

ON ORTHOPTERA FROM THE VICINITY OF RIO DE JANEIRO, BRAZIL

BY JAMES A. G. REHN

The interesting collection here discussed was made in April, 1913, by Dr. Malcolm Burr, the distinguished British Dermapterist and Orthopterist, in the course of a brief stay in the neighborhood of Rio de Janeiro. Dr. Burr very kindly placed the collection in our hands for study, permitting us to retain for the Academy collection the first set, while a second set will be forwarded to the Oxford Museum. The localities represented are: Tijuca, on the southwestern outskirts of the metropolis; Petropolis, immediately over the crest of the neighboring Serra de Estrella to the northward, and the city of Rio itself, a very few specimens being so labelled.

The particular interest which attaches to the collection is that it is from a region, which, although the metropolitan center of Brazil, has been neglected by entomologists in recent years, so much so that certain species described from the locality by the older authors have been generally misidentified by subsequent workers. In proportion to its size, therefore, the present series has been of exceptional interest and great value.

The collection comprises two hundred and eighty-seven specimens, representing forty species belonging to thirty-three genera, of which one genus and three species proved to be new. A key to the species of the genus *Symphyloxiphus*, which was made possible largely by the present material, has been added.

We wish to thank Dr. Burr for his kindness in permitting us to study this most important though limited series.

BLATTIDAE

PSEUDOMOPINAE

Ischnoptera parvula Saussure

1868. *I[schnoptera] parvula* Saussure, *Revue et Magasin de Zoologie*, 2e ser., xxi, p. 112. [Brazil.]

Petropolis. April 12 to 14, 1913. Two females.

This strikingly distinct species is here first recorded from South America with exact locality.

EPILAMPRINAE

Epilampra agathina Saussure

1864. *Epilampra agathina* Saussure, Revue et Magasin de Zoologie, 2e ser., xvi, p. 322. [Brazil.]

Petropolis. April 12 to 14, 1913. One female.

Walker has recorded this species from Tijuca and Constancia, Brazil.

Epilampra verticalis Burmeister

1838. *E[pilampra] verticalis* Burmeister, Handb. der Entom., ii, abth. ii, pt. i, p. 505. [Brazil.]

Tijuca. April 9 to 11, 1913. One female.

This specimen is inseparable from material from the Misiones, Argentina.

PANCHLORINAE

Pycnoscelus surinamensis (Linnaeus)

1758. [*Blatta*] *surinamensis* Linnaeus, Syst. Nat., X ed., p. 424. [Surinam.]

Petropolis. April 12 to 14, 1913. One female.

OXYHALOINAE

HYPNORNOIDES new genus

Allied to *Hypnorna* Stål, from which it differs in the shorter, more ovate instead of elongate form, in the head being without a distinct transverse sulcus and carina between the face and vertex, in the tegmina being relatively broad, not acuminate, and with a distinct anal impression on the same. It is not close to the related *Calhypnorna*.

Generic Description.—Depressed, ovate in form. Face and vertex passing regularly one into the other, non-carinate or sulcate: antennae short, moniliform, hirsute. Pronotum roughly quadrate: lateral portions defined, translucent. Tegmina coriaceous, short lanceolate: venation distinct but not elevated; anal sulcus distinct: marginal field sharply defined, narrow. Wings with small reflexed intercalated area. Ante-penultimate dorsal abdominal segment produced latero-caudad into a distinct projection: subgenital plate of female deeply fissate and semi-valvate. Femoral margins without true spines: dorsal genicular spine

present on median and caudal femora: ventral margins of median and caudal femora, and ventro-cephalic margin of cephalic femora each with a single distal spine. Arolia large.

Type.—*Hypnornoides burri* new species.

Hypnornoides burri new species (Pl. XXVII, figs. 1 and 2.)

Type.—♀; Petropolis, State of Rio de Janeiro, Brazil. April 12 to 14, 1914. (M. Burr.) [Acad. Nat. Sci. Phila., Type no. 5249.]

Size small: form markedly depressed: surface of pronotum and tegmina dull and minutely shagreenous, of remainder of body moderately polished but frequently with a very weak shagreen. Head with its width visible cephalad of the pronotum, the occiput greatly flattened, the general outline of the head trigonal when seen in cephalic aspect: occiput rounding regularly over the vertex into the face: interspace between the eyes very broad, slightly greater than that between the inner margins of the antennal scrobes, the interocular region ventrad to the interantennal region with spaced, distinct, stellate impressions, from which spring single chaetiform hairs; region of the antennal scrobes marked off from the vertex by arcuate, converging and ventrad vanishing angles: clypeus and labrum strongly transverse: palpi with third joint rather slender, straight; fourth joint distinctly shorter than the third, funnel-shaped; fifth joint subequal to the third, of the typical Blattid form, the greatest width at the proximal third: eyes strongly depressed, elongate reniform in outline: antennae very slightly longer than the body, multiarticulate, the articles moniliform, very short proximad, increasing in length distad, the distal joints very slightly longer than broad; proximal joint thickened, second and third joints larger than fourth and succeeding; from fourth joint distad the antennae are adpressed hirsute. Pronotum faintly transverse, roughly quadrate in form, greatest width at caudal fourth: cephalic margin regularly arcuate, rounding into the weakly oblique, gently diverging and slightly arcuate lateral margins; caudo-lateral angles rounded obtuse; caudal margin very slightly arcuate: surface of disk with complicated less shagreenous pattern: lateral portions of pronotum narrow, flattened, translucent, the disk sharply and narrowly rounding ventrad to the level of the lateral portions. Tegmina lanceolate, the greatest width contained nearly two and one-half times in the greatest length of the same, and situated at three-fifths of the length from the base; coriaceous, the marginal field mottled translucent, the portion of the dextral tegmen normally covered when the tegmina are closed, shining, but with a distinct and rather modified venation: costal margin faintly arcuate proximad, thence obliquely straight to the point of greatest width, which is broadly rounded and from where the margin is obliquely arcuate-truncate to the rounded rectangulate apex, which is faintly sutural in position; sutural margin very faintly arcuate, strongly rounded proximad to the base, rounding in similar fashion distad to the apex: marginal field relatively narrow, attenuate, reaching to the point of greatest width of the tegmen, flattened and

sharply delimited by contour, as well as texture and color, from the remainder of the tegmen; anal field elongate pyriform, its apex nearly at the middle of the sutural margin: venation partly obscured by the coriaceous character of the tegmina and at the same time lacking sharp definition in its own structure (except in the shining, normally covered portion of dextral tegmen); eight to nine costal veins distinguishable; discoidal and median veins parallel for a considerable distance, three apparent discoidal rami, which are obliquely directed toward the sutural margin, are present; anal sulcus impressed, delicate, continuous, gently arcuate; axillary veins four in number, relatively faint. Wings subequal to the tegmina in length: costal margin slightly oblique and straight in proximal three-fifths, thence truncate and distad sharply arcuate to the base of the intercalated field: intercalated field of medium size, folded and reflexed, the base obtuse-angulate, the greatest length of the field equal to about one-sixth that of the remainder of the wing: mediastine vein continued to the apex of the field, following the trend of the costal margin in the proximal half, there bent and continuing distad at a very broad obtuse angle; costal veins irregular, nine in number, hardly clavate; area between the mediastine and discoidal veins very broad, at greatest width almost equal to the distance from the discoidal to the anal vein, the latter following much the same direction as the mediastine vein, area with seven transverse nervures, which are not parallel in direction, the areolets distad, however, being subquadrate; medio-discoidal area narrow, hardly half as wide as the medio-ulnar area; median vein following the same general trend of the above described veins, the medio-ulnar area with four nervures distad. Abdomen with the ante-penultimate dorsal segment well produced into rectangulate projections latero-caudad: supra-anal plate transverse, trigonal, compressed and subrostrate mesad, the free margin broadly arcuate-emarginate laterad, the median compressed section with a very shallow obtuse-angulate emargination, each side of which emargination on the compressed section is placed a group of chaetiform hairs: cerci twice as long as the supra-anal plate, tapering, acuminate, dorsal surface depressed, ventral surface with numerous chaetiform hairs: subgenital plate large, weakly compressed proximo-laterad, distad with a considerable median fission, the free margin in general form sub-rectangulate. Caudal tarsi with the metatarsus subequal in length to the remaining tarsal joints.

General color of the dorsal surface burnt sienna, of the ventral surface blackish brown. Head with the occiput, interocular region and face to the level of the ventral portion of the antennal scrobes orange rufous; ventral portion of the face and mouth parts of the color of the ventral surface, with weak points of orange rufous on the face, the palpi in part, and the labrum edged with dull ochraceous-orange; eyes blackish brown; antennae black, the first and third joints to a variable degree orange rufous, mesad with a broad cream white annulus involving eight joints, distad the black passes into ochraceous-tawny.¹ Pronotum with the disk approaching chestnut, weakly mottled with darker (dull fuscous), particularly caudad and laterad, lateral portions of the pronotum ochraceous-buff. Tegmina with the marginal field whitish. Dorsum of the

¹ As the antennae are incomplete in the type, certain of these characters have been drawn from the paratype.

abdomen with a broad, proximal, transverse bar of shining blackish brown, this breaking up before reaching the lateral abdominal margins. Venter of the abdomen with the segments narrowly edged laterad and distad with the dorsal color, the edging irregular in strength and continuity; subgenital plate with ill-defined blotches of the same; cerci of the dorsal color, darkening distad. Coxae of the ventral color proximad, naples yellow distad; femora naples yellow, this passing distad into ochraceous-orange; tibiae similar to the distal portion of the femora, excepting the caudal pair, which are hazel; tarsi naples yellow, excepting the ultimate and penultimate articles which are dresden brown.

Measurements (in millimeters)

♀	Length of body	Length of pronotum	Greatest (caudal) width of pronotum	Length of tegmen	Greatest width of tegmen
Petropolis, Brazil					
Type.....	7.5	1.9	2.2	4.6	1.9
Paratype.....	7.3	2	2.3	4.8	1.9

In addition to the type we have before us a paratypic female bearing the same data as the type. It shows no noteworthy differences excepting some minor color differences. These are the presence of fuscous disto-mesad on the cephalic femora and to a lesser degree proximad on the cephalic tibiae, the obsolete character of the paler palpal markings and the reduction of the paler ventral abdominal marginings. These show that the specimen is in a slightly more intensive condition of coloration than the type.

Chorisoneura bisignata new species (Pl. XXVII, figs. 3, 4, 5 and 6.)

Apparently allied to *C. discoidalis* Burmeister, but differing in the entirely black front and vertex of head, in the pale humeral line on the tegmina and in the smaller size.

Type.—♂; Petropolis, State of Rio de Janeiro, Brazil. April 12 to 14, 1913. (Malcolm Burr.) [Acad. Nat. Sci. Phila., Type no. 5261.]

Size medium (for the genus): form depressed, elliptical: surface shining. Head distinctly projecting cephalad of the pronotum, visible for almost its entire width: occipital outline with the eyes, when seen from the dorsum, moderately arcuate; interspace between the eyes very broad, subequal to that between the antennal scrobes: eyes narrow, strongly elongate and reniform in basal outline: ocelli minute, elongate elliptical; face with the antennal depressions strongly defined mesad by strongly arcuate rims: palpi with the third joint moderately slender, slightly longer than the fourth joint; fourth joint nearly subequal to the fifth joint, faintly and regularly enlarging distad; fifth joint of the usual type, tapering in the distal three-fifths: antennae at least as

long as the body (their condition incomplete). Pronotum transverse, flattened elliptical, the greatest length contained about one and two-fifths times in the greatest width: cephalic margin very broadly and shallowly obtuse-angulate, the immediate angle broadly rounded; caudal margin similar but more arcuate and with a faint median flattening; latero-cephalic angles rounded, latero-caudal angles rounded obtuse; lateral margins strongly and regularly arcuate: disk with a weakly impressed pattern; broad lateral and narrow caudal sections semi-transparent, the former well separated from the disk by distinct breaks in the contour of the pronotum: entire margin finely cingulate. Tegmina elongate, very narrowly lanceolate, nearly four times as long as the greatest width: costal margin strongly arcuate proximad, thence very faintly and quite regularly truncato-arcuate to the acute apex; sutural margin straight, becoming arcuate in distal third: marginal field of medium width, well-defined, reaching to the proximal two-fifths; scapular field broad, at its widest point hardly inferior to the width of the discoidal field; anal field pyriform, reaching to the proximal third of the tegmen: venation distinct, coarse, well etched into relief; costal veins eighteen in number, oblique, irregular distad, the intercalated veins of scapular field decided and regularly placed; median vein in greater part subparallel to the discoidal vein, sinuate in form, with six oblique rami toward the sutural margin; ulnar vein bifurcate distad; whole of the discoidal field with numerous, closely placed and strongly marked cross-veins, which give a rectangulate or rarely quadrate form to the cells; anal sulcus well indicated, distinctly arcuate proximad, thence straight oblique, faintly arcuate at its junction with the sutural margin; axillary veins five in number, well-defined, with but indistinct cross-veins. Wings falling but slightly short of the tegmenal apices; costal margin in greater part gently arcuate: intercalated triangle relatively large, its greatest length equal to about one-third that of the remainder of the wing: costal veins sixteen in number, the proximal eleven thickened distad and weakly elongate clavate; discoidal vein in general straight; medio-discoidal area rather broad, appreciably wider than the medio-ulnar area, cross-veins fifteen in number, the cells varying from very narrow spaces to elongate rectangles; median vein very faintly arcuate, simple, medio-ulnar area with about six faint cross-veins, irregularly placed distad; ulnar vein heavy and straight, furcate distad, the main trunk there sending three weak cross-veins toward the anal vein. Abdomen narrowed distad: disto-dorsal abdominal segment transverse, the free margin moderately arcuate: cerci large, coarsely jointed, tapering, strongly depressed, sparsely hirsute: subgenital plate of the usual *Chorisoneura* type, the free margin unsymmetrical, from the sinistral side showing the following: a strong proximal rotundate acute-angulate shoulder, a rounded but not deep emargination, a median sinuate and slightly oblique truncation, a more pronounced, though narrow, arcuate emargination and lastly a short bisinuate section; styles of the usual large, acuminate, sublamellate type found in this genus, ventral surface of same deeply channelled. Cephalic femora with the ventro-cephalic margin bearing a closely set series of setiform spinules distad; median and caudal femora with the ventral margin having few scattered spinules; ventro-cephalic margin of cephalic femora with a large distal spine, both ventral margins of median and caudal femora with similar, but smaller, single distal spines: arolia large.

General color fuscous-black, the pale pattern pale ochraceous-buff to Naples and mustard yellow. Head fuscous-black excepting the mouth-parts, which are buff, the palpi Naples yellow, the distal joint tipped with fuscous. Pronotum with the disk of the general color, the broad lateral borders, the narrower caudal margin and a fine thread along the cephalic margin, pale ochraceous-buff, the caudal outline of the dark disk sharply contrasted, the others faintly blending. Tegmina of the general color, with the marginal field and a broad marginal edging to nearly the whole of the scapular field, dull Naples yellow, and a strongly contrasted, but relatively narrow, dash along the greater part of the discoidal vein mustard yellow. Wings strongly washed with fuscous. Abdomen with the dorsal surface buckthorn brown, broadly but indefinitely edged laterad and distad with weak fuscous; cerci mustard yellow: ventral surface of thorax and coxae, excepting an isabelline wash to the cephalic coxae, of the general color of the abdomen, colored similarly to the dorsum of the same section, but with the fuscous lateral marginal areas deeper in tone and more sharply defined, while distad the subgenital plate is of the paler color. Limbs Naples yellow; tarsi with a distal spot of fuscous and small ones of the same color at the base of the second and fourth joints.

Length of body, 6.9 mm.; length of pronotum, 1.8; greatest width of pronotum, 2.5; length of tegmen, 8.8; greatest width of tegmen, 2.5.

The type of this striking species is unique.

Chorisoneura perlucida (Walker)

1868. *Blatta perlucida* Walker, Catal. Blatt. Brit. Mus., p. 99. [Tijuca, Brazil.]

Tijuca. April 9 to 11, 1913. (Malcolm Burr.) One male.

This topotypic specimen fully answers the poor description of Walker as far as the latter goes except that the eyes are hardly "wide apart." However, as the type was a female, and the present individual is of the opposite sex, this is easily explained, as the difference in this respect is always more marked in the females of the Blattidae.

The only locality from which the species has been recorded is Tijuca.

PERISPHAERINAE

Hormetica laevigata Burmeister

1848. *H[ormetica] laevigata* Burmeister, Handb. der Entom., ii, abth. ii, pt. i, p. 512. [No locality.]

Petropolis. April 12 to 14, 1913. (Malcolm Burr.) One male, one female.

A study of the characters given by Burmeister for this species and his supposed synonymous *scrobiculata* shows conclusively

that Brunner erred in uniting them. That this was done is, however, not at all strange, Brunner's measurements showing that he had but the present species before him, although he should have given more attention to the features given by Burmeister in the key section of the page on which both forms were described. Burmeister says of *laevigata*, "Flügeldecken reichen bis fast ans Ende des Hinterleibes und greifen über einander"; while of *scrobiculata* he writes, "Flügeldecken merklich kürzer als der Hinterleib." The present species has, in both sexes, the tegmina longer than in any other form of the genus known to us. Serville's name *robusta* and *laevicollis* are clearly based on the sexes of the same species which Burmeister called *scrobiculata*.

The three closely allied species of this section of the genus, specimens of each of which are now before us, may be recognized by the following key.

A. Tegmina not as long as or but slightly longer than the greatest width of pronotum, exposing four to five abdominal segments; apex relatively broad. Wings shorter than tegmina. Lateral margins of pronotum of male but moderately arcuate.

B. Tegmina with length little greater than their individual width; distal extremity subtruncate; distal portion of costal margin strongly arcuate.

scrobiculata Burmeister

BB. Tegmina with length appreciably greater than their individual width; distal extremity well rounded; distal portion of costal margin obliquely subarcuate.

atlas Rehn

AA. Tegmina about a third longer than the greatest width of the pronotum, exposing about three abdominal segments; apex relatively narrow, rounded. Wings as long as tegmina. Lateral margin of pronotum of males considerably arcuate.

laevigata Burmeister

Measurements (in millimeters) of the three forms are as follows:

	Length of body	Length of pronotum	Greatest width of pronotum	Length of tegmen	Greatest width of tegmen
<i>Hormetica laevigata</i> ♂ (ex Burmeister)	circa 30
<i>Hormetica laevigata</i> ♂ (Amazons)	34	13.5	17	14.7	12.5
<i>Hormetica atlas</i> ♂ (Type)	45.5	15.5	19.5	18.5	14.2
<i>Hormetica atlas</i> ♀ (Allotype)	35.5	11	14.5	12.8	10

	Length of body	Length of pronotum	Greatest width of pronotum	Length of tegmen	Greatest width of tegmen
<i>Hormetica scrobiculata</i> ♂ (ex Brunner)	40	13	18	22
<i>Hormetica scrobiculata</i> ♀ (ex Brunner)	31	11	15	18
<i>Hormetica scrobiculata</i> ♂ (Petropolis)	36	12.9	16.2	20.8	11.9
<i>Hormetica scrobiculata</i> ♀ (Petropolis)	36.5	11.5	15	19.4	11.1

MANTIDAE

VATINAE

Cardioptera brachyptera Burmeister

1838. *M[antis (Cardioptera)] brachyptera* Burmeister, Handb. der Entom., ii, abth. ii, pt. i, p. 541. [Brazil.]

Tijuca. IV, 9 to 11, 1913. (M. Burr.) One juv. female.

ACRIDIDAE

ACRYDIINAE

Rytinatettix² lobulatus (Stål)

1860. *Tetrix lobulata* Stål, Kongl. Svenska Fregatt. Eugenies Resa, Zool., i, p. 347. [Rio de Janeiro, Brazil.]

Petropolis. April 12 to 14, 1913. (Burr.) One female.

This species has also been recorded from Nova Friburgo, Brazil and Argentina, as well as from the Amazon region,³ but we feel misgivings as to the latter identification.⁴

² Vide Hancock, Trans. Entom. Soc. London, 1908, p. 418, (1908).

³ Hancock, Ibid., p. 419.

⁴ Hancock (Ibid., p. 418) has suggested the probability of Giglio-Tos' *Paratettix borelli* (Bull. Mus. Zool. Anat. Comp. Torino, xii, no. 302, p. 28, (1897)) being the same as Stål's *lobulata*. This does not appear to us to be the case, as in our opinion it equals the allied *Rytinatettix fossulatus* (Bolivar) (Ann. Soc. Entom. Belg. xxxi, p. 256, (1887)). We have specimens from Argentina before us which fully agree with *borelli*, and were so determined by Bruner, and these are clearly *fossulatus*. Our previous references of material to *lobulatus* (Proc. Acad. Nat. Sci. Phila., 1913, p. 304) should instead relate to *fossulatus*, true *lobulatus* previous to this writing having been unknown to us. The localities from which *fossulatus* is now known are: Rio de Janeiro, State of Apiahy, Rio Grande do Sul, Corumbá and Chapada, Brazil; Caiza and Puerto Suarez, Bolivia; Paraguay; San Lorenzo, Misiones, Embarcacion, Jujuy, Tucuman, Cruz del Eje, Cordoba, Carcaraña, Rosario and Buenos Aires, Argentina; Lota, Chile.

PROSCOPINAE

Corynorhynchus radula (Klug)

1820. *Proscopia radula* Klug, in Nees ab Esenbeck, Horae Physicae Berolin, p. 20, pl. iii, fig. 4. [Rio de Janeiro, Brazil.]

Tijuca. April 9 to 11, 1913. (M. Burr.) One male.

This species has been recorded from as far north as Surinam.

ACRIDINAE (*Truxalinae* of authors)**Truxalis brevicornis** (Johannson)

1764. *Gryllus brevicornis* Johannson, Amoen. Acad., vi, p. 398. [Pennsylvania.]

Tijuca. April 9 to 11, 1913. (Malcolm Burr.) One male.

Petropolis. April 12 to 14, 1913. (Malcolm Burr.) Four males, four females.

All of the above specimens are in the green color phase. The four Petropolis females vary in tegminal coloration from immaculate to rather thickly punctate with circular spots in the discoidal area.

Orphula pagana (Stål)

1860. *Gomphocerus (Hyalopteryx) paganus* Stål, Kongl. Svenska Freg. Eugenies Resa, Zool., i, Ins., p. 339. [Rio de Janeiro, Brazil.]

1906. *Orphulina veteratoria* Rehn, Proc., Acad. Nat. Sci. Phila., 1906, p. 21. (In part, male only.) [São Paulo, Brazil.]

1911. *Orphulella crassa* Bruner, Ann. Carneg. Mus., viii, pp. 12, 17. [Rio de Janeiro, Brazil.]

Tijuca. April 9 to 11, 1913. (Malcolm Burr.) Fifteen males, four females.

Petropolis. April 12 to 14, 1913. (Malcolm Burr.) Ten males, fifty-three females.

The author has already pointed out the unfortunate, but universal, misidentification of this species by authors,⁵ and the student is referred to the earlier paper for discussion of this matter.

The genus and species is a member of the *Orphulellae*, being near *Sisantum* and *Orphulina*, with a more distant relationship to *Parorphula* and *Orphulella*. In addition to *pagana* the genus contains certain other forms, i. e. *Orphulina veteratoria* Rehn (♂ not ♀), *Orphula gracilicornis* Bruner, *Orphula azteca* (Sausure) and *meridionalis* and *guatemalae* Bruner. We now have

⁵ Trans. Amer. Entom. Soc., xlii, p. 275, (1916).

before us the types of *veteratoria*, *meridionalis* and *guatemalae*, topotypes of *gracilicornis* and two males of *azteca* determined by Bruner after comparison with Saussure's type. It is evident that the male of *veteratoria* equals true *pagana*, which at the time of the description of *veteratoria* was interpreted in the sense used by Giglio-Tos and Bruner, determined Asuncion material from the latter author being at that time in our hands; the female of *veteratoria*, which is the type, stated when described as probably different from the male, is the same as *O. acuta*, described by us several pages later in the same paper. Bruner's *gracilicornis*, which was considered a *Sisantum* by us,⁶ is a quite different member of this group, while *meridionalis*, *azteca* and *guatemalae* are closely related, so much so that we prefer not to comment further on them until series are available. Bruner's *Orphulella crassa*, described from Rio de Janeiro, agrees completely with the material now before us, and is clearly a synonym of *Orphula pagana*.

The rather extensive series of this species now before us shows there is some size variation and also some slight fluctuation in the degree of angulation of the fastigium, but in no case is this sufficiently marked to prevent the ready recognition of the species. The tegmina and wings surpass the apices of the caudal femora in but a single specimen, a male, in which the difference is slight. All the males seen are in the brown phase and in the female sex the green phase is scarcer than the brown one, but fifteen being in the completely colored green phase and four with the dorsum green.

The species is known from the vicinity of Rio de Janeiro, several localities in the state of São Paulo, from the state of Espirito Santo (recorded by us as *Orphulina veteratoria*) and Sete Lagoas, Minas Geraes (recorded by Bruner as *Orphulella crassa?*).

***Orphulella punctata* (DeGeer)**

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

Tijuca. April 9 to 11, 1913. (Malcolm Burr.) Three females.

Petropolis. April 12 to 14, 1913. (Malcolm Burr.) Two females.

⁶ Entom. News, xxii, p. 250, (1911).

Amblytropidia robusta Bruner

1906. *Amblytropidia robusta* Bruner, Proc. U. S. Nat. Mus., xxx, p. 631. [Sapucay, Paraguay.]

Tijuca. April 9 to 11, 1913. (Malcolm Burr.) Seven males, two females.

These specimens are slightly different from a topotypic series of this species, the caudal femora of the females averaging slightly more slender. This feature, however, shows relatively considerable variation in the Sapucay material, and the difference between the Tijuca females and the average of the topotypes of that sex (seven in number) is no greater than the individual variations in this feature among the latter series. One of the females has a pale subcostal tegminal line, which is lacking in all the other individuals of *robusta* seen by us. As we know this variation occurs in *A. vittata* the feature is only individual.

The range of the species is considerably extended to the eastward by the present record, the previously known localities for the species being Sapucay and Puerto Bertoni, Paraguay and the Misiones, Argentina.

Peruvia ensicornis (Rehn)

1913. *Fenestra ensicorne* Rehn, Proc. Acad. Nat. Sci. Phila., 1913, p. 83, figs. 1 and 2. April 30, 1913. [Espírito Santo, Brazil.]

1913. *Toxopterus orientalis* Bruner, Ann. Carneg. Mus., viii, p. 449. May 5, 1913. [Rio de Janeiro, Brazil.]

Tijuca. April 9 to 11, 1913. (Malcolm Burr.) One male, one female.

For the use of *Peruvia* Scudder in place of *Toxopterus* Bolivar, see the recent discussion of the problem by the author.⁷ The above synonymy is evident after a careful study of the type of *ensicorne* and the description of *orientalis*. The type of *ensicorne* has now lost its antennae, and these were evidently incomplete when the species was described and figured, thus the clavate apex was not described.

It is evident from an examination of this species and comparison with the genotypes of *Peruvia* (*P. nigromarginata*) and *Fenestra* (*F. bohlsii*), that the two genera are quite close to one another, the present form constituting, in fact, a connecting link, although

⁷ Trans. Amer. Entom. Soc., xlii, pp. 280 and 281, (1916).

nearer *nigromarginata* in the sum total of characters. The wing of the male has the anterior field hyaline as in *Fenestra*, instead of semi-opaque as in *Peruvia*, the posterior field similar in opacity to the radiate field, as in *Peruvia*, instead of hyaline like the anterior field as in *Fenestra*, while the black margin of the radiate field, the opaqueness of the same and the general venation are of the *Peruvia* type. The head is nearer *nigromarginata* in form, but the antennae are nearer *Fenestra* in type except for the clavate extremity. The pronotum is *Peruvia*-like in general form but shortened, with the lateral carinae more irregular and the surface texture very rough. The tegmina are nearer *nigromarginata* in form and vein disposition. The caudal limbs are more like those of *Peruvia*.

The female is quite different from the male, being heavily built with abbreviate tegmina and wings, the former not exceeding the base of the supra-anal plate and the wings being slightly shorter than the tegmina. The venation of the female is reduced, but the general plan is that of the male tegmina and wings, the anterior field of the wings, however, being blackish and subopaque. The antennae are strongly depressed, sub-ensiform, with no distal clavation. The measurements of the female are: length of body, 29 mm.; length of pronotum, 6.7; greatest width of pronotal disk (caudad), 3.9; length of tegmen, 14.2; greatest width of tegmen, 4.5; length of caudal femur, 17.7.

The species is apparently restricted to the southeastern coast region of Brazil, where it replaces the interior and Amazonian *P. nigromarginata*. Bruner's record of the latter species (as *Toxopterus miniatus*) from Rio de Janeiro, was in all probability based on the single male which he later described as *T. orientalis*.

LOCUSTINAE

Diedronotus discoideus (Serville)

1831. *Tropinotus discoideus* Serville, Ann. Sci. Nat., xxii, p. 273. [Brazil.]

Tijuca. April 9 to 11, 1913. (Malcolm Burr.) Three females, two immature females.

This is the most easterly definite record of the species, aside from one of Bahia material given by Pictet and Saussure. We feel rather dubious about this latter record really referring to

discoideus, as all the material of the genus we have seen from that portion of Brazil represents the allied *D. angulatus*.

Elaeochlora trilineata (Serville)

1831. *Xiphicera trilineata* Serville, Ann. Sci. Nat., xii, p. 272. [Brazil.]

Petropolis. April 12 to 14, 1913. (Malcolm Burr.) Three males.

This beautiful species has been recorded from Rio de Janeiro by several authors. It probably replaces, in that general region, *E. viridicata* (Serville), which is rather widely distributed to the southward and southwestward.

Chromacris miles (Drury)

1773. *Gryll[us] Loc[usta] miles* Drury, Illustr. Nat. Hist. Exot. Ins., ii, pp. 79 and Index, pl. xlii, fig. 2. [Bay of Honduras.]

Petropolis. April 12 to 14, 1913. (Malcolm Burr.) Three males.

These specimens belong to the color form having the pale, normally exposed, markings decidedly yellow and the wing disk of the same color, while the tegmina are greenish. This phase superficially resembles the Central American *C. colorata*, but the antennae are always entirely black. We have the same phase from Jundiahy, state of São Paulo, and Rio Capivary, state of Santa Catharina, Brazil.

Leptysmia filiformis (Serville)

1839. *Opsomala filiformis* Serville, Hist. Nat. Ins., Orth., p. 593. [The North of the State of São Paulo, Brazil.]

Tijuca. April 9 to 11, 1913. (Malcolm Burr.) Three males, two females, one immature male, one immature female.

Petropolis. April 12 to 14, 1913. (Malcolm Burr.) One male.

Vilerna rugulosa Stål

1878. *V[ilerna] rugulosa* Stål, Bihang K. Svenska Vet. Akad. Handl., v, no. 4, p. 61. [Peru; Rio de Janeiro, Brazil.]

Tijuca. April 9 to 11, 1913. (Malcolm Burr.) One male, one female.

Petropolis. April 12 to 14, 1913. (Malcolm Burr.) One male, one female.

These specimens are specifically identical with previously reported material from several localities in Paraguay, but in

common with other material from the eastern coastal region of Brazil (Espírito Santo and Rio de Janeiro) they have the fastigium narrower in both sexes than in the Paraguayan individuals. The species is known to range northward as far as Pará, Brazil, southward to Santa Catharina, Brazil and westward to northern Argentina.

***Abracris caeruleipennis* (Bruner)**

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

Tijuca. April 9 to 11, 1913. (Malcolm Burr.) One male, one female.

These specimens are quite pale in general coloration, in this respect resembling a pair from Chapada, Matta Grosso, Brazil, now before us, but in the case of the Tijuca pair this may be due to specimens having been immersed in alcohol, which, however, was not the case with the Chapada pair. This species is the most variable and perplexing member of the genus, having caused some confusion in our studies of the material of this genus in the past.⁸

The species is known from as far north as the state of Pará, Brazil, and south to the Misiones and province of Formosa, Argentina, west to southern Bolivia.

***Sitalces volxemi* Stål**

1878. *S[italces] volxemi* Stål, Bihang K. Svenska Vet. Akad. Handl., v, no. 9, p. 16. [Brazil.]

Petropolis. April 12 to 14, 1913. (Malcolm Burr.) One female.

⁸ As we have shown elsewhere (Trans. Amer. Entom. Soc., xlii, p. 294, (1916) the following records of *signatipes* made by us refer to *caeruleipennis*: Proc. Acad. Nat. Sci. Phila., 1907, p. 185 (Sapucay, Paraguay) [part]; Ibid., 1908, p. 17 (São Paulo, Brazil); Proc. U. S. Nat. Mus., xxxvi, p. 149 (part: Chapada, Brazil material); Proc. Acad. Nat. Sci. Phila., 1913, p. 339 (Misiones, Argentina); Ibid., 1915, p. 285 (Misiones, Argentina). The closely related *A. conspersipennis* Bruner (Biol. Cent.-Amer., Orth., ii, p. 281, (1908)), from Chapada, Brazil, we have not recognized in the collections in hand. It is described as having the interocular space about as wide as the frontal costa in both sexes (Ann. Carneg. Mus., viii, p. 110, (1911)), a condition we have never seen.

This specimen fully agrees with Stål's description of this apparently little known species. While the median carina of the pronotum is somewhat more evident than Stål's term "obsoleta" would indicate, it is not as solid or sharp as in the allied *S. robustus* Bruner, which is a larger species with a broader interocular space, a sulcate frontal costa and shorter tegmina. This appears to be the first exact record of the species.

Schistocerca fimbriata (Thunberg)

1824. [*Gryllus*] *fimbriatus* Thunberg, Mém. Acad. Imp. Sci. St. Pétersb., ix, p. 428. [Brazil.]

Schistocerca flavo-fasciata Stål, Scudder, etc., (not *Acrydium flavo-fasciatum*] DeGeer).

Tijuca. April 9 to 11, 1913. (Malcolm Burr.) Two females.

Petropolis. April 12 to 14, 1913. (Malcolm Burr.) Four males, one female.

As we have already shown⁹ DeGeer's *flavo-fasciatum* is distinct from this species, being a form of northern South America. Stål, who examined the type of Thunberg's *Gryllus nitens*, *fimbriatus* and *nitidus*, considered these species to be the same as DeGeer's form, the type of which was missing. Of these names *nitens*, the oldest, seems from the description more likely to be true *flavo-fasciata*. Stål was, of course, unaware of the differences separating the true *flavo-fasciata* (*aequalis* Scudder) and the species called *flavo-fasciata* by Scudder. Thunberg's *fimbriatus* stands next in availability and may be used, at least provisionally, for the present species, as it shows no features of disagreement from the original description.

This species can be readily distinguished in both sexes from *flavo-fasciata* by the narrower marginal field of the tegmina, which as far as available material goes is always rather narrowly striped with pale, while the male cerci are more tapering and never broadly truncate distad as in the other species.

Scudder's *infumata* is quite close to *fimbriata*, as type material of the former now before us shows, and it is very probable that *infumata* will eventually prove to be but a geographic race or an extreme refinement of the characters of *fimbriata*.

The species is known to range from Asuncion and Luque, Paraguay, north to Chapada and Pará, Brazil, east to the vicinity

⁹ Trans. Amer. Entom. Soc., xlii, pp. 304 and 305, (1916).

of Rio de Janeiro. We feel there may be some confusion with *flavo-fasciata* in the Pará record.

Dichroplus punctulatus (Thunberg)

1824. *Gryllus punctulatus* Thunberg, Mém. Acad. Imp. Sci. St. Pétersb., ix, p. 408. [Brazil.]

Petropolis. April 12 to 14, 1913. (Malcolm Burr.) One male, one female.

This species is widely distributed over South America.

Dichroplus brasiliensis Bruner

1906. *Dichroplus brasiliensis* Bruner, Proc. U. S. Nat. Mus., xxx, pp. 678, 682. [Victoria, Brazil.]

Rio de Janeiro. April 9 to 14, 1913. (Malcolm Burr.) Two males, two females.

Tijuca. April 9 to 11, 1913. (Malcolm Burr.) Two males, one female.

Petropolis. April 12 to 14, 1913. (Malcolm Burr.) Three males, thirteen females, two immature females.

These specimens are inseparable from single females from Espirito Santo and São Paulo, Brazil, previously recorded by us. The pale lateral lines on the dorsum are indicated in all the adults in the present series, but subobsolete in the immature individuals. In the males these bars are especially marked. The enclosed dark area varies appreciably in width in both sexes. The species is known only from the coastal section of southeastern Brazil. The record of *brasiliensis* from the territory of Misiones, Argentina, recently made by the author is incorrect, as the single male there reported belongs to an allied new species, which will shortly be described by us. The male genitalia of *brasiliensis* were not described by Bruner, whose only description of the species consists of several features in a key and a few comments on another page, and aside from the features of the genitalia *brasiliensis* and the new form are extremely close. The chief features of the male genitalia of *brasiliensis* are as follows: Furcula distinct but minute, longer than broad, rounded, depressed, closely placed; supra-anal plate acute trigonal, the immediate apex narrowly rounded, median line distad of this subcarinate, elevated, surface subtectate in transverse section, the lateral margins distinctly reflexed proximad, thus forming a

v-shaped trough on each side; cerci slender, subcompressed, when seen from the lateral aspect the proximal half is regularly tapering, the distal half bears a slight widening along the dorsal margin which tapers to the acute apex, when seen from the dorsum the cerci are parallel proximad, faintly incurved from the middle to the distal fourth, thence to the apex straight parallel; subgenital plate moderately produced, subcompressed, apex rounded subrostrate, dorsal margin elongate and narrowly V-shaped, the same gently arcuate when seen from the lateral aspect.

Dichroplus amoenus (Stål)

1878. *P[ezotettix]* (*Dichroplus*) *amoenus* Stål, Bihang K. Svenska Vet.-Akad. Handl., v, no. 9, p. 8. [Peru.]

Rio de Janeiro. April 9 to 11, 1913. (Malcolm Burr.) One female.

Tijuca. April 9 to 11, 1913. (Malcolm Burr.) Two males, three females, one immature male.

Petropolis. April 12 to 14, 1913. (Malcolm Burr.) Three males, eleven females.

While a portion of this interesting series has been immersed in a liquid preservative for a short time, and its coloration is in consequence somewhat altered, we find positive evidence in the present material of the occurrence of two distinct color phases in the species. This condition occurs in a few other members of the Melanopli, such as *Melanoplus herbaceus*, but it is relatively uncommon in the Locustinae. The green phase is that described by Stål, with the base color of the caudal femora and cephalic and median limbs and abdomen clear oil green to oil yellow, the femora without transverse bars and the black of the distal extremity strongly contrasted. The brown phase has the green replaced by rufous to ferruginous, the caudal femora with three distinct, transverse, greenish black bars on the dorsal surface, which fuse and color the greater portion of the lateral surface, while the distal extremity of the femora loses its contrasting coloration. The color of the caudal tibiae is changed but little, being but faintly darker in the brown individuals, which have the pale bars on the head and pronotum less strongly contrasted. All the decided brown specimens (two females) are from Petropolis, but another female from the same locality and one of the same sex from Tijuca are nearly intermediate between the two phases, having the dorsal bars on the femora weakly but dis-

tinctly marked, and the lateral face nearly uniform greenish or with faint darker markings. The tegmina vary much in the contrast of their colors, one extreme having their base color with a narrow humeral line of pale ochraceous, the other extreme being pale with a few scattered circular spots of dark color. The solid color of the dorsal field of the tegmina breaks up before the black of the lateral field weakens. The dark extreme of tegminal coloration is more pronounced in the specimens in the green phase, but some of the individuals in the same phase have the contrasts of the tegmina no stronger than in the brown phase specimens.

The only other Brazilian record is of a specimen from Minas Geraës, which is in the green phase.

Pycnosarcus atavus (Saussure)

1859. *P[olysarcus] atavus* Saussure, *Revue et Magasin de Zoologie*, 26 ser., xi, p. 393. [Bahia, Brazil.]

Tijuca. April 9 to 11, 1913. (Malcolm Burr.) One male.

This genus and species is known only from eastern Brazil, the localities being Bahia, Minas Geraës and the Rio de Janeiro region.

TETTIGONIIDAE

PHANEROPTERINAE

Phanoptera nana Fieber

1853. *Phanoptera nana* Fieber, *Lotos*, iii, p. 173. [Portugal.]

Rio de Janeiro. April 8, 1913. (Malcolm Burr.) Two males.

This African species, which has also been taken in Portugal, was recorded from Rio de Janeiro by Brunner.¹⁰ The present specimens are inseparable from a pair from Kwidschi Island, Lake Kivu, Central Africa, and agree in every particular with the description of the species. As suggested by Brunner, the species certainly found its way to America in shipping, probably through the medium of slave ships, which made very frequent voyages from West Africa to Brazil. The African cricket *Scapsipedus limbatus* was, in every probability, similarly introduced into the West Indies.¹¹

¹⁰ Monogr. der Phaneropt., p. 213, (1878).

¹¹ See Rehn and Hebard, *Proc. Acad. Nat. Sci. Phila.*, 1915, p. 297 footnote 7, (1915).

Anaulacomera intermedia Brunner

1878. *A[naulacomera] intermedia* Brunner, Monogr. der Phaneropt., pp. 278, 283. [Brazil.]

Petropolis. April 12 to 14, 1913. (Malcolm Burr.) One male.

The present species fully agrees with the original description of this very distinct species. Bruner¹² has recorded a male of the form from Rio de Janeiro.

COPIPHORINAE

Neoconocephalus virescens Karny

1907. *Neoconocephalus virescens* Karny, Abhandl. k.-k. zool.-botan. Gesell. Wien, iv, heft iii, pp. 22, 29. [Marcapata, Peru.]

Petropolis. April 12 to 14, 1913. (Malcolm Burr.) One male.

This specimen fully agrees with the brief description of Karny, and also with his measurements. It is possible that it may represent a distinct species, as the two localities are so widely separated, but we have no valid reason at present to consider the Petropolis male as other than *virescens*.

Neoconocephalus irroratus (Burmeister)

1838. *C[onocephalus] irroratus* Burmeister, Handb. der Entom., ii, abth. ii, pt. i, p. 705. [Brazil.]

Petropolis. April 12 to 14, 1913. (Malcolm Burr.) Five males, two females.

These specimens fully agree with the description of this species given by Redtenbacher, except for one feature, which is the absence of black areas at the base of the spines on the median femora. We find, from the present material, that these areas may or may not be indicated, and in certain specimens mere shadowy indications of the blackish patches are evident. There can be no question of the specific identity of the individuals with or without these markings. Four of the males show distinct blackish points on the tegmina, the other specimens have no indications of these. The size variation is very great, the extremes of each sex being as follows (measurements in millimeters):

¹² Ann. Carneg. Mus., ix, p. 319, (1915).

	Length of body	Length of pronotum	Greatest caudal width of pronotum	Length of tegmen	Length of caudal femur	Length of ovipositor
♂	25	7.6	5.2	35.8	20	..
♂	30	9.2	6.1	42.4	24.5	..
♀	31.9 ¹³	7.9	5.2	46	24	30
♀	35.2 ¹³	8.3	5.4	44.5	26.9	29

We have not used DeGeer's name *tuberculatus* for this species, as has been done by several recent authors, because it seems evident to us that DeGeer had a very different species, and probably one of another genus before him. Stål,¹⁴ in commenting on the DeGeerian material says the fastigii touch in the type of the species. This would show it to be quite distinct from *irroratus* and probably from *Neoconocephalus*.

CONOCEPHALINAE

Conocephalus saltator (Saussure)¹⁵

1859. *X[iphidium] saltator* Saussure, Revue et Magasin de Zoologie, 2e ser., xi, p. 208. [Guiana.]

Tijuca. April 9 to 11, 1913. (Malcolm Burr.) Eight males, five females, one immature female.

Conocephalus truncatus (Redtenbacher)¹⁶

1891. *Xiphidium truncatus* Redtenbacher, Verh. k.-k. zool.-botan. Gesell. Wien, xli, p. 522. [Brazil.]

Tijuca. April 9 to 11, 1913. (Malcolm Burr.) One female.

Petropolis. April 12 to 14, 1913. (Malcolm Burr.) Six males, ten females.

GRYLLIDAE

GRYLLINAE

Hygronemobius dissimilis (Saussure)

1874. *Nemobius dissimilis* Saussure, Miss. Sci. Mexiq., Réch. Zool., vi, p. 387. [Brazil.]

Petropolis. April 12 to 14, 1913. (Malcolm Burr.) Two males.

¹³ Exclusive of ovipositor.

¹⁴ Recens, Orthopt., ii, p. 110, (1874).

¹⁵ Recorded by Rehn and Hebard, Trans. Amer. Entom. Soc., xlii, p. 278, (1915).

¹⁶ Recorded by Rehn and Hebard, Trans. Amer. Entom. Soc., xlii, p. 281, (1915).

These specimens have been recorded by Hebard in his study of the genus.¹⁷

Gryllus assimilis (Fabricius)

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

Tijuca. April 9 to 11, 1913. (Malcolm Burr.) One female.¹⁸

TRIGONIDIINAE

Anaxipha pallens (Stål)

1860. *Trigonidium pallens* Stål, Kong. Svenska Fregatt. Eugenies Resa, Insecta, p. 318. [Rio de Janeiro, Brazil.]

Tijuca. April 9 to 11, 1913. (Malcolm Burr.) Sixteen males, eleven females.

Petropolis. April 12 to 14, 1913. (Malcolm Burr.) Nine males, eight females, one immature female.

The series is clearly referable to Stål's *pallens*, which seems to have been unrecognized since the original description. The latter is quite brief, but its features are fully apparent in this quite extensive series.

The specimens have been dried after immersion in liquid preservative, and in consequence their color tones have been much altered, but the pattern is clearly apparent and as described.

An examination of the material for the character of the perforation of the cephalic tibiae shows that all¹⁹ have the tibiae biperforate. Two males and one female from Tijuca and one of each sex from Petropolis have the wings caudate; the more usual condition, and that described by Stål, has them completely hidden under the tegmina, than which the wings are distinctly, though somewhat variably, shorter. The size varies very considerably, from faintly under to appreciably over Stål's dimensions.

Symphyloxiphus abbreviatum (Bruner)

1916. *Cyrtoxipha abbreviata* Bruner, Ann. Carneg. Mus., x, p. 408. [Chapada, Matto Grosso, Brazil.]

Petropolis. April 12 to 14, 1913. (Malcolm Burr.) Two females.

¹⁷ Entom. News, xxvi, p. 197, (1915).

¹⁸ This specimen has been recorded by Rehn and Hebard in a study of the American representatives of the genus (Proc. Acad. Nat. Sci. Phila., 1915, p. 319, (1915)).

¹⁹ Two specimens have no cephalic limbs.

These specimens agree quite well with the original description of this species, which will fall more naturally into *Symphyloxiphus*²⁰ than into *Cyrtoxipha* or *Anaxipha*. The tegmina are of the type found in the female of *Symphyloxiphus*, with the veins somewhat more elevated but of similar direction and disposition, while the distal palpal joint is more of the type of *Anaxipha*. The form of the proximal antennal joint is, however, much like that of the genotype. It would seem that *S. magnificum* Rehn, the genotype, shows a number of features of decided difference from *Anaxipha*, and even more from *Cyrtoxipha*, but that certain other species, among them *abbreviatum*, to a degree bridge this gap. We feel the affinity of these forms is more properly expressed by ranging them with *magnificum*, although in certain features they are less divergent from *Anaxipha* than is *S. magnificum*. Without males we can not make the full comparisons we should like.

Symphyloxiphus pulex new species (Pl. XXVII, figs. 7, 8 and 9.)

Closely related to *S. abbreviatum* (Bruner), agreeing in the general form, but differing in the proportionately broader inter-antennal portion of the rostrum, the shorter and broader pronotum, the more quadrate lateral lobes of the pronotum, the more regularly disposed and less numerous dorsal tegminal venation of the female, and in the shorter and relatively more robust ovipositor and caudal femora. When compared with *S. magnificum* Rehn, this species is readily distinguishable by its shorter distal palpal joint, its broader pronotum, shorter cephalic limbs, more sparsely and more strongly venose tegmina, more robust and inflated caudal femora, in the shorter and more robust ovipositor, as well as the non-strigate external face of the caudal femora. From *bicolor* (Chopard)²¹ the new form apparently differs in the same features as from *magnificum*.

Type.—♂; Petropolis, State of Rio de Janeiro, Brazil. April 12 to 14, 1913. (Malcolm Burr.) [Acad. Nat. Sci. Phila., Type no. 5339.]

²⁰ Rehn, Proc. U. S. Nat. Mus., xxx, p. 603, (1906). [Genotype: *S. magnificum* Rehn, from Costa Rica.]

²¹ Vide infra.

Size small: form robust, compact, puliciform: surface of all exposed parts, excepting the tegmina, covered to a greater or lesser degree with short, adpressed hairs. Head short, strongly transverse, its greatest depth subequal to the width across eyes: occiput rather strongly declivent ventro-cephalad, the least interocular width faintly greater than the greatest width of the eye, shallow, paired juxta-ocular depressions situated at the point of least width: interantennal portion of rostrum relatively broad, nearly subequal in width to the proximal antennal joint, rounded transversely and strongly arcuate when seen from the side: infra-antennal portion of face strongly transverse: palpi moderately slender and elongate, third and fifth joints subequal in length, the former weakly arcuate, the latter strongly tubiform and with its distal margin transversely truncate, the distal width of the fifth joint contained about two and one-fourth times in the length of the same; fourth joint two-thirds as long as the fifth: eyes in basal outline broad subreniform ovoid, their depth about twice that of the infra-ocular portion of the genae, when seen from the dorsum the eyes are quite prominent and directed moderately cephalad: antennae more than twice as long as the body, proximal joint large, broad; second joint hardly thicker than the succeeding ones, which are covered moderately closely with adpressed hairs and with scattered erect hairs. Pronotum with its form transverse when seen from the dorsum, the greatest caudal width contained almost twice in the greatest length, strongly narrowing cephalad, the greatest cephalic width equal to about three-fifths of the caudal width: cephalic and caudal margins of disk subtruncate, the disk very broadly rounding ventro-laterad into the lateral lobes: surface of disk with a distinct medio-longitudinal impressed sulcus on cephalic half of disk, the median region of the disk with, in addition, a poorly defined impressed triangular area: lateral lobes subquadrate in form, faintly deeper than long, the ventral angles well rounded, the ventral portion of the lobes bent ventro-mesad toward the coxae. Tegmina surpassing the apex of the abdomen by nearly the dorsal length of the pronotum, relatively broad, the greatest width of the dorsal field contained slightly more than twice in the length of the same: dorsal venation as shown in figure. Wings aborted. Subgenital plate narrowing distad, the apex bisarcuate emarginate: cerci elongate, tapering, surpassing the apices of the tegmina, strongly and thickly hirsute. Cephalic and median femora moderately robust: cephalic tibiae subequal to the femora, hardly at all fusiform, straight, rather slender; cephalic face imperforate, caudal face with a distinct elliptical foramen: proximal joint of cephalic tarsi very robust, nearly as deep as the tibiae. Caudal femora in length approximately subequal to the tegmina, moderately compressed, in general form rather strongly inflated, tapering to a relatively slender apex: caudal tibiae subequal to the femora in length, slender, armed with three pairs of marginal spurs, which are very elongate, slightly unguiculate distad, diverging from the axis of the tibia at an angle of about 35° , external distal spurs very small, the median one nearly twice the length of the ventral one, distinctly more than twice the length of the dorsal one; internal distal spurs two in number, ventral one very long, two-thirds as long as the metatarsus, subfusiform, dorsal one two-thirds as long as the ventral one, tapering: caudal metatarsi subequal to the length of the remaining joints of the tarsus, relatively heavy, weakly compressed,

disto-internal spur two-thirds as long as the metatarsus, second joint of tarsus elongate-elliptical in outline.

Allotype.—♀; Tijuca, Rio de Janeiro, Brazil. April 9 to 11, 1913. (Malcolm Burr.) [Acad. Nat. Sci. Phila.]

Differing from the above description of the type in the following features. Pronotum less strongly transverse, the caudal width not more than one-third again as great as the length, with the cephalic narrowing less pronounced, more nearly quadrate. Tegmina falling short of the apex of the abdomen by about one-third of their length, when closed and seen from above rectangulate in form, the greatest width of the dorsal field of the single tegmen contained more than twice in the tegminal length: costal margin strongly arcuate proximad, faintly arcuate-emarginate mesad, thence broadly and gradually arcuate to the rotundato-truncate apex of the dorsal field; sutural margin nearly straight: venation pronounced, elevated; of the dorsal field regular, composed of six longitudinal veins, with about four intercalated false nervures, all connected by a variable number of cross-nervures; of lateral field composed of the straight mediastine vein and three supplementary nervures, the first marginal and strongly sinuate, the second brief and incomplete, the third parallel to and equally developed with the mediastine vein. Ovipositor faintly longer than the cephalic femur, moderately falciform, slightly more so proximad than elsewhere, division of valves at three-fifths of length from base, apex strongly acuminate, dorsal and ventral margins and contiguous margin of dorsal valves finely serrulate: subgenital plate short, subrostrate. Caudal tibiae with all spurs more elongate than in the male, the proportions of the distal ones to the metatarsus and each other remaining the same, the ventro-internal one more tapering: caudal metatarsus more elongate and slender, distinctly longer than the remaining tarsal joints, disto-internal spurs hardly more than one-half as long as the metatarsus.

All of the material of this species before us either has been immersed in alcohol, and therefore has a coloration clearly not that of nature, or is so badly damaged that the color of certain portions of the body cannot be ascertained on account of their absence. The following color description is therefore a purely composite one, drawn from the entire series. Pronotum, genae, face, cephalic and median femora except for narrow, pale, distal sections, and the proximal half (♀) or all (♂) of the abdomen, blackish brown. Tegmina of the female of the same color. The tegmina of the male, the distal portion of the abdomen in the female, the caudal femora, the extremities of the cephalic and median femora, and all of the tibiae and the tarsi except as qualified as below, warm buff to ochraceous-buff. The head has the occiput pale, to a greater or lesser degree with fuscous, which generally resolves itself into a quadrilineate pattern; eyes margined caudad, ventrad and occasionally dorsad with pale, a pale infra-ocular line on the genae indicated; eyes hair brown to cinnamon brown; antennae pale with the proximal joint infuscate; palpi very pale, the distal joint marked distad more or less distinctly with fuscous. Ovipositor of female pale, ferruginous washed distad. Caudal femora with a fine dorsal and another

external line of fuscous, these often subobsolete, the genicular arches occasionally blackish-brown; caudal tibiae with or without points of blackish-brown at the base of each marginal spur; caudal tarsi similarly with or without the entire second and apex of third joint blackish-brown. A single pair from Tijuca have a very recessive type of coloration, the pronotum in both sexes and the tegmina in the female as well being yellow ocher.

♂ (*type*): length of body, 5 mm.; length of pronotum, 1.2; greatest (caudal) width of pronotum, 2.1; length of tegmen, 4.1; greatest width of dorsal field of tegmen, 2.2; length of caudal femur, 4.2.

♀ (*allotype*): length of body, 5.2 mm.; length of pronotum, 1.2; greatest width of pronotum, 1.5; length of tegmen, 3.1; greatest width of dorsal field of tegmen, 1.4; length of caudal femur, 5; length of ovipositor, 1.8.

In addition to the type and allotype we have examined six paratypes (three males and three females) from the same general region and the same collection. These were taken at Petropolis (1 ♂, 1 ♀) and Tijuca (2 ♂, 2 ♀) on the dates given above for the type and allotype. As we have said above under color comments, all the material has been injured through color change or breakage of parts. In addition to these we have before us five females from La Piedrita, Venezuela, taken February 16, 1911 (S. Brown), and a single female from Pará, state of Pará, Brazil (C. F. Baker), in the collection of the Academy. This material from Venezuela and northern Brazil shows certain features of difference, as somewhat shorter form, more robust palpi and apparent color tendencies, which may make it necessary at a future date, when more and perfect material is at hand, to separate the more northern insects, but for the present it seems best to permit them to remain under *pulex*. We do not, however, consider them paratypes of the new species. In the allotypic female we find four external marginal spurs on one caudal tibia,²² all the other specimens have three. In all the material the perforation of the cephalic tibiae is as described, and in none are the wings developed.

The genus *Symphyloxiphus* also contains the two species described from western Ecuador by Chopard as *Anaxipha riveti* and *A. bicolor*.²³ The latter is clearly a member of the present genus, extremely close to, if distinct from, *S. magnificum* (the genotype), and we have no hesitation in assigning it without

²² This specimen has but a single caudal limb remaining.

²³ Miss. Serv. Geogr. pour Mesure Arc Mérid. Equat. Amér. Sud., x, fasc. i, pp. 49 to 50, pls. v, fig. 6, vi., figs. 7, 8, 13, 15 and 16.

material. Of *riveti*, however, we have before us a series of two males and thirteen females, taken at Duran, Ecuador, June 23 and 28, 1914 (H. S. Parish), and two males and one female from Lima, Peru, August 12 and 19 and September 2, 1914 (same collector), all in the collection of the Academy. The species *riveti* is typical *Symphyloxiphus* in palpal proportions, in the general contour of the cephalic femora and in tegminal structure, as well as in the pattern of limb coloration. Our material demonstrates that macropterism occurs in the genus, all of the Duran material having caudate wings, while the Lima specimens have the wings atrophied. Correlated with this, as found to be the case in *Anaxipha*, all the macropterous specimens have the cephalic tibiae strongly elliptico-perforate on both faces, while those with atrophied wings have the foramina on the cephalic face greatly reduced or subobsolete. The type material of Chopard, which was of the latter type, was described as having the tibiae perforate only on the caudal face.

The following tentative key to the species which we would refer to *Symphyloxiphus*, may assist in the recognition and discrimination of the species. As we have said above, *bicolor* may not be distinct from *magnificum*, but on this point we cannot make a definite statement, as it is the only one of the species here assigned of which we have examined no material.

A. Distal palpal joint hardly, if at all, longer than the third joint, regularly tubiform (distal margin transversely truncate). Caudal femora with one or more longitudinal lines of black on external face. Cephalic tibiae straight, more slender.

B. Pronotum weakly transverse. Tegmina of female with less regularly disposed and more numerous veins in dorsal field. Caudal femora slender. Ovipositor slender and more elongate. Cephalic and median femora not largely black. **abbreviatum** (Bruner)

BB. Pronotum strongly transverse. Tegmina of female with more regularly disposed and more numerous veins in dorsal field. Caudal femora relatively robust. Ovipositor robust and shorter. Cephalic and median femora largely black. **pulex** new species

AA. Distal palpal joint distinctly longer than the third joint, elongate tubiform. Caudal femora without longitudinal black lines on external face. Cephalic tibiae as a whole gently arcuate, heavy.

B. Tegmina ochraceous, more or less marked with brownish, particularly on lateral field. Pronotum with the lateral lobes crossed by a broad black line. **riveti** (Chopard)

BB. Tegmina shining black, veins rather poorly indicated. Pronotum without broad black line on lateral lobes.

C. Head orange-ochraceous. Caudal femora without dorsal black line.
magnificum Rehn

CC. Head black. Caudal femora with dorsal black line.

bicolor (Chopard)

Phyllosecyrtus colliurides (Stål)

1860. *Cranistus colliurides* Stål, Kongl. Svenska Freg. Eugen. Resa, Insecta, p. 316, pl. v, fig. 5. [Rio de Janeiro, Brazil.]

Petropolis. April 12 to 14, 1913. (Malcolm Burr.) One male, one female.

These specimens clearly represent this interesting species, which has been subject to some vicissitudes in its interpretation in the past. We know little concerning the extent of its distribution and almost nothing about its color variations. The present specimens have the pronotum colored exactly as in *P. canotus*, a specimen of which is also before us, but *colliurides* differs in being larger, with solidly colored tegmina and much more decidedly projecting wings. Stål, in the original description, refers to the subchitinous exposed portions of the wings as cerci, saying also, "alae nullae," a pardonable error, for such it is the figure demonstrates. Saussure²⁴ has added a touch of confusion to this species by giving 20.5 mm. as the length, an evident error for 9.5 or 10.5, as the remainder of the measurements would show. Stål gives the length as $9\frac{1}{2}$ mm.

The figure given by Burmeister as *colliurides*²⁵ does not represent the species as we understand it from the above, practically topotypic, material.

²⁴ Mel. Orthopt., ii, fasc. vi, p. 640 (1878).

²⁵ Abhandl. Gesell. Halle, xv, p. 12, (1880).

EXPLANATION OF PLATE XXVII

- Fig. 1.—*Hypnornoides burri* new genus and species. *Type*. ($\times 7$)
- Fig. 2.—*Hypnornoides burri* new genus and species. Cephalic aspect of head. *Type*. (Greatly enlarged.)
- Fig. 3.—*Chorisoneura bisignata* new species. Tegmen of *type*. ($\times 7$)
- Fig. 4.—*Chorisoneura bisignata* new species. Pronotum of *type*. ($\times 7$)
- Fig. 5.—*Chorisoneura bisignata* new species. Anterior field of wing of *type*. ($\times 7$)
- Fig. 6.—*Chorisoneura bisignata* new species. Ventral surface of apex of abdomen of male (*type*). (Greatly enlarged.)
- Fig. 7.—*Symphyloxiphus pulex* new species. Dorsal view of head and tegmina of male (*type*). ($\times 9$)
- Fig. 8.—*Symphyloxiphus pulex* new species. Palpus of *type*. (Greatly enlarged.)
- Fig. 9.—*Symphyloxiphus pulex* new species. Ovipositor of female (*allotype*). (Greatly enlarged.)



Rehn, James A. G. 1917. "On Orthoptera from the Vicinity of Rio de Janeiro, Brazil." *Transactions of the American Entomological Society* 43, 335–363.

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