

ON A COLLECTION OF ORTHOPTERA FROM THE STATE OF PARÁ, BRAZIL.

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The present study is based on material collected at two localities in the State of Pará, and all of which is now in the collection of the Academy of Natural Sciences of Philadelphia. The localities represented are Igarapé-assú and the vicinity of the city of Pará. The former locality is about one hundred and twenty miles east of the city of Pará, off the main line of the railroad between Pará and Brangança and in primaeval forest conditions.¹ The material from this locality was secured by Mr. H. S. Parish of Toronto, Canada, while that from the vicinity of Pará was taken by Prof. C. F. Baker, while attached to the Museu Goëldi at Pará. Portions of both series have already been recorded by the present author in connection with studies of other series of Brazilian material,² a total of forty-eight previously known and seven new species having been reported from the series now completely studied. These figures are not included in the totals here given.

In the present paper are discussed one hundred and nine species, representing seventy-one genera, of which twenty-two species and two genera are described as new. The number of specimens represented is four hundred and twenty-one.

DERMAPTERA.

FORFICULIDÆ.

Doru lineare (Eschscholtz).

1822. *Forficula linearis* Eschscholtz, Entomogr., p. 81. [Santa Catharina, Brazil.]

Igarapé-assú. One female.

ORTHOPTERA.

BLATTIDÆ.

Ectobiinæ.

Anaplecta replicata Saussure and Zehntner.

1893. *Anaplecta replicata* Saussure and Zehntner, Biol. Cent.-Amer., Orth., I, p. 25, pl. IV, fig. 12. [Pernambuco, Brazil.]

¹ The general features of this region have been entertainingly described by Dr. Emilie Snethlage, Director of the Museu Goëldi, in a recent number of the Geographical Review (IV, pp. 41 to 50, 1917).

² The Stanford Expedition to Brazil, 1911, J. C. Branner, Director. Dermaptera and Orthoptera I. Trans. Amer. Entom. Soc., XLII, pp. 215 to 308, (1916). The Stanford Expedition to Brazil, 1911, J. C. Branner, Director. Orthoptera II. Ibid., XLIII, pp. 89 to 154, (1917).

Igarapé-assú. Three males.

These specimens fully agree with the description of the species. The status of three unquestionably related forms, i. e. *lateralis* Burmeister, *minutissima* (DeGeer)³ and *pumila* (Stål), we are compelled to leave in abeyance for the present, although it is quite probable that one at least is the same as the present species. The original descriptions are so brief that little other than the general relationship of the species can be ascertained from them, and the desired more detailed information can only be gleaned from the types or topotypic material.

Anaplecta bivittata Brunner.

1865. *A[naplecta] bivittata* Brunner, Nouv. Syst. Blatt., p. 63. [Brazil.]

Igarapé-assú. One male.

This specimen shows some points of difference from the original description, but it is apparently the same species. The head is not wholly rust color, as described, the interocular region of the vertex being blackish brown, while the tegminal maculation does not reach the costal margin of the same, but does, however, border the humeral trunk to the distal squarely truncate margin of the maculation.

This is apparently the first definite locality for the species.

Pseudomopinæ.

Pseudomops annulicornis (Burmeister).

1838. *Th[ysocera] annulicornis* Burmeister, Handb. der Entom., II, abth. II, pt. 1, p. 500. [Bahia, Brazil.]

Igarapé-assú. Two males, four females.

These specimens fully agree with the description of Walker's *Pseudomops deceptura* from an unknown locality, which is considered a synonym of Burmeister's species by Shelford. The original description of *annulicornis* is extremely brief, so little can be learned

³ We cannot agree with Shelford in his placing this species as a *Holocompsa* (Trans. Entom. Soc. London, 1908, p. 464) from the evidence of the alleged type. The description and figure given by DeGeer are undoubtedly of an *Anaplecta* and it is not at all difficult to see which species are its closest relatives. It seems evident that Shelford did *not* see the material on which DeGeer based his species and *ad interim* the *Holocompsa* specimen was probably by accident associated with DeGeer's label. DeGeer's original description says of the insect: "Sa couleur est d'un brun noirâtre et très luisant; c'est aussi la couleur de la plaque du corcelet, qui est arrondie, mais dont les deux bords latéraux sont blancs & très transparents." This would clearly apply to an *Anaplecta* of the present group and certain other characters mentioned, as the folding of the wings, make the identification even stronger. The redescription of the "type" by Shelford presents the following features comparable to those quoted above from DeGeer: "Head..... with rufous pubescence. Pronotum fuscous with a recumbent rufous pubescence. Tegmina with marginal area with rufous pubescence." Further comment seems unnecessary.

from it. In all of the specimens the head, the two distal joints of the palpi, the extremities of the femora and tibiæ and the tarsi are black or blackish. In no case is the usual dark transverse arcuate bar of the pronotal disk strongly marked.

The only previous records of the species are from Bahia (Burmeister), Pará (Rehn) and Porto Velho, Rio Madeira, interior Brazil (Rehn).

***Pseudomops affinis* (Burmeister).**

1838. *Th[ysocera] affinis* Burmeister, Handb. der Entom., II, abth. II, pt. 1, p. 499. [Surinam.]

Igarapé-assú. Two females. December, 1911 (one). [One; Cornell University.]

Para and Surinam are the only localities from which the species was previously known.

***Pseudomops angusta* Walker.**

1868. *Pseudomops angusta* Walker, Catal. Blatt. Brit. Mus., p. 81. [Santarem, Brazil.]

Igarapé-assú. One female.

As in material already recorded by us,⁴ this specimen differs from the original description in the palpi being entirely black, the femora blackish dorsad and the cerci almost entirely black.

***Ischnoptera crispula* n. sp. (Pl. I, figs. 1-4.)**

A species showing certain affinities with the *inca* group on one hand and with the *marginata*, *castanea-rubiginosa* group on the other. It is apparently allied to *I. hebes* Walker,⁵ from Santarem, Brazil, agreeing in the general form, the small size, the widely separated eyes, the setose antennæ, the thinly pilose pronotum and tegmina and most of the color features, but differing in the limbs being in large part fuscous instead of "pale testaceous," in the abdomen having the fourth ventral segment uniformly dark with remainder of the same surface of the abdomen, instead of "tawny" as in *hebes*, while the tegmina have the marginal field, and to a lesser degree the costal margin of the tegmina, pale ochraceous and sharply contrasted with the remainder of the tegmina. The genital features of the present species are quite distinctive. We are able to give only color differences to separate the species, as all the structural features mentioned by Walker for *hebes* are shared by the present species, but our experience with the species of this section of the genus indicates that beyond certain permissible fluctuations color features are well fixed. An

⁴ Trans. Amer. Entom. Soc., XLII, p. 224, (1916).

⁵ Catal. Blatt. Brit. Mus., p. 122, (1868).

examination of the original material of *hebes* will, in all probability, show the older species possesses characteristic genital features.

Type: ♂; Pará, State of Pará, Brazil. (C. F. Baker.) (Acad. Nat. Sci. Phila., Type no. 5316.)

Size very small: form moderately depressed: surface moderately polished, of the head, pronotum, tegmina and limbs with sparse, but distinct, erect hairs. Head for its full width visible cephalad of the pronotum, the outline of the eyes and occiput regularly arcuate; interspace between the eyes very broad, equal to one and one-half times the depth of the adjacent portion of the eye: ocelli elliptical, oblique in position, the interspace between them subequal to that between the eyes; palpi with the third joint slightly longer than the fourth, fifth appreciably longer than the third and moderately inflated, excavate face obliquely truncate for the greater portion of the length of the joint: antennæ faintly exceeding the body in length, rather sparsely but regularly setose. Pronotum subtrapezoid in outline, the greatest width, which is distinctly caudad of the middle, contained one and one-half times in the greatest length of the same; cephalic margin moderately arcuate, rounding into the but weakly arcuate, diverging lateral margins, caudo-lateral angles well rounded, caudal margin moderately arcuate, all the margins distinctly though narrowly cingulate: in transverse section the disk is flattened dorsad and distinctly and roundly declivent laterad; surface unimpressed. Tegmina lanceolate-elliptical, the greatest width contained slightly more than three times in the greatest length of the tegmen, distal section surpassing apex of abdomen by nearly the dorsal length of the pronotum: costal margin moderately arcuate proximad and distad; sutural margin in greater portion straight, distad regularly arcuate to the broad and well rounded apex, which is more costal in position: marginal field relatively narrow and abbreviate; anal field elongate pyriform, reaching to two-fifths the length of the tegmen: discoidal vein with sixteen costal rami, several of the distal ones of which are bifurcate; median vein with four rami (made up by bifurcation of two main rami); ulnar vein with three to four rami, the number of both median and ulnar rami very difficult to determine owing to the anastomosing of the veins in the proximal portion of the discoidal field; anal sulcus regularly arcuate in proximal half, straighter distad except for the short distal arcuation near the junction with the sutural margin; axillary veins fourteen in number, as the usually weak adventitious veins are equal in strength to the usually more pronounced principal veins. Wings with the

costal margin straight oblique proximad, very gently arcuate distad, with a faint flattening at the middle of the arcuation: anterior field very broad, broadly rounded distad; intercalated triangle distinct but small: costal veins eleven in number, in general regularly oblique, simple and non-clavate; medio-discoidal area in general faintly wider than the medio-ulnar area, divided into moderately regular, subquadrate areolæ by thirteen cross-veins; median vein simple, direct, unbranched; medio-ulnar area with similar but less numerous and more oblong areolæ; ulnar vein with two complete and seven incomplete rami; axillary vein with two rami. Sixth and seventh dorsal abdominal segments with the structure characteristic of *Ischnoptera*.⁶ supra-anal plate large, semi-ovate, very shallowly arcuato-emarginate mesad; slightly sinuate near the cercal bases, peripheral margin and its vicinity with scattered, erect hairs; ventral surface of the plate with a long dextral, subchitinous tooth, which is directed meso-ventrad: cerci moderately elongate, fusiform, depressed, apex narrowly blunted; subgenital plate moderately asymmetrical, sinistral portion of plate arcuate-emarginate ventrad of the cercus, mesal portion of plate similar, the area between obliquely sinuato-truncate, the sinistral style situated sinistrad on the same section, dextral side of the plate deeply rectangulate-emarginate, the dextral style situated on the apex of the rounded lobe between the median and dextral emarginations; styles short, thick, fusiform, unequal, with distal extremity arcuate aciculate; margin of the plate closely haired, dorsal surface of the subgenital plate having at the base of the dextral style a lamellate, suberect, subchitinous process, the free margin of which is unequally bilobate. Cephalic femora armed ventro-cephalad with a typical *Ischnoptera* spine arrangement.⁷

General color blackish brown, the trochanters, ventral surface of the femora, dorsal surface of the tibiæ and flecks on the tarsi ochraceous-buff. Head with the interocular region faintly reddish; eyes black; ocelli naples yellow. Pronotum with the margins, except for the median section of the caudal margin, narrowly ferruginous. Tegmina with the marginal field and an evanescent edging of the scapular field light ochraceous buff. Wings infumate.

Length of body, 7.6 mm.; length of pronotum, 2.3; greatest width of pronotum, 3; length of tegmen, 7.6; greatest width of tegmen, 2.4.

The type is unique.

⁶ See Hebard, Trans. Amer. Entom. Soc., XLII, p. 339 to 340, pls. XVI and XVII, (1916).

⁷ See Hebard, Trans. Amer. Entom. Soc., XLII, p. 340, pl. XVII, fig. 1, (1916).

Ischnoptera castanea Saussure. (Pl. I, figs. 13, 14.)

1869. *I[schnoptera] castanea* Saussure, *Revue et Magasin de Zoologie*, 2e sér., XXI, p. 112. [Brazil.]

Igarapé-assú. One male.

This specimen fully agrees with the original description, as far as it supplies characters derived from the female sex. As the male genital characters have never been described, the following notes on the same should prove of assistance.

Supra-anal plate moderately transverse, the margin broadly arcuate, appreciably flattened in the middle and there very weakly bilobate, cercal emargination decided, regularly concave, margin between apex and cercal emargination moderately arcuate; surface of plate sub-depressed proximo-laterad, with a distinct, broad, median impression on distal half: distal portion of margin very sparsely haired: ventral surface of supra-anal plate with patches of short, agglutinated hairs on the faint lobes of the distal margin, also meso-laterad on the body of the plate, while a distinct, tuberculiform node is situated immediately mesad of the dextral cercus; immediately mesad of the sinistral cercus there projects ventrad a heavy, claw-like process, which is nearly straight and robust in the proximal two-thirds, thence sharply bent mesad and straight acuminate: from immediately ventrad of the dextral cercus springs an unpaired lamellate, articulate process, a portion of the internal genitalia, the dorsal surface of the same bearing in proximal two-thirds a carinate ridge, the apical section rotated dorsad and weakly rostrate, bearing five distinct teeth: genital hook slender, bent recurved, the apex slightly flattened. Subgenital plate faintly asymmetrical, with dextral, sinistral and median emarginations, between which are short, truncate projections of the margin of the plate; sinistral emargination broad, faintly angled mesad; median emargination regular; dextral emargination small but deep and rectangulate; styles unequal in size and development, the sinistral large, straight proximad, acuminate distad, distal half decurved; dextral style smaller, regularly acuminate, decurved; margin of the plate and styles sparsely haired; dorsal surface of the subgenital plate at base of dextral style with an erect, laterad directed, lamellate lobe, bearing at the internal angle of the apex a distinct, dentiform spine.

Ischnoptera imparata n. sp. (Pl. I, figs. 5-8.)

This peculiar species appears to be allied on one hand to *I. castanea* Saussure, and on the other to *I. amazonica* Rehn,⁸ but it can be recog-

⁸ Trans. Amer. Entom. Soc., XLII, p. 225, (1916).

nized at once by its distinctive form, with tegmina not surpassing the apex of the abdomen, and the type of the male genitalia.

Type: ♂; Pará, State of Pará, Brazil. (C. F. Baker.) (Acad. Nat. Sci. Phila., Type no. 5317.)

Size very small: form elongate elliptical; surface moderately polished, sparsely pilose, more heavily so on the limbs. Head exposed cephalad of the pronotum for the greater portion of its width; interspace between the eyes moderately broad, very faintly less than that between the ocelli, which latter are ovate: antennæ one and one-half times as long as the body, closely moniliform, proximal joint faintly shorter than the interspace between the eyes: palpi with the third joint simple, the fourth elongate funnel-shaped, slightly shorter than the third joint, fifth joint moderately inflated, greatest depth at proximal third. Pronotum weakly transverse, the greatest length contained one and one-third times in the greatest width and the latter placed faintly caudad of the middle, general form subtrapezoid; cephalic margin broadly subtruncate, rounding laterad into the lateral margins, which are moderately diverging caudad, faintly arcuate on cephalic two-thirds, thence sharply arcuate to the obtuse caudolateral angles; caudal margin arcuato-truncate: disk moderately deplanate, with distinct diverging sulci; narrow lateral portions distinctly deflexed. Tegmina surpassing the apex of the abdomen by less than the length of the pronotum, lanceolate: costal margin moderately arcuate proximad, thence nearly straight to the narrowly rounded apex, which is costal in position; sutural margin straight, except for a short proximal section and distad rounding into the strongly oblique, arcuato-truncate, distal margin: marginal field very narrow, in length nearly equal to two-fifths of the entire tegmen: anal field elongate pyriform, in length equal to about one-half of the tegmental length: costal veins fourteen to fifteen in number; discoidal sectors longitudinal, six in number, with distinct, longitudinal, intercalated nervures and regularly placed transverse nervures, which form rectangulate interspaces; anal sulcus sharply curved distad and joining the sutural margin at a right angle; axillary veins closely placed, with regular intercalated and cross nervures, their structure merged to such an extent that a count is not warranted. Wings falling slightly short of the apex of the tegmina when in repose, greatest width contained one and two-thirds times in greatest length: costal margin regularly arcuate; apex broadly rotundato-rectangulate; peripheral margin more amply arcuate distad than usual: anterior field relatively very broad; intercalated triangle distinct but

small: mediastine vein straight in the greater portion of its length, bearing eight costal veins, remainder of costal veins seven in number, all non-clavate; discoidal vein almost straight; medio-discoidal area broad, divided by sixteen regularly placed, transverse nervures into subquadrate areolets; median vein arcuato-sinuate; medio-ulnar area narrower than the medio-discoidal area, similarly divided, but with veins fewer and less distinct; ulnar vein with one complete ramus, which is bifurcate close to its origin, and three incomplete rami; axillary vein biramose. Dorsal abdominal segments of the type characteristic of *Ischnoptera*:⁹ supra-anal plate transverse, lateral margins regularly converging caudad, the distal margin truncate, its vicinity with long, sparse hairs; when viewed from the caudal aspect there is seen to be dextrad, briefly mesad of the cercus, a thick, curved projection, which points mesad, and is distinctly tapering distad, the whole structure well hidden under the margin; cerci relative heavy, rather short, subequal in width for the greater portion of the length, rather abruptly tapering distad, depressed dorsad, rounded ventrad, with a close, adpressed coat of short hairs and scattered, erect, long hairs: subgenital plate moderately asymmetrical; sinistral margin with a broad, deep emargination ventrad of the cercus, relatively short, median section concavo-truncate, dextrad of which is a short, deeply arcuate emargination, with a moderate projection separating it from the oblique subtruncate and then (proximad) arcuate remainder of the same margin; both principal emarginations with their margins somewhat thickened and the plate there appreciably convex in section, between them the plate is concave distad; styles unequal, the sinistral one twice as large as the dextral, situated at the lateral angles of the median subtruncate section, incrassate, tapering, with the apex bispinose, the distal spine larger, decurved, the other spine situated slightly proximad of the apex, straighter; when viewed from the caudal aspect the plate is seen to have an incrassate arm extending mesad from the projection of the dextral margin, this arm reaching to the median line of the body, supplied at the apex with long hairs and on the cephalic face with a number of spines: genital hook sinistral in position, the distal portion sinuate, V-shaped, narrowed at the bend of the structure, slightly thickened and blunt distad. Cephalic femora with ventro-cephalic margin with four large, proximo-mesal spines, these followed distad by a regular series of very short, fine spines; distal spines three in

⁹ See Hebard, Trans. Amer. Entom. Soc., XLII, pp. 339 to 340, pls. XVI and XVII, (1916).

number, the extreme distal the larger: median and caudal femora with ventral margins regularly and heavily spined, genicular spine large: caudal tarsi with metatarsus distinctly longer than the remaining joints combined, ventral surface strongly biseriate, pulvilli small.

General color above and on the venter of the abdomen argus brown, paling to antique brown on the veins distad on the tegmina. Head deep blackish fuscous, except for the mouth-parts, labrum and distal half of the clypeus; eyes prout's brown; distal palpal joint weakly washed with mummy brown; ocelli zinc orange; antennae blackish fuscous, slightly paler proximad and distad. Pronotum with a relatively broad cephalic and lateral border of ochraceous-buff, the bounding line of the two shades appreciably sinuate laterad. Tegmina with the general color strongest at the base of the marginal field, this, in the same area, sharply giving way to ochraceous-buff, which passes distad into a weak shade of the general coloration; distal section of the tegmina very pale, as is the normally covered section of the right tegmen. Wings weakly infusate, becoming ochraceous distad, the veins similarly but more opaquely colored. Abdomen faintly darker than the general dorsal coloration, more deeply infusate laterad, the dorsal abdominal fold ochraceous-buff, surrounded by deep fuscous; styles deep fuscous. Limbs ochraceous-buff, coxæ each with a proximal blotch of fuscous, those of the cephalic coxæ much smaller than those of the other limbs.

Length of body, 7.3 mm.; length of pronotum, 2.4; greatest width of pronotum, 2.9; length of tegmen, 6.4; greatest width of tegmen, 2.2.

The type is unique.

Ischnoptera clavator n. sp. (Pl. I, figs. 9-12).

Allied to *I. amazonica*¹⁰ Rehn, from northern Brazil, but differing in the deeper color pattern, more inflated distal palpal joint and the radically different genitalia of the male, the subgenital plate of which bears a relatively large club-like appendage. The supra-anal plate of the female of *clavator* is distinctly U-emarginate mesad, while that of *amazonica* is entire. The species shows relationship to *I. rubiginosa* Walker, having a similarity in the form of the male supra-anal plate, but *clavator* is a larger species with more convergent eyes, a less strongly transverse pronotum, more elongate tegmina and wings, and decidedly different development of the subgenital plate and styles of the male. The female of *rubiginosa* has the

¹⁰ Trans. Amer. Entom. Soc., XLII, p. 225, (1916).

supra-anal plate trigonal with the lateral margins sinuate-emarginate and the apex well rounded and entire, instead of U-emarginate as in *clavator*.

Type: ♂; Igarapé-assú, State of Pará, Brazil. (H. S. Parish.) [Acad. Nat. Sci. Phila., Type no. 5319.]

Size small: form elongate elliptical, strongly depressed: surface glabrous. Head distinctly projecting cephalad of the pronotum: interspace between the eyes very narrow, hardly more than half that between the ocellar spots, which latter distance is subequal to the greatest length of one of the spots, the spots are large, subreniform in outline: eyes with their greatest cephalic depth equal to about one and one-half times the interocellar width: antennæ slightly longer than the body, moderately hirsute, second and third joints together about two-thirds as long as the proximal joint: third palpal joint of moderate length, slightly arcuate; fourth palpal joint two-thirds as long as third, slightly and evenly enlarging distad; fifth palpal joint slightly longer than the third, inflated, sublanceolate, apex subacute. Pronotum roundly trapezoidal, but moderately transverse, the greatest length contained one and one-half times in the greatest width; cephalic margin weakly arcuate, broadly rounding into the diverging, distinctly arcuate, lateral margins, which pass through the obtusely rounded caudo-lateral angles into the arcuato-truncate caudal margin, all margins finely cingulate and supplied with sparse, well-spaced, long hairs, the cephalic margin, however, with a series of short hairs: disk of pronotum weakly arcuate in section, appreciably declivent laterad, the immediate margin slightly reflexed; oblique sulci indicated but slightly irregular in impression, caudal section of disk weakly depressed. Tegmina elongate lanceolate, surpassing the apex of the abdomen by nearly the length of the pronotum, the width at the distal third greater than that at the proximal third: costal margin straight except for a short proximal arcuation and a brief distal rounding to the apex, which is at the tip of the median vein and very narrowly rounded; sutural margin in general straight, except at distal third, where it regularly and broadly rounds to the immediate apex: marginal field narrow, its distal extremity not quite reaching to the proximal third of the tegmen; scapular field moderately wide, subequal in width; anal field elongate pyriform: costal veins very numerous, regular in position; discoidal rami longitudinal, nine in number (aside from the discoidal vein itself), intercalated nervures regular and all connected by closely placed

and generally regular, transverse sectors; anal sulcus impressed, moderately, strongly arcuate distad, jointing the sutural margin faintly distad of the proximal third; axillary veins and their numerous intercalated accessories regularly placed. Wings reaching almost to the apex of the abdomen, broad, their greatest width contained almost twice in their greatest length; costal margin largely straight oblique proximad, gently arcuate distad, the apex well rounded rectangulate and entirely in the anterior field; peripheral margin of the posterior field regularly arcuate, except for the frequent, short, bulging arcuation at the apex of the axillary vein and rami; intercalated triangle very small; mediastine vein largely straight oblique; discoidal vein straight proximad, weakly arcuate distad; costal veins (including the more distinct ones arising from the mediastine vein) twenty-one in number, oblique, non-clavate; medio-discoidal area distinctly narrower than the medio-ulnar area, appreciably narrowing distad, with the transverse rami rather regularly placed, twenty in number, the majority weakly bent arcuate, the areolets generally subquadrate; median vein simple, of much the same curve as the discoidal vein; medio-ulnar area with the transverse rami less numerous than those of the medio-discoidal area, fifteen in number, incomplete costad, the areolets more rhomboid than quadrate: ulnar vein with two complete and seven incomplete rami; axillary vein with two rami diverging slightly proximad of the middle. Abdomen with the disto-dorsal segments having the structure usual in *Ischnoptera*: supra-anal plate in general subquadrate, very faintly transverse; distal margin bisarcuate laterad of a shallow, median, arcuate emargination, the whole margin, but particularly these arcuate portions, supplied with long bristle-like hairs; surface of disto-dorsal section of the plate with two areas of impression:¹¹ cerci elongate, styliform, acuminate, depressed dorsad, rounded ventrad, strongly hirsute: subgenital plate asymmetrical; free margin sinistrad with an arcuate emargination, in which is placed the sinistral style, mesad with a transverse, truncate section, in the dextral angle of which is situated the dextral style, dextrad of this is a deep acute-angulate emargination, in which is visible an acute, lamellate projection of the internal genitalia, dextrad of this emargination and mesad of the cercus the margin develops an erect, lamellate peg-like process, which projects dorsad of the supra-anal plate when the parts are in their normal position, the apex of this process is covered with erect,

¹¹ The presence of these areas may not be a normal condition.

agglutinated hairs, certain of which appear spiniform, the remainder of the margin and a large portion of the ventral surface of the plate with long hairs, many of which are bristle-like; sinistral style strongly arcuate, the apex directed laterad and with a number of distinct but short teeth; dextral style very short, decurved, rounded at the apex, with there a number of similar short teeth. Cephalic femora with the ventro-cephalic margin bearing three median and three distal spines, the latter group increasing in length distad, the area between the two groups with a continuous, regularly spaced series of short, piliform spinules, no disto-dorsal genicular spine present: median and caudal femora with a distinct disto-dorsal genicular spine, ventral margins with large, well-spaced spines: arolia distinct; caudal metatarsus faintly longer than the remaining joints combined.

Allotype: ♀; Same data as type. [Acad. Nat. Sci. Phila.]

The following features are those of difference from the description of the type. Interspace between the eyes wider, more than two-thirds as wide as that between the ocellar spots, which area is nearly twice as great as the greatest length of one of the spots; ocellar spots somewhat smaller and less conspicuous than in the male: eyes with their greatest depth but faintly greater than the interocellar width. Abdomen simple: supra-anal plate moderately transverse, arcuate, the chitin with a median V-emargination which is filled with a semi-opaque membrane,¹² dorsal surface of the plate with a distal, medio-longitudinal, carinate fold, the free margin of the plate with numerous long, bristle-like hairs: subgenital plate large, distal margin arcuate-truncate between the cerci. Cephalic femora with the median group of large spines numbering four.¹³

General tone of the dorsal surface clear dresden brown to mars brown, the venter largely fuscous. Head blackish fuscous, the clypeus and mandibles ochraceous-buff; ocellar spots warm buff: eyes mars brown to mummy brown: antennæ clove brown, the proximal joint faintly ochraceous. Pronotum with the disk blackish fuscous, more or less distinctly divided in two by a medio-longitudinal line of kaiser brown to liver brown; broad lateral margins, a connected and narrower cephalic margin and a detached, usually weaker, caudal margin of warm buff to ochraceous-buff, the dark disk

¹² In two paratypic females this membrane is not apparent, the margin being distinctly and clearly V-emarginate. Apparently this soft area is not a permanent structure and may be due to the hardening of exuded body fluids.

¹³ Two paratypic females agree with the allotype in the number of these spines, while the type has but three.

appreciably narrower at a point slightly caudad of the middle. Tegmina of the general dorsal color, very pale on the portion of the dextral tegmen concealed when in repose; proximal section of the humeral trunk blackish fuscous; marginal field pale ochraceous translucent, proximad more or less suffused with the blackish fuscous of the humeral trunk. Wings clear hyaline, except for a slight infuscation of the sub-coriaceous region of the costal veins; venation pencilled in prout's brown. Dorsum of abdomen fuscous, paling to bister along the median line; supra-anal plate of male with a russet tinge, the characteristic *Ischnoptera* fold of the male ochraceous-buff; venter of abdomen becoming ochraceous-tawny meso-proximad. Limbs ochraceous-buff, the coxæ fuscous proximad, spines tawny.

Male (*type*): Length of body, 12.6 mm.; length of pronotum, 3; greatest width of pronotum, 3.6; length of tegmen, 11.9; greatest width of tegmen, 3.7. Female (*allotype*): Length of body, 13.5 mm. length of pronotum, 3.2; greatest width of pronotum, 3.7; length of tegmen, 12.3; greatest width of tegmen, 3.3.

In addition to the type and allotype we have examined two paratype females, taken at Igarapé-assú. One specimen, while of the body bulk of the others, has the tegmina shorter (11.5).

Xestoblatta¹⁴ *nyctiboroides* (Rehn).

1906. *Ischnoptera nyctiboroides* Rehn, Proc. Acad. Nat. Sci. Phila., 1906, p. 266. [Demerara, British Guiana.]

Igarapé-assú. January 23, 1912. One male.

This specimen, the second known of the species, fully agrees with the original description except that the ulnar vein of the wings has two complete rami on one wing and but one on the other, one incomplete ramus on one wing and none on the other.

Neoblattella conspersa (Brunner).

1865. *Phyllodromia conspersa* Brunner, Nouv. Syst. Blatt., p. 106. [Brazil.]

Igarapé-assú. December, 1911; January 13 to 25, February 6, 1912. Twenty-two males, twenty-five females. [Two: Cornell University.]

This interesting series shows that while the blackish punctulations on the tegmina in this species vary greatly in number and intensity they are never entirely absent, and are always placed on thickened nodes on the veins. In the individuals with the greater number of punctulations these are individually larger than in those specimens with a considerably smaller number of the same. The pattern of the disk of the pronotum varies in intensity and completeness pro-

¹⁴ Vide Hebard, Trans. Amer. Entom. Soc., XLII, p. 370, (1916).

portionately with the tegminal punctulations, in occasional specimens being obsolete or completely absent. The pale transverse line ventrad of the eyes varies considerably in degree of definition, but this is not correlated with the variation in intensity of the dorsal surface. The ventral surface of the abdomen is always marked by a medio-longitudinal bar of blackish brown, this varying individually in width and to a less extent in distinctness.

As one of the females bears an oötheca we know that in the present species the egg-case is carried vertically with the suture dorsad.

Neoblattella titania (Rehn).

1903. *Blattella titania* Rehn, Trans. Amer. Entom. Soc., XXIX, p. 267.
[Bartica, British Guiana.]

Igarapé-assú. One female.

This individual fully agrees with the type.

Neoblattella pellucida (Burmeister).

1838. *Bl[atta]pellucida* Burmeister, Handb. der Entom., II, abth. II, pt. 1, p. 498. [Pará, Brazil.]

Igarapé-assú. January 13 to 25, 1912. Two males, three females.

Cariblatia igarapensis n. sp. (Pl. I, figs. 15-18.)

Closely related to *C. fossicauda*¹⁵ Hebard, differing in the larger size (this species being the largest of the genus), more elongate tegmina and in the form of the subgenital plate of the male; this of a similar type in which the dextral portion is but weakly produced, the sinistral portion alone markedly projecting. In the female the distal portion of the subgenital plate is less strongly produced than is normal for the genus, but the apex is broadly rounded, not appearing at all bilobate.

Type: ♂; Igarapé-assú, State of Pará, Brazil. (H. S. Parish.)
[Acad. Nat. Sci. Phila., Type no. 5237.]

Size relatively large (for the genus): form as usual in the genus: surface moderately polished. Head for its whole width visible cephalad of the pronotum; occipital line, when seen from the dorsum, straight; interspace between the eyes broad, the breadth subequal to the greatest depth of the eye, and slightly less than the distance between the ocellar spots; ocellar spots small, oblique, ovate: third joint of palpi elongate, simple, faintly arcuate; fourth joint very faintly shorter than the third joint, regularly though not greatly expanding distad; fifth joint slightly shorter than the fourth joint, moderately inflated, the flexor margin, when seen from the side, regu-

¹⁵ Trans. Amer. Entom. Soc., XLII, p. 177, pl. XI, figs. 13 to 17, pl. XII, fig 17 and 18, (1916).

larly arcuate, the extensor margin faintly sinuate, apex roundly acute, when seen from the side: antennæ slightly surpassing the body in length; proximal joint large, faintly longer than the second and third joints united. Pronotum rounded sub-hexagonal, transverse, the greatest length contained one and two-fifths times in the greatest width, which is placed distinctly caudad of the middle: cephalic margin weakly arcuate, passing by broadly rounded angles into the oblique, diverging and appreciably arcuate cephalic portions of the lateral margins, which strongly round into the caudal sections of the lateral margins; caudal margin arcuato-truncate, rounded obtuse-angulate laterad: broad lateral portions of the pronotum weakly declivent. Tegmina lanceolate, greatest width contained about three and one-half times in the length of the same, when closed they surpass the apex of the abdomen by about the length of the pronotum: costal margin in large part straight, gently arcuate in the area of the marginal field, sharply and briefly arcuate distad; sutural margin in general straight, with a distal oblique, subarcuate third: apex rather narrowly rounded, slightly costal in position; marginal field reaching about to the proximal third, relatively narrow; scapular field very broad, at proximal third of tegmen equal to one-half the entire width of the same, costal veins elongate, straight, oblique, the distal one of the regular series biramose, eleven in number exclusive of the rami of the distal one; discoidal vein furcate distad, one or both forks again furcate; discoidal sectors longitudinal, four to five in number, exclusive of the median vein itself; anal field elongate pyriform; anal sulcus with its oblique portion nearly straight, reaching the sutural margin at about the proximal third; axillary veins five to six in number. Wings relatively broad: costal margin straight oblique in the greater portion of the proximal half, straight truncate in the region of the costal veins, sharply rounding to the rounded obtuse-angulate apex, which is situated at the apex of the median vein: intercalated triangle distinct, trigonal: mediastine vein simple, with a decided costal clavation at its apex; discoidal vein bifurcate and its divisions again furcate; costal veins ten in number, the distal four of a common origin and hardly clavate, the remainder heavily clavate; medio-discoidal area narrow, dividing into oblong or sub-quadrate areolets by transverse nervures; median vein simple, largely straight; medio-ulnar area subequal to or faintly narrower than the medio-discoidal area, distad more or less completely intersected by transverse nervures; ulnar vein with two complete rami; axillary vein with three rami originating mesad. Supra-anal plate strongly

transverse, the margin broadly obtuse-angulate with the immediate angle broadly rounded, the median section of the margin supplied with a group of long bristle-like hairs: cerci missing: subgenital plate very similar to that of *fossicauda*, having a large, elongate, quadrate, peg-like projection sinistrad, this, however, being proportionately longer and more compressed than in *fossicauda*; mesad the distal margin is deeply U-emarginate, dextrad of which is a projection less than one-half the length of the sinistral protuberance, dextral margin arcuate: genital hook resembling that of *C. insularis* (Walker), but with the curve of the hook more distad in position. Spination of the limbs typical of the genus.

Allotype: ♂; same data as the type.

Differing from the description of the male in the following features. Occipital line weakly arcuate; interspace between the eyes slightly exceeding the greatest depth of the eye and subequal to the distance between the margins of the antennal scrobes. Supra-anal plate transverse, with a distinct, relatively broad, rounded emargination mesad: cerci greatly surpassing the subgenital plate, tapering, moniliform, apex sharply acuminate: subgenital plate ample, the distal section broad, when seen from the ventral aspect not emarginate or bilobate, weakly channelled when seen from the caudal aspect.

General color above pale old gold, the tegmina and lateral portions of the pronotum semihyaline, the wings almost colorless hyaline with the veins tinted. Ventral surface largely cinnamon-buff to ochraceous-buff. Head of the ventral color, the face with bister bands which in disposition combine features of the patterns of *C. reticulosa* and *craticula*, the ventral facial band clearly defined in the allotype, but not indicated in the type, a detached bister point present at each lateral angle of the clypeal base in the allotype but not indicated in the type; eyes kaiser brown, thickly mottled with bister; antennæ old gold, becoming bister distad. Pronotum with a pattern in bister much like that of *fossicauda* but with the lines more connected and complete, the pattern more intensive and therefore more complete in the allotype than in the type. Wing veins, excepting the costal clavations and radiate veins, old gold, the exceptions bister, the clavations rather weakly so. Dorsum of the abdomen washed with bister laterad, leaving, however, a very narrow, pale margin; venter of abdomen with a proximal median area of bister and narrow submarginal lines of the same color. Tibial spines and the larger femoral spines with their bases surrounded by bister rings.

Type: Length of body, 10 mm.; length of pronotum, 2.2; greatest width of pronotum, 3; length of tegmen, 9.8; greatest width of tegmen, 2.8. Allotype: Length of body, 10 mm.; length of pronotum, 2.3; greatest width of pronotum, 3; length of tegmen, 9.2; greatest width of tegmen, 2.5.

The type and allotype are all the individuals of the species we have seen.

Nyctiborinæ.

Paratropes elegans (Burmeister).

1838. *Ph[oraspis] elegans* Burmeister, Handb. der Entom., II, abth. II, pt. 1, p. 493. ["Unknown locality," probably Surinam.]

Igarapé-assú. One male, one female.

This species has been recorded from Surinam (Saussure) and Pará, Ega and São Paulo, Brazil (Walker).

Epilamprinæ.

Epilampra grisea (DeGeer).

1773. *Blatta grisea* DeGeer, Mém. Hist. Ins., III, p. 540, pl. 44, fig. 9. [Surinam.]

1903. *Epilampra lucifuga* Rehn, Trans. Amer. Entom. Soc., XXIX, p. 271. [Southern British Guiana.]

Igarapé-assú. January 2 to 23, 1912. Ten males, five females.

The acquisition of this series and the recent re-description of the type of DeGeer's *grisea* by Shelford¹⁶ enables us to place our *lucifuga* as a synonym of this variable species. The material before us exhibits two color forms, one similar to the type of *lucifuga*, the other with the castaneous markings slightly larger and more thickly distributed. In all of the specimens the paired trigonal patches on the pronotum are retained. In none of the specimens is the humeral trunk marked by a solid line, this region having either a series of blotches or almost no infuscation at all.

Apparently this is the only exact Brazilian record of the species.

Epilampra conspersa Burmeister.

1838. *E[pilampra] conspersa* Burmeister, Handb. der Entom., II, abth. II, pt. 1, p. 505. [Pará, Brazil.]

Igarapé-assú. One female.

This individual agrees fully with the description given by Saussure and Zehntner,¹⁷ although its identity with Burmeister's species is not so certain. The Burmeisterian description is very brief and is considered by Kirby to represent a form different from that studied by Saussure and Zehntner. Personally we cannot express an opinion, but prefer to use Burmeister's name for this handsome species until the type of *conspersa* has been re-examined.

¹⁶ Trans. Entom. Soc. London, 1907, p. 462.

¹⁷ Biol. Cent.-Amer., Orth., I, p. 64, (1893).

Blattinæ.**Periplaneta americana** (Linnæus).

1758. [*Blatta*] *americana* Linnæus, Syst. Nat., X ed., p. 424. ["America."]

Igarapé-assú. One female.

Periplaneta australasiae (Fabricius).

1775. [*Blatta*] *australasiæ* Fabricius, Syst. Entom., p. 271. ["In nave e mari pacifico et regionibus incognitis revertente."]

Igarapé-assú. January 7, 1912. One female.

Panchlorinæ.**Panchlora**¹⁸ *exoleta* Burmeister.

1838. *P[anchlora] exoleta* Burmeister, Handb. der Entom., II, abth. II, pt. 1, p. 507. [Pará and Bahia, Brazil.]

Igarapé-assú. February 25, 1912. Two males, one female.

Panchlora bidentula Hebard.

1916. *Panchlora bidentula* Hebard, Entom. News, XXVII, p. 221, fig. 1. [Igarapé-assú, State of Pará, Brazil.]

Igarapé-assú. January 17, 1912 (type), no date (paratype). Two males.

Corydiinæ.**Melestora minutissima** n. sp. (Pl. I, figs. 22, 23.)

This is the smallest form of the genus, being decidedly under the size of the three previously known species, i. e., *adspersipennis* and *fuscella* Stål from Rio de Janeiro and *fulvella* Rehn from the Misiones, Argentina. Aside from the much inferior size, it differs from *adspersipennis* in the much less transverse pronotum, in the non-sulcate character of the median area of the same and in the dark and less varied coloration. From *fuscella* the new species also differs in the non-sulcate median section of the pronotum and in the non-pellucid character of the lateral portions of the same. From *fulvella*, with the type of which the new form has been compared, the present species also differs in the less strongly transverse and more ovate pronotum, in the tegminal venation becoming obsolete distad, in the relatively longer caudal tarsi and in the fuscous coloration.

Type: ♂; Igarapé-assú, State of Pará, Brazil. (H. S. Parish.) [Acad. Nat. Sci. Phila., Type no. 5248.]

Size very small: form elongate ovate, depressed: surface moderately polished, regularly but sparsely clothed with silky pile. Head visible cephalad of the pronotum, the outline of the occiput and head arcuate; interspace between the eyes very broad, uniform in width, which is subequal to the greatest depth of the eye, surface of the inter-

¹⁸ For comments on the important characters for diagnostic use in this genus, as well as the synonymy of many of the nominal species of the same, see Hebard, Entom. News, XXVII, pp. 217 to 221, (1916).

space finely rugulose and with regularly placed impressed pits with fine, diverging radial lines: interspace between the antennal scrobes very faintly narrower than that between the eyes, moderately arcuate in section, glabrous: palpi with the fourth joint very slender proximad, regularly expanding distad, the apical margin obliquely truncate; distal article longer than the fourth joint, broad, greatest width at proximal third, margins regularly converging to the acute apex: eyes with facets clearly defined and slightly elevated individually: antennæ at least as long as the body, the proximal segment short moniliform, subglobose, the joints becoming progressively longitudinal distad, regularly pilose. Pronotum transversely short elliptical, the greatest length contained one and one-fifth times in the greatest width: all margins arcuate, the nearest approach to angulation being the weakly suggested latero-caudal angles: oblique depressions distinct, extending from the medio-caudal section toward the usual position of the latero-cephalic angles, then turning mesad and extending subparallel to the cephalic margin, vanishing caudad before reaching the middle line, the enclosed area moderately bullate, with irregularly placed and irregularly indicated slight transverse wrinkles, no medio-longitudinal impression: lateral sections of pronotum weakly declivent. Tegmina coriaceous, haired as the other portions of the body, lanceolate-elliptical, the greatest width contained three times in the greatest length of the tegmen: costal margin lightly and regularly arcuate; sutural margin straight for the greater portion of the proximal two-thirds, arcuate distad; apex rather broadly rounded; the entire costal margin thickened and finely nodulose cingulate: marginal field occupying about the proximal two-fifths, well developed, moderately wide: six well defined costal veins indicated: discoidal field with six definite longitudinal sectors (including the discoidal vein itself), these sinuate, connected by cross-veins and forming quadrate to oblong interspaces, all obsolete distad, becoming lost in the coriaceous shagreenous condition of that region; anal sulcus distinct, impressed, arcuate proximad, straight oblique distad, joining the sutural margin near the proximal third; anal field elongate pyriform; axillary veins three in number, poorly defined. Wings faintly surpassing the tegminal apices when all are in repose. Supra-anal plate transverse, the free margin sinuate-arcuate: cerci moderately long, robust, subfusiform, the apex rather short acute, the whole subdepressed: subgenital plate asymmetrical, from the sinistral side the margin is developed as follows: obliquely arcuate-emarginate ventrad of the cercus, then developed into an acute, peg-

like process, which is narrowly separated from a median rectangulate projection by a distinct but not deep V-shaped emargination, dextrad of the rectangulate projection the margin is briefly arcuate, then strongly oblique truncate. Median and caudal femora with ventral margins finely spined: caudal tarsi hardly shorter than the caudal tibiae, the metatarsus occupying slightly more than one-half the length of the tarsus: arolia present.

General color mummy brown, becoming buckthorn brown distad on the femora and remainder of the limbs, and blackish-brown on the head and proximal antennal joint. Abdomen becoming auburn meso-proximad. Subgenital plate blackish-brown. Eyes blackish-brown.

Length of body, 6.2 mm.; length of pronotum, 1.5; greatest width of pronotum, 1.7; length of tegmen, 5.3; greatest width of tegmen, 1.7.

The type is unique.

Oxyhaloinæ.

Chorisonaura parishi n. sp. (Pl. I, figs. 19-21.)

This is a most peculiar species, which we are placing in *Chorisonaura* chiefly on account of the peculiar structure of the male subgenital plate. The femora are very weakly spined ventrad, while the general form is distinctly suggestive of an *Anaplecta*, so much so that we are not at all convinced of the proper generic position of the species, the assignment of which is tentative. The insect does not seem to be closely related to any of the described species of *Chorisonaura* and we are unable to give a comparative diagnosis for that reason.

Type: ♂; Igarapé-assú, State of Pará, Brazil. (H. S. Parish.) [Acad. Nat. Sci. Phila., Type no. 5234.]

Size rather small: form depressed, elongate elliptical: surface moderately polished. Head projecting cephalad of the pronotum when seen from the dorsum: occipital line arcuato-truncate when seen from the dorsum; least interspace between the eyes, which is ventral in position, very broad, subequal to the area between the antennal scrobes; face moderately bullate: palpi with the third joint slender, slightly longer than the fifth joint; fourth joint faintly shorter than the fifth joint, slender proximad and regularly enlarging distad; fifth joint somewhat thickened, elongate elliptical in outline: eyes strongly reniform in basal outline: antennæ slightly exceeding the body in length; third joint nearly twice as long as the second joint, proximal joint moderately enlarged, slightly longer than the third joint. Pronotum transverse, its greatest length contained one and

one-half times in its greatest width: cephalic and caudal margins very faintly arcuate, subparallel, the caudal of greater extent than the cephalic, lateral margins broadly and strongly arcuate, latero-cephalic angles obsolete, latero-caudal angles very faint, greatest width situated slightly caudad of the middle: surface of the disk with a faint, discontinuous, medio-longitudinal impression, also with three pairs of poorly defined impressions, the caudal pair practically delimiting the disk latero-caudad; lateral portions of the pronotum semihyaline, weakly deflexed. Tegmina elongate lanceolate, the greatest width contained about three and one-half times in the greatest length: costal margin moderately arcuate in proximal third, straight thence to the moderately arcuate distal fourth; sutural margin of similar form, but the distal arcuation is somewhat more extensive; apex rounded acuminate, nearly median in position: marginal field of medium width, sharply subdeplanate, extending to the proximal third of tegmen; scapular field broad, comprising but slightly less than half the entire tegminal width; anal field subpyriform, comprising slightly less than one-third the sutural length: costal vein twelve in number, oblique, somewhat sinuate and irregular; discoidal vein bifurcate distad, the sutural ramus sending two rami to the distal section of the sutural margin; median vein in general parallel to the discoidal vein, reaching the sutural margin proximad of the discoidal rami, sending two to three strongly oblique rami suturad; ulnar vein bifurcate; anal sulcus strongly arcuate proximad, straight oblique thence to the apex, which is very briefly arcuate; axillary veins five in number, poorly defined. Wings with the intercalated field relatively large, its axial length about equal to one-third that of the remainder of the wing, strongly arcuate distad, subrectangulate proximad: costal veins eleven in number, the three proximal ones springing from the mediastine vein, the proximal nine all distinctly elongate clavate; discoidal vein straight, simple except for the costal veins; medio-discoidal area broad, its width at broadest point almost equal to that from discoidal vein to costal margin, divided into more or less distinctly quadrate areas by eleven transverse veins; median vein straight except for curving costad toward the discoidal vein near its apex, simple except for several rudimentary rami distad; medio-ulnar area narrow, distinctly less (at broadest points) than half as wide as the medio-discoidal area; axillary vein biramose. Subgenital plate¹⁹ of the slightly asymmetrical type, with the large, compressed

¹⁹ The condition of the material is such that we have refrained from making any effort to ascertain the features of the supra-anal plate.

type of styles, found in a number of species of the genus; form of the plate reading from sinistral portion; first, an infra-cercal, slightly oblique, subtruncate, projecting portion, this rounding into a relatively deep U-shaped emargination to the base of the styles, which are placed in broadly, unequally arcuate emarginations, between which is a slight, acute-angulate projection, dextrad of the styles the margin is developed similarly to the sinistral portion, but the projection is narrower and more acute; styles in length distinctly surpassing the remainder of the subgenital plate, distinctly compressed, subparallel, tapering, ventral margin thickened: cerci elongate, depressed, subfusiform, distad greatly attenuate. Femoral margins with a few weak, short spines; genicular spines strongly developed on median and caudal femora: arolia large.

General color buckthorn brown. Head dull vinaceous-rufous; eyes cinnamon-brown; antennæ with the proximal portion of the dorsal surface lined with mummy brown: palpi clay color. Pronotum dull mars yellow mesad, this flanked by a pair of poorly defined, broad bars of dark auburn, which diverge caudad and fail to reach the caudal margin of the pronotum; lateral portions of the pronotum nearly colorless hyaline. Tegmina with marginal field nearly colorless hyaline; humeral trunk and vicinity dark auburn. Wing weakly washed with buckthorn brown, the inter-marginal costal region washed, and the radiate veins pencilled with mummy brown. Abdomen on both lateral aspects with indefinite marginal bands of mummy brown.

Length of body, 8 mm.; length of pronotum, 1.6; greatest width of pronotum, 2.4; length of tegmen, 6.6; greatest width of tegmen, 1.8.

In addition to the type we have before us a paratypic male bearing the same data as the type. This specimen shows no differences excepting a quadriramose condition of the tegminal discoidal vein, which has one ramus furcate on one tegmen, and biramose on the other.

We take great pleasure in dedicating this interesting and aberrant species to the collector, Mr. Parish, to whose energy we are indebted for several extremely interesting and important series of tropical American Orthoptera.

MANTIDÆ.

Mantiniæ.

Acontiothespis eximia (Pascoe).

1882. *Callimantis eximia* Pascoe, Ann. and Mag. Nat. Hist., (5), IX, p. 423.
[Nazare, near Pará, Brazil.]

Pará. (C. F. Baker.) One male.

Igarapé-assú. January 19, 1912. Two males, one female.

Kirby²⁰, who examined Pascoe's type, considers Saussure and Zehntner's *paraensis* to be the same as *eximia*.

The male has not been previously described. In that sex the general form of the head is similar to that found in the female, but the occipital line is weakly concave and the facial scutellum is slightly shallower, though of exactly the same general pattern. The pronotum is of similar form to that of the female but, naturally, slightly more slender. The tegmina are entirely hyaline except the marginal field and the vicinity of the humeral trunk, which are opaque green. The wings are hyaline with the costal margin rather narrowly washed with pomegranate purple, a longitudinal blotch placed on the caudal two-thirds of the radiate field at about two-fifths the length of the wing from the internal margin, bone brown in color. One of the Igarapé-assú males measures as follows: length of body, 19.8 mm.; length of pronotum, 4.4; greatest width of pronotum, 2.2; length of tegmen, 14; length of cephalic femur, 5.2.

All the known records of the species are from the state of Pará, Brazil.

***Angela quinquemaculata* (Olivier).**

1792. *Mantis quinquemaculata* Olivier, Encycl. Méth., Ins., VII, p. 636. [Surinam.]

Igarapé-assú. One male.

This specimen has been compared with a male of the species from Bartica, British Guiana (II-27-1913; H. S. Parish) and agrees in all respects except two. The folded carination of the disto-dorsal abdominal segments is well indicated in the Bartica specimen and not apparent in that from Igarapé-assú. The Bartica specimen is more intensely colored, having the yellow areas between the purplish bars on the wings brighter, but the general weak infuscation of the wings is more extensive in the Brazilian specimen and the distal ferruginous patch on the anterior field of the same is more decided in this individual.

Apparently this is the first Brazilian record of the species.

***Macromantis ovalifolia* (Stoll).**

1813. [*Mantis*] *ovalifolia* Stoll, Natuur. Afbeeld. Beschr. Spookten, etc., pp. 58, 77, pl. XIX, fig. 72. [No locality.]

Igarapé-assú. One male.

This specimen has the marginal field of the tegmina hyaline in the proximal two-fifths and viridi-coriaceous distad. Apparently

²⁰ Synon. Catal. Orth., I, p. 233, (1904).

this is the first record of the genus from Brazil or from south of the Guianas.

Miopteryginæ.

Musonia²¹ *major* Saussure and Zehntner.

1894. *Musonia major* Saussure and Zehntner, Biol. Cent.-Amer., Orth., I, p. 165, pl. X, figs. 17 to 19. [South America.]

Igarape-assú. Two males.

These specimens have also been compared with a male of this species from Nouveau Chantier, French Guiana, recorded by Chopard.²² The form of the supra-anal plate of the male has never been described. From our material it is seen to be elongate lanceolate, with the apex rounded and but faintly surpassing the distal margin of the subgenital plate. There is present on the plate a distinct precurrent median carina.

This is the first record of the species from Brazil.

Vatinæ.

Parastagmatoptera *flavoguttata* (Serville).

1839. *Mantis flavoguttata* Serville, Hist. Nat. Ins., Orthopt., p. 183. [Cayenne.]

Igarapé-assú. One male.

This specimen is inseparable from males from Nouveau Chantier, French Guiana, determined and recorded by Chopard.

ACRIDIDÆ.

Acrydiinæ.

Eomorphopus *granulatus* Hancock.

1906. *E[omorphopus] granulatus* Hancock, Genera Insectorum, fasc. 48, Tetriginæ, p. 38, pl. IV, figs. 35 and 35a. [Dutch Guiana.]

Igarapé-assú. January 25, 1912. One male.

Allotettix *peruvianus* (Bolivar).

1887. *P[aratettix] peruvianus* Bolivar, Ann. Soc. Entom. Belg., XXXI, p. 272. [Pumamarca, Peru.]

Igarapé-assú. Four males, one female.

²¹ The type of this genus was first fixed by the present author, in February, 1904 (Proc. U. S. Nat. Mus., XXVII, p. 568), as *surinama*. Kirby later (Synon. Catal. Orth., I, p. 276—not earlier than November, 1904) indicated *major* Saussure and Zehntner as the type, an unwarranted and untenable designation, as it was not one of the originally included species. As Giglio-Tos has based his recently proposed generic name *Promusonia* on *surinama* (Bull. Soc. Entom. Ital., XLVII, p. 6, (1916)), it is evident that his name is a pure synonym of *Musonia* as properly restricted. As we have already contended (Ibid., p. 567), the generic name *Mionyx* also becomes a synonym of *Musonia*, although at the date of our previous writing no single type had been selected for it. Kirby, however, indicated (Ibid., p. 276) as its type, *lineativentris* Stål, which is apparently congeneric with *surinama*, in addition being with the latter the original basis of *Musonia*. Certain species which have been referred to *Mionyx* are, apparently, not congeneric with *surinama*, and these will require a new generic name.

²² Ann. Soc. Entom. France, LXXX, p. 332, (1911).

Micronotus caudatus (Saussure).

1861. *T[ettix] caudata* Saussure, Revue et Magasin de Zoologie, 2e sér., XIII, p. 399. [Guiana.]

Igarapé-assú. Three males, five females.

These specimens are typical of this relatively widely distributed species. It seems to us very probable that Bruner's *Tettix gracilis* from Trinidad²³ equals the present species.

Apotettix bruneri (Hancock).

1906. *Apotettix bruneri* Hancock, in Bruner, Proc. U. S. Nat. Mus., XXX, p. 614. [Paraguay.]

Igarapé-assú. One female.

This specimen is inseparable from Paraguayan and Argentinian individuals of the same sex. The range of the species is much extended to the northward by this record.

Tettigidea hancocki Bruner,

1910. *Tettigidea hancocki* Bruner, Ann. Carneg. Mus., VII, p. 131. [Corumbá, Brazil.]

Igarapé-assú. One male.

This specimen fully agrees with the description of *hancocki*, but in size it is somewhat smaller, showing the following proportions: length of body, 8.8 mm.; length of pronotum, 9.1; length of tegmen, 1.7; length of wing distad of pronotum, 2.5; length of caudal femur, 5.4.

The two localities from which this species are known are widely separated, but doubtless it will be found in suitable situations in the intervening region.

Proscopinæ.**Proscopia scabra** Klug.

1820. *Proscopia scabra* Klug, in Nees ab Esenbeck, Horæ Physicæ Berolin., p. 19, pl. III, fig. 2. [Pará, Brazil.]

Pará. (C. F. Baker.) One male.

The male is particularly interesting in having a striking type of coloration, a median supra-clypeal area on the lower face, the ventral section of the genæ, the cephalic supracoxal plate, a wash along each side of the meso- and metapleura and the greater portion of the immediate apex of the abdomen, being yellowish. The species *Taxiarchus paraensis* described by us from Obidos, Amazon River,²⁴ we find to be a synonym of the present species. The unsatisfactory character of Brunner's generic key and lack of comparable material were largely responsible for the reference of this insect to *Taxiarchus*.

²³ Journ. N. Y. Entom. Soc., XIV, p. 145, (1906).

²⁴ Entom. News, XVII, p. 332, (1906).

Certain of the genera of the present subfamily do not appear at all natural or, if so, are not properly defined.

The species is known from as far south as Bahia and inland to the upper Amazonian region.

Acridinæ (*Truxalinæ* of authors).

Orphulella punctata (DeGeer).

1773. *Acrydium punctatum* DeGeer, Mém. Hist. Ins., III, p. 503, pl. 42, fig. 12. [Surinam.]

Igarapé-assú. Two males, one female.

Pará. (W. M. Mann.) One male, one female. (C. F. Baker.)
Three males, seven females.

This series exhibits the usual phases and variations of this plastic and widespread species. But two, these females from Pará, are of the all green phase, while the strongly infuscated phase is represented in the Igarapé-assú and Pará lots. In a relatively large number of specimens the lateral carinæ of the pronotal disk show a more or less decided tendency to become obsolete between the first and second transverse sulci.

Orphulella boucardi (Bruner).

1904. *Linoceratium boucardi* Bruner, Biol. Cent.-Amer., Orth., II, p. 84. [Rio Sarstoon, British Honduras; Panama; San Diego, Department of Magdalena, Colombia.]

Igarapé-assú. February 1, 1912 (one specimen only). Six males, two females.

For comments on the synonymy of this species the student is referred to a recent paper by the author.²⁵

Ommexechinæ.

Ommexechea giglio-tosi Bolivar.

1899. *O[mmexechea] giglio-tosi* Bolivar, Revista Chilena Hist. Nat., III, pp. 54, 55. [Caiza, Aguiarenda and San Francisco, Bolivian Chaco.]

Igarapé-assú. One male.

This specimen is inseparable from individuals of the same sex previously recorded by us from northern Argentina, except that the disk of the wing is more glaucous and less azure blue.

Pyrgomorphinæ.

Omura congrua Walker.

1870. *Omura congrua* Walker, Catal. Derm. Salt. Brit. Mus., III, p. 504. [Pará, Brazil; Amazon Region; Archidona, Ecuador.]

Igarapé-assú. One male.

²⁵ Trans. Amer. Entom. Soc., XLII, p. 277, (1916).

Locustinae (*Acridinae* of authors).**Colpolopha obsoleta** (Serville).

1831. *Tropinotus obsoletus* Serville, Ann. Sci. Nat., XXII, p. 274. ["Cape of Good Hope."]

Igarapé-assú. One male.

This specimen is inseparable from British Guianan males of the species, which has been recorded from Santarem (Rehn) and Pará (Bruner), Brazil.

Tropidacris collaris (Stoll).

1813. *Gryllus (Locusta) collaris* Stoll, Natuurl. Afb. Beschry. Spookten, etc., Trek-springhaanen, pp. 39, register 13, pl. XXIV, fig. 80. [No locality.]

Igarapé-assú. One dated January 17, 1912. One male, two females.

Stenaecris cylindroides (Stål).

1860. *Opsomala cylindroides* Stål, Kong. Svenska Freg. Eugenies Resa, Ins., p. 325. [Rio de Janeiro, Brazil.]

Igarapé-assú. One female.

This specimen is inseparable from south Brazilian material.

Oxyblepta xanthochlora (Marschall).

1835. *Gryllus xanthochlorus* Marschall, Ann. Wiener Mus., I, p. 215, pl. XVIII, fig. 7. [Brazil.]

Igarapé-assú. One dated January 17, 1912. Two males, two females.

These specimens are only provisionally referred to this species, as the forms of the genus found in northern South America and their relationship is very poorly understood.

Mastusia caeruleipennis Bruner.

1911. *Mastusia caeruleipennis* Bruner, Ann. Carneg. Mus., VIII, p. 86. [Benevides, state of Pará, Brazil.]

Igarapé-assú. Three males, two females.

This species was described from a female, apparently unique. The male sex fully agrees with the important features of the original description, except for the genital characters and those features in which the males of this group show some difference from the female, i. e. smaller size, proportionately narrower interocular space of the vertex, more prominent eyes and slightly more distinct median carina of the pronotum. In size the male specimens before us show the following measurements:

Length of body.....	22.3 mm.	19 mm.	19.5 mm.
Length of pronotum.....	4.4 "	4 "	4.3 "
Greatest dorsal (caudal) width of pronotum.....	2.2 "	2.1 "	2.2 "
Length of tegmen.....	11 "	9 "	10 "
Length of caudal femur.....	13.1 "	12.1 "	13.5 "

The male genitalic characters can be briefly described as follows. The disto-dorsal abdominal segment has the distal margin concave mesad, the concavity delimited laterad by a short black projecting tooth; supra-anal plate of the trefoil type found in this genera group, the paired lateral sections strongly rounded, the median distal section short sublinguiform, the dividing emarginations roundly rectangulate, proximal half of plate with a median sulcus, widening distad; cerci developed as broad plates but slightly surpassing the apex of the supra-anal plate, the dorsal section of the plate strongly impressed and depressed, with the apex slightly recurved on the main portion of the cercus, the lateral section, which is thrown into relief by the impressed and recurved sections, being of the sub-falciform pattern found in the cerci of other species of this group of genera, in which species, however, the cerci are not at all lamellate, but instead show modifications of a simpler cercal type; subgenital plate short, when seen from the lateral aspect blunted, the apex strongly pinched dorsad.

The male sex, and to a lesser degree one of the females, shows certain color differences from the original description. The dorsal coloration is appreciably marked off from the darker lateral bars by narrow lines of dull yellow on the head and pronotum, which are continued caudad from the pallid lines on the tegmina mentioned by Bruner. There is also a dark bar, which varies in solidity, across the ventral sections of the genæ, lateral lobes and, more weakly, the pleura, bordering ventrad the yellow described by Bruner. The face is dull pale olivaceous green in both sexes. The caudal femora are clear oil yellow proximad, passing to oil green distad, with the distal extremity somewhat infuscated.

The number of spines on the external margin of the caudal tibiæ varies from six to seven.

Tetratænia surinama (Linnæus). (Pl. I, figs. 24 and 26.)

1764. [*Gryllus*] *surinamus* Linnæus, Mus. Ludovic. Ulric., p. 146. [Surinam.]

Igarapé-assú. Five males.

Pará. (C. F. Baker.) One male, one female.

This series shows the male sex to have a very great amount of variation in size, and apparently to a certain degree locally in the depth of general coloration; in the Igarapé-assú specimens the dorsal surface of the head and pronotum is fully as dark as the lateral (i. e. ventrad of the narrow pale dorso-lateral lines) areas, while the tegmina are more olivaceous, instead of the same area

on the pronotum and the tegmina being distinctly greenish, as in the Pará individuals.

The size extremes (in millimeters) of the Igarapé-assú males and the single female (Pará) seen are as follows:

	♂	♂	♀
Length of body.....	19.5 mm.	29 mm.	35 mm.
Length of pronotum.....	4.2 "	5.8 "	6.6 "
Greatest dorsal (caudal) width of pronotum.....	2.6 "	3.8 "	4.8 "
Length of tegmen.....	17.6 "	22.7 "	24.6 "
Length of caudal femur.....	13.6 "	18.6 "	19 "

The species has been recorded from Surinam, "Brazil," Coca (Bolivar) and Valley of Santiago (Giglio-Tos), Ecuador. The two latter records may not refer to true *surinama*.

Tetratænia phila²⁶ n. sp. (Pl. I, figs. 25 and 27.)

Allied to *T. surinama* (Linnaeus), but differing in the generally smaller size, less strongly bullate occiput, narrower interspace between the eyes, shorter and proportionately broader fastigium, more prominent eyes, in the more slender and more regularly arcuate male cerci, in the less expanded genicular lobes of the median femora and the small dorsal spine of the same region, in the less produced and more robust caudal femora of the male and in the less strongly contrasted coloration.

Type: ♂; Igarapé-assú, State of Pará, Brazil. (H. S. Parish.) [Acad. Nat. Sci. Phila., Type no. 5284.]

Size small (for the genus): form in general as in *T. surinama*. Head with the occiput regularly bullate-arcuate ascending, but not as elevated as the dorsal surface of the eyes, weakly carinate mesad, the vertex and fastigium moderately declivent; interspace between the eyes subequal in width to the inter-antennal section of the frontal costa; fastigium nearly twice as broad as long, cephalic margin arcuato-obtuse, faintly excavate near the apex, fastigio-facial angle roundly obtuse when seen from the lateral aspect, face gently retreating, bounding border of the fastigium well indicated; frontal costa not strongly indicated ventrad, failing to reach the clypeal suture, moderately narrowed dorsad at the fastigio-facial angle and again to a smaller degree ventrad of the ocellus, thence subequal in width ventrad, surface biseriate punctate dorsad, faintly sulcate ventrad; lateral facial carinae distinct and gently diverging

²⁶ From Φίλε, a friend.

ventrad: eyes prominent, distinctly elevated dorsad of the vertex, in outline broad ovate, in length twice as long as the infra-ocular portion of the genæ: antennæ almost twice as long as the combined length of the head and pronotum. Pronotum subsellate, greatest width (caudad) of the disk contained one and one-half times in the greatest length; cephalic margin of disk gently arcuate with a shallow median emargination, caudal margin obtuse-angulate with the immediate angle narrowly emarginate; prozona about one and one-half times as long as the metazona, the latter closely cribroso-punctate, transverse sulci deeply impressed; median carina faintly indicated on the prozona, severed by all the transverse sulci, distinct but low and not sharply defined on the metazona, lateral angles rounded, faintly more evident on the metazona than on the prozona; lateral lobes with their greatest depth contained one and one-quarter times in their greatest dorsal length; cephalic margin straight oblique, ventro-cephalic angle rounded obtuse-angulate; ventral margin arcuato-emarginate cephalad, obtuse-angulate mesad, straight oblique ascending caudad, ventro-caudal angle rounded; caudal margin moderately concave. Tegmina reaching to the tips of the caudal femora, apex rounded. Wings reaching to the tegminal tips. Prosternal spine erect, conical, acute; interspace between the mesosternal lobes quadrate, internal margins of the lobes straight, interno-caudal angles rounded; metasternal lobes very narrowly separated caudad. Furcula present as short spiniform points, between which and the cercal bases are placed on each side a single similar point, the abdominal segment bearing the same sublamellate expanded over the cercal base: supra-anal plate elongate trigonal, slightly arcuate-emarginate on each side mesad, apex broadly rounded, margins moderately elevated, the median line of the plate finely sulcate proximad, carinate distad: cerci thick at the base, thence tapering to the subequal distal half, moderately arcuate in form, apex blunt, moderately incurved: subgenital plate considerably produced, distal portion strongly compressed with the apex faintly bulbous, this faintly elevated when seen from the lateral aspect. Cephalic limbs as usual in the genus. Median femora with the dorsal genicular teeth short and blunt, the genicular lobes not strongly developed. Caudal femora slightly more than twice as long as the head and pronotum together, rather robust, not surpassing the tips of the tegmina, genicular lobes acute, pattern of the paginæ regular, moderately impressed: caudal tibiæ slightly shorter than the femora, distal two-thirds expanded, margins there distinctly lamellate,

lamellar brush on internal margin thick, external margin with but a few hairs; external margin with six to seven spines, internal margin with nine spines: caudal tarsi with proximal joint strongly depressed.

Allotype: ♀; same data as type.

Differing from the description of the male in the following features. Frontal costa sulcate for but a short distance ventrad of the ocellus, plane thence ventrad: eyes elevated but slightly dorsad of the vertex, in depth about one and one-half times that of the infra-ocular portion of the genæ: antennæ hardly twice as long as the pronotum alone. Pronotum not as sellate as in the male, the dorsal line not at all concave when seen from the side, greatest dorsal (caudal) width of disk contained about one and one-third times in the greatest dorsal length of the same: prozona about one and one-third times as long as the metazona: lateral lobes of the pronotum with their greatest dorsal length very faintly longer than their greatest depth. Interspace between mesosternal lobes faintly broader than in the male, that between metasternal lobes cuneate and at narrowest point about two-fifths the width of the mesosternal interspace. Ovipositor jaws elongate, slender, compressed, margins irregularly denticulate. Median femora of normal type, as usual in females of this genus.

General color of intensive individuals very dark olive on the dorsal and lateral aspects, ventral surface and abdomen olive-yellow to yellowish olive, mottled in both cases with bottle green, metazona of the dorsum of the pronotum washed with ivy green. The usual four lines on the head, pronotum and pleura relatively narrow, the dorsal pair quite narrow, in color these lines are olive-ocher to olive-yellow, paling to cream-buff or primrose yellow where the ventral pairs are connected on the face; pleural spots three in number. Eyes mars brown to prout's brown; antennæ of the general color, in proximal half weakly subannulate with dull ochraceous, tips briefly cream color. Tegmina with the anal vein lined with the continuation of the dorsal pair of pale lines; anal area sometimes weakly washed with bottle green. Wings with the disk china blue, apex and distal half of periphery clouded with fuscous. Cephalic and median limbs of the ventral color, the mottling of bottle green quite marked, the tibiæ subannulate with fuscous; proximal portion of the femora washed with nopal red. Caudal femora with the external, dorsal and internal faces of the general dorsal color, triannulate with aniline yellow, the proximal annulus incomplete, the median one V-shaped on the lateral face,

ventral face aniline yellow or washed with garnet brown, the proximal portion of the femora washed more or less completely with nopal red; caudal tibiae deep slate blue, paler along the margins, an incomplete proximal yellowish annulus, spines yellowish, black tipped; caudal tarsi dull greenish, faintly washed with reddish (this probably more extensive and much stronger in life), internal margin of the two proximal joints lined with black.

In the single recessively colored individual before us the dorsal pale lines are greatly subdued and the femoral bands, particularly the caudal ones, are obsolete, while the general color is less distinctly greenish and in places more brownish. The pale antennal tips and the ventral pair of pale bands are, however, as decided as in the intensively colored specimens.

Measurements (in millimeters).

	♂ (Type)	♀ (Allotype)
Length of body.....	18.7	25.4
Length of pronotum.....	4	5.2
Greatest width of dorsum of pronotum.....	2.5	3.9
Length of tegmen.....	15.1	19
Length of caudal femur.....	12.2	15.2

In addition to the type and allotype we have before us two paratype females, which show structural differences only in the faintly more bullate dorsum of the pronotum of one specimen, which is of the recessive type of coloration noted above. An interesting thing concerning one female paratype is that the left antenna was broken off at the sixth joint some time during the life of the insect, and there has been regenerated distad of that joint a terminal joint much longer and appreciably more bulbous than the other segments, which terminal segment, curiously enough, bears a narrow terminal pale marking. Since writing the above we have had placed in our hands a single female of the species from Albina, Surinam, collected May, 1904, by William Schaus, and belonging to the United States National Museum. This individual is more brownish than the Igarapé-assú specimens, with the pattern recessive in character.

CHLOROPSEUSTES²⁷ new genus.

A member of the Tetratæniæ and allied to *Tetratænia*, *Mastusia* and *Eumastusia*, but completely apterous and in general form strongly resembling species of the Coscineutid genus *Dellia*, from which, however, *Chloropseustes* can be immediately separated by the expanded

²⁷ From *χλωρος* green, *ψευστης* deceiver.

and marginally lamellate distal sections of the caudal tibiae, as well as by the character of the genitalia of both sexes. The more fully the other features of the new genus are examined, the more superficial the evident resemblance to *Dellia* is found to be. From all of the allied genera *Chloropseustes* can be separated by its apterous condition, its supra-genicular spiniform process and its highly polished surface; from *Tetratænia* also in the broadly emarginate caudal margin of the pronotal disk, the more (♂) or less (♀) sulcate frontal costa, the simpler subgenital plate of the male and the absence of the clavation of the distal extremity of the median femora found in the male of *Tetratænia*; from *Eumastusia* the new genus differs in the form of the head and general type of the pronotum, as well as sculpture of the same, in the non-compressed male subgenital plate and in the linear, more exerted ovipositor jaws of the female; from *Mastusia* the new genus also differs in the form and sculpture of the head and pronotum, in the emarginate caudal margin of the pronotal disk and in the linear, more exerted, female ovipositor jaws. The coloration of the type species is very distinctive.

Description of Genus.—Apterous. Glabrous. Surface of face, genæ, occiput, pronotum, pleura and proximal abdominal segment with small, raised but low, callose, white areas. Interspace of vertex narrow; fastigium subdeclivent, sulcate; fastigio-frontal region truncate when viewed from lateral aspect; face retreating; frontal costa distinctly (♂) or weakly (♀) sulcate mesad and ventrad, plane dorsad; eyes prominent in both sexes. Pronotum with three very deeply impressed transverse sulci, no lateral and little trace (in male only) of median carinæ; cephalic and caudal margins of disk emarginate mesad; mesonotum not equal to one-third the length of the prozona. Supra-anal plate of male subtrigonal; cerci of male falciform; subgenital plate short, broad. Ovipositor jaws of female elongate, straight, margins weakly denticulate. Prosternal spine sub-compressed, conical, acute. Mesosternal lobes with interspace slightly longitudinal (♂) or slightly transverse (♀). Metasternal lobes contiguous (♂) or narrowly separated (♀). Cephalic and median femora of male subinflated, cephalic genicular lobe larger than caudal lobe on each femur. Caudal femora with a more (♂) or less (♀) pronounced supra-genicular spine, genicular lobes weakly acute; caudal tibiae expanded distad, with the margins sublamellate, external margin with seven spines, internal margin with nine spines; caudal tarsi elongate, second joint subequal to one-half the length of the metatarsus, third joint subequal to joints one and two together.

Genotype: *C. leucotylus* new species.

*Chloropseustes leucotylus*²⁸ n. sp. (Pl, I, figs. 28-31.)

Type: ♂; Igarapé-assú, State of Pará, Brazil. January 17, 1912. (H. S. Parish.) [Acad. Nat. Sci. Phila., Type no. 5287.]

Size small. Head slightly enlarging cephalad of its insertion in the pronotum; occiput roundly inflated and ascending; vertex with interspace between the eyes very narrow, less than the width of the third antennal joint, caudad of the constriction the vertex is lanceolate sulcato-impressed; fastigium weakly declivent when seen from the lateral aspect, distinctly broader than long when seen from the dorsum, the greatest width subequal to twice the width of the proximal antennal joint, fastigium delicately sulcate medio-longitudinally; fastigio-frontal region vertically truncate to between the antennæ when seen from the lateral aspect, face then strongly retreating, weakly concave; frontal costa indicated to the clypeal suture, narrow, weakly narrowed ventrad of junction with fastigium and faintly so immediately ventrad of the median ocellus, surface of costa dorsad plane with a few punctures, ventrad of ventral margins of antennal scrobes deeply but narrowly sulcate; lateral facial carinæ well indicated, divergent ventrad; eyes quite prominent, large, well elevated dorsad of the vertex, in length about twice that of the infra-ocular portion of the genæ; antennæ about three times as long as the pronotum, simple, joints elongate, very faintly enlarging distad. Pronotum weakly sellate in general form, but dorsal line straight, with greatest dorsal length slightly greater than the greatest dorsal width; cephalic margin of disk subarcuate with shallow, broad, median emargination; caudal margin of disk very broadly and faintly emarginate, with a more pronounced, broad, median V-emargination: median carina very weakly and discontinuously indicated on the prozona; transverse sulci very deeply impressed, the caudal one continuous, the others, three in number, severed by the median carina, a supplementary, short, dorsal sulcus placed between sulci one and two; metazona forming no more than one-fourth of the dorsal length of the pronotum: lateral lobes about one and three-fourths times as long as deep, ventro-caudal angle rounded, caudal margin straight; surface of metazona of lobes faintly punctulate. Mesonotum with caudal margin faintly obtuse-angulate emarginate mesad, the surface ascending dorso-caudad into a blunt, tubercular structure: metanotum with a structure similar to that of mesonotum, but the caudal margin is more decidedly obtuse-angulate emarginate. Tegmina

²⁸ From λευκος *white*, τυλος *knob*.

and wings completely absent. Abdomen slightly compressed, weakly carinate medio-longitudinally dorsad, extremity slightly recurved: furcula developed as short, broad, rounded well-separated lobes; lateral sections of the segment bearing the furcula sublamellate and projecting over the lateral face of the cercal base, the margin of these lobes arcuate obtuse-angulate: supra-anal plate moderately produced and constricted trigonal, the apex moderately broad, rounded, lateral margins with the cercal emargination broad, moderately deep and regularly arcuate, distal section of plate slightly deflected ventrad from the plane of the proximal portion of the same, the deflected portion with lateral sulci limiting a median rounded "boss": cerci falci-form, short, not surpassing the apex of the supra-anal plate, proximal portion of the cerci very broad, then tapering strongly to the relatively slender and moderately acute distal portion, the whole cercus placed so as to incline toward the median line of the body: subgenital plate very short, broad, not at all produced, when seen from the lateral aspect rounded, the dorsal margin broadly U-shaped.²⁹ Prosternal spine moderately compressed conical, acute, arising from a broad base. Interspace between the mesosternal lobes subcuneate, slightly longer than broad: metasternal lobes touching on their caudal half. Cephalic and median femora moderately inflated, appreciably arcuate, cephalic genicular lobe of each of these femora larger than the caudal lobe of the same. Caudal femora about twice as long as the head and pronotum together, surpassing the apex of the abdomen by nearly one-half the femoral length, moderately slender, external paginæ regularly and distinctly sculptured, genicular lobes moderately acute, median section of dorso-genicular margin with a distinct projecting spine: caudal tibiæ very slightly shorter than the femora, distinctly expanded distad, the margins there considerably lamellate, marginal hairs few in number but individually long and regularly disposed, external margin with seven spines, internal margin with eight to nine spines: caudal tarsi not quite one-half as long as the caudal tibiæ, slender, the first and second joints together but slightly longer than the third, the second joint about one-half the length of the first joint, which is considerably depressed.

Allotype: ♀; same data as the type. [Acad. Nat. Sci. Phila.]

The female differs from the male description in the following features. Interspace between the eyes subequal to the width of the second antennal joint, the vertex caudad of the interspace hardly more

²⁹ The type has this plate compressed, apparently unnaturally so, and we are taking its marginal form from the paratype male, which, apparently, represents the normal type.

than finely sulcate: frontal costa less clearly defined ventrad and with the sulcation weaker and sub-obsolete ventrad: eyes not quite twice as long as the infra-ocular portion of the genæ: antennæ about two and one-half times as long as the dorsum of the pronotum. Pronotum slightly shorter, the lateral lobes about one and one-half times as long as deep. Mesonotum and metanotum with marginal form and tuberculiform structure less decided. Supra-anal plate elongate trigonal, strongly arcuate in transverse section, apex rather blunt, surface non-sulcate: cerci short, blunt, styliform: ovipositor valves exerted, elongate, straight, compressed, apices slightly blunted, lateral margins rather finely denticulate, dorsal surface of dorsal valves weakly canaliculate. Interspace between the mesosternal lobes slightly transverse: metasternal lobes narrowly separated. Cephalic and median femora more slender. Caudal femora with dorsal genicular spine less aciculate.

General color calla green to ivy green, passing into more or less clear oil yellow on the lateral lobes of the pronotum (σ), the genæ and lower face (σ) and rostral region (both sexes). The pale spotting ranges from maize yellow, through creamy white to light green-yellow, and is distributed roughly as follows: three paired spots on face, three to four paired markings ventrad of eyes and on genæ, a paired series of eight spots following the usual position of lateral pronotal carinæ extending from eyes to caudal coxæ, another paired series extending from mesonotum to and over dorsum of third to fifth proximal abdominal segments, ventral section of lateral lobes of pronotum with three paired dashes; all these markings placed on strumose tubercles or ridges. Fastigium of male distinctly, of female weakly, pale lemon yellow: antennæ of the color of the face, infuscated distad: eyes mars brown to russet. Abdomen of male occasionally yellowish disto-ventrad: furcula, edge of expansion of disto-dorsal abdominal segment and tips of cerci of male black. Caudal femora with distal extremity and adjacent section of tibiæ cadmium orange to cadmium yellow, strongest on the genicular arches and weakly tinged with the general greenish on the lobes and dorsum: caudal tibiæ with spines black-tipped: caudal tarsi with pulvilli pads scarlet red in some specimens, yellowish (possibly faded) in others.

Measurements (in millimeters).

	σ (Type)	φ (Allotype)
Length of body.....	13.6	17.8
Length of pronotum.....	2.9	3.1
Greatest (dorsal) width of pronotal disk.....	2.3	2.8
Length of caudal femur.....	10.3	1.6

In addition to the type and allotype we have before us a paratype pair (one—the male—dated January 17, 1912), which show no noteworthy differences from the type material, except that the male has the general coloration more olivaceous, but this we feel is due to drying.

Bucephalacris falcifer n. sp. (Pl. I, figs. 32, 33.)

Apparently a near relative of *B. corallipes* Bruner,³⁰ from Corumbá, Brazil, agreeing in the robust form, the closely veined tegmina and the coral red caudal tibiae. The new form differs, however, from *corallipes* in the female sex (the only one known of *corallipes*) having the head higher than wide, in the eyes being less than twice as long as the cephalic margin of the cheek, in the fastigium being distinctly broader than long, in the unbanded pronotum and in the longer tegmina.

Type: ♂; Pará, State of Pará, Brazil. (C. F. Baker.) [Acad. Nat. Sci. Phila., Type no. 5288.]

Size small: form robust: surface of face, lower portion of genæ, pronotum and pleura closely but not very deeply cribroso-punctate, occiput very shallowly punctate. Occiput arcuato-bullate, well elevated dorsad of pronotal level, at highest point faintly flattened; interocular portion of vertex very narrow, hardly more than one-fourth the width of the proximal antennal joint, weakly sulcate in caudal section; fastigium very faintly declivent, the greatest length subequal to the greatest width, in general form pentagonal, the cephalic margin strongly truncate and appreciably cingulate, the surface impressed, weakly nodulose and with a short, rather fine, medio-longitudinal carina: frontal costa dorsad four times as broad as the interocular space and subequal in width ventrad to the median ocellus, ventrad of which the margins are strongly constricted, then diverging an equal amount and obsolete ventrad of this point, the interantennal section of the costa is excavato-sulcate, distinctly punctate, surrounding the ocellus the surface is impresso-punctate, thence faintly sulcate for a short distance and then passing into the punctate face: lateral facial carinae indicated, but developed only as an angle of the face, moderately diverging ventrad, punctate as the face: eyes quite prominent, more than twice as long as the infra-ocular portion of the genæ, in basal outline broad ovate, slightly flattened cephalad: antennæ lacking. Pronotum narrower than the caudal width of head, faintly constricted mesad, the greatest dorsal width of disk

³⁰ Ann. Carneg. Mus., VIII, p. 93, (1911).

very slightly less than the greatest dorsal length: cephalic margin of disk obtusely produced with a very broad, shallow emargination: caudal margin of disk very broadly obtuse-angulate: median carina faintly indicated cephalad, more distinctly so on the metazona, obsolete mesad: transverse sulci well impressed, metazona slightly more than one-half of the prozonal length: lateral lobes with the greatest dorsal length subequal to the greatest depth; cephalic margin of lobes straight, slightly oblique, ventro-cephalic angle nearly rectangulate, ventral margin obliquely concave-emarginate cephalad, median angle distinct but obtuse, this margin obliquely subarcuate caudad, ventro-caudal angle obtuse, caudal margin straight, vertical. Tegmina reaching to the apex of the supra-anal plate, moderately broad, distal four-fifths weakly tapering, apex rounded; venation close, particularly proximad. Wings reaching to the tips of the tegmina, very broad, the greatest width contained one and two-fifths times in the greatest length: distal section of anterior and portion of radiate fields subtruncate. Prosternal spine very robust, short, rather blunt, faintly transverse compressed: interspace between the mesosternal lobes with cephalic width faintly greater than the depth, the caudal width very much greater, the interspace regularly narrowing cephalad, median width of interspace very faintly less than that of one of the lobes, ventro-internal angle of the lobes broadly obtuse: metasternal lobes touching caudad. Supra-anal plate with the greatest proximal width subequal to the greatest length, lateral margin subparallel proximad, then moderately and regularly narrowing, distal extremity rather broad, arcuato-truncate, the surface with a pair of shining black tubercles placed mesad at the distal third, proximad the same plate has indications of a medio-longitudinal impression, flanked laterad by a pair of low rounded ridges; margins slightly thickened and elevated: cerci robust, flattened and broad proximad, in general form subfalcate, the tip directed dorsad, strongly tapering from the broad base to the median section, thence weakly tapering to the subacute apex; when viewed from the dorsum the general form of the cercus is straight proximad, then incurved and last with the distal fourth straight, the arcuate distal margin of the broad proximal portion bears several blunt teeth: pallium³¹ greatly produced in an erect, distad compressed, falciform process considerably surpassing the subgenital plate, in form this process is gently tapering with a moderately acute apex: subgenital plate short, well

³¹ See Scudder, Proc. U. S. Nat. Mus., XX, p. 8, (1897).

rounded when seen from the side, the dorsal free margin V-shaped, the apex faintly rostrate produced, the proximal section of the V-form of the margin slightly embracing the ventral ridge of the pallium. Cephalic and median limbs moderately robust. Caudal femora moderately robust, very faintly shorter than the tegmina, the greatest depth contained three and one-half times in the length of the same, genicular lobes moderately acute, external face regularly patterned: caudal tibiae slightly shorter than the femora, armed on the external margin with six spines, internal margin with eight spines: caudal tarsi very slender and elongate, the proximal and second joints subequal in length.

Allotype: ♀; Igarapé-assú, State of Pará, Brazil. (H. S. Parish.) [Acad. Nat. Sci. Phila.]

Differing from the description of the type in the following features. Size medium. Interocular portion of the vertex slightly wider than the proximal antennal joint, weakly sulcate: fastigium distinctly but not strongly transverse: frontal costa twice as wide as the interocular portion of the vertex, of similar structure to that of the male but the broad portion is plane and non-sulcate, roughly biseriate punctate, ventrad of the ocellus even more strongly constricted and sulcate than in the male, thence obsolete: eyes less prominent than in the male, one and two-thirds times as long as the infra-ocular portion of the genæ, in basal outline slightly broader proportionately than in the male: antennæ nearly twice as long as the head and pronotum together, very slender, filiform. Pronotum with the median carina obsolete except on the metazona, where it is weak but distinct: lateral lobes with the greatest depth very faintly greater than the greatest dorsal length of the same. Interspace between the mesosternal lobes with its cephalic width equal to about one and one-third times the greatest length of the same, the form of which latter expands caudad: metasternal lobes separated by an interspace which at its narrowest point (caudad) is subequal to its greatest length. Ovipositor valves robust, short, the external margins of the dorsal valves crenulate.

General color of the female saccardo olive, becoming weakly mummy brown on the dorsum of the pronotum and faintly so on the face; of the male on the head, pronotum and pleura dusky olive-green, on tegmina buffy citrine. Eyes cinnamon-brown (♂) to prout's brown (♀); antennæ fuscous, becoming black distad, with the extreme apex narrowly vinaceous-rufous, proximal joint more (♂) or less (♀) completely raw sienna. Wings very weakly washed

with fuscous, this more apparent along the costal margin and broadly around the periphery, veins fuscous. Abdomen dresden brown (♂) to brownish olive (♀), the ventral surface faintly more greenish; distal section of the margin of the male supra-anal plate, raised points on the same and distal extremity of the cerci black. Cephalic and median limbs of the general coloration: caudal femora hellebore green (♀) or light hellebore green (♂), the distal extremity english red (♂) to mahogany red (♀), the genicular arches weakly greenish, in the female this weakly suffusing the lobes as well: caudal tibiae and tarsi nopal red, spines black tipped.

Measurements (in millimeters).

	♂ (Type)	♀ (Allotype)
Length of body.....	17.6	25.8
Length of pronotum.....	3.4	5
Greatest dorsal width of pronotal disk.....	2.8	4.4
Length of tegmen.....	11	14.8
Length of caudal femur.....	10.5	14

The type and allotype are the only specimens of this species we have seen.

Vilerna æneo-oculata (DeGeer).

1773. *Acrydium æneo-oculatum* DeGeer, Mém. Hist. Ins., III, p. 502, pl. 42, fig. 11. [Surinam.]

Igarapé-assú. One male.

This specimen is somewhat smaller than British Guiana individuals of the same sex, but is clearly the same species. This Guianan type is known to range south as far as Chapada, Matto Grosso and Rio de Janeiro, Brazil.

Abracris dilecta Walker.

1870. *Abracris dilecta* Walker, Catal. Dermapt. Salt. Brit. Mus., IV, p. 642. [Santarem, Brazil.]

Igarapé-assú. January 17, 1912 (one). Two females.

These specimens are inseparable from a cotypic female of the synonymous *meridionalis*³¹ from Demerara, kindly loaned by Prof. Bruner.

Abracris cæruleipennis (Bruner).

1900. *Jodacris* (?) *cæruleipennis* Bruner, Second Rep. Merchants Loc. Invest. Comm. Buenos Aires, p. 68. [Asuncion, Paraguay; Territory of Formosa, Argentina.]

Pará. (C. F. Baker.) One male, one female.

³¹ See Rehn, Trans. Amer. Entom. Soc., XLII, p. 294, (1916).

Igarapé-assú. January 17 and February 1, 1912. Three males, six females.

These specimens have been compared with a typical pair, a female from Asuncion, Paraguay and a male from San Bernardino, Paraguay, loaned by Prof. Bruner, from which they show no important differences, although they are rather different in coloration. The Pará female has the base color pale ochraceous, with no distinct markings on the body, and the external face of the caudal femora unmarked. The male from the same locality has a decidedly varied pattern of the usual contrasted type of the genus, and a distinct oblique dark bar on the external face of the caudal femora, which marking extends to the base as a fine line. The Igarapé-assú males are duller and darker than the Pará male, but are much more variegated than the females. The external femoral bars are present in all of these, continued to the base by a fine line in one. The Igarapé-assú females are very dark and dull, very little contrasted and with the pale paired thoracic lines completely or nearly completely effaced. The color wash of the proximal portion of the wings in all the specimens, as in the typical material, is more bottle green than "blue" as originally described. The same is true of material from other localities in Paraguay and southern Brazil. The ventro-external face of the caudal femora is variable in the extent to which it is suffused with fuscous or blackish. It is always touched with darker in the punctations of the distal two-thirds of the area, which tendency becomes more pronounced and extensive until in the extreme condition that section is almost uniformly colored, but it is never as sharply defined laterad, as solid, or as solid to the base of the femur as in *nebulosa*, *chapadensis*, *dilecta* and *obliqua*. This feature is the one referred to by us as showing variability in the coloration of this margin.³²

***Osmilia flavo-lineata* (DeGeer).**

1773. *Acrydium flavo-lineatum* DeGeer, Mém. Hist. Ins., III, p. 497, pl. 42, fig. 4. [Surinam.]

Igarapé-assú. January 17, 1912 (one). Thirteen males, twelve females, one juv. male, one juv. female.

These specimens have the disk of the wing more bluish green than in typical individuals of *flavo-lineata*, in which the same area is yellowish, although with a green tinge, the present specimens being

³² Proc. Acad. Nat. Sci. Phila., 1907, p. 186, (1907). The material there recorded as *signatipes*, as we have shown elsewhere (Trans. Amer. Entom. Soc., XLII, p. 294, (1916)) belongs to *cæruleipennis* and *chapadensis*.

terre-verte as opposed to olive-yellow (Ridgway). The bluish tone, however, is more nearly that of typical *flavo-lineata* than the dark tyrian blue (Ridgway) of *violacea* (Thunberg). We refer the Igarapé-assú series to *flavo-lineata*, but do not consider it typical, as we do material from lower Amazonia and the Guianas. It is possible that *flavo-lineata* and *violacea* may be geographic races of the same species and the present series may show a step in the intergradation, but until more material from a number of additional localities is in hand this cannot be more than suggested. The present series shows the usual amount of structural and general brownish color variation in tone and tegminal maculation found in forms of this genus. We feel that this genus should be placed near *Abracris*, to which it is undoubtedly close in relationship.

***Sitalces ovatipennis* Bruner.**

1908. [*Sitalces*] *ovatipennis* Bruner, Biol. Cent.-Amer., Orth., II, p. 291. [British Guiana.]

Pará. (C. F. Baker.) One male, one female.

Igarapé-assú. Three males, three females.

This material has been compared with paratype specimens from Bartica, British Guiana. While they are always minute the tegmina vary greatly in their exact shape and relative size. There is quite a little variation in the extent to which the blackish of the post-ocular regions and lateral lobes suffuses the dorsum of the thoracic segments and the proximal abdominal segments. This is continuous across the dorsum in some individuals, except for the pale longitudinal lines, and in others is there completely replaced by olivaceous. This is always correlated with general pattern depth and the two represent intensive and recessive extremes.

The species is here first recorded from Brazil.

***Sitalces jugatus* n. sp. (Pl. I, figs. 34, 35.)**

A striking apterous species belonging to the section of the genus containing *S. apterus* (Scudder),³³ *debilis* Rehn and probably others. From *apterus* it differs in the slightly narrower dorsal section of the frontal costa in the female, in the larger auditory tympanum, more slender shaft of the cercus in the male, in the relatively shorter and more robust caudal femora of the male, the more slender caudal tarsi of the same sex and in some difference in the color pattern of

³³ We have examined one male and one female of the original one male and two females of this species, which was described as an *Ommatolampis* (Proc. Boston Soc. Nat. Hist., XVII, p. 273, (1875)), and find it is a *Sitalces*. Its relationship to *jugatus* can be determined from the above diagnosis.

the male. The latter feature consists of the pale callose area in *jugatus* being present only on the pleura, while in *apterus* the ventral portion of the lateral lobes is of similar character.

From *debilis* the new species can be readily separated by its more finely rugoso-punctate surface, much more declivent fastigium, more prominent eyes, less apparent median carina of the pronotum, more elongate auditory tympanum, less strongly carinate dorsal line of the abdomen, stouter female cerci, the more acute extremity of the prosternal process, the less decidedly serrate character of the ventral margin of the caudal femora and the reddish brown coloration. As the male of *debilis* is unknown we cannot compare that sex. Bruner's *nudus* from Santarem, may be closely related, but such information as we are able to secure from his very incomplete and not at all convincing remarks on that species seems to point to their being different.

Type: ♂; Igarapé-assú, State of Pará, Brazil. (H. S. Parish.) [Acad. Nat. Sci Phila., Type no. 5291.]

Size large (for the genus); form robust; surface of head largely, of dorsal thoracic and single proximal abdominal segments strongly, ruguloso-punctate, other proximal abdominal segments faintly sculptured dorsad. Head with the occiput not elevated dorsad of the pronotum, distinctly declivent to and including the vertex and fastigium; interocular width of the vertex very narrow, equal to less than one-half of the interantennal width of the costa, finely sulcate; fastigium rather short, broader than long, cephalic bounding margin of the impresso-punctate surface rectangulate, with a fine median continuation of the sulcus of the vertex: frontal costa faintly produced between the antennal bases, fastigio-facial angle obtuse, facial line considerably retreating, dorso-ocellar section of the costa subequal in width, broad, wider than the proximal antennal joint, non-sulcate, thickly punctate, surface impressed about ocellus, the margins of the costa compressed immediately ventrad of the same, briefly sulcate, thence costa is obsolete: eyes quite prominent, ovate in basal outline, the length twice that of the infra-ocular portion of the genæ: antennæ filiform, elongate, in length twice as long as the head and pronotum together. Pronotum sub-cylindrical, moderately expanding caudad, the greatest caudal width of the disk subequal to the dorsal length of the same, in transverse section faintly tectate: dorsal margin of pronotal disk arcuate produced, faintly and broadly emarginate mesad; caudal margin subtruncate with a very broad and shallow median emargination; median carina faintly and rather irregularly

indicated, no trace of lateral carinae on shoulders; transverse sulci distinct, but rather finely and narrowly impressed, metazona hardly more than a fourth the length of the remainder of the pronotum: lateral lobes with their greatest depth subequal to two-thirds of the greatest dorsal length of the same; cephalic margin oblique, ventro-cephalic angle rounded obtuse, ventral margin distinctly arcuato-emarginate oblique cephalad, median angle rounded obtuse, caudal section of the ventral margin oblique arcuato-truncate, ventro-caudal angle broadly rounded obtuse. Tegmina and wings absent. Proximal abdominal segment with distinct lateral subcircular auditory tympani. Prosternal spine moderately elongate, erect, conical acute: interspace between the mesosternal lobes quadrate, smaller than one of the lobes; metasternal lobes narrowly separated caudad: surface of mesosternum and metasternum more or less shagreenous, the cephalic half of the mesosternum strongly and closely so. Disto-dorsal abdominal segment with the furcula represented by a pair of the merest nodes, between which the segment is moderately emarginate: supra-anal plate elongate trigonal, apex narrowly rounded, lateral margins with a weak shoulder at two-fifths the length from the base, surface with a broad medio-longitudinal sulcus on proximal half, a pair of inter-marginal, straight, converging impressions, which on account of the shoulder on the lateral margin are more removed from the latter proximad than distad, and the distal area enclosed by the impressions faintly elevated and its surface weakly impressed: cerci short, rather robust, when seen from the dorsum compressed, having the proximal half straight and the distal section directed obliquely meso-caudad, when seen from the lateral aspect having the proximal half deep and weakly narrowing distad, a short, blunt tooth present ventrad on the external face at the point of flexure of the cercus, the distal half narrowing to the blunt but acuminate apex, ventral margin of the distal half with a distinct, blunted but acuminate tooth, this much like the true apex in character: subgenital tooth simple, hardly produced, free margin distinctly emarginato-truncate mesad, the lateral angles being low nodes. Cephalic and median femora robust, inflated, the median ones particularly so. Caudal femora about twice as long as the head and pronotum together, moderately robust, the greatest width contained three and one-half times in the greatest femoral length; dorsal carina with a series of distinct, spaced serrations and an intercalated series of serrulations, ventral carina similarly but more decidedly armed, particularly distad; pagina evenly and deeply engraved; genicular lobes with the distal portion of the

ventral margin distinctly concave, apex bluntly acute-angulate: caudal tibiae slightly shorter than the femora, moderately sinuate, faintly expanded distad; external margin with seven spines, internal margin with nine spines: caudal tarsi slender, elongate; metatarsus and second joint subequal in length to the third joint.

General color of the dorsum of the thoracic and proximal abdominal segments pale morocco red. General color of the head and abdomen oil yellow, on the occiput and postocular region of the head dull blackish green: venter aniline yellow; cephalic and median femora light cadmium, passing to pyrite yellow on the tibiae; caudal femora sulphine yellow proximad, passing regularly to olive-green distad; caudal tibiae and all tarsi olive-green; mesopleura with a decided subcircular spot of buff yellow at the base of the median femora. The clypeal suture and the ventral margin of the genae are lined with black and the antennal fossae washed with the same; antennae of the color of the face proximad, passing to bay mesad and distad; eyes burnt sienna. Abdomen with the proximal segments margined with black, the median segments with paired circular to ovate black spots disposed along the median line; disto-dorsal abdominal segment lined with black next to the supra-anal plate, the extreme tip of the latter similarly blackened; cerci with the points black tipped. Caudal femora with the genicular arches black and a cloud of similar character crossing the base of the genicular lobes; caudal tibiae with the spines black tipped.

Allotype: ♀; same data as type. [Acad. Nat. Sci., Phila.]

The characters here discussed are supplementary to those given for the male sex. Form very robust: sculpturing as in the male but more decided on the abdominal segments. Interocular width of the vertex slightly more than one-half the interantennal width of the frontal costa, weakly sulcate to bisulcate caudad: fastigium nearly twice as broad as long, cephalic bounding margin of the impresso-punctate surface, obtuse-angulate: frontal costa thickly impresso-punctate dorsad, faintly narrowed at junction with fastigium: eyes slightly less prominent than in the male, their length nearly twice that of the infra-ocular portion of the genae: antennae about one and one-half times as long as the head and pronotum together. Pronotum with the greatest caudal width of the disk slightly greater than the greatest length of the same, in transverse section arched: cephalic margin of pronotal disk hardly emarginate, caudal margin less distinctly emarginate than in the male; transverse carina well indicated but more delicate than in the male: lateral lobes slightly deeper in pro-

portion to the length than in the male. Prosternal spine more aciculate than in the male: interspace between the mesosternal lobes slightly transverse, subequal in width to one of the lobes; metasternal lobes separated caudad by a width equal to one-half that between the mesosternal lobes; surface of the sternum punctate instead of shagreenous. Abdomen distinctly carinate mesad to the penultimate segment: supra-anal plate subtectate in section, elongate trigonal in general form, distal section moderately produced caudad with the apex broadly rounded, proximal half with a distinct medio-longitudinal impression, laterad with distinct carinae, which form the proximo-lateral point of the plate thence strongly converge to the median (longitudinal) section of the plate, represented distad by parallel rounded shoulders, ventro-laterad of which the plate is subcompressed: cerci short, broad at base, tapering, the apex blunted: ovipositor jaws moderately compressed, dorso-lateral margins of the dorsal valves faintly and irregularly crenulate. Cephalic and median limbs normal, not inflated as in the male, rather short. Caudal femora as in the male but differing in the ventral carina having smaller but more numerous teeth.

General color of head, thoracic and abdominal segments and cephalic limbs bay, shading to auburn in places, the venter passing to mummy brown. Fastigium sanford's brown; eyes bronzy argus brown; antennae of the general color, paler proximad; clypeal suture black mesad and laterad, the paired black spots found on the fourth fifth and sixth segments in the male represented by smaller and weaker dots. Median limbs paler than the cephalic ones, more yellow ocher. Caudal femora bay with the dorsal face sanford's brown, the genicular arches black, the lobes blackish with a decided green tinge; caudal tibiae and tarsi cedar green, the distal portion black, the spines black tipped.

Measurements (in millimeters).

	♂ (Type)	♀ (Allotype)
Length of body.....	17	21.4
Length of pronotum.....	4	4.3
Greatest dorsal (caudal) width of pronotal disk.....	3.5	4.7
Length of caudal femur.....	11.4	12.5

In addition to the type and allotype we have examined four male and two female paratypes. Of these one male bears an exact date, January 21, 1912. The series is quite uniform in coloration, shows

no noteworthy variation in structure and exhibits but a negligible amount in size. A single female from Peixe Boi, east of Pará, State of Pará, Brazil, (November to December, 1907; H. B. Merrill), in the collection of the Academy, is inseparable from the typical Igarapé-assú series.

TETTIGONIIDÆ.

Phaneropterinæ.

Ceraia capra n. sp. (Pl. II, figs. 36, 37.)

While we have only the female sex of this species its description is justified by the peculiar and unique form of the subgenital plate, and also by the ambisexual characters separating it from the allied species known only from the male. It is apparently nearest to *C. punctulata* and *dentata* Brunner, but from the former it differs in the annulate antennæ, in the lateral lobes of the pronotum being roundly inserted cephalad, in the greater number of spines on the ventral margin of the caudal femora, in the metasternal lobes being rounded instead of trigonal, in the ventral margin of the ovipositor being crenulate but a short distance distad, in the deeply fissate and bicorniform subgenital plate and in the somewhat greater size. From *dentata* the new form can be readily distinguished by the angulate instead of rotundate mesosternal lobes.

Type: ♀; Igarapé-assú, State of Pará, Brazil. (H. S. Parish.) [Acad. Nat. Sci. Phila., Type no. 5310.]

Size moderately large; form well compressed; surface somewhat polished. Head moderately arcuate, weakly elevated dorsad of the general level of the pronotal disk; fastigium subhorizontal, narrow, compressed, particularly proximad, sulcate, the apex faintly bulbous, narrowly in contact with the compressed and slender facial fastigium; eyes but moderately prominent when seen from the dorsum, basal outline subcircular, the depth subequal to that of the infra-ocular portion of the genæ; antennæ broken. Pronotum with the disk deplanate dorsad, greatest caudal width of disk contained one and one-third times in the greatest length of the same; cephalic margin of disk emarginato-truncate, caudal margin strongly arcuate, forming more than the quadrant of a circle; lateral angles of disk rounded, broadly so cephalad, more narrowly so caudad; surface of disk hardly punctulate cephalad, median figure broadly U-shaped, deeply impressed; lateral lobes with their greatest depth distinctly greater than the greatest length, cephalic margin appreciably sinuate, ventro-cephalic angle very broadly arcuato-rotundate, ventral margin broadly rounded subrectangulate, ventro-caudal section

and ventral margin to shortly ventrad of the humeral sinus oblique arcuato-truncate, the infra-humeral section of the margin distinct obtuse-angulate, the humeral sinus rectangulate with the immediate angle rounded. Tegmina surpassing the apices of the caudal femora by about the length of the pronotal disk, in form somewhat elongate, lanceolate, the greatest width contained three and one-third times in the tegminal length; costal margin gently arcuate in distal half, nearly straight in proximal half, sutural margin distad of the anal field straight except for the oblique arcuato-truncate distal fifth, apex rotundato-rectangulate, situated nearer the costal than the main portion of the sutural margin; mediastine vein short, irregular, ramose; humeral and discoidal veins contiguous in proximal two-fifths; median vein diverging slightly proximad of proximal two-fifths of length, bifurcate, the rami reaching the sutural margin; ulnar vein straight except for brief distal arcuation; transverse nervures numerous and regular in discoidal field. Wings surpassing the tegmina in length by a distance nearly equal to the dorsal length of the pronotum, apex moderately acute. Prosternum unspined; mesosternum with the lobes rotundato-acute-angulate; metasternum with the lobes rounded laterad and caudad, hardly any caudo-median production indicated. Abdomen with the disto-dorsal abdominal segment faintly tectate in section, weakly produced mesad, with a distinct but not wide rectangulate emargination, which is bordered laterad by low, rounded, thickened areas of the margin reflexed toward the ventral surface; supra-anal plate reflexed, trigonal; cerci simple, crassate, tapering to delicate apices, gently arcuate; ovipositor slightly more than half again as long as the dorsum of the pronotum, regularly narrowing in depth distad, the proximal half moderately arcuate, distal half straight, the immediate apex obliquely subtruncate, the apex, distal portion of dorsal margin and apex of ventral valves serrulato-denticulate; subgenital plate elongate, compressed, fissate for about one-half its length, the resultant lateral lobes diverging and embracing the base of the ovipositor, each regularly tapering in width to the subaciculate apex. Cephalic and median femora unarmed beneath; cephalic tibiae with four spines on the dorso-caudal margin; median tibiae with five to six spines on the same margin. Caudal femora slightly more than two-thirds as long as the tegmina, robust in proximal half; genicular lobes short bispinose; ventro-external margin of caudal femora with eight short, flattened, sublamellate spines, ventro-internal margin with ten similar spines. Tarsi without arolia.

General color of the body and femora yellow ocher (doubtless changed from green by drying), the caudal section of the pronotum, tegmina (except for yellowish wash proximad) and tibiae warbler green (Ridgway), becoming olive-green distad on the tegmina. Eyes chestnut brown; antennae multiannulate with fuscous (only proximal portion of antennae remaining). Tegmina with a longitudinally disposed series of small fuscous spots between the discoidal and median and ulnar veins, these placed one in each quadrate space and the series weaker proximad, distad not reaching the apex, a few weak scattered similar spots in the ulnar-anal area. Ovipositor with the margins edged with mummy brown; infra-cercal plates fuscous proximad. Cephalic tibiae with foramina fuscous; tibial spines ochraceous, narrowly tipped with black; caudal femora with the vicinity of the bases of the ventral spines auburn.

Length of body (exclusive of ovipositor), 28.6 mm.; length of pronotum, 7.2; greatest (caudal) width of pronotal disk, 5.8; length of tegmen, 45.5; greatest width of tegmen, 10.4; length of caudal femur, 32.8; length of ovipositor, 11.3.

The type of this species is unique.

Parableta integricauda Brunner.

1878. *P[arableta] integricauda* Brunner, Monogr. der Phaneropt., p. 254, pl. V, fig. 78. [Ecuador; Surinam.]

Igarapé-assú. One male.

So far as we are able to determine from the description of this species the Igarapé-assú specimen belongs here. The eyes, however, are not black but auburn, while the tegmina show but two groups of purplish bordered spots along the ulnar vein. Each of these groups is composed of two distinct spots in contact with each other except for the separation of the vein, the sutural one in each case larger than the other.

The only previous exact records are from Coca (Bolivar) and Valley of Santiago (Giglio-Tos), Ecuador.

Scaphura sphex n. sp. (Pl. II, figs. 38-40.)

Allied to *S. nitida*, possessing the same polished surface of the body, tegmina and exposed portions of the wings, the distinctive translucence or even transparency of the tegmina, and form of the same, as well as the characteristic structure of the pronotum. The tegminal corrugations are similar in the two species. From *nitida*, *sphex* differs in the relatively broader tegmina, which are also yellowish hyaline except in the suffused distal fourth, in the wings being hyaline in the same proportion (when at rest) as the tegmina, in the less

thickly plumose proximal section of the antennæ, in the more prominent eyes, in the more slender limbs and in features of the coloration which need not be emphasized on account of color variability in the genus.

Walker's *Aganacris micans*³⁴ may be related, but the description does not mention the peculiar hyaline character of the tegmina and wings, the former of which is said to be black with a cupreous tinge, the latter blackish.

Type: ♂; Igarapé-assú, State of Pará, Brazil. (H. S. Parish.) [Acad. Nat. Sci. Phila., Type no. 5303.]

Size medium: form compressed: surface highly polished, the head, ventral portion of the lateral lobes of the pronotum, venter, apex of abdomen and limbs with a greater or lesser amount of whitish pile. Head with the occiput rather strongly inflated, moderately declivent to the fastigium: fastigium but slightly produced, subcompressed, strongly declivent, acuminate when seen from the dorsum, the apex narrowly but strongly rounded, strongly sulcate, ventrad rather broadly in contact with the slightly acute fastigium of the face: median ocellus large; lateral ocelli large, ovate, separated by the fastigium alone: palpi elongate, slender, fifth joint slightly more than half again as long as the third joint: eyes large, prominent, ovate in basal outline, their depth about twice that of the infra-ocular portion of the genæ: antennæ incomplete, proximad moderately plumose. Pronotum short sellate, with the peculiar structural details found in *S. nitida*, when seen from the side the dorsum is strongly concave in cephalic half and deplanate caudad: greatest (caudal) width of the disk equal to about four-fifths the greatest length of the same; cephalic margin of the disk subtruncate, caudal margin strongly arcuate: transverse impression broad, rounded, its center at about cephalic fourth: lateral portions of disk in cephalic half strongly rounded into the lobes, caudad are present distinct angles, which are directed mesocephalad, these passing into the rounded portion; metazona of disk slightly impressed: lateral lobes of the pronotum with the greatest depth one and one-half times in the greatest length of the same; the transverse impression of the dorsum strongly continued on the lateral lobes, caudad of which the surface is somewhat bullate; cephalic margin of the lobes sigmoid, concave dorsad, convex ventrad, ventrocephalic angle rounded obtuse, ventral margin arcuate oblique, ventro-caudal margin very broadly rounded, caudal margin slightly

³⁴ Catal. Dermap. Salt. Brit. Mus., V, p. 41, (1871).

oblique, sinuato-truncate, humeral sinus rectangulate. Tegmina surpassing the apices of the caudal femora by somewhat more than the length of the pronotal disk, of the peculiar crinkled character found in *S. nitida*, this being regular proximad in the discoidal field, irregular distad and in the costal field: greatest width of the tegmina at the distal fourth, contained nearly four and three-quarters times in the greatest length; costal margin straight arcuate, briefly arcuate proximad and in the distal fourth; apex well rounded, sutural portion of apex oblique subtruncate; sutural margin concavo-truncate: mediastine vein weak but distinct: humeral and discoidal veins not in contact; median vein diverging from the discoidal vein at the proximal third, bifurcate faintly before its middle; ulnar vein bi- or triramose: stridulating field with the free margin but faintly produced at the apex of the stridulating vein, distad of this gently arcuate; stridulating vein nearly transverse, greatly thickened, subfusiform; speculum greatly elongate, narrow, proximad of the stridulating vein the field is subcoriaceous. Wings projecting distad of the tegmina a distance less than the length of the disk of the pronotum, the apex narrowly rounded. Prosternum elevated in a V-shaped structure, unarmed: mesosternal lobes truncate laterad, rounded rectangulate disto-laterad: metasternal lobes narrow, obliquely arcuate. Disto-dorsal abdominal segment arcuate-emarginate laterad, the distal margin subtruncate mesad, a weak medio-longitudinal impression present: subgenital plate deflexed, trigonal: cerci simple, tapering, arcuate dorsad, the apices very briefly spiniform: subgenital plate narrow, produced, attenuate mesad, projecting almost to the tips of the cerci, the distal margin strongly arcuate-emarginate; styles short, articulate. Limbs slender: cephalic femora subcompressed, moderately deep; cephalic tibiae with the tympana large, reniform: caudal femora nearly two-thirds as long as the tegmina, moderately inflated proximad, very slender distad, ventro-external margin with six to nine, ventro-internal margin with four spines.

General color shining blue black, the pubescence of the body and limbs white, the plumosity of the antennae black. Head with a pair of infra-ocular lines of hazel, the clypeus and labrum marked with the same to ochraceous-buff: palpi incompletely lined dorsad with ochraceous-buff: eyes cinnamon-brown. Pronotum with the ventral portion of the lateral lobes narrowly margined with naples yellow. Tegmina faintly buffy hyaline in the proximal three-fourths, distal fourth strongly washed with blackish fuscous; humeral, discoidal, ulnar and anal veins and rami prominently lined with walnut brown

to blackish fuscous; stridulating field similar in tone to the discoidal three-fourths of the tegmina; stridulating vein broadly black, opaque area proximad of same bright mustard yellow; bordering veins of speculum lined with fuscous, first axillary distad with dragon's-blood red, second with black. Wings with base tint as in tegmina, the veins lined with russet. Metapleura marked dorso-laterad with two points of mustard yellow. Abdomen with two proximal segments with paired dots of mustard yellow on dorsal surface. Coxal region marked more or less strongly with the same color. Venter of abdomen obscurely buffy. Median femora faintly and brokenly lined with mustard yellow on cephalic surface; caudal femora at proximal fourth with sublunate spot on mustard yellow on dorsal face.

Length of body, 16.2 mm.; length of pronotum, 4; greatest width of pronotal disk, 3.2; length of tegmen, 24; greatest width of tegmen, 5.2; length of caudal femur, 15.5.

The type of this striking and remarkable mimetic species is unique. The resemblance of it to certain sphecoid wasps is most extraordinary, and suggested the specific name.

Stilpnochlora marginella (Serville).

1839. *Phylloptera marginella* Serville, Hist. Nat. Ins., Orth., p. 405. ["Cape of Good Hope."]

Igarapé-assú. One male.

For comments on this species and close relatives, see a recent summary by the author.³⁵

Anaulacomera nodulosa Stål.

1873. *A[naulacomera] nodulosa* Stål, Öfvers. K. Vetensk.-Akad. Förhandl., XXX, p. 43. [Surinam.]

Igarapé-assú. January 17 and February 1, 1912 (two specimens). Four males, four females.

These specimens are referred to Stål's species with some uncertainty, as they are all larger than Stål's measurements, although certain individuals are comparable with the dimensions given by Brunner for the species. The species much resembles *A. albonodulosa*, but has the fastigium proportionately shorter and thicker, the pronotum shorter, the cerci briefer and not completely curved and the tegminal venation coarser.

The species has been definitely recorded from Surinam (also Paramaribo) and Chapada, Matto Grosso, Brazil.

Viadana myrtifolia (Linnæus).

1758. [*Gryllus* (*Tettigonia*)] *myrtifolius* Linnæus, Syst. Nat., X ed., p. 429. [Surinam.]

³⁵ Entom. News, XXVIII, pp. 107 to 113, (1917).

Igarapé-assú. One female.

A male from Paramaribo, Surinam, (K. Mayo), in the collection of the Academy of Natural Sciences, is specifically identical with the Igarapé-assú female.

The species has been recorded from Surinam, Cayenne and Pará, Brazil.

Coelophyllum³⁶ **coriaceum** (Pictet).

1888. *P[rosagoga] coriacea* Pictet, Mém. Soc. Phys. Hist. Nat. Genève, XXX, No. 6, p. 9, pl. 1, figs. 2, 2a. [Guiana.]

Igarapé-assú. January 17, 1912. One female.

This is, apparently, the first record of the species since the original description.

Coelophyllum rectinerve (Brunner).

1891. *Prosagoga rectinervis* Brunner, Verh. k.-k. zool.-botan. Gesell. Wien, XLI, pp. 170, 171. [Upper Amazonas.]

Igarapé-assú. One male, one female.

We have before us another female from Chanchamayo, Peru, which fully agrees with the Igarapé-assú individuals. The male is faintly smaller than the original measurements for that sex, but otherwise the specimens are in complete accord with the description.

The range of the species is now known to extend from the upper reaches of the Amazon to its mouth.

Pseudophyllinæ.

Acanthodis aquilina (Linnæus).

1758. [*Gryllus* (*Tettigonia*)] *aquilinus* Linnæus, Syst. Nat., X ed., p. 430. ["Indiis."]

Pará. (C. F. Baker.) One male.

This specimen is inseparable from an individual of the same sex from Cayenne, determined and presented to the Academy by Saussure. The species is known from localities extending from the mouth to the upper portion of the Amazon, north to the Guianas and Venezuela (Meridá).

Leurophyllum consanguineum (Serville).

1839. *Acanthodis consanguinea* Serville, Hist. Nat. Ins., Orth., p. 454. [Unknown locality.]

Pará. (C. F. Baker.) One male, one immature male.

This species is known to range from southeastern Brazil north to Cayenne, west to eastern Ecuador.

Leurophyllum maculipenne (Serville).

1839. *Platyphyllum maculipenne* Serville, Hist. Nat. Ins., Orth., p. 447. [Brazil.]

³⁶ See Rehn, Entom. News, XXVIII, p. 152, (1917).

Pará. (C. F. Baker.) One male, one female.

Igarapé-assú. January 29, 1912 (one specimen). Three females.

This striking and beautiful species is well distributed over the Amazonian and Guianan regions.

***Bliastes submarginatus* (Walker).**

1870. *Merocidius submarginatus* Walker, Catal. Spec. Derm. Salt. Brit. Mus., III, p. 450. [Pará, Brazil.]

Pará. (C. F. Baker.) One female.

Kirby has placed *Bliastes limbatus* Brunner, described from Pará, as a synonym of *submarginatus*³⁷, with which action we fully agree. In the present specimen the caudal genicular lobes of the median femora are spined, and the spines on the ventro-cephalic margin of the cephalic and median femora number three instead of four as described by Brunner.

***Teleutias aduncus* Stål.**

1874. *T[eleutias] aduncus* Stål, Recens. Orth., II, p. 88. [Unknown locality.]

Pará. (C. F. Baker.) One male.

This specimen fully agrees with the original description and the later one by Brunner. This is the first exact locality known for the species, which was recorded by Brunner from Upper Amazonia.

***Diophanes salvifolium* (Lichtenstein).**

"1796. *Locusta salvifolia* Lichtenstein, Catal. Mus. Hamburg, III, p. 82."

Pará. (C. F. Baker.) One female.

This specimen has the wings with a complete but narrow distal and peripheral edging of whitish, while the hyaline character of the interspaces of the axillary and radiate fields of the wings is very pronounced.

Copiphorinæ.

***Copiphora cornuta* (DeGeer).**

1773. *Locusta cornuta* DeGeer, Mem. Hist. Ins., III, p. 441, pl. 37, fig. 7. (Surinam.)

Pará. (C. F. Baker.) One male.

Igarapé-assú. One female.

These specimens are fully typical of the species, except that the dorso-caudal margin of the median tibiæ bear four to five spines in the Pará individual and five in that from Igarapé-assú. The presence of but three spines on this margin has been considered diagnostic of this species by Karny, but reliance cannot be placed on the number of marginal spines in this instance as in many others, the material before us showing sufficient variation to nullify the

³⁷ Synon. Catal. Orth., II, p. 331, (1906).

diagnostic value of this feature. We have also before us for study a pair from Paramaribo, Surinam (K. Mayo) and a female from Bartica, British Guiana (March 25, 1913; H. S. Parish), all belonging to the Academy. The five specimens show there is a very decided amount of variation in the intensity of the tuberculation of the fastigium, but all are clearly referable to the same species. Both Guianan females have three spines on the dorso-caudal margin of the median tibiae, while the Paramaribo male has three spines on this margin on one limb and four on the other.

The species has already been recorded from Pará by Walker and Bruner.

Acantheremus elegans Karny.

1907. *Acantheremus elegans* Karny, Abhandl. k.-k. zool.-botan. Gesell. Wien, IV, heft 3, p. 9, fig. 1. [Surinam.]

Pará. (C. F. Baker.) One female.

This specimen fully agrees with the original description of the species, differing only in the slightly greater size of the specimen before us.

Neoconocephalus nigropunctatus (Redtenbacher).

1891. *Conocephalus nigropunctatus* Redtenbacher, Verhandl. k.-k. zool.-botan. Gesell. Wien, XLI, pp. 380, 391, pl. III, fig. 32. [Upper Amazon; Brazil; Surinam; Cuba; Cayenne.]

Pará. (C. F. Baker.) Three males, one female.

Benevides, Pará. (H. H. Smith.) Two males. [U. S. N. M.]

Contamano, Rio Ucayali, Peru. October to December, 1912. One male, two females.

The Contamano specimens have been immersed in a liquid preservative and in consequence all have lost their original coloration, but they are identical with the Pará male, and all fully agree with the original description.

Bruner has recorded³⁸ the species from Pará and Benevides.

Neoconocephalus fratellus (Griffini).

1891. *Conocephalus frater* Redtenbacher (not of Kirby, 1890), Verhandl. k.-k. zool.-botan. Gesell. Wien, XLI, pp. 381, 399. [Cuba; St. Vincent, Lesser Antilles; Trinidad; Brazil; Upper Amazons.]

1899. *Conocephalus fratellus* Griffini, Misc. Entom., VII, p. 5. (New name.)

Pará. (C. F. Baker.) One male.

The tegmina are appreciably shorter in this specimen than the measurements given for those of the same sex by Redtenbacher; otherwise the specimen is typical.

³⁸ Ann. Carneg. Mus., IX, p. 392, (1915).

Homorocoryphus cocanus (Bolivar).

1881. *Conocephalus cocanus* Bolivar, Anales Soc. Españ. Hist. Nat., X, p. 497. [Coca, Ecuador.]

Pará. (C. F. Baker.) Three males, two females.

Pará. (Thayer Expedition.) One female. [M. C. Z.]

These specimens have been compared with a male from Chanchamayo, Peru, in the collection of the Academy, and found to be inseparable.

The species was recorded from Cayenne by Redtenbacher.

Homorocoryphus brunneri (Redtenbacher).

1891. *Conocephalus brunneri* Redtenbacher, Verhandl. k.-k. zool.-botan. Gesell. Wien, XLI, pp. 385, 423. [Theresopolis, Brazil; Upper Amazons; Buenos Aires and Rosario, Argentina; "Yalapa."]

Igarapé-assú. One female.

Listroscelinæ.**Phlugis marginata** (Redtenbacher).

1891. *Thysdrus marginatus* Redtenbacher, Verhandl. k.-k. zool.-botan. Gesell. Wien, XLI, pp. 534, 537. [Upper Amazonia.]

Pará. (C. F. Baker.) One female.

This specimen, the first known from an exact locality, fully agrees with the original description, except that the caudal femora are slightly shorter.

Phlugis chelifera n. sp. (Pl. II, figs. 41-43.)

Closely related to *P. abnormis* (Redtenbacher),³⁹ from Retalulen,⁴⁰ but differing in the somewhat smaller size; in the male cerci being quite short, not a quarter as long as the subgenital plate; in the internal projection of the paired processes of the disto-dorsal abdominal segment of the male being flattened, vertical, decurved plates, instead of spiniform; and in the subgenital plate of the same sex having the expanded distal section proportionately shorter and more sharply expanded, the proximal angle of the dorsal margin of the expansion slightly recurved acute, and in the vertical margin of the same section, when seen from the side, being distinctly indented proximad.

Type: ♂; Igarapé-assú, State of Pará, Brazil. (H. S. Parish.) [Acad. Nat. Sci. Phila., Type no. 5321.]

Size medium (for the genus): form subcompressed. Head well seated in the pronotum: occiput and interocular space moderately

³⁹ Verhandl. k.-k. zool.-botan. Gesell. Wien, XLI, pp. 534, 538, pl. IV, fig. 95.

⁴⁰ This is apparently an error of transcription for Retahluleu, western Guatemala. Karny was apparently unable to place the locality quoted, and we also have been unable to secure any information concerning it. We feel confident, however, that "Retalulen" is an error for Retahluleu.

declivent cephalad; interspace between the eyes equal in width to one of the eyes, this area supplied with a median impressed point: fastigium of medium width, bilobate and angularly reflexed: face moderately retreating, broadly deplanate: eyes as prominent as usual in the genus, strongly projecting cephalad, when seen from the side the form is ovoid: antennæ surpassing the body in length; proximal joint strongly inflated; second joint moderately inflated. Pronotum of the type usual in the genus, distinctly elongate, metazona well produced, greatest width of the pronotum contained twice in the greatest length of the same: cephalic margin of disk shallowly arcuate-emarginate, caudal margin strongly arcuate; principal sulcus deeply impressed; metazona equal to two-fifths the length of the whole disk; a fine medio-longitudinal impressed line present caudad on the disk; three incomplete transverse sulci indicated on the prozona: lateral lobes two and one-half times as long as their depth, the margin arcuate from the cephalic margin of the disk to the very shallow humeral sinus, faintly flattened ventro-cephalad, caudal margin in general oblique subtruncate from the sinus to the arcuate caudal margin of the disk. Tegmina with length slightly exceeding that of the body, narrow, the greatest width contained over seven times in the length: margins in general straight, subparallel; apex rather narrowly rounded, sutural in position: discoidal vein straight, oblique, joining the costal margin at about its proximal third; number of rami in the marginal field sixteen, these straight and weakly oblique in trend; ulnar vein triramose distad; transverse nervures straight, weakly oblique, in general evenly spaced: tympanal field largely covered by the pronotal extension. Wings surpassing the tegminal apices by half the length of the tegmina, moderately acuminate. Penultimate disto-dorsal abdominal segment large, subcucullate, distal margin broadly arcuato-angulate, the mesal portion of the margin with an overlapping transparent bisinuate lamellation, visible only under fair magnification: disto-dorsal abdominal segment vertical, largely under the penultimate segment, roundly depressed mesad, roundly elevated disto-laterad; free margin with a median very deep U-emargination, laterad of which are paired V-emarginations of subequal depth, the processes between the three emarginations compressed, subfalciform, with their apices subacute and directed ventrad; laterad of the lateral emarginations the segment is produced into subconchate projections, which have a thickened ridge along their dorsal margin and are distinctly concave ventrad, when seen from the side the projections are spatulate, angulato-arcuate

dorsad and distad, narrowly rounded disto-ventrad, sigmoid ventrad: supra-anal plate well hidden, acute-angulate in form: cerci very short, simple, styliform, faintly sinuate, apex blunt: subgenital plate of the elongate, specialized type found in the genus, compressed; when seen from the side the plate is narrowed at the distal third, thence strongly compressed, the dorsal margin arcuate-emarginate with the dorsal angle acute produced; distal margin oblique sinuato-truncate, the disto-ventral angle produced, bluntly angulate, ventral margin angulato-arcuate; when seen from the venter the plate is regularly narrowing distad, the proximal half with a distinct median carina, the distal half narrowly fissate, the apex of the fissure narrowly broadened; when viewed from the dorsum the branches of the plate are seen to be thickened and inflated from the basal excavation of the plate to the disto-dorsal angle, or in the section which is arcuate-emarginate when seen from the side. Cephalic femora with three spines on the ventro-cephalic margin and four on the ventro-caudal margin; cephalic tibiae with five spines on each ventral margin exclusive of the apical ones. Median femora unspined on margins; median tibiae with two spines on the ventro-cephalic margin. Caudal femora of the usual type, with nine very small spines on the ventro-external margin and six of the ventro-internal margin.

General color honey yellow, the wings weakly washed with chamois, parts of the head, lateral lobes of the pronotum and limbs tending toward clay color. Eyes walnut brown.

Length of body, 12.4 mm.; length of pronotum, 3.3; greatest width of pronotum, 1.6; length of tegmen, 12.4; greatest width of tegmen, 1.6; length of caudal femur, 9.1.

In addition to the type we have before us four paratypic males, all from Bartica, British Guiana (H. S. Parish; March 6, 24 and 26; April 15, 1913), in the collection of the Academy. These specimens are all slightly larger than the type, but otherwise inseparable. The number of rami in the costal field of the tegmina ranges from fifteen to eighteen. In these specimens the coloration, particularly of the exposed portion of the wings and distad on the tegmina, is strongly approaching cosse green, the limbs also in part washed with weak javel green.

Phlugiola redtenbacheri Karny.

1911. *Phlugiola redtenbacheri* Karny, Abhandl. k.-k. zool.-botan. Gesell. Wien, IV, heft 3, p. 20. [Surinam.]

Branganza, State of Pará. (Miss H. B. Merrill.) One female. [A. N. S. P.]

This specimen fully agrees with the original description and figure. As far as we are aware the two localities given above are all those known for this striking and peculiar genus and species.

Agroeciinæ.

Paralobaspis personata n. sp. (Pl. II, figs. 44, 45.)

Differing from *P. picta*,⁴¹ from Ecuador, the genotype and only previously described species of the genus, in the shorter pronotum and shorter and more arcuate ovipositor, the much shorter tegmina, in the coloration of the mouthparts and the face, the latter being solid black in the present species, in the face being almost without impressed punctations, in the generally unicolorous pronotum, in the unicolorous prosternal spines, in the more unicolorous limbs and in the fewer spines on the ventro-cephalic margins of the cephalic and median femora.

Type: ♀; Pará, State of Pará, Brazil. (C. F. Baker.) [Acad. Nat. Sci. Phila., Type no. 5322.]

Size medium: form relatively robust, subcompressed: surface smooth. Head with the exposed dorsal length slightly less than one-half as long as the dorsum of the pronotum, ventral portion of head quite broad, narrowing dorsad: fastigium as characteristic of the genus, its plane in general continuous with the occipital line, the apex with a slightly decurved spine, the general direction of which is cephalad, cephalic margin of the fastigium ventrad of the spine distinctly compressed and carinate: paired ocelli subtrigonal in form, median ocellus small, in general circular: face with the very faintest and very sparsest type of punctation: eyes moderately prominent, irregularly subcircular in basal outline, slightly flattened cephalad and even more weakly so ventro-caudad: antennæ over twice as long as the body; proximal joint with the projection on the disto-internal face rounded dentiform. Pronotum with its dorsal line straight when seen from the side, in transverse section moderately arcuate dorsad, rounding broadly into the lateral lobes: disk of pronotum quite narrow on the cephalic half of the pronotum, moderately expanding on the metazona, cephalic margin of disk with the faintest possible arcuate emargination, caudal margin of disk regularly arcuate; principal transverse sulcus weakly impressed, placed mesad, prozona crossed at its middle by a more decidedly impressed arcuate sulcus, which is weak mesad: lateral lobes of the pronotum twice as long as deep; cephalic margin of the lobes straight oblique, regularly rounding at the ventro-

⁴¹ Boll. Mus. Zool. Anat. Comp. Torino, XIII, No. 311, p. 89, (1898).

cephalic angle into the oblique, but more nearly horizontal, weakly sinuate ventral margin, ventro-caudal angle roundly obtuse, caudal margin oblique, in general straight, with a broad though shallow humeral sinus; surface of lateral lobes moderately undulate, having one center of elevation or "boss" on the prozona, the other in the position of similar structures in the *Conocephalinae*. Tegmina slightly surpassing the apices of the caudal femora, subequal in width, the greatest width contained nearly six times in the length: costal margin straight except for short arcuations proximad and distad, sutural margin straight, apex rounded: principal venation simple; median vein diverging distad of the middle of the discoidal vein; reticulations in general irregular, the transverse nervures clearly defined only in the proximal portions of the marginal and discoidal fields. Wings reaching to the apices of the tegmina. Prosternal spines elongate, aciculate, weakly recurved, parallel: mesosternal lobes narrow, very acute, the apices weakly spiniform: metasternal lobes weakly obtuse-angulate, the angle briefly spiniform. Disto-dorsal abdominal segment with an impressed, medio-longitudinal crease, the free margin being produced each side of this into subspiniform projections, supra-coxal sections of the margin broadly and shallowly arcuato-emarginate: cerci tapering, with the apices rather sharply aciculate, gently arcuate when seen from the side: ovipositor moderately falcate, in length almost equal to twice the length of the pronotal disk, greatest depth of the ovipositor mesad; dorsal margin of ovipositor very faintly curved in distal two-thirds, ventral margin of same regularly arcuate, apex acute: subgenital plate in general trigonal, the margin having a distinct angulate sinuation each side of the median V-emargination. Cephalic femora subequal to the pronotum in length, the ventro-cephalic margin with two spines distad: median femora with three to four spines in the same position on the same margin; all genicular lobes spined excepting the caudal ones of the cephalic femora. Caudal femora about three-fourths as long as the tegmina, robust proximad, narrowed distad, ventro-external margin with eight spines.

General coloration clay color to ochraceous-buff, the abdomen approaching buckthorn brown, the dorsal aspect of the head and pronotum tinted with the same. Head with a large, solid facial area of moderately shining black, which dorsad involves all of the fastigium excepting its dorsal surface, the proximal antennal joint and the entire face, the black area expanding ventrad from as wide as the space between the ventro-cephalic section of the eyes to wider than that

between the latero-proximal angles of the clypeus, extending caudad as broad lines along the juxta-mandibular portion of the genæ, and as three distinct dorso-ventral bars on the proximal half of the clypeus, one median, the others marginal: mandibles largely zinc orange: eyes dresden brown: antennæ yellow ocher, becoming ochraceous tawny distad, with well-spaced annuli of mummy brown, these more closely placed proximad than distad, the same section of the antennæ with the individual joints marked off by narrow shadow annuli of mummy brown; ventral surface of second article barred transversely proximad and distad with mummy brown. Pronotum with a pair of obliquely disposed spots of mummy brown laterad on the rounded shoulder at the cephalic fifth; pair of similar but very much weaker spots are placed immediately caudad of the transverse sulcus, the four spots having a cruciform disposition; area of the median impression washed faintly with mummy brown. Tegmina with their base color mummy brown, the venation, primary and secondary, forming a meshwork of warm buff to light buff. Wings infumate. Ovipositor sanford's brown. Limbs ochraceous-buff, the femoral spines (marginal) fuscous, with a fuscous spot surrounding the base of each, apices of the caudal femora infusate; external face of the caudal femora with an oblique patterned area of fuscous, consisting of two long lines and portions of a number of generally transverse, briefly arcuate, lines: cephalic tibiæ with a fuscous patch on each face immediately distad of the foramina, the distal extremity also narrowly infusate; median tibiæ with similar areas in similar positions; caudal tibiæ marked with fuscous proximad and distad, all tibial spines tipped with fuscous, those of ventral surface with fuscous surrounding their bases.

Length of body (exclusive of ovipositor), 20 mm.; length of pronotum, 6.3; greatest width of pronotal disk, 3; length of tegmen, 19.8; greatest width of tegmen, 3.2; length of caudal femur, 14.5.

The type of this most interesting species is unique.

Gryllacrinæ.

Gryllacris harpistylata n. sp. (Pl. II, figs. 46, 47.)

Allied to *G. lævigata* Brunner,⁴² but differing in the paired productions of the disto-dorsal abdominal segment being closely placed mesad and spiniform, the whole segment more produced mesad, in the cerci being reduced to brief styliform appendages, in the subgenital plate being large, moderately produced and having greatly

⁴² Verhandl. k.-k. zool.-botan. Gesell. Wien, XXXVIII, pp. 321, 344, pl. VIII, fig. 41c. [Upper Amazonia.]

elongate and recurved, hook-like, acute styles, in the smaller general proportions, but actually longer tegmina and wings, in the fewer spines on the ventral margin of the caudal femora, in the restriction of the infuscation of the head to the occiput and fastigium, and in the pronotum being broadly bivittate with fuscous.

Type: ♂; Pará, State of Pará, Brazil. (C. F. Baker.) [Acad. Nat. Sci. Phila., Type no. 5323.]

Size medium: form as usual in the genus, with greatly developed tegmina and wings: surface moderately polished. Head broad, strongly transverse, the face markedly flattened, in fact slightly impressed: occiput strongly arcuate transversely, in side view regularly rounding over the vertex into the face: vertex broad, about one and one-half times as wide as proximal antennal joint, lateral margins subparallel; lateral ocelli ovate, rather small, median ocellus large, elliptical: eyes rather prominent, weakly projecting dorsad, in basal outline elongate-ovoid: antennæ imperfect, at least surpassing the apices of the tegmina and wings, heavy, brittle: third palpal joint moderately arcuate when seen from the side; fourth joint slightly longer than the third joint, straight, tapering proximad in the proximal half, distal half subequal in width, rather narrow; fifth joint slightly longer than the fourth joint, faintly enlarging distad. Pronotum transverse, in general form strongly rounded transversely: cephalic margin of dorsum faintly arcuate produced mesad; caudal margin arcuate laterad, shallowly and broadly arcuato-emarginate mesad; all margins more or less distinctly cingulate: transverse sulci two in number, the cephalic one placed close to the cephalic margin, being intermarginal and deeply impressed on the lateral lobes, the caudal one placed a short distance cephalad of the caudal margin, on the dorsal surface being broadly obtuse-angulate in form, on the lateral lobes carried regularly and straight ventro-cephalad, joining the cephalic transverse sulcus; intervening area, area of humeral shoulders and caudal section of lateral lobes moderately bullate; a medio-longitudinal impressed area is indicated on the middle of the dorsum: lateral lobes of the pronotum subrectangulate in general form, cephalic margin of the lobes straight dorsad, curving through the rounded ventro-cephalic angle into the weakly oblique cephalic two-thirds of the ventral margin, this rounding into the reversed oblique, short caudal third of the same margin, ventro-caudal angle obtuse, caudal margin straight, no humeral sinus present. Tegmina distad becoming coriaceous and pilose, about one and two-thirds times as long as the body, broad, the greatest width at distal fourth and con-

tained but slightly more than three times in the greatest tegminal length; costal margin strongly arcuate in proximal eighth, thence broadly and very shallowly arcuate emarginate to distal third, thence regularly and broadly arcuate to the rounded obtuse-angulate apex; sutural half of distal margin oblique rotundato-truncate, rounding into the sutural margin, which is broadly arcuate, flattened and straight mesad. Wings faintly surpassing the apices of the tegmina, the distal sections as coriaceous and pilose as the tegmina. Prosternum unspined; meso- and metasternal lobes small, rounded laterad. Disto-dorsal abdominal segment large, half domed, dorsal surface with a pair of lateral patches of long pile, a medio-longitudinal impressed cuneiform area placed on the distal half, the free margin mesad supplied with a closely placed pair of slender processes, which when seen from the side are tapering, sinuate, with a recurved apex, these processes reaching as far caudad as the apex of the subgenital plate and their bases placed on each side of the median impression of the segment: cerci simple, tapering, weakly depressed, incomplete in the type, sparse pilose: subgenital plate strongly produced in median linguiform development which is flattened, clothed with long pile and laterad of the base of which spring styles of a most striking type; these being greatly produced, tapering, straight in their distal third, thence regularly arcuate dorsad and mesad, with the apex moderately decurving and produced in a distinct apical spine, the whole of the styles long pilose; the right style is simple, the left is compound, having a dorsal branch forking from the main style near its base, faintly more than one-half as long as the main branch, following the principal arm in attenuation and curve but with an unarmed apex. Cephalic and median femora unarmed beneath; cephalic and median tibiae with three spines distad on each ventral margin. Caudal femora short, robust, weakly tapering distad, ventro-external margin with four to six spines, ventro-internal margin with three large distal and four minute proximal spines; caudal tibiae with three external and four internal spines on the dorsal margin.

General coloration between ochraceous-buff and zinc orange, a broad V-shaped patch dorsad between the eyes and a pair of broad sinuate bars on the pronotum at the usual position of the lateral shoulders and also covering the dorsal half of the lateral lobes, bone brown. Eyes blackish fuscous. Tegmina colorless, semi-transparent proximad on marginal and discoidal fields and translucent washed with pale mummy brown distad; venation pencilled with prout's brown, except immediately at the base of the tegmina, where

it is of the general color; anal field weakly suffused and venation heavily pencilled with bone brown. Wings with the venation weakly pencilled with prout's brown. Disto-dorsal abdominal segment with the paired pilose areas touched with kaiser brown, the paired process of the same segment blackish fuscous; femoral and tibial spines tipped with chestnut brown.

Length of body, 18 mm.; length of pronotum, 3.6; greatest width of pronotum, 4.2; length of tegmen, 29.5; greatest width of tegmen, 9.5; length of caudal femur, 9.6.

The type is unique.

Gryllacris cruenta Brunner.

1888. *Gryllacris cruenta* Brunner, Verhandl. k.-k. zool. botan. Gesell. Wien, XXXVIII, pp. 321, 345. [Upper Amazonia.]

Pará. (C. F. Baker.) One female.

This scarce and striking species has been recorded by Griffini, on the basis of a male, from Paramaribo, Surinam.⁴³ His specimen showed certain differences from the original description, but these he considered to be individual. Our specimen also shows certain differences, but these are only in part those noted by Griffini. Our specimen has the coloration much like that given in the original description, less like that given by Griffini as far as the head and pronotum are concerned. The caudal femora have nine to ten spines on the ventro-internal margin instead of three to four as described, and eight as given by Griffini, while the external margin has seven to eight spines seven are given in the original description and six by Griffini. The caudal tibiae have five spines on each dorsal margin instead of five internal and seven external as originally described, and six external and five to six internal as described by Griffini. It is evident there is considerable variation individually in the number of these spines and their diagnostic value must not be overrated. The present specimen is slightly smaller than the original measurements of the female, except that the ovipositor is of exactly the same length.

GRYLLIDÆ.

Gryllotalpinæ.

Scapteriscus didactylus (Latreille).

1804. *Gryllotalpa didactyla* Latreille, Hist. Nat. Gen. Crustac. et Ins., XII, p. 122. [Cayenne; Surinam.]

Paramaribo, Surinam. (K. Mayo.) Two females.

Pará. (C. F. Baker.) One female. (Thayer Expedition.) One female. [M. C. Z.]

Igarapé-assú. January 17 (1) and 23 (1), 1912. Five females.

⁴³ Ann. Mus. Nat. Hungar., XII, p. 249, (1914).

These specimens all represent the long and narrow headed type of the *didactylus-camerani* group. We have no Brazilian material of this species in the collections before us other than those listed above, and it seems quite probable that some of the older records of this species, particularly those of its occurrence at points far removed from the Guianan region, may relate to *camerani* or other species. We have material and records showing the occurrence of *camerani* over the upper and middle Amazonian regions.

The present series shows great size variation, the extremes in the Igarapé-assú series being very great.

Ripteryx circumcincta Saussure.

1874. *Rhippteryx circumcincta* Saussure, Miss. Scient. Mexiq., Rech. Zool., VI, p. 358. [South America.]

Pará. (C. F. Baker.) One female.

Igarapé-assú. December, 1911 and January 17, 1912 (two specimens with dates). Four males, thirteen females.

This series is quite uniform in coloration and size. The only exact records we have for the occurrence of this species are those of Bruner of material from Benevides and Pará, State of Pará, Brazil.

Gryllinæ.

Hygronemobius albipalpus (Saussure).

1877. *N[emobius] albipalpus* Saussure, Mélang. Orthopt., II, fasc. V, p. 257. [Rio de Janeiro, Brazil.]

Igarapé-assú. January 17 to 23, 1912. Seven males, fourteen females.

These specimens have been recorded by Hebard in his study of the genus.⁴⁴

Nemobius brasiliensis (Walker).⁴⁵

1869. *Argizala brasiliensis* Walker, Catal. Dermapt. Salt. Brit. Mus., I, p. 61. [Brazil; Santarem, Brazil.]

Igarapé-assú. One male.

This widely distributed and striking species has been recorded from as far south as Paraguay and north to Mexico.

Hemigryllus ortonii (Scudder).

1869. *Nemobius ortonii* Scudder, Proc. Boston Soc. Nat. Hist., XII, p. 330. [Napo or Marañon (Rivers).]

Pará. (C. F. Baker.) One female.

⁴⁴ Entom. News, XXVI, p. 198.

⁴⁵ We find that Bruner's *Nemobius argentinus*, recently described from Carcaraña, Argentina (Ann. Carneg. Mus., X, p. 371, (1916)) is identical with the present author's *Nemobius hebarði*, from Buenos Aires and the Misiones, Argentina, described over a year previous (Proc. Acad. Nat. Sci. Phila., 1915, p. 290, figs. 4 and 5, (1915)).

Piexe Boi, east of Pará. November to December, 1907. (H. B. Merrill.) One female.

Igarapé-assú. January 17 and 23, 1912 (two individuals only with dates). Two males, five females.

We have already resurrected and correctly placed this specific name,⁴⁶ which antedates Saussure's *kreichbaumeri*, the designation under which this species has been universally reported in the literature. There is some variation in size in individuals of the same sex, but the diagnostic features are always well marked.

Anurogryllus muticus (DeGeer).

1773. *Gryllus muticus* DeGeer, Mém. Hist. Ins., III, p. 520, pl. 43, fig. 2. [Surinam.]

Pará. (C. F. Baker.) One female.

Igarapé-assú. Two females.

The Igarapé-assú specimens are quite different in size, but this is not unusual in the species. The Pará individual is appreciably paler than the Igarapé-assú representatives, being more ferruginous and less fuscous. The three specimens examined all have caudate wings.

APHEMOGRYLLUS⁴⁷ new genus.

Related to *Miogryllus* Saussure, differing in the elongate and slender limbs, in the elongate metatarsus of the caudal limbs, in the great reduction in size of the ventral pair of distal spurs of the caudal tibiae, in the striking disposition of the venation of the lateral field of the tegmina in both sexes, in the greater (♂) or lesser (♀) strangulate character of the entire pronotum and in the tegmina of the male sex having no speculum present and the stridulating area very simply developed.

Generic Description.—Head broader than the pronotum: inter-antennal portion of face subequal to greatest width of a single antennal scrobe, this area rounded in profile: eyes heptagonoid-ovate in outline, little prominent. Pronotum broader than long, distinctly (♂) or appreciably (♀) strangulate: lateral lobes distinctly longer than deep, the ventral margin obliquely arcuato-truncate. Tegmina of male with dorsal field but weakly developed as a stridulating area, no speculum present; lateral field with two veins in addition to the mediastine vein, these diverging from the base and widely spaced: tegmina of female with venation of lateral field as in male, venation of dorsal field simple. Cephalic tibiae with a decided,

⁴⁶ Trans. Amer. Entom. Soc., XLIII, p. 128, (1916).

⁴⁷ From *a*, without; *ψημη* voice and *Gryllus*.

large, external foramen and a small internal one of variable exact size and indication. Caudal tibiae with each dorsal margin armed with four to five spines; distal spurs of caudal tibiae three in number on each side, the median the longest in each group, ventral spur on each side short, the two subequal in length: caudal metatarsus elongate, over twice as long as the remaining tarsal joints, dorsal surface armed the whole length of the external margin and distad on the internal margin, internal apical metatarsal spur over one-half as long as third tarsal joint. Ovipositor shorter than caudal femora, straight, apex acuminate, dorsal valves surpassing ventral ones.

Aphemogryllus gracilis n. sp. (Pl. II, figs. 48-53.)

Type: ♂; Igarapé-assú, State of Pará, Brazil. February 6, 1912. (H. S. Parish.) [Acad. Nat. Sci. Phila., Type no. 5327.]

Size small: form much like species of *Nemobius*: surface moderately polished. Head distinctly broader than the pronotum, moderately inflated: occiput strongly and regularly declivent from its caudal section to the interantennal protuberance; latter region but slightly wider than a single antennal scrobe, well rounded when seen from the side, its lateral margins faintly converging ventrad: ocelli disposed in a broad, depressed triangle, relatively large: palpi relatively short, robust, compressed; fourth joint of same subequal to the third, slightly expanding; fifth joint distinctly compressed mesad, gradually expanding distad, the apical margin strongly oblique truncate: antennae at least as long as the body. Pronotum strangulate when compared with the head, the greatest width about one and one-half times the greatest length: cephalic margin truncate, caudal margin feebly bisinuate, both margin strongly hirsute, the surface of the pronotum with many short, adpressed hairs; a fine medio-longitudinal sulcus present, which becomes weaker caudad: lateral lobes subquadrate, the ventral margin moderately arcuate ascendent caudad, the ventro-cephalic angle broadly rounded, the ventro-caudal obtuse. Tegmina well developed but falling slightly short of the apex of the body; apex well rounded: lateral field relatively broad; mediastine vein simple, preceded by two free veins, these diverging from an identical point near the base of the tegmen, the space between the vein itself and the first free vein quite wide; humeral and discoidal veins close to one another and at several points coalescing; stridulating field relatively simple, no speculum present and normal Gryllid venation quite recognizable; median vein straight, simple; ulnar

vein short, transverse;⁴⁸ anal vein following its general direction as the stridulating vein but not thickened, and from the general neighborhood of the usually present Grylloid anal node continuing an arcuate but longitudinal course to the apical margin of the tegmen; axillary veins three in number, the first terminating at the "node," the second continued, following the trend of the anal vein, to a point of fusion distad on the sutural margin, third axillary vein following the sutural margin distad of the "node:" area between the ulnar and median veins mesad and distad wide, with three cross-veins⁴⁹ and distad a spurious longitudinal vein; anal and axillary veins connected by a number of cross-veins. Wings caudate, surpassing the closed tegmina by considerably more than the tegminal length. Cerci very elongate, nearly as long as the body, tapering. Subgenital plate moderately produced, spoon-shaped. Cephalic tibiae with the cephalic face imperforate, but with a smooth elliptical area in the usual tympanal position; caudal face with a large, elongate, elliptico-reniform tympanum. Caudal femora moderately robust, the apex relatively slender: caudal tibiae armed on the dorso-external margin with four spines, the dorso-internal margin with four to five spines; external distal spurs relatively short, the median one slightly more than a third as long as the metatarsus and half again as long as the dorsal one, ventral spur distinctly shorter than the dorsal one, internal distal spurs with the median and dorsal subequal in length, about one-half as long as the metatarsus, the ventral small and subequal to the ventro-external spur: caudal metatarsus slender, moderately compressed distad; dorso-external margin with seven to nine adpressed spines, dorso-external spur faintly more than one-half as long as the internal one, the latter reaching to slightly distad of the middle of the third tarsal joint.

Allotype: ♀; Igarapé-assú, State of Pará, Brazil. January 23, 1912. (H. S. Parish.) [Acad. Nat. Sci. Phila.]

The following features are those of difference from the type.

Pronotum faintly less strangulate; cephalic margin of same very shallowly arcuate-emarginate. Tegmina slightly shorter than in the male, reaching not quite to the middle of the abdomen; humeral and discoidal veins well separated, slightly diverging distad, humeral vein not furcate distad: dorsal field with the median, ulnar, anal and two axillary veins regularly disposed, cross-veins indicated

⁴⁸ At least this is the usual position of the ulnar vein in the Gryllinae.

⁴⁹ The ulnar vein (so-called) might be considered another one.

sparsely proximad, more frequently distad. Ovipositor straight, robust, shorter than the caudal femora; apex acuminate, ventral valves shorter than the dorsal ones. Caudal femora with four spines on each dorsal margin: caudal metatarsus with five to six spines on the dorso-external margin.

General coloration of the head, pronotum and dorsum of the abdomen ranging from mummy brown (recessive type) to blackish brown—number one of Ridgway (intensive type), the limbs and ventral surface buckthorn brown (recessive type) to mummy brown in those having the darkest dorsal coloration (intensive); tegmina buffy hyaline to weak fuscous hyaline, the venation of the dorsal coloration. Head unicolorous with the mouth-parts washed with ochraceous-tawny to amber brown; ocelli ochraceous-buff to mars yellow; eyes mottled blackish-brown and dresden brown to mummy brown; palpi of the same coloration as the limbs; antennæ of the general coloration. Wings whitish hyaline, with a brownish tinge in the intensive specimens, with a distinct iridescence, longitudinal veins colored similarly to those of the tegmina. Cerci of the dorsal coloration. Pubescence of the limbs golden. Caudal femora washed more or less completely with the dorsal coloration.

Measurements (in millimeters)

	Length of body (exclusive of ovi- positor)	Length of pro- notum	Greatest width of prono- tum	Length of teg- men	Greatest width of dorsal field of tegmen	Length of wing distad of tegmen	Length of caudal femur	Length of ovi- positor
♂								
Igarapé-assú, <i>type</i>	8.2	1.2	1.6	4.6	1.5	6.3	4.9
Igarapé-assú, <i>paratype</i>	7.2	1.3	1.8	4.2	1.4	5.8	5
♀								
Igarapé-assú, <i>allotype</i>	8.8	1.5	2.2	4.5	1.6	7.3	5.2	3.9
Igarapé-assú, <i>paratype</i>	9.5	1.7	2.1	4.5	1.6	7.2	5.5	3.9
Rio Pacaya, Peru, <i>paratype</i>	8.7	1.9	2.3	4.7	1.6	8.2	5.6	3.5

In addition to the type and allotype we have examined a paratypic series of seven; one male and three females bearing the same date as the type (one female has no date) and three females from Rio Pacaya, Peru, July, 1912, all in the collection of the Academy. When examined for features of variation we find that the paratypic male has five external and four internal dorsal marginal spines on the caudal tibiae. The females all have four spines, excepting one from Igarapé-assú which has four internal on one limb and five on the other. The spines on the dorsal margin of the caudal metatarsus

vary from six to eight in number on the external margin and four to six on the internal margin in the paratypes. The paratype male has the ulnar vein of the tegmina more oblique than in the type and the first cross-vein between the anal and median veins is also more oblique, forming an angle in the anal vein at its juncture, the next cross-vein obliquely sigmoid, while the proximal disposition of the axillary veins of the tegmina is also slightly different. One of the Rio Pacaya females has the humeral vein forked near the base.

Miogryllus convolutus (Johannson).

1763. *Gryllus convolutus* Johannson, Amoen. Acad., VI, p. 399. [Surinam.]

Pará. (C. F. Baker.) Two females.

Igarapé-assú. January 17 to February 6, 1912. Four males, nine females.

These specimens have already been recorded by Hebard in a study of the genus.⁵⁰

Miogryllus verticalis (Serville).

1839. *Gryllus verticalis* Serville, Hist. Nat. Ins., Orth., p. 343. [Cayenne.]

Igarapé-assú. One male.

This macropterous individual has been recorded by Hebard in his study of the genus.⁵¹

Miogryllus tucumanensis Giglio-Tos.

1894. *G[ryllus]* (*Miogryllus*) *tucumanensis* Giglio-Tos, Boll. Mus. Zool. Anat. Comp. Torino, IX, No. 184, p. 41. [San Pablo, Province of Tucuman, Argentina.]

Igarapé-assú. January 17, 1912 (one). Two females.

These specimens fully agree with the description of this species, except for the presence of caudate wings and having the tegmina slightly longer and overlapping. They are, as far as we can determine, representative of the macropterous condition of this species, a phase previously unknown. In the two specimens the tegmina measure 8.4 and 8.5 millimeters in length, while the other dimensions are as given in the original description.

The reference of the species to *Miogryllus* is according to the original author, and merely tentative as far as we are concerned, for its exact relationship to *Gryllodes* remains to be determined, when more is known of the constancy and variation of characters in the latter genus.

⁵⁰ Journ. N. Y. Entom. Soc., XXIII, p. 109, (1915).

⁵¹ Ibid., p. 121, (1915).

As far as known the species has been taken only at the two widely separated localities given above.

Gryllus assimilis (Fabricius).

1775. [*Acheta*] *assimilis* Fabricius, Syst. Entom., p. 280. [Jamaica.]

Pará. (C. F. Baker.) One male, one female.

Peixe-boi, east of Pará. November to December, 1907.

(H. B. Merrill.) One male, one female.

Igarapé-assú. Two females.

The Pará and Igarapé-assú specimens have been recorded by Rehn and Hebard in a critical study of *Gryllus* as found in America.⁵² The Peixe-boi pair would be represented by the following symbols, as previously established by us: ♂, AVauO1; ♀, AVbuO2.

Oecanthinæ.

Lerneca varipes Walker.

1869. *Lerneca varipes* Walker, Catal. Spec. Derm. Salt. Brit. Mus., I, p. 72. [Amazon Region.]

Igarapé-assú. One female.

This specimen is inseparable from individuals of both sexes of this species from Caparo, Trinidad, comments on which will be published at a later date.

Trigonidiinæ.

Anaxipha⁵³ *esau* n. sp. (Pl. II, figs. 54, 55.)

Apparently a relative of *A. tibialis* (Saussure), but strongly marked off from any other species, studied or known to us, in the presence of short, curved hairs placed along the veins of the tegmina and also regularly over the intervening areas, the exposed portion of the wings, the body and the limbs being more decidedly haired than usual. From *tibialis* the present species also differs in the shorter and more robust cephalic tibiae, the shorter caudal metatarsi, in the reduction of the cross-veins in the dorsal field of the female tegmina, in the distinct sculpturing of the main veins of the same and in the more robust general form.

Type: ♀; Igarapé-assú, State of Pará, Brazil. February 1, 1912. (H. S. Parish.) [Acad. Nat. Sci. Phila., Type no. 5342.]

Size small: form elongate, slender, subcylindrical, wings caudate: surface closely and relatively heavily haired, on the tegmina the hairs

⁵² Proc. Acad. Nat. Sci. Phila., 1915, p. 319, (1915).

⁵³ For comments on the characters separating *Cyrtoxipha* and *Anaxipha*, see Rehn and Hebard, Entom. News, XXIII, pp. 411 and 412; Proc. Acad. Nat. Sci. Phila., 1916, pp. 300 to 302

are particularly disposed along the longitudinal veins. Head with the greatest width across the eyes subequal to the greatest width at the caudal margin of the pronotum; when seen from the side the interocular section of the head is regularly declivent from the narrowly rounded occiput, interantennal protuberance broadly rounded when seen in the same view, when seen from the dorsum subcompressed; hairs on the rostrum decurved: eyes with axis subvertical, in basal outline broad ovoid, prominent when seen from the dorsum, slightly projecting cephalad: antennæ surpassing the body in length, proximal joint large, moderately deplanate: palpi with the third and fourth joints slender, the third subequal in width; the fourth faintly expanding distad, slightly shorter than the third; fifth joint reversed pyramidal, about one and one-half times as long as the distal margin, which is straight truncate, the joint slightly flattened. Pronotum transverse, its greatest caudal width nearly equal to one and one-half times the greatest length of the same, narrowing cephalad, so that the cephalic width is distinctly less than the caudal width and faintly less than the width of the adjacent portion of the head, in transverse section the pronotum is regularly rounded dorsad and into the lateral lobes; cephalic margin of the dorsum gently arcuate, the caudal margin broadly obtuse-angulate, the immediate angle narrowly rounded, both margins faintly cingulate; hairs on the pronotum large and chaetiform, those along the caudal margin directed dorso-caudad, those on the lateral lobes directed cephalad; a short cephalo-median longitudinal sulcus present; lateral lobes longer than deep, rounding into the dorsal surface; ventro-cephalic angle broadly rounded, ventral margin straight, ventro-caudal angle narrowly rounded, caudal margin straight; surface of the lateral lobes obliquely impressed. Tegmina reaching to the apex of the abdomen, pilosity covering the dorsal surface from the region of the humeral angle, the lateral field almost unhaired; lateral field with three veins, of which one parallels the margin, another is very brief, the third reaches the costal margin at about the distal fourth of the field; mediastine, humeral, discoidal and median veins of the tegmina subparallel, straight; ulnar vein arcuate proximad; anal vein bent both proximad and distad, straight between, joining the axillary vein at the distal third of the tegmen; axillary veins two in number, these joining and continuing as a single vein. Exposed portion of the wings projecting distad of the closed tegmina a distance slightly greater than one-half the length of the tegmina, haired similar to the tegmina. Ovipositor no longer than the head and pronotum together, robust, dorsal mar-

gin nearly straight, ventral margin arcuate in distal half, apex acuminate: subgenital plate narrowly fissate-emarginate mesad. Cephalic tibiae short, broadly fusiform inflated in proximal two-thirds, subequal and subcompressed in distal third; cephalic face with a large elliptico-reniform tympanum, caudal face with a much smaller elliptical tympanum. Caudal femora subequal in length to the tegmina, moderately inflated; caudal tibiae with three pairs of marginal spurs, which are not opposite in their insertion, the external series slightly more proximal in their position when compared with their equivalent on the internal series, the internal spurs faintly arcuate, their dorso-internal edge also faintly thickened, knife-like and pencilled with blackish; disto-external spurs small; disto-internal spurs very much longer, the dorsal one about two-thirds as long as the metatarsus, the dorso-internal margin thickened and pencilled as on the internal marginal spurs; metatarsi slightly longer than the remaining tarsal joints combined, a single spine present at the disto-internal angle, the internal spur of the metatarsus large, reaching almost to the extremity of the tarsus, slightly falcate, with the dorsal edge thickened and pencilled as is the case with the other internal spurs.

General color ochraceous-buff, the head distinctly and the pronotum faintly washed with weak russet; eyes clear russet; exposed portion of the wings faintly washed with mummy brown, the veins pale; at distal fourth the cephalic and median femora bear narrow, incomplete annuli of weak mummy brown, indications of a similar one are present on the pregenicular section of the caudal femora.

Length of body, 4.6 mm.; length of pronotum, 1; greatest (caudal) width of pronotum, 1.3; length of tegmen, 3.7; length of exposed portion of wing, 2.7; length of caudal femur, 3.6; length of ovipositor, 1.6.

The type of this species is unique.

Anaxipha angusticollis (Saussure).

1874. *Cyrtoxipha angusticollis* Saussure, Miss. Scient. Mex., Rech. Zool., VI, p. 377, pl. 7, fig. 2. [Eastern Cordillera of Mexico.]

Pará. (C. F. Baker.) One male, one female.

Igarapé-assú. February 1, 1912 (two). Three females.

This striking species, which shows great diversity in form between the sexes, has the coloration more generally punctate, from the present material, than previous descriptions would lead one to suppose. The agreement with the features of the detailed original description is so full there can be no question of the identity, or at the most the very close relationship of the present material. Chopard reported the species from St. Jean du Maroni, French Guiana, and Bruner

refers material from Cacagualito, Colombia; São Luiz de Cáceres, Matto Grosso, Brazil, and British Guiana to it, while Bugaba, Panama is given by Saussure, in the *Biologia*, as another locality. The form of the whole thorax of the male is so remarkable that its isolation from the other members of the genus is quite marked.

Anaxipha conspersa (Bruner).

1916. *Cyrtoxipha conspersa* Bruner, Ann. Carneg. Mus., X, p. 406. ["Las Juntas" (250 m.), Department of Santa Cruz, Bolivia.]

Pará. (C. F. Baker.) One male.

We have referred this specimen to *conspersa* although it shows several features of difference, which, however, we feel are due to individual or sexual variation, lack of note or over-emphasis in the original description. In our specimen we see no distinct indication of the ridge, "which separates this region (*i. e.*, depressed section of the vertex) from the front." There is, however, a slight elevation covering the base of the inter-antennal protuberance, which may be the feature referred to by Bruner. The other feature is that the whole occiput caudad of the transverse arcuate depression is solidly mars brown.

Anaxipha simulacrum n. sp. (Pl. II, figs. 56-59.)

The slender form, the blackish antennæ and the shape of the cephalic tibiæ and of the ovipositor are quite characteristic of this very distinct species, which has, at a glance, a *Cyrtoxiphine* appearance. The head and palpi, however, are *Anaxiphine* in character.

The species is not closely related to any of the other forms known to us.

Type: ♀; Igarapé-assú, State of Pará, Brazil. (H. S. Parish.) [Acad. Nat. Sci. Phila., Type no. 5340.]

Size very large (for the genus): form moderately elongate, slender, terete: surface of body moderately shining, with numerous hairs, the marginal ones of the pronotum, particularly laterad, elongate and curved. Head in general vertical, its axis slightly retreating ventro-caudad, its greatest longitudinal length slightly less than the greatest depth (including the mandibles); in lateral view the occiput is well arcuate caudad of and between the eyes, thence very strongly arcuate-declivent to the inter-antennal region, which is rounded obtuse-angulate, the ventral section retreating to the clypeal suture; when seen from the dorsum the occiput is broad, very broad behind the eyes, the narrowest portion of the interocular section slightly less than half the width of the head at the caudal margin of the eyes, the least interocular width subequal to the transverse width

of one of the eyes, width of the interantennal protuberance hardly more than one-half that of the interocular space: when seen from the dorsum the eyes are moderately prominent, when seen in lateral view they are sub-reniform ovoid: antennæ with the proximal joint broad, subdepressed, the internal margin roundly enlarged; remainder of antennæ incomplete: palpi slender, elongate, third joint faintly longer than the fifth and distinctly longer than the fourth joint; fifth joint trumpet-shaped, its length about two and one-half times the distal width, distal truncation faintly oblique. Pronotum slightly longitudinal when seen from the dorsum, regularly rounding transversely, when seen from the dorsum slightly expanding caudad; cephalic margin of the dorsum truncate mesad, caudal margin moderately arcuate, these margins cingulate; dorsum with the medio-longitudinal sulcus indicated on the cephalic two-thirds, very deeply so in the median region, a transverse sulcus weakly indicated mesad: lateral lobes longitudinal, with a distinct caudo-ventral trend; cephalic margin and ventro-cephalic angle regularly and broadly rounded, ventro-caudal angle rounded rectangulate, caudal margin slightly oblique, straight, the vicinity of the ventro-caudal angle strongly impressed. Tegmina slightly surpassing the apex of the abdomen, the closed pair cylindrical when seen from the dorsum, the outline of the dorsal field narrowing in the distal fifth; venation simple, prominent, transverse nervures regularly placed, separating areas which are regularly oblong: lateral field with the discoidal vein straight, regularly but weakly diverging from the humeral vein, incomplete veins costad of the mediastine vein two in number. Wings fully developed, caudate, projecting distad of the tegmina a distance slightly greater than the length of the head and pronotum combined. Ovipositor moderately elongate, relatively slender, very faintly arcuate proximad, more strongly so distad; distal extremity moderately acute, weakly crenulate on the dorsal margin, almost to the weak swelling, which is situated at the distal three-fifths: subgenital plate slightly broader than long, the apex briefly fissate, rounding narrowly into the margins of the plate. Cephalic and median limbs elongate, straight, moderately tapering: cephalic femora subequal to the combined length of the head and pronotum; cephalic tibiæ subequal to the femora in length, the distal half quite slender, both faces of the tibiæ with elongate reniform tympana, those of the two faces subequal in size: median femora faintly shorter than the cephalic ones; tibiæ subequal in length to the cephalic tibiæ and distinctly surpassing the median

femora. Caudal femora moderately robust, tapering, surpassing the apex of the ovipositor and falling but slightly short of the tips of the wings; caudal tibiæ subequal to the femora in length, very slender, the dorsal margins armed with three pairs of spurs, which are not paired in position, those of the external margins being more proximal in position than the corresponding spur on the internal margin, the spurs slender, slightly falcate or but faintly hooked at the apex, their length about two and one-half times the depth of the tibial shaft; disto-external spurs very short, the median one three times as long as the dorsal and nearly twice as long as the ventral one; disto-internal spurs two in number, elongate, weakly falcate, the dorsal one about one-half as long as the metatarsus and half again as long as the ventral one: caudal metatarsi about one-fourth as long as the tibiæ, straight, the dorsal surface with a short recumbent spine on each margin distad, the internal distal spur about one-half again as long as the external one; second tarsal joint elongate cordiform, the third slender.

Allotype: ♂; same data as type. January 26, 1912.

Differing from the description of the type in the following features: Tegmina relatively narrow when seen from the dorsum (the pair in repose), narrowing distad: lateral field of the tegmina relatively broad, subequal in width; mediastine vein diverging regularly from the humeral vein distad, the area between with a number of transverse nervures which divide it into rectangulate spaces; three free veins are present in the proximal section of the lateral field costad of the mediastine vein: humeral vein curving costad at its apex: speculum elongate diamond-shaped, its length about one-half that of the dorsal field of the tegmen, its greatest length slightly more than one-half its length; postaxillary veins three in number; axillary veins two in number. Styles reaching to the apices of the caudate wings.

General color buff-yellow, the pubescence largely golden. In the female there is a medio-longitudinal line of raw umber on the closed tegmina, which is distinct proximad and weakens distad. Eyes fuscous-black; antennæ distad of the proximal joint blackish, the proximal one washed distad with fuscous; second and third tarsal joints of all tarsi washed with fuscous-black; ovipositor rich chestnut brown.

Measurements (in millimeters).

	Length of body.	Length of pronotum.	Length of tegmen.	Length of caudal femur.	Length of ovipositor.
♂ <i>type</i>	6.3	1.5	5.3	5.2	2.5
♀ <i>allotype</i>	7	1.4	6	5.5

The type and allotype are the only specimens known to us.

Anaxipha smithi (Saussure).

1897. *Cyrtoxipha smithi* Saussure, Biol. Cent.-Amer., Orth., I, p. 236.
[Teapa, Tabasco, Mexico.]

Igarapé-assú. One female.

We have assigned this specimen to *smithi* without having seen Mexican material of either sex, but it agrees with the description, which was based on the male sex, in all features of any importance. Actual comparison may show the Brazilian material to be distinct, but at this time we know of no evidence requiring its separation. The ovipositor is short and robust, much like in *imitator*, but the form of the ovipositor is more robust, with a more decided angle to the dorsal line in *imitator*, while the palpi are more slender and the cephalic tibiae less robust in *smithi*, the coloration also being different.

Chopard⁵⁴ has reported this species from four localities in French Guiana.

Anaxipha aptera (Chopard).

1912. *C[yrtoxipha] aptera* Chopard, Ann. Soc. Entom. France, LXXXI, p. 410, 4 figs. [Charvein, St. Laurent and Nouveau-Chantier, French Guiana.]

Pará. (C. F. Baker.) One male.

Paramaribo, Dutch Guiana. (K. Mayo.) One male. [A. N. S. P.]

The wingless condition of the known material of this species may not be a specific character of the form, as quite a few species are known to be dimorphic in this respect. The Pará individual has four reddish brown longitudinal lines on the vertex and occiput, the median pair continued on the interantennal protuberance. The Paramaribo specimen has these absent.

Anaxipha minuta (Linnæus).

1767. [*Gryllus*] *minutus* Linnæus, Syst. Nat., ed. XII, p. 694. ["America" (Surinam according to DeGeer).]

Pará. (C. F. Baker.) One male, one female.

Paramaribo, Dutch Guiana. (K. Mayo.) Three females.

There is so little in the literature to enable us to pin this name down to a definite species, that we are under the necessity of using it for an insect not disagreeing with the insufficient diagnosis, and found in the region from which *minuta* was supposed to have come. The Linnean material is probably not in existence, as Stål did not feel that he had it before him, when preparing the Recensio, although part of the basic material of DeGeer's *testaceus*, which is generally considered synonymous with *minuta*, was in his hands. The present

⁵⁴ Ann. Soc. Entom. France, LXXXI, p. 407, (1912).

species shows no features of difference from the Linnean description which might not be due to discoloration of the original material.

Anaxipha cayennensis (Saussure).

1897. *Cyrtoxiphus aztecus* var. *cayennensis* Saussure, Biol. Cent.-Amer., Orth., I, p. 235. [Cayenne.]

Igarapé-assú. (H. S. Parish.) Two males.

We have used for comparison material from British Guiana, and found some slight differences, chiefly in the relative width of the dorsal field of the tegmina, but nothing sufficiently marked or constant to make it advisable to separate the two lots. Saussure considered this merely a variety of *azteca*, but we prefer to give the name specific rank until more is known concerning its relationship to *azteca*, in this following Chopard and Bruner. The former author has recorded the species from Nouveau-Chantier, French Guiana; the latter from Santarem, Brazil. Our material is of similar small size to that reported by Bruner.⁵⁵

Anaxipha nitida (Chopard).

1912. *C[yrtoxipha] nitida* Chopard, Ann. Soc. Entom. France, LXXXI, p. 408, 4 figs. [Nouveau-Chantier, French Guiana.]

Pará. (C. F. Baker.) One female.

This individual is fully typical of the present striking and beautiful species, although slightly smaller than the original measurements. The antennæ are broadly white annulate on a fuscous ground, at a point about three millimeters from their bases. The coloration of the antennæ is not mentioned in the original description.

Anaxipha variegata (Chopard).

1912. *C[yrtoxipha] variegata* Chopard, Ann. Soc. Entom. France, LXXXI, p. 407, 4 figs. [St. Laurent and Nouveau-Chantier, French Guiana.]

Pará. (C. F. Baker.) One male.

This specimen may prove to be distinct from true *variegata*, as it shows certain color features not mentioned by Chopard, but, at present, we prefer to consider these individuals variations or the color features to have been omitted from the description by Chopard. The antennæ are solid blackish proximad, then follows a broad cream-colored area, which contains two narrow brown annuli, distad of this the color is pale brownish with regularly placed dark brown annuli. The occiput is pale yellow, caudad broadly blackish brown, like the face and between the eyes, in the middle of the yellow area is a transverse bar of blackish brown. The median femora, like the cephalic ones, have a distal pale area colored like the tibiæ, and in addition a median annulus of the same.

⁵⁵ Ann. Carneg. Mus., X, p. 404, (1916).

Anaxipha incompta (Walker).

1869. *Eneoptera incompta* Walker, Catal. Derm. Salt. Brit. Mus., I, p. 67.
[Tapayos[Tapajos], Brazil.]

Pará. (C. F. Baker.) One male.

We are identifying this specimen with Walker's species provisionally, or at least until we can ascertain more about the type of the species, as the description is woefully inadequate.

Anaxipha tibialis (Saussure).

1897. *Cyrtoxipha tibialis* Saussure, Biol. Cent. Amer., Orth., I, p. 236, pl. XI, fig. 40. [Teapa, Tabasco, Mexico.]

Pará. (C. F. Baker.) Two males, three females.

These specimens show no differences from the description of *tibialis* and we see no alternative but to record them as that species, although comparison with Mexican material is not at present possible. The two male specimens show differences which demonstrate the presence in males of this species of a broad and a narrow type of tegmina, and consequently of the tympanum, also in both sexes of recessive and intensive types of coloration. In the former of these color types the dark lateral bar is quite narrow, distinctly dorsad on the lateral lobes, and on the tegmina pencils but the immediate vicinity of the mediastine vein; in the intensive type the bar is broad and covers all of the lateral lobes except the ventro-cephalic portion, which is yellow, and on the tegmina suffuses a broad belt costad of the mediastine vein.

As we here understand the species it is not far removed from *imitator* (Saussure), from which it differs in the narrower head and pronotum, slightly different shape of the cephalic tibiae and more restricted, less solidly infuscate dark areas on the pronotum and tegmina.

Anaxipha paraensis n. sp. (Pl. II, figs. 60-62.)

Apparently related to *A. tolteca* (Saussure), described from eastern Mexico, but differing in the broadly rounded lateral shoulders of the pronotum, and in the shorter and narrower tegmina, which have the speculum more longitudinal. Doubtless other features of difference exist which will become apparent on actual comparison of the two forms.

Type: ♂; Pará, State of Pará, Brazil. (C. F. Baker.) [Acad. Nat. Sci. Phila., Type no. 5343.]

Size relatively large, broad, tegmina well vaulted: surface of body well clothed with hairs, which are bristly on the head and pronotum. Head trigonal in cephalic aspect, faintly deeper than broad: occiput moderately declivent to the inter-antennal region, with numerous

bristles which are directed ventro-cephalad; inter-antennal protuberance equal to about one-half the least width of the inter-ocular region: eyes very prominent when seen from the dorsum, their convexity directed cephalo-laterad, when seen from the side their basal outline is reniform-ovoid, the narrower portion ventrad: antennæ reaching at least to the apices of the wings, the proximal joint enlarged but simple: palpi slender, the third and fifth joints subequal in length, the third joint slightly arcuate; fourth joint about two-thirds as long as the third joint; fifth joint trumpet-shaped, the distal margin very faintly oblique-truncate. Pronotum transverse, strongly and regularly narrowing cephalad, the width at the caudal margin about one-third greater than the length of the pronotum, the dorsum broadly and regularly rounding into the lateral lobes; surface of the dorsum and lateral lobes with scattered curved bristles, the margins, but particularly the cephalic, with a regularly placed series of smaller bristles; cephalic margin of the disk faintly arcuate, the caudal margin more distinctly but weakly arcuate; medio-longitudinal impression distinctly but not deeply indicated on the greater portion of the disk, transverse impression distinct, median, arcuate: lateral lobes distinctly longer than deep, subrectangular; cephalic margin oblique, the ventro-cephalic angle rounded obtuse, ventral and caudal margins each straight, the ventro-caudal angle narrowly rounded rectangulate, the lobes well inbent ventro-caudad. Tegmina broad, distinctly broader than the body, in length slightly surpassing the apex of the body: lateral field broad, subequal in depth; costal margin in greater portion straight, very faint intimation of an emargination mesad, arcuate distad; mediastine vein arcuate proximad and distad, straight for the greater portion of its length, little distant from and subparallel to the humeral vein in the proximal half, the area between these veins crossed by numerous straight transverse nervures; costal section of the marginal field with three incomplete veins, the third of which is a ramus of the mediastine vein: humeral and discoidal veins closely placed, subparallel; median vein parallel to the other veins of the humeral trunk, slightly weaker; stridulating vein regularly arcuate; ulnar vein regularly sigmoid; axillary veins three in number of which the third is strumose; post-axillary veins three in number; speculum roughly diamond-shaped, but slightly longer than broad, the sutural angle the only one of the four which is distinctly rounded, the figure within the speculum complete, ovoid-subcordiform, its area coriaceous-rugulose; apex of the dorsal field of the tegmina slightly acute-angulate. Wings strongly caudate, pro-

jecting distad of the tegmina a distance equal to the length of the tegmina, the exposed portion of the wings faintly fusiform when seen from the side, the dorsal and ventral margins of the same rather thickly hirsute. Styles elongate, slender, tapering, falling but slightly short of the tips of the closed wings: subgenital plate elongate, scoop-shaped, narrowing distad, the distal margin narrowly bisarcuate. Limbs moderately slender, elongate. Cephalic femora moderately tapering; cephalic tibiae subequal in length to the femora, the proximal five-eighths moderately bullate, the distal three-eighths relatively slender, tympana perforating both faces of the tibiae, that of the cephalic face relatively large, elongate acute-elliptical, of the caudal face but little more than half that size and ovoid in form. Median tibiae slightly surpassing the femora in length, but faintly larger in proximal half than in distal half. Caudal femora subequal to the tegmina in length, moderately inflated proximad, tapering thence distad, genicular region very small: caudal tibiae in length subequal to the femora, three pairs of marginal spurs present, those of the external margin more proximal in position than those of the internal, the spurs nearly straight with the immediate apex briefly hooked; disto-external spurs small, the middle one not more than one-fifth as long as the metatarsus, the dorsal one not more than one-half as long as the middle one, the ventral one about two-thirds as long as the middle one; disto-internal spurs two in number, the dorsal one heavy, tapering, very faintly hooked at the apex, in length slightly more than two-thirds as long as the metatarsus, the ventral spur about three-fifths as long as the dorsal one, more slender: caudal metatarsi slightly less than a fourth as long as the caudal tibiae, each dorsal margin distad with a single spine, external apical spur about two-thirds as long as the internal one.

General color buckthorn brown, the tegmina dresden brown, the head and thoracic bristles fuscous. The lower face with a weak pattern of liver brown, the interantennal protuberance dorsad with a pair of short, narrow lines of blackish; eyes tawny-olive; antennae chamois, largely washed on all but the ventral surface with bister. Pronotum, as well as the dorsal surface of the head, with a weak pattern of vandyke brown. Tegmina with the venation lined to a variable degree with bister, those distad on the lateral field with this most evident. Wings with the exposed portion heavily washed with fuscous, the cross veins of the paler general color. Cephalic and median tibiae weakly marked with fuscous, the tarsi of the same limbs with the same color. Caudal femora with the genicular extremity,

aside from the arches, marked with fuscous, the dorsal surface of the caudal tibiae and the marginal spurs weakly washed with the same shade.

Length of body, 7 mm.; length of pronotum, 1.4 mm.; greatest width of pronotum (caudad) 2 mm.; length of tegmen, 6 mm.; greatest width of dorsum of tegmen, 2.5 mm.; length of wings distad of tegmen, 4.6 mm.; length of caudal femur, 5.8.

The type of this species is unique.

Anaxipha fistulator n. sp. (Pl. II, figs. 63-66.)

Allied to *A. championi* (Saussure), from Panama, but differing in the more elongate palpi, the distal joint of which is markedly elongate and obliquely truncate distad, in the more sharply inflated and then narrowed cephalic tibiae, the differently shaped lateral lobes of the pronotum and in the more slender caudal femora. When compared with *A. stramenticia*, described below, *fistulator* is seen to be quite close, but the latter differs in its distinctly larger size, somewhat differently shaped palpi and cephalic tibiae and has the pronotum more strongly transverse.

Type: ♂; Igarapé-assú, State of Pará, Brazil. (H. S. Parish.) [Acad. Nat. Sci. Phila., Type no. 5341.]

Size quite large (for the genus): form subdepressed, the tegmina broader than the body, wings long caudate: surface of the body rather thickly covered with hairs, many of those of the head and pronotum chaetiform. Head broad sub-cordiform in outline when seen from the cephalic aspect, the greatest width across the eyes but faintly less than the length, the buccal region quite narrow, the occipital outline arcuate transversely; in lateral aspect the dorsum of the head is seen to be strongly, but uniformly declivent to the inter-antennal protuberance, which broadly rounds caudad to the clypeal suture: eyes moderately exserted and well rounded when seen from the dorsum, in basal outline short and broad ovate: antennae incomplete, the proximal joint broad: palpi slender, elongate; third joint gently arcuate, faintly shorter than the fifth joint; fourth joint about three-fifths as long as the fifth joint, the latter trumpet-shaped, the distal margin obliquely truncate. Pronotum weakly sellate, strongly narrowing cephalad, the pronotum distinctly transverse, the greatest caudal width more than twice that of the cephalic margin of the disk and equal to one and one-half times the length of the pronotal disk, the dorsum broadly rounding into the lateral lobes: cephalic margin of the disk subtruncate, rounding into that of the lateral lobes; caudal margin of the disk truncate; medio-longitudinal sulcus indicated

over the greater portion of the length of the disk, not reaching either margin, more distinctly indicated cephalad: lateral lobes subquadrate, ventral margin truncate, cephalic margin oblique, sub-truncate, ventro-cephalic angle rounded obtuse, caudal margin straight, ventro-caudal angle broadly rounded rectangulate; impression of lateral lobes moderately indicated, oblique, appreciably in bent ventro-caudad. Tegmina relatively broad, the greatest width of the disk contained about two and one-half times in the length of the same, when in repose the greatest width across the dorsal fields of the tegmina is at three-fifths the length of the tegmina, the margin of the extremity of the field weakly acute-angulate: lateral field moderately broad, subequal in width; mediastine vein moderately but regularly diverging from the humeral vein in proximal half, thence subparallel or weakly converging distad; two free veins present cephalad of the proximal half of the mediastine vein: humeral vein prominent and straight for the greater portion of its length, sharply decurved at its apex; discoidal vein in general paralleling the humeral vein, obtuse-angulate at the distal four-fifths; stridulating vein strongly but not regularly arcuate; axillary veins two in number, post-axillary veins three in number; ulnar vein strongly arcuate in proximal three-fourths; speculum oblique sub-rectangulate, the proximal angle and the distal angle rectangulate, the costal angle weakly obtuse, the sutural angle rounded, the greatest (transverse) width of the speculum subequal to the length, figure of the speculum complete, following the costal outline less distinctly than the others. Wings with the caudate section but slightly shorter than the tegmina, well haired along the dorsal and ventral margins. Subgenital plate relatively small, narrowing distad, the distal margin rather sharply and deeply bisarcuate: styles slightly surpassing the apices of the caudal femora, tapering, robust proximad. Cephalic femora moderately robust, tapering, in length subequal to the head and pronotum combined; cephalic tibiae subequal to the femora in length, the proximal five-eighths distinctly inflated, the distal section relatively slender, tympanum of the cephalic face large, elongate subelliptical, of the caudal face distinctly smaller, sub-elliptical. Median limbs missing. Caudal femora faintly longer than the tegmina, moderately robust proximad, regularly tapering, very slender distad; caudal tibiae subequal to the femora in length, slender, the marginal spurs of the same number and disposition as in the other new species of the genus here described; disto-external spurs small, the dorsal one very small, hardly more than a third the length of the median one, the ventral spur

faintly more than half the length of the median one; disto-internal spurs two in number, the dorsal one five-eighths of the length of the metatarsus, the ventral one two-thirds the length of the dorsal one: caudal metatarsi contained about four and one-half times in the length of the tibiæ, the dorsal surface armed distad with a pair of spines, distal spur of the external side two-thirds as long as the internal one.

General color straw yellow, the tegmina more clear yellow ocher, the head with an indefinite tawny wash, the caudate portion of the wings, when closed, washed with weak buckthorn brown. Eyes cinnamon brown.

Length of body, 7.9 mm.; length of pronotum, 1.2; greatest caudal width of pronotum, 1.9; length of tegmen, 6; greatest width of dorsum of tegmen, 2.5; length of exposed caudate section of wing, 5; length of caudal femur, 6.

The type of this species is unique.

Anaxipha stramenticia n. sp. (Pl. II, figs. 67-70.)

This species is apparently more closely related to *granadensis* (Rehn), from Nicaragua, *championi* (Saussure), from Panama, and *fistulator*, described above, than to the other species known to us. From *granadensis* it differs chiefly in the different profile of the head, this having the occiput and fastigium very much less deplanate declivent, in the distal palpal joint being very strongly oblique truncate distad, in the more quadrate lateral lobes of the pronotum, in the dorso-internal spur of the caudal tibiæ being half as long as the metatarsus, and the caudal metatarsal internal spur distinctly surpassing the second tarsal joint, in the sparser tegminal venation of the female (the only sex known of *granadensis*) and in the exact shape of the apex of the ovipositor. From *championi* the new form differs chiefly in the obliquely truncate distal margin of the distal palpal joint and the more decidedly slender distal portion of the cephalic femora, while from *fistulator* it is distinguished chiefly by its smaller size, more sharply narrowed cephalic tibiæ, less strongly transverse pronotum and less attenuate caudal femora.

Type: ♂; Pará, State of Pará, Brazil. (C. F. Baker.) [Acad. Nat. Sci. Phila., Type no. 5345.]

Size medium (for the genus): form relatively elongate, the wings caudate: body and limbs thickly clothed with short hairs, on the head and pronotum many are more elongate and chætiform. Head broad cordiform when seen from the cephalic aspect, the greatest width across the eyes not exceeded by the depth of the head, the occipital line moderately arcuate when seen from the front; in lateral

aspect the dorsal line of the head is moderately declivent from the occiput to the inter-antennal protuberance, which broadly rounds over the ventral section of the facial line to the clypeal sulcus; width of inter-antennal protuberance not quite equal to one-half the least width between the eyes: eyes when seen from the dorsum quite prominent, full, in basal outline broad ovoid, flattened caudad: palpi slender, elongate; third joint in length subequal to the fifth joint, moderately arcuate; fourth joint about three-fifths of the length of the third joint; fifth joint trumpet-shaped, flaring quite markedly, the distal margin rather strongly oblique truncate: antennæ incomplete, the proximal joint broad, distinctly depressed. Pronotum rather small, sub-selliform, weakly enlarging caudad, the dorsum rather broadly rounding into the lateral lobes; cephalic margin of the disk sinuato-truncate, caudal margin arcuato-truncate, medio-longitudinal sulcus distinctly indicated mesad and very briefly cephalad, transverse impression weakly indicated, bisarcuate: lateral lobes subquadrate in form, the margins straight, the angles well rounded; ventro-caudal section moderately but not strongly in-bent. Tegmina but little broader than the body, in length but faintly surpassing the apex of the abdomen: lateral field broad, subequal; mediastine vein regularly diverging from the humeral vein, the area between with weakly indicated transverse nervures, which divide the area into subquadrate areolets; accessory veins of the lateral field three in number, situated costad of the mediastine vein, one simulating and subparalleling the mediastine vein, the other two (which are costad) short and sinuate: humeral and discoidal veins straight in general, subparallel: dorsal field with the greatest width at five-eighths the length from the base, distal margin of the discoidal field rounded obtuse-angulate; stridulating vein bent arcuate; axillary veins two in number (not counting the thickened marginal node); postaxillary veins three in number; ulnar vein moderately sigmoid, more so proximad than distad; speculum oblique subrectangulate, the greatest width of the same (between angles) equal to about three-fourths of the length, proximal angle weakly acute, distal angle rectangulate, costal angle rounded obtuse, sutural angle rather broadly rounded, figure of the speculum complete, unsymmetrical elongate subelliptical. Wings with the caudate portion projecting distad of the tegmina a distance equal to three-fourths of the length of the tegmina. Subgenital plate short, slightly transverse, scoop-shaped, the lateral margins converging distad, the distal extremity with a relatively deep emargination, which is made weakly bisarcuate by a median

triangular projection: styles nearly reaching the tips of the caudate wings. Cephalic femora subequal to the length of the head and pronotum combined, straight, tapering; cephalic tibiae faintly shorter than the femora, strongly inflated in the proximal half, subequal and moderately slender distad, tympanum of the cephalic face large, elongate elliptical, of the caudal face smaller, subelliptical. Caudal femora faintly shorter than the tegmina, moderately robust proximad, tapering distad: caudal tibiae subequal to the femora in length, the marginal spines placed as in the other species here described, disto-external spurs very small, the dorsal one minute, disto-internal spurs two in number, the dorsal one half as long as the metatarsus, the ventral one two-thirds as long as the dorsal one: caudal metatarsi with its length contained about three and one-half times in the length of the caudal tibiae, the dorsal margins each armed distad with a single tooth, distal spur of the internal face reaching to about the middle of the third tarsal joint, the external spur hardly surpassing the middle of the second joint.

Allotype: ♀; same date as the type.

Differing from the description of the type in the following features. Pronotum relatively heavier than in the male, broader in proportion to the width of the head, the caudal margin of the disk weakly produced mesad, rounded, very faintly sinuate laterad of the median production: lateral lobes with the cephalic margin more oblique truncate, the ventro-cephalic angle rounded obtuse. Tegmina narrow, elongate, slightly surpassing the apex of the abdomen (exclusive of the ovipositor), when in repose the lateral margins of the tegmina are subparallel, narrowing at the distal extremity to the narrowly rounded apex: lateral field with the veins more regularly disposed than in the male, straighter, and more distinctly diverging: dorsal field with the anal and axillary (two) veins moderately sinuate, transverse nervures numerous and irregularly distributed. Ovipositor in length subequal to that of the head and pronotum combined, moderately falcate, of medium depth, distal extremity of the dorsal margin and the vicinity of the valvular suture in the distal third with fine strumose denticulations, apex acute.

General color antimony yellow, becoming warm buff on the tegmina, the abdomen with a tendency toward ochraceous-buff, ovipositor tipped with mars brown, the eyes varying from the general color to dresden brown.

Measurements (in millimeters).

	Length of body.	Length of pronotum.	Greatest width of pronotum.	Length of tegmen.	Length of wings distad of closed tegmina,	Length of caudal femur.	Length of ovipositor.
♂, <i>type</i>	6.2	1.1	1.9	5.2	4.4	5.5
♀, <i>allotype</i>	6	1.3	1.8	5	4	5.5	2.3

In addition to the type and allotype we have before us a paratypic pair, bearing the same data as the type. These specimens show no differences worthy of remark.

Eneopterinae.**Aphonomorphus major** Chopard.

1912. *A[phonomorphus] major* Chopard, Ann. Soc. Entom. France, LXXXI, p. 429, 3 figs. [St. Laurent du Maroni, French Guiana.]

Igarapé-assú. One female.

This specimen is somewhat damaged and the form of the distal palpal joint is not satisfactorily ascertainable, but in all other important ambisexual features our specimen agrees with the description of *major*, which was based on the male. The dorso-internal margin of the caudal tibiae has one more spine (six instead of five) than Chopard gives, but this is probably a purely individual feature.

Aphonomorphus griseus Chopard.

1912. *A[phonomorphus] griseus* Chopard, Ann. Soc. Entom. France, LXXXI, p. 430, 2 figs. [La Forestière, French Guiana.]

Igarapé-assú. January 17, 1912. One male.

We are assigning this specimen here although it shows at least one point of difference from Chopard's description. This is in the presence of but two, instead of three, spines on the dorso-external margin of the caudal metatarsi. Our specimen has the body length slightly greater than Chopard's measurement, and the distal palpal joint seems rather elongate to answer the original "aussi long que large." However; the features of agreement are so pronounced and the features of difference those of possible individual variation, or of exact interpretation of the proportions of a relatively difficult shape to describe, that we consider our present course of reference best.

Aphonomorphus surdus n. sp. (Pl. II, figs. 71-74.)

Apparently allied to *A. variegatus* and *griseus* Chopard, from Cayenne, and *A. conspersus* Bruner, from Bolivia. From *variegatus* it differs chiefly in the different spination of the caudal tibiae, in the different coloration, in the more elongate limbs, in the smaller ocelli, in the greater general size, in the deeply sulcate subgenital plate of the male, and in the fewer mediastine rami of the tegmina. From *griseus* it differs in the greater general size, in the smaller ocelli, in the lateral lobes of the pronotum being longer and shallower in propor-

tion, in the pronotum being less narrowed cephalad, in the more elongate limbs, in the deeply sulcate subgenital plate of the male and in the different coloration. From *conspersus* the new form differs in the smaller, non-attingent ocelli, the more fusiform cephalic tibiæ, the generally less robust limbs, the more elongate caudal metatarsal spurs, and the less strongly divided subgenital plate of the male and in certain features of the coloration. Comparison can hardly be made with *lividus* (Burmeister), as its diagnosis is so brief and indefinite that the recognition of the species without the re-examination of the type would be purely guess-work.

Type: ♂; Pará, State of Pará, Brazil. (C. F. Baker.) [Acad. Nat. Sci. Phila., Type no. 5363].

Size medium: form elongate, quite slender, subcompressed surface of body and limbs rather thickly pilose, this generally adpressed; of tegmina microscopically adpressed pilose. Head no wider than the cephalic section of the pronotum, depth of the head subequal to the width across the eyes: occiput gently declivent cephalad, the fastigium plane and non-excavate; when seen in lateral outline the interantennal angle is rounded obtuse-angulate: ocelli of medium size, placed in an arcuate line, the median one rather small, elliptical, transverse, separated from the lateral ocelli by faintly more than the length of the median ocellus, fossetted; lateral ocelli large, sub-circular, flattened, placed longitudinal, separated from the eyes by less than their own diameter: rostrum with the interantennal width faintly greater than the width of the proximal antennal segment, briefly fossulate dorsad: eyes moderately prominent, in basal outline broad subpyriform: palpi moderately elongate; third joint long; the fourth somewhat shorter, narrow at its base; fifth joint as long as the fourth joint, produced securiform, the distal width slightly less than the length of the joint, flexor margin nearly straight with a distal rounding to the arcuato-truncate distal margin, extensor margin gently concave: antennæ elongate; proximal joint moderately depressed, narrowed proximad. Pronotum transverse, the greatest median length contained one and one-half times in the greatest caudal width of the same; in transverse section arcuate, rather broadly rounding into the lateral lobes: cephalic margin subtruncate; caudal margin strongly bisinuate, decidedly produced arcuate mesad; lateral borders of disk moderately diverging caudad; cephalic and caudal margins cingulate, the former with this moderately, the latter extremely, broad; pyriform impressions of the disk large, broad; lateral lobes of the pronotum one and one-half times as

long as deep, somewhat impressed ventrad; ventro-cephalic angle broadly rounded, ventral margin arcuate, ventro-caudal angle rounded obtuse and broadly lamellato-cingulate, the other margins rather narrowly cingulate. Tegmina surpassing the tips of the caudal femora by about the length of the pronotum; when seen from the dorsum the lateral borders of the dorsal fields of the tegmina regularly converge distad: lateral field of uniform depth in the proximal third, thence regularly narrowing distad; mediastine vein with five rami; lateral field with five proximal free veins; hyaline intercalated field very elongate, reaching to the proximal third of the lateral field: dorsal field rather narrow, five times as long as greatest breadth, regularly narrowing in distal half; between the median and the short anal vein there is but a brief section of the ulnar vein which is distinctly traceable, all the other longitudinal nervures irregular and sinuate, the cross-veins irregularly distributed and oblique sectors not clearly defined; anal and the two axillary veins oblique, straight, regularly disposed, connected by numerous cross-veins. Wings surpassing the tegmina by slightly more than the length of the pronotum. Cerci very slender, elongate, reaching almost to the tips of the wings, clothed with numerous, rather adpressed, short hairs and sparse, erect, long hairs, decurved: subgenital plate elongate scaphiform, subcompressed, with a deep medio-longitudinal sulcus on the ventral surface; distal margin U-emarginate. Limbs moderately slender, third joint of tarsi slender. Cephalic tibiae with an elongate elliptical foramen on the cephalic face, caudal face imperforate. Caudal femora moderately slender, about two-thirds as long as the tegmina: caudal tibiae very faintly shorter than the caudal femora; dorsal surface armed distad as follows: on external margin with five major spines, on internal margin with six, those of the internal slightly longer than those of the external; the intercalated spinulations placed, on external margin—3 (or 4), 4, 2, 1, on internal margin—1, 2 (or 3), 2, 1, 0; dorso-internal distal spur over twice as long as the ventral, almost as long as the metatarsus; external distal spurs short: caudal metatarsi armed on the dorso-external margin with a single (distal) spinulation, on the dorso-internal margin with three spinulations, metatarsal spurs very long, the internal slightly longer than the external, faintly arcuate when seen from the side, arcuate proximad when seen from the dorsum.

Allotype: ♀; same data as type. [Acad. Nat. Sci. Phila.]

Differing from the description of the male (type) in the following

features. Size larger: form and vestiture similar. Head slightly deeper than width across the eyes: ocelli similar to those of the male but slightly smaller. Pronotum with cephalic margin distinctly arcuato-emarginate; lateral borders of disk less distinctly diverging caudad than in the male. Tegmina surpassing the tips of the caudal femora: mediastine vein with eight rami; lateral field with five free veins proximad: dorsal field with its width contained slightly more than five times in the tegminal length. Cerci very elongate, appreciably surpassing the tips of the wings: subgenital plate of the type usual in the female sex of the genus, moderately compressed: ovipositor in length surpassing that of the caudal femora by not more than one-half the dorsal length of the pronotum, slender, compressed, moderately decurved in proximal half, thence straight; apical valves acute lanceolate, ventro-external surface of valves shagreenous, the ventral surface crassly crenate-dentate, the productions unequal and irregular in size, these arranged in several series. Caudal tibiae with the intercalated spinulations numbering 3 (or 5), 3, 2, 1 (or 2) on the external margin; 2, 3 (or 4), 1, 1, 0 on the internal margin.

General coloration of the male buckthorn brown, of the female between cinnamon-brown and dresden brown, in both sexes with an overlying coloration of points of mummy brown and blackish fuscous; pubescence pale golden. Head with the ocelli bordered dorsad by a transverse, poorly defined band of fuscous; ocelli naples yellow; eyes hazel, obliquely and rather irregularly barred dorsad with three lines of fuscous; antennae multiannulate with mummy brown on an ochraceous-buff ground, the contrast decided in the male, hardly apparent in the female. Pronotum with the cephalic and caudal margins beaded with fuscous except in the male, where the caudal margin is unmarked dorsad. Tegmina with the median vein strongly, closely and quite regularly beaded with blackish fuscous, except in proximal fifth, spot at base of humeral trunk blackish fuscous; dorsal surface with five oblique clouds of fuscous in the female, the cross-veins largely lined with fuscous, in the male no clouds are indicated and but a few cross-veins are pencilled; lateral field of female with cross-veins pencilled with fuscous; longitudinal veins all lined with dull ochraceous-tawny; intercalated field washed with mummy brown in the male, nearly clear hyaline in the female. Limbs thickly and closely speckled with fuscous in the female, in the male this hardly indicated on the caudal limbs, and much less distinctly so on the others than in the female; caudal

femora with the ventral margin broadly beaded with fuscous distad; caudal tibiae with the spines and spurs annulate mesad with fuscous. Ovipositor with the tips fuscous.

♂ (type). Length of body, 19.5 mm.; length of pronotum, 3; greatest (caudal) width of pronotum, 4.4; length of tegmen, 19; greatest width of dorsal field of tegmen, 3.9; length of caudal femur, 12.8.

♀ (allotype). Length of body, 18 mm.; length of pronotum, 3.6; greatest (caudal) width of pronotum, 5; length of tegmen, 22.2; greatest width of dorsal field of tegmen, 4.4; length of caudal femur, 15; length of ovipositor, 16.

The type and allotype are the only individuals of the species seen by us. It is evident that the male is in a recessive type of coloration, the female in an intensive one.

EXPLANATION OF PLATES I AND II.

PLATE I.

- Fig. 1.—*Ischnoptera crispula* new species. Wing of male (type). (×6.)
 Fig. 2.—*Ischnoptera crispula* new species. Pronotum of male (type). Dorsal view. (×6.)
 Fig. 3.—*Ischnoptera crispula* new species. Genital orifice of male (type). Caudal elevation. (Greatly enlarged.)
 Fig. 4.—*Ischnoptera crispula* new species. Subgenital plate of male (type). Ventral view. (Greatly enlarged.)
 Fig. 5.—*Ischnoptera imparata* new species. Wing of male (type). (×8.)
 Fig. 6.—*Ischnoptera imparata* new species. Pronotum of male (type). Dorsal view. (×6.)
 Fig. 7.—*Ischnoptera imparata* new species. Genital orifice of male (type). Caudal elevation. (Greatly enlarged.)
 Fig. 8.—*Ischnoptera imparata* new species. Subgenital plate of male (type). Ventral view. (Greatly enlarged.)
 Fig. 9.—*Ischnoptera clavator* new species. Wing of male (type). (×4.)
 Fig. 10.—*Ischnoptera clavator* new species. Pronotum of male (type). Dorsal view. (×6.)
 Fig. 11.—*Ischnoptera clavator* new species. Genital orifice of male (type). Caudal elevation. (Greatly enlarged.)
 Fig. 12.—*Ischnoptera clavator* new species. Subgenital plate of male (type). Ventral view. (Greatly enlarged.)
 Fig. 13.—*Ischnoptera castanea* Saussure. Genital orifice of male. Igarapé-assú, Brazil. Caudal elevation. (Greatly enlarged.)
 Fig. 14.—*Ischnoptera castanea* Saussure. Subgenital plate of male. Igarapé-assú, Brazil. Ventral view. (Greatly enlarged.)
 Fig. 15.—*Cariblatia igarapensis* new species. Pronotum of male (type). Dorsal view. (×6.)
 Fig. 16.—*Cariblatia igarapensis* new species. Genital orifice of male (type). Caudal elevation. (Greatly enlarged.)
 Fig. 17.—*Cariblatia igarapensis* new species. Wing of male (type). (×5.)
 Fig. 18.—*Cariblatia igarapensis* new species. Subgenital plate of male (type). Ventral view. (Greatly enlarged.)
 Fig. 19.—*Chorisoneura parishii* new species. Pronotum of male (type). Dorsal view. (×7.)
 Fig. 20.—*Chorisoneura parishii* new species. Tegmen and wing of male (type). (×7.)

- Fig. 21.—*Chorisoneura parishii* new species. Subgenital plate of male (type). (Greatly enlarged.)
- Fig. 22.—*Melestora minutissima* new species. Dorsal view of male (type). ($\times 7$.)
- Fig. 23.—*Melestora minutissima* new species. Apex of abdomen of male (type). Ventral view. (Greatly enlarged.)
- Fig. 24.—*Tetratænia surinama* (Linn.). Median femur of male. Pará, Brazil. (Greatly enlarged.)
- Fig. 25.—*Tetratænia phila* new species. Median femur of male (type). (Greatly enlarged.)
- Fig. 26.—*Tetratænia surinama* (Linn.). Caudal femur of male. Pará, Brazil. ($\times 3$.)
- Fig. 27.—*Tetratænia phila* new species. Caudal femur of male (type). ($\times 3$.)
- Fig. 28.—*Chloropseustes leucotylus* new genus and species. Lateral view of male (type). ($\times 2\frac{1}{4}$.)
- Fig. 29.—*Chloropseustes leucotylus* new genus and species. Pronotum of male (type). Dorsal view. ($\times 7$.)
- Fig. 30.—*Chloropseustes leucotylus* new genus and species. Apex of abdomen of male (type). Lateral elevation. ($\times 7$.)
- Fig. 31.—*Chloropseustes leucotylus* new genus and species. Apex of abdomen of female (allotype). Lateral elevation. ($\times 7$.)
- Fig. 32.—*Bucephalacris falcifer* new species. Apex of abdomen of male (type). Dorsal view. ($\times 7$.)
- Fig. 33.—*Bucephalacris falcifer* new species. Apex of abdomen of male (type). Lateral elevation. ($\times 7$.)
- Fig. 34.—*Sitalces jugatus* new species. Apex of abdomen of male (type). Lateral elevation. ($\times 6$.)
- Fig. 35.—*Sitalces jugatus* new species. Apex of abdomen of male (type). Dorsal view. ($\times 6$.)

PLATE II.

- Fig. 36.—*Ceraia capra* new species. Meso- and metasternal lobes of female (type). ($\times 3$.)
- Fig. 37.—*Ceraia capra* new species. Ovipositor and subgenital plate of female (type). ($\times 2$.)
- Fig. 38.—*Scaphura sphex* new species. Lateral view of tegmen of male (type). ($\times 1\frac{1}{2}$.)
- Fig. 39.—*Scaphura sphex* new species. Head of male (type). Dorsal outline. ($\times 5\frac{1}{2}$.)
- Fig. 40.—*Scaphura sphex* new species. Pronotum of male (type). Lateral elevation. ($\times 3$.)
- Fig. 41.—*Phlugis chelifera* new species. Apex of abdomen of male (type).⁵⁶ Dorsal view. (Greatly enlarged.)
- Fig. 42.—*Phlugis chelifera* new species. Apex of abdomen of male (type).⁵⁶ Ventral view. (Greatly enlarged.)
- Fig. 43.—*Phlugis chelifera* new species. Apex of abdomen of male (type).⁵⁶ Lateral elevation. (Greatly enlarged.)
- Fig. 44.—*Paralobaspis personata* new species. Pronotum of female (type). Lateral elevation. ($\times 3$.)
- Fig. 45.—*Paralobaspis personata* new species. Ovipositor of female (type). ($\times 4$.)
- Fig. 46.—*Gryllacris harpistylata* new species. Apex of abdomen of male (type). Dorsal view. (Greatly enlarged.)
- Fig. 47.—*Gryllacris harpistylata* new species. Apex of abdomen of male (type). Lateral elevation. (Greatly enlarged.)
- Fig. 48.—*Aphemogryllus gracilis* new genus and species. Tegmen of male (type). Dorsal field. ($\times 8$.)
- Fig. 49.—*Aphemogryllus gracilis* new genus and species. Tegmen of male (type). Lateral field. ($\times 8$.)

⁵⁶Cerci and supra-anal plate drawn from paratype as they are flexed inward in type.

- Fig. 50.—*Aphemogryllus gracilis* new genus and species. Head and pronotum of male (type). Dorsal view. (Greatly enlarged.)
- Fig. 51.—*Aphemogryllus gracilis* new genus and species. Palpus of male (type). (Greatly enlarged.)
- Fig. 52.—*Aphemogryllus gracilis* new genus and species. Caudal tarsus and extremity of tibia of male. Internal face. (Greatly enlarged.)
- Fig. 53.—*Aphemogryllus gracilis* new genus and species. Ovipositor of female (allotype). ($\times 11$.)
- Fig. 54.—*Anaxipha esau* new species. Caudal tarsus and extremity of tibia of female (type). External face. (Greatly enlarged.)
- Fig. 55.—*Anaxipha esau* new species. Cephalic tibia of female (type). Cephalic (left) and caudal (right) faces. (Greatly enlarged.)
- Fig. 56.—*Anaxipha simulacrum* new species. Dorsal field of tegmen of male (allotype). ($\times 7$.)
- Fig. 57.—*Anaxipha simulacrum* new species. Head and pronotum of female (type). Lateral elevation. (Greatly enlarged.)
- Fig. 58.—*Anaxipha simulacrum* new species. Cephalic tibia of female (type). Cephalic (left) and caudal (right) faces. (Greatly enlarged.)
- Fig. 59.—*Anaxipha simulacrum* new species. Ovipositor of female (type). (Greatly enlarged.)
- Fig. 60.—*Anaxipha parænsis* new species. Dorsal field of tegmen of male (type). ($\times 7$.)
- Fig. 61.—*Anaxipha parænsis* new species. Palpus of male (type). (Greatly enlarged.)
- Fig. 62.—*Anaxipha parænsis* new species. Cephalic tibia of male (type). Cephalic (left) and caudal (right) faces. (Greatly enlarged.)
- Fig. 63.—*Anaxipha fistulator* new species. Dorsal field of tegmen of male (type). ($\times 7$.)
- Fig. 64.—*Anaxipha fistulator* new species. Pronotum of male (type). Lateral elevation. (Greatly enlarged.)
- Fig. 65.—*Anaxipha fistulator* new species. Palpus of male (type). (Greatly enlarged.)
- Fig. 66.—*Anaxipha fistulator* new species. Cephalic tibia of male (type). Cephalic (left) and caudal (right) faces. (Greatly enlarged.)
- Fig. 67.—*Anaxipha stramenticia* new species. Dorsal field of tegmen of male (type). ($\times 7$.)
- Fig. 68.—*Anaxipha stramenticia* new species. Head and pronotum of male (type). Lateral elevation. (Greatly enlarged.)
- Fig. 69.—*Anaxipha stramenticia* new species. Ovipositor of female (allotype). (Greatly enlarged.)
- Fig. 70.—*Anaxipha stramenticia* new species. Cephalic tibia of male (type). Cephalic (left) and caudal (right) faces. (Greatly enlarged.)
- Fig. 71.—*Aphonomorphus surdus* new species. Dorsal field of tegmen of male (type). ($\times 2\frac{1}{2}$.)
- Fig. 72.—*Aphonomorphus surdus* new species. Head of male (type). Cephalic view. (Greatly enlarged.)
- Fig. 73.—*Aphonomorphus surdus* new species. Subgenital plate of male (type). Ventral view. (Greatly enlarged.)
- Fig. 74.—*Aphonomorphus surdus* new species. Cephalic tibia of male (type). Cephalic (left) and caudal (right) faces. (Greatly enlarged.)



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