

THE GENUS *PINTALIA* STÅL (HOMOPTERA, CIXIIDAE)

By the late FREDERICK MUIR, D.Sc.*

[Read 3rd October, 1934.]

WITH THIRTY-ONE TEXT-FIGURES.

Pintalia Stål.

- Pintalia* Stål, 1862, Svensk. Vet. Akad. Handl., 3 (6) : 4. Type *P. lateralis* Stål. Stål, 1866, Hem. Afr., 4 : 165. Muir, 1925, Pan-Pac. Ent., 1 : 103, 106.
- Cotyleceps* Uhler, 1895, Proc. zool. Soc. Lond., 1895 : 63. Type *C. decorata* Uhler. Muir, 1925, *op. cit.*, p. 100.
- Metabrixia* Fowler, 1904, Biol. cent. Amer. Homoptera, 1 : 80. Type *M. delicata* Fowler. Muir, 1925, *op. cit.*, p. 100.
- Ciocixius* Metcalf, 1923, J. Elisha Mitchell sci. Soc., 38 : 183. Type *Cixius dorsivittatus* Van Duzee. Muir, 1925, *op. cit.*, p. 100.

THIS genus was erected by Stål for nine species from Rio Janeiro; of these *consobrina* and *ustulata* are not typical. In 1869 Stål placed *Flata variegata* Fabr. from the West Indies into this genus. In 1890 Lethierry described *Pintalia discoidalis*. There appears to have been no further recognition of the genus until Muir, 1925, gave the above synonymy. The writer regrets that he has been unable to identify any of Stål's species among the South American material. Figures of the head, thorax and tegmen show the chief characteristics of the genus. The vertex is distinctly divided into two parts by a transverse carina which is straight or curved. In *discrepans*, which is only provisionally placed within the genus, the transverse carina forms two arcs and the base of the lateral carinae of the frons is swollen. The hind tibiae are generally unarmed, but in some species there are two small spines. The ovipositor is complete, well developed, curved, the pygofer longer than wide, with a longitudinal depression down the middle. The body is considerably flattened laterally and the tegmina steeply tectiform.

The male genitalia are of the normal Cixiid type. The pygofer is compressed laterally, the lateral margins at or near the anal angle are often produced, the medio-ventral process is always present. The anal segment is large, longer than broad, the ventral surface more or less concave, with the ventral margin beyond anus produced, sometimes asymmetrical and sometimes curved ventrad. The genital styles are generally long and narrow, in transverse section more or less angular, narrow at base and generally broadest at or near apex. The aedeagus is large; the periandrium well developed, tubular or subtubular, well chitinised except at the apex; the base is continued dorsally as a quadrate plate towards the anal segment, in some species there is a small membranous area in the middle of this plate, in other species this

* Dr. F. Muir died on May 13, 1931, leaving a number of unfinished manuscripts on the Fulgoroidea. These manuscripts, of which the present paper is one, are now the property of the British Museum (Nat. Hist.) and will be published in due course as opportunity arises.—W. E. CHINA.

area is larger so that the chitinisation forms a frame. The penis is large, the outer wall often fairly well chitinised, the inner wall complex, folded up when at rest, its surface bearing small chitinous spines, and part of its surface is chitinised; it is highly probable that during copulation a portion of this inner surface is evaginated. Both the periandrium and penis often bear spines of different sizes. A strongly chitinised tube (the apodeme of acnis) runs through the periandrium; distally it continues into the inner wall of the penis, basally it forms the spermatoc chamber; the ventral wall of this chamber is formed by the broadening of the wall of the apodeme of penis, the sides and dorsal wall by a thin, transparent, but strong membrane, the continuation of the dorsal and lateral walls of the apodeme. The basal wall or floor of the chamber is formed by a strongly chitinised structure, the bridge; this is formed of a more or less flat surface which articulates to the distad expanded wall of the apodeme of the penis, and dorsally (or internally) is expanded into a large, concave surface produced into two arms; to this concave surface (apodeme of bridge) large muscles are attached which proceed to the walls of the pygofer and work the aedeagus. The bridge, or floor of the chamber, is pierced by a small hole and the ejaculatory duct continues into the body lumen from this point. A strongly chitinised rod (apodeme of genital styles *ap. g. s.*) proceeds from the bridge to between the bases of the genital styles, where it is expanded and forms a close connection with the base of the styles and the median ventral process.

When working on the homologies of such complex structures as the male genitalia of Fulgorids we must consider the probabilities that things may not always be "what they seem," and in the absence of knowledge of the ontogeny of the above described structures homologies with other Fulgorids, even nearly related ones, are mostly speculation. From observations on a number of species of *Pintalia*, *Andes* and *Oliarus* it appears as if the apodeme of penis is formed by the ejaculatory duct becoming highly chitinised. In Coleoptera such as *Eumolpus surinamensis* we find a highly chitinised ejaculatory duct running well into the lumen of the abdomen. The chamber, bridge and apodeme of bridge appear to be continuations of the apodeme of penis and so are probably of a similar origin. The apodeme of the genital styles can be seen to be attached to the bridge and does not appear to be a development from it. It is possible that it arises from the small chitinised area between the base of the genital styles, a sclerite well developed in many Homoptera (v. o. JASSIDAE) and called the *connective*. In *Eurymela* (a primitive type of Jassid) the connective is a small, quadrate plate with a short, broad, thin flange projecting from the middle into the lumen of the pygofer and could very well represent the early stage of the apodeme of the genital style as found in *Pintalia* and many other Fulgorids. When we know more about the ontogeny of these structures in the different families, or groups of families, of Fulgorids we shall be more certain of the homologies, and so have a better understanding of the relationship of the groups and families.

Pintalia fuscipennis sp. n., fig. 1.

Male: length 4.7 mm.; tegmen 5 mm. Width of vertex between basal angles, ~~twice~~ the length in middle and slightly wider than apex (1.2 to 1), transverse carina nearly straight. Length of frons 1.4 times the width. The periandrium is long, slender, tubular, with ~~three~~ spines, the penis is short and without armature; it comes near to *quadrispinosa*. Brown; legs slightly lighter. Tegmina stramineous or light brown on basal half, the subapical

and apical cells fuscous; three small fuscous marks in costal cell, a spot at claval fork, another at *Cu* fork and another at *Sc + R* fork, a small dark mark on hind margin at

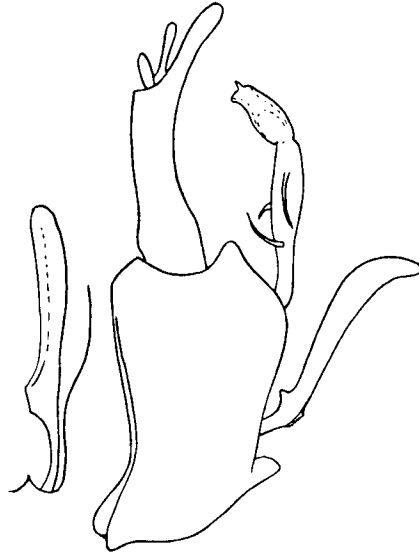


FIG. 1.

apex of clavus; tips of apical veins lighter than membrane. Wings fuscous with dark veins.

Described from one male from BRAZIL: Jabaty, May 1924 (*F. X. Williams*). Type No. 1246, in collection of Hawaiian Sugar Planters' Assoc. Experiment Station, Honolulu.



FIG. 2.

***Pintalia propria* sp. n., fig. 2.**

Male: length 3.7 mm.; tegmen 5.3 mm. Width of vertex between basal angles 2.5 times the length in middle and twice the width at apex, the lateral margins from apex to

transverse carina parallel, then strongly diverging posteriorly, transverse carina very widely angular, or nearly straight. Length of frons 1.4 times the width, only slightly excavate. The aedeagus has a pair of large spines, one on each side of the base of the penis, and two at apex of periandrium, a long, slender spine and a shorter spine; there is also a fairly large projection on the ventral aspect of the periandrium near base, and a smaller one a little to the right of it. The anal segment is very distinctive, there being a pair of projections from the lateral corners of the apex, and the anal style is large, broad, concave on ventral and convex on dorsal surface.

Dark stramineous; tegmina hyaline, slightly opaque; veins brown; cross-veins and apical cross-veins fuscous, extending slightly into membrane; four small, fuscous spots in costal cell; three small, fuscous marks in basal half, one on *R* and *M*, one slightly beyond *C* fork and one at apex of claval fork; a fuscous spot at the apex of each apical cell, four slightly basad of these and four small spots in subapical cells. Wings hyaline, slightly fuscous with darker veins.

Described from one male from BRAZIL: Rezende, March 1924 (*F. X. Williams*). Type No. 1245, in collection of H.S.P.A. Exp. Sta., Honolulu.

***Pintalia huigrensis* sp. n., fig. 3.**

Male: length 3.5 mm.; tegmen 6.3 mm. Width of vertex between basal angles 2.4 times the length in middle and 1.6 times the width at apex, transverse carina straight; length of frons 1.4 times the width, lateral carinae large, frons considerably concave.

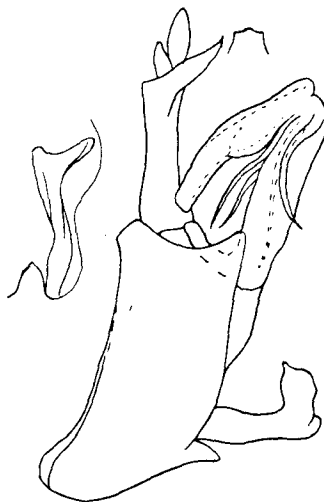


FIG. 3.

Brown, carinae of head and thorax lighter, darkest on lateral portion of mesonotum. Tegmina clear hyaline, veins in apical half fuscous, transverse and apical transverse veins fuscous or brown, veins in basal half lighter with a few darker marks, three minute fuscous marks in apical half of clavus. Wings clear hyaline with brown veins. Male genitalia figured.

Described from one male from ECUADOR: Huigra, May 31, 1923 (*F. X. Williams*). Type No. 1244, in collection of H.S.P.A. Exp. Sta., Honolulu.

***Pintalia furcata* sp. n., fig. 4.**

Male: length 3.8 mm.; tegmen 6.5 mm. Width of vertex between basal angles 3 times the length in middle and 1.8 the width at apex; transverse carina nearly straight.

slightly anterior to middle on median line. Length of frons 1.7 times the width, widest on apical half, lateral margins slightly arcuate, apex and base subequal in width. Brown, darkest over mesothorax; hind legs lighter than middle and front legs. Tegmina light brown, with darker fuscous over apical portion, with lighter semi-hyaline marks; these semi-hyaline, light marks are:—two small ones in clavus, over *M* and *Cu* basal cells,



FIG. 4.

over *R* fork, through four *R* and *M* apical cells, over *M* 3-4 fork, and a small one on hind margin slightly apical of apex of clavus. Wings slightly fuscous with darker veins. The periandrium has three spines near its apex, two small, curved spines and one larger, fuscate spine; there is a small spine at apex of penis.

Described from one male specimen from ECUADOR: Mera, January 26, 1923 (*F. X. Williams*). Type No. 1241, in collection of H.S.P.A. Exp. Sta., Honolulu.

***Pintalia distincta* sp. n.**

Female: length 4.6 mm.; tegmen 5 mm. Width of vertex between basal angles 2.7 times the length in middle and 1.4 times the width at apex; the basal emargination subangular in middle and slightly sinuous. Length of frons 1.4 times the width, base and apex subequal in width, sides slightly arcuate. Middle of frons and clypeus, sides of clypeus and genae behind antennae and the vertex black or fuscous brown, rest of the head light brown; pronotum dark in middle and along anterior margin behind eyes, the rest light; mesonotum light brown, fuscous along margin of posterior angle; abdominal sternites yellow, tergites and genitalia dark brown; legs light brown, front and middle tibiae and tarsi darker brown. Tegmina hyaline, clear, veins brown excepting the claval suture which is yellowish, apical and subapical veins lighter than the basal portions, infuscate in the membrane over the apical veins making a dark line across tegmen, a narrow fuscous line through middle of apical cells. Wings hyaline with brown veins, slightly fuscous along apical margin.

Described from two females from ECUADOR: Tena, February 25, 1923 (*F. X. Williams*). Type No. 1239, in collection of the H.S.P.A. Exp. Sta., Honolulu; paratype in Brit. Mus. (Nat. Hist.). The colouration of this species is so distinct that I do not hesitate to describe it from females only.

***Pintalia longispinis* sp. n., fig. 5.**

Male: length 3.4 mm.; tegmen 4.9 mm. Width of vertex between basal angles 3 times the length in middle 1.5 times the width at apex; length of frons in middle 1.4 times

the width, sides arcuate from base to apex, apex slightly wider than base; the median carina forms a small but distinct fork at base. Brown, lighter over carinae of head and middle of pronotum; tegmen light sordid brown, opaque, three faint spots, one at claval fork, another at *Cu f*, and the other near *Sc + Rf*; a dark mark at apex of clavus, apical margin fuscous extending into half the apical cells, costa dark brown, veins light brown, darker over cross-veins and apical cross-veins; wings light fuscous; opaque with a sordid



FIG. 5.

white waxy secretion. The genitalia very distinct, a long, slender spine arises from the left side at base and lies alongside the perianthrium, two spines arise from the apex of perianthrium, one on each side, and two smaller spines arise slightly before the apex.

Female: length 3.4 mm.; tegmen 5 mm. Darker in colour than the male with the spots on the basal half of the tegmen more distinct, the apical cells mostly fuscous with an irregular lighter mark through the middle.

Described from four males and three females from BRAZIL: Belem, Para. May, June 1924 (*F. X. Williams*). Type No. 1232, in collection of H.S.P.A. Exp. Sta., Honolulu; paratypes in Brit. Mus. (Nat. Hist.).

In colour of tegmina this comes next to *blairmontensis*, but it is slightly darker, especially in the female.

Pintalia quadrispinosa sp. n., fig. 6.

Male: length 3.4 mm.; tegmen 5 mm. Width of vertex between basal angles 2.3 times the length in middle and 1.9 times the width at apex, the apex is slightly concave. Length of frons 1.6 times the width, base slightly wider than apex, sides very slightly arcuate on apical two-thirds. Brown; darker over clypeus, middle of frons and the mesonotum, abdomen dark brown, front and middle legs darker than hind legs. Tegmina light sordid brown, lightly opaque with waxy secretion, a dark brown or black mark in middle of costal cell, another in middle of the stem, one at *Cu f* and a fourth at claval fork; fuscous over cross and apical cross-veins, a dark mark on commissure at apex of clavus, apical portions of apical cells slightly fuscous, a faint fuscous mark through middle of apical cells. Wings slightly fuscous with darker veins. The penis is simple and fairly small, the perianthrium has four spines, three on the left side, one of them near base, one near middle and one near apex, the spine on right side near apex.

Described from one male from BRAZIL: Arapary, May 1924 (*F. X. Williams*).
Type No. 1238, in collection of H.S.P.A. Exp. Sta., Honolulu. This species

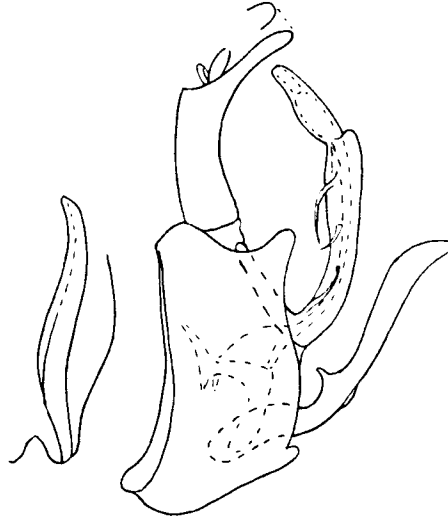


FIG. 6.

is nearest to *longispinus*, but differs in the structure of the aedeagus and in colour, the colouration of *obscurata* is close to it, but the spots across the basal half of tegmen are broken circles and not solid.

***Pintalia fuscomarginata* sp. n., fig. 7.**

Male: length 3.4 mm.; tegmen 5.6 mm. Width of vertex between basal angles 2.7 times the length and 1.6 times the width at apex. Length of frons in middle 1.6 times the width, apex a little wider than base. The apex of anal segment asymmetrical, the



FIG. 7.

left side rounded and produced considerably; the penis is produced into a strong, short, curved spine. Stramineous or light brown, slightly darker over frons and mesonotum, abdomen darker brown. Tegmina stramineous, fuscous on apical portion of costal cell, the stigma and along apical margin, the infuscation widest over *Cu* apical veins; a dark

mark at apex of clavus, extending along *Cu* to apical infuscation, a faint fuscous line from apex of apical *Rs* to *M4* over middle of apical cells, slightly infuscate over apical cross-veins, veins same colour as membrane. Wings slightly stramineous with light brown veins.

Female similar to male in build but somewhat darker in colour, the veins of tegmina darker.

Described from three males and two females from ECUADOR: Tena, March, February 1923 (*F. X. Williams*), and one male and one female from Felton's, near Tena, April 1923 (*F. X. Williams*). Type No. 1237, in collection of H.S.P.A. Exp. Sta., Honolulu; paratypes in Brit. Mus. (Nat. Hist.).

***Pintalia obscurata* sp. n., fig. 8.**

Male: length 4.4 mm.; tegmen 6 mm. Width of vertex between basal angles 2.5 times the length in middle and 1.3 times the width at apex, the vertex therefore short and broad; length of frons 1.4 times the width, base and apex subequal in width, slightly widest on apical half, sides slightly arcuate. There is a faint medio-longitudinal line dividing the apical portion of the vertex (fossette) into two areas (areolets). Genitalia figured; periandrium fairly simple with three spines, the penis produced into a strong,



FIG. 8.

curved spine at apex and has a spine on each side arising on basal half. Brown; dark over mesonotum and abdomen. Tegmina hyaline with brown veins, a slight, irregular, brownish mark from middle of costa to fork of claval veins forming three broken, small circles; slightly fuscous over cross-veins and apical cross-veins, two irregular, narrow, fuscous lines, cross apical cells from *M3* to *R*, very slightly fuscous over *Cu* beyond apex of clavus, apical margin darker fuscous extending a little into apical cells between apical veins. Wings hyaline, very slightly fuscous, veins darker.

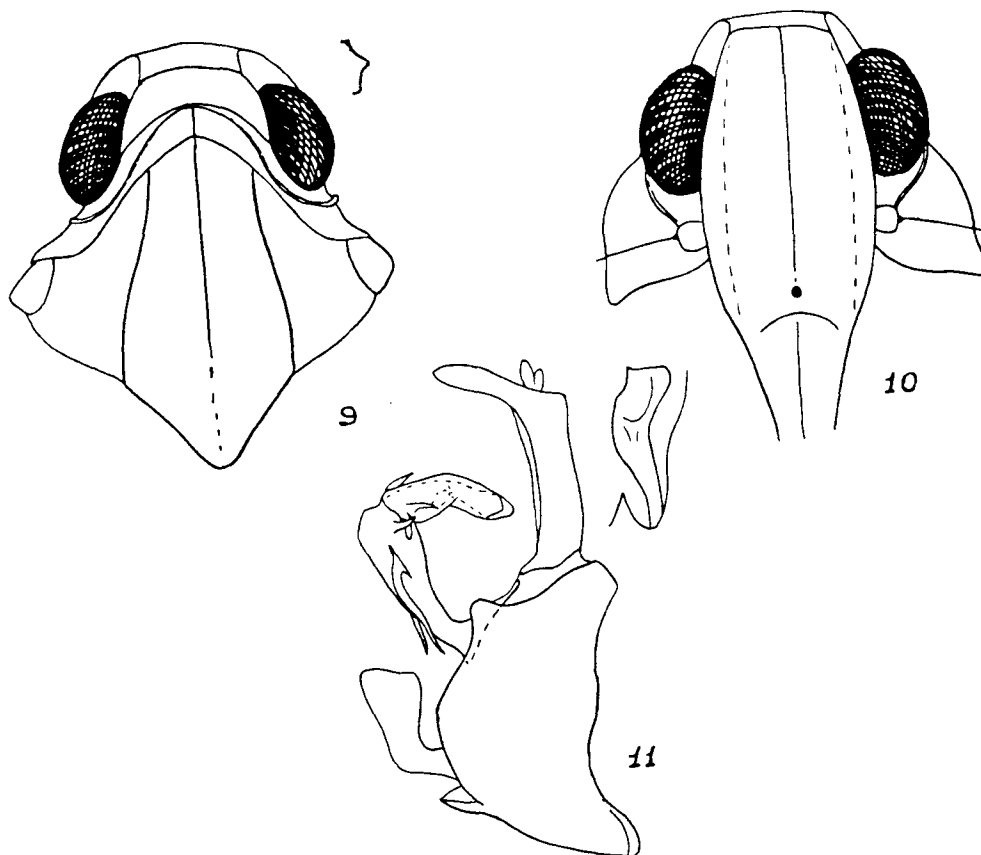
Female: length 4.8 mm.; tegmen 6 mm. Similar to male in colour and build.

Described from three males and two females from ECUADOR: Tena, March 1923 (*F. X. Williams*). Type No. 1236, in collection of H.S.P.A. Exp. Sta., Honolulu; paratypes in Brit. Mus. (Nat. Hist.).

***Pintalia lentiginosa* sp. n., figs. 9, 10 and 11.**

Male: length 3.8 mm.; tegmen 6.4 mm. Width of vertex between basal angles 2.3 times the length of vertex in middle, and 1.5 times the width at apex; sides anterior to

transverse carina parallel, posterior to transverse carina they diverge posteriorly considerably, base roundly emarginate, apex truncate. Length of frons 1.6 times the width, sides slightly arcuate, widest near middle, width at apex subequal to width at base, median carina simple, not very distinct. Brown, carinae of head, middle of pronotum, middle of mesonotum and legs lighter. Tegmina hyaline, slightly opaquely white, freckled with slight fuscous, some small, darker marks in costal cell, one in middle of clavus, one at the apex, the freckles nearer together on apical half, veins same colour as membrane or slightly yellowish; granules minute, same colour as veins. Wings hyaline, slightly opaque, veins



FIGS. 9-11.

light yellow. The genitalia are best understood by the figure. Apex of anal segment curved ventrad, rounded.

Female: length 3.8 mm.; tegmen 7 mm. Similar to the male in structure and colour, but the tegmina slightly more freckled and darker.

Described from eleven males and eight females from ECUADOR: Banos, 6000 feet elevation, October 30, 1922 (*F. X. Williams*), and three males and two females from ECUADOR: Mt. Tunguragura, 1000 feet elevation, January 4, 1923 (*F. X. Williams*); type is from Banos. There is a slight amount of variation in the number and intensity of the freckles on the tegmina in both sexes. Type No. 1209, in collection of H.S.P.A. Exp. Sta., Honolulu; paratypes in Brit. Mus. (Nat. Hist.).

***Pintalia lentiginosa* var. *tunguraguensis* var. n.**

There are two specimens, one male and one female, from ECUADOR: Mt. Tunguragura, 9000 feet elevation, January 4, 1923 (*F. X. Williams*), which differ from the typical specimen in having the spots in the middle running together forming a dark mark from base, over *R* and *M* to apex. The male genitalia are practically typical. Type No. 1235, in collection of H.S.P.A. Exp. Sta., Honolulu; allotype ♀ in Brit. Mus. (Nat. Hist.).

***Pintalia infuscata* sp. n., fig. 12.**

Male: length 3.8 mm.; tegmen 5.8 mm. Width of vertex at base 2.5 times the length in middle and 1.5 times the width at apex; length of frons in middle 1.6 times the width, width at apex 1.4 times the width at base. The apex of the anal segment is asymmetrical, being produced more on the left than on the right; the penis is membranous and sub-tubular with a plate arising from its base which is produced into two spines. Brown or

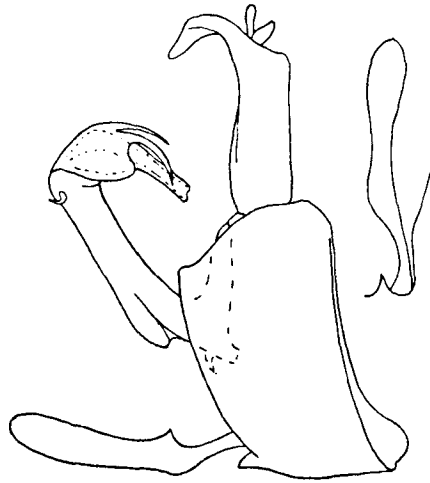


FIG. 12.

fuscous brown; carinae of frons, pronotum and legs lighter. Tegmina fuscous or brownish fuscous with lighter more hyaline spots, these latter being more numerous on basal half and appearing more like dark spots on the light fuscous background. Wings fuscous with brown veins.

Female: length 4.9 mm.; tegmen 7 mm. Similar in build and colour to the male but slightly darker.

Described from one male and one female from BRAZIL: Campinas, March 1924 (*F. X. Williams*). Type No. 1234, in collection of H.S.P.A. Exp. Sta., Honolulu; allotype ♀ in Brit. Mus. (Nat. Hist.).

***Pintalia fuscomaculata* sp. n., fig. 13.**

Male: length 3 mm.; tegmen 4.3 mm. Width of vertex between basal angles twice the length in middle and twice the width at apex, basal emargination somewhat angular. Length of face in middle 1.5 times the width, sides straight on basal third then slightly arcuate; apex 1.7 times the width of base. The conspicuous features of the aedeagus are the two large spines, one at base of penis and the other at middle of periandrium. Dark brown; the vertex, lateral margins of frons, middle of pronotum, and the legs lighter.

Tegmina stramineous or yellowish mottled with dark fuscous or black, the marking heaviest over apical cells where it appears as fuscous with lighter marks, a mark from apex of costal

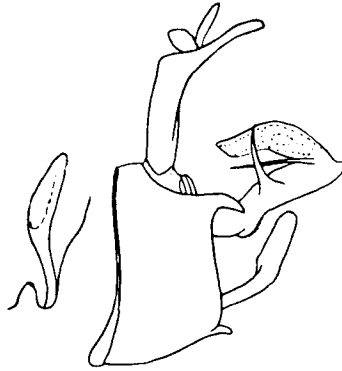


FIG. 13.

cell to *Mf* where it joins the apical infuscation and also an infuscation at apex of clavus; wings light fuscous with brown veins.

Female similar in build and colour to the male.

Described from one male and one female from BRAZIL: Belem, June 1924 (*F. X. Williams*). Type No. 1233, in collection of H.S.P.A. Exp. Sta., Honolulu; allotype in Brit. Mus. (Nat. Hist.).

***Pintalia blairmontensis* sp. n., fig. 14.**

Male: length 3 mm.; tegmen 4.3 mm. Width of vertex between basal angles twice the length in middle and twice the width at apex; length of frons 1.6 times the width, width at apex 1.8 times the width at base. Brown; lighter over carinae of head, legs and the genitalia. Tegmina opaquely white with waxy secretion with light brown spots,

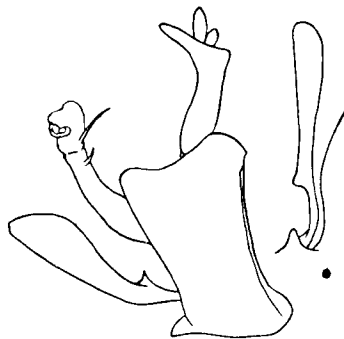


FIG. 14.

three in clavus, the largest at fork, two in costal cell with four crossing from *Sc + Rf* to *Cuf*, a darker mark at apex of clavus with a series of eleven small fuscous spots along apical margin between apical veins, veins light brown or stramineous, darker over cross-veins and apical cross-veins, a faint mark in the middle of *M 1*, *1a*, and *2* cells and near apex of *R* cells; wings hyaline, slightly fuscous, opaquely white with waxy secretion, veins brown. Apex of anal segment rounded; the penis very small.

Female similar to male but slightly darker in colour.

Described from four males and one female from BRIT. GUIANA: Blairmont, October, November 1923 (*F. X. Williams*). Type No. 1231, in collection of H.S.P.A. Exp. Sta., Honolulu; paratypes in Brit. Mus. (Nat. Hist.).

***Pintalia brunnivenosa* sp. n., fig. 15.**

Male: length 3.6 mm.; tegmen 5.6 mm. Width of vertex between basal angles 2.3 times the length in middle and 1.5 times the width at apex; length of frons 1.6 times the width, apex slightly broader than base. Light brown; darker between carinae of head, over middle of mesonotum and along the posterior-lateral margin of pronotum.

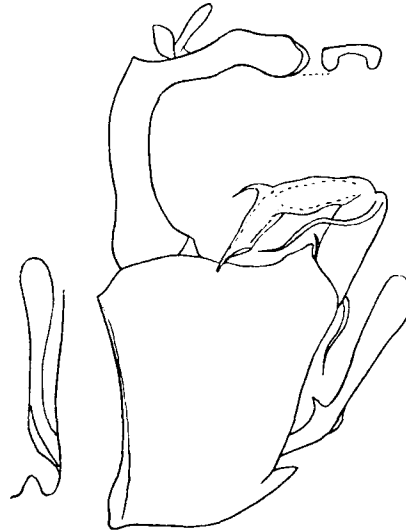


FIG. 15.

Tegmina opaquely white or slightly yellowish with dark brown veins, dark brown along commissure, continued slightly fuscous round apical margin to stigma; wings slightly yellowish fuscous, opaque with a slight waxy secretion, veins brown. Genitalia figured; on the right side of penis near base there is a small, curved spine.

Female considerably darker in colour than the male.

Described from one male and one female from ECUADOR: Tena, February, March 1923 (*F. X. Williams*), and one male and one female from ECUADOR: Mera, February 1923 (*F. X. Williams*). Type locality Tena. Type No. 1230, in collection of H.S.P.A. Exp. Sta., Honolulu; paratypes in Brit. Mus. (Nat. Hist.).

Pintalia delicata (Fowler).

Metabrixia delicata Fowler, 1904, Biol. cent. Amer. Homoptera, 1: 86, pl. ix, figs. 23, 23a.

There are three female specimens from ECUADOR: Tena, March, April 1923, which agree with the description and must stand under this name until males are procured.

***Pintalia bicaudata* sp. n., fig. 16.**

Male: length 3.8 mm.; tegmen 5.2 mm. Width of vertex between basal angles 2 times the length in middle, and 1.2 the width at apex; sides subangular or arcuate.

narrowest at middle; length of frons 1.5 times the width, sides slightly arcuate on apical half where it is widest, lateral carinae deep, making frons excavate; median ocellus distinct at apex of frons. Claval fork distad of middle of clavus, on level with *Cu f*, *Sc + R* fork more basad, *Mf* level with apex of clavus. Genitalia figured; the apex of anal segment bifurcated. Brown, darker in middle of frons and irregularly extending towards lateral margins; mesonotum lighter between carinae than on the sides. Basal half of tegmen dirty white irregularly spotted with brown, the granules numerous and brown, an irregular brown mark from apex of clavus towards costa irregularly wedge shape; from the base of stigma there is an irregular dark mark to *Mf* and over *Cu* to apex and from *Mf* to apical



FIG. 16.

Rs with many irregular dots between leaving a more or less triangular lighter patch with its base along margin from base of stigma to apical *Rs* and its apex reaching to *M 1 + 2*, fork; granules brown bearing light brown macrotrichia. Wings fuscous, lightest across middle, veins fuscous, darkest over apical half.

Female; length 4.4 mm.; tegmen 6.4 mm. In structure and colour similar to the male but much darker and the colour pattern on tegmen better defined. Anal segment small, longer than broad, subparallel sided, anus at apex; pygofer small, longer than wide; ovipositor longer than pygofer, curved.

Described from nine males and six females from ECUADOR: Tena, February, March, and April 1923 (*F. X. Williams*). Type No. 1211, in collection of H.S.P.A. Exp. Sta., Honolulu; paratypes in Brit. Mus. (Nat. Hist.).

***Pintalia obtorta* sp. n., fig. 17.**

Male: length 3.3 mm.; tegmen 5 mm. Width of vertex between basal angles a little more than twice the length in middle and a little less than twice the width at apex, the transverse carina slightly angular in middle. Length of frons in middle 1.5 times the width, apex slightly wider than base. The genitalia are very distinct and can be best understood by the figures. Brown, lighter over middle of mesonotum, pronotum, vertex and carinae of frons; abdomen dark. Tegmina on basal half dirty white speckled over with fuscous brown, the apical half dark fuscous with lighter areas over *Cu*, a small light

spot over apical *R* cells, a small yellowish dot at the apex of each apical vein. Wings fuscous with dark veins.



FIG. 17.

Described from one male from ECUADOR : Bucay, October 7, 1922 (*F. X. Williams*). Type No. 1212, in collection of H.S.P.A. Exp. Sta., Honolulu.

***Pintalia angustinata* sp. n., fig. 18.**

Male: length 3.3 mm.; tegmen 5.3 mm. Width of vertex between basal angles about twice the length in middle and nearly twice the width at apex, transverse carina curved; length of frons in middle 1.7 times the width, lateral margins arcuate on apical



FIG. 18.

half, straighter on basal half. Genitalia figured; the anal segment flattened laterally at apex into a subangular plate. Light brown; darker on genae around the eye and ocellus and under the antennae, darker over mesonotum. Tegmina hyaline slightly stramineous with fuscous markings very similar to those of *latinotata* but much narrower, the markings

in the apical cells being more like a fuscous network than light spots on a fuscous background, it is also somewhat similar to *tumatumariensis* but narrower and with hyaline areas in the apical cells more extensive. Wings light fuscous with dark veins.

Described from two males and one female from BRAZIL: Belem, and one male and one female from BRAZIL: Jabatv, Para, May, June 1924 (*F. X. Williams*). Type No. 1229, in collection of H.S.P.A. Exp. Sta., Honolulu; paratypes in Brit. Mus. (Nat. Hist.).

***Pintalia albolineata* sp. n., fig. 19.**

Male: length 3.2 mm.; tegmen 5 mm. The width between the posterior angles of vertex slightly less than double the length in middle and slightly more than double the width at apex; middle of apex slightly angular where the median frontal carina shows, sides of vertex nearly straight, not greatly carinate. Length of frons 1.4 times the greatest width, apex twice the width of base. Stramineous; vertex, frons and front of clypeus

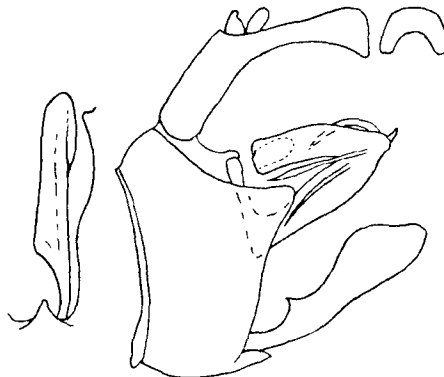


FIG. 19.

light, sides of clypeus, genae and the lateral carinae of basal half of vertex dark. Tegmina hyaline, fuscous, darker over apical cells and clavus; the commissure from base of tegmen to apex of clavus white, extending to the claval vein, the apical margin light; veins same colour as membrane or slightly darker; wings hyaline, slightly fuscous with dark veins. The genitalia best understood from figure.

Female: length 3.6 mm.; tegmen 5.3 mm. In build and colour similar to male but the tegmina more uniformly darker. Ovipositor complete, long, curved; pygofer small, disc nearly round, much shorter than ovipositor; anal segment small, but slightly longer than wide.

Described from one male and three females from BRIT. GUIANA: Blairmont, October, November 1923 (*F. X. Williams*). Type No. 1222, in collection of H.S.P.A. Exp. Sta., Honolulu; paratypes in Brit. Mus. (Nat. Hist.).

This is near to *P. delicata* (Fowler), but the tegmina are not so uniformly fuscous and the anal segment appears different.

***Pintalia albomarginata* sp. n., fig. 20.**

Male: length 3.4 mm.; tegmen 4.6 mm. Width of vertex between basal angles slightly more than twice the length in middle and 1.5 times the width at apex; median transverse carina straight, lateral margins nearly straight. The male genitalia best understood from figure; the apex of anal segment slightly asymmetrical, being slightly more

produced on left than on right. Head and legs light brown; pronotum, mesonotum and abdomen dark brown; front tibiae and tarsi fuscous. Tegmina dark brown, the commissure and apical margin light. Wings fuscous brown with darker veins.



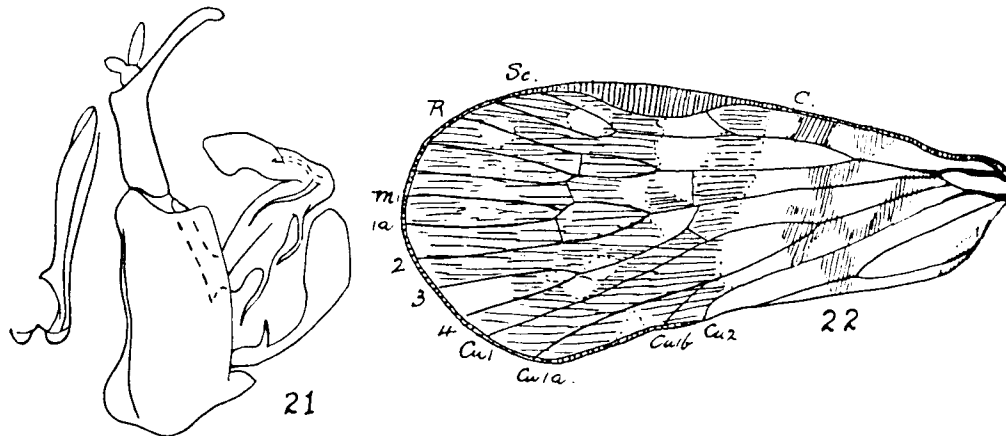
FIG. 20.

Female similar to male in build and colour. Anal segment considerably longer than wide, parallel-sided; ovipositor longer than pygofer.

Described from four males and one female from BRAZIL: Belem, May, June 1924 (*F. X. Williams*). Type No. 1223, in collection of H.S.P.A. Exp. Sta., Honolulu; paratypes in Brit. Mus. (Nat. Hist.).

***Pintalia tumatumariensis* sp. n., figs. 21 and 22.**

Male: length 3 mm.; tegmen 4.2 mm. Width of vertex between basal angles twice the length in middle; transverse carina in middle, slightly sinuate; length of frons in middle 1.6 times the width, sides slightly arcuate on apical half, straighter on basal half.



FIGS. 21-22.

The anal segment turned slightly ventral at apex and broadly rounded; the periandrium flattened laterally, especially ventrally.

Female similar to male in build and colour. Brown; legs and thoracic pleura lighter.

Tegmina hyaline, sordidly white, with fuscous markings (fig. 22). Wings fuscous with dark veins.

Described from two males and one female from BRIT. GUIANA: Tumatumari, July 19, 1923 (*F. X. Williams*). Type No. 1228, in collection of H.S.P.A. Exp. Sta., Honolulu; paratypes in Brit. Mus. (Nat. Hist.).

***Pintalia latinotata* sp. n., fig. 23.**

Male: length 3.5 mm.; tegmen 5 mm. Width of vertex between basal angles 2.8 times the length in middle, transverse carina slightly curved about middle. Length of frons in middle 1.5 times the width, lateral margins arcuate on apical half, straighter on basal half. Genitalia figured; apex of anal segment pointed. Dark brown, lighter over

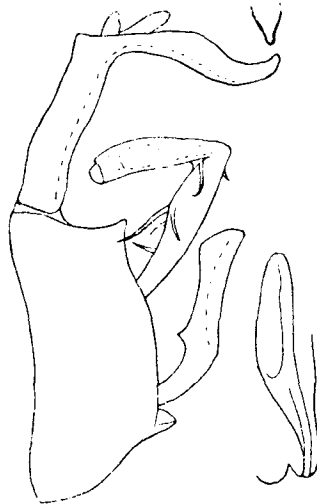


FIG. 23.

lateral portion of pronotum, on legs and abdomen. Tegmina hyaline, whitish or light stramineous heavily mottled with fuscous, the markings somewhat like that of *tumatumariensis* (fig. 22), but the transverse line in middle is more broken and the apical cells have seven or eight irregular but distinct hyaline spots, veins same colour as membrane. Wings fuscous with darker veins.

Described from one male from BRAZIL: Belem, June 1924 (*F. X. Williams*). Type No. 1227 in collection of H.S.P.A. Exp. Sta., Honolulu.

***Pintalia ecuadorensis* sp. n., fig. 24.**

Male: length 3.7 mm.; tegmen 5.8 mm. Width of vertex between basal angles 2.6 times the length in middle, and 1.5 times the width at apex; length of frons in middle 1.5 times the width, apex and base subequal, sides slightly arcuate. Genitalia figured; apex of anal segment rounded, the basal third of segment tubular, the apical two-thirds concave ventrally. Stramineous or light brown, darker over middle of mesonotum. Tegmina hyaline, slightly stramineous, a few fuscous marks in apical half of costal cell, a small mark across *M* near to *Cu f*, a small mark at fork of *Cu*, another near fork of clavus which is about one-third from apex, a small mark at apex of clavus on commissure, the cross-veins near *Mf* fuscous, the apical cross-veins fuscous. Fuscous over apical portion of apical cells. Wings hyaline, sordidly light stramineous, veins fuscous.

Female: length 3.7 mm.; tegmen 5.7 mm. Similar to male but with a tendency to darker and plainer markings on tegmina.



FIG. 24.

Described from one male and one female from Mera, one male and two females from Tena (type locality) and three females from ECUADOR: Felton's, Pano River, February, March, April 1923 (*F. X. Williams*). Type No. 1227, in collection of H.S.P.A. Exp. Sta., Honolulu; paratypes in Brit. Mus. (Nat. Hist.).

***Pintalia maculipennis* sp. n., fig. 25.**

Male: length 3.8 mm.; tegmen 5.3 mm. Width of vertex between basal angles 2.5 times the length in middle; length of frons in middle 1.6 times the width, width at apex slightly greater than at base. The genitalia figured; the apex of anal segment large, bilobed; besides the spines figured on the aedeagus there is one short, stout spine on left

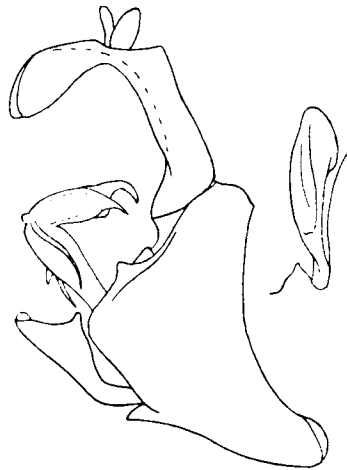


FIG. 25.

side of penis. Brown, slightly darker over pronotum and mesonotum than on head. Tegmina hyaline, sordidly whitish, speckled all over with light brown, most numerous over apical half, the apical cells slightly fuscous, veins light brown, granules minute. same colour as veins. Wings hyaline, slightly fuscous, more so at apex, veins light fuscous.

Described from one male from ECUADOR: Mera, January 26, 1923 (*F. X. Williams*). Type No. 1226, in collection of H.S.P.A. Exp. Sta., Honolulu.

***Pintalia pulchella* sp. n., fig. 26.**

Length 3.3 mm.; tegmen 5.3 mm. Width of vertex between basal angles twice the length in middle and twice the width at apex, base deeply emarginate, the transverse carina much nearer to apex than to base, in dorsal view apex slightly angularly emarginate. Length of frons in middle twice the width, widest on apical half, sides slightly arcuate, apex of frons twice the width of base. *Cu* 1 considerably curved parallel to *M* 3 + 4. Head dark brown or black, lighter over lateral carina of frons and vertex; pronotum and mesonotum brown, whitish on hind lateral corners of pronotum and the tegulae, legs and abdomen yellowish. Tegmina hyaline, slightly opaque and white with brown mark-



FIG. 26.

ings; a light brown mark from base along *Cu* and suture to fork of claval veins where it meets a band of light brown from the middle of costa (where it is dark brown), a dark brown mark at apex of costal cell extending as a lighter band to apex of clavus, at *Mf* it curves over *M* 1 and 2 to apical cells of *R*, the apical portions of apical cells slightly stramineous; veins same colour as membrane, granules minute. Wings hyaline, white, veins slightly stramineous. The genitalia figured; apex of anal segment asymmetrical.

Female: length 3.6 mm.; tegmen 5.3 mm. Similar to male but slightly darker in colour, especially the markings on tegmen.

Described from four males and one female from ECUADOR: Mera, January, February 1923 (*F. X. Williams*). Type No. 1225, in collection of H.S.P.A. Exp. Sta., Honolulu; paratypes in Brit. Mus. (Nat. Hist.).

***Pintalia ornata* sp. n., fig. 27.**

Male: length 3.6 mm.; tegmen 5 mm. Width of vertex between basal angles 2.8 times the length in middle and 1.4 times the width at apex. *Cu* 1 strongly bent at cross-veins and to make way for the arched *M* 3 + 4, the hind margin at the apex of suture distinctly, roundedly produced. The genitalia best understood from figure. Head whitish or yellowish, in lateral view a fuscous mark from back of eye over basal portion of carina, continuing on dorsal surface, another across gena in front of eye, a third over ocellus across gena, both showing faintly on frons, sides and apex of clypeus fuscous; pronotum and mesonotum brown, darkest over lateral portions; legs and abdomen yellow, pygofer brown. Tegmina hyaline, slightly opaquely white, with darker and lighter brown markings; extreme base continuing on to clavus light brown or yellowish, an angular

band from middle of costa to commissure across the fork of costal veins, darkest on costal cell; a broken mark from apex of clavus to margin at apex of *Rs*, extending brokenly along hind margin to apical *Cu*, a brown mark at apex between *M 1a* and 2; a few small brown specks scattered over the white portions; granules few, dark, bearing light brown hairs. Wings hyaline, opaquely white and slightly fuscous, veins brown.

Female: length 3.3 mm.; tegmen 5.3 mm. Similar in colour and build to the male. Pygofer longer than broad; ovipositor longer than the pygofer, the basal portion only resting within a groove, no distinct wax producing area on pygofer but the caudal portion slightly flattened and producing a powder-like wax secretion but no filaments; anal segment small, slightly longer than wide, apex slightly narrower than base, ventral surface excavate.



FIG. 27.

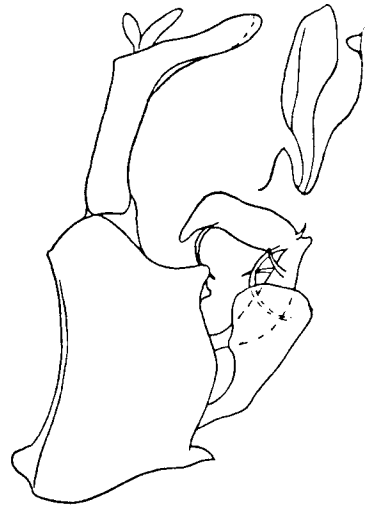


FIG. 28.

Described from four males and six females from BRAZIL: Belem and one male and one female from BRAZIL: Jabaty, Para, May, June 1924 (*F. X. Williams*). Type No. 1224, in collection of H.S.P.A. Exp. Sta., Honolulu; paratypes in Brit. Mus. (Nat. Hist.).

Pintalia altamazonica sp. n., fig. 28.

Male: length 3.4 mm.; tegmen 4.9 mm. Width of vertex between the basal angles 2.5 times the length in middle and 1.6 times the width at apex; transverse carina slightly curved. Length of frons 1.5 times the width, apex slightly wider than base. The lateral carinae at base are distinctly flattened and expanded for a short distance then narrowed. The genitalia figured; the apex of anal segment slightly asymmetrical; the anal angle has a small projection on inner surface; the periandrium has three curved spines at or near apex and one small spine at base of penis, a long, curved spine near apex of penis.

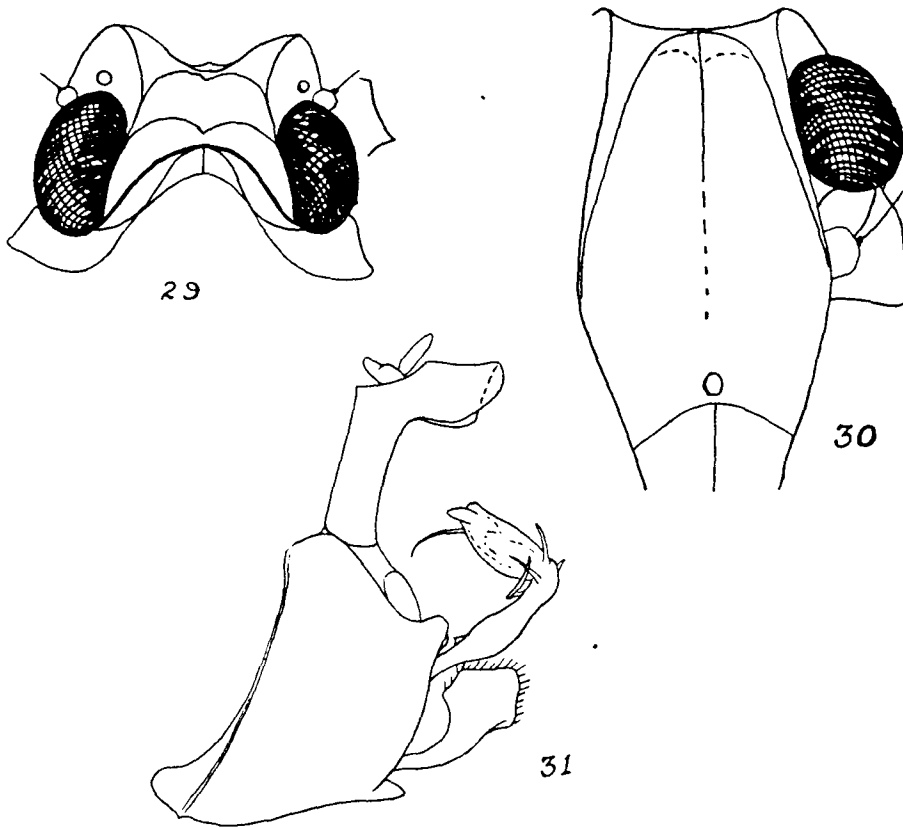
Brown, darkest over lateral portions of pronotum and mesonotum, legs lighter. Tegmina distad of nodal line (apical and subapical cells) fuscous brown, a small hyaline mark in apical portion of *R* and *M 1* and *1a* apical cells, small mark in *Sc* apical cell, another near stigma and another yellowish mark on posterior margin at apex of clavus; the basal portion of stigma lighter, slightly fuscous at base and three or four small, obscure fuscous spots in middle. Wings fuscous with darker veins.

Female similar to male; in the tegmina the hyaline spots in apical portion are yellow and in the basal portion the dark, fuscous marks are more distinct.

Described from one male from ECUADOR: Tena (type) and one female from ECUADOR: Mera, March and April 1923 (*F. X. Williams*). Type No. 1242, in collection of H.S.P.A. Exp. Sta., Honolulu; allotype in Brit. Mus. (Nat. Hist.).

***Pintalia* (?) *discrepans* sp. n., figs. 29, 30 and 31.**

In size and colour this is similar to *P. altamazonica* in both sexes. The male genitalia are very similar, the apex of the anal segment is shorter and, in lateral view, broader, but it is asymmetrical; the genital styles are slightly more angular in outline and the spines on aedeagus slightly different. But in the generic characters of the head there is a great difference; the lateral carinae of the frons are very wide and flattened at the base and



FIGS. 29-31.

gradually decrease to about one-third from apex, a character found only slightly in *altamazonica*. The transverse carina of the vertex forms two areas, and the bases of the frontal carinae are visible.

This species is of great interest for here we see generic characters that have departed considerably from the normal while the specific characters have altered but slightly.

Described from one male and one female from ECUADOR: Tena, February 19, 1923 (*F. X. Williams*). Type No. 1243, in collection of H.S.P.A. Exp. Sta., Honolulu; allotype in Brit. Mus. (Nat. Hist.).

Besides the above described species there are, in Dr. Williams' collection, ten female specimens which the writer cannot associate with any described males but does not care to describe from single females.