with an asymmetrical process --*Arezzia* Metcalf and Bruner

MORPHOLOGY

In the past emphasis has been laid on the shape and relative proportions of the crown, the position of the ocelli, the character of the venation and the external genitalia especially in the differentiation of the genera and species. In our opinion more emphasis must be placed in the future on the finer details of the venation and the internal genitalia. For that reason careful drawings have been made of the internal male genitalia of all the species considered in this paper where males were available. Drawings of the head characters and external genitalia are also included.

Certain terms which are used in this paper need to be defined. The head of an insect may be considered as an elongate six-sided box. The surfaces can then be named without reference to their morphological composition which will vary in the different families. The dorsal surface is called the crown in this paper not the vertex as it contains other elements besides the vertex. The anterior surface is called the face. In the cicadellids it is made up largely of the clypeus and anteclypeus. The lateral surfaces are called the cheeks. They are composed largely of the genae and mandibular sclerites (lorae). The ventral surface is the oral surface and the posterior surface is the base.

The anterior wings are the tegminae. They are fairly heavily chitinated in the cicadellids and are divided into three general areas - the anterior (costal or ventral) basal, corium; the posterior (anal or dorsal) clavus; and the apical membrane which is more or less translucent. The corium contains four principal veins, the costa, along the costal margin, the radius, the media and the cubitus anterior. The cubitus posterior separates the corium from the clavus. The membrane is usually

occupied by the apical cells formed by simple cross veins between the principal longitudinal veins or by branching of these veins. Due to the fact that the tegminae are relatively opaque in cicadellids the venation is frequently obscured but is usually distinct if viewed from the inner surface.

The female genitalia are of the usual homopterous design. The shape of the last ventral segment is specifically distinct. The genitalia proper consist of the swollen pygofer, the sheaths of the ovipositors and the ovipositors.

The male genitalia are complicated. The shape of the last ventral segment is not distinctive. Apically there is the median unpaired valve, sometimes concealed by the last ventral segment, sometimes absent; the paired genital plates and the pygofer. The relative shapes, sizes and details of these structures seem to be specific. The internal male genitalia are very complicated. They consist of a pair of genital styles and an unpaired aedeagus. The aedeagus is made up of: A basal connective which unites it to the styles; a basal shaft; and, typically, a pair of dorsal processes; a pair of ventral processes; a pair of posterior processes and an apical lobe. So far as the writers are aware the characters of the internal male genitalia are always distinctive. And if considered in their broader aspects may give good characters for the distinction of generic and subgeneric groups.

NOMENCLATURE

In practically all groups of insects there is much confusion in nomenclature due in great part to the inaccessibility of the literature and frequently to a failure to apply the strict rules of nomenclature as laid down by the International Zoological Congress and elaborated by Banks and Caudell and the British National Entomological Commission. There has been a failure also to recognize the importance of correctly established genotypes.

The confusion in the use of the names *Tettigonia* and *Cicadella* is a case in point. As nearly as we can determine, the facts in this case are as follows:

Linne (1767a: 692-703) divided the genus *Gryllus* into a number of subgenera one of which he called *Tettigonia*. These

are apparently genuine Orthoptera. In 1762, 1766 and 1799 Geoffroy (1762a: 429) contrasted *Cicada* with *Tetigonia* (sic) but he did not follow binary nomenclature and mentions no species as belonging to *Tetigonia*, therefore, this name has no standing today. Fabricius (1775a: 678) used the name *Tetigonia* for the larger Homoptera which we now place in the Family CICADIDAE and the name *Cicada* for all the smaller Homoptera now placed in the membracids, cercopids, jassids and fulgorids. In this he was not followed by subsequent writers who followed Olivier (1789a: 24) using *Cicada* for the members of the Family CICADIDAE and *Tettigonia* for jassids. This in general was followed down to about 1900 with the genus *Tettigonia* being more and more restricted and used with *Cicada viridis* Linne as the implied type. In 1900 Kirkadly tried to revive the spelling used by Geoffroy but Jacobi (1904a: 778) proposed the new name *Tettigoniella* to replace the name *Tetigonia* Olivier and subsequent writers. Jacobi does not give a definite type for *Tettigoniella* but his reference to "*Tetigonia* Geof. fur *Cicada viridis* L." would lead one to believe that he intended *C. viridis* as the type of *Tettigoniella*. This is definitely stated by Distant (1908a: 516).

In 1916a: 66 and 1917b: 595 Van Duzee receive the name *Cicadella* crediting it to Latreille 1817a: 406 and placing *Tetigonia* Geof., *Tettigonia* Oliv. and *Tettigoniella* Jac. as synonyms giving as the orthotype *C. viridis* Linne. This is not correct, however, as Latreille (1817a: 400) divided the Homoptera into three families: 1) Cicadaires, 2) Aphidieus, and 3) Gallinsectes. The first of these was divided into three groups not genera "Cigales proprement dites" genus *Cicada* Oliv.; "Les autres Cicadaires" genera *Fulgora* Linn., *Flata*, *Issus*, *Derba* and *Delphax*; and "Les Cicadelles (Cicadella)" with the genera *Ledra* Fab., *Membracis* Fab., *Cercopis* Fab., and *Tettigonia* including the genera *Cicada* Fab. and *Iassus* Fab. Thus *Cicadella* would include all the members of the leafhoppers except the LEDRIDAE. No mention is made of *C. viridis* Linne. This same scheme was followed by Latreille (1829a: 209) except that the genera *Otiocerus* Kirby, *Lystrá* Fab., *Cixius* Latr., *Poeciloptera* Latr., *Anotia* Kirby and *Asiraca* Latr., are added to the "Cicadaires (muettes)" and the genera *Tragopa* Latr., *Darnis* Fab., *Boeydium* Latr., *Centrotus* Fab., *Aetalion* Latr., *Ciccus* Latr., *Eulopa* (sic) Fall., *Eupelixa* Germ., *Penthimia*

Germ., *Jassus* Fab., and "Les Cicadelles propes ou Tettigones" (Tettigonia Oliv., Germ.—Cicada Linn., Fab.) are added. There is still no mention of *Cicada viridis* in any way. So far as we can discover this general scheme was used by the various translators of Cuvier's "Le Regne Animal". But Blanchard (1849a: pl. 99) gives in the explanation "Genre Cicadelle, *Cicadella* Latr. *Tettigonia* Oliv. Fig. 6 *Tettigonia viridis* Linn, and the name *Tettigonia viridis* was repeated on the plate.

In 1802 Latreille (1802a: 261) divided the genus *Tettigonia* into two divisions with *Cicada cuspidata* F. in one and *Cicada viridis* L. and *Cicada lanio* F. in the other.

In 1806 Dumeril (1806a: 267) gives a key to the genera of Homoptera including *Cicadella* which is briefly described on the preceding page. In 1817 Dumeril (1817b: 189) gives a good definition of the genus *Cicadella* and lists four species *C. vittata*, *C. viridis*, *C. interrupta* and *C. ulmi*. Dumeril has page priority over Latreille and Dumeril definitely indicated *Cicadella* as a genus, therefore, it clearly has priority. Sherborn (1925a: 1273) accepts this. *Cicadella* Dumeril will have as its logotype *Cicada viridis* Linne, a palearctic species.

The genotypes of the other genera are indicated under the discussion of each genus.

KEY TO THE SPECIES OF CUBAN *CICADELLIDAE*

- A. Apical portion of tegminae behind clavus more or less reticulate-veined; head acutely angular.
 - B. Crown flattened with definite margins, largely pale; face in profile nearly straight.....*Draeculacephala cubana* Metcalf and Bruner
 - BB. Crown convex with indefinite, rounded margins, largely rufous; face inflated
 - C. With many small reticulations on the apex of tegminae*Carneocephala flaviceps* Riley
 - CC. With a few coarse reticulations on apex of tegminae*Carneocephala reticulata* Signoret
- AA. Apical portion of tegminae without reticulate veins; head usually not distinctly angular.
 - B. Abdomen black or brownish above.
 - C. Species mainly green above 1
 - 1. Pronotum and crown marked with black and yellowish transverse fascia; face, at least in female, entirely or in part bright rufous 2

1. Pronotum and crown without transverse fascia; mainly green and yellow above... 3
 2. Pronotum with anterior margin broadly bright rufous; tegminae, with distinct black stripes along veins; one long outer antepical cell ----*Kolla fasciata* Walker
 2. Pronotum with anterior margin black; tegminae with narrow black lines along veins; one somewhat shorter outer antepical cell-----*Kolla carabela* Metcalf and Bruner
 3. Head about as wide as pronotum, crown somewhat pointed, bright yellow marked with regular geometrical design in narrow black lines; tegminae with only one claval vein distinct; clear grass green without markings; face largely black transversely striped above with pale yellow; anteclypeus of female below with prominent angle; antennae normal----- *Hortensia similis* Walker
 3. Head distinctly narrower than pronotum; crown much shorter and more obtuse than in foregoing, bright yellow marked with heavy, simpler design in black; ocelli placed in center of disc, relatively close together; tegminae with two claval veins distinct; green, marked along longitudinal veins with narrow black stripes; face largely pale without transverse bands, a black median spot above on clypeus, this very flat without angle below; antennae relatively long *Hortensia filicis* Metcalf and Bruner
- CC. Species not mainly green above----- 1
1. Above mainly black heavily marked with paler longitudinal stripes or blotches; below largely yellow; two subequal antepical cells; species of large or medium size ----- 2
 1. Above the greyish or fuscous brown, size small, less than 5 mm.----- 3
 2. Above black with pale, bright blue, irregular longitudinal markings on pronotum and tegminae; below deep yellow, face heavily marked with fuscous; size relatively large, length 8.75 mm-----
----*Hadria balloui* Metcalf and Bruner.
 2. Above mainly black with slate grey variable stripes, sometimes washed along

- dorsum with yellow, orange or greenish yellow, below light yellow-----
Hadria convertibilis Metcalf and Bruner
2. Above mainly black with rows of numerous blue-grey elongated spots on tegminae; below yellow; face heavily marked with black, legs orange-brown; larger than foregoing, length 7-8 mm-----
Hadria convertibilis roigi Metcalf and Bruner.
3. Crown and pronotum vittate with dark brown; radius branched no inner antepical cell -----
Entogonia inexpectata Metcalf and Bruner.
3. Crown and pronotum not vittate; radius not branched, a larger inner antepical cell-----*Ciminius harti* Ball
- BB. Abdomen red or bright crimson above.
- C. Mainly yellowish or greyish white and pink, vittate with black or fuscous; three rather large antepical cells in tegminae
1. Form elongate; crown horizontal, conspicuously sculptured; anteclypeus bent backward forming prominent angle near center; tegminae with the three antepical cells of about the same length; genital segment of female produced behind into point, without incision-----
Poeciloscarta cardini Metcalf and Bruner.
1. Form relatively stout, crown gently sloping to face, nearly smooth; anteclypeus forming nearly even curve with clypeus, the inner antepical cell about twice as long as other two; genital segment of female with small notch at apex-----
2. Head short and very broad; tegminae washed on lower surface with red and brown, usually no distinct yellow areas above except along costal margin; apex of genital segment with small shallow notch
Poeciloscarta laticeps Metcalf and Bruner
2. Head usually slightly longer and narrower than above; tegminae on lower surface washed uniformly with red, above often marked with pale yellow especially on clavus, apex of genital segment with small u-shaped notch -----
3. Crown and pronotum buff striped with black, disc of latter on either side of

- median pair of stripes often suffused with deep yellow or orange red; face with transverse black dashes between two vertical stripes on either side; legs buff, often more or less embrowned; apex of genital segment with narrow u-shaped notch; length 6.1 - 6.5 mm.---*Poeciloscarta histrio* Fabricius
3. Crown and pronotum paler, glossy, black stripes broader, usually continuous, disc of pronotum on either side of median pair of stripes deep orange red; face without transverse black dashes on either side; femora dull orange or red; apex of genital segment with u-shaped notch; size distinctly larger, length 6.5 - 7.5 mm.----*Poeciloscarta histrio* var. *baraguensis* Metcalf and Bruner
- CC. Not marked as above; two rather small antepical cells or none ----- 1
- 1, Distinctly vittate longitudinally with black or fuscous on crown and pronotum. 2
1. Without distinct black vittae on crown and pronotum ----- 4
2. Four broad black vittae on pronotum---- 3
2. Five black vittae on pronotum, ground color of crown and thorax above orange yellow to greenish yellow; head somewhat pointed -----*Arezzia omaja* Metcalf and Bruner
3. Above light blue and black: two broad black median vittae from apex of head to lateral angles of scutellum; black stripes on pronotum from behind eyes not percurrent; tegminae black with large, light blue, elongated blotches; head somewhat produced and distinctly pointed ---*Hortensia gundlachiana* Metcalf and Bruner
3. Above mainly pink, vittate; two broad black median vittae from apex of head to lateral angles of scutellum, the latter with black median mark at base; black vittae on pronotum from behind eyes percurrent; tegminae pink and bluish grey marked with black along veins; head somewhat produced, rather narrowly rounded in front, but not distinctly pointed-----*Hortensia conciliata* Metcalf and Bruner
4. Crown and pronotum, at least anterior

- portion of latter, with vermiculate or labyrinthine markings; two small or very small antepical cells ----- 5
4. Not so marked ----- 12
5. Tegminae and pronotum largely green--- 6
5. No green above ----- 10
6. The head, anterior margin of pronotum and scutellum yellow inscribed with black 7
6. The head, anterior margin of pronotum and scutellum pale buff lightly inscribed with thin brown lines, the remainder of pronotum green heavily mottled with dark brown; tegminae green without markings; face buffy mottled with brown or the reverse, no black median spot above *Arezzia viridipennis* Metcalf and Bruner
7. Size moderate, length 6.0 - 7.3 mm.----- 8
7. Size relatively large, length 7.7 - 9.0 mm.; head very short, broad and rounded anteriorly, heavily inscribed with black above in labyrinthine pattern, face strongly marked on sides with fuscous brown and with large irregular fuscous median spot above ----*Arezzia maestralis* Metcalf and Bruner
8. Face with dark median spot above; tegminae without distinct, white subapical transverse band ----- 9
8. Face without a dark median spot above; head somewhat produced and obtusely pointed, labyrinthine pattern above of numerous mostly anastomosing narrow black lines; tegminae with a distinct, milky white, subapical transverse band; below typically light lemon yellow-----*Hadria labyrinthica* Metcalf and Bruner
9. General coloration above bright green, the black markings narrow; head short and broad, nearly rounded in front; face rounded in even curve to anteclypeus; genital segment of female moderately produced behind in center, the apex with shallow incision----- *Hadria cubana* Metcalf and Bruner
9. General coloration above dull greyish green, more heavily inscribed with black; head short but rather narrowly rounded in front; face with disc somewhat flattened; genital segment of female considerably produced behind into moderately acute

- point, with extreme apex obtuse; size larger; females exceeding 7mm.-----*Hadria trinitalis* Metcalf and Bruner
10. Crown short, broad and broadly rounded to face; face with a single median black spot above -----
10. Crown triangular produced; face with a pair of black spots above -----*Lucumius triangularis* Metcalf and Bruner
11. Above mainly brown heavily marked with black; the black markings over either side of crown and pronotum forming a somewhat labyrinthine pattern of broken irregular stripes, arranged longitudinally; tegminae marked with black along veins; genital segment of female produced into point behind, the apex obtuse---*Arezzia rangeliana* Metcalf and Bruner
11. Above mainly brown, darker on head and anterior margin of pronotum, which are covered by network of very irregular somewhat vermiculate, buffy lines and spots almost as broad as intervening dark areas; arranged transversely on disc of pronotum; tegminae without black markings, irrogate with testaceous; genital segment of female produced behind into a long acute point, the apex with u-shaped notch-----*Arezzia anachoreta* Metcalf and Bruner
12. Above pale purplish red marked with large deep orange maculae delimited by dark undulating lines; legs and venter stramineous----- *Hadria oteroi* Metcalf and Bruner
12. Above mainly dull wine red with few pale buffy markings on head and thorax, chiefly longitudinal, these for most part with broad indefinite fuscous borders; legs reddish, more or less infuscate-----
Arezzia baracoa Metcalf and Bruner

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DRAECULACEPHALA BALL

(Ball 1901b: 66)

Orthotype *Tettigonia mollipes* Say 1830b: 312.

This is a genus of some 15 known species most of which come from the United States. One species *D. lenticula* Ball is

known only from Mexico and Honduras, and another species *D. minor* Walk. has been reported from the Southern States, Mexico, Guatemala and the West Indies. Most of the species resemble each other very closely having a rather acute triangular crown, usually longer than the pronotum. In the more northern species the crown is often broadly rounded. Face flat. Well developed wing venation with the apical area strongly reticulate. Most of the species are largely dull greenish in color with the crown, anterior margin of the pronotum and the scutellum dull yellow. Some of the species are straw yellow.

Ball (1927c) has recently reviewed the North American species and given a key for these forms. We cannot agree with his statement that the internal genitalia are not diagnostic. We believe that these furnish not only reliable specific but generic characters as well.

Draeculacephala cubana n. sp. Figs. 23, 48.

This species bears a superficial resemblance to the North American *mollipes*, but the crown of the female is longer and more acute and the male genitalia are entirely different.

The general color of the tegminae and the disc of the pronotum dark grass green. The crown and the anterior margin of the pronotum and scutellum straw yellow; crown faintly marked with a series of elongate brown dashes forming indistinct lines; ocelli and eyes conspicuously marked with black. Face fuscous, somewhat darker in the male and marked with a series of pale arcs; beneath dull yellow, more or less infuscated often completely infuscated in the male. Tegminae grass green, venation paler, sometimes blue, costal margin not abruptly paler, the claval furrow concolorous.

Crown of the male and female distinctly longer than the pronotum, acute in both sexes; lateral margins nearly straight. Face nearly straight in profile.

Last ventral segment of the female triangular, the lateral margins nearly straight; the pygofer rather robust. Male genitalia: Last ventral segment broadly circular in outline; plates elongate, longer than the pygofer.

Length: Female average 8.5 mm., male average 6.5 mm.

Holotype: Female, Santiago de las Vegas, April 20, 1916, S. C. Bruner.

Allotype: Male, same locality.

Paratypes: Numerous specimens, Santiago de las Vegas, Manzanillo, Havana, Casa Baraqua, Miyanda, Carabella Grande, Sto. Tomás, Isla de Pinos, S. German, Buenos Aires.

CARNEOCEPHALA BALL

(Ball 1927c: 39)

Orthotype *Draeculacephala floridana* Ball 1901b:72.

In this genus the tegminae are reticulate apically but the crown is conically produced and the face is inflated. Seven species are known from the United States two of these are reported from Mexico and the West Indies also, and an eighth species is known from Central America.

Carneocephala reticulata Sign. Fig. 25

Tettigonia reticulata Signoret 1854a:22.

Originally described from Cuba as *Tettigonia reticulata* Signoret (1854a:22), the species has since been greatly confused in the literature, apparently due to the fact that the larger *Carneocephala flaviceps* Riley of continental North America was thought to be the same. The latter name is attached to the specimens in the Gundlach Museum in Havana (No. 284). Dr. P. Valdés Raqués (1910,) published a list of the insects in this museum transcribing the name as *flavipes* by mistake. It was reported as *Draeculacephala reticulata* by Bruner in 1922 and as *D. sagittifera* Uhler by Dr. Osborn in 1926. Nottingham (1932a:104) has recently pointed out that the latter while similar is not identical with the Cuban species. The genus *Carneocephala* was erected in 1927 by Ball for four species formerly included under *Draeculacephala*.

C. reticulata is widely distributed in Cuba and specimens have been taken in all of the provinces. It usually occurs on small grasses and is rather a common species. Dr. Osborn found it particularly on Bermuda grass (*Cynodon dactylon* (L.) Pers.).

Carneocephala flaviceps Riley. Fig. 24.

Tettigonia flaviceps Riley 1880a:78.

This species is common throughout the Southern States. A single female specimen was taken at Santiago de las Vegas without further data.

HORTENSIA GEN. N.

Orthotype *Tettigonia similis* Walker 1851b:769.

Head including the eyes somewhat narrower than pronotum, somewhat conically produced; eyes not prominent; crown smooth. Pronotum distinctly broader than long; the anterior margin nearly a uniform curve from the posterior humeral angles; posterior margin nearly straight. Mesonotum large. Tegminae narrow with three large antepical cells. Aedeagus simple with a pair of short lobe-like processes at the base of the apical lobe.

Hortensia flicis n. sp. Figs. 2, 26.

A rather small species with head obtusely angular and somewhat narrower than pronotum; bright green and yellow, the vertex heavily marked with black, veins of tegminae narrowly black and abdomen fuscous above.

Head rather short; crown obtusely angular, sides slightly rounded, more so in male, about one and one-half times as broad as long, slightly more than half the length of pronotum, shorter in male; eyes not prominent in line with crown; ocelli in center of disc, nearer together than usual in *Cicadella*; antennae rather long, segment two elongate, apex visible from above; face with disc very flat, almost perfectly straight in profile, forming angle of 70-75 degrees with vertex; very broadly and nearly evenly curved from anteclypeus to apex, slightly prominent near center. Pronotum about one-tenth broader than head across eyes, nearly six-tenths as long as broad, surface smooth, a shallow depression behind anterior margin, posterior margin nearly straight. Tegminae with three relatively large oblong antepical cells, the inner shorter; venation resembling that of *H. similis* Walk. except for presence of two veins.

Genitalia: Female, last ventral segment somewhat more than twice as long as preceding, posterior margin angularly produced, surmounted by a short rather acute median tooth; pygofers with pale or brownish bristles, mostly on sides behind

ventral margin. Male last ventral segment nearly twice as broad as long, about a third longer than preceding, posterior margin nearly straight or slightly convex; plates rather small and broad basally, apices long and relatively thick, exterior margins with regular row of long pale bristles. Valve very small, posterior margin circular, frequently entirely concealed by the last ventral segment.

Color: Crown shining yellow marked with heavy regular design in black, about equal in extent to yellow, including an area on either side of apex, a patch on either side of disc from and including ocelli to or near posterior margin, an inverted V-shaped median mark from base to beyond level of ocelli; black markings usually connected with each other. Pronotum largely bright green with anterior and lateral margins for about one-fourth of length irregularly yellow, posterior margin very narrowly yellow, a small, roughly oval, oblique black spot on either side of disc at anterior border of green area and a similar smaller spot in front of each in yellow area sometimes connected or obsolete; a small, usually elongated black mark from behind posterior angle of eyes. Scutellum yellow, a black vitta on each side of center from base to deep transverse suture, where apices are more or less prolonged inwards; postscutellum somewhat paler. Tegminae bright green marked over longitudinal veins with narrow, even, black stripes; transverse veins and short indefinite band behind outer apical margin opaque whitish; apical area with inner half to apex of clavus subhyaline, pale fuscous. Below largely pale buffy yellow marked with black and fuscous brown. Face with elongate oval central area from crown nearly to anteclypeus usually more distinctly yellow, a large rounded median black spot above near margin, black of crown continued on either side of this, fading gradually below to form an indefinite pale brown band on sides, converging to base of anteclypeus; thence continued as broad paler median band; darker, narrow, oblique stripes at times faintly indicated in brown on sides of face with a fuscous black stripe along inner margin; an irregular dark patch on genae beneath eyes. Pronotum with large fuscous patch on sides behind eyes. Mesosternum largely fuscous. Legs and rostrum pale, basal joints of latter externally and claws somewhat embrowned. Venter of female, including ovipositor, pale buffy yellow; apical tooth on genital segment slightly darker; venter of male usually infuscate, except plates

which are usually much paler. Abdomen above fuscous. Wings infuscated.

Length: 5.5 - 6 mm.

Holotype: Female, Palma Mocha Peak, Sierra Maestra Mts., Oriente Province, altitude 3,000—4,250 ft., July 10 - 20, 1922, C. H. Ballou and S. C. Bruner; on ferns (E. E. A. de Cuba No. 8896).

Allotype: Male, Sierra Maestra Mts., altitude 3,500 - 4,500 ft.

Paratypes: Eleven specimens, same data as types. One female, Pico Turquino, July 20, 1922, S. C. Bruner and C. H. Ballou, altitude 5,000 — 5,500 ft.

This species is strikingly different structurally from all other species found in Cuba. The venation of tegminae is very similar to that of *H. similis* Walk. The insect was swept from ferns growing along shady, steep-banked, mountain brooks.

Hortensia similis Walk. Figs. 1, 31, 49.

Tettigonia similis Walker 1851b: 769

This widely distributed species was described from North America, has been reported from Florida, Cuba, Jamaica, St. Vincent, Trinidad, Puerto Rico, Dominica, Mexico, Central America, Venezuela, Brazil, and Argentina; and occurs abundantly on grasses throughout Cuba, specimens having been collected in many localities in all provinces including the Trinidad Mountains up to at least 2,500 ft., and on the Zapata Peninsula.

It differs from the other species of Cuban *Cicadellidae* in having only one claval vein conspicuous and by the peculiar form of the clypeus of the females, this being directed abruptly backward, a short distance before the anteclypeus, thus forming a conspicuous obtuse angle in lateral view. In the males this is barely indicated. There is considerable variation in size, Cuban specimens measuring 4 — 6 mm. in length, the males being much the smaller.

Hortensia gundlachiana n. sp. Fig. 5.

Readily distinguishable from other species occurring in Cuba by the very striking coloration of light blue, yellowish green and black; and by the well produced, narrow, pointed head.

Head considerably produced before eyes with the apex pointed, the sides somewhat arcuate, more so in the female;

crown smooth, surface polished, slightly tumid in center behind ocelli, about three-fourths as long as wide basally, slightly more than half as long as pronotum, sides slightly sinuate in front of eyes which are well rounded externally and somewhat protruding. Pronotum behind slightly wider than head across eyes, only about two-thirds as broad as long, posterior margin very slightly concave, a very shallow transverse depression behind anterior border, lateral margins straight, converging cephalad. Clypeus narrow, nearly straight in lateral view, the disc flattened; antennae long. Rostrum very long, reaching posterior coxae. Tegminae rather narrow with three large, elongate antepical cells, the inner cell about one-fourth shorter than outer two.

Genitalia: Female, last ventral segment long, about three and one-half times as long as preceding, the posterior margin greatly produced into a long, narrow, acute tooth; pygofer greyish white along ventral margin with sparse growth of dark bristles. Male plates with apex produced into a very long narrow process about as long as basal portion; margins of latter with fine long hairs.

Color: Above largely black with broad, sharply defined vittae and longitudinal blotches of light or pale blue and yellowish green. Crown largely covered by two broad, black, longitudinal vittae across disc, the narrower median vitta very pale blue and a buffy vitta next to each eye. Pronotum light blue, becoming very pale cephalad, the disc crossed by two straight, percurrent black vittae, the margins of these somewhat uneven, and a similar but narrower black vitta from behind each eye extending to about the center. Scutellum with center pale, the sides covered by a continuation of black vittae of pronotum; postscutellum brown. Tegminae black marked with paler as follows: Clavus with a large elongated blotch of yellowish green to greenish yellow extending obliquely caudad from anterior margin to about center; a similar, narrower band with rounded ends extending backward from below apex of this to near apex; *corium* largely covered by five large, light to somewhat pale blue, elongated blotches with a short, broad, paler, preapical fascia. Below largely black; clypeus and anteclypeus shining black, a continuation of the pale buffy spot above lorae. Thorax dull black, the legs dull orange yellow. Venter largely dull black, hind margins of segments yellow, and in female with the lateral margins also more or less so; pygofer largely black, pale ventrally. Abdomen above black. Wings strongly infuscated.

Length: 6.7 — 7.1 mm.

Holotype: Female and Allotype, Male, El Yunque Mt., Baracoa, Oriente Province, elevation 300 meters, June 10, 1935, F. de Zayas.

Paratype: One female from the same locality in the collection of the collector.

There is a specimen of *H. gundlachiana* in the Gundlach Museum labeled "361, Tettigonia sp." Gundlach records that this was also collected at Baracoa.

This species appears to be related to *Cicadella (Entogonia) constans* Walk. of Haiti, as figured and described by Dozier (1931 a: 6).

Hortensia conciliata n. sp. Fig. 6.

A rather small species with head considerably produced but well rounded in front, the crown, pronotum and scutellum brightly colored with broad longitudinal black and pink vittae.

Head rather strongly produced beyond eyes, well rounded in front, crown somewhat flattened, nearly four-fifths as long as broad at base, about five-sixths as long as pronotum (in female), sides not appreciably sinuate in front of eyes. Eyes of moderate size, slightly protruding. Pronotum as broad as head across eyes, short, less than sixth-tenths as long as broad, posterior margin shallowly, but distinctly concave, a light transverse depression behind anterior border. Postscutellum rather broad, apparently with a longitudinal median depression.

Color: Crown rich dull buffy pink, marked on each side with a broad black vitta with very uneven borders, this bifurcates behind ocelli, one branch continuing straight to posterior margin, the other narrower, continuing obliquely to internal angle of eye, the central pink area somewhat broader than lateral black vittae; ocelli yellowish surrounded by a narrow pale border. Pronotum buffy pink, concolorous with head, marked with four very broad black percurrent, uneven, vittae, thus forming alternate black and pink bands of about the same width, the two median vittae narrower anteriorly and joining those on crown; the posterior margin of pronotum appears narrowly pale pinkish. Scutellum pink and black concolorous with pronotum, median vitta from base to transverse impression and lateral angles black, the latter a continuation of two median vittae of

pronotum; postscutellum pale. Tegminae mutilated, basal half marked with black stripes along veins, the intervening pale areas pinkish and bluish grey. Legs pale testaceous. Abdomen red above.

Length: 5.50 mm., approximately.

Holotype; Female; "Guamacas; Cuba", Dr. J. Gundlach, in the Gundlach Museum, Havana, No. 277.

The foregoing incomplete description and accompanying figure were made from a single somewhat faded specimen through the glass cover of a sealed box in the Gundlach collection. This specimen is labeled "*Tettigonia conciliata* Uhler — 277". Gundlach records this number as collected at "Gumacas; Cuba". The latter locality is evidently Santiago de Cuba. Pedro Valdes Ragues published (1910) the manuscript name *conciliata* and the number of the specimen in Gundlachs collection with the observation "4mm., light brown, reddish".

No other species is known from Cuba with which this rare or very local form could be confused. It is apparently related to *Arezzia omaja* n. sp.

Poeciloscarta Stal

(Stal 1869a: 73)

Logotype *Cicada histrio* Fabricius 1794 a: 34.

This genus was established by Stal (1869a: 73) as a sub-genus of *Tettigonia* Oliv. for the following species: *cardinalis* Fabr., *cruenta* Fabr., *quadriguttata* Fabr., *marginella* Fabr., *laeta* Fabr., *pubica* Fabr., *quadrifasciata* Linn., *moesta* Fabr., *lyncea* Fabr., *histrio* Fabr., *tristis* Fabr., *suturalis* Fabr., and *pauperata* Fabr., all from South America and the West Indies. Van Duzee (1894a: 271) raised this group to generic rank but included only *lyncea* and *histrio*. Melichar (1926 a: 342) confines this genus to "Arten aus Madagaskar und Afrika" and erects a new genus *Cardioscarta* for "Arten aus Amerika". In 1932 a:285 he described the genus *Cardioscarta* and gave a key to and descriptions of 90 species, including three of the above, 52 previously described species and 35 new species.

We have selected *Cicada histrio* Fabricius (1794a:34) as the type of the genus *Poeciloscarta* Stal.

In this genus the head is broad, broader than the pronotum; blunt anteriorly; eyes prominent; the crown short, somewhat uneven. Pronotum nearly quadrangular. Tegminae with three

large antepical cells, the radial and medial nearly quadrate; claval veins not united. Anterior tibiae ciliate.

In this genus the aedeagus is provided with a pair of elongate ventral processes.

Poeciloscarta histrio Fabr. Figs. 3, 33, 50.

Cicada histrio Fabricius 1794a:34

Tettigonia robusta Walker 1851b:777.

This species was described by Fabricius without definite locality. Walker redescribed it as *Tettigonia robusta*, also without definite locality. It is apparently one of the most common species in Cuba. It is a species of moderate size and robust form with short, broad, well rounded head; above largely buff, more or less pinkish, with dull pink tegminae, marked throughout rather evenly with strong black longitudinal stripes.

Head short and broad, somewhat variable in form; crown nearly evenly rounded in front to slightly triangular, concave before eyes, moderately long, shorter in male, slightly more than half as long as pronotum; eyes prominent; antennae of moderate length, apex of second segment visible from above; clypeus moderately tumid, very slightly flattened. Pronotum approximately three-fourths as broad as head across eyes, nearly two-thirds as long as broad, posterior margin slightly concave in center. Tegminae broadly rounded at apex, appendix relatively broad with three large antepical cells, the inner cell larger, elongated, about twice the length of two preceding cells.

Genitalia: Female, last ventral segment three to five times as long as preceding, posterior margin produced into somewhat acute point, sides slightly convex, apex with small distinct, narrowly U-shaped notch, usually about one-half as wide as deep; pygofers with few pale brown bristles, mostly in irregular band on either side of ventral margin. Male, last ventral segment broader than long, about one-third longer than preceding segment, posterior margin broadly concave, plates small, extending about half the length of pygofers, relatively slender with elongated apices, external margin without row of large bristles, with few minute brownish bristles intermixed with fine pale hairs.

Color: Above, crown buff, often suffused with pink, especially on either side of median line, marked with four strong longitudinal, rather evenly spaced, black vittae; the two inner

vittae usually percurrent, unbroken, parallel, margins somewhat undulating; intermediate vittae much more uneven, broken before ocelli, a narrow fascia connects inner and intermediate vittae anterior to ocellus; a narrow incomplete median vitta often present; eyes dark brown. Pronotum buff, sometimes suffused with pink, the anterior and lateral margins broadly paler, the disc crossed by four, strong, evenly spaced, nearly percurrent, black fasciae, the space between the inner and intermediate fasciae frequently washed with very pale orange yellow; an elongated black patch behind each eye extending about two-thirds the distance to posterior margin. Scutellum and post-scutellum buff, the inner pair of fasciae of pronotum continued over scutellum to transverse impressed line. Tegminae below entirely red except translucent apical area, appearing pale to deep dull pink above, heavily marked with black longitudinal veins to base of anteapical cells, cross veins at bases of anteapical cells irregularly marked with black, costal area from base largely washed with opaque yellow; cells bordering claval suture and inner angle of clavus usually suffused with pale yellow; translucent apical area dark fuscous divided by a paler transverse fascia preceded by a variable transparent white patch next to costal margin. Below pale buff marked with black, head and pleurae often suffused in part with pink. Clypeus with two longitudinal black stripes on either side which unite below, then continue inwards unite again on base of anteclypeus and continues as a broad stripe to apex; the two inner stripes of clypeus often gradually broadened above, usually not connected with stripes on crown; lateral pair of stripes usually in part connected by numerous incomplete black dashes which often cross the uneven lateral stripes. Legs deep buff to brownish, a dusky streak on femora behind near apex and on corresponding portion of lower surface of tibiae. Each segment of abdomen below with a pair of fuscous black spots, last segment of female with similar large macula on disc, the apex embrowned; in male the dark maculae on sides of posterior ventral sclerites fuse behind at apex forming two or three broad arcs. Abdomen above bright crimson. Wings translucent brownish fuscous with darker veins.

Length: 6.1—6.5 mm.

Redescribed from numerous specimens from various localities throughout Cuba, including Taco Taco (E. E. A. de Cuba

No. 8772) and Sierra Rangel, Pinar del Rio Province; Santiago de las Vegas (E. E. A. de Cuba No. 10028), Havana Province; Peninsula de Zapata and Trinidad Mts., Santa Clara Province, Camaguey, Camaguey Province, Nagua (E. E. A. de Cuba No. 8893), Santiago de Cuba, San Nicolas and Baracoa, Oriente Province.

This common species occurs on a wide range of plants of different families, both cultivated and wild. Dr. J. C. Myers (1928d) refers to it as the Croton Leafhopper as he found it very abundant on *Codiaeum variegatum* (L.) Bl. near Cienfuegos, Cuba. The junior author has found adults and nymphs on a small composite weed, *Vernonia cinerea* (L.) Less. at Santiago de las Vegas. A. R. Otero found it breeding at the same locality on a garden plant, *Aloysia triphylla* (L. Her) Br., and we have specimens reared on *Ocimum bacilicum* L. by C. H. Ballou. It is also found occasionally hiding in the whorls of sugar cane leaves. At San Nicolas, Oriente, it was found rather numerous on coffee plants, *Coffea arabica* L.

The nymphs are suggestive of the adults being whitish and pale yellow heavily marked with black and dusky.

In order to fix as definitely as possible the identity of the present species specimens were sent to the British Museum and there very kindly compared with the type of *Tettigonia robusta* Walk. by Mr. W. E. China who found them conspecific. The latter was synonymized with *Tettigonia histrio* of Fabricius by Stal. This matter has already been considered by Myers in the paper cited above. While the present form is the same as that treated by the latter author and also that of the Gundlach Museum (labeled *Tettigonia robusta* Sign.) it is by no means certain that it is the species referred to as *histrio* by other recent authors. Osborn (1926c:340) speaks of *histrio* as having the lines on the tegminae interrupted but otherwise very similar to *sirena* Stal. However, the true *histrio* has the black lines on the tegminae relatively even and continuous. Furthermore, *sirena* is certainly very different from anything known in Cuba, or in Puerto Rico, from which Islands it has been reported in various recent publications. Stal described *sirena* (1864a:76) as an insect 8½ to 10 mm. in length with the abdomen fuscous above. *Poeciloscarta histrio* is much smaller (6-6½ mm.) with the abdomen bright crimson above. Fowler's illustration of *sirena* (1899d: Pl. 16, fig. 18) made from the type also indicates an entirely distinct species.

Poeciloscarta histrio var. *baraguensis* n. vr. Fig. 29.

In general plan of coloration, form and structure resembling *P. histrio* Fabr. but readily distinguishable by heavier black markings, brighter colors and by distinctly larger size.

Genitalia: External genitalia not appreciably different from *histrio* except that notch in produced apical margin of last ventral segment of female is relatively broader in the specimens at hand, this being intermediate in form between that of *laticeps* and *histrio*.

Color: The black stripes strongly marked, broader than in *histrio*, the four on disc of pronotum usually percurrent and rather uniform in width. The ground color of head and thorax pale, glossy, the disc of pronotum on either side of center, between inner and intermediate stripes, and lateral angles of scutellum heavily washed with orange or orange red. Tegminae with costal area and clavus externally deep yellow. Below resembling *histrio* except for stronger black markings, the two inner stripes of face usually continuous with those on crown, not broken at apex of head, and without transverse row of narrow black dashes between these and intermediate vertical stripes. Legs with femora orange or light red, brighter on the posterior pair and contrasting with pale buff tibiae.

Length: 6.5 - 7.5 mm.

Holotype: Female, Central Baragua, Camagüey, July 26-27, 1927, C. F. Stahl and S. C. Bruner.

Allotype: Male, same locality.

Paratypes: Seven specimens from same locality, and Isla de Pinos, March 1, 1923, S. C. Bruner.

This relatively large, strikingly marked form appears very different from the common *histrio*; the internal genitalia are practically identical. Its food plant has not been determined.

Poeciloscarta cardini n. sp. Figs. 8, 27.

A rather elongate, subparallel species of moderate size with prominent eyes, horizontal sculptured vertex and narrow impressed pronotum; unevenly striped with black above, the head and thorax buff, the tegminae rose pink; abdomen red above.

Head somewhat produced, narrowly rounded or slightly pointed in front; crown horizontal, a longitudinal median

depression at base and broader lateral depression next to eyes, the apex slightly prominent above, about three-fourths as long as broad, about two-thirds as long as pronotum, shorter in male; eyes prominent, strongly rounded externally, not forming even curve with crown; antennae relatively long, nearly as long as head and thorax combined; face normal, disc slightly flattened, forming angle of about 55 degrees with crown; anteclypeus bent upward before center, forming a prominent obtuse angle in lateral view. Pronotum considerably narrower than head across eyes, about two-thirds as long as broad, a deep impression on either side in front, disc behind moderately convex, smooth, posterior margin nearly straight. Tegminae somewhat elongated with subparallel lateral margins, apex obtusely rounded, almost subtruncate, three large elongate antepical cells of about same length.

Genitalia: Female, last ventral segment nearly two and one-half times as long as preceding, posterior margin produced, forming about a right angle, the apex with a short tooth; pygofers with few dark bristles behind ventral margin. Male, abdomen very small, last ventral segment transverse, slightly more than twice as broad as long, posterior margin straight; valve minute forming a nearly equilateral triangle; plates slender, about two and one-half times as long as last ventral segment, somewhat longer than pygofers, apices somewhat flattened, twisted and bent outward in dried specimens, external margins with few minute bristles only.

Color: Crown buff or pale yellow, often lightly washed with brown on either side of apex, with irregular black longitudinal markings as figured, leaving a broad median band and area between ocelli and eyes pale. Pronotum buff, often somewhat brownish, with six more or less broken and variable, broad, longitudinal black or fuscous stripes, the central stripes narrower and parallel; anterior margin often paler, the broad lateral margins pale yellow. Scutellum buff or pale yellow, a black mark on either side at base, narrowed behind and extending to transverse depression and there prolonged inwards; often a smaller median dark spot at base; postscutellum pale yellowish. Tegminae jasper red varying in intensity, sometimes with a lilac tint, marked along veins with broken black stripes and variable elongated blotches, intervening areas often washed with paler; an indefinite pale, broad, somewhat oblique transverse fascia usually distinguishable behind center preceded by darker

indefinite band; apical area lightly infuscated, translucent, preceded by pale macula on costal margin, disc before apical margin and around anal angle largely pale; commissure pale yellow. Below buff or yellowish white usually heavily marked with fuscous and brown. Face with row of four narrowly spaced large black spots across upper margin, the two central spots larger, continued from crown; a somewhat sinuate row of 6 to 9 oblique dark brown arcs on sides beneath lateral spots, these gradually shortened below and fused near apex, then united with broad fuscous brown median stripe, which is continued, gradually narrowed, to about center of anteclypeus. Lorae with inner margin broadly fuscous. Genae with elongate irregular fuscous area from lower margin of eyes to behind lorae. Thorax with large fuscous patches. Legs pale, usually with more or less distinct, incomplete, fuscous basal and preapical bands on femora; a row of small dark spots at base of spines on outer side of posterior tibiae and a similar row of smaller spots beneath; these markings largely obsolete on pale specimens. Female with sides of ventral sclerites, pygofers at base, and center of pleural sclerites more or less infuscated; genital segment with large fuscous median patch over base, apical margin embrowned the pygofers with sides more or less pinkish. Venter of male and plates somewhat infuscate. Abdomen above and lateral margins of venter bright crimson. Wings light fuscous.

Length: 7 - 8 mm.

Holotype: Female, Las Animas, Sierra Rangel Mts. Pinar del Rio Province, August 2, 1929, J. Acuña and S. C. Bruner.

Allotype: Male, Cienaga de Zapata, Santa Clara Prov., July 10, 1920, S. C. Bruner, on *Morinda roioe* Lin. (E. E. A. de Cuba No. 8548).

Paratypes: Specimens from Sierra Rangel, Pinar del Río, J. Acuña; Santiago de las Vegas, on *Terminalia catappa* Lin., A. R. Otero; Ceballos, Camagüey, P. Cardín; Baracoa, Oriente, S. C. Bruner and L. Bouclé; Nagua, Oriente Prov., July 29, 1922, S. C. Bruner and C. H. Ballou.

This unique form while widely distributed in Cuba is not commonly seen and usually only solitary individuals have been taken in sweeping woodland vegetation. It is apparently related to *Cicadella dubiosa* Dozier of Haiti, but may be easily distinguished by shorter vertex, distinct genitalia, and distinct markings and general coloration.

The species is dedicated to the former entomologist of the Cuban Experiment Station, the late Patricio Cardin, who collected the first specimen obtained.

Poeciloscarta laticeps n. sp. Figs. 7, 30.

Closely related and very similar to *Poeciloscarta histrio* Fabr., but having a somewhat shorter and broader head, narrower, more irregular and broken black vittae, these alternately thickened and narrowed on tegminae; general coloration browner, the tegminae eosine pink; genitalia distinct.

Head short and broad with prominent eyes; crown very broadly rounded anteriorly, somewhat more than twice as broad as long, about three-fifths as long as pronotum, slightly shorter in male. Clypeus moderately tumid in lateral view forming a broad, nearly regular curve with anteclypeus. Pronotum only about four-fifths as broad as head across eyes, scarcely three-fifths as long as broad. Tegminae broadly rounded at apex, apical margin largely subtruncate, appendix unusually broad; three antepical cells, the outer and intermediate cells rather small, roughly oval and subequal, the inner cell elongate, about twice the length of others.

Genitalia: Female, last ventral segment nearly three times as long as penultimate, posterior margin somewhat produced and gradually narrowed, the apex with a shallow, nearly evenly rounded notch, pygofers with few brownish bristles. Male, last ventral segment much broader than long, somewhat longer than penultimate, posterior margin straight; plates small, extending about two-thirds the length of pygofer, relatively narrow, tapering to slender apices, without regular row of conspicuous marginal bristles.

Color: Crown, pronotum and mesonotum pale buff above, marked with irregular black longitudinal vittae. Crown usually with a median line from base, broadened anteriorly, and not extending to apex, sometimes, reduced to a mere spot behind apex. Pronotum with black markings as follows: An inner pair of more or less continuous vittae extending from behind anterior margin to about four-fifths distance to hind margin, more approximate anteriorly; on either side of these an intermediate sub-parallel vitta of about same length, usually broken into spots anteriorly; a much broader and shorter vitta from behind eyes extending about two-thirds length of pronotum. Scutellum pale buff, with a broad black vitta on either side from base to slight-

ly beyond transverse impressed line, sometimes connected at apex by narrower fascia along impressed line; lateral angles often faintly orange; postscutellum buffy. Tegminae below light brown washed with rose red from base through disc to anteapical cells and through center of clavus showing on upper surface as pale brown and pink; veins narrowly marked with a large, transparent patch from costal margin including most of first anteapical cell, followed by transverse black or fuscous band which curves forward to apex of inner anteapical cell; remainder of apical area smoky hyaline except apical margin which is rather broadly fuscous black; costal area washed with opaque yellow over approximately anterior two-thirds. Below pale buffy yellow marked with black, the pleurae washed with yellow. Clypeus with two vertical black stripes on either side which originate near base, unite below at acute angle before apex, continue inward, fuse on base of anteclypeus and extend as a single broad band to apex; the two inner stripes of clypeus abruptly enlarged at upper extremity and there more approximate; each lateral pair of stripes connected by numerous, usually incomplete, oblique black dashes. Legs largely brownish buff; posterior tibiae usually washed with pale yellow; a dusky streak on femora behind near apex and on corresponding portion of lower surface of tibiae. Each segment of abdomen below with a pair of black spots in the female, these connected to form a black crescent in the male; last segment of female with a similar large broadly oval macula on disc, the posterior margin somewhat embrowned; the pleural sclerites with a median longitudinal fuscous dash. Abdomen above bright crimson. Wings largely pale brownish fuscous with darker veins.

Length: 6 - 6.5 mm.

Holotype: Female, El Cobre, Oriente Province, October 5, 1928, F. Silvestri and S. C. Bruner.

Allotype: Male, Omaja, Oriente, July 24, 1932, S. C. Bruner.

Paratypes: One female, Manacas, Santa Clara Province, S. C. Bruner; one female, Santiago de las Vegas, A. Otero, three males and five female Omaja, Oriente, S. C. Bruner; one female, Barrio Caobilla, Camegüey, June 23-25, J. Acuña; one female, Casa Baragua, June 26, C. F. Stahl and S. C. Bruner; one female and one male, S. Nicolas, Ote, July 20, S. C. Bruner on *Coffea arabica*; and one female, Jaranu, S. C. Bruner.

Cicadella Dum.
(Dumeril 1817b: 189)

Logotype *Cicada viridis* Linne 1758a: 438

This genus has had numerous species assigned to it since Van Duzee reestablished it in 1916. There are no Cuban species in this genus as we have restricted it here. A reexamination of *C. viridis* (Fig. 51) shows the following characters: Crown broad, sometimes strongly produced, obtuse anteriorly; ocelli deeply impressed; clypeus strongly inflated; eyes prominent. Pronotum about twice as broad as long, anterior margin broadly curved, lateral margins short, posterior margin nearly straight. Tegminae with three large anteapical cells. Aedeagus with elongate anterior, ventral and posterior processes.

Cicadella sanguinicollis Latr.

Tettigonia sanguinicollis Latreille 1811a: 191

While described from Cuba nothing remotely resembling this highly colored species has since been found there, and it seems practically certain that there has been a mistake with regard to the origin of the type. Judging from Signoret's description and figure in his "Revue" it seems likely that it was really obtained in some continental locality in the Neotropical Region. Its length is given as 16mm., very much larger than any other Cicadellid known from Cuba. It is therefore not considered in the present work as belonging to the fauna of this country. The type was in Signoret's collection.

Kolla Dist.
(Distant 1908g:223)

Orthotype *Kolla insignis* Distant 1908g:223.

This genus was described to include two species from India. It has been extended since to include 37 species from all parts of the World. We are not convinced that all these species are congeneric but until the type can be restudied in comparison with the other species we prefer to assign the species listed below to this genus.

The genus *Kolla* Dist. as represented by our Cuban species may be characterized as follows: Head nearly as broad as pronotum; crown broadly rounded the anterior margin continu-

ing the contour of the eyes; cheeks below antennae distinctly carinate; front tibiae ciliate; radius branching before the apex of clavus; media and cubitus unbranched before the membrane; claval veins not united. Crown and pronotum in the known species transversely fasciate; aedeagus with the ventral processes elongate, as long as the pygofer.

Kolla fasciata Walk. Figs. 14, 28

Tettigonia fasciata Walker 1851b: 780

Fasciata was described from the United States and has been reported from the West Indies, Mexico and Central America. Van Duzee considers *fasciata* as a variety of *bifida* Say. We believe, however, that the Cuban material is specifically distinct from that of North America. This species might be confused with *carabela* as it has the same general color pattern, the essential differences being that in *fasciata* the anterior margin of the pronotum is ferruginous and the veins are broadly bordered with black.

Kolla carabela n. sp. Figs. 36, 52.

This species has been recorded as *Kolla geometrica* Sign. which was described from Colombia and has been reported from the West Indies, Central America, Mexico, and the Southeastern United States. We do not believe, however, that the species from Cuba is the same as the one reported from the Southeastern United States. We have named the Cuban species *carabela* until the species from Colombia can be reexamined.

The specimens from Cuba are generally dark green above marked with black and yellowish green. The anterior border of the pronotum is black, and the veins of the tegminae narrowly bordered with black. This species is widely distributed in Cuba, having been collected in practically all the areas where extensive collections have been made.

Head nearly as wide as the pronotum; crown short, slightly produced on median line, about three-fourths as long as the pronotum. Pronotum nearly twice as broad as long; the anterior margin broadly curved, the posterior margin slightly concave.

Color: Crown black the posterior border greenish yellow, a broad greenish yellow fascia anterior to ocelli projecting on median line to anterior of the crown, and including a small black spot. Pronotum mostly dark green, anterior margin black bordered posteriorly by a greenish-yellow fascia; posterior

border greenish-yellow bordered anteriorly with black. Scutellum greenish yellow with the anterior border and the impressed line black. Tegminae dull green, the apical transparent area infuscated; the veins narrowly fuscous or black. Face largely testaceous, with two large black spots dorsally. Genae and lorae black. Legs dull yellow. Abdomen testaceous.

Length: Female 5.25 mm. Male 3.5 - 4 mm.

Holotype: Female, Sierra Rangel, August 29, 1927, J. Acuña.

Allotype: Male, Sto. Tomás, May 5 - 9, 1927, S. C. Bruner and J. Acuña.

Paratypes: Eleven females, Santiago de las Vegas, Havana, Sto. Tomas, Sierra Rangel, Bahía Honda, and ten males from Santiago de las Vegas, Carabela, Santiago, Las Animas, Jaraheuca.

Ciminius gen. n.

Orthotype *Tettigonia harti* Ball 1901b: 61.

This genus may be distinguished from other Cicadellid genera by the peculiar venation and genitalia. It comes closest to *Kolla* Distant.

Crown triangular broader than long; the anterior margins continuing the margins of the eyes; the dorsal surface sloping to meet the slightly inflated face. Pronotum broad. Scutellum broad. Tegminae short; cell radius one without an apical cell; with a medial anteapical cell. Anterior tibiae ciliate. Posterior tibiae with a few coarse spines not ciliate.

Ciminius harti Ball Figs. 34, 53.

Tettigonia harti Ball 1901b: 61

This species was described from the Southern United States and Cuba. It may be recognized from other Cuban species by its small size, tegminae dark brown or dull black with veins pale.

Head conical; crown obtusely rounded, twice as wide as long, about two-thirds as long as pronotum.

Female last ventral segment nearly truncate, slightly incised either side to form a small median tooth. Male plates about half as long as pygofers, broad at base tapering to elongate points.

Color: Female brownish. Crown with light slightly curved fascia across apex in front of ocelli and a pair of black spots on

posterior border behind ocelli. Pronotum buffy, irregularly marked with brown. Tegminae brown with veins buffy. Face with numerous dark brown arcs; apex and median area pale. Male darker dull black with numerous pale markings.

Collected from several localities in Cuba as follows: Baragua, Bahia Honda, Santiago de las Vegas, Casa Blanca, Nagua, Corralillo, Herradura, Pinar del Rio Province. Osborn records it from Camagüey Province.

Hadria gen. n.

Orthotype *Hadria convertibilis* n. sp.

This genus may be distinguished from the other Cuban genera by the broad obtuse head; by the simple venation; with tegminae heavy and opaque, veins straight with two antepical cells. Anterior tibiae strongly ciliate. Male aedeagus simple with a pair of posterior processes.

Hadria convertibilis n. sp. Figs. 11, 35, 54.

A woodland species of moderate size, usually black above heavily marked with numerous light bluish slate and greyish white variable stripes, lowland varieties often more or less washed with yellow; below largely yellow; dorsum of abdomen black.

Head rather short and broad, somewhat triangular with obtuse apex nearly evenly rounded in front; crown slightly more than one-half as long as broad and about three-fifths length of pronotum. Face moderately convex, disc slightly flattened above. Anteclypeus somewhat prominent in center. Pronotum slightly narrower than head, disc with very faint transverse striae. Tegminae moderately broad.

Genitalia: Female, last ventral segment long, about two and one-third times as long as preceding, posterior margin moderately produced into an acute angle with sides sinuate; pygofer with few scattered brown bristles. Male, last ventral segment nearly one-half broader than long, about one-third longer than preceding, posterior margins straight, plates nearly as long as pygofer, apices not produced, rather obtuse, external margins almost straight, with row of pale stiff hairs or slender bristles.

Color: Above largely black heavily striped with paler as follows: Vertex usually with two, more or less percurrent, narrow, approximate greyish or yellowish white median stripes,

often broken near apex; two or three parallel yellowish arcs on either side of apex, a greyish or yellowish white irregular oblique stripe passing from inner side of ocelli to behind inner angle of eyes and another similar dash from anterior margin of eyes. Pronotum with two approximate median spots on anterior margin, with two or three smaller irregular spots on either side, greyish white; two broad, parallel vittae from behind median spots and a band of irregular spots on either side along outer paler stripe usually brownish grey or slate colored. Scutellum with a more or less ring-like greyish or yellowish white mark at base on either side and beyond the transverse impressed line two, similar, more or less confluent, stripes converging apically; postscutellum greyish white. Tegmina heavily marked over entire surface with slate grey, more or less broken, uneven, variable stripes, about as wide or wider than intervening black areas; costal cell anteriorly more or less washed with greyish white; translucent apical area dark fuscous with a short well marked white transverse fascia from costal margin to base of third apical cell. Below largely yellow, sometimes more or less suffused with brownish fuscous. Face deep yellow in center with a fuscous spot at apex, sometimes obsolete, usually lightly infuscate on either side and marked with some six or seven oblique parallel pale yellowish stripes; remainder of face yellowish usually without distinct darker markings. Sternum yellow with two dark indefinite maculae on mesosternum. Rostrum and legs buffy yellow or light yellowish brown, tarsi darker. Venter clear yellow; produced apical portion of genital segment of female more or less infuscate; pygofer ventrally greyish white. Abdomen above fuscous black. Wings fuscous with darker veins.

Length: 6 - 7 mm.

Holotype: Female, and Allotype: Male, Las Animas, Sierra Rangel, Pinar del Rio Province, altitude 1,500 ft., April 28, 1933, S. C. Bruner and A. R. Otero.

Paratypes: Many specimens from same locality, J. Acuña, C. H. Ballou, A. R. Otero, S. C. Bruner; Santiago de las Vegas; Los Sabalos, Zapata Swamp (on *Chrysobalanus icaco* Lin. — E. E. A. Cuba No. 8542) and Santo Tomás, P. de Zapata; Santa Clara Province, S. C. Bruner and J. Acuña; Barrie Caobillas, Camagüey Prov., J. Acuña; Nagua, C. H. Ballou and S. C. Bruner, (E. E. A. Cuba No. 8888), Santiago de Cuba, F. Silves-

tri and S. C. Bruner, and Baracoa, S. C. Bruner and L. Bouclé, Oriente Province. Male, Jaronu, L. C. Scaramuzza, two females Alguizar Havana, L. C. Scaramuzza, four females, Buenos Aires, Trinidad Mts., S. C. Bruner and A. R. Otero.

This species manifests a perplexing number of what are evidently local color varieties for no definite structural differences have been discovered by which they can be separated. We have selected as the type the insect occurring in the Sierra Rangel Mountains of Western Cuba. This is rather uniform in coloration above, but below may vary from almost entirely pale yellow to fuscous brown with perhaps only the venter dusky yellow. Lowland specimens from Santiago de las Vegas are brighter colored, bluish grey and black above with apex of clavus pale and largely bright yellow below. From the Zapata Swamp and Nagua, Oriente, the pale stripes are broader, often paler and those on clavus more or less suffused with orange yellow, deeper along commissural margins. The face, furthermore, is often heavily marked with black; a broad dark band on either side of disc extending downward to disc of clypeus, usually broken above by transverse pale stripes, a black band from insertion of antennae connecting with former above sides of clypeus, and another shorter streak from below eyes. The black median spot on face may also be continued downward as band. In some specimens from Santiago de Cuba the pale areas above are still broader and those on head and pronotum as well as on tegminae largely yellow or olive yellow.

Pedro Valdés Ragués (1910 a) published Uhler's manuscript name, "*Tettigonia convertibilis*" giving the following abbreviated description "5 mm. dark red, No. 76". There are several specimens numbered 76 in the Gundlach Museum among which the present form is certainly included, but more than one species may be represented. Those who adhere to a very strict interpretation of the International Rules may prefer to credit this species to Valdés.

Hadria convertibilis var. *roigi* var. n. Fig. 32.

Similar to *H. convertibilis* but may be distinguished by larger size, stronger black markings on face, and a tendency of the paler stripes on tegminae to break up into rows of spots and dashes.

Genitalia: Female, similar to *H. convertibilis*.

Color: Above largely black with markings similar in arrangement and general appearance to those of typical *H. convertibilis*, but paler longitudinal stripes on tegminae on four of the five specimens are entirely broken up into numerous irregular spots and dashes. This color and corresponding markings on pronotum are largely dark bluish grey with no indication of yellow. The pale markings on head, anterior and lateral margins of pronotum, scutellum and commissural margins of tegminae are greyish white. Below resembling strongly marked forms of *convertibilis* from eastern Cuba. Face pale grey washed with yellowish on sides and clypeus heavily marked with black as follows: A large indefinite median fuscous spot above on face, sometimes extended below towards center, a broad vertical black band on either side extending to anteclypeus, often more or less broken above by pale transverse stripes, sides from antennae to anteclypeus broadly black, the latter with base and disc also largely black; genae with elongated black macula from eyes to lorae; and sometimes a smaller spot over apical half of lorae. Legs bright orange brown, often darker apically. Venter deep yellow, the sternal sclerites with disc more or less fuscous, more broadly so towards base.

Length: 7 - 8 mm.

Holotype: Female, Buenos Aires, Trinidad Mts., Santa Clara Prov., elevation 2,350 - 2,800 ft., S. C. Bruner and A. R. Otero.

Allotype: Male, same locality.

Paratypes: Four females, same data.

Hadria balloui n. sp. Figs. 16, 37.

A relatively large, rather elongate species, largely black above marked with blue and greyish white, with dorsum of abdomen fuscous; related to *H. convertibilis* but readily distinguishable by much greater size, distinctly blue markings and characters of external and internal genitalia.

Head short and obtuse, crown nearly evenly rounded in front, disc somewhat flattened, in female about two and one-half times as broad as long, one-half length of pronotum; eyes relatively small slightly protruding; antennae rather short; face normal; anteclypeus in plane with face to near center, then bent upward forming rounded obtuse angle, more prominent than in *convertibilis*. Pronotum subequal in width to head across eyes,

nearly twice as broad as long, posterior four-fifths shallowly transversally striate, posterior margin nearly straight, very slightly concave. Tegminae of usual form, apex evenly rounded, two moderately large, subequal, oblong, nearly rectangular antepical cells.

Genitalia: Female, last ventral segment about two and three-fourth times as long as preceding, posterior margin produced into a strong acute tooth; pygofers rather thickly and uniformly covered with brownish yellow bristles. Male, last ventral segment about one-half broader than long, one-third longer than preceding segment, posterior margin nearly straight; valve broad and short posterior margin broadly curved. Plates rather large and stout, gradually curved inwards towards apices, which are short, very obtuse, and overlap, extending behind nearly to apex of pygofers, exterior margins with regular row of deep yellow bristles of moderate length.

Color: Crown largely black with a few small greyish or slightly yellowish markings as follows: Two minute median spots followed by two longitudinal, slightly divergent, short stripes to posterior margin, and few irregular spots between ocelli and eyes. Pronotum largely black, the anterior margin with two median rounded greyish white spots, followed by two irregular parallel dull or bright cobalt blue bands over disc to posterior margin; a narrower sinuate longitudinal band from anterior margin behind center of eye, nearly evanescent before hind margin, and lateral margins largely greyish white; the intermediate pale stripe with few pale spots on inner side of anterior margin followed by irregular broken blue border. Scutellum black with a broken ring-like yellowish or greyish white mark at base on either side of center and a similar heart-shaped mark, sometimes divided in center, at apex; postscutellum yellowish white. Tegminae black with deep cobalt blue, irregular, elongated variable areas over clavus and corium; apex of clavus and broken stripe along commissural margins paler; a short, irregular preapical yellowish white transverse band from near costal margin, usually reaching apex of first antepical cell. Below largely deep yellow. Face pale buffy yellow heavily marked with fuscous as follows: Face with a very large irregular fuscous median spot above, a series of about seven fuscous brown, more or less broken, oblique, parallel arcs on sides, a very large central macula, covering larger part of apex

and continued over basal half of disc of anteclypeus. Mesosternum largely fuscous. Legs and rostrum more or less embrowned posterior femora paler. Apical tooth of female genital segment brown. Abdomen above fuscous. Wings infusate with darker veins.

Length: 8.75 mm.

Holotype: Female, summit of Turquino Peak, Sierra Maestra Mts., Oriente Prov., altitude 6,600 ft., July 20, 1922, C. H. Ballou and S. C. Bruner, (E. E. A. de Cuba No. 8886).

Allotype: Male, same data.

Paratypes: Four specimens, same data, at altitudes between 3,600 and 6,000 ft.

The peculiar male genitalia distinguish this species from all others studied from Cuba.

Hadria oteroi n. sp. Fig. 18.

Immediately distinguishable from all known Cuban species by the brilliant coloration: Above opaque rosy red marked on head, thorax and tegminae with rich yellow and orange, the maculae sharply defined and bordered with very dark red, or fusco-piceous.

Head short, obtusely angular, well rounded in front, crown about as long as one-half width, somewhat more than one-half as long as pronotum. Eyes not prominent, forming continuous even curve with crown; rather strongly sinuate below on posterior margin. Pronotum nearly as broad as head. Tegminae of usual form.

Genitalia: Female, last ventral segment about four times as long as preceding, considerably produced behind into a moderately acute angle, the apex rounded and provided with a very small angular median tooth; pygofers with few short bristles, mostly pale.

Color: Crown light orange yellow with dark brownish red markings as follows: An irregular transverse subapical line and a broader uneven basal line from inner angle of each eye, these transverse lines connected by a narrow median line. Pronotum with disc covered by a large deep yellow macula, broadly three lobed in front and nearly truncate with median incision behind, surrounded by a dark purplish red irregular border, this darker anteriorly from which project a number of irregular vermiculate

lines, the remainder of anterior portion of pronotum pale grey, as is adjoining narrow central portion of hind margin of head; the pronotum behind macula is rosy red, an indefinite orange spot on lateral margins behind eyes. Scutellum largely yellow, an oblique band across each lateral angle and a small central mark at base dark brownish red; postscutellum brownish pink. Tegminae dull rosy red with deep yellow markings, these broadly but irregularly bordered with very dark or smoky red, as follows: a somewhat rounded spot on clavus near anterior angle, next to suture, a large more distinct rounded macula over center of clavus of both tegminae bisected by commissural line, the apex of clavus for about length of central macula, a rather small ovoid macula somewhat before center of corium, and a large transverse patch just behind apex of clavus, divided by two dark longitudinal veins, these latter markings indefinite in paratype. Behind this there is a small dark orange red, broadly oval, transverse subapical macula, the veins through which are red and inconspicuous. The apical margin and subhyaline apical area are infuscated. The longitudinal veins, except at apex, are broadly very dark red. The costal area behind margin is narrowly washed with yellow. Below, face orange red, paler on disc of clypeus above; clypeus marked with fuscous as follows: a median stripe from base to beyond center, two irregular lines on each side converging at an acute angle below apex, these crossed and more or less broken by about nine oblique parallel pale yellow bars. Apex of clypeus at sides and adjoining base of disc of anteclypeus infuscated as is also the central portion of latter to sides, the apex pale. The lorae and genae largely infuscate. Remainder of under parts including legs pale stramineous except pro- and mesosterni and pleurae which are largely infuscate. The ventral segments laterally and apex and posterior lateral angles of genital segment and basal half of pygofer are washed with fuscous, the remainder of latter with red. The abdomen above is bright crimson. Wings infuscate with darker veins. The single paratype is paler below, without fuscous or red on venter, and the dark markings above are nearly black and yellow areas are orange red.

Length: 7.0 mm.

Holotype: Female, Buenos Aires, Trinidad Mts., Santa Clara Province, elevation 2,350 - 2,800 ft., May 4, 1932, A. R. Otero and S. C. Bruner, on *Coffea arabica*; (E. E. A. de Cuba No. 10,000).

Paratype: Female, Las Animas, Sierra Rangel, Pinar del Río Province, elevation 1,500 ft., April 27, 1933, A. R. Otero and S. C. Bruner, on tree fern (*Alsophila*).

Hadria trinitalis n. sp. Figs. 10, 45.

Very similar to *Arezzia cubana* but distinguishable by larger size, duller, rather greyish green color, more coarsely and thickly inscribed and striped with black, above, and very different female genitalia.

Vertex moderately produced as in *cubana*, slightly more pointed, somewhat longer than one-half basal width, scarcely three-fifths as long as pronotum. Face with disc flattened. Pronotum as broad as head across eyes. Tegminae rather narrow, narrower than in *cubana*, provided with two short anteapical cells.

Genitalia: Female, last ventral segment, about four times as long as preceding, considerably produced caudad into moderately acute point, rounded at extreme apex; pygofer with few brown bristles. Male, last ventral segment somewhat longer than wide basally, about one and two-thirds as long as preceding, posterior margin nearly straight, plates broad basally tapering to acute apices, slightly curved upwards, not reaching apex of pygofer; sides with a row of closely set brown bristles, a few pale coarse hairs behind.

Color: Above dull greyish or somewhat brownish green and light olive yellow strongly marked with irregular black vermiculate design and longitudinal stripes. Crown usually yellow, often more or less brownish, covered with black variable design of broad irregular vermiculate lines. Pronotum with anterior border to and including posterior lateral angles broadly light olive yellow, the remainder green, concolorous with tegminae, the surface marked with heavy irregular black dashes and lines, tending to form longitudinal stripes; two regular parallel stripes on center of disc and another from behind center of each eye often more or less continuous; black markings on anterior yellow border usually vermiculate and anastomosing. Scutellum light olive yellow with regular design in heavy black uneven lines; postscutellum pale yellow, not white and sharply contrasting with scutellum as in *A. cubana*. Tegminae dull green, often somewhat greyish or brownish, the anterior costal area washed with light olive yellow, and whole surface marked with heavy black longitudinal lines, on and between veins, the

latter tending to be wavy and often more or less broken or incomplete cephalad; the veins surrounding the short anteapical cells are black, more or less distinctly lined with pale on anterior side; whole appendix semitransparent, deep smoky; extreme apex of clavus pale. Below creamy buff lightly washed with brownish olive on sides of head and pleurae. Disc of face at level of insertion of antennae with an angular black or fuscous median spot, immediately around which the disc is pale, then washed with brown, each side with eight or more darker brown but indefinite oblique stripes which extend more or less on paler sides; anteclypeus embrowned basally on disc and often along narrow median ridge to apex. Mesosternum with fuscous patch on sides. Legs with tibiae and tarsi more or less washed with brown, especially anterior pair, often also including an indefinite pale brown anteapical band on anterior and intermediate femora. Apex of genital segment of female slightly embrowned. Abdomen above bright crimson. Wings infusate with black veins.

Length: 6.4 — 7.3 mm.

Holotype: Female and Allotype: Male, Buenos Aires, Trinidad Mts., Santa Clara Province, altitude 2,350 — 2,800 ft., May 4, 1932, S. C. Bruner and A. R. Otero, on *Coffea arabica*.

Paratypes: Ten specimens, same data.

Adults were very numerous on coffee plants and more or less shrubby growth of surrounding native hardwoods. It is a species peculiar to the Trinidad mountain region.

Hadria labyrinthica n. sp. Figs. 15, 40.

Above green and greenish yellow, rather heavily inscribed with black, the head, pronotum in part, and scutellum with an intricate network of irregular black lines; closely resembling *Arezzia cubana* but distinguishable by clear yellow ground color of clypeus with neither dark median spot above nor brownish wash over disc, the presence of a distinct milky white subapical transverse band on tegminae and shape of genital segment.

Head obtusely triangular with apex well rounded; length of crown rather variable, shorter in male, usually somewhat more than one-half as long as basal width, nearly two-thirds as long as pronotum. Pronotum subequal in width to head. Tegminae moderately broad, narrower apically than in *A. cubana*,

provided with two small subquadrate anteapical cells, nearly equal in length.

Genitalia: Female, last ventral segment long, about three times as long as preceding, posterior margin somewhat angularly produced in center, apex rather broad, distinctly bisinuate, with a small obtusely angular median tooth; pygofers with few short, coarse, brown bristles. Male, last ventral segment transverse, somewhat longer than preceding, posterior margin straight; plates broad basally tapering suddenly to narrow upturned points, almost attaining apex of short pygofers.

Color: Above, crown yellow or greenish yellow covered with a more or less symmetrical and variable design of numerous irregular, curved, partly anastomosing distinct black lines. Pronotum with anterior and lateral margins for about one-fourth length yellow, concolorous with head, and inscribed with similar black lines; remainder green, the whole surface marked with irregular black spots and transverse dashes. Scutellum yellow, concolorous with head, covered with more or less irregular design of distinct curved black lines, forming a cross in center; postscutellum ivory white. Tegminae green, the costal region anteriorly washed with yellow, the longitudinal veins to dark apical area marked with continuous black lines between which is an indefinite row of very irregular spots and curved dashes; apex of tegminae infuscated with paler yellowish brown veins and divided anteriorly by a conspicuous opaque white transverse band from costal margin to oblique subhyaline area which is also infuscated; the extreme apex of clavus washed with milky white. Below usually pale lemon yellow more intense on head towards front, legs pale stramineous, the tarsi and apex of tibiae often darker, clypeus marked with scattered irregular black or fuscous spots, more numerous above, sometimes forming indefinite parallel oblique stripes on sides, no median dark spot on disc; usually a dark patch on margin between face and crown before level of insertion of antennae. Pronotum with black spot on side immediately behind eye. Mesosternum usually dark, the apex of genital segment of female embrowned. Abdomen above bright crimson. Wings infuscated with darker veins. Entire insect sometimes more or less infuscated so that yellow is obscured and green very dark.

Length: 6.0—6.5 mm.

Holotype: Female, and Allotype: Male, San Blas, Trinidad Mts., Santa Clara Province, May 5, 1932, S. C. Bruner and A. R. Otero, (E. E. A. de Cuba No. 10039).

Paratypes: Buenos Aires, Trinidad Mts., elevation 2,350—2,800 ft., S. C. Bruner, A. R. Otero; Central Soledad, Cienfuegos, S. C. Bruner, A. R. Otero; and Santiago de Cuba, S. C. Bruner, Baracoa, S. C. Bruner and L. Bouclé, Nagua (E. E. A. de Cuba No. 8887), C. H. Ballou, S. C. Bruner, Jarahueca, S. C. Bruner, Maisi, J. Acuña, Loma del Gato, all in Oriente Province; Sierra Rangel, Pinar del Río Prov., J. Acuña and A. R. Otero.

This is the common green woodland Cicadella of Oriente Province, where it apparently entirely replaces the very similar *A. cubana*, with which it may, however, be found in central and western Cuba.

Hadria cubana n. sp. Figs. 13, 38.

In general coloration resembling *H. similis* Walk. but larger and more robust, with a much shorter, more rounded, and broader head; more densely inscribed with black on crown, pronotum and scutellum; tegminae also marked with longitudinal black dashes or lines and abdomen red above.

Crown moderately produced, apex broadly rounded; somewhat longer than one-half basal width, nearly three-fifths length of pronotum; shorter in male. Pronotum scarcely as broad as head across eyes. Tegminae rather broad, provided normally with two short anteapical cells.

Genitalia: Female, last ventral segment long, more than four times as long as preceding; moderately produced behind in center and apex with distinct somewhat rectangular or rounded notch, this usually about twice as wide as deep and sometimes with a small tooth at bottom; pygofer with few short pale brownish bristles. Male, last ventral segment transverse, rectangular, longer than preceding, posterior margin slightly convex, plates broad basally, tapered into long, narrow recurved points.

Color: Above largely green marked with greenish yellow and inscribed with black. Crown yellow covered with black design of narrow vermiculate lines, these somewhat variable and sometimes broken into spots and curved dashes, a narrow median straight line reaching forward from base to center or

beyond. Pronotum with anterior margin broadly yellow to posterior lateral angles, remainder green, the whole surface marked with black vermiculate dashes and spots, mostly arranged transversely, those on anterior yellow portion tending to form continuous lines. Scutellum yellow marked with irregular design of black lines as shown in figure; postscutellum ivory white. Tegminae green, the costal region anteriorly washed with yellow, the longitudinal veins marked with narrow dark fuscous lines between which is a more or less indistinct broken irregular fuscous line; the veins surrounding the short antepical cells usually largely opaque yellow, appendix subhyaline, lightly infuscate, apical margin darker before which are two or three indefinite small opaque whitish patches; the inner margin behind apex of clavus with a small black dash preceded and followed by minute milky white patches. Below light ochraceous buff, the head anteriorly and meso- and metapleura more or less suffused with yellow, the clypeus at level of insertion of antennae with a small variable, angular median spot, around which it is usually lightly washed with brown and marked on sides with some ten more or less distinct light fuscous arcs; the base of anteclypeus also washed with light fuscous; mandibular sclerites black next the anteclypeal border; the mesosternum with a large fuscous patch on either side; the apex of genital segment of female embrowned; abdomen above bright scarlet red. Wings infuscate.

Length: 6.0—6.75 mm.

Holotype: Female, and Allotype: Male, Santiago de las Vegas, Havana, May 16, 1932, A. R. Otero.

Paratypes: Sierra Rangel, near Taco-Taco, Pinar de Río, J. Acuña, C. H. Ballou, S. C. Bruner, A. R. Otero, (E. E. A. de Cuba No. 8738); Santiago de las Vegas, Havana, A. R. Otero; Pan de Matanzas Mt., Matanzas Prov., L. C. Scaramuzza, S. C. Bruner, A. R. Otero, (E. E. A. de Cuba No. 10010); Cayo Ramona, Ciénaga de Zapata, S. C. Bruner, (E. E. A. de Cuba No. 8544); Barrio Caobillas, Camagüey Province, J. Acuña, Bainoa, S. C. Bruner, Nagua, Oriente Province, S. C. Bruner, Sto. Tomás, Zapata Prov., S. C. Bruner, Valle San Guan, Bahía, Honda, S. C. Bruner.

Although one of the commonest woodland species throughout a large part of Cuba no description has apparently been publish-

ed. Adults occur on the shrubby growth of "guara" (*Cupania cubensis*) and various other small hardwoods. Specimens from the more humid and dense hill-side localities are of a darker green color. The form of the notch on the apex of female genital segment varies considerably.

Arezzia gen. n.

Orthotype *Arezzia maestralis* n. sp.

This genus may be recognized by the peculiar venation and internal male genitalia.

Head about as broad as pronotum, not produced; crown much broader than long; face not inflated. Pronotum broader than long, anterior angles not produced, anterior margin broadly rounded. Scutellum large, broader than long. Tegminae coriaceous; membrane broad; main veins unbranched; two small nearly quadrate antepical cells. Anterior and posterior tibiae ciliate. Male aedeagus with an elongate assymmetrical process.

Arezzia maestralis n. sp. Figs. 12, 41, 55.

A relatively large, robust, green and yellow species finely marked with black, somewhat resembling *Hadria cubana* n. sp. in coloration but immediately distinguishable by much larger size, broader, much shorter and more obtuse head, transverse wrinkles on pronotum and conspicuously angular anteclypeus.

Head short, thick, slightly broader than pronotum; crown nearly evenly rounded in front, slightly longer on median line, about two and one-half times as broad as long, slightly shorter and more obtuse in male, about half the length of pronotum; eyes not prominent, normal, forming nearly even curve with crown; clypeus considerably flattened, disc slightly convex in lateral view, forming nearly a right angle with crown; anteclypeus continued in same plane as clypeus to center, then bent upward at a very obtuse but conspicuous angle of almost 140 degrees. Pronotum nearly as wide as head, almost twice as broad as long, posterior margin distinctly concave, surface, except anterior yellow portion with very shallow transverse wrinkles. Tegminae rather broad, slightly narrower apically, apex evenly rounded, with two small roundish antepical cells of about the same size.

Genitalia: Female, last ventral segment about three times as long as preceding, posterior margin moderately and evenly produced in center, apex with a small broad usually rounded

notch on either side of a small short tooth, somewhat variable in length; pygofers along exposed ventral margin subequal in length to last ventral segment, with few stout brownish bristles. Male, last ventral segment about seven-tenths as long as broad, nearly one-fourth longer than preceding segment, posterior margin straight; plates of usual form, slender apices extending nearly to apex of pygofers, stout marginal bristles rather long, pale or brownish, intermixed with few much longer pale hairs.

Color: Above, crown dull yellow marked with intricate, more or less anastomosing, somewhat variable, labyrinth-form pattern in rather thick black lines. Pronotum largely dull green, the anterior and lateral margins broadly yellow, the whole surface marked with dark vermiculate black spots and dashes, these appearing darker and more or less anastomosing on anterior pale margin, similar to those on crown; a small irregular macula behind exterior half of eyes. Scutellum dull yellow or greenish yellow, marked with more or less regular but variable design in uneven black lines, a rough cross over center constant; postscutellum concolorous or slightly paler. Tegminae dull green marked along longitudinal veins to apical transverse veins with black line and between these with wavy broken lines and dashes; apical aerea pale translucent fuscous, the green bordering this usually yellowish, but no distinct transverse pale antepical macula; veins of apex of tegminae yellow-brown. Below largely pale yellow, more intense on face and pleurae, with dark markings as follows: Clypeus with an irregular, variable, usually rather large fuscous black median spot above and nine or ten oblique, parallel, often unbroken, strong, fuscous brown bars on sides which do not extend below to anteclypeus, the disc sometimes brownish; a small, irregular, fuscous spot on genae beneath eyes and sometimes a smaller more or less distinct mark on disc of anteclypeus; first segment of rostrum often infuscate externally; one or two small indefinite fuscous maculae on sides. Legs with tibiae and tarsi usually buffy or brownish, the posterior femora more or less infuscate apically in front. Apex of genital segment of female slightly embrowned. Abdomen above bright crimson. Wings infuscate with dark veins.

Length: 7.7 - 9.0 mm.

Holotype: Female, and Allotype: Male, Turquino Peak, Sierra Maestra Mts., Oriente Province, altitude 5,000 — 5,500

ft., July 20, 1922; S. C. Bruner and C. H. Ballou, (E. E. A. de Cuba No. 8890).

Paratypes: Twenty specimens, same locality, from the summit of Turquino Peak, Palma Mocha Peak, and other points in the Sierra Maestra, altitudes 4,000—6,600 ft., C. H. Ballou and S. C. Bruner.

This species and *Hadria balloui* are of the same length and are the largest members of the Cicadellinae so far known from Cuba. It was the most abundant Cicadellid found in the Sierra Maestra on the Turquino expedition.

The shallow transverse wrinkles or corrugations on the pronotum are very weak. These and form of the clypeus suggest characters of generic significance; however, the insect is clearly closely related to other species of *Arezzia* and cannot be satisfactorily separated generically.

Arezzia omaja n. sp. Figs. 17, 39.

A rather small species with relatively narrow pointed head; deep yellow and green conspicuously striped with black; abdomen red above.

Head moderately produced, slightly flattened, rather distinctly angled, about three-fifths as long as broad, shorter and more obtuse in male, nearly four-fifths as long as pronotum. Face with disc flattened, surface nearly straight in lateral view, forming angle of about 70 degrees with crown. Anteclypeus normal, slightly prominent in center. Pronotum as broad or slightly broader than head, a gentle transverse depression across median line, behind anterior margin. Tegminae somewhat narrow, apex broadly rounded, two subequal, nearly rectangular antepical cells of moderate size, about twice as long as broad.

Genitalia: Female, last ventral segment large, about two and one-half times as long as preceding, central area considerably produced with small angular notch on each side of small acute median tooth; pygofers with few brownish bristles. Male, last ventral segment somewhat transverse, posterior margin straight about one-third longer than preceding, plates rather short and broad basally, the narrow recurved apices extending nearly to apex of pygofers, sides with rather long pale bristles and hairs.

Color: Crown, pronotum and scutellum largely greenish yellow or light orange yellow heavily striped with black as follows: Crown with a narrow black median line from base to

near apex, a broad black percurrent longitudinal band with undulating margins on either side from which, anterior to center, a narrow fork runs obliquely backward through ocelli to inner angle of eyes; a narrow black dash on sides of crown from anterior margin of eyes; the narrow median line and broad lateral stripes of crown continued on pronotum to posterior margin, a broad, nearly percurrent stripe from behind each eye; the ground color over disc to posterior margin washed with greenish; scutellum with median stripe of pronotum continued over basal half to dark transverse suture and intermediate stripes continued, gradually narrowed, to either side of apex; postscutellum yellowish. Tegminae with ground color largely green washed with orange yellow along commissural margins, the longitudinal veins marked by rather even black stripes, apical area including antepical cells fuscous with a conspicuous yellowish white transverse macula rounded behind, extending from costal margin near apical cross veins to fourth apical cell; the costal region anteriorly washed with opaque pale yellow, ground color bordering orange yellow of commissural region, sometimes more or less bluish. Below buff with face and sides washed with yellow and marked with fuscous brown as follows: Clypeus with a conspicuous median spot above near apex and usually two to four incomplete, variable oblique dashes on sides which merge into a solid band below forming arms of large variable, roughly Y-shaped mark, the stalk of which is formed by a broad median band on anteclypeus; small markings on cheeks below eyes and indefinite larger maculae on pleurae; ventral sclerites largely fuscous brown in females and only slightly so in males; the last ventral segment of female has disc and posterior margins fuscous brown. Abdomen above bright crimson. Wings infusate with darker veins.

Length: 5.3 — 5.9 mm.

Holotype: Female, San Blas, Trinidad Mts., Santa Clara Province, May 5, 1932, S. C. Bruner and A. R. Otero.

Allotype: Male, El Cobre, Oriente Province, October 5, 1928, F. Silvestri and S. C. Bruner, (E. E. A. de Cuba No. 10,037).

Paratypes: Two specimens, San Blas, Trinidad Mts., S. C. Bruner and A. R. Otero; Cumanayagua, Santa Clara, F. de Zayas. One male Nagua, Oriente Province, July 7, 1922, S. C.

Bruner and C. H. Ballou. A pair, Omaja, July 24, S. C. Bruner, one male, Camagüey, July 30, J. Acuña.

Arezzia anachoreta n. sp. Figs. 19, 42.

A rather large stout species with short, rounded head, buffy heavily marked with dark brown vermiculate lines and spots; abdomen red above.

Head short, broadly rounded in front, crown distinctly shorter than one-half basal width, about one-half as long as pronotum. Face moderately convex, disc somewhat flattened. Pronotum slightly narrower than head. Tegminae moderately broad with two small short anteapical cells.

Genitalia: Female, last ventral segment about four times as long as the preceding, considerably produced behind, sides converging concavely to acute point, the apex with a distinct U-shaped notch, thus forming two small very sharp points; pygofers with very few scattered short bristles. Male, last ventral segment nearly as long as broad, about one-third longer than the preceding, posterior margin straight; plates broad and short with apices not appreciably elongated, distinctly shorter than pygofers, pale buff with usual row of fuscous bristles.

Color: Crown pale yellow partly stained with salmon pink and heavily inscribed with fuscous design of irregular anastomosing, somewhat vermiculate lines about as broad as remaining pale areas. Pronotum pale yellow, the anterior one-third heavily marked with broad, irregular, vermiculate anastomosing fuscous lines; the remainder largely dark brown the surface marked with numerous irregular yellowish white spots or blotches mostly arranged transversely; the narrow lateral and posterior margins also yellowish white. Scutellum pale yellow more or less stained with salmon pink and covered with a rather regular design of heavy uneven fuscous brown lines; postscutellum entirely yellowish white, contrasting sharply with scutellum. Tegminae light brown irrorate with pale testaceous; extreme apex of clavus greyish white; a very faint incomplete subapical transverse fascia across base of apical cells; the subhyaline apical area nearly concolorous with rest of tegminae. Below largely pale buffy yellow, slightly stained with pinkish in places and marked with fuscous brown as follows: Clypeus with a large irregular median fuscous spot on disc above and about nine distinct fuscous-brown parallel oblique lines on sides; the

disc also lightly washed with brown except around median spot. Sternum largely infuscate. Legs with a faint anteapical band on femora; tibiae and tarsi lightly infuscate, the claws darker. Venter pale yellow, the pygoferes somewhat pinkish, the notch at apex of genital segment embrowned. Abdomen above bright crimson. Wings pale fuscous with darker veins.

Length: 6.50 - 7.75 mm.

Holotype: Female, Buenos Aires, Trinidad Mts., Santa Clara Province, elevation 2,350 - 2,800 ft., May 3, 1932, J. Acuña, (E. E. A. de Cuba No. 10036.)

Allotype: Male, Las Animas, Sierra Rangel, Pinar del Río Province, elevation 1,500 ft., April 28, 1933, S. C. Bruner and A. R. Otero.

Paratypes: Eleven male specimens taken with the allotype, one pair from Camagüey, July 15, 1921, J. Acuña, (E. E. A. de Cuba No. 8689), and one female from Las Animas, Sierra Rangel, May 1933, Hermano Roberto. One male, same data as above. One female, Nagua, Oriente Prov., July 7, 1922, S. C. Bruner and C. H. Ballou. One male, San Nicolas, Ote, July 21, 1927, S. C. Bruner. One female Sierra Rangel, August 28, 1927, J. Acuña and S. C. Bruner, altitude 500 - 1000 ft. One pair, Loma del Gato, Oriente, J. Acuña and S. C. Bruner, October 1. One male, Sierra Rangel, J. Acuña and A. R. Otero.

This relatively large inconspicuously colored species is apparently uncommon. Solitary individuals have been taken only occasionally among other species in sweeping woodland vegetation, except for the twelve male specimens from the Sierra Rangel which among some fifteen or more were attracted to a light placed at the edge of a forest. Two other species (*Hadria cubana* and *Hadria convertibilis*) were both common here but strangely none came to the light except one male of the latter.

There is a damaged specimen of this form in the Gundlach Museum, Havana, labeled "367, *Tettigonia* sp." Gundlach's records show that this was taken at Bayamo (Oriente Province); it thus appears to occur throughout the Island.

Arezzia baracoa n. sp. Figs. 20, 44.

Readily distinguishable from all other species known from Cuba by having veins of tegminae red and by general coloration.

tion: Dull wine red with longitudinal buffy white and fuscous markings above on head and thorax; abdomen red above.

Head broadly triangular with crown well rounded in front, this somewhat longer than one-half basal width and less than three-fifths length of pronotum. Clypeus with disc flattened, nearly straight in lateral view, forming angle of about 75 degrees with crown, somewhat rounded above. Anteclypeus continued in plane with clypeus until just before center, then suddenly bent upward at obtuse angle. Pronotum slightly but distinctly narrower than head. Tegminae moderately broad with two relatively large anteapical cells.

Genitalia: Male, last ventral segment broader than long, about one-fourth longer than preceding segment, posterior margin straight; plates moderately broad basally tapering to slender brown points, regularly upcurved, not quite reaching apex of pygofer, sides with usual row of brown bristles and fine pale hairs.

Color: Above dull wine red with paler and fuscous markings. Crown with a broad pale buff median vitta from base to near apex with rather broad indefinite fuscous border; remainder with indefinite mottled design of dark and pale markings the disc washed with dull red. Pronotum deep wine red with broad nearly percurrent median vitta and a large patch behind eyes including lateral angles buffy white, the latter interiorly and the median vitta with indefinite fuscous border; the anterior portion of pronotum also pale buff, heavily marked with fuscous, the extreme front margin entirely pale. Scutellum largely buffy white with two indefinite curved fuscous markings basally on each side of center; postscutellum pale. Tegminae dull wine red with dark red veins, the surface largely covered with large paler maculae, these tending to form transverse bands apically; the semi-transparent apical area yellowish white; costal margin darker. Below, face pale brown; the center of disc of clypeus and sides paler, the latter with about six indefinite curved oblique parallel light fuscous bars, an indefinite fuscous median patch on clypeus above. Sternum lightly infuscate; the pleurae largely paler. Legs entirely reddish fuscous. Abdomen yellowish white, the basal portion of segments red and center more or less infuscate; the plates pale

with apices brownish. Abdomen above dull crimson. Wings infusate with darker veins.

Length: 6.5 mm.

Holotype: Male, El Yunque Mt., Baracoa, Oriente Province, April 27, 1929, S. C. Bruner and L. Bouclé, (E. E. A. de Cuba No. 10029).

We know of no other species of the *Cicadellinae* occurring in Cuba which has the veins of tegminae largely red.

Arezzia viridipennis n. sp. Figs. 21, 43.

Closely related to *Hadria oteroi* but slightly smaller and readily distinguishable from that and all other species by very different coloration: Head, anterior portion of pronotum and scutellum pale buff lightly inscribed with thin dark brown lines, the disc and remainder of pronotum heavily mottled with dark brown and washed with green; tegminae green without dark stripes.

Head large, rather short, well rounded in front, slightly broader than pronotum; crown almost twice as broad basally as long, nearly two-thirds as long as pronotum. Tegminae rather broad, provided with two very small anteapical cells, the inner cell much the larger.

Genitalia: Female, last ventral segment more than twice as long as preceding considerably produced, converging somewhat concavely to obtuse apex, this slightly sinuate on either side of very small angular median tooth; pygofer with few short scattered bristles.

Color: Crown buff slightly stained with pinkish in places and inscribed with dark brown vermiculate lines, more numerous and anastomosing on disc, a thin dark median line from base. Pronotum with anterior portion for about three-eighths of length, pale buff lightly inscribed with dark brown vermiculate lines, remainder of pronotum heavily mottled with dark brown and washed with dull green, contrasting with pale forepart. Scutellum paler buff marked with regular design in dark brown as shown in figure; postscutellum light brown. Tegminae green with thin yellow veins, the posterior subapical cross-veins broadly paler, forming an indefinite transverse anteapical

pale line; the translucent apical area smoky; extreme apex of clavus pale; costal area anteriorly washed with yellow. Below cream white to buffy more or less marked with brown; the clypeus largely dark brown mottled with cream white or, in paler specimens, largely cream white mottled with dark brown, the sides in either case cream white with an indefinite oblique row of dashes below antennae; anteclypeus, genae and lorae cream white, the disc of former largely and markings on latter dark brown. The mesosternum sometimes with a dark brown spot. Abdomen entirely pale below or with venter more or less embrowned; above bright crimson. Wings infusate with black veins.

Length: 6—6.33 mm.

Holotype: Female, Maisi, Oriente Province, February 5, 1929, J. Acuña.

Allotype: Male, Oriente Province, September 12.

Paratypes: Female, Baracoa, Oriente Province, April 25, 1929, S. C. Bruner and L. Bouclé; Jarahueca, S. C. Bruner.

This very distinct little species is rare and apparently confined to eastern Cuba. There is a specimen in the Gundlach Museum, Havana, labeled "No. 366, *Tettigonia* sp." Records show this was taken at Baracao.

Arezzia rangeliana n. sp. Figs. 22, 46.

Resembles *Hadria convertibilis* but readily distinguishable by shorter, more obtuse head, paler, brownish coloration with narrower black stripes and by abdomen being red above, not black.

Form relatively robust. Crown short, broadly rounded in front, scarcely one-half as long as basal width and about six-tenths as long as pronotum, still shorter in male. Clypeus with disc flattened, the anteclypeus continued in same plane to center, then abruptly curved backward to apex, forming a broad rounded angle. Pronotum somewhat narrower than head across eyes, about six-tenths as long as broad. Tegminae of the usual form with two oblong anteapical cells, the inner one somewhat shorter.

Genitalia: Female, last ventral segment about four times as long as the penultimate, produced behind into a rather long

point, the apex similar to *Hadria trinitalis*, but less acute; pygofer with few short blackish bristles. Male, last ventral segment less than two-thirds as long as broad, longer than penultimate, posterior margin straight, plates moderately broad tapering to slender, upturned apices not reaching apex of pygofer; sides with usual row of blackish bristles.

Color: Above buffy yellow and light brown striped with black, the stripes on crown and thorax broken into irregular curved lines. Crown dull buffy or slightly pinkish yellow marked with somewhat variable design of irregular curved heavy black lines. Pronotum with anterior margin broadly buffy yellow, remainder light olive brown, marked with irregular, curved heavy black lines, more or less anastomosing especially in front, and tending to form three irregular vittae on either side. Scutellum concolorous with crown, marked with variable design of heavy black curved lines and spots; postscutellum paler yellow. Tegminae sepia marked along longitudinal veins with percurrent black stripes and irregular dashes between; the anterior half of costal area buffy yellow, and extreme apex of clavus pale yellow; the translucent apical area infuscate; a darker fascia from costal margin across basal half of antepical cells followed by a similar fascia of pale yellow. Below largely amber yellow. Face straw yellow marked with black and fuscous; clypeus with large irregular black spot in center above, the disc below washed with pale fuscous and sides with eight or nine more or less complete, heavy black bars. Mesosternum largely fuscous or blackish. Legs with tibiae and tarsi buffy yellow more or less washed with brown. Apex of genital segment of female and ovipositor infuscate, the sides of pygofer with a smoky patch. Abdomen above bright crimson. Wings infuscate.

Length: 6.3—7.5 mm.

Holotype: Female, and Allotype: Male, Las Animas, Sierra Rangel, Pinar del Río Province, altitude 1,500 ft., April 28, 1933, S. C. Bruner and A. R. Otero, on woody plants in forest.

Paratypes: Sierra Rangel, Pinar del Río, one male April 6, 1922, J. Acuña, C. H. Ballou, S. C. Bruner, (E. E. A. de Cuba No. 8775), and one female from the same region, May 1933, Hon. Roberto, Colegio "La Salle"; Taco Taco, April 1-6, 1922, S. C. Bruner and C. H. Ballou.

Entogonia Mel.

(Melichar 1926a: 360)

Orthotype *Tettigonia sagata* Signoret 1854a: 27

This genus was established for certain species of Cicadellids from the Southern United States, México, Central and South America; with broad nearly flat crowns which are more or less produced in front of eyes. Venation distinct with a distinct first radial anteapical cell.

Entogonia inexpectata n. sp. Fig. 9.

This is a small slender species of a general pale buffy color, with the head, pronotum and mesonotum striped with chestnut brown and the veins of the tegminae marked with chestnut brown. This species is suggestive of *Cicadella occatoria* Say but is somewhat smaller, duller in color and lacks the median dark vitta on the pronotum and mesonotum and the genitalia are entirely different.

Crown broad somewhat elongate, about two-thirds as long as broad; shorter than the pronotum. Head including eyes somewhat broader than pronotum. Face somewhat tumid. Tegminae narrow elongate; nearly twice as long as the abdomen; radius forked before the level of the apex of clavus; legs slender, fore and middle tibiae ciliate.

Genitalia: Male, last ventral segment nearly as long as broad, posterior margin straight; plates elongate, slender apices upturned, about half as long as the pygofer.

Color: Face, crown, pronotum and mesonotum ochraceous orange, the crown with a pair of narrow stripes which unite near the anterior margin, diverging posteriorly to form a distinct V. Outside of these a pair of broader parallel stripes which continue onto the face forming two elongate black marks. There are two short black stripes in front of eyes which continue onto the face. The markings of the crown are continued across the pronotum and the mesonotum. Tegminae warm buff; veins marked with chesnut brown, the apex suffused with chesnut. Legs and venter warm buff.

Length: 4.7 mm.

Holotype: Male, Barrio Caobilla, Camgüey, Cuba, June 23-25, 1927, J. Acuña.

Lucumius gen. n.

Orthotype *Lucumius triangularis* n. sp.

This genus has a superficial resemblance to *Xerophloea* Germ. with the head broadly triangular and the tegminae gradually attenuated giving the body a wedge shaped appearance.

Head with eyes as broad as pronotum; crown short but distinctly conically produced; clypeus broad above the sides distinctly sinuate below the eyes; anteclypeus narrow elongate, the sides nearly parallel. Pronotum broader than long; the anterior angles distinct. Scutellum large, broader than long. Tegminae coriaceous; membranes overlapping so that the apex appears very acute; venation simple, two small antepical cells. Anterior and posterior tibiae ciliate. Male genitalia simple, aedeagus very short barely exceeding styles with a pair of short posterior processes.

Lucumius triangularis n. sp. Figs. 4, 47, 56.

This is a medium sized species with the general body color ochraceous buff with the crown, pronotum and scutellum with numerous blackish brown vermiculate lines; and the veins of the tegminae narrowly blackish brown.

Crown about one and one-half times as broad as long, conically produced; eyes not protuberant; ocelli large; face somewhat inflated. Pronotum nearly twice as broad as long; anterior margin broadly curved; posterior margin nearly straight. Principal veins of the tegminae unbranched before antepical cells, broadly curved following the contour of the costal margin.

Genitalia: Last ventral segment of female three times as long as penultimate; posterior margin sinuate forming a broad short median lobe which terminates in a small median triangular tooth; pygofer elongate not inflated. Male genitalia with the plates elongate, triangular, longer than the pygofer.

Color: General color above and below ochraceous buff, heavily marked above with blackish brown; below, with the legs unmarked; dorsum of abdomen bright scarlet. Crown and pronotum with numerous vermiculate blackish brown lines and dashes. Scutellum with a distinct cross formed by a median vitta and a transverse fascia on the impressed line, the distal

ends of the fascia ending in vermiculate lines. Tegminae ochraceous buff with the veins blackish brown and the cells shaded with chestnut brown. Face ochraceous brown with a pair of black spots at the apex, and a black dash next the eyes; and ten chestnut brown arcs.

Length: 6.0 mm.

Holotype: Female, Camagüey, S. C. Bruner.

Allotype: male Camagüey, S. C. Bruner.

Paratypes: One male and one female, same locality.

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PLATE III

Fig. 1. *Hortensia similis* Walk.

A. Dorsal view of head and thorax; B. Profile; C. Female genitalia; D. Male genitalia.

Fig. 2. *Hortensia flicis* M. and B.

A. Dorsal view of head and thorax; B. Profile; C. Female genitalia; D. Male genitalia.

Fig. 3. *Poeciloscarta histrio* Fabr.

A. Dorsal view of head and thorax; B. Profile; C. Female genitalia; D. Male genitalia.

Fig. 4. *Lucumius triangularis* M. and B.

A. Dorsal view of head and thorax; C. Female genitalia.

Fig. 5. *Hortensia gundlachiana* M. and B.

A. Dorsal view of head and thorax.

Fig. 6. *Hortensia conciliata* M. and B.

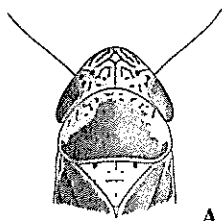
A. Dorsal view of head and thorax.

Fig. 7. *Poeciloscarta laticeps* M. and B.

A. Dorsal view of head and thorax; B. Profile; C. Female genitalia; D. Male genitalia.

PLATE IV.

- Fig. 8. *Poeciloscarta cardini* M. and B.
A. Dorsal view of head and thorax; B. Profile; C.
Female genitalia; D. Male genitalia.
- Fig. 9. *Entogonia inexpectata* M. and B.
A. Dorsal view of head and thorax.
- Fig. 10. *Hadria trinitalis* M. and B.
A. Dorsal view of head and thorax; B. Profile; C.
Female genitalia; D. Male genitalia.
- Fig. 11. *Hadria convertibilis* M. and B.
A. Dorsal view of head and thorax; B. Profile; C.
Female genitalia; D. Male genitalia.
- Fig. 12. *Arezzia maestralis* M. and B.
A. Dorsal view of head and thorax; B. Profile; C.
Female genitalia; D. Male genitalia.

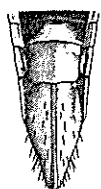


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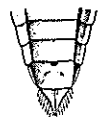


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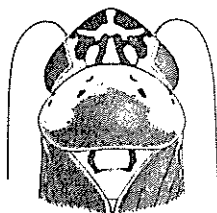
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C



D

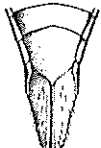


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B

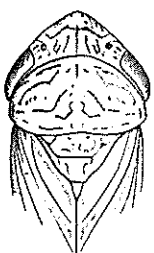
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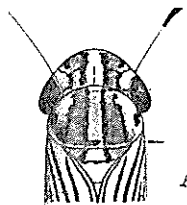
C



D



4 A

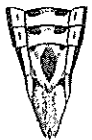


A



B

3



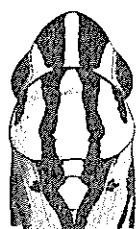
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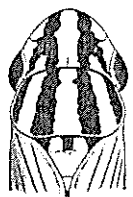
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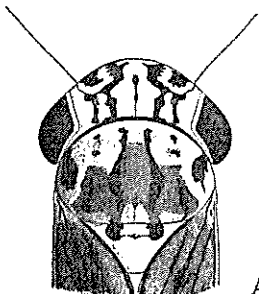
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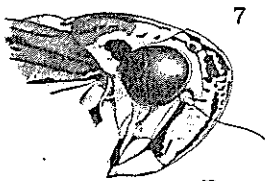
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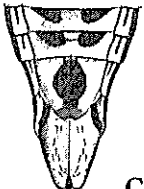


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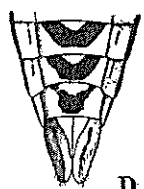


B

7



C



D

PLATE V.

Fig. 13. *Hadria cubana* M. and B.

A. Dorsal view of head and thorax; B. Profile; C. Female genitalia; E. Face.

Fig. 14. *Kolla fasciata* Walk.

A. Dorsal view of head and thorax; B. Profile; C. Female genitalia; D. Male genitalia.

Fig 15. *Hadria labyrinthica* M. and B.

A. Dorsal view of head and thorax; B. Profile; C. Female genitalia; E. Face.

Fig. 16. *Hadria balloui* M. and B.

A. Dorsal view of head and thorax; B. Profile; C. Female genitalia; D. Male genitalia .



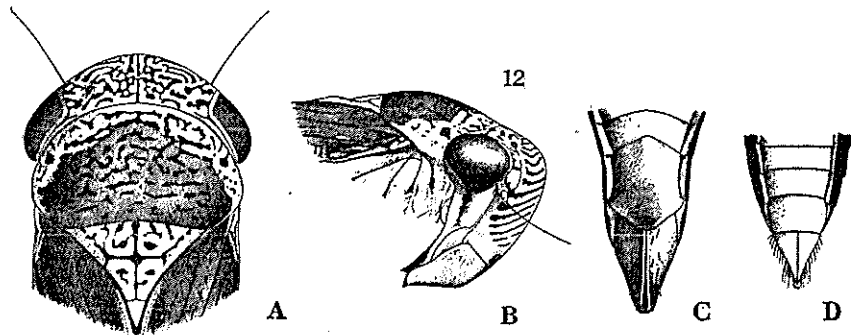
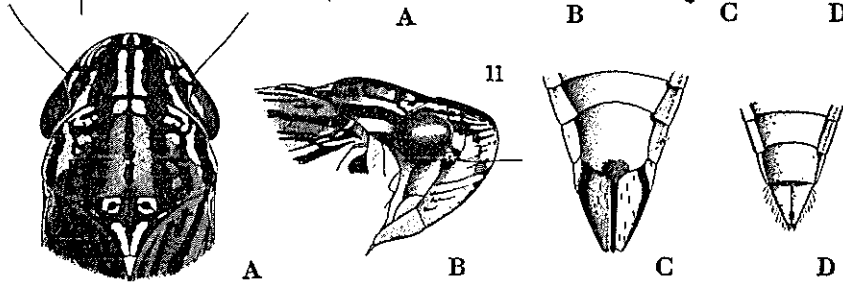
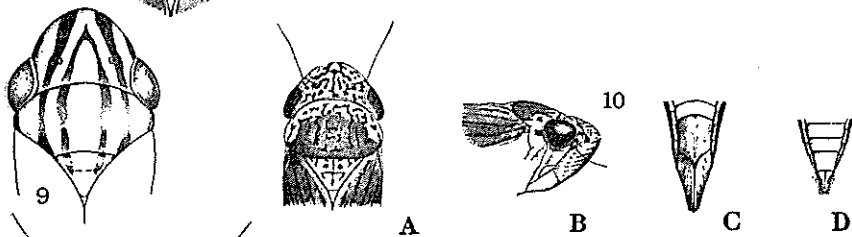
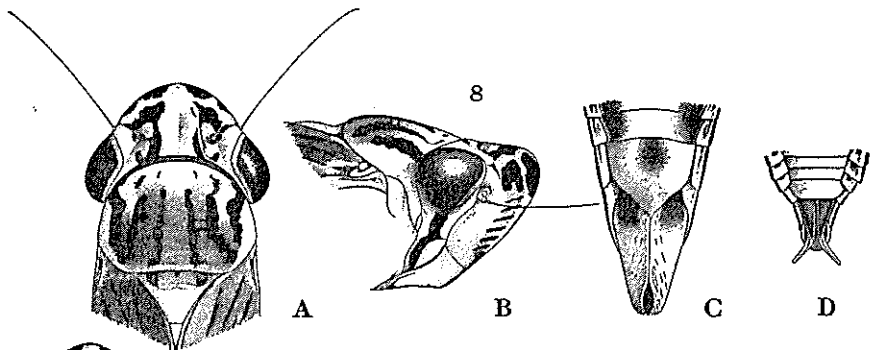
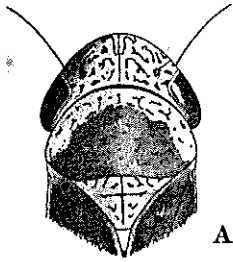
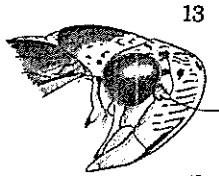


PLATE VI.

- Fig. 17. *Arezzia omaja* M. and B.
A. Dorsal view of head and thorax; B. Profile; C. Female genitalia; E. Face.
- Fig. 18. *Hadria oteroi* M. and B.
A. Dorsal view of head and thorax; B. Profile; C. Female genitalia; E. Face.
- Fig. 19. *Arezzia anachoreta* M. and B.
A. Dorsal view of head and thorax; B. Profile; C. Female genitalia; E. Face.
- Fig. 20. *Arezzia baracoa* M. and B.
A. Dorsal view of head and thorax; B. Profile; D. male genitalia; E. Face.
- Fig. 21. *Arezzia viridipennis* M. and B.
A. Dorsal view of head and thorax; B. Profile; C. Female genitalia; E. Face.
- Fig. 22. *Arezzia rangeliana* M. and B.
A. Dorsal view of head and thorax; B. Profile; C. Female genitalia; D. Male genitalia.

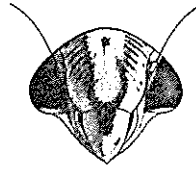


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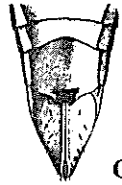


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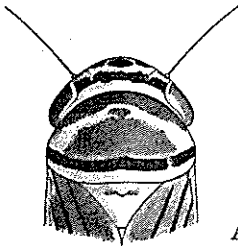
B



E



C

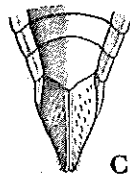


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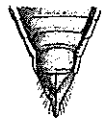


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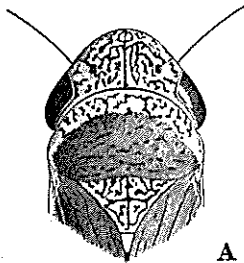
B



C



D

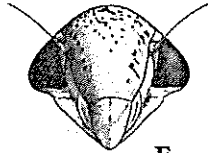


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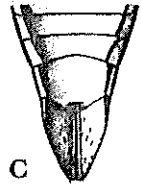


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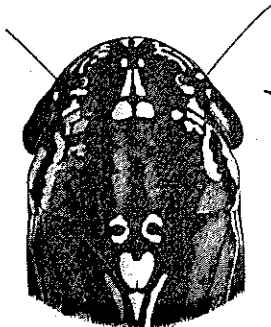
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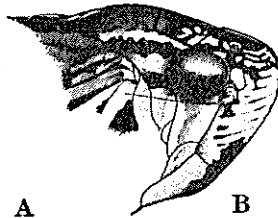
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C

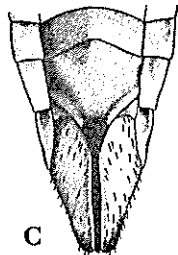


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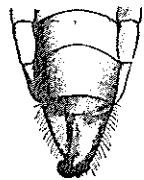


16

B



C

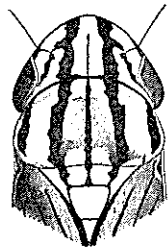


D

PLATE VII.

Internal Male Genitalia

- Fig. 23. *Draeculacephala cubana* M. and B.
- Fig. 24. *Carneocephala flaviceps* Riley
- Fig. 25. *Carneocephala reticulata* Sign.
- Fig. 26. *Hortensia filicis* M. and B.
- Fig. 27. *Poeciloscarta cardini* M. and B.
- Fig. 28. *Kolla fasciata* Walk.
- Fig. 29. *Poeciloscarta histrio* var. *baraguensis* M. and B.
- Fig. 30. *Poeciloscarta laticeps* M. and B.
- Fig. 31. *Hortensia similis* Walk.
- Fig. 32. *Hadria convertibilis* var. *roigi* M. and B.
- Fig. 33. *Poeciloscarta histrio* Fabr.
- Fig. 34. *Ciminius harti* Ball
- Fig. 35. *Hadria convertibilis* M. and B.
- Fig. 36. *Kolla carabela* M. and B.
- Fig. 37. *Hadria balloui* M. and B.
- Fig. 38. *Hadria cubana* M. and B.

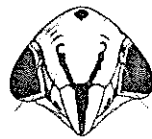


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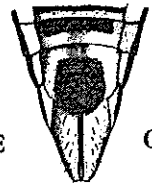


B

17



E



C



A



B

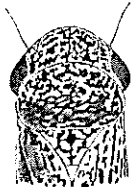
18



E



C



A

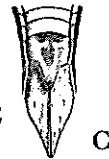


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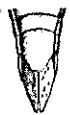
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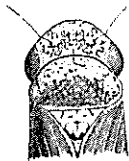
E



C



21 C



21. A



A



B

20



E



D

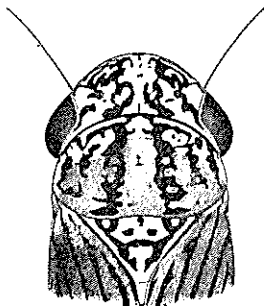


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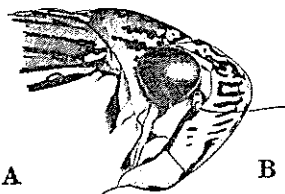
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E

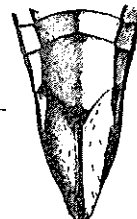


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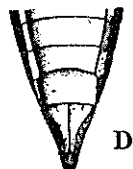


B

22



C



D

PLATE VIII.

Internal Male Genitalia

Fig. 39. *Arezzia omaja* M. and B.

Fig. 40. *Hadria labyrinthica* M. and B.

Fig. 41. *Arezzia maestralis* M. and B.

Fig. 42. *Arezzia anachoreta* M. and B.

Fig. 43. *Arezzia viridipennis* M. and B.

Fig. 44. *Arezzia baracoa* M. and B.

Fig. 45. *Hadria trinitalis* M. and B.

Fig. 46. *Arezzia rangeliana* M. and B.

Fig. 47. *Lucumius triangularis* M. and B.

Tegminae

Fig. 48. *Draeculacephala cubana* M. and B.

Fig. 49. *Hortensia similis* Walk.

Fig. 50. *Poeciloscarta histrio* Fabr.

Fig. 51. *Cicadella viridis* Linne. (Palearctic and Nearctic species.)

Fig. 52. *Kolla carabela* M. and B.

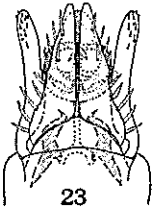
Fig. 53. *Ciminius harti* Ball.

Fig. 54. *Hadria convertibilis* M. and B.

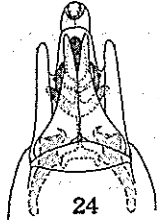
Fig. 55. *Arezzia maestralis* M. and B.

Fig. 56. *Lucumius triangularis* M. and B.

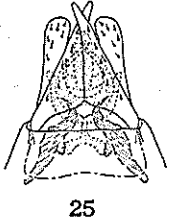
(The cubital vein is omitted)



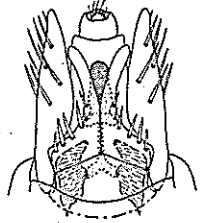
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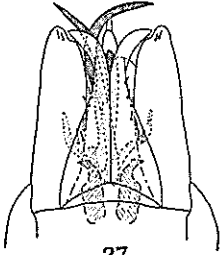
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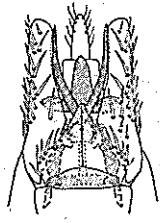
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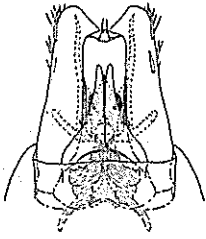
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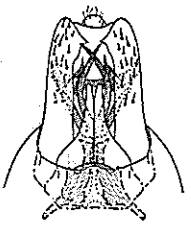
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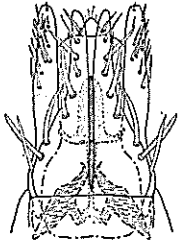
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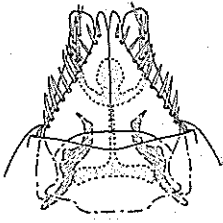
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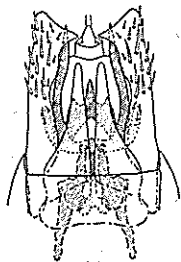
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31



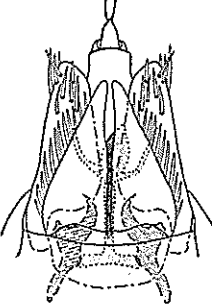
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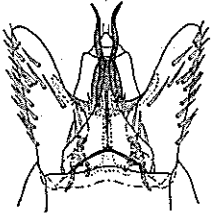
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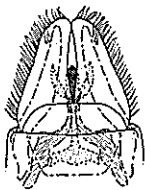
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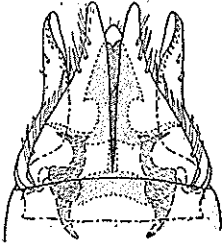
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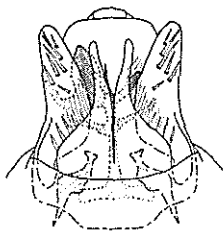
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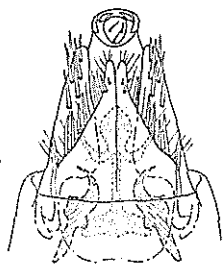
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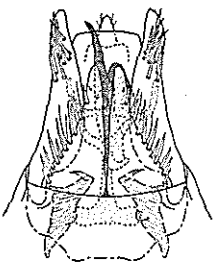
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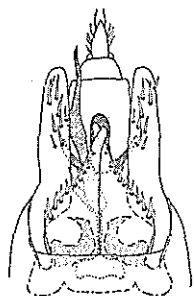
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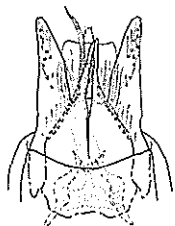
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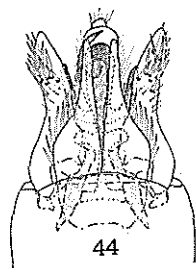
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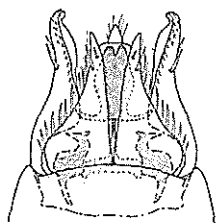
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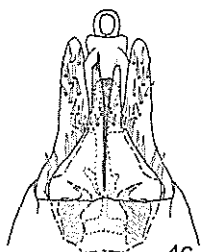
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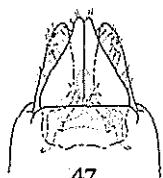
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45



46



47



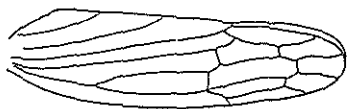
53



50



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51



48



55



49



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52