

SYNOPTIC LIST OF PARAGUAYAN ACRIDIDÆ, OR LOCUSTS, WITH DESCRIPTIONS OF NEW FORMS.

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The present paper is based primarily on the extensive collection obtained from Mr. W. T. Foster, of Sapucay, Paraguay, and now belonging to the United States National Museum. In addition, the writer has personally collected in that country, besides having purchased several small collections from that section of South America.

To make the paper as complete as possible, Giglio-Tos's papers have been consulted, and all the forms not represented in the collections studied have been included.

TABLE FOR DETERMINING THE SUBFAMILIES OF PARAGUAYAN LOCUSTS.

- a. Claws of feet without a cushion or arolium between them; pronotum extending over the abdomen; tegmina or front wings lobiform TETTIGINÆ
- aa. Claws with the cushion or arolium present; pronotum not extending over the abdomen.
 - b. Antennæ, or feelers, shorter than the front femora, or thighs.
 - c. Head short, compressed in front EUMASTACINÆ
 - cc. Head greatly elongated, body apterous or subapterous PROSCOPINÆ
 - bb. Antennæ as long or longer than the front femora.
 - c. Prosternum, or breast, between base of front pair of legs smooth; not provided with a tubercle, swelling, or spine.
 - d. Fastigium of the vertex but little declivous, meeting the face in a more or less well-defined angle, the face usually very oblique. Wings, as a rule, without a dusky band TRUXALINÆ
 - dd. Fastigium of the vertex rounded at its point of junction with face, the latter vertical or nearly so. Wings when present usually with colored disk and well-defined dusky band EDIPODINÆ
 - cc. Prosternum, or breast, between base of front pair of legs laminately elevated in front, tuberculate or spined.
 - d. Foveolæ of the vertex above, contiguous, forming the apex of the fastigium. Rather clumsy insects, usually without or with abbreviated wings, but occasionally with these appendages complete PYRGOMORPHINÆ
 - dd. Foveolæ of the vertex lateral, never forming the apex of the vertex, often closed behind or entirely wanting. Prosternum distinctly spined or tuberculate. Wings variously formed ACRIDIINÆ

Subfamily TETTIGINÆ.

The grouse locusts are especially numerous in the Tropics, but on account of their small size and inconspicuous colors are rarely collected except by specialists. A few are at hand and others have been reported upon as coming from Paraguay. The two forms herewith described as new are characterized by Dr. J. L. Hancock, to whom they were submitted for study.

TABLE FOR DETERMINATION OF GENERA.

- a.* Front thighs more or less carinated above; front margin of pronotum in middle not advanced upon the back of head.
- b.* Body, even of the female, quite slender, the apex of pronotum greatly extended beyond the tip of hind femora *Nephele* Bolivar
- bb.* Body in both sexes obese, the apex of pronotum not at all or but little extended beyond the tip of hind femor. *Apotettix* Hancock, *Paratettix* Bolivar
- aa.* Front thighs not compressed, rather broadly and distinctly grooved; front margin of pronotum in middle angulate or more or less advanced upon the occiput.
- b.* Vertex in front terminating in oblique carinae; frontal costa rather broadly sulcate. *Tettigidea* Scudder
- bb.* Vertex in front not carinate; frontal costa very narrowly sulcate.

Batrachidea Serville

NEPHELE Bolivar.

NEPHELE ASMODÆUS (Serville).

Tettix asmodæus SERVILLE, Hist. Nat. Orthopt., 1839, p. 760.

Nephele asmodæus BOLIVAR, Essai Tettigide, 1887, p. 79.

Habitat.—This insect is credited to Asuncion, Paraguay, by Bolivar.^a

NEPHELE GRACILIS Bruner.

This insect, according to Doctor Hancock, belongs to the genus *Paratettix* and comes near to *P. caudatus* (Saussure). It occurs at Asuncion.

APOTETTIX Hancock.

The representatives of this genus fall between *Tettix* and *Paratettix*. They differ chiefly in the structure of the vertex and in having the first joint of the hind tarsi decidedly longer than the third. The following description was drawn up by Dr. J. L. Hancock, to whom the species is to be credited:

APOTETTIX BRUNERI, new species (Hancock).

Characters.—Male, body scabrus subtuberculate; moderately robust; ferrugineous, with the tibiae more or less lightly biannulate with fuscous, tarsal apices of the same color. Head well crowded under the pronotum to the eyes, not at all elevated or exserted. Vertex short, nearly twice the breadth of one of the eyes; median carina distinct, little

^aBoll. Mus. Zool. Anat. Torino, XV, 1900, No. 377, p. 3.

elevated anteriorly and produced; on either side between the eyes shallowly fossulate, but only lowering the vertex very little below the level of the eyes. Eyes small and globose. Frontal costa widely sulcate, the rami evenly divergent forward to the median ocellus, convexly produced between the antennae. Pronotum anteriorly truncate, posteriorly subulate, extending backward beyond the hind femora a distance equal to about half their length; dorsum rugose-scabrus, subtuberculose, rather wide between the shoulders, lightly convex, and behind the shoulders little flattened; humeral angles distinct, widely angulate and carinate; anterior carinae abbreviated being barely shorter than the eyes; median carina of pronotum percurrent, in front of the shoulders arcuate subdepressed; the posterior angles of the lateral lobes very little angulato-laminate outward, and obliquely truncate behind; elytral and posterior sinuses nearly equal in depth. Elytra oval; wings caudate, passing the pronotal process. Anterior femora compressed, the superior carinae convex, the lower margin undulate; breadth of middle femora equal to about one-half that of its length, carinae strongly compresso-carinate, above and below little lobate; posterior femora stout, the margins arcuate, minutely serrulate; posterior tibiae plurispinose, canthi minutely serrulate; the first article of the posterior tarsi distinctly longer than the third, the first two pulvilli equal in length and acute, the third little longer and flat below. Total length of body 10.2 mm.; pronotum 8.5 mm.; posterior femora 4.5 mm.

Type.—Cat. No. 9754, U.S.N.M.

Habitat.—Paraguay, January 25, 1901.

This species is distinguished from the other members of *Apotettix* by the broader vertex, the more scabrus dorsum and the subproduced obliquely truncated posterior angles of the lateral lobes of pronotum.

PARATETTIX Bolivar.

PARATETTIX SCHOCHII Bolivar.

Paratettix schochii BOLIVAR, Essai Tettigidae, 1887, p. 100.

This insect is credited to Asuncion, Paraguay, by Giglio-Tos. It is quite possible, however, that this is an error and another insect is referred to.

PARATETTIX BORELLII Giglio-Tos.

Paratettix borellii GIGLIO-TOS, Boll. Mus. Zool. Anat. Torino, XII, 1897, No. 302, p. 28.

Paratettix toltecus GIGLIO-TOS, Boll. Mus. Zool. Anat. Torino, IX, 1894, No. 184, p. 5.

Habitat.—Very common throughout middle Argentina and northward. Quite likely also occurs in Paraguay, though no specimens are at hand from that country.

PARATETTIX CNEMIDOTUS (Burmeister).

Tetrix cnemidota BURMEISTER, Handb. Ent., II, 1838, p. 659.

Paratettix cnemidotus BOLIVAR, Essai Tettigidae, 1887, p. 100.

Habitat.—This Brazilian insect, so thinks Giglio-Tos, has been taken in the Province of Jujuy, Argentina. It no doubt occurs as well in Paraguay, since most of the representatives of this subfamily enjoy a rather wide distribution.

PARATETTIX CAUDATUS (Saussure).

One female labeled simply "Paraguay," January 25, 1901, and two females and a male, from Sapucay, Paraguay. W. T. Foster, collector.

TETTIGIDEA Scudder.

TETTIGIDEA MULTICOSTATA Bolivar.

Tettigidea multicostata BOLIVAR, Essai Tettigidae, 1887, p. 125.

Habitat.—This species is represented by specimens coming from Sapucay, where they were taken by W. T. Foster. It is also known to occur quite commonly throughout northern Argentina and southern Brazil (Bolivar, Giglio-Tos).

TETTIGIDEA GRACILIS Bruner.

Tettigidea gracilis BRUNER, Locusts of Argentina, 1900, p. 17.

Habitat.—A single specimen, the type, of this insect is at hand. It was taken on the steamer near the borders of Paraguay by the writer. It is evidently a native of that country as well.

BATRACHIDEA Serville.

BATRACHIDEA FLAVONOTATA Bolivar.

Batrachidea flavonotata BOLIVAR, Essai Tettigidae, 1887, p. 126.

Habitat.—Asuncion, Paraguay. Possibly the same as the following species, described by Hancock:

BATRACHIDEA NOTATA, new species (Hancock).

Characters.—Male, body granulose, ferrugineo-fuscous, lateral lobes and lower portion of face similarly colored, legs pale. Vertex equal to one of the eyes in breadth, distinctly flattened and nearly on a level with the eyes, narrowed forward, the front margin truncate, on either side with minute abbreviated, rounded carina, mid-carina vestigial and minutely elevated anteriorly. Eyes subglobose. Frontal costa narrowly compressed, facial contour depresso-convexed, very little produced, not at all sinuate. Pronotum anteriorly strongly spiniform produced, posteriorly the apical process abbreviated acute, not extended

backward to the knees, antero-lateral margin behind the frontal spine very shallowly convexly excavate on each side, anterior carinae behind the front margin distinctly convergent backward, in length not quite equal to that of the eyes, median carina percurrent, substraight, little compresso-elevated, behind the spine anteriorly as far backward as the sulci distinctly compressed, and barely elevato-arcuate forward. Elytra elongate, acuminate forward, widest near the apex, and presenting a large oval pale macula, occupying about a third of the elytral area posteriorly (probably smaller in the female); wings undeveloped. Femoral margins entire, posterior femora stout, the superior margin arcuate, the antegenicular denticle acute; posterior tibiae plurispinose, the canthi minutely serrulate and little expanded toward the apex; the first article of the posterior tarsi with the third pulvilli barely longer than the first and second and straight below.

Total length of body, 9 mm.: pronotum, 6.5 mm.; posterior femora, 5 mm.

Type.—Cat. No. 9755, U.S.N.M.

Habitat.—Sapucay, Paraguay. W. T. Foster, collector.

Subfamily EUMASTACINÆ.

No specimens of this group are at hand, but the following-named genera and species are known to occur in the region covered by the present paper:

TABLE FOR DETERMINATION OF GENERA.

- a. Fastigium of the vertex very narrow, scarcely or not at all projecting in advance of the eyes..... *Eumastax* Burr
 aa. Fastigium of the vertex wider and more or less projecting in advance of the eyes..... *Masytes* Karsch

EUMASTAX Burr.

This generic name has recently been suggested by Malcolm Burr^a in place of *Mastax* Perty, which had been used several years before in Coleoptera. This being the typical genus of the subfamily necessitated the changing of that name also.

TABLE FOR DETERMINATION OF SPECIES.

- a. Apex of the vertex above the eyes, when viewed from the side, not visible. Tegmina and wings fully developed. Posterior femora irregularly black spotted..... *pardalina* Burr
 aa. Apex of the vertex above the eyes when viewed from the side plainly visible. Deflexed lobes of the pronotum with the anterior angle obtuse..... *versicolor* Burr

EUMASTAX PARDALINA Burr.

Eumastax pardalina BURR, Essai sur les Eumastacides, p. 51.

This insect was described as coming from Paraguay.

^a Anales de la Sociedad Española de Historia Natural, XXVIII, 1899.

EUMASTAX VERSICOLOR Burr.

Eumastax versicolor BURR, Essai sur les Eumastacides, p. 54.

This is also a Paraguayan species.

MASYNTEs Karsch.

TABLE FOR DETERMINATION OF SPECIES.

- a. Tegmina lobiform, elliptical, the apex broadly rounded. Pronotum truncate behind, the middle minutely notched *borellii* Giglio-Tos
 aa. Tegmina and wings perfectly developed. Pronotum rounded behind, the middle not notched *tigris* Burr

MASYNTEs BORELLII Giglio-Tos.

Masyntes borellii GIGLIO-TOS, Boll. Mus. Zool. Anat. Torino, XII, 1897, No. 302, p. 17.

It has been taken at San Pedro, Paraguay.

MASYNTEs TIGRIS Burr.

This is also recorded as coming from Paraguay.

Subfamily PROSCOPINÆ.

As indicated in the table for determining the subfamilies of Paraguayan locusts, it will be seen that the insects belonging to this subfamily are rather long, wingless, and resemble to a certain extent the different species of walking sticks, or stick insects. Thus far there have been reported as coming from this region but four species. A number of others should be added. They belong to the two genera that may be separated by the accompanying table.

TABLE FOR DETERMINATION OF GENERA.

- a. Pronotum cylindrical, not separated from the prosternum by longitudinal lines. Body comparatively heavy in the female; antennæ nearly as long or a trifle longer than the vertex *Tetanorhynchus* Brunner
 aa. Pronotum more or less flattened from above, divided from the prosternum by a longitudinal line. Body long and slender even in the female; the vertex in both sexes advanced beyond the tip of the antennæ. *Cephalocanna* Serville

TETANORHYNCHUS Brunner.

TABLE FOR DETERMINATION OF SPECIES.

- a. Rostrum of the female distinctly shorter than the remainder of head, attenuated toward the apex *humilis* Giglio-Tos
 aa. Rostrum of the female distinctly longer than the remainder of head.
 . b. Rostrum with the apex strongly clavate, posterior tibiæ armed above with 14-22 spines on the inner and outer rows. *borellii* Giglio-Tos
 bb. Rostrum attenuate toward the apex. Posterior tibiæ armed above with 13 spines on the inner and outer rows. *angustirostris* Brunner

TETANORHYNCHUS HUMILIS Giglio-Tos.

Tetanorhynchus humilis GIGLIO-TOS, Boll. Mus. Torino, XII, No. 302, p. 18 (1897).

Habitat.—San Lorenzo, Province of Jujuy, and northward and eastward. (Giglio-Tos.)

TETANORHYNCHUS BORELLII Giglio-Tos.

Tetanorhynchus borellii GIGLIO-TOS, Boll. Mus. Torino, No. 302, p. 18 (1897).

Habitat.—Same localities as the preceding, and likewise Bolivia. (Giglio-Tos.)

TETANORHYNCHUS ANGUSTIROSTRIS Brunner.

Tetanorhynchus angustirostris BRUNNER, Verhandl. d. k. k. Zool. bot. Ges., XXXIX, p. 107 (1890).

Habitat.—San José, Argentina. (Brunner.) Possibly also from Paraguay.

CEPHALOCÆMA Serville.**CEPHALOCÆMA COSTULATA** Burmeister.

Plate XXXVI, fig. 1.

The collection contains several specimens of both sexes of undoubted *costulata*, which were taken at Sapucay by W. T. Foster. It has also been previously reported by Brunner and Giglio-Tos as occurring in Paraguay.

CEPHALOCÆMA CALAMUS Burmeister?

The collection contains several specimens, both males and females, of an insect which runs to *calamus* in Brunner's synoptic table, but which are too small by about 10 mm. (female) and 30 mm. (male). An examination of their sexual appendages points to maturity. Should this insect prove to be distinct from *calamus*, the name *burmeisteri* is proposed for it. The following brief diagnosis will show wherein it differs from that species as characterized by Burmeister:

Abdomen in some specimens showing faint costæ; pronotum weakly granulose; antennæ shorter than (female) or considerably longer than (male) the rostrum; the latter about equal to, in female, or about two-thirds as long, male, as the rest of head, its apex blunt and gently depressed or curved downward. Hind femora with 13 or 14 spines in outer row.

Length of body, male 60, female 94; of head, male 8, female 16; of rostrum, male 3, female 8.5; of pronotum, male 10.5, female 17; of hind femora, male 21, female 29; of anterior femora, male 7, female 10 mm.

Habitat.—Sapucay, Paraguay, January to March. W. T. Foster, collector.

CEPHALOCÆMA TERETIUSCULA Brunner.

This insect is also credited to Paraguay.^a

CEPHALOCÆMA, species.

A fourth species of this genus is represented by a single nymph which was taken by the writer during the month of September at San Bernardino. It is a rather robust form with short, stout legs, and in which the rostrum of the vertex is broad, sulcate, evenly tapering, and longer than the rest of the head. The hind tibiæ are provided with 17 spines on the inner and 19 on the outer upper margin and below with a few minute ones on the outer edge. The pronotum and abdomen above are furnished with longitudinal costæ in the fashion of *costulata*.

Several additional species are liable to occur in Paraguay. Those the habitat of which is known and would permit of this are also included in the following synoptic table:

TABLE FOR DETERMINATION OF SPECIES.

- a.* Rostrum of the vertex scarcely as long as or but little longer than balance of head. Pronotum punctulate or smooth. Tibiæ above on both sides with not more than 16 spines.
- b.* Rostrum of the vertex much shorter than the remainder of head. Abdomen 5-ridged. *costulata* Burmeister and *burmeisteri* Bruner
- bb.* Rostrum of the vertex distinctly shorter than or but little longer than remainder of head. Abdomen not 5-ridged.
- c.* More robust; rostrum pyramidal, acuminate, viewed from the front narrowly lamellate. Antennæ of female greatly surpassing the rostrum. *borelli* Giglio-Tos
- cc.* More slender; rostrum with the sides parallel.
- d.* Rostrum linear, obtuse, viewed from the front narrowly cruciform. Antennæ of female a little surpassing the rostrum *caizana* Giglio-Tos
- dd.* Rostrum quadrangular, obtuse, as long as (female) or longer (male) than the rest of head. *calamus* Burmeister
- aa.* Rostrum much (two or more times) longer than the remainder of head.
- b.* Pronotum longer than the head.
- c.* Pronotum with the anterior margin not tuberculate.
- d.* Rostrum less than twice the length of remainder of head, moderately dilated toward the apex. *obtusa* Giglio-Tos
- dd.* Rostrum fully twice as long as remainder of head, strongly dilated toward the apex *magna* Giglio-Tos
- cc.* Pronotum with the anterior margin bituberculate. *gigantea* Giglio-Tos
- bb.* Pronotum shorter than the head.
- c.* Rostrum less than four times as long as remainder of head.
- d.* Rostrum a trifle more than twice as long as remainder of head; the anterior femora about two-thirds as long as pronotum. *teretiuscula* Brunner
- dd.* Rostrum three times as long as remainder of head; the anterior femora a trifle longer than the pronotum. *lancea* Burmeister
- cc.* Rostrum more than four times as long as remainder of head. *lineata* Brunner

^aSee Monog. Proscop., p. 32.

Subfamily TRUXALINÆ.

The insects belonging to this subfamily are much more numerous than are those of any of the preceding subfamilies; and, in some instances, become sufficiently numerous to be classed as destructive. The genera named in the following table are known to occur in Paraguay. Two of these genera are herewith described for the first time, while a few of the species are also made known to science in this paper.

TABLE FOR DETERMINATION OF GENERA.

- a. Foveolæ of vertex below or absent. Face usually very oblique.
- b. Antennæ with the joints depressed, more or less ensiform.
- c. Wings of male more or less broadly fenestrate.
- d. Sides of the fastigium strongly rounded, the apex not acuminate. Tegmina acuminate or decidedly obliquely truncate. Posterior femora with the apical angles horizontally produced, acuminate.
- e. Head conical, face moderately oblique. Foveolæ of the vertex indistinct, triangular.
- f. Vertex longer than the eyes. Tegmina of male broader than the length of the pronotum. Wings of male very broadly fenestrate.
- Hyalopteryx* Charpentier
- ff. Vertex shorter than the eyes. Tegmina of male narrower than the length of pronotum. Wings of male less broadly fenestrate.
- g. Tegmina obliquely truncate at apex; wings hyaline and more or less infuscated. Pronotum with the lateral carinæ continuous uninterrupted.
- h. Larger, general color green.....*Truxalis* Linnæus
- hh. Smaller, general color testaceous or ferruginous.....*Orphula* Stål
- gg. Tegmina acuminate, wings tinted with dilute red. Pronotum with the lateral carinæ interrupted.....*Entyralis* Bruner
- dd. Sides of the fastigium straight or but gently rounded, the apex more or less acuminate. Tegmina broadly rounded or somewhat truncate. Posterior femora with their apical angles roundly deflexed.
- e. Fastigium of the vertex above depressed; without a longitudinal carina.
- f. Lateral carinæ of pronotum more or less converging near the middle. The sides of pronotum compressed; tegmina and wings fully developed.
- g. Wings tinted with yellowish-brown; the tegmina rather broad, their apex somewhat obliquely truncate.....*Parorphula* Bruner
- gg. Wings transparent or infuscated, the tegmina narrower, their apex rounded.
- h. Interspace between the mesosternal lobes distinctly longer than wide. Head and pronotum subequal in length. Frontal costa distinctly sulcate throughout. Front greatly oblique. Lateral carinæ of pronotum subparallel in advance of the posterior sulcus.....*Orphulina* Giglio-Tos
- hh. Interspace between the mesosternal lobes about as wide as long. Head shorter than the pronotum. Front less strongly oblique. Frontal costa scarcely sulcate below the ocellus. Lateral carinæ of the pronotum divergent or arcuate in advance of the hind sulcus.....*Orphulella* Giglio-Tos
- ff. Lateral carinæ of pronotum not converging near the middle. The sides of pronotum not compressed. Tegmina and wings usually more or less abbreviated.....*Dichromorpha* Morse

- ee.* Fstigium of the vertex above rounded, provided with a longitudinal carina.
- f.* Wings with the anterior ulnar vein branched at base. Antennæ long, clavate in the male. Wings red and black. *Toxopterus* Bolivar
- ff.* Wings with the anterior ulnar vein not branched at base. Antennæ long, not clavate in male. Wings hyaline, more or less tinted with carmine at base *Fenestra* Brunner
- cc.* Wings of male not fenestrate, the radial veins not incrassate and constricted on apical third. Pronotum with lateral carinæ gently diverging posteriorly; and with a pair of supplemental carinæ on disk. Antennæ subensiform. Front strongly oblique *Sinipta* Stål
- bb.* Antennæ filiform. Lateral carinæ of pronotum parallel; supplemental carinæ absent *Amblytropidia* Stål
- aa.* Foveolæ of vertex visible from above, always present. Face usually more nearly vertical than in the alternate category.
- b.* Inner apical spurs of hind tibiæ subequal in length. Antennæ, at least of male, nearly or quite as long as hind femora.
- c.* Wings colored. Basal joints of antennæ depressed. Lateral carinæ of pronotum converging toward the middle. Tegmina without trace of intercalary vein. *Dichroattix* Bruner
- cc.* Wings transparent. Basal joints of antennæ not depressed. Lateral carinæ of pronotum nearly parallel. Tegmina with the intercalary vein more or less plainly developed.
- d.* Pronotum provided with lateral carinæ, which are interrupted in the middle. Valves of the ovipositor of normal type. . . . *Staurorhectus* Giglio-Tos
- dd.* Pronotum entirely without lateral carinæ. Valves of the ovipositor very blunt *Amblyscapheus*, new genus
- bb.* Inner apical spurs very unequal in length. Antennæ of neither sex anywhere near as long as hind femora.
- c.* Lateral foveolæ of the vertex well developed, once and a half to twice as long as broad.
- d.* Lateral carinæ interrupted in the middle, strongly divergent both in front and behind. The inner claws of hind tibiæ fully twice the length of the outer one. Wings of female fully developed. *Stirapleura* Scudder
- dd.* Lateral carinæ of the pronotum not interrupted, but gently divergent in front and behind. Inner claws of hind tibiæ less than twice the length of outer. Tegmina and wings of the female abbreviated.
Meloscirtus, new genus
- cc.* Lateral foveolæ of vertex obscure, linear. Lateral lobes of pronotum without raised line or carina.
- d.* Larger. Lateral carinæ of pronotum more or less interrupted between anterior and posterior sulci; diverging strongly anteriorly and posteriorly *Plectrotettix* McNeill
- dd.* Smaller. Lateral carinæ of pronotum but little or not at all interrupted; divergent but little *Euplectrotettix* Bruner

HYALOPTERYX Charpentier.

The genus *Hyalopteryx* of which *H. rufipennis* Charpentier is the type, occurs in the southern part of tropical South America, where it is represented by several species.

The material collected by W. T. Foster, at Sapucay, contains 5 males and 10 females of this genus. Instead of agreeing with *H. rufipennis* they differ from Charpentier's description and figures in a number of

respects, and are described herewith as new. A second species or possibly the *H. interrupta* Brunner from Sao Paulo, Brazil, is also characterized in the subjoined synoptic table, as also species described by each, Malcolm Burr and Giglio-Tos.

TABLE FOR DETERMINATION OF SPECIES.

- a. Disk of hind wings red or rufous.
- b. Tegmina of male much wider in their broadest part than the length of the pronotum; in the female acuminate.
- c. Hind femora without lamellate prolongations at the apex above. Colored portion of wings uniform red or reddish *rufipennis* Charpentier
- cc. Hind femora provided with lamellate projections at their apex, the one on inner side more than twice as long as the outer. Colored portion of wings much darker externally so as to form a conspicuous arcuate band.
- interrupta* Brunner ?
lamellipes, new species
- bb. Tegmina of male no wider than the length of the pronotum; in the female subacuminate *specularis*, new species
- aa. Disk and anal area of hind wings subhyaline or yellow.
- b. Larger. Wings clear yellow; the anterior field broadly dilated and fenestrate in male *exaggeratus* Burr
- bb. Smaller. Wings subhyaline; the anterior field in male but little dilated.
- gracilis* Giglio-Tos

HYALOPTERYX RUFIPENNIS Charpentier.

Hyalopteryx rufipennis CHARPENTIER, Orthopt. Descr. et Depict., 1853, pl. XLVI.

Charpentier simply gives Brazil as the habitat of his species. It may also occur in Paraguay.

HYALOPTERYX INTERRUPTA Brunner? or HYALOPTERYX LAMEL-
LIPES, new species.

There are before me as I write several specimens of a species of this genus that possess the characters given at *cc* in the synoptic table. They come from Sao Paulo, Brazil, which is in the same general region as Paraguay.

Bang Haase lists *Hyalopteryx interrupta* Brunner in one of his catalogues. I have been unable to discover the place of publication of this species, hence do not know whether it is the same as *lamellipes*. It also belongs to the same general region.

HYALOPTERYX SPECULARIS, new species.

Pale flavo-testaceous to bruno-testaceous, the tegmina more or less strongly and regularly conspersed with fuscous. The hind wings, especially in the males, showing traces of a deeper red band beyond the middle.

Body compressed, rather slender. Head about the same length as the pronotum; the vertex gently ascending, as long as the eyes, broadly rounded in front, convex in the middle, and provided with a

prominent longitudinal carina; frontal costa prominent between the antennæ, greatly contracted above, sulcate throughout except at the narrowest place at upper end, the sides parallel to the transverse facial groove below the ocellus, below this gently and evenly divergent. Face viewed in profile gently hollow. Antennæ broadly (female) or narrowly (male) ensiform, as long as the head and pronotum combined in the male, but considerably shorter in the female. Sides of pronotum nearly parallel, provided with four or five well-defined longitudinal ridges; lateral carinæ prominent as far as the second transverse sulcus where they divide, one part continuing as the carina, while the other forms a supplementary carina near the sides of the disk and to the hind extremity; median carina strong, especially on the front lobe, cut about the middle by the last transverse sulcus; front edge straight, hind margin obtusely angulate. Tegmina extending beyond the apex of abdomen as well as the tips of hind femora in both sexes, of moderate width and bluntly acuminate in the female, in the male about as broad at their widest part as the length of the pronotum, also somewhat acuminate at apex. Wings much shorter than the tegmina, the anterior field of the male with a broadly rounded and heavy front border made up of three heavy veins separated by two series composed of numerous short transverse parallel veinlets; the speculum moderately broad and occupying about one-fourth of the entire wing, separated into sections by 8 cross-veins. Hind femora somewhat longer (male) or about reaching (female) the tip of the abdomen, their apices on each side above produced into short acute lamellæ of about equal length. Hind tibiæ provided with about 15 spines in outer row. Subgenital plate of male abdomen acute, straight, about twice as long as its basal width. Valves of ovipositor short and blunt.

General color dull testaceous, inclining to brownish, the sides of head, back of eyes, and pronotum along lateral carinæ to hind margin with a piceous or dark brown band that continues for a short distance on the basal portion of the discal field of tegmina. The latter also provided with a few small black or dark brown discal spots basally and beyond quite generally and regularly conspersed with brown; at the extreme base on the hind margin with a small triangular red patch. Wings with the anterior field testaceous and fuscous, except the speculum, which is colorless; basal half of radial field vermilion, crossed beyond by a rather broad band of claret, the apical portion and a narrow space adjoining the speculum smoky hyaline, with dusky veins; in the female the greater portion of the wing is vermilion with the principal longitudinal veins and many of the transverse veinlets of the anterior field brown or black, the apical fourth and outer part of what corresponds to the speculum in the male smoky hyaline. Face, sides of head, pronotum, pleura, and abdomen sparsely conspersed with black dots.

Length of body, male, 27, female, 37; of pronotum, male, 4.95, female, 6.75; of tegmina, male, 22.5, female, 30; of hind femora, male 14.5, female, 19; of antennæ, male and female, 10-13 mm.

Type.—Cat. No. 9728, U.S.N.M.

Habitat.—Sapucay, Paraguay, in December.

HYALOPTERYX EXAGGERATUS Burr.

Hyalopteryx exaggeratus BURR, Trans. Ent. Soc. Lond., 1902, Pt. 2, p. 183.

This insect comes from the adjoining parts of Brazil and Bolivia. It may be found in Paraguay as well.

HYALOPTERYX GRACILIS Giglio-Tos.

Hyalopteryx gracilis GIGLIO-TOS, Boll. Mus. Zool. Anat. Torino, No. 302, XII, 1897, p. 22.

This species was described from the Bolivian Chaco which borders on Paraguay. It is therefore likely to be found in Paraguay as well.

TRUXALIS Linnæus.

TRUXALIS BREVICORNIS (Linnæus).

Gryllus brevicornis LINNÆUS, Cent. Ins. Par., 1763, p. 15.

Truxalis brevicornis FABRICIUS, Syst. Ent., 1775, p. 279.

Acridium ensicornum DE GEER, Mem. Ins., 1773, p. 449, pl. XLII, figs. 1, 2.

Opsomala punctipennis SERVILLE, Hist. Nat. Ins. Orth., 1838, p. 590.

Truxalis viridula PALISOT BEAUVOIS, Ins. Afr. and Amer., 1807, p. 80, pl. III, fig. 4.

Oxyoryphus burkhartianus SAUSSURE, Rev. et Mag. Zool., 1861, p. 315.

Truxalis adspersa BLANCHARD, Voy. Amer. Merid., VI, Pt. 2, 1837-43, p. 216, pl. XXVII, fig. 2.

Several specimens are at hand from Asuncion where they were collected by the writer. Giglio-Tos also reports it from the same locality. There are also a number of specimens before me that were collected at Sapucay by W. T. Foster.

It is one of the most widely distributed species of American locusts, being found on both continents between the fortieth parallels of latitude.

EUTRYXALIS Bruner.

EUTRYXALIS MINOR (Giglio-Tos).

Metaleptea minor GIGLIO-TOS, Boll. Mus. Zool. Anat. Torino, No. 302, XII, 1897, p. 22.

Eutryxalis minor BRUNER, Locusts of Argent., 1900, p. 24.

No specimens of this insect are at hand that were taken in Paraguay, but it was collected at Asuncion and in the adjoining parts of the Bolivian chaco by Dr. A. Borelli.

ORPHULA Stål.

ORPHULA PAGANA Stål.

Gomphocerus (Hyalopteryx) pagana STÅL, Freg. Eug. Resa. Ins. Orthopt., 1860, p. 339.

Truxalis (Orphula) pagana STÅL, Recens. Orthopt., I, 1873, p. 106.

Orphula pagana GIGLIO-TOS, Boll. Mus. Zool. Anat. Torino, No. 184, IX, 1894, p. 9.

This species is represented by a large number of specimens that were collected both by the writer and by W. T. Foster. It comes from all the localities in Paraguay, as well as from the adjoining parts of Argentina, Bolivia, and Brazil.

PARORPHULA Bruner.

PARORPHULA GRAMINEA Bruner.

Plate XXXVI, fig. 7.

Parorphula graminea BRUNER, Sec. Rept. Merch. Locust. Invest. Com. B. A., 1900, p. 25, fig. 7.

No specimens of this insect are at hand from Paraguayan localities, but it is known to have a wide distribution in Argentina immediately to the south. It is liable to be met with on pasture lands where the forests are open or missing.

ORPHULINA Giglio-Tos.

ORPHULINA PULCHELLA Giglio-Tos.

Orphulina pulchella GIGLIO-TOS, Boll. Mus. Zool. Anat. Torino, No. 184, IX, 1894, p. 9.

There are several female specimens at hand that may belong here. If they do they are hardly separable from the genus *Orphulella*, except that in these specimens the space between the mesosternal lobes is plainly longer than wide, whereas in the various species of *Orphulella* it is decidedly wider than long. Since Giglio-Tos has described only the male, the following brief diagnosis of the female may be added:

Body slender, slightly compressed at thorax, the head about as broad as the front edge and about four-fifths as long as the pronotum, the face rather strongly oblique; fastigium of the vertex forming about a right angle, as in *Orphulella*. Pronotum a very little expanding on hind lobe, which is but little, if any, shorter than the anterior; lateral carinae in front of last transverse sulcus parallel, back of it somewhat divergent. Tegmina of medium width, not provided with discal spots, extending considerably beyond the tip of the abdomen. Hind femora a trifle surpassing the abdomen.

General color above testaceous or greenish, the sides of the head, pronotum, and pleurae fuscous, bordered along the lateral carinae by a

line of black, sometimes lighter or darker; below this flavous. Hind femora testaceous, their outer disk more or less ferruginous or brownish; hind tibiæ testaceous, their apex infuscated. Tegmina, except on dorsal field, more or less fuscous.

Length of body, female, 20–22; of pronotum, 3.8; of tegmina, 17; of hind femora, 11.5 mm.

Habitat.—Sapucay, Paraguay, January to March (W. T. Foster), 3 females. Also reported by Giglio-Tos from San Pedro.

ORPHULELLA Giglio-Tos.

The insects which belong to this genus are all rather small and very variable in color—so much so, in fact, that without a very full series of specimens for study the student can not construct a table that will definitely separate them. There seem to be at least four, and possibly five, well-marked forms found within the territory covered by the present paper. They may be determined by the following

TABLE FOR DETERMINATION OF SPECIES.

- a. Lateral carinæ of the pronotum interrupted or obsolete between the anterior and posterior sulci.
- b. Size small *gracilis* Giglio-Tos
- bb. Size larger, separate sections of carinæ lunate..... *obscura*, new species
- aa. Lateral carinæ of the pronotum complete or subinterrupted. Size larger.
- b. General color testaceous or pale ferruginous. The tegmina rather evenly sprinkled with fuscous dots.
- c. Size larger (female, 18 mm.). Lateral carinæ strongly divergent posteriorly *punctata* (De Geer)
- cc. Size smaller (female, 16 mm.). Lateral carinæ less strongly divergent posteriorly *intricata* (Stål)
- bb. General color green. The discal field alone varied with fuscous.
- elegans* Giglio-Tos

ORPHULELLA GRACILIS Giglio-Tos.

Orphulella gracilis GIGLIO-TOS, Boll. Mus. Zool. Anat. Torino, IX, No. 184, 1894, p. 11.

Habitat.—Various localities in Paraguay (Giglio-Tos); San Bernardino (Bruner).

ORPHULELLA OBSCURA, new species.

A very dark colored and strongly hirsute insect with broadly interrupted lateral carinæ of the pronotum, and in this respect allied to *O. gracilis* Giglio-Tos. As compared with *gracilis* it is, however, much larger and more robust, and has the hind femora more than usually robust for the genus. Body compressed and deep through the middle. Head large and wide, as long as and a little broader than the front edge of pronotum; eyes, especially in the male, large and prominent; vertex fairly wide, short, the bounding walls parallel for a short distance and meeting at fastigium in an obtuse angle even in the male; frontal

costa prominent between the antennæ, narrow above, evenly broadening below and continuous to the clypeus, profoundly sulcate throughout; lateral foveolæ large, subquadrate in the male, or acutely triangular in the female. Pronotum short, broad, rather strongly constricted in the middle; lateral carinæ obliterated between the middle and anterior sulci; strong elsewhere, the anterior section arcuate and greatly oblique or divergent, the part between the middle and posterior sulci short and lunate, broadly separated from that on the posterior lobe, the latter also a little arcuate and oblique—in each case the apices of these sections are directed inward; anterior edge truncate, the posterior broadly angulate; sides higher than long, their lower edge strongly sinuate. Tegmina moderately wide, longer than the abdomen and hind femora in both sexes, their apices broadly rounded. Hind femora robust on basal two-thirds, about normal on the outer third, a little surpassing (male) or not quite reaching (female) the tip of the abdomen. Antennæ rather heavy, filiform, a little longer than the head and pronotum taken together.

General color brownish, testaceous, very heavily and profusely marked with black. Head back of eyes, a considerable portion of the occiput, sides of pronotum, pleura, hind femora, and tegmina black—these markings much more decided and extensive in the male than in the female. On the disk of the pronotum inside the lateral carinæ, a decussate pale marking, the sides of pronotum, head, and pleura also provided with several paler markings. Hind femora, as well as those of anterior and middle pairs, likewise alternately pale and dark banded. The tibiæ and tarsi annulated with dull black. Tegmina variegated with paler discal and dorsal spots. The abdomen testaceous conspersed with black or dark brown. Wings strongly fuliginous. Antennæ ferruginous at base, but becoming much darker, almost black, apically.

Length of body, male, 16; female, 21; of antennæ, male and female, 6.75; of pronotum, male, 3; female, 3.2; of tegmina, male, 14; female, 17.5; of hind femora, male, 9; female, 10 mm.

Type.—Cat. No. 9729, U.S.N.M.

Habitat.—Sapucay, Paraguay, 1 male and 2 females, taken during the months of January and February (W. T. Foster, collector).

ORPHULELLA PUNCTATA (De Geer).

Acridium punctatum DE GEER, Mem. Ins., III, 1773, p. 503, pl. XLII, fig. 12.

Tracalis (*Orphula*) *punctata* STÅL, Recens. Orthopt., I, 1873, p. 106.

Orphulella punctata GIGLIO-TOS, Boll. Mus. Zool. Anat. Torino, IX, 1894, No. 184, p. 12.

Habitat.—Sapucay, Paraguay, numerous specimens (W. T. Foster); various localities in Paraguay (Giglio-Tos). It is also found throughout Brazil, the Guianas, Venezuela, some of the West Indies, and Central America.

ORPHULELLA INTRICATA (Stål).

Orphula intricata STÅL, Recens. Orthopt., I, 1873, p. 106.

Orphulella intricata GIGLIO-TOS, Boll. Mus. Zool. Anat. Torino, IX, 1894, No. 184, p. 12.

Habitat.—Several specimens of both sexes that appear to belong here were taken by the writer at Asuncion. Others are among the material collected at Sapucay by W. T. Foster.

ORPHULELLA ELEGANS Giglio-Tos.

Orphulella elegans GIGLIO-TOS, Boll. Mus. Zool. Anat. Torino, IX, 1894, No. 184, p. 12.

Habitat.—Province of San Pedro, Villa Rica, and Asuncion (Giglio-Tos); Asuncion (Bruner); Sapucay (W. T. Foster).

DICHROMORPHA Morse.

DICHROMORPHA AUSTRALIS Bruner.

Dichromorpha viridis GIGLIO-TOS, Boll. Mus. Zool. Anat. Torino, XII, 1897, No. 302, p. 24; XV, 1900, No. 377, p. 3.

Dichromorpha australis BRUNER, Locusts of Argent., 1900, p. 29.

Habitat.—Several specimens, male and female, collected by W. T. Foster at Sapucay. Asuncion (Giglio-Tos, Bruner).

The present species was wrongfully included with the considerably larger and more robust North American *D. viridis* Scudder. For a rather full synonymy of this last-mentioned species see Biologia Cent. Amer., Orthopt., II, p. 86.

TOXOPTERUS Bolivar.

TOXOPTERUS MINIATUS Bolivar?

Toxopterus miniatus BOLIVAR, Anal. Soc. Esp. Hist. Nat., XIX, 1890, p. 314.

Habitat.—Several specimens of the two sexes were taken by W. T. Foster at Sapucay, Paraguay.

This insect is doubtfully referred to Bolivar's species.

FENESTRA Bruner.

If the genus *Fenestra* occurs in Paraguay, it will be found in open country among the bunch grasses. Three species were described by the writer.^a Bruner did not mention a type for the genus, so we may consider *Fenestra pulchripennis* as the type. It may occur in Paraguay, as it appears to be the more common species in Argentina.

^aLocusts of Argentina, pp. 30 and 31.

SINIPTA Stål.

SINIPTA DALMANI Stål.

Plate XXXVI, fig. 3.

Gomphocerus (Sinipta) dalmani STÅL, Freg. Eug. Resa, Ins. Orthopt., 1860, p. 340.

Sinipta dalmani STÅL, Recens. Orthopt., 1, 1873, p. 103.

Habitat.—The collections made by W. T. Foster at Sapucay, Paraguay, contain examples of this insect. Stål's type came from Uruguay, and numerous examples were taken by the writer in middle and northern Argentina, where it is a very common insect on the open pampas.

AMBLYTROPIDIA Stål.

This genus contains a rather large number of species, taking the two Americas together. They are most abundant in the Tropics, however, where the species are distributed in savannas or grassy openings in the forests. The species so far recognized may be separated by the subjoined table:

TABLE FOR DETERMINATION OF SPECIES.

- a. Median carina of vertex quite prominent. Last transverse sulcus of pronotum situated plainly behind the middle.
- b. Quite robust, for most part pale colored, the tegmina of female not or but little surpassing the tip of the abdomen. The latter concolorous above.
- c. Antennæ of female, those of the male always more elongate, a trifle longer than the head and pronotum combined. Tegmina provided with fuscous spots.
- d. Smaller. Brazil.....*ferruginosa* Stål
- dd. Larger. Central America (Guatemala). Hind tibiæ with 13 spines in outer row.....*magna* Bruner
- cc. Antennæ of female plainly shorter than the head and pronotum combined. Tegmina variable.
- d. Tegmina pale testaceous, without fuscous spots or longitudinal pale stripes.....*australis* Bruner
- dd. Tegmina mottled, or with both fuscous spots and longitudinal pale stripes. Often largely green.
- e. Smaller. Tegmina often with a sub-costal pale line, or the dorsum with lateral green stripes reaching from the eyes to middle of the tegmina. The latter as long as abdomen.....*vittata* Giglio-Tos
- ee. Larger. Tegmina without the sub-costal pale line; the dorsum either wholly green or ferruginous. Tegmina shorter than the abdomen.
robusta, new species
- bb. More slender, rather dark colored. Tegmina of female always surpassing the tip of abdomen. Abdomen of male at least bright ferruginous or orange above.
- c. Color quite uniform dusky brown, the females with distinctly flecked tegmina.
- d. Hind tibiæ 12-13 spined in outer row. British Guiana and Trinidad Island.....*trinitatis* Bruner
- dd. Hind tibiæ 15-16 spined in outer row. West coast of Central Mexico.
elongata Bruner

- cc. Color dark olive brown in male. Hind tibiæ 11-12 spined in outer row.
 Mexico *auriventris* Bruner
- aa. Median carina of vertex less prominent. Last transverse sulcus of pronotum situated about the middle.
- b. Hind tibiæ provided with 15-19 spines in outer row.
- c. Rather robust. Color variable. Costa Rican *costaricensis* Bruner
- cc. More slender. The color more uniform. Mexico southerly.
- d. Anterior portion of disk of pronotum narrower than the hind portion; lateral carinæ in males concolorous; disk and sides not decidedly infuscated *mystica* Saussure
- dd. Anterior portion of disk of pronotum about equal to the width of hind portion; lateral carinæ in males pale, the disk and sides infuscated.
ingenita Bruner
- bb. Hind tibiæ provided with but 14 spines in outer row. Eastern United States southward *occidentalis* Saussure

AMBLYTROPIDIA FERRUGINOSA Stål.

Amblytropidia ferruginosa STÅL, Recens. Orthopt., I, 1873, p. 107.—BRUNER, Biol. Cent. Amer., Orthopt., II, 1904, p. 63.

Habitat.—According to Giglio-Tos^a this species occurs in Paraguay at various localities. The collections do not contain specimens of it.

AMBLYTROPIDIA AUSTRALIS Bruner.

Amblytropidia australis BRUNER, Biol. Cent. Amer., Orthopt., II, 1904, pp. 62, 64.
Amblytropidia ferruginosa, GIGLIO-TOS., Boll. Mus. Zool. Anat. Torino, IX, 1894, No. 184, p. 13; XII, 1897, No. 302, p. 25.

Habitat.—Specimens of this insect are at hand from Asuncion (Bruner) and Sapucay (Foster). It is more common southward in Argentina and Uruguay.

AMBLYTROPIDIA VITTATA Giglio-Tos.

Amblytropidia vittata GIGLIO-TOS., Boll. Mus. Zool. Anat. Torino, IX, 1894, No. 184, p. 13.

Habitat.—Luque, Paraguay (Giglio-Tos); specimens are at hand from Sao Paulo, Brazil.

AMBLYTROPIDIA ROBUSTA, new species.

A variable insect as to general color, in which the two sexes differ greatly in size and comparative robustness. Male slender, rufo-testaceous, with fuscous knees; female robust, varying from pale testaceous to dark brown, the dorsum sometimes uniformly green, the knees concolorous.

Head of moderate size, about as wide as front edge of the pronotum, the occiput and vertex somewhat rugose, the latter short and provided with a well-defined longitudinal carina; frontal costa prominent and unusually broad, slightly expanding below and continuous to the clypeus, in the male punctate and decidedly sulcate, in the female smooth and faintly sulcate. Antennæ filiform, not quite as long

^a Boll. Mus. Zool. Anat. Torino.

(female), or a little longer (male) than the combined length of head and thorax. Pronotum a little expanding posteriorly, the lateral carinae prominent, rather coarsely punctate, most profusely so on the hind lobe; transverse sulci faint, the posterior one only severing the median carina, situated plainly back of middle. Tegmina without a definite intercalary vein, a little surpassing (male) but falling considerably short of the tip of the abdomen (female). Hind femora long and robust, surpassing the abdomen in both sexes. Hind tibiae with 13-14 spines in outer row.

General color varying from a nearly uniform pale testaceous with an olivaceous tinge on sides of pronotum and pleura in the males to a deep brown varied with green on dorsum in females. Face usually paler than other portions of head; the usual dusky band back of eyes and along the upper edge of sides of pronotum. Tegmina immaculate in the males, in the females provided with a discal row of fuscous dots, sometimes the balance of the member also more or less regularly but dimly conspersed. Sides of the three basal abdominal segments largely black in the female, pale in male. Hind femora with their inner face and lower sulcus reddish purple (female) or orange (male). Antennae infuscated apically.

Length of body, male, 20, female, 33; of pronotum, male, 4, female, 6; of tegmina, male, 17, female, 21; of hind femora, male, 14, female, 21.5 mm.

Type.—Cat. No. 9717, U.S.N.M.

Habitat.—Sapucay, Paraguay, W. T. Foster, collector; several specimens of both sexes.

DICHROATETTIX Bruner.

DICHROATETTIX VIRIDIFRONS Bruner?

Plate XXXVI, figs. 5, 6.

Dichroattix viridifrons BRUNER, Locusts of Argent., p. 33, 1900, figs. 9 and 10.

While no specimens of this species are at hand, it is barely possible that it may occur in Paraguay as well as in Argentina.

DICHROATETTIX BOHLSII (Giglio-Tos).

Fenestra bohlsii GIGLIO-TOS, Zool. Jahrb., VIII, p. 807.

Habitat.—Paraguay (Giglio-Tos); Sapucay, Paraguay (W. T. Foster), several specimens of both sexes.

This insect is rather larger and more robust than the preceding, from which it differs in these respects, and in having the wings less clouded on the anterior field and apical half.

AMBLYSCAPHEUS, new genus.

Related to *Staurorhectus* Giglio-Tos, but differing from that genus in the entire absence of lateral carinae on the pronotum.

Head rather large, smooth, a little broader below than above, nearly as long as pronotum; the occiput gently rounded; the vertex about as wide as the shortest diameter of one of the eyes, without a longitudinal carina, and meeting in front at less than a right angle, lateral carinae fairly prominent, the surface within depressed so as to form a semicircular groove extending across the front; frontal costa prominent, a very little narrower at the ocellus than between the antennae and below, sulcate deeply throughout. Face rather strongly oblique, straight when viewed laterally, facial carinae strong, straight, greatly divergent; eyes pyriform, considerably diverging, about as long as that portion of the cheeks below them. Antennae coarsely filiform and with the basal joints a little depressed, but not enough so as to give to these members even a subensiform appearance, a little longer than the head and pronotum together. Pronotum nearly cylindrical, without lateral carinae, but with a strong, equal, median one, smooth on anterior lobe, finely and closely punctulate on posterior, the latter lobe about one-fourth shorter than the former; anterior edge broadly rounded, the hind edge obtusangulate, lower lateral edges sinuate. Tegmina membranous, of medium width, paucily veined, the apex rounded and without an intercalary vein, a little surpassing the tip of abdomen but not quite reaching the apices of hind femora. Latter long, slender on apical, rather robust on basal half; hind tibiae profusely hirsute and with 11 spines in outer row. Upper valves of ovipositor short, slender at base but broad to near apex, the tip short. Mesosternal lobes about as wide apart as the lobes themselves.

Type of genus.—*Amblyscapheus lineatus*.

AMBLYSCAPHEUS LINEATUS, new species.

A medium sized but moderately robust insect, the general color of which is bright yellow with black antennae and two prominent very dark brown or blackish stripes which extend from the fastigium, one on each side of vertex, head, pronotum, and tegmina, to apex. On the latter these dark stripes gradually widen and occupy the entire discal field and become gradually paler from base to tip. Knees of hind femora and immediate base of tibiae also black. Hind tibiae pale glaucous above and on sides, the lower edge dark lined.

Length of body, male, 26; of pronotum, 5; of antennae, 10.5; of tegmina, 19; of hind femora, 16.5 mm.

Type.—Cat. No. 9730, U.S.N.M.

Habitat.—Sapucay, 3 females, December, February, and March.

At first glance this insect reminds one very much of the male of *Staurorhectus longicornis* Giglio-Tos, but the absence of lateral pronotal carinae will at once indicate its location. The male is evidently much smaller than the female.

STAUORHECTUS Giglio-Tos.

STAUORHECTUS LONGICORNIS Giglio-Tos.

Staurorhectus longicornis GIGLIO-TOS, Boll. Mus. Zool. Anat. Torino, XII, 1897, No. 302, p. 26.

Habitat.—The collections made at Sapucay, Paraguay, by W. T. Foster, and sent to both the U. S. National Museum and the writer, contain a number of individuals of both sexes. It is also common in portions of Argentina and Bolivia.

STIRAPLEURA Scudder.

Although no specimens of this genus are at hand, nor none apparently have been reported from Paraguay, it is quite possible that *Stirapleura* is represented in the country. They may be looked for on sandy open country. *Stirapleura variabilis* Bruner, from Argentina, is figured at fig. 2, on Plate XXXVI, in order that the genus may be recognized if found.

MELOSCIRTUS, new genus.

Related to *Stenobothrus* and *Bruneria*, but differing from both of these genera in a number of respects. Rather below medium in size; in the female with abbreviated tegmina and wings. The face, occiput, the disk, and sides of pronotum and meso- and metathorax pale streaked.

Female.—Head moderately large, a little wider than the front edge of the pronotum. Eyes subpyriform, about as long as the cheeks below them, separated above by a space twice the width of the frontal costa between the antennæ. Fastigium rather deeply sulcate and provided with a faint median longitudinal carina, meeting in front in an obtuse angle; lateral foveolæ small, about twice as long as wide, only partially visible from above. Front viewed in profile roundly oblique; frontal costa fairly prominent, evenly divergent and continuous to the clypeus, sulcate. Antennæ filiform, a little longer than the combined length of head and pronotum. The latter short, a very little constricted at middle, broadly rounded in front, obtusangulate behind; lateral carinæ arcuate and greatly interrupted between the transverse sulci, median carina fairly prominent throughout, cut by the last transverse sulcus a little back of its middle; lateral lobes a little higher than long, the lower edge rounded and provided on each side near the hind margin with a more or less prominent, raised, pale-colored tortuous carina. Tegmina somewhat abbreviate, about half as long as the abdomen, acuminate, the costal border a little ampliate near the base, without an intercalary vein. Hind femora rather robust, their tip coincident with that of the abdomen; hind tibiæ pro-

vided with 8 spines in outer and 10 in inner row, the inner apical spurs considerably stronger than the outer ones, unequal. Interspace between mesosternal lobes fully twice as broad as long. Valves of ovipositor small, as in its allies.

Type of genus.—*Meloscirtus australis*.

MELOSCIRTUS AUSTRALIS, new species.

General color testaceous, varied above and on the sides with fuscous, black and dirty white. Head fuscous, with pale bands on occiput, front and hind borders of cheeks, the sides back of eyes, and the base of mandibles. The lines back of eyes are quite narrow and continuous with those that follow the lateral carinæ of the pronotum. The latter with the middle of disk longitudinally pale striped or wholly fuscous, the lateral lobes provided with a rather broad oblique pale band, commencing in front at the middle and directed backward and upward to the hind edge at the shoulder, lower edge broadly pale; above this fuscous with a narrow somewhat tortuous raised pale line. Pleura varied with pale and brown. Hind femora with the outer half of upper edge entirely pale, the inner half toward the base with two fuscous blotches and an infuscated preapical dash of the same color, the outer disk in the middle and the knees both internally and externally marked with fuscous. Tibiæ testaceous conspersed with fuscous. Sides of abdomen irregularly varied with brown. Length of body, female, 17; of pronotum, 3-3.1; of tegmina, 7; of hind femora, 9.35; antennæ, 7.25 mm.

Type.—Cat. No. 9731, U.S.N.M.

Habitat.—The collection made by W. T. Foster at Sapucay, Paraguay, contains two females.

PLECTROTETTIX McNeill.

This genus contains a number of species, the representatives of which vary much in color. At least five of the known forms occur in Paraguay.^a These Paraguayan forms may be separated by the following table:

TABLE FOR DETERMINATION OF SPECIES.

- a. Tegmina less densely reticulate, the post-radial area provided with two rows of cells and an intercalary vein; anterior and posterior lobes of the pronotum subequal in length.....*brasiliensis* Bruner
- aa. Tegmina more densely reticulate; the post-radial area densely and irregularly reticulate and without an intercalary vein; the posterior lobe of the pronotum longer than the anterior one.
- b. Hind tibiæ provided with 9-11 spines in outer row; size moderate.
- c. Tegmina irregularly marked with rather small dark blotches. Hind tibiæ pale, with the apical third bluish.....*conspersus* Bruner
- cc. Tegmina regularly marked with large maculations. Largely green, or with the hind tibiæ and the lower sulcus of hind femora red.

^aFor a discussion of the generic name see Biol. Cent. Amer., p. 99.

- d. Hind tibiae furnished with only 9 spines in the outer row....*pictus* Bruner
 dd. Hind tibiae provided with 10 or 11 spines in the outer row.
 e. Lower sulcus of hind femora deep blue, the tibiae testaceous, provided with 10 spines*brunneri* (Giglio-Tos)
 ee. Lower sulcus of hind femora testaceous or red, the tibiae red, infuscated apically, 11-spined in outer row.....*varipes* Bruner
 bb. Hind tibiae provided with 12 spines in outer row; size large.
borellii (Giglio-Tos)

PLECTROTETTIX BRASILIENSIS Bruner.

Plectrotettix brasiliensis BRUNER, Biol. Cent. Amer., Orthopt., II, 1904, p. 100.

Habitat.—There are a number of both sexes of this species in the U. S. National Museum collections from Sapucay, Paraguay. They were received from W. T. Foster.

PLECTROTETTIX CONSPERSUS Bruner.

Plectrotettix conspersus BRUNER, Biol. Cent. Amer., Orthopt., II, 1904, p. 100.

Habitat.—This insect also comes from Sapucay, Paraguay, where it was taken by Mr. Foster. There are several specimens of both sexes at hand. Type specimens are in the collections of the U. S. National Museum, No. 9718, and of the writer.

PLECTROTETTIX PICTUS Bruner.

Plate XXXVI, fig. 8.

Plectrotettix pictus BRUNER, Locusts Argent., 1900, p. 37, fig. 13; Biol. Cent. Amer., Orthopt., II, 1904, p. 100.

Habitat.—This locust is very common in the provinces of Cordoba and Santa Fe, in Argentina. It, without doubt, occurs also in southern Paraguay, although not represented in the collections examined nor mentioned in the writings of Giglio-Tos.

PLECTROTETTIX BRUNNERI (Giglio-Tos).

Pseudostauronotus brunneri GIGLIO-TOS, Zool. Jahrb., VIII, pp. 809-811.

Plectrotettix brunneri BRUNER, Biol. Cent. Amer. Orthopt., II, 1904, p. 100.

Habitat.—Paraguay (Giglio-Tos) and Brazil (Bruner). Not represented in the collections received from W. T. Foster.

PLECTROTETTIX VARIPES Bruner.

Plectrotettix varipes BRUNER, Ent. News, XVI, 1905, p. 214.

Habitat.—This species is represented by a number of individuals of both sexes. They come from Sapucay, Paraguay, where they were taken by W. T. Foster. Type specimens are in the collection of the U. S. National Museum, No. 9832, and in Bruner's collection.

PLECTROTETTIX BORELLII (Giglio-Tos).

Scyllina borellii GIGLIO-TOS, Boll. Mus. Zool. Anat. Torino, IX, 1894, No. 184, p. 14.

Plectrotettix borellii BRUNER, Biol. Cent. Amer. Orthopt., II, 1904, p. 100.

Habitat.—The only reference to this unusually large species is that given by Giglio-Tos. It comes from Colonia Risso, Paraguay.

EUPLECTROTETTIX Bruner.

EUPLECTROTETTIX FERRUGINEUS Bruner.

Euplectrotettix ferrugineus BRUNER, Locusts of Argent., 1900, pp. 39-40.

Habitat.—Asuncion, (Bruner); Sapucay (W. T. Foster). This insect was fairly common on the sandy knolls about Asuncion. It also occurs in Northern Argentina on both sides of the Rio Parana. An allied species, *Eu. conspersus* Bruner, is figured herewith on Plate XXXVI, fig. 4.

Subfamily CEDIPODINÆ.

TRIMEROTROPIS Stål.

TRIMEROTROPIS PALLIDIPENNIS (Burmeister).

Edipoda pallidipennis BURMEISTER, Handb. Ent., II, 1838, p. 641.

Edipoda straminea ERICHSON, in Schomb. Faun. et Flor. Brit. Guiana, p. 582.

Trimerotropis pallidipennis SAUSSURE, Prodr. Cédip., 1884, p. 171.

Habitat.—In sandy and dry localities from central Mexico to middle Argentina. It may be looked for in Paraguay, and if proper locations are examined it will no doubt be found. No specimens are at hand, nor am I aware of its having been reported as occurring in that country.

CŒLOPTERNA Stål.

CŒLOPTERNA ACUMINATA (De Geer).

Aceridium acuminatum DE GEER, Mém. Ins., III, 1773, p. 501, pl. XLII, fig. 10.

Cœlopterna acuminata STÅL, Recens. Orthopt., I, 1873, p. 145.

Paulinia mucosa BLANCHARD, in D'Orbigny Voy. l'Amer., Merid., VI, Pt. Ins., p. 216, pl. XXVII, fig. 6.

Habitat.—Giglio-Tos gives Asuncion and Colonia Risso, Paraguay, as localities where it occurs. It is also quite generally distributed over the warmer parts of South America. The variety *brevipennis* Giglio-Tos is also credited to Paraguay.

This insect was made the type of a distinct subfamily by Stål; but Brunner v. Wattenwyl in his Revision du Systeme des Orthopteres, places it along with the Cédipodinae, where I am willing to let it remain at present. The insect is one that lives upon aquatic plants and often must swim, hence the peculiar development of hind tibiae and their spurs.

Subfamily PYRGOMORPHINÆ.

The present group of locusts, like the preceding subfamily, is rather poorly represented in this moist region, where vegetation is abundant and rank. Four genera may be contained among the locust fauna of Paraguay. They may be separated as follows:

TABLE FOR DETERMINATION OF GENERA.

- a.* Body more or less graceful and cylindrical, somewhat rugose. The antennæ filiform. Pronotum feebly carinated.
- b.* Tegmina and wings perfectly developed, extending considerably beyond the tip of the abdomen in both sexes. Carinæ of hind femora smooth. Internal angles of mesosternal lobes rounded at apex *Ossa* Giglio-Tos
- bb.* Tegmina and wings somewhat abbreviated. Carinæ of hind femora toothed. Internal angles of mesosternal lobes not rounded *Ommexecha* Serville
- aa.* Body very obese and greatly depressed; coarsely tuberculate, carinated and spined. Antennæ with the joints somewhat flattened, subensiform. Pronotal carina always more or less cristate.
- b.* Tegmina and wings present. Pronotum without the lateral toothed, leaf-like expansion; its hind border broadly angulate and adorned with five flat, tooth-like projections—the middle one furcate *Spathalium* Bolívar
- bb.* Tegmina and wings wanting. Pronotum furnished at lower lateral edges with a toothed, leaf-like expansion; its hind border broadly rounded and adorned with a series of six distinct, heavy, blunt spines..... *Græa* Philippi

OSSA Giglio-Tos.

TABLE FOR DETERMINATION OF SPECIES.

- a.* Body covered with long white hair. Tegmina above with an orange spot at base. Eyes globose. Posterior femora moderately heavy..... *bimaculata* Giglio-Tos
- aa.* Body subglabrous. Tegmina above without a basal spot. Eyes ovoid. Posterior femora somewhat slender *viridis* Giglio-Tos

OSSA BIMACULATA Giglio-Tos.

Ossa bimaculata GIGLIO-TOS, Boll. Mus. Zool. Anat., Torino, IX, 1894, No. 184, p. 15.

Habitat.—Several specimens, both sexes, from Sapucay, Paraguay (W. T. Foster). It also occurs in the northern portions of Argentina, eastern Bolivia, and southern Brazil.

OSSA VIRIDIS Giglio-Tos.

Plate XXXVIII, fig. 5.

Ossa viridis GIGLIO-TOS, Boll. Mus. Zool. Anat., Torino, XII, 1897, No. 302, p. 27.

Habitat.—Northern Argentina and several localities in the Bolivian Chaco (Giglio-Tos). It is also very common in the Argentine Provinces of Cardoba and Santa Fe, where it is found feeding on a certain *Nicotiana* or plant of an allied genus. It most assuredly occurs also in Paraguay

OMMEXECHA Serville.

TABLE FOR DETERMINATION OF SPECIES.

- a.* Tegmina not reaching the apex of abdomen.
b. General color green; tegmina shorter. Hind femora externally smooth.
virens Serville
bb. General color dull brown; tegmina longer. Hind femora externally hirsute.
servillei Blanchard
- aa.* Tegmina reaching beyond the tip of abdomen. The genicular lobes of hind femora two-spined; tegmina acuminate *macropterum* Blanchard
bb. The genicular lobes of hind femora smooth. Tegmina rounded at apex.
germari Burmeister

OMMEXECHA VIRENS Serville.

Ommexecha virens SERVILLE, Revue Meth., p. 95; Hist. Orthopt., 1839, p. 701.—
 BLANCHARD, Monog. Ommex., p. 612, pl. xxii, fig. 1a, female.

Habitat.—Not represented in the collections. Given originally as coming from "Buenos Aires." Supposed to be a freshly molted specimen of the next species.

OMMEXECHA SERVILLEI Blanchard.

Ommexecha servillei BLANCHARD, Monog. Ommex., 1836, p. 613, pl. xxii, figs. 2, male, 3, female.

Habitat.—Asuncion (Giglio-Tos, Bruner); San Bernardino (Bruner); Sao Paulo, Brazil.

This insect was found on sandy ground in the city of Asuncion and also along the sandy beach of a lake at San Bernardino.

OMMEXECHA MACROPTERUM Blanchard.

Ommexecha macropterum BLANCHARD, Monog. Ommex., 1836, p. 610, pl. xxi, figs. 3, 4.

Ommexecha bruneri BOLIVAR, Monog. Pargomor., 1884, p. 28.

Habitat.—If the synonymy is correct, this insect extends from Peru to Paraguay. Sapucay, Paraguay, the two sexes (W. T. Foster).

OMMEXECHA GERMARI Burmeister.

Ommexecha germari BURMEISTER, Handb. Ent., II, p. 655 (1838).—BOLIVAR, Monog. Pargomor., 1884, p. 28, fig. 1.

Habitat.—Villa Rica and Asuncion, Paraguay (Giglio-Tos). Not in the collections before me.

SPATHALIUM Bolivar.

No specimens of this genus are at hand from Paraguay, but since it occurs both to the south in Argentina and to the north in Brazil some one or more of the species undoubtedly will be found in the country now under consideration. One of the Argentinian species is figured herewith, namely, *Spathalium hispidum* Bruner, Plate XXXVII, fig. 8, male, Plate XXXVIII, fig. 11 female.

GRÆA Philippi.

This fourth genus of the subfamily is also liable to occur in Paraguayan territory. But two species are known to the writer, and both of them are found on the pampas of Argentina from Bahia Blanca to Catamarca and northward. *Græa horrida* Philippi is shown on Plate XXXVII at fig. 1.

Subfamily ACRIDINÆ.

This is by far the most extensive subfamily of locusts represented in the region covered by the present paper, and contains, with but two or three exceptions, all of the destructive species. The following rather long table for the separation of the genera to which these insects belong will be of some value to the reader in separating the many forms that occur in any particular region. In genera where more than one species occur there will also be found tables for the separation of the different species.

TABLE FOR DETERMINATION OF GENERA.

- a. Posterior tibiæ provided with an apical spine above on both margins.
- b. Fastigium of the vertex horizontally greatly produced.
- c. Tegmina somewhat surpassing the tip of the abdomen, their apex truncate.
Superior carina of the hind femora terminating at the apex in a prominent tooth *Procolpia* Stål
- cc. Tegmina considerably surpassing the tip of abdomen, their apex narrowly rounded. Superior carina of hind femora terminating in a small tooth.
Munatia Stål
- d. Crest of the pronotum serrate throughout *Prionolopha* Stål
- dd. Crest of the pronotum not serrate, or sometimes posteriorly crenulate, or sometimes cut by the transverse sulci.
- e. Lateral carinæ of the pronotum converging toward the front.
- f. Carinæ of the frontal costa parallel or gently diverging above the ocellus.
- g. Tegmina and wings complete, equaling or surpassing the abdomen.
Tropinotus Serville
- gg. Tegmina and wings abbreviated *Alcamesis* Stål
- ff. Carinæ of the frontal costa diverging above the ocellus.
- ee. Lateral carinæ of the pronotum parallel or diverging toward the front.
Elaeochlora Stål
- bb. Fastigium of the vertex sloping or depressed.
- c. Wings with that portion just back of the vein which divides the first and second parts dilated and provided with numerous parallel transverse veins.
- d. Fastigium of the vertex subtriangularly acuminate. Frontal costa compressed. Pronotum above rounded; lateral carina obliterated in front of last transverse sulcus, blunt back of it *Chromacris* Walker
- dd. Fastigium of the vertex obtuse. Frontal costa not compressed or sulcate.
- e. Median carina of the pronotum not cristate. Head somewhat smooth.
Frontal costa above the antennæ obtusely sulcate *Zoniopoda* Stål
- ee. Median carina of the pronotum elevated into a crest which is interrupted by the sulci so as to form lobes *Tropidacris* Scudder

- cc. Wing with that portion just back of the vein which divides the first and second parts not dilated nor provided with transverse parallel veins. Fastigium of the vertex rounded and fading into the frontal costa.
- Diponthus* Stål
- aa. Posterior tibiae with the apical spine absent from the upper outer margin.
- b. Posterior tibiae more or less flattened toward the apex, the margins acute.
- c. Mesosternal lobes contiguous nearly throughout in a straight line. (Tegmina acuminate.)
- d. Fastigium of the vertex as long or longer than the eyes.
- e. Fastigium of the vertex with a single deep groove. Interocular space of the vertex very narrow.....*Leptysmia* Stål
- ee. Fastigium of the vertex provided with four narrow shallow grooves. The interocular space wider.....*Leptysmia* Giglio-Tos
- dd. Fastigium of the vertex shorter than the eyes.....*Arnilla* Stål
- cc. Mesosternal lobes more or less distant.
- d. Pronotum with its hind margin rounded.
- e. Prosternal tubercle transverse, broad, the apex truncate. (Frontal costa complete, gently sulcate, the lateral carinae acute. Facial carinae strongly converging below. Lower edge of sides of pronotum straight.)
- Oxybleptella* Giglio-Tos
- ee. Prosternal tubercle conical, somewhat acute.
- f. Body graceful. Front strongly oblique. Head much exerted, conical. Antennae distinctly ensiform. Eyes greatly elongate, viewed from above strongly convergent, forming an acute angle. Pronotum distinctly dilated posteriorly, the lower edges of side oblique, straight or nearly so. Elytra dilated toward their apex....*Inusia* Giglio-Tos
- ff. Body heavier. Front less strongly oblique. Head less exerted, not conical. Antennae filiform or weakly subensiform. Eyes not or but little elongate, viewed from above gently convergent, forming an obtuse angle. Pronotum but little or not at all dilated posteriorly, the lower edge of lateral lobes on the posterior half straight, on the anterior half emarginate. Tegmina narrowed toward the apex. Pronotum cylindrical. Frontal costa below the ocellus and lateral carinae of the face subobsolete.....*Stenopola* Stål
- dd. Pronotum with its hind margin obtusangulate, the apex not incised. Tegmina greatly surpassing the tip of hind femora.
- e. Frontal costa between the antennae more prominent, subdilated. Eyes more convergent and farther removed from the front edge of the pronotum. Tegmina subacuminate.....*Cornops* Scudder
- cc. Frontal costa less prominent, and not dilated between the antennae. Eyes less divergent, and nearer to front edge of the pronotum. Apex of the tegmina distinctly rounded.....*Paracornops* Giglio-Tos
- bb. Posterior tibiae terete, not laminate, the margins rounded.
- c. Posterior tarsi with the first and second joints subequal in length. Fastigium of the vertex horizontal or subhorizontal, somewhat prominent. The front strongly oblique. Tegmina as long or longer than abdomen. Pronotum subcylindrical.....*Bucephalacris* Giglio-Tos
- cc. Posterior tarsi with the second joint distinctly shorter than the first.
- d. Fastigium of the vertex triangular or in front truncate, divided from the frontal costa by a transverse carina or distinct angle.
- e. Upper carina of hind femora smooth, at most provided with punctures from which emanate stiff hairs.
- f. Interval between the mesosternal lobes narrower than the lobes themselves, distinctly longer than wide.

- g.* Pronotum smooth, the transverse sulci profound and deeply impressed, the hind lobe elevated. Head large and strongly exerted. *Adimantus* Stål
- gg.* Pronotum more or less strongly punctate, granulose or rugose, the transverse sulci less profound, the hind lobe not elevated. Head less exerted.
- h.* Pronotum very strongly rugose, the median carina very strong and lobed between the transverse sulci *Zygolistrum* Rehn
- hh.* Pronotum granulose or punctate, the median carina less strong, not lobed between the sulci.
- i.* Larger. Green or greenish. Metasternal lobes in the female distant. Frontal costa above the antennæ narrowed, evenly amplified throughout. Space between the eyes not narrower than widest part of frontal costa. Posterior extremity of pronotum obtusangulate, the lower lateral edges nearly straight, distinctly incrassate *Aleuas* Stål
- ii.* Smaller. Testaceous, ferruginous, or fuscous. Metasternal lobes in female contiguous. Frontal costa moderately dilated between the antennæ, plane, punctate; sulcate below the ocellus and continued to the clypeus. Space between the eyes nearly or quite as wide as the frontal costa. Posterior extremity of the pronotum subrotund, the lower lateral edges in front distinctly sinuate. Tegmina densely reticulate. *Paraleuas* Giglio-Tos
- ff.* Interspace between mesosternal lobes of about equal width with the lobes themselves, quadrate.
- g.* Frontal costa very prominent and strongly dilated between the antennæ, plane. Valves of ovipositor slender, long, and straight. *Orthoscapheus*, new genus
- gg.* Frontal costa not unusually prominent nor dilated between the antennæ, punctate, or sulcate. Valves of ovipositor normal.
- h.* Body cylindrical or subcylindrical, the sexes subequal in size; lower branch of male cerci much longer than the upper. *Jolacris* Giglio-Tos
- hh.* Body decidedly compressed, the sexes very unequal in size. The two branches of the male cerci of about the same length. *Omallolettix*, new genus
- ce.* Upper carina of hind femora more or less serrate. Fastigium of the vertex horizontally projecting, acuminate.
- f.* Pronotum rugose with the hind margin rounded, the median carina visible throughout. Tegmina and wings somewhat abbreviated. Vertex between the eyes moderately broad *Filerna* Stål
- ff.* Pronotum at most coarsely punctate on posterior lobe, the hind margin angulate and with the median carina obliterated between the transverse sulci. Tegmina and wings greatly surpassing the abdomen.
- g.* Vertex between the eyes very narrow. Pronotum with the lateral carinae acute, straight, parallel. Tegmina with the apex rounded. Hind femora greatly incrassate *Xiphiola* Giglio-Tos
- gg.* Vertex between the eyes rather wide. Pronotum with the lateral carina less acute, straight but evenly divergent posteriorly. Apex of tegmina obliquely subtruncate. Hind femora only moderately incrassate *Osmiliola* Giglio-Tos
- dd.* Fastigium of the vertex deflexed or horizontal, gently fading into the frontal costa.

- e. Mesosternal lobes longer than wide, their internal margin straight. *Schistocerca* Stål
- ee. Mesosternal lobes transverse or of equal width and length, their internal margin rounded.
- f. Posterior tibiæ furnished with 8 or sometimes more than 8 spines in the outer row.
- g. Tegmina equaling the abdomen in length or abbreviate, never lobi-form or rudimentary, always with the inner margins overlapping.
- h. Head small, not exerted, the hind part narrower than front edge of pronotum; occiput and vertex on the same plane with the pronotum.....*Atrachelaeris* Giglio-Tos
- hh. Head distinctly exerted, the posterior part of equal width or very little narrower than pronotum.
- i. Pronotum decidedly dilated posteriorly. Cerci of the male slender, pointed at apex.....*Dichroplus* Stål
- ii. Pronotum subcylindrical, but little broadened posteriorly. Male cerci more or less amplified at apex.
- j. Female with the valves of the ovipositor normal, acute. Male cerci fairly broad and obliquely docked at apex. *Leiotettix*, new genus
- jj. Female with the valves of the ovipositor slender, straight, the upper ones much the longer. Male cerci variable, spatulate or slender and curved at apex.....*Scotussa* Giglio-Tos
- gg. Tegmina lobiform, lateral, widely separated, or with their inner edges nearly, but never quite touching.
- h. Pronotum with the posterior margin rounded or subangulate.
- i. Head very large, the hind portion wider than the pronotum; the labrum large. Frontal costa prominently dilated between the antennæ. Prosternal spine minute. Tegmina lateral, the dorsum of abdomen exposed between them. Subgenital plate subglobose at apex, the cerci, except at base, stiliform, bent upwards.....*Parascopas*, new name
- ii. Head large, but not broader than the pronotum; the labrum normal. Frontal costa not at all or but little dilated between the antennæ. Prosternal spine elevated, not minute. Tegmina with their inner edges nearly touching. Subgenital plate triangularly produced, the cerci variable.
- j. Male cerci laminately compressed. Chief color of insect green or greenish.....*Chlorus* Giglio-Tos
- jj. Male cerci long and slender, the apex pointed and decurved. Chief color of insect ferruginous.....*Eurotettix*, new genus
- hh. Pronotum with the posterior margin truncate or roundly emarginate.....*Paradichroplus* Brunner
- ff. Posterior tibiæ generally with less than 8 spines, usually with 6 to 7, in outer row. Frontal costa percurrent, straight, not at all or but little produced between the antennæ. Tegmina and wings fully developed.....*Osmilia* Stål

PROCOLPIA MINOR Giglio-Tos.

Procolpia minor GIGLIO-TOS, Boll. Mus. Zool. Anat. Torino, No. 184, IX, 1894, p. 17; No. 377, XV, 1900, p. 3.

While the collections contain no specimens of this insect, it has been reported from Asuncion.

MUNATIA AUSTRALIS, new species.

General color brownish ferruginous, only varied by having the pronotal carina and a median line on occiput to fastigium testaceous. In the male this line is also continued on the dorsal edge of tegmina for half their length. Much smaller than *M. punctata* Stål, from which it differs markedly otherwise by having the pronotal carina blunt and smooth instead of thin and irregularly serrate.

Head rather small, the vertex horizontal, acuminate, extending in front of the eyes about twice as far (female) or a trifle more (male) as their distance apart, broadly and shallowly sulcate; frontal costa prominent above, widening gently to just below the ocellus, where the carinae unite for a short distance and again gently separate and continue to the clypeus, just before reaching which they diverge more abruptly, sulcate from between the antennae; lateral carinae of face interrupted, the face provided with several prominent longitudinal rugae and elevated points; cheeks also more or less coarsely rugose. Pronotum widening posteriorly, very coarsely and sparsely rugose above, less so on sides, the last transverse sulcus quite profound, situated about the middle; median carina smooth, blunt, not greatly elevated; hind margin acute, front margin angulate, with the apex deeply notched. Tegmina and wings considerably surpassing the tip of abdomen; the wings yellowish (female) or blue (male) basally, more or less fuliginous beyond. Hind femora only moderately robust, quite rough and provided with 5 or 6 short spines on outer edge of lower side, as long as the abdomen; the inner spines of tibiae rather heavy.

Length of body, male, 27, female, 40; of antennae, male, 14, female, 16; of pronotum, male, 7.25, female, 10.5; of tegmina, male, 26, female, 35; of hind femora, male, 14, female, 20 mm.

Type.—Cat. No. 9722, U.S.N.M.

Habitat.—Sapucay, a number of both sexes, W. T. Foster, collector.

PRIONOLOPHA SERRATA (Linnæus).

Gryllus (Bulla) serratus LINNÆUS, Syst. Nat., 10th ed., 1758, p. 427.

Acridium serratum DE GEER, Mém. Ins., III, 1773, p. 493, pl. xli, fig. 6.

Pamphagus serratus THUNBERG, Mém. Acad. St. Petersb., V, 1815, p. 260.

Xiphocera serrata BURMEISTER, Handb. Ent., II, 1838, p. 614.

Tropinotus serratus SERVILLE, Hist. Ins., Orthopt., 1839, p. 618.

Acridium serrato-fasciatum DE GEER, Mém. Ins., III, 1773, p. 495, pl. xlii, fig. 2.

Pamphagus lateralis THUNBERG, Mém. Acad. St. Petersb., V, 1815, p. 260.

Prionolopha serrata STÅL, Recens. Orthopt., I, 1873, p. 44.

Several specimens of both sexes are at hand. They come from San Pedro, San Bernardino, Sapucay, and Asuncion. Also reported by Giglio-Tos.

A second species of the genus, *P. brevipennis*, is described by Giglio-Tos^a as coming from the Matto Grosso Plateau in Brazil. It may also reach northern Paraguay.

^a Boll. Mus. Zool. Anat. Torino, No. 377, XV, 1900, p. 4.

TROPINOTUS Serville.

Since Paraguay seems to be the center of abundance of the species belonging to the genus *Tropinotus* it might be well to append a brief synoptic table for separating all the known forms, together with those here described.

TABLE FOR DETERMINATION OF SPECIES.

- a. Crest of the pronotum more or less crenulate or even serrulate posteriorly. Genicular angles of hind femora acute, a little lengthened.
- b. Tegmina and body cinereous, testaceous, or ferruginous, usually more or less mottled with brown.
- c. The markings of tegmina large, forming more or less well-defined bands.
- d. Hind tibiae 12-spined. The wings with the anterior field as well as disk colored bright rose.....*rosulentus* Stål
- dd. Hind tibiae 9-10 spined. The anterior field of wing more or less infuscated.
- e. Hind femora very long, reaching considerably beyond the tip of abdomen in both sexes. Crest of pronotum deeply cleft by all three sulci, the lobes distinctly separated*discoideus* Serville
- ee. Hind femora shorter, only reaching the tip of abdomen (female) or but little surpassing it (male). Crest of pronotum less deeply cleft, the lobes closely approximate.
- f. Larger; general color cinereous or testaceous, the maculation of tegmina, composed of several transverse bars and distributed over most of wing.
- g. Wings long, narrow. Carina of pronotum less arched, confined to Brazil and southward.....*angulatus* Stål
- gg. Wings broad, shorter. Carina of pronotum high and strongly arched. Yucatan and Honduras.....*mexicanus*, new species.^a
- ff. Smaller; general color ferrugineo-testaceous, the tegmina with but a single triangular basal maculation*schulzi* Bruner
- cc. Markings of tegmina small, irregularly scattered over the wing save for a row in basal half of discal area.
- d. Pronotum short, the crest low, and but little produced posteriorly. Hind tibiae with 9 spines in outer row*modestus* Giglio-Tos
- dd. Pronotum longer, considerably produced posteriorly. Hind tibiae with 10 spines in outer row*conspersus* Bruner
- bb. Tegmina and body uniformly colored, without maculation or conspersing.
- c. Tegmina, as well as entire body and legs, green.....*insignis* Giglio-Tos
- cc. Tegmina, body and legs uniformly dull brown save a paler dorsal stripe on the former*affinis*, new species
- aa. Crest of pronotum smooth posteriorly. Genicular angles of hind femora shorter and more rounded.
- b. Hind tibiae provided with fewer (10) spines in outer row. General color, dark cinereous.....*regularis* Bruner
- bb. Hind tibiae provided with more (11-19) spines in outer row. Color variable.
- c. Color largely green; the discal area of tegmina with or without dark spots.
- d. Posterior femora punctate, and with all the carinae nigro-serrate. Hind tibiae armed with 11 or 12 spines on outer side (San Leopold, Central Brazil)*scabripes* Stål

^aThese two species are before me as I write, hence are included herewith. The Mexican species will be described in the Biologia Centrali Americana when the proper place is reached. The other is sufficiently distinct to be recognized by the diagnosis given here. This last may also occur in Paraguay.

dd. Posterior femora nearly smooth, only partially nigro-punctate on the carina. Hind tibiae armed with 13 to 16 spines on outer row.

e. Larger and more robust (36 male, 51 female, mm.); the disk of tegmina provided with a row of prominent dark subquadrate spots. Hind femora rather robust basally. The tibiae 13 or 14 spined. . . . *livripes* Stål

ee. Smaller and slenderer (30 male, 40 female, mm.). Disk of tegmina immaculate or only showing traces of the discal spots. Sometimes with the body and tegmina more or less infuscated. Hind femora slender. The tibiae 15 to 16 spined. (São Paulo, Brazil.)

gracilis Bruner^a

cc. Color ochreous or ferrugineo-testaceous.

d. Hind tibiae with 11-12 spines in outer row. Crest of pronotum arcuate. Tegmina with a pale costal line *lineatus*, new species

dd. Hind tibiae with 18-19 spines in outer row. Crest of pronotum straight. Tegmina without a costal line *laufferi* Bolivar

TROPINOTUS DISCOIDEUS Serville.

Tropinotus discoideus SERVILLE, Hist. Orthopt., 1839, p. 619.

Tropidonotus discoideus STÅL, Obs. Orthopt., III, 1878, p. 19.

Habitat.—This insect is represented by 9 male and 12 female specimens collected by W. T. Foster at Sapucay (coll. U. S. Nat. Mus.); by others from Asuncion (coll. L. Bruner), and is reported from various Paraguayan localities (Giglio-Tos).

TROPINOTUS ANGULATUS Stål.

Tropinotus angulatus STÅL, Recens. Orthopt., I, 1873, p. 44.

Tropidonotus angulatus STÅL, Obs. Orthopt., III, 1878, p. 19.

Habitat.—Specimens of this species are at hand from Asuncion (L. Bruner, collector); it is also credited to Paraguay by Giglio-Tos.

TROPINOTUS MODESTUS Giglio-Tos.

Tropidonotus modestus GIGLIO-TOS, Boll. Mus. Zool. Anat. Torino, IX, 1894, No. 184, p. 16.

Habitat.—This species, while not recorded directly from Paraguay, was taken in the adjoining parts of the Argentine Chaco. It undoubtedly occurs likewise in Paraguayan territory.

TROPINOTUS INSIGNIS Giglio-Tos.

Tropidonotus insignis GIGLIO-TOS, Boll. Mus. Zool. Anat. Torino, IX, 1894, No. 184, p. 16.

Habitat.—While this insect was first described from northwestern Argentina it has since been reported from Cordoba and Santa Fe, and from the Bolivian Chaco. It is very likely found in Paraguay as well.

TROPINOTUS AFFINIS, new species.

Apparently quite closely related to *T. scabripes* Stål, but differing from it in a number of points sufficiently to warrant me in describing it as new. As compared with that species, *affinis* is a little larger and

^a See footnote on preceding page.

perhaps a trifle more robust. Its hind femora are rather profusely and evenly granulated with black, and have all the carinae decidedly nigro-serrate as in *scabripes*. The median carina of the pronotum is moderately elevated, evenly and gently arcuate, the transverse sulci quite profound but with the different sections more closely approximate than in *discoideus*, the hind lobe somewhat the longer and acute angled behind; lateral carinae prominent and bowed outward in middle. Tegmina long, slender, tapering; very closely veined on basal half, less so on apical, without markings. Posternal spine rather large and long, directed posteriorly but not reaching the front edge of the mesosternum, not sulcate in front as in *scabripes*.

General color above brownish ferruginous, a little paler below; the dorsal field of tegmina testaceous; occiput and fastigium of vertex also with a narrow line on each side of same color. Hind wings long and narrow, the disk orange red; hind margin and obliquely inwardly directed band, along with basal half of anterior field dark fuscous, the apical portion faintly clouded, the scalariform space transparent, vitreous. Hind tibiae brownish with a faint lavender tint, the tarsi fuscous. Antennae pale on basal half, infuscated apically.

Length of body, female, 45, of pronotum, 15, of tegmina, 37, of hind femora, 24, of antennae, 16 mm.

Type.—Cat. No. 9732 U.S.N.M.

Habitat.—Sapucay, Paraguay, a single female collected by W. T. Foster in February.

While the writer is unacquainted with *T. scabripes* Stål, to which this insect seems to be quite closely related, it seems to be distinct.

TROPINOTUS REGULARIS Bruner.

Tropinotus regularis BRUNER, Ent. News, XVI, 1905, p. 214-215.

The present collection contains 9 males and 8 females of this insect. Since the female was not described when the species was named, and because of the material now at hand showing some variation, the additional description is here presented.

Besides being much larger and more robust than the opposite sex, some specimens of both the male and the female insects exhibit a few of the color variations of *T. lævipēs* Stål, but differ from it by the much shorter and more robust hind femora and in being either altogether or largely brown and black. The female, like the male, has the discal field of the tegmina regularly maculate with black quadrate spots well toward the apex. In some specimens the dorsum of pronotum is largely and the tegmina above the discal row of maculations entirely green, in others the lower apical half and a narrow subcostal stripe on the basal half is cinereous. Hind femora prominently provided with dusky bands externally and above, the lower sulcus and inner face testaceous; the hind tibiae testaceous more or less regularly conspersed with fuscous.

Length of body, male, 28, female, 43; of pronotum, male, 9, female, 14; of tegmina, male, 24, female, 31; of hind femora, male, 16.5, female, 24; of antennæ, male, 10, female, 14 mm.

Type.—Cat. No. 9720, U.S.N.M.

Habitat.—Sapucay, Paraguay, November to March, 9 males and 8 females collected by W. T. Foster (coll. U. S. Nat. Mus.). It is also represented by a single male each in the collection of the Philadelphia Academy of Sciences and in the private one of the writer.

TROPINOTUS SCABRIPES Stål.

Tropidonotus scabripes STÅL, Obs. Orthopt., III, 1878, p. 19.

Tropinotus scabripes BRUNER, Ent. News, XVI, 1905, p. 215.

Habitat.—Recorded from central Brazil in company with the following species. It is very evidently also to be found in northern Paraguay, since the species of this genus seem to be rather widely distributed if suitable environment is to be had.

TROPINOTUS LÆVIPES Stål.

Plate XXXVII, fig. 7.

Tropidonotus lævipis STÅL, Obs. Orthopt., III, 1878, p. 20.

Tropinotus lævipis BRUNER, Ent. News, XVI, 1905, p. 215.

Habitat.—Four males and four females, Sapucay, Paraguay, collected by W. T. Foster.

This is by far the commonest species in Argentina and is found as far south as Buenos Aires.

TROPINOTUS GRACILIS Bruner.

Tropinotus gracilis BRUNER, Ent. News, XVI, 1905, p. 215.

This, the most slender of the known forms, will probably be found in eastern Paraguay, as well as about Sao Paulo, Brazil, the locality from which the type specimens were obtained.

TROPINOTUS LINEATUS, new species.

A medium sized, rather robust insect, the general color of which is dark ferruginous to brown. Pronotal crest smooth; the genicular lobes of the hind femora not greatly elongate nor acute. Disk of the tegmina very obscurely maculate with large brown patches distributed similarly to those in *discoideus*, and provided with a narrow subcostal testaceous line that reaches from the base to a little beyond the middle.

Head of medium size, nearly as wide above as below; the occiput provided with a well-defined longitudinal median carina which extends to the fastigium of the vertex; vertex nearly (male) or quite (female) as broad as the longest diameter of one of the eyes, fastigium a little less than a right angle, the walls prominent; frontal costa only moderately

prominent, narrowed above, gently sulcate and more (female) or less (male) strongly punctate; face quite strongly punctate, cheeks somewhat rugose; antennæ with the joints of basal half somewhat depressed. Pronotum strongly crested, the median carina smooth, plainly cut by all three of the transverse sulci; lateral carinæ also cut by the sulci, in some specimens faintly crenulate; disk granulose, and on the hind lobe provided on each side with four or five fine ridges parallel to lateral margins; lateral lobes profusely punctate; hind and front margins both acute, the hind lobe nearly twice as long as the front one. Tegmina profusely veined on basal, less so on apical half, extending beyond the tip of hind femora and abdomen in the two sexes; hind femora moderately robust, the superior carina plainly serrate, genicular lobes subacute, not greatly elongated. Last ventral segment of male abdomen cuneate, the middle strongly carinate.

General color dark ferruginous to brown, in some individuals largely green on occiput, disk of pronotum and the anterior and posterior fields of the tegmina; disk of latter more or less strongly marked with large brown or fuscous patches as in *discoideus*. Principal longitudinal veins basal half of tegmina black conspersed with yellow or testaceous. The characteristic color feature of the tegmina is, however, the narrow pale stripe between the median and subcostal veins, and which has suggested the specific name. Hind femora granulose, the carina more or less strongly conspersed with black on the serrations. Hind tibiæ with the spines black tipped.

Length of body, male, 32, female, 40-42; of pronotum, male, 13, female, 15.5-17; of tegmina, male, 26, female, 34; of hind femora, male, 18, female, 23-24 mm.

Type.—Cat. No. 9733 U.S.N.M.

Habitat.—Several specimens of both sexes at Sapucay, Paraguay, by W. T. Foster.

ALCAMENES Stål.

TABLE FOR DETERMINATION OF SPECIES.

- a*. Pronotum with the median carina tectiformly elevated. The posterior lobe much longer than the anterior one.
- b*. Anterior and middle sulci of the pronotum obsolete above. Tegmina twice maculate. Hind tibiæ 12-13 spined in outer row.....*granulatus* Stål
- bb*. Anterior and middle sulci of the pronotum strongly impressed, cutting the crest. Tegmina immaculate. Hind tibiæ 10-11 spined in outer row.
cristatus, new species
- aa*. Pronotum with the median carina only moderately elevated. The posterior lobe shorter than the anterior one.
- b*. Body slender. The posterior sulcus of the pronotum a little more prominent than the others. Posterior margin obtuse. The hind femora slender.
brevicollis Stål
- bb*. Body heavy. The posterior sulcus of the pronotum strongly impressed. Posterior margin a right angle. The hind femora tumid at the base.
clarazianus Pictet and Saussure

ALCAMENES CRISTATUS, new species.

Rather above the medium, moderately robust (female), or somewhat slender (male), the two sexes very unequal in size. Uniformly grass-green, or sometimes brunco-testaceous above, in the former specimens provided with a brownish purple line along the lateral carinae and hind margin of dorsum of pronotum. The dorsal field of the tegmina also more or less tinged with this color. All the tibiae and antennae more or less strongly infuscated. Venter pale yellowish.

Body greatly compressed, much higher than broad. Head about as wide as the front edge of the pronotum, eyes small, elongate, in the male not quite, in the female a trifle more than, one-half as long as the cheeks below them, rather widely separated above; occiput somewhat inflated and provided with a series of fine transverse ridges or rugae; fastigium of the vertex nearly horizontal, broadly triangular, with a fine longitudinal median carina that continues posteriorly to the occiput; frontal costa moderately prominent between the antennae, quite narrow above but evenly broadening below, punctate nearly throughout and very gently sulcate in the vicinity of the ocellus. Antennae of moderate length, somewhat incrassate, the basal joints depressed but not sufficiently so to give to these members even a subensiform appearance, inserted between the upper portion of the eyes. Pronotum tectiform, broadly and evenly arched, rugose at sides, coarsely granulose above, the anterior lobe shorter than the posterior; the transverse sulci continuous, severing both the lateral and median carinae, anterior and posterior edges acutely produced on occiput and over the base of tegmina; lateral carinae finely crenulate, the median smooth, and the lower lateral edges provided with a series of smooth pale tubercles. Tegmina coriaceous, very profusely and minutely veined, somewhat abbreviated, elongate triangular, their apices reaching two-thirds (female) or nearly four-fifths to the tip of the abdomen, without maculation. Wings not as long as tegmina. Hind femora slender, in the males a little surpassing, in the females not quite reaching, the tip of the abdomen. Prosternal spine coarse, robust, long, curved to the rear and tapering on apical half, the tip reaching over the base of mesosternum.

Length of body, male, 36; female, 53; of antennae, male and female, 13.5; of pronotum, male, 19; female, 23; of tegmina, male, 17; female, 23; of hind femora, male, 20; female, 25 mm.

Type.—Cat. No. 9723, U.S.N.M.

Habitat.—Sapucay, Paraguay, 9 males, 9 females, and 1 nymph. W. T. Foster, collector.

At first glance this insect, on account of its long and strongly crested pronotum, reminds one of a short-winged and diminutive *Prionolopha serrata* which occurs in the same region. The genera *Alcamenes* and

Prionolopha seem to be quite closely related—much more so than *Tropinotus* and *Prionolopha* are.

Possibly one or two of the other species of the genus may reach Paraguay as well.

ELÆOCHLORA Stål.

ELÆOCHLORA TRILINEATA (Serville).

Xiphicera trilineata SERVILLE, Hist. Orthopt., 1839, p. 614.

Elæochlora trilineata STÅL, Recens. Orthopt., I, 1873, p. 46.

Habitat.—Originally described from Brazil. Reported as coming from Paraguay by Giglio-Tos.

I do not know this species.

ELÆOCHLORA VIRIDICATA (Serville).

Plate XXXVI, fig. 9, female. Plate XXXVIII, fig. 7, male.

Xiphicera viridicata SERVILLE, Hist. Orthopt., 1839, p. 614.

Elæochlora viridicata STÅL, Recens. Orthopt., I, 1873, p. 46.

Habitat.—Brazil, Paraguay, Uruguay, and Argentina. Represented in the collections from Sapucay, which were taken by W. T. Foster.

This insect was found in Argentina attacking a species of Solanaceous plant of which it seemed very fond.

Other species of the genus occur throughout tropical America and some of which are sure to be found in Paraguay.

CHROMACRIS Walker.

CHROMACRIS MILES (Drury).

Gryllus miles DRURY, Exot. Ins., II, 1773, pl. XLII, fig. 2.

Rhomalea speciosa THUNBERG, Mém. Acad. St. Petersb., IX, 1824, p. 104, pl. XIV, fig. 1.

Acridium speciosum SERVILLE, Hist. Orthopt., 1839, p. 673.

Rhomalea miles var B. PICTET and SAUSSURE, Cat. Acrid., 1887, p. 20.

Chromacris speciosa WALKER, Cat. Dermapt. Salt. Brit. Mus., IV, 1870, p. 644.

Habitat.—Sapucay, Paraguay, several specimens collected by W. T. Foster. Also recorded by Pictet and Saussure (in their Catalogue d'Acridiens, p. 20), as coming from this country.

CHROMACRIS STOLLI (Pictet and Saussure).

Plate XXXVIII, fig. 2.

Gryllus miles STOLL, Sauter., 1787, pl. XVI b, fig. 60.

Rhomalea stollii PICTET and SAUSSURE, Cat. Acridiens, 1887, p. 21.

Chromacris stollii REHN, Ent. News, XVI, 1905, p. 38.

Habitat.—No specimens are at hand from Paraguayan territory, but it is recorded as coming from there by Rehn. It is also a common insect in northern Argentina and some parts of Brazil.

Chromaceris nuptialis (Gerstaecker) should also occur within the borders of Paraguay as it is found in adjoining portions of Argentina, Bolivia, and Brazil.

ZONIOPODA Stål.

TABLE FOR DETERMINATION OF SPECIES.

- a. Body and tegmina mostly green or greenish. Wings generally cerulean.
- b. Pronotum unicolorous, in no wise striped or banded with yellow or testaceous.
- c. Larger (male, 40, female, 52 mm.). Hind femora provided with a transverse preapical black band on each side.....4. *junceorum* Berg
- cc. Smaller (male, 30, female, 36 mm.). Hind femora entirely green
3. *iheringi* Pietet and Saussure
- bb. Pronotum more or less longitudinally striped with yellow or testaceous.
- c. All the legs fasciate with red, yellow, and black. Head largely red
1. *tarsata* Serville
- cc. Legs not fasciate with varied colors. Head without the red
2. *similis*, new species
- aa. Body, as well as legs, varied with fuscous or black; the tegmina variable.
- b. Tegmina dark olive to black, the longitudinal veins yellow or testaceous. Wings cerulean.
- c. Pronotum longitudinally black and yellow striped.
- d. Head largely blood-red.....8. *omnicolor* Blanchard
- dd. Head not varied with red7. *emarginata* Stal
- cc. Pronotum not longitudinally striped with black and yellow.
- d. Pronotum glossy black bordered broadly behind and narrowly in front with pale testaceous or dirty white. Body and limbs largely black
6. *exillipes*, new species
- dd. Pronotum chiefly yellow or testaceous, with a median and a subfrontal black band. Body and limbs largely pale. Knees, coxæ and head red
5. *pisicauda*, new species
- bb. Tegmina blackish-fuscous tessellate with yellow. Wings red...9. *picta* Bolivar

ZONIOPODA TARSATA (Serville).

Plate XXXVII, fig. 2.

Aceridium tarsatum SERVILLE, An. Sc. Nat., XX, 1831, p. 283.

Zoniopoda tarsata STÅL, Recens. Orthopt., I, 1873, p. 51.

Aceridium cruciatum BLANCHARD, in D'Orbigny, Voy. P. Amer. Merid., VI, 1837-1843, Pt. 2, Ins., p. (216), pl. xxvii, fig. 5.

Habitat.—Several specimens of both sexes, taken by W. T. Foster, at Sapueay, are before me. It is also reported by Giglio-Tos as coming from Paraguay. It is exceedingly common in Argentina, Brazil, Bolivia, and Uruguay as well, where it is the most prevalent species of the genus.

This insect frequents low, wet places, and is most frequently met with on aquatic plants.

ZONIOPODA SIMILIS, new species.

A slender green species, with rough pronotum and low, pale median carina that recalls *Z. tarsata*, minus the banded legs and bright red markings of head.

Head moderately large, slightly wider than the front edge of the pronotum; the eyes moderately prominent and separated by a space about equal to their longest diameter; fastigium short, broadly triangular, and separated from the vertex by a deep transverse furrow; frontal costa with its sides nearly parallel, deeply sulcate, and continuous to clypeus; face coarsely punctate. Pronotum slender, subcylindrical, as broad in front as behind, a little contracted in the middle, both laterally and from above, giving the insect a strangled appearance; the two lobes about equal in length, the transverse sulci rather distinct but not profound; posterior edge obtusangulate, the front edge a little rounded. Tegmina a trifle narrower than in *tarsata*, as long (female) or a little surpassing the tip of abdomen (male). Hind femora slender, not reaching the apex of the abdomen in either sex. Last ventral segment of male abdomen moderately long and pointed, the apex deeply fissate, and in this respect approaching *fissicauda*.

General color, pale olive-green, with some tinge of yellowish on sides and disk of pronotum, and in the male also rose tinted about the coxæ and face; wings pale blue. Legs nonfasciate, the hind tibiæ pale greenish yellow, their apices and the tarsi carmine. Antennæ unicolorous, black or blackish, except basal joint, which is tinged with red.

Length, male, 31, female, 45; of pronotum, male, 6, female, 8; of tegmina, male, 26, female, 35; of hind femora, male, 15.5, female, 21.

Type.—Cat. No. 9734, U.S.N.M.

Habitat.—Sapucay, Paraguay, January to March. W. T. Foster, 2 males, 2 females.

ZONIOPODA IHERINGI Pictet and Saussure.

Zoniopoda iheringi PICTET and SAUSSURE, Cat. Acridiens, 1887, p. 27.

Habitat.—The collections before me contain a number of specimens of both sexes of this Brazilian insect that were collected at Sapucay. It is also reported by Rehn as coming from Paraguay.

The writer is in possession of a male specimen of this or a closely allied species which has the radial portion of its wings bright rose color instead of cærulean.

ZONIOPODA JUNCORUM Berg.

Zoniopoda juncorum BERG, in Pictet and Saussure, Cat. Acridiens, 1887, p. 26.

Habitat.—While the collections before me do not contain specimens of this beautiful acridian it is reported as coming from a number of localities in Argentina and Bolivia adjoining. Giglio-Tos records it from Paraguay.

ZONIOPODA FISSICAUDA, new species.

About the size and form of *Z. tarsata*, Serville, but differing from it in having the pronotum shorter and much smoother and the median carina stronger than there. Instead of longitudinal pale stripes the

pronotum is provided with two conspicuous black collar-like bands, one median and the other just back of the anterior edge. The abdomen is alternately yellow and black-banded, the pleura obliquely yellow and black alternately and the venter yellow. The tegmina have the longitudinal veins yellow and the interspaces transparent bluish lead color, which when folded over the caerulean wings gives to them the appearance of being alternately dark and pale streaked. The head, front, and middle femora, coxæ, and knees of hind legs red, hind femora and tibiæ yellow, the former thrice banded with black, the latter basally and at the apex also black, tarsi and apex of remaining tibiæ likewise black. There are also black bands on both the middle and anterior femora.

The characteristic feature of this species, however, is the very long last ventral segment of the male abdomen, which is fissured to its base, giving to this region the appearance of being provided with exceedingly long cerci which cross at their apices scissor-like.

Length of body, male, 35; female, 45; of pronotum, male, 6.4; female, 8.5; of tegmina, male, 33; female, 40; of hind femora, male, 18; female, 22 mm.

Type.—Cat. No. 9735 U.S.N.M.

Habitat.—Sapucay, Paraguay, January, W. T. Foster. One male and 1 female.

ZONIOPODA EXILIPES, new species.

Very similar in general appearance to *Z. omnicolor* Blanchard, but differing from that species in the absence of reddish tints about the head and the longitudinal bands on the pronotum. It also differs from that insect by lacking the bands on the anterior and middle legs.

Head a trifle inflated, smooth; the vertex rather broad, one and one-half (male), or nearly twice as wide (female) as the shortest diameter of the eyes, separated from the occiput by a well-defined transverse impression; frontal costa rather broad, continuous to clypeus, the sides pinched below the ocellus, flat and coarsely punctate above, sulcate at ocellus and for one-half the distance below; antennæ black, nearly or quite as long as the hind femora. Pronotum with the anterior lobe smooth, tripartite, subtectate on the dorsum, the transverse sulci broad and deep; posterior lobe flat above, closely and finely granulate, the median carina blunt, hind margin obtuse-angled, front margin entire subangled. Tegmina complete in the male and slightly surpassing the tip of the abdomen; in the female somewhat abbreviated, a little more than half the length of the abdomen. Hind femora very slender, not reaching the tip of abdomen even in the male; middle and anterior femora also slenderer than usual in the genus.

General color glossy black, varied on the margins of the face, the anterior and posterior edges of pronotum, the hind edges of meso- and metathorax and abdominal segments, as well as on the front and hind

coxae and the longitudinal veins of the tegmina with testaceous. Occiput and hind portion of genae dirty yellow. Hind femora with base, apex, and two bands yellowish testaceous; tibiae black, in nowise banded. Wings dusky, bluish tinted basally.

Length of body, male 37, female 49; of antennae, male 17, female 15; of pronotum, male 7, female 9.5; of tegmina, male 30, female 21; of hind femora, male 17, female 19 mm.

Type.—Cat. No. 9719, U.S.N.M.

Habitat.—Sapucay, Paraguay, 2 males and 1 female.

This insect's relationship to its allies may be seen by a reference to the accompanying synoptic table. Whether or not *emarginata* Stål and *omnicolor* Blanchard are distinct, I am unable to say.

ZONIOPODA EMARGINATA Stål.

Zoniopoda emarginata STÅL, *Revens. Orthopt.*, I, 1873, p. 52.

Habitat.—Stål gives Brazil as the habitat, while Pictet and Saussure simply say "Amérique méridionale."

Whether or not this species is distinct from *omnicolor* Blanchard, I am unable to say. If it is, it may also be looked for in Paraguay.

ZONIOPODA OMNICOLOR (Blanchard).

Plate XXXVII, fig. 3.

Acridium omnicolor BLANCHARD, in D'Orbigny *Voy. l'Amer. Merid.*, VI, 1837-43, Pt. 2, Ins., p. 216, pl. xxvii, fig. 3.

Zoniopoda omnicolor BRUNER, *Locusts of Argent.*, 1900, p. 61, fig. 27.

Habitat.—Several specimens are at hand from Sapucay, Paraguay. They were taken by W. T. Foster. It is also reported by Giglio-Tos and Rehn as a Paraguayan insect.

This species occurs rather commonly at Cordoba, in Argentina, where it is found in colonies upon special food plants, after the manner of *Chromacris stollii*.

ZONIOPODA PICTA Bolivar.

Zoniopoda picta BOLIVAR, *Viaje Pacif.*, *Orthopt.*, 1884, p. 37.

Habitat.—If the writer has rightfully determined this insect, it may also be found in Paraguay. It is not reported from that country by the authors already referred to in connection with the preceding species.

TROPIDACRIS Scudder.

TROPIDACRIS DUX (Drury)?

Gryllus dux DRURY, *Illustr. Nat. Hist.*, II, 1837, new ed., pl. XLIV.

Habitat.—Giglio-Tos refers to this insect as being found at Asuncion, Paraguay. It is not represented in any of the collections at hand.

For a discussion of the synonymy the reader is referred to Scudder's paper on "A study of the giant lobe-crested grasshoppers of South and Central America."

Another species of the genus, *T. cristata*, is common along the northwestern borders of Argentina and northward. It is barely possible that it also reaches the mountainous portions of Paraguay.

DIPONTHUS Stål.

TABLE FOR DETERMINATION OF SPECIES.

- a.* Tubercle of the prosternum acuminate, retro-arcuate.
- b.* General color green or olive; tegmina immaculate, the margins pale.
- c.* Grass-green; the tegmina grass-green; wings greenish hyaline. Posterior femora on outer face not transversely banded; the tibiae green, not dotted with black.....*electus* Serville
- cc.* Olive-green; tegmina dilute fuscous; wings subhyaline, rose-color basally, the nervures brown. Posterior femora on the outer face with two bands and the condyle black or blackish; hind tibiae with base, apex, and spines black.....*dispar* Gerstaecker
- bb.* General color ochraceous or fuscous; tegmina maculate.
- c.* Wings blue, the apex bordered with brown; hind tibiae black and yellow annulate, not black-dotted.....*festivus* Gerstaecker
- cc.* Wings rose color, tessellate with black; hind tibiae yellow, dotted with black, apex and base dusky.....*clarazianus* Pietet and Saussure
- aa.* Tubercle of the prosternum straight, not retroarcuate.
- b.* Pronotum with the pale lines percurrent, three dorsal, straight; two lateral, suboblique. Body and legs yellow, black, and red; tegmina black tessellate with yellow.....*pulchus* Pietet and Saussure
- bb.* Pronotum with the pale lines not percurrent, except the dorsal one alone in some instances.
- c.* Larger (male, 40, female, 51 mm.). Testaceous conspersed with black.
nigro-couspersus Stål
- cc.* Smaller (male, 24-29, female 30-40 mm.). Color variable.
- d.* Body and legs not black spotted.
- e.* Tegmina for the most part olivaceous or greenish, but slightly maculate with dusky.....*permistus* Serville
- cc.* Tegmina decidedly obscure maculate.
- f.* Anterior and middle legs not largely black; general color dull testaceous, inclining to brown.....*paraguayensis*, new species
- ff.* Anterior and middle legs largely black.
- g.* Pronotum largely black, the bands bright yellow, head and knees ornamented with red.....*schulzi* Bruner
- gg.* Pronotum when black only so on the anterior lobe, the bands testaceous. Head and knees without red.....*argentinus* Pietet and Saussure
- dd.* Body and legs conspicuously conspersed with black.
- c.* Body and legs strongly tinged with rufous or red. Antennae unicolorous, black.....*pycuostictus* Pietet and Saussure
- cc.* Body and legs along with tegmina greenish or olivaceous. Antennae annulate with pale.....*communis* Bruner

DIPONTHUS PARAGUAYENSIS, new species.

About the size and form of *D. schulzi* Bruner, but differing from that species in having the veins of tegmina, the legs and pronotum, together with body testaceous. The darker portions of head, pronotum, and legs in this form are dark olive instead of deep black, as in the species to which it has been compared. The present species also lacks the red markings of the head and knees of that insect.

Head rather small, the fastigium depressed, the vertex between the eyes a little wider than the broadest part of the frontal costa, the latter of nearly equal width throughout (female) or with the sides decidedly convergent below (male), flat above, sulcate at and below the ocellus. Pronotum short, rather coarsely and profusely punctate above and on sides of hind lobe, the latter a very little longer than the anterior one; hind margin very broadly angulate. Tegmina and wings reaching beyond the abdomen in both sexes. Hind femora as long as the abdomen.

The median line of head and pronotum above fades posteriorly, while the oblique lines on the sides of latter are bordered below by a slight infuscation. The cells of the tegmina are fuliginous, with the veins and cross-veins and the edgings of the membrane to a considerable extent testaceous. This gives to these members the appearance of being testaceous and rather evenly conspersed with dull black. The wings deep rose, the apices pale, with dusky veins. Hind femora crossed above by two dark bands; the outer and inner faces have in addition a basal blotch and the upper half of the genæ dark—the latter black; hind tibiae olivaceous or testaceous, the apex and hind tarsi infuscated. Antennæ dark colored annulate with paler.

Length of body, male 25, female 32; of pronotum, male 4.4, female 5.5; of tegmina, male 22, female 28; of hind femora, male 12.5, female 16 mm.

Type.—Cat. No. 9724, U.S.N.M.

Habitat.—Two specimens, male and female, from Sapucay, Paraguay (coll. L. Bruner); Sapucay, Paraguay, several specimens of both sexes taken by W. T. Foster (coll. U. S. Nat. Mus.).

It is possible that both *D. dispar* and *D. festinus* of Gerstaecker will also be found to occur in Paraguayan territory. One of the species of this genus, *D. communis* Bruner, is figured herewith on Plate XXXVII, fig. 6.

LEPTYSMSA Stål.

An examination of all the American locusts that fall into the genus *Leptyσμα* would indicate that it contains a much larger number of species than generally has been conceded; and, as is recognized at present, it is composed of two series of species, namely, the one more

robust and belonging to North America, and represented by *L. marginicollis*; the other more slender and belonging to South America, with *L. filiformis* as a type. There are at least four readily separable forms of the latter group before me as I write. They may be separated by the accompanying key:

TABLE FOR DETERMINATION OF SPECIES.

- a.* Apex of male abdomen simple, acuminate. Hind tibiae with numerous (11 to 17) spines in outer row. Sides of head, pronotum, and pleura with a decided narrow ferruginous or piceous band.
- b.* Larger (male 27 mm. long). Hind tibiae 17-spined. [Central Argentina.]
argentina, new species
- bb.* Smaller (male 25, female 30-32 mm. long). Hind tibiae 11-spined. [Sao Paulo, Brazil.].....*gracilis*, new species
- aa.* Apex of male abdomen complex, provided with two rather widely separated, backward projecting, slender fingers, between and above which there is a large contorted process. Hind tibiae with 7 to 11 spines in outer row. Sides of head, pronotum, and pleura less decidedly piceous-banded.
- b.* Smaller and slenderer (male 30, female 33-37 mm. long)....*filiformis* (Serville)
- bb.* Larger and more robust (male 33, female 40-43 mm. long)...*obscura* (Thunberg)

LEPTY SMA FILIFORMIS (Serville)?

There are 4 males and 4 females before me from Sao Paulo, Brazil, which are placed here. I am not quite sure, however, of the determination, although the measurement agrees with that given by Serville in his description of the species. This insect is credited to Paraguay by Giglio-Tos, and to Argentina by Stål.

LEPTY SMA OBSCURA (Thunberg)?

There are a number of specimens (4 males and 10 females) in the National collection from Sapucay, Paraguay. These were collected by W. T. Foster. The writer also collected in Paraguay, when several specimens of both sexes were taken at San Bernardino. All of these are larger and somewhat more robust than those referred to above as possibly being *L. filiformis* Serville. They have accordingly been placed under Thunberg's *obscura*.

LEPTY SMINA Giglio-Tos.

LEPTY SMINA PALLIDA Giglio-Tos

Plate XXXVIII, fig. 1.

Leptysmina pallida GIGLIO-TOS, Boll. Mus. Zool. Anat. Torino, IX, 1894, No. 184, p. 35.

Habitat.—Although this insect is not represented in the collections at hand, nor seems to have been reported from Paraguayan territory, it was originally described from Resistencia, Argentina, almost on the borders of Paraguay. It is quite sure to be taken later. The writer has a specimen, presumably of this species, taken by himself at Victoria, Brazil.

ARNILIA Stål.

ARNILIA CYLINDRODES Stål.

Opsomala cylindroides STÅL, Freg. Eugene Resa, Ins. Orthopt., 1860, p. 325.

Arnilia cylindroides STÅL, Recens. Orthopt., 1, 1873, p. 85.

This insect was described originally as coming from Rio Janeiro, Brazil, by its author, and later by himself credited to North Carolina as well. Not having specimens of the genus from Rio Janeiro or other Brazilian localities that agree with Stål's description, it has not been recognized by me. I am inclined, however, to consider the North Carolina insect as distinct from the Brazilian.

Giglio-Tos credits *cylindroides* to Paraguay.

ARNILIA GRACILIS Giglio-Tos.

Two males of a slender *Arnilia*, which the writer collected in 1897 at San Bernardino, Paraguay are referred here.

ARNILIA COCCINEIPES, new species.

Related to *Arnilia viridis* Serville, but a trifle larger and differing from it in several other respects. General color pale green above, without the lateral white lines of *viridis* and other related species of the genus. Antennæ ferruginous. The dorsum of abdomen also lacks the red of *viridis*, while in the present insect the entire hind tibiæ are red, instead of merely the base and apex.

Insect more or less distinctly hirsute throughout, but not profusely so except on lower side of abdomen near its apex. Form cylindrical, slender, the tegmina and wings extending considerably beyond the tip of the abdomen; the former acuminate, rather closely veined on basal half, less so on apical half. Head smooth, the occiput as long as the anterior lobe of the pronotum, the eyes rather large and moderately prominent, very little more pointed above than below, much longer (nearly twice the length) than the cheeks below them; face strongly oblique; vertex rather broad, nearly (male) or quite as wide as the frontal costa in its broadest part (female); the fastigium fairly prominent, a little wider than long, and with the anterior angle somewhat rounded, the margin a trifle elevated; frontal costa prominent above where it is considerably expanded between the base of the antennæ; below this with the sides parallel, deeply sulcate throughout. Pronotum cylindrical, rather shallowly but profusely punctate; the median carina visible only on the posterior lobe; transverse sulci well defined, the last situated back of the middle; front edge subtruncate, hind edge broadly rounded. Meso- and metapleura closely punctate, pectus smooth. Hind femora moderately robust, shorter than the abdomen in both sexes. Hind tibiæ with 7 spines in outer row. Prosternum robust, the apex truncate, rather larger than at base. Last ventral seg-

ment of male abdomen long and narrow, slightly curved upward, the apical third with the sides nearly parallel, the point blunt, entire; supraanal plate broad on basal half, suddenly contracted on the apical half, and produced into a rather narrow triangle, the apex of which is acute; basal portion bordered with a rather high wall and with two median longitudinal carinae; marginal apophyses, longitudinal carinae, and base of lateral border black. Cerci rather robust, of the usual form in this group, unicolorous-pale. Valves of the ovipositor strongly and quite evenly toothed, the serrations deep piceous.

Length of body, male, 32; female, 40; of pronotum, male, 5.15; female, 6.5; of tegmina, male, 29; female, 36; of hind femora, male, 15.5; female, 18 mm.

Type.—Cat. No. 9736, U.S.N.M.

Habitat.—San Bernardino and Asuncion, Paraguay, in September several specimens of both sexes (L. Bruner); 1 female, Sapucay, Paraguay (W. T. Foster), in February; Victoria, Brazil, in May (L. Bruner), 1 female.

As indicated above, this insect bears some resemblance to *Opsomala viridis* Serville,^a but differs from it in lacking the pale lines on sides of body as well as in the absence of the blood-red markings on the abdomen and the pale band on the hind tibiae.

OXYBLEPTELLA Giglio-Tos.

OXYBLEPTELLA SAGITTA Giglio-Tos.

Oxybleptella sagitta GIGLIO-TOS, Boll. Mus. Zool. Anat. Torino, IX, 1894, No. 184, p. 33, fig. 7.

Habitat.—Villa Rica, Paraguay (Giglio-Tos). Not contained in the material before me, but represented by several specimens received from Sao Paulo, Brazil.

INUSIA Giglio-Tos.

INUSIA PALLIDA, new species.

Female.—A pale green insect with the yellowish lower half of sides of pronotum, cheeks, and pleura separated from the dorsal region by a narrow, obscure piceous band. Head, pronotum, and sides of meso- and metathorax profusely but not deeply punctate.

Head small, a little narrower than the front edge of the pronotum; the eyes of medium size, not at all prominent, separated above by a space a little broader than the widest part of the frontal costa; fastigium horizontal, triangular, about three-fourths as long as one of the eyes, the extreme apex bluntly rounded; frontal costa a little prominent, slightly widest between the antennae, sulcate throughout and

^a Rev. Mét. Ins., Orthopt., p. 77.

continuous to the clypeus. Antennæ with the basal joints depressed. Pronotum somewhat expanded on posterior lobe, the last transverse sulcus decidedly back of the middle; anterior edge roundly advanced upon the occiput, the posterior margin of disk also broadly rounded, but little elongated. Tegmina and wings extending nearly one-third of their length beyond the apex of the abdomen, the former a little broadened toward the apex, the latter subacuminate. Hind femora moderately robust, almost as long as the abdomen; hind tibiæ with 7 spines in outer row and 10 in the inner. Mesosternal lobes with their inner edge evenly rounded, separated by a space nearly as broad as long. Prosternal spine moderately robust, bent backward and acuminate.

General color above pale green, the lower portion of cheeks, sides of pronotum; pleura and venter flavous, bordered above from the back edge of eyes to the base of tegmina by a narrow inconspicuous fuscous band. Hind tibiæ dull plumbeous, the tarsi reddish. Antennæ ferruginous.

Length of body, female, 27.5; of pronotum, 5.1; of tegmina, 21; of hind femora, 14 mm.

Type.—Cat. No. 9737, U.S.N.M.

Habitat.—Sapucay, Paraguay, a single female specimen (W. T. Foster).

The type of the genus, *I. gracillima* Giglio-Tos, may reach Paraguayan territory, as it was taken at Caiza, in the Bolivian Chaco. Judging from its description, it must be a much slenderer insect than *pallida*. Other species of the genus occur in northern South American regions, as well as in Central America and southern Mexico.

STENOPOLA Stål.

STENOPOLA PUNCTICEPS Stål.

Opsomala puncticeps STÅL, Freg. Eugene Resa, Ins., Orthopt., 1860, p. 325.

Stenopola (Oxyblepta) puncticeps STÅL, Recens. Orthopt., I, 1873, p. 84.

Habitat.—Sapucay, Paraguay, W. T. Foster, collector. Also reported by Giglio-Tos as coming from Paraguay.

STENOPOLA BOHLSII Giglio-Tos.

Stenopola bohlsii GIGLIO-TOS, Zool. Jahrb., VIII, p. 813.

? *Stenopola puncticeps* GIGLIO-TOS, Boll. Mus. Zool. Anat. Torino, IX, 1894, No. 184, p. 31.

Habitat.—A number of specimens of both sexes are before me from Sapucay, Paraguay, most, if not all, of which were collected by W. T. Foster. It is represented in the collections of the author and that of the U. S. National Museum. It was described from Paraguayan specimens.

PARACORNOPS Giglio-Tos.

This genus is based on the insect which has been determined by Giglio-Tos as De Geer's *Acridium longipenne* which, according to that author, came from Surinam (Dutch Guiana). Without having material from that country for comparison, it would be a difficult matter to definitely recognize the insect to which De Geer gave the name *longipenne*.

Be this as it may, Stål thought that he recognized in an insect from Brazil De Geer's species, and placed it in Scudder's genus *Cornops*.^a Later Giglio-Tos^b recognized the generic distinctness of *Cornops bivitatum* Scudder and the *Acridium longipenne* De Geer. He therefore suggested the name *Paracornops* for the De Geerian species.

By a rather careful study of the description and figure it would appear that if De Geer's insect really occurs in the region under consideration in the present paper, and is contained in the material at hand, we will have to tabulate the species as follows:

TABLE FOR DETERMINATION OF SPECIES.

- a. Upper valves of ovipositor provided externally with 4 or 5 large teeth. General color of insect greenish ferruginous above, testaceous on sides and below. More finely and closely punctate.
- b. Smaller (male 19, female 25 mm.). The lower lateral edges of pronotum somewhat sinuate *longipenne* (De Geer)
- bb. Larger (male —?, female 33). The lower edges of pronotum not sinuous.
paraguayense, new species
- aa. Upper valves of the ovipositor provided externally with 6 or 7 small teeth. General color of insect grass-green or olivaceous above, greenish yellow below. More coarsely and sparsely punctate.
- b. Punctuation of pronotum and pleura quite regularly distributed, leaving no decided glabrous patches. Hind femora much surpassing the abdomen.
aquaticum, new species
- bb. Punctuation of pronotum and pleura somewhat irregularly distributed, leaving glabrous patches on sides of pronotum and pleura. Hind femora only a trifle surpassing the abdomen..... *politum*, new species

PARACORNOPS LONGIPENNE (De Geer)?

This insect is included as a Paraguayan species on the authority of Giglio-Tos, who gives its habitat as the province of San Pedro. There are several specimens, male and female, in the writer's collection which come from Sao Paulo, Brazil, a short distance to the eastward, which have been determined as this species. They are darker colored than De Geer's description would indicate, but for size and markings would be just about right.

Length of body, male, 19, female, 25; of pronotum, male, 4, female, 5; of tegmina, male, 19, female, 23.5; of hind femora, male, 12, female, 15; of antennæ, male, 7.5, female, 6.5 mm.

No synonymy is given for this insect at present, but will be later in a paper under contemplation.

^aSyst. Acrid., 1878, p. 40.

^bBoll. Mus. Zool. Anat. Torino, IX, 1894, No. 184, p. 31.

PARACORNOPS PARAGUAYENSE, new species.

In color and general appearance very similar to the insect here accepted as the *longipenne* DeGeer, but differing from that insect in its much larger size and paler color. It also varies from *longipenne* in having the lower lateral edges of the pronotum less sinuate, while the prosternal spine in the present species is very long and slender as compared with the shorter and rapidly tapering one of the other insect. Frontal costa scarcely expanding between the antennæ, shallowly sulcate, and with the carina not converging at the ocellus.

Length of body, female, 33; of pronotum, 6; of tegmina, 28; of hind femora, 16.5; of antennæ, 8.25 mm.

Habitat.—San Bernardino, Paraguay, a single female collected by the writer during the month of September. It was taken among the rank grasses growing in an open glade near a lake.

PARACORNOPS AQUATICUM, new species.

General color above grass-green, on the sides and below greenish yellow. Sides of head back of the eyes and upper portion of the sides of pronotum and upper portion of pleura, together with a small basal portion of the costal margin of the tegmina, washed with piceous, which marking is most apparent in the male.

Head of moderate size, in the male a trifle narrower, in the female about as wide as the front edge of the pronotum, the occiput short; eyes fairly prominent in both sexes, the vertex about as wide (female) or a little more than one-half the width of the frontal costa (male), the fastigium short, broad, blunt, centrally gently sulcate; frontal costa prominent above where it is somewhat narrowed, as it is also below the ocellus, shallowly and broadly sulcate; the surface coarsely punctate; punctuations of the face piceous, giving it the appearance of being profusely freckled. Antennæ filiform, about equal to (female) or a very little longer than (male) the head and pronotum taken together. Pronotum subcylindrical, a little expanding on the hind lobe, profusely and rather coarsely punctate; median carina percurrent, but not prominent; the anterior margin roundly advanced upon the occiput, hind margin obtusangulate (male) or subrotund (female). Tegmina rather narrow, their apex subacuminate as compared with *longipenne*, extending one-third (male) or one-fourth (female) of their length beyond the tip of the abdomen. Hind femora rather robust and long, surpassing the abdomen in both sexes; hind tibiæ unusually broad on their apical portion, the outer edge 7-spined. Prosternal spine short, coarse, and blunt, slightly transverse. Last ventral segment of male abdomen short, the sides of apex provided with a blunt tooth; the supraanal plate marked with two narrow subbasal lines and two black dots.

Length of body, male, 19.5, female, 24.5; of pronotum, male, 4.5, female, 5.25; of tegmina, male, 21, female, 24; of hind femora, male, 13, female, 16 mm.

Type.—Cat. No. 9738, U.S.N.M.

Habitat.—San Bernardino, in September, 1 male, collected by the writer; also a female from Sapucay, April, W. T. Foster, collector.

The insects which form the basis of the above description appear to belong together, although the pronotum of the female specimen is much less angulate on the hind margin of its disc than that of the male. The male specimen may be considered the type of the species.

PARACORNOPS POLITUM, new species.

Very similar to *P. aquaticum* Bruner, but with shorter and more pointed tegmina. Vertex quite deeply sulcate. The hind femora are shorter and somewhat less robust, while the sides of the pronotum are almost without indications of the piceous band. The pronotum is less profusely punctate on the prozona and has the sides largely without punctures except on the hind lobe. The color of the entire insect is a smoky green inclining to brown. The antennae are shorter than the head and pronotum combined. The prosternal spine is short and rather coarse, cylindrical, the apex blunt.

Length of body, female, 25; of pronotum, 5.5; of tegmina, 22; of hind femora, 14.75; of antennae, 6.75 mm.

Habitat.—The single specimen, a female, comes from Rio de Janeiro, Brazil, where it was taken by myself on some water plants growing in the Botanical Gardens just outside of the city. This specimen is in the writer's collection. The species may also occur in Paraguay.

CORNOPS Scudder.

CORNOPS BIVITTATUM Giglio-Tos.

Cornops bivittatum GIGLIO-TOS, Boll. Mns. Zool. Anat. Torino, IX, 1894, No. 184, p. 32.

Habitat.—Asuncion, Paraguay (Giglio-Tos). Not in the collections studied.

BUCEPHALACRIS Giglio-Tos.

The genus *Bucephalacris* was established by Giglio-Tos^a for an insect which he took to be the *Gryllus bucephalus* of Marshall.^b Later he recognized it as distinct and described it as *B. borellii*. The writer has specimens from British Guiana that appear to be Marshall's insect without any doubt. These are quite distinct and do not even fall in the same genus as characterized by Professor Giglio-Tos.

^a Boll. Mns. Zool. Anat. Comp. Uni. Torino, IX, 1894, No 184, p. 30.

^b Ann. Wiener Mus., 1835, p. 217, No. 10, pl. xviii, fig. 9.

BUCEPHALACRIS BORELLII Giglio-Tos.

Bucephalacris borellii GIGLIO-TOS, Boll. Mus. Zool. Anat. Torino, XII, 1897, No. 302, p. 31.

Gryllus bucephalus GIGLIO-TOS, Boll. Mus. Zool. Anat. Torino, IX, 1894, No. 184, p. 31, not Marshall.

Habitat.—Credited to the Province of San Pedro, Paraguay, where it was taken by Doctor Borelli (Giglio-Tos).

BUCEPHALACRIS PARAGUAYENSIS new species.

General form cylindrical, not especially robust, the color dull grayish brown, with the lower sulcus and inner face of hind femora deep blood-red; apex of tegmina broadly rounded, a little shorter than both the hind femora and the abdomen; prosternal spine large, short, blunt.

Head a little broader than the front edge of the pronotum, nearly as broad as high; face and cheeks rather evenly and profusely punctate, the occiput smooth; eyes large, prominent, strongly divergent, much longer than the cheeks below them; vertex between the eyes rather narrow, about three-fifths as broad as the frontal costa between the base of antennæ; fastigium slightly depressed, a little broader than long, widely truncate in front and separated from the facial costa by a strong transverse carina, just back of which are two lateral depressions separated by a short posteriorly directed carina or ridge; frontal costa evenly and coarsely punctate, rather broad and prominent above, gently narrowing below, not quite reaching the clypeus, broadly and shallowly sulcate, with the bounding walls blunt and smooth, which, about midway between the antennæ and clypeus, emits a lateral impunctate ridge, which extends a little more than half way to the lateral facial carinæ; antennæ filiform; pronotum subcylindrical, the surface rather evenly and profusely punctate, without lateral carinæ; median carina percurrent, faint, most apparent on hind lobe; anterior edge somewhat advanced upon the occiput, but with the center roundly emarginate, hind border broadly rounded; transverse impressed lines well marked, continuous, the last much back of the middle; pleura and sternum of meso- and metathorax punctate, the mesosternal lobes separated by a space a little longer than broad, the inner edge of the lobes broadly rounded posteriorly; tegmina of medium and equal width throughout, not quite as long as the abdomen, the texture semimembranous and with comparatively few veins, the apex rounded; wings as long as tegmina.

Anterior and middle legs short, their femora but little enlarged and slightly arcuate. Hind femora moderately robust on basal two-thirds, somewhat compressed, the pinnæ quite regular in size, the carinæ low and smooth; tibiæ slender, hairy, with 7 spines in outer row; tarsi long and slender, the first and second joints equal in length. Prosternal spine coarse, short, the apex broadly rounded. Valves of

ovipositor slender, exerted, the basal half of upper pair with three transverse rugæ, apical half slender, scooped out, curved upward and slightly inward; lower pair with a broad basal tooth, the apical half narrowed and curved downward.

General color dull grayish brown. Eyes slightly æneous, more or less clearly longitudinally striped anteriorly with dark brown and testaceous. Sides of head and upper portion of sides of pronotum showing a faint dusky band, below this a paler one; upper edge of clypeus, lower face, and facial carinæ also paler. Tegmina unicolorous, save that a few of the smaller veins and veinlets above near the base are a trifle paler. Hind wings hyaline at base, the apical portion faintly clouded. Hind femora with indication of three fuscous bands, one basal, one median, and the other preapical, most decided across upper edge, and crossing over to upper edge of inner face. Latter, along with lower sulcus, bright blood-red. Hind tibia dirty plumbeous, infuscated apically. Pectus and venter pale dirty yellow.

Length of body, female, 30, of pronotum, 5.1, of tegmina, 17, of hind femora, 14 mm.

Habitat.—The type, a single female, was collected by the writer at San Bernardino, Paraguay, during the month of September, 1897. It was taken in a small opening near the edge of a heavy forest, and if memory is not at fault, was collected from the trunk of a small shrub.

ADIMANTUS Stål.

ADIMANTUS VITTICEPS (Blanchard).

Aceridium vitticeps BLANCHARD, in D'Orbigny Voy. l'Amer. Merid., VI, 1837-43, Pt. 2, Insect., p. 216, pl. xxvii, fig. 4.

Habitat.—Sapucay, Paraguay, W. T. Foster, collector. Specimens of both sexes are at hand.

Should this insect prove to be of the same species as Burmeister's *Oryza ornatissima*,^a it is quite probable that the Burmeister name would have priority, since D'Orbigny's work began publishing in 1837 and was not completed till 1843, while the Handbuch was published in 1838. Whether the insects are identical or not they are at least congeneric.

ZYGOLISTRON TRACHYSTICTUM Rehn.

Zygolistron trachystictum REHN, Ent. News, XVI, 1905, p. 39, figs. 1, 2, 3, male.

There are before me as I write 9 males and 3 females of this peculiar locust. Although one would have no difficulty in recognizing the two sexes as belonging to one and the same species, there is sufficient difference between the two to warrant me in presenting herewith a description of the female which Mr. Rehn had not seen when he drew up his description.

^aHandbuch Ent., II, p. 636.

As compared with the male it is much more robust, has a larger head, broader and shorter fastigium of the vertex, less prominent eyes, the pronotum is more coarsely rugose, the tegmina are abbreviated, being only about one-half as long instead of a trifle longer than the abdomen. The antennæ of the female are also correspondingly shorter than in the opposite sex, as are also the hind femora. The valves of the ovipositor are not abnormally developed, being of the ordinary type in species of allied genera. In color the sexes are similar, save that perhaps the females will average a little paler, and in lacking to some extent the row of prominent discal spots of the tegmina.

Length of body, female, 54, of pronotum, 11, of tegmina, 20, of hind femora, 21 mm.

Habitat—Sapucay, Paraguay, W. T. Foster, 9 males and 3 females collected in February.

This genus seems to have some of the characteristics of the Zoniopodæ, but lacks the terminal spine on the outer carina of the hind tibiæ. It also resembles in other respects the genus *Aleuas* which latter genus lacks the terminal spine. Possibly too much stress has been placed by some orthopterists on this spine feature in the arrangement of the genera. I would also suggest the same with reference to the comparative length of the first and second joints of the hind tarsi.

ALEUAS Stål.

ALEUAS VITICOLLIS Stal.

Aleuas vitticollis STÅL, Syst. Acrid., 1878, p. 69.

Habitat.—Sapucay, Paraguay, 2 males, W. T. Foster, collector. Reported also from this country by James A. G. Rehn.

The following table for the separation of the species of *Aleuas* will give an idea of the relationship of the previously described forms of the genus, together with the one now characterized:

TABLE FOR DETERMINATION OF SPECIES.

- | | | |
|-----|--|-----------------------------------|
| a. | Hind tibiæ armed externally with 6 or 7 spines. Wings either fully developed or more or less abbreviated. Pronotum strongly rugose-punctate. | |
| b. | Tibiæ normally with but 6 spines on the outer margin. | |
| c. | Tegmina slightly surpassing the apices of the hind femora | <i>vitticollis</i> Stål |
| cc. | Tegmina much abbreviated, less than half as long as the abdomen. | <i>brachypterus</i> , new species |
| bb. | Tibiæ with 7 spines on the outer margin. Tegmina and wings surpassing tip of the abdomen | <i>gracilis</i> Stål |
| aa. | Hind tibiæ armed externally with 8 or 9 spines. Wings always fully developed. Pronotum not rugose, punctate | <i>lineatus</i> Stål |

ALEUAS BRACHYPTERUS, new species.

Like the previously known species of the genus this insect is prevalingly green or greenish olive in color. Its pronotum has the median carina and a line on either side continuous from the hind mar-

gin of the eyes to the base of elytra black. The hind tibiae are greenish basally and purplish apically; the spines pale, black-tipped.

Head as wide as the front edge of the pronotum, smooth above and at the sides. Vertex between the eyes about as broad as the longest diameter of one of the latter, evenly rounded, not sulcate in the least, separated from the face by low, blunt carinae which meet at the middle in a very obtuse angle. Frontal costa evenly widening downward, flat, gently punctate, its lateral carinae well defined, straight, and continuous to the clypeus; facial carinae less conspicuous, but plain, a little curved at the base of antennae. Pronotum subcylindrical, its surface rugosely punctate, the median carina prominent, cut back of middle by last transverse sulcus; lateral carinae obliterated; lower lateral margins heavily bordered, gently undulate; front border a little advanced on occiput, hind edge obtuse-angled. Tegmina a little less than half as long as the abdomen, oblong ovate, the apex drawn out and pointed, the dorsal edges just touching. Abdomen rather strongly carinate above; valves of ovipositor short, strong, the apices abruptly bent. Hind femora slender, not reaching the tip of abdomen.

Length of body, female, 54, of pronotum, 12.75, of tegmina, 16, of hind femora, 23.5 mm.

Type.—Cat. No. 9721, U.S.N.M.

Habitat.—Sapucay, Paraguay, a single female specimen (Coll. L. Bruner); 3 males and 3 females (Coll. U. S. Nat. Mus.).

ALEUAS GRACILIS Stål.

Aleuas gracilis STÅL, Syst. Acrid., 1878, p. 70.

Habitat.—Four male specimens that were collected at Sapucay by W. T. Foster are at hand. Rehn also reports it from Paraguay.

ALEUAS LINEATUS Stål.

Plate XXXVIII, fig. 10.

Aleuas lineatus STÅL, Syst. Acrid., 1878, p. 70.

Habitat.—This is the most abundant and, at the same time, most widely distributed species of the genus. Specimens are at hand from Argentina, Paraguay, and Uruguay. Those from Paraguay come from Sapucay.

PARALEUAS Giglio-Tos.

The representatives of this genus are of small or medium size and, judging from the material before me, are fairly numerous. Like the species of *Jodaeris* and *Omalotettix* they occur among the dead leaves and herbage growing beneath the larger shrubs and trees composing the forests and jungles which prevail over much of Paraguay and Brazil. The three forms at hand and *Paraleuas bohlsi* Giglio-Tos may be separated by the subjoined table.

TABLE FOR DETERMINATION OF SPECIES.

- a. Larger (female, 23–26 mm.). Tegmina unicolorous, without maculations.
 - b. Hind femora green, not provided with fuscous annulations externally. Hind tibiae green *bohlsii* Giglio-Tos
 - bb. Hind femora brunneo-testaceous and furnished externally with two fairly well-defined dusky bands, most prominent above. Tibiae deep glaucous, infuscated apically *fosteri*, new species
- aa. Smaller (female 17.5–20 mm.). Tegmina rather evenly maculate with small fuscous spots.
 - b. Hind femora banded with fuscous both internally and externally. Lower edge of cheeks, pronotum, and pleura not entirely pale (Paraguay).
..... *punctipennis*, new species
 - bb. Hind femora not banded with fuscous. The lower edge of cheeks, pronotum, and pleura pale banded (Victoria, Brazil)..... *minor*, new species^a

PARALEUAS BOHLSII Giglio-Tos.

Paraleuas bohlsii GIGLIO-TOS, Boll. Mus. Zool. Anat. Torino, XIII, 1898, No. 311, p. 57.

Habitat.—Reported from Paraguay by Giglio-Tos, but not represented in the material now at hand as a basis of this paper.

PARALEUAS FOSTERI, new species.

Like *P. bohlsii* Giglio-Tos, the present species has the general appearance of a *Stenopola*. It is brunneo-ferruginous above, and is provided on the cheeks, lower part of sides of pronotum, and on the pleura with a pale band.

^aWhile at Victoria, Brazil, several years ago the writer secured, among other material which he collected there, several specimens of a small locust which is related to the other species tabulated above. As species of the genus occur over a rather extended range and each may have an extensive distribution, it is thought wise to describe *P. minor* at this time.

As shown by the above table, it is most nearly related to the *A. punctipennis* which comes from San Bernardino, from which it differs, however, in its considerably smaller size, its somewhat general paler color, and in the presence of well-defined pale lateral bands on sides of head, lower portion of sides of pronotum, and pleura. While it is provided with the fuscous tegmina maculations, *minor* is without the dusky bands on the hind femora. In the present species the head of the male is very short and much broader than the front edge of the pronotum, and the tegmina and wings slightly surpass both the apex of the abdomen and the tips of the hind femora. The eyes are unusually large and prominent, so as to give to the head when viewed from in front the appearance of being nearly twice as broad above as below. The cheeks below the eyes are less than one-half as long as the greatest diameter of one of them. Hind tibiae colored as in *punctipennis*, with 8 spines in the outer row.

Length of body, male, 13, female, 17.5; of pronotum, male, 2.3, female, 2.8; of tegmina, male, 11, female, 12; of hind femora, male, 8.5, female, 9 mm.

Habitat.—Victoria, Brazil, during the month of May, both sexes. (Collection of L. Bruner.)

The present species does not have the second joint of the hind tarsi as nearly equal in length with the first as is the case in *punctipennis*.

Head moderately large, a little broader than the front edge of the pronotum, the occiput short; eyes large and prominent, much longer than that portion of the cheeks below them, separated above by a space scarcely as wide as the diameter of the basal joint of the antennæ; fastigium of the vertex horizontal, moderately large and broadly and very shallowly sulcate; frontal costa prominent above the ocellus where it is nearly twice as broad as the narrow vertex. plane, with a few coarse punctures, below the ocellas narrower, less prominent, sulcate and continuous to the clypeus. Antennæ rather coarsely filiform, a trifle longer than the head and pronotum together. Pronotum short, cylindrical, without lateral carinæ, strongly and coarsely impresso-punctate, a little expanding on posterior lobe. Tegmina narrow, about as long as abdomen and somewhat surpassing the apex of hind femora. The latter moderately broad at base, but flattened, slender apically. Hind tibiæ and tarsi rather profusely and longly hirsute, the former provided with 7 spines in outer row. Prosternal spine robust, short, and directed gently to the rear.

General color above brownish ferruginous, with a well-defined piceous band on the head back of eyes, on upper portion of sides of pronotum and pleura, followed below by a narrower one of flavous, which is again bordered on the lower margin by a darker color that continues to the pectus and venter. Sides of abdomen largely piceous. Tegmina brownish ferruginous, becoming fuliginous apically. Wings much infuscated. Hind femora ferrugineo-testaceous, with traces of two dusky bands across upper edge and black ones internally, the apex black internally on lower half, reddish on upper half, preceded by a pale annulus. Hind tibiæ dull plumbeous basally, becoming strongly infuscated apically. Antennæ ferruginous.

Length of body, female 23, of pronotum 3.8, of tegmina 16, of hind femora 10.5 mm.

Type.—Cat. No. 9739 U.S.N.M.

Habitat.—Sapucay, Paraguay, 5 females collected during the months of January and February (W. T. Foster).

PARALEUAS PUNCTIPENNIS, new species.

A somewhat smaller but more robust insect than the preceding and differing from it in lacking the decided pale band on sides of head, pronotum and pleura, in possessing a broader head, larger and more prominent eyes, a shorter pronotum and correspondingly shorter tegmina and wings. The tegmina in *punctipennis* are somewhat shorter than the abdomen and strongly mottled with fuscous, and the carinæ of the hind femora are conspicuously conspersed with black in addition to the darker outer face and much more pronounced fuscous bands. The disk of the pronotum and occiput is dirty gray, more or less conspersed and mottled with fuscous, as is also the face. The

eyes are brunneo-testaceous and aeneous in certain lights. Hind tibiae grayish plumbeous, a little darker apically. Anterior and middle legs conspersed with fuscous. Legs, venter and apical parts of abdomen strongly hirsute. Second joint of hind tarsi nearly as long as first.

Length of body, female 20, of pronotum 3, of tegmina 13, of hind femora 10 mm.

Habitat.—San Bernardino, Paraguay.

Type.—A single female taken by the writer in September.

This insect approaches *Bucephalaeris* in some respects, but the prevailing characters are those of *Paraleucus*.

ORTHOSCAPHEUS, new genus.

According to Giglio-Tos' table for the separation of the described genera of South American Acridiinae^a the insect upon which the present genus is based would run to *Jodacris*. The peculiar structure of the ovipositor, as compared with that of *J. ferruginea*, will, however, separate it from that genus, as will also several other characters. Face, pronotum, and pleura strongly punctate. Female front subvertical, very slightly advanced between the antennae when viewed laterally; frontal costa very broad and fairly prominent above the ocellus, where it is without sulcation and nearly impunctate, at and below the ocellus a little narrower, sulcate and continuous to the clypeus. Eyes fairly prominent, a little longer than the cheeks below them, front edge nearly straight, the back side broadly rounded; vertex between the eyes about as broad as the basal antennal joint, the fastigium broadly triangular, its front edges meeting in an obtuse angle, narrowly and shallowly sulcate in the middle. Antennae presumably filiform (the only specimen at hand is without them). Pronotum profusely and strongly punctate, with the sides of anterior lobe parallel, the posterior one expanding, the two lobes of about equal length, the hind sulcus profound; front border broadly rounded the center shallowly emarginate, hind border obtusangulate; median carina distinct in front and on the hind lobe; sides a little higher than long, the edges nearly parallel, lower posterior angle square, the apex a little rounded, the anterior angle obliquely truncate. Tegmina complete, coriaceous, profusely and strongly veined, a little tapering, the apex rounded, and the costal field near the base rather strongly ampliate. Hind femora moderately robust, the pinnae quite regular, their tips not quite reaching the apex of the abdomen, the genicular lobes rounded. Ovipositor long and straight, the upper valves without teeth, of nearly equal width throughout, their apices bluntly rounded; the lower ones smaller, shorter, and more slender, tapering and acuminate, in a measure lying between the lower edges of the upper pair.

^a Boll. Mus. Zool. Anat. Comp. Uni. Torino, 1898, No. 311, pp. 40-50.

Mesosternal lobes separated by a subquadrate space about equal in width to the lobes themselves. Prosternal spine pyramidal, moderately robust and directed gently to the rear.

Type of genus.—*Orthoscaphus roseipennis*.

ORTHOSCAPHEUS ROSEIPENNIS, new species.

? *Osmilia coriacea* GIGLIO-TOS, Boll. Mus. Zool. Anat. Torino, IX 1894, No. 184, p. 18.

General color, dark wood-brown, with some indication of ferruginous upon head, pleura and hind femora. Tegmina quite evenly conspersed with small fuscous spots. Frontal costa above the ocellus black; the hind femora with the inner side, lower sulcus and the lower outer edge also pitch black; upper edge with two transverse dusky bands, the outer fourth including knee brownish testaceous. Surface of head, pronotum, pleura, anterior and middle legs, and carinae of hind femora also conspersed with dark brown or black. Hind wings beautiful, transparent rose color, becoming smoky apically, the veinlets on apical half and some of the veins also black, the remainder rose-red.

Length of body, female 28.5, of pronotum 5.5, of tegmina 23, of hind femora 14, of ovipositor 2.65 mm.

Type.—Cat. No. 9740, U.S.N.M.

Habitat.—Sapucay, Paraguay, a single female specimen, which was taken February 28 by W. T. Foster. It may be taken as the type of the genus.

The *Osmilia coriacea* Giglio-Tos, may be identical with this insect, and, if so, his name would have priority, and it should be *Orthoscaphus coriaceus* Giglio-Tos.

JODACRIS Giglio-Tos.

JODACRIS FERRUGINEA Giglio-Tos.

Amicris ferrugineus GIGLIO-TOS, Boll. Mus. Zool. Anat. Torino, IX, 1894, No. 184, p. 30, in part.

Jodacris ferruginea GIGLIO-TOS, Boll. Mus. Zool. Anat. Torino, XII, No. 302, pp. 32-33, footnote (1897) in part.

Habitat.—Province of San Pedro, Paraguay (Giglio-Tos); Sapucay, W. T. Foster, several specimens (Coll. U.S.N.M.); San Bernardino (L. Bruner).

For a straightening out of the synonymy of this insect see remarks under *Omalotettix*.

OMALOTETTIX, new genus.

Related to *Jodacris* and *Orthoscaphus*, but differing from both of these in the more compressed body; from *Jodacris* by the great disparity in size between the sexes and in the shorter male cerci, which have the two forks more nearly equal. It differs further from this

last-named genus by having the hind femora slenderer apically, the vertex between the eyes narrower, and the hind lobe of the pronotum longer and more ampliate, as well as angulate instead of broadly rounded.

In his diagnosis of the genus *Jodacris*^a it is evident that the author had before him specimens of two distinct genera—a male of his *ferruginea* and a female of the *Jodacris* (?) *nebulosa* Bruner.^b This genus is widely distributed over tropical America and contains several species. These inconspicuously colored insects live in forests, where they occur among fallen leaves and on the stems of plants. Three species are known to abound in Paraguay. They may be separated by the subjoined synoptic table.

This last-named insect may be considered the type of *Omalotettix*.

TABLE FOR DETERMINATION OF SPECIES.

- a.* Paler, testaceous to brunneo-testaceous. Outer lower edge of hind femora largely black, the sides of pronotum usually provided with a piceous band which is bordered above and below by one of paler hue.
- b.* Larger (male, 17; female, 21 mm.). Hind femora with two dusky bands across the upper edge, the outer face plain *nebulosa* Bruner
- bb.* Smaller (male, 14; female, 19 mm.). Hind femora provided on outer face with a conspicuous black patch *signatipes*, new species
- aa.* Darker, wood-brown to brunneo-ferruginous. Outer lower edge of hind femora without the black color. Sides of pronotum unicolorous.
- caruleipennis* Bruner

OMALOTETTIX NEBULOSA Bruner.

Jodacris (?) *nebulosa* BRUNER, Locusts of Argentina, 1900, p. 67.

Habitat.—Sapucay, Paraguay, 4 males and 12 females (W. T. Foster); Tucuman, Argentina, and Victoria, Brazil (L. Bruner).

As mentioned above, this insect was confounded with *Jodacris ferruginea* by Giglio-Tos when he drew up his diagnosis of the genus. He also credits it to Paraguay.

OMALOTETTIX SIGNATIPES, new species.

Very similar to the preceding, from which it differs in the points indicated in the synoptic table of species given above. It also differs from *nebulosa* in having a slightly shorter and broader fastigium of the vertex, a slightly less prominent frontal costa between the base of the antennæ and a little shorter hind lobe of the pronotum, which is less decidedly angulate.

Length of body, males, 14; females, 19; of pronotum, males, 3; females, 4; of tegmina, males, 13; females, 18; of hind femora, males, 8.5; females, 12 mm.

Type.—Cat. No. 9741, U.S.N.M.

^a Boll. Mus. Zool. Anat. Torino, 1897, No. 302, pp. 32-33.

^b Locusts of Argentina, 1900, p. 67.

Habitat.—Sapucay, Paraguay, 2 females collected in March by W. T. Foster.

There are also a number of specimens of both sexes of this species in the writer's collection from Pernambuco, Brazil, and Temax, Yucatan.

OMALOTETTIX CÆRULEIPENNIS Bruner.

Jodacris (?) *carruleipennis* BRUNER, Locusts of Argentina, 1900, p. 68.

Habitat.—Three males and 4 females, Sapucay, Paraguay (W. T. Foster); other specimens at Asuncion (L. Bruner).

This species also occurs in northern Argentina, where it may be taken in company with *nebulosa*. It appears less common than the other two species here mentioned.

VILERNA Stål.

VILERNA RUGULOSA Stål.

Vilerna rugulosa STÅL, Syst. Acrid., 1878, p. 61.

Habitat.—Sapucay, 1 specimen, W. T. Foster collector; San Bernardino and Asuncion, L. Bruner collector; province of San Pedro, Luque, and Asuncion, Paraguay, Giglio-Tos.

This insect is fairly common and should be sought for among the yucca and pineapple-like plants, in the center and about the base of the leaves of which it lurks and where it is more or less thoroughly protected from lizard and bird enemies.

OSMILIOLA Giglio-Tos.

OSMILIOLA AURITA Giglio-Tos.

Osmiliola aurita GIGLIO-TOS, Boll. Mus. Zool. Anat. Torino, XII, 1897, No. 302, p. 33.

Habitat.—This insect was described from specimens collected at San Lorenzo, in the province of Jujuy, Argentina, and Caiza, in the Bolivian Chaco. A single female specimen at hand was taken at Pernambuco, Brazil. It evidently occurs in Paraguay also.

XIPHIOLA Bolivar.

XIPHIOLA BORELLII Giglio-Tos.

Xiphiola borellii GIGLIO-TOS, Boll. Mus. Zool. Anat. Torino, XV, 1900, No. 377, p. 5.

Habitat.—There are 3 males and 2 females before me from Sapucay. They were collected by W. T. Foster. The type came from Urucum, Brazil.

SCHISTOCERCA Stål.

TABLE FOR DETERMINATION OF SPECIES.

- a. Pronotum with its posterior edge decidedly angulatè. Antennæ of male nearly or quite one-half longer than the pronotum.
 - b. Tegmina distinctly maculate. Sides of pronotum with the lower area obliquely pale, edged above with fuscous. Male cerci apically narrowed.
 - desiliens* Scudder
 - bb. Tegmina immaculate or very faintly maculate; the lower area of sides of pronotum pale yellow, separated obliquely from the darker upper portion. Male cerci but little narrowed apically.
 - c. Antennæ of male one-half as long again as the head and pronotum together. Wings feebly infumate; the tegmina feebly or obscurely maculate.
 - flavofasciata* (De Geer)
 - cc. Antennæ of male one-third as long again as the head and pronotum together. Wings strongly infumate, the tegmina immaculate.....*infumata* Scudder
- aa. Pronotum with its posterior edge distinctly rounded. Antennæ of male relatively shorter.
 - b. Head unusually large, broader than the front edge of the pronotum, giving to the insect a strangulate appearance.
 - c. General color bright olive green, salmon, and cream, the tegmina obscurely if at all maculate. The pronotum coarsely granulate and with the anterior lobe plainly tectate.....*lineata* (Stoll)
 - cc. General color testaceous, ferruginous, and white, the tegmina plainly, often strongly, maculate. The pronotum finely granulate, in nowise tectate.
 - d. Pronotum very decidedly strangulate on anterior lobe; the maculation of tegmina rather evenly distributed, the anal area at broadest point one-third broader than the interspace between the eyes...*peregrina* (Olivier)
 - dd. Pronotum less decidedly strangulate; the maculation of tegmina inclining to form bands, the anal area at its broadest point no broader or but little broader than the interspace between the eyes.
 - paranensis* (Burmeister)
 - bb. Head normal, about as wide as the front edge of the pronotum. Maculations of tegmina confined chiefly to the middle area and gathered into two longitudinal rows on apical third*pallens* (Thunberg)

SCHISTOCERCA DESILIENS Scudder.

Schistocerca desiliens SCUDDER, Proc. Amer. Acad. Arts Sci., XXXIV, 1899, p. 455.

Habitat.—Specimens of this species were observed by the writer in the vicinity of Asuncion, in 1897. There are none in the collections at hand from Paraguay, but quite a series are before me from Victoria, Brazil.

SCHISTOCERCA FLAVOFASCIATA (De Geer).

Arydium flavofasciatum DE GEER, Mém. Ins., III, 1873, p. 488, pl. XL, fig. 8; for additional synonymy see Scudder's Orthopteren Genus Schistocerca.

Habitat.—Reported from Asuncion and Luque, Paraguay. Not represented in the collection just studied.

SCHISTOCERCA INFUMATA Scudder.

Schistocerca infumata SCUDDER, Proc. Amer. Acad. Arts Sci., XXXIV, 1899, p. 457.

Habitat.—Sapucay, Paraguay, 8 males and 6 females, collected by W. T. Foster. Also reported from Paraguay by Jas. A. G. Rehn.

This rather fine appearing locust is quite generally distributed over Argentina and Uruguay along the La Plata River and northward into Brazil at least as far as Pernambuco, where two specimens of it were observed by the writer at the edge of a swamp.

SCHISTOCERCA LINEATA (Stoll)?

Gryllus (Locusta) lineatus STOLL, Rep. Speet., etc., 1787, p. 31, pl. xv, fig. 57.

Habitat.—The writer has before him 4 male and 4 female specimens of a *Schistocerca* that might be the insect figured by Stoll. It is quite distinct in its coloration from every other form ever examined by me. It comes from Sao Paulo, Brazil, where it seems to be fairly common. Should the present determination be correct, the name of Scudder's *lineata* must be changed. I would suggest the name *scudderi* as a suitable one.

SCHISTOCERCA PALLENS (Thunberg).

Gryllus pallens THUNBERG, Mém. Acad. St. Petersb., V, 1815, p. 237. For further synonymy see Scudder.

Habitat.—Not represented in the collections at hand. It is known, however, to be pretty widely distributed over tropical America from Mexico to the Uruguay River. It certainly occurs in Paraguay.

SCHISTOCERCA PARANENSIS (Burmeister).

Plate XXXVII, fig. 4.

Acridium paranense BURMEISTER, Reis. La Plata Stat., I, 1861, p. 491.

Schistocerca paranensis BRUNER, 1st Rept. B. A. Loc. Com., 1898, pl., figs. 1-3, 6.

Acridium (Schistocerca) peregrinum (part) BERG, Anal. Soc. Cient. Argent., IX, 1880, p. 275.

Habitat.—This migratory species reaches Paraguay regularly in its annual flights if it is not permanently found in some portion of the country. It was observed in great abundance in the vicinity of Asuncion during 1897, when the writer made a visit to that region.

SCHISTOCERCA PEREGRINA (Olivier).

Acridium peregrinum OLIVIER, Voy. Emp. Ott., II, 1807, p. 424. For additional synonymy see Scudder.

Habitat.—While this insect is chiefly confined to the Mediterranean region of the Orient, it is frequently reported from various parts of tropical America. Giglio-Tos records it as coming from various Paraguayan, northern Argentinian, and southern Brazilian points. Evi-

dently many of these reports are based on specimens of the preceding species. I myself have seen no typical specimens of *peregrina* that were taken on this side of the Atlantic.

ATRACHELACRIS Giglio-Tos.

ATRACHELACRIS UNICOLOR Giglio-Tos.

Plate XXXVIII, fig. 8, female; fig. 9, male.

Atrachelacris unicolor GIGLIO-TOS, Boll. Mus. Zool. Anat. Torino, IX, 1894, No. 184, p. 21.

Habitat.—Several specimens of the two sexes from Sapucay, Paraguay, are before me. They were collected by W. T. Foster. It is also reported from Asuncion by Giglio-Tos.

DICHRPLUS Stål.

Many of the insects which comprise this extensive genus are very closely related to one another in their general appearance, and the comparatively few forms that have thus far been noted by entomologists have been so briefly described that it is a little doubtful as to the identity of all of them. This is especially true when the student is limited in the material that is accessible for study. With comparatively few exceptions the members of the genus are confined to regions south of the equator in South America, with Paraguay and northern Argentina as the center of their distribution. This being true, most of the species may be expected to occur in the country now under consideration. The subjoined table will be of assistance in determining them.

TABLE FOR DETERMINATION OF SPECIES.

- a. Female with the valves of the ovipositor emarginately truncate. Interval between the mesosternal lobes considerably longer than wide. Male cerci moderately long, compressed back of middle, beyond gently bowed.
- b. Prosternal tubercle large, transverse. Lower edge and inner face of hind femora blood-red. General color dull brown. *obscurus* Bruner
- bb. Prosternal tubercle not large, conical. Lower edge and inner face of hind femora yellowish.
- c. Smaller. General color olivaceous yellow. Upper valves of ovipositor much longer than the lower ones *clivens* Stål
- cc. Larger. General color brownish yellow. Upper valves of ovipositor but little longer than lower ones. *lemniscatus* (Stål)
- aa. Female with the valves of the ovipositor entire at apex, acuminate or subacuminate. Interval between the mesosternal lobes usually, but not always, as broad or a little broader than long.
- b. Hind tibiae with nine spines in outer row. Tegmina and wings usually, but not always, reaching or surpassing the tip of abdomen.
- e. Interval between the mesosternal lobes a little longer than wide. Upper edge of sides of pronotum generally dusky throughout, but sometimes only to the posterior sulcus.
- d. Tegmina not or scarcely surpassing the tip of hind femora.

- c. Frontal costa sulcate.
- f. Posterior coxæ marked externally with a dark line.
- g. Disk of tegmina dark veined.....*fuscus* (Thunberg)
- gg. Disk of tegmina not dark veined. Lower sulcus and inner face of hind femora red.....*cinereus* Bruner
- ff. Posterior coxæ not marked externally with a dark line.
- g. Smaller. Green and yellowish, hind femora on basal half internally sanguineous. Tegmina unicolorous, sordid yellow.
bicolor Giglio-Tos
- gg. Larger. Brownish testaceous, the hind femora internally flavous. Tegmina faintly conspersed with fuscous.
- h. Very robust. Hind femora incrassate and with the lower outer sulcus infuscated, surpassing the tip of tegmina and abdomen in the female.....*robustus*, new species.
- hh. Less robust. Hind femora normal, the lower outer sulcus concolorous, about reaching or falling a little short of the tip of tegmina and abdomen in the female.
paraguayensis, new species
- ee. Frontal costa not sulcate. Dorsal edge of tegmina pale-veined.
patruelis Stål
- dd. Tegmina surpassing the tip of hind femora.
- e. Male cerci rather heavy and straight. Lower sulcus of hind femora yellowish.....*pratensis* Bruner
- ee. Male cerci slender, incurved beyond the middle. Lower sulcus of hind femora orange-red.
- f. Smaller, very slender; the sides of pronotum parallel. Dusky band on side of pronotum extending to metapleura.....*exilis* Giglio-Tos
- ff. Larger, less graceful; the sides of pronotum diverging posteriorly. Dusky band on side of pronotum continued upon tegmina to the apex.....*elongatus* Giglio-Tos
- cc. Interval between mesosternal lobes fully as wide or wider than long. The dusky band on sides of pronotum more or less interrupted.
- d. Posterior lobe of pronotum somewhat ascending posteriorly, a little longer than the anterior lobe.....*arrogans* Stål
- dd. Posterior lobe of pronotum not ascending posteriorly, about equaling or a trifle shorter than the anterior lobe.
- e. Posterior coxæ fuscous or black spotted. Last ventral segment of male abdomen with the lateral margins black.
- f. Smaller. Hind tibiæ red.....*punctulatus* (Thunberg)
- ff. Larger. Hind tibiæ greenish testaceous.....*conspersus* Bruner
- ee. Posterior coxæ unspotted. Last ventral segment of male abdomen with the margins never black.
- f. Hind femora with the inner face and lower sulcus flavous or testaceous. Tegmina rather evenly and finely conspersed with fuscous.
dubius, new species
- ff. Hind femora with the inner face and lower sulcus, at least in part, sanguineous. Tegmina abbreviate or fully developed, not evenly conspersed with fuscous.
- g. Hind tibiæ deep purple. Pronotum at sides of disk pale vittate.
brasilienis, new species
- gg. Hind tibiæ glaucous. Disk of pronotum either vittate or concolorous.
- h. Tegmina and wings usually greatly abbreviated. Sides of disk of pronotum and dorsal angles of tegmina pale vittate.
vittatus Bruner

- hh. Tegmina not abbreviated, nearly or quite as long as the abdomen.
 . Pronotum and tegmina not vittate.
- i. General color, dull olivaceous yellow or testaceous.
- j. Lower edges of sides of pronotum dirty white. Tegmina not conspersed *bergii* Stål
- jj. Lower edges of sides of pronotum concolorous. Tegmina conspersed with small fuscous dots..... *robustus* Stål
- ii. General color, fusco-ferruginous. Inferior portion of sides of pronotum sordid testaceous *distinguendus* Giglio-Tos
- bb. Hind tibiæ provided with eight spines in the outer row. The tegmina usually, but not always, abbreviated.
- c. Tegmina fully developed, reaching or even surpassing the apex of the abdomen and tips of hind femora. Hind femora internally fasciate with black; the tibiæ infuscated with a subbasal pale annulus *cinctipes*, new species
- cc. Tegmina and wings abbreviated, about as long as the head and pronotum united. Hind femora internally largely sanguineous.
- d. Hind tibiæ red..... *peruvianus* Stål
- dd. Hind tibiæ glaucous.
- e. Larger. Apex of femora wholly and base of hind tibiæ black.
amemus Stål
- ee. Smaller. Apex of hind femora for most part olivaceous, the base of hind tibiæ glaucous. Outer face of hind femora with upper half fuscous, the lower half dirty white, inside and below sanguineous.
schulzi, Bruner

DICHOPLUS LEMNISCATUS (Stål).

Acridium (*Podisma*) *lemniscatum* Stål, Freg. Eugene Resa, Ins. Orthopt., 1860, p. 334.

Habitat.—Not contained in the collections at hand. Previously reported from Argentina and Brazil. No doubt also to be found in Paraguay.

DICHOPLUS FUSCUS (Thunberg).

Gryllus fuscus THUNBERG, Mém. Acad. St. Petersb., V, 1815, p. 235.

Pezotettix (*Trigonophymus*) *fuscus* Stål, Recens. Orthopt., I, 1873, p. 78.

Dichroplus fuscus, GIGLIO-TOS, Boll. Mus. Zool. Anat. Torino, IX, 1894, No. 184, p. 21.

Habitat.—Not contained in the collections at hand, but reported from Resistencia, Argentinian Chaco, and also from the Bolivian Chaco by Giglio-Tos. It certainly also crosses over the river into Paraguay.

DICHOPLUS BICOLOR Giglio-Tos.

Dichroplus bicolor GIGLIO-TOS, Boll. Mus. Zool. Anat. Torino, IX, 1894, No. 184, p. 21.

Habitat.—Recorded from Asuncion, Paraguay, by Giglio-Tos; also from northern Argentina and Bolivia. Not represented in the collections at hand.

DICHOPLUS ROBUSTUS, new species.

A large robust species related to *D. cinctipes* and *D. paraguayensis*, but differing from both of them in several particulars, as will be seen from an examination of the accompanying synoptic table. As compared

with *cinetipes*, the present species is much larger and lacks the decided dusky bands on the sides of the head back of the eyes and on the pronotum, and the hind femora only bear traces of the fuscous bands across their upper edge, while the hind tibiae are characterized by the entire absence of any fuscous tinge. The tegmina of *robusta* also lack the decided conspersing of the species to which it has just been compared. Its head is slightly narrower than the front edge of the pronotum and the eyes less prominent, while the latter gradually widens from the front edge instead of only on the posterior lobe. The tegmina and wings do not quite reach the tips of the robust hind femora.

General color uniform pale brownish testaceous, with a shade of olive on sides of pronotum, pleura, and outer face of hind femora; head and pronotum with a few scattered small dots of reddish brown; tegmina also dimly marked with small pale brownish specks, especially in the discal field and on dorsal edge of basal half; hind femora with their lower edge dark plumbeous, and a series of five medium-sized blotches of same color on lower outer carina, upper edge crossed by two well-defined, but not prominent, dusky bands, which cross over to the inner face and fade away; antennae fuscous, darkest at apex; prosternal spine rather long, coarse, and curved to the rear.

Length of body, female, 33; of pronotum, 7.5; of tegmina, 22; of hind femora, 18.5 mm.

Type.—Cat. No. 9742, U.S.N.M.

Habitat.—Sapucay, Paraguay; January. W. T. Foster, collector. Two females.

DICHIROPLUS PARAGUAYENSIS, new species.

Size medium, form elongate, but not especially slender. General color uniform brownish testaceous or dull ferruginous with an olivaceous tinge on head, sides of pronotum, and hind femora, most apparent in the female, without indications of darker or lighter markings save at the base of the tegmina, where there is a trace of black on the median veins, and faint indications of dusky bands on upper edge of hind femora. Middle of sides of pronotum also provided with the usual piceous band, but very faintly.

Body, legs, and even tegmina rather hirsute. Head a little wider than the front edge of the pronotum, the occiput slightly elevated above the level of pronotal disk, vertex between the eyes nearly twice the width of the first antennal joint, the fastigium depressed, broadly sulcate; frontal costa a trifle contracted above, evenly widening below, coarsely punctate above and sulcate at ocellus and below. Pronotum with the anterior lobe cylindrical, a little longer than the posterior one, which has the surface gently punctate and the hind margin a little obtuse angled, the apex rounded. Tegmina of medium width, a little surpassing the apex of both femora and abdomen. Hind femora rather

slender, a little surpassing the tip of abdomen; hind tibiae 9 spined in outer row. The last ventral segment of male abdomen elongate, with the upper edges straight and the apex bluntly rounded, directed posteriorly. Cerci slender, evenly tapering, fully three times as long as basal width, directed posteriorly and a little upwards, and bent inwards. Prosternal spine slender, acuminate.

Length of body, male, 23; of pronotum, 5.15; of tegmina, 18; of hind femora, 13 mm.

Type.—Cat. No. 9743, U.S.N.M.

Habitat.—Sapucay, Paraguay, a single male specimen which seems to have lost its color by immersion in spirits or some other preservative. This insect seems to approach *D. bergii* Stål most closely in general structure.

DICHROPLUS PATRUELIS Stål.

Acridium (*Podisma*) *patruelis* STÅL, Freg. Eugene Resa, Ins. Orthopt., 1870, p. 334.

Pezotettix (*Dichroplus*) *patruelis* STÅL, Recens. Orthopt., 1873, I, p. 78.

Habitat.—Reported by Giglio-Tos as occurring in the Province of San Pedro, Paraguay, and from Resistencia, Argentina. Not represented in the collections at hand.

DICHROPLUS EXILIS Giglio-Tos.

Dichroplus exilis GIGLIO-TOS, Boll. Mus. Zool. Anat. Torino, IX, 1894, No. 184, p. 23.

Habitat.—This species is represented by both sexes from Sapucay, Paraguay, where they were taken by W. T. Foster. It is also reported from Paraguay by Rehn. Outside it is known from Resistencia and San Lorenzo in Argentina.

DICHROPLUS ELONGATUS Giglio-Tos.

Plate XXXVI, fig. 10.

Dichroplus elongatus GIGLIO-TOS, Boll. Mus. Zool. Anat., Torino, IX, 1894, No. 184, p. 23.

Habitat.—Villa Rica and Asuncion, Paraguay (Giglio-Tos). Not represented in the collections studied for this paper. It is more common to the southward and westward.

DICHROPLUS PUNCTULATUS (Thunberg).

Plate XXXVIII, figs. 3 and 4.

Gryllus punctulatus THUNBERG Mém. Acad. St. Petersb., IX, 1824, p. 408.

Pezotettix (*Trigonophymus*) *punctulatus* STÅL, Recens. Orthopt., I, 1873, p. 77.

Pezotettix (*Dichroplus*) *punctulatus* STÅL, Obs. Orthopt., III, 1878, p. 6.

Habitat.—This, the most widely distributed species of the genus, is represented by specimens collected at Sapucay by Mr. W. T. Foster. It occurs from middle Argentina to Central America and southern Mexico, and exhibits considerable variation in color and size.

DICHROPLUS CONSPERSUS Bruner.

Dichroplus conspersus BRUNER, Locusts of Argentina, 1900, p. 76, fig. 4.

Habitat.—Not represented in the collections at hand, but it should be found in southern Paraguay where the country is open.

DICHROPLUS DUBIUS, new species.

A rather robust, medium sized insect, the general color of which is brownish testaceous, paler beneath, conspersed on legs and tegmina with moderately large brownish or dull black flecks.

Head as wide as front edge of pronotum; eyes not prominent, their front edge straight, separated above by a space equal to one-half of their longest diameter; fastigium of vertex declivant, broad, hexagonal, bounded on sides by rather prominent carinae, in front by a faint one and open behind; frontal costa fairly prominent and broad, a little widest at ocellus, flat and coarsely punctate above, broadly sulcate at ocellus and below. Pronotum rather broad, considerably widest on hind lobe, the anterior lobes a trifle the longest; transverse sulci deep, the middle and hind uninterrupted and reaching the lower lateral edges, the anterior one interrupted just below the dorsum; anterior edge truncate, behind obtusangulate the apex rounded. Tegmina tapering, their apex rounded, about as long as abdomen. Hind femora and tibiae rather robust, the former as long as, or a little longer than, the abdomen, the latter with 9 spines on outer edge. Prosternal spine robust but evenly pyramidal; interspace between mesosternal lobes about as long as broad. Hind femora without definite transverse bands save as the dusky dots referred to above congregate into two patches on the upper edge; the bounding carinae of outer disk regularly dark dotted; hind tibiae brownish testaceous.

Length of body, male 17, female 20; of pronotum, male 4.35, female 5; of tegmina, male 15, female 14; of hind femora, male 11, female 13 mm.

Type.—Cat. No. 9744, U.S.N.M.

Habitat.—A number of females and 3 males from Sapucay, Paraguay, where they were collected by W. T. Foster.

DICHROPLUS BRASILIENSIS, new species.

There are several specimens of an apparently undescribed species at hand that were taken by the writer during May, 1897, at Victoria, Brazil. They are about the size of *D. Bergii* Stål, and are to be distinguished from all other described species by their deep purple hind tibiae. There is a possibility of this insect being found in Paraguay also.

DICHROPLUS VITTATUS Bruner.

Dichroplus vittatus BRUNER, Locusts of Argentina, 1900, p. 77, figs. 43 and 44.

Habitat.—Although not represented in the material at hand from Paraguay, it is sure to occur there when the country is a little more carefully explored.

DICHROPLUS BERGII Stål.

Pezotettix (Dichroplus) bergii STÅL, Obs. Orthopt., III, 1878, p. 6.

Habitat.—Various localities in Paraguay (Giglio-Tos, Rehn, Foster, Bruner). It is also found in other regions, as Uruguay, Brazil, Argentina, and Bolivia.

DICHROPLUS ROBUSTULUS Stål.

Pezotettix (Dichroplus) robustulus STÅL, Obs. Orthopt., III, 1878, p. 7.

Habitat.—Not in the collections at hand, but very likely to be taken in Paraguay as well as in Brazil, from where it was described.

DICHROPLUS DISTINGUENDUS Giglio-Tos.

Dichroplus distinguendus GIGLIO-TOS, Boll. Mus. Zool. Anat. Torino, IX, 1894, No. 184, p. 22.

Habitat.—Reported as occurring in the Province of San Pedro, Paraguay (Giglio-Tos). Not represented in the collections studied.

DICHROPLUS CINCTIPES, new species.

A medium-sized brownish testaceous insect with conspicuously banded hind femora. The two sexes not very unequal in size. Rather profusely hirsute on legs, abdomen, thorax, and even on the tegmina.

Head about as wide as the front edge of the pronotum; the eyes rather prominent, especially in the male, about as long (female) or a trifle longer (male) than the cheeks below them, in both sexes separated above by a space equal to the broadest part of the frontal costa; fastigium of the vertex broadly and shallowly sulcate, the bounding carinae angulate and faintly separating it from the sulcus of the frontal costa; the latter quite prominent, especially between the base of the antennae, a little narrowed above the antennae, and again just below the ocellus continuous to the clypeus, sulcate throughout, more deeply in the male, and provided with strong, smooth, lateral carinae; facial carinae also prominent, in the male parallel, in the female very slightly sinuate and divergent below. Antennae filiform, about as long (female) or a little longer (male) than the head and pronotum together. Pronotum with the sides of the anterior lobe cylindrical, smooth, the hind lobe strongly expanding posteriorly, punctate, the two lobes about equal in length; median carina present only on hind lobe; transverse sulci profound, continuous; anterior edge straight or very

slightly advanced upon the occiput, the hind margin obtusangulate, the apex broadly rounded. Tegmina rather narrow, tapering, about equaling (female) or a little surpassing (male) the tip of the abdomen. Hind femora only moderately robust, just reaching the tip of the male abdomen, but not quite that of the female. Hind tibiae normally provided with eight spines in outer row. Space between the mesosternal lobes about as long as broad, possibly a trifle broader than long in the female. Prosternal spine pyramidal, about as long as extreme basal width, the apex acuminate. Male cerci slender, tapering, and curved slightly downward toward the tip. Last ventral segment short, its upper edges straight and meeting behind in an acute angle.

General color above brownish testaceous, below paler, more or less conspersed with brown and black. The usual piceous band extending from the hind edge of eyes along the upper half of sides of pronotum to last transverse sulcus, somewhat interrupted in the female: below this the sides of pronotum and cheeks are pale testaceous, as are also oblique bands on both the meso- and metapleura. Antennae pale ferruginous. Pronotum above and tegmina inconspicuously conspersed with brown, the latter with a discal row of rather well-defined fuscous spots, the apical half membranous and semipellucid. Hind femora decidedly banded with fuscous externally and above; internally and below with black and pale testaceous; hind tibiae more or less testaceous and dusky, with a pale basal annulus. The three basal abdominal segments largely black.

Length of body, male, 21; female, 25; of antennae, male and female, 10; of pronotum, male, 4.6; female, 6; of tegmina, male, 15.5; female, 17.25; of hind femora, male 11; female, 14 mm.

Type.—Cat. No. 9745 U.S.N.M.

Habitat.—Sapucay, Paraguay, February, collected by W. T. Foster. Male and female specimens.

LEIOTETTIX, new genus.

Related to both *Dichroplus* and *Scotussa*, but differing from the former in the more cylindrical pronotum with its comparatively shorter hind lobe and in the more ampliate fastigium of the vertex; and from the latter in having the valves of the ovipositor normal instead of straight, and the cerci obliquely docked instead of broadly spatulate. The representatives of the genus are small or medium sized.

Body with the surface glabrous, hirsute. Head large, fully as wide as or even a little broader than the front edge of the pronotum. Eyes a trifle prominent, about as long (female) or somewhat longer (male) than the cheeks below them, separated above by a space equal to the greatest width of the frontal costa in the male and a very little

more in the female. Vertex in front of the eyes amplified and roundly depressed, the sulcation wide and with its lateral walls broadly angulate. Frontal costa broadest and most prominent between the antennæ, a very little narrowed above, broadly sulcate in the vicinity of the ocellus at least, and coarsely punctate above. Antennæ normal. Pronotum cylindrical, a very little compressed in middle, the transverse sulci all equally plain, the last plainly behind the middle; anterior lobe glabrous at sides, somewhat transversely rugose above, hind lobe coarsely and closely punctate. Tegmina complete, sparsely veined, a very little surpassing the apex of abdomen. Hind femora moderately robust, about the same length as the abdomen in the two sexes. Space between the mesosternal lobes longer than wide, narrower than the lobes themselves. Prosternal spine acute.

The four species of *Leiotettix* before me as I write all agree in having the dark bands back of eyes and along the sides of pronotum green or greenish instead of piceous or fuscous. These species may be separated by the annexed synoptic table:

The species *viridis* may be considered as the type of the genus.

TABLE FOR DETERMINATION OF SPECIES.

- a. Size smaller (17 mm. male to 25 mm. female). The hind tibiæ green or glaucous.
 - b. General color of insects above grass green, below testaceous. *viridis*, new species
 - bb. General color of insect above cinereous.
 - c. Sides of pronotum with scarcely any trace of darker band. Hind femora conspicuously conspersed with dark brown and black, their inner face testaceous *punctipes*, new species
 - cc. Sides of pronotum with a conspicuous band. Hind femora not conspersed externally, their inner side and lower sulcus blood-red.
 - sanguineus*, new species
- aa. Larger (23 mm. male, 28 mm. female). The hind tibiæ yellow or testaceous.
 - flavipes*, new species

LEIOTETTIX VIRIDIS, new species.

A medium-sized, grass-green, locust that at first sight reminds one of a small *Atrachelacris unicolor*, Giglio-Tos, but which upon a little closer examination is readily observed to be quite distinct.

Head rather large, fully as wide (female) or even a little wider (male) than the front edge of the pronotum; the eyes fairly prominent, fully as far apart above as the width of the frontal costa between the base of the antennæ; fastigium of the vertex roundly depressed, the lateral carinæ broadly angulate, in some specimens meeting in front and separating the sulcation of this part from that of the costa by a faint ridge; frontal costa quite broad, widest above the ocellus and between the antennæ, sulcate, fading away below before reaching the clypeus. Facial carinæ but little divergent below, fairly prominent. Pronotum glabrous, short, subcylindrical, a little contracted in the middle, nearly

(female) or quite (male) as wide in front as behind, the front edge broadly rounded, the hind margin obtusangulate, median carina prominent on hind lobe, obliterated on front lobe, the latter considerably the longer. Tegmina semimembranous, sparsely veined, a little surpassing both the abdomen and hind femora in the two sexes, the costal area rather prominently dilated on basal third. Hind femora rather robust, fully as long in the male or even a trifle surpassing the tip of the abdomen in the female. Hind tibiae 8 or 9 spined in outer row. Male cerci long, slender, the apical half bent inward and curved downward, somewhat lamellate and sulcate on outer face, the extreme tip obliquely doeked.

General color as mentioned above, grass-green, the sides of pronotum a little darker where the piceous band usually occurs. Hind femora green above and on upper half of outer face, remainder yellow or testaceous save the genicular lunules which are dark piceous or black and a row of similarly colored spots on the lower carina of outer face. Hind tibiae greenish glaucous. Antennae testaceous, apically infuscated. Venter pale, the sides of basal segments of abdomen a little obscured near their anterior edge.

Length of body, male, 19, female, 23; of pronotum, male, 4, female, 5; of tegmina, male, 15, female, 16.5; of hind femora, male, 10.5, female, 13.6 mm.

Type.—Cat. No. 9746, U.S.N.M.

Habitat.—Sapucay, Paraguay, in February, where both sexes were taken by W. T. Foster.

LEIOTETTIX PUNCTIPES, new species.

In size and general form quite similar to *L. viridis* which is described above, but differing from it in having slightly less prominent eyes, a somewhat more coarsely punctate and angulate pronotum, and more closely veined tegmina. The color of *punctipes* is cinereo-testaceous or cinereo-ferruginous above, flavous beneath, with a trace of the usual pronotal bands and alternate pale and darker meso- and meta plural stripes. The hind femora have all the upper and outer carinae, as well as the pinnae, conspersed with black or piceous, and the genicular lunules are dark only on the bounding carinae; hind tibiae cinereo-glaucous, a little varied with brown near base. Sides of basal abdominal segments conspicuously piceous on their anterior half.

Length of body, female, 23; of pronotum, 5.15; of tegmina, 18; of hind femora, 13 mm.

Type.—Cat. No. 9747, U.S.N.M.

Habitat.—In the same region and along with the preceding species. Also collected by W. T. Foster, 5 females.

LEIOTETTIX SANGUINEUS, new species.

A slenderer insect than either *viridis* or *punctipes*, but to both of which it is rather closely related. Its determinate characters are well defined dark green pronotal stripes and deep blood-red inside and lower edge of hind femora. The sides of face below the eyes and lower half of sides of pronotum are flavous, as are also a portion of the pleura, venter, and lower part of outer face of hind femora. Above, the general color is ferruginous, in some specimens with an olivaceous tinge near the base of tegmina. Costal field of latter olivaceous, as are the anterior and middle legs, along with the outer disk of the hind femora, the latter without dusky spots on the carinae, as described in *punctipes*. The hind tibiae deep glaucous. Male cerci similar to those of *viridis*. Sides of the four basal abdominal segments largely jet black. Median carina of pronotum plain throughout.

Length of body, male, 18, female, 25; of pronotum, male, 4, female, 5; of tegmina, male, 14, female, 16-18; of hind femora, male, 9.5, female, 13 mm.

Type.—Cat. No. 9748, U.S.N.M.

Habitat.—Sapucay, Paraguay, January to March, 2 males and 2 females. Taken by W. T. Foster.

LEIOTETTIX FLAVIPES, new species.

In general structure and appearance quite similar to the other species of the genus described above, but differing from all of them in the larger size and the more decided dark pronotal bands. It also reminds one of the species of *Scotussa*, but it lacks the pale dorsal vitta of both *S. rubripes* and *S. brasiliensis*, to which it approaches in size. As compared with them it has the head larger, the occiput shorter, the vertex broader and less deeply sulcate, the eyes less elongate and pointed above, the frontal costa broader above and more uniform in width, as well as decidedly sulcate in the vicinity of the ocellus. The pronotum is slightly contracted at the middle and the head is a trifle wider than its front edge—the sculpturing, punctation, and arrangement of the sulci are the same, only the present species lacks the piceous bands on head and sides of pronotum back of the eyes, and in their stead has them deep green in color. The color of tegmina, body, and legs are similar, save that in the insect now under consideration the hind tibiae are testaceous instead of green or coral-red. In some specimens the lower sulcus and inner face of the hind femora lack the bright red of *brasiliensis* especially.

Length of body, male, 24, female, 28-31; of pronotum, male, 4.85, female, 6-6.5; of tegmina, male, 19, female, 20-21; of hind femora, male, 12.25, female, 15.25-16 mm.

Type.—Cat. No. 9749, U.S.N.M.

Habitat.—Sapucay, Paraguay, 2 females (Coll. L. Bruner); a number of specimens of both sexes (Coll. U. S. Nat. Mus.).

In size and general appearance this insect reminds one very much of a representative of *Scotussa*, but the form of the ovipositor in the female and the cerci of the male are abnormal for that genus and come much nearer to those of *Leiotettix*.

SCOTUSSA Giglio-Tos.

SCOTUSSA IMPUDICA Giglio-Tos.

Scotussa impudica GIGLIO-TOS, Boll. Mus. Zool. Anat. Torino, IX, 1894, No. 184, p. 25, fig. 4 a, b, c.

Habitat.—Luque, Paraguay (Giglio-Tos). Not represented in the Paraguayan collections studied. It occurs also in Argentina as far south as the southern part of the province of Santa Fe.

SCOTUSSA RUBRIPES, new species.

General color olive-green, becoming rufous on disk of pronotum and on the tegmina; below greenish yellow. Cheeks and lower half of lateral lobes of pronotum pale greenish yellow. The latter, together with sides of head back of eyes, piceous; this piceous band bordered above by a narrow one of testaceous, which gives to the insect a bivittate appearance, and at first glance suggests a species of *Melanoplus* or *Dichroplus*, to which the present genus is closely related, but from which it is readily separated by the structure of the upper valves of the female ovipositor, which are unusually long, straight, and slender. Hind tibiæ and tarsi bright coral-red.

Head about as wide as front edge of thorax, the face rather oblique viewed from the side, the occiput not elevated; width of vertex about two-thirds the shortest diameter of one of the eyes, fastigium gently depressed, sulcate, the well-defined bounding walls meeting in front at a right angle; frontal costa broad, narrowed to one-half its width at ocellus above where it is separated from the vertex by the meeting of the carinæ that bound the sulcus, reaching the clypeus, not sulcate; eyes not prominent, about as long as the cheeks below them, slightly pointed above, straight in front; antennæ filiform, about as long as head and pronotum together. Pronotum minus lateral carinæ, with the anterior lobe cylindrical, the hind lobe slightly enlarging posteriorly, about two-thirds the length of the front one, transverse sulci dim, posterior edge broadly rounded or subangulate, surface of hind lobe profusely but shallowly punctate, of anterior one smoother. Tegmina and wings complete, reaching slightly beyond apex of hind femora and ovipositor, the tip rounded, intercalary vein well-defined, cross-veins and veinlets few except on basal fourth, where they are numerous and irregular, giving the member a granular appearance. Hind femora moderately robust, not quite reaching the apex of upper valves of ovipositor; hind tibiæ with 8 spines in outer row. Proster-

nal spine moderately robust, pyramidal, directed gently to the rear. Valves of the ovipositor very unequal, the upper ones nearly twice as long as the lower, straight, and provided with several small saw-like teeth along their outer edge on apical half; lower valves weak and hooked at apex and furnished below with a single additional subapical tooth.

Length of body, female, 26; of pronotum, 6; of tegmina, 19; of hind femora, 13.5; of upper valves of ovipositor, 4 mm.

Type.—Cat. No. 9750, U.S.N.M.

Habitat.—A single female specimen from Sapucay, Paraguay.

The character of the ovipositor would indicate an abnormal egg-laying habit for this and allied species. Three such are known to me. They may be separated by the annexed

TABLE FOR DETERMINATION OF SPECIES.

- a. Hind tibiae green or glaucous. Valves of ovipositor tapering, scarcely toothed.
impudica Giglio-Tos
- aa. Hind tibiae coral-red. Valves of ovipositor of nearly equal size throughout, plainly serrate.
- b. Smaller (female, 26 mm.). Spines in outer row of hind tibiae 8. (Sapucay, Paraguay) *rubripes*, new species
- bb. Larger (female, 31; male, 18 mm.). Spines in outer row of hind tibiae 9. (Sao Paulo, Brazil) *brasiliensis*, new species^a

PARASCOPAS, new name.

PARASCOPAS OBESUS (Giglio-Tos).

Scopas obesus GIGLIO-TOS, Boll. Mus. Zool. Anat. Comp. Torino, IX, 1894, No. 184, p. 29.

Giglio-Tos proposed *Scopas* as the generic name for this insect. As it had been preoccupied by Bonapart for a fish genus I suggest that *Parascopas* be used for the locust, and that the species *obesus* Giglio-Tos be made the type of the genus.

The collection contains 5 specimens, 2 males and 3 females, from Sapucay (Coll. U. S. Nat. Mus.). There are also a pair, male and female, in the collection of L. Bruner. These latter bear the same label.

^aSome time ago a considerable number of Orthoptera from southern Brazil was submitted to the writer for determination. Among these were 8 specimens of the insect here tabulated. Aside from being larger and more robust than *S. rubripes*, which is herewith described rather fully, this Brazilian species has the tegmina more densely veined and the pronotum somewhat expanding posteriorly throughout, as indicated by the diverging pale vittæ of the disk. The lower sulcus and inner face of hind femora are deep red, whereas in *rubripes* they are simply tinged with orange. As compared with *S. impudica* Giglio-Tos, *brasiliensis* has the two sexes greatly unequal in size, as will be seen by the following measurements:

Length of body, male, 18-20, female, 31; of pronotum, male, 4.75, female, 6.8; of tegmina, male, 16, female, 22; of hind femora, male, 11.5, female, 16 mm. Eight specimens, 4 males and 4 females.

CHLORUS Giglio-Tos.

CHLORUS BORELLII Giglio-Tos.

Paradichroplus borellii GIGLIO-TOS, Boll. Mus. Zool. Anat. Torino, IX, 1894, No. 184, p. 27.

Chlorus borellii GIGLIO-TOS, Boll. Mus. Zool. Anat. Torino, XIII, 1898, No. 311, p. 50, note.

Habitat.—Asuncion, Paraguay (Giglio-Tos).

CHLORUS VARICOLOR (Stål).

Pezotettix varicolor STÅL, Obs. Orthopt., III, 1878, p. 9.

Paradichroplus varicolor GIGLIO-TOS, Zool. Jahrb., VIII, p. 813.

Chlorus varicolor GIGLIO-TOS, Boll. Mus. Zool. Anat. Torino, XIII, 1898, No. 311, p. 50, note.

Habitat.—Giglio-Tos reports this insect as coming from Paraguay.^a Possibly he refers to the insect which is described just beyond.

CHLORUS VITTATUS, new species.

Dark brownish green, varied on head, pronotum and abdomen with dirty ochraceous. Sides of basal half of abdomen heavily marked with jet black. Body and limbs rather strongly hirsute.

Head rather large, a very little broader than the front edge of the pronotum, smooth; eyes large, rounded behind, nearly straight in front, separated above by a space about equal to the width of the frontal costa between the base of the antennæ, a little longer than the cheeks below them; fastigium of the vertex somewhat expanding in front, shallowly sulcate, roundly confluent with the upper end of facial costa; latter broad, prominent, a very little narrowed above, broadly and very gently sulcate near the ocellus, and strongly punctate on upper half. Antennæ filiform, about as long as the head and pronotum combined. Pronotum subcylindrical, somewhat expanding on hind lobe, without lateral carinae, the median carina distinct throughout, slender, cut back of the middle by the last transverse sulcus, all three sulci quite strong; anterior edge truncate, faintly and broadly emarginate in middle, hind margin broadly rounded or subangulate. Tegmina broadly oval, rather coarsely veined, their dorsal edges not quite meeting, extending backward to near the middle of second abdominal segment. Hind femora robust, a little surpassing the tip of abdomen. Valves of ovipositor slender, pointed, the upper pair a trifle longer than the lower. Space between the mesosternal lobes a little narrower than the lobes themselves, a trifle widest anteriorly. Prosternal spine pyramidal, acute, directed a little to the rear.

As indicated above, the general color of this insect is dark brownish green, streaked and otherwise varied with dirty testaceous or ochra-

^aSee Zool. Jahrb., VIII, p. 813.

ecous. Head back of upper part of eyes and on each side of disk of pronotum provided with a line of medium width; face, cheeks below middle of eyes, lower half of sides of pronotum, and oblique lines on both meso- and metapleura ochraceous. Abdomen above also of this color. Tegmina dark, with paler veins, giving to them a ferruginous appearance. Hind femora very deep green, a little paler beneath; the hind tibiae dark blue-green, the tarsi testaceous. Antennae ferruginous, infuscated apically.

Length of body, female 27; of pronotum, 6; of tegmina, 5; of hind femora, 15 mm.

Type.—Cat. No. 9751, U.S.N.M.

Habitat.—Sapucay, Paraguay, January 9 and 10; 2 females; W. T. Foster, collector.

EUROTETTIX, new genus.

As indicated by the synopsis of the Melanopline genera of Paraguay, this genus is composed of brachypterous insects, the chief color of which is ferruginous. Related to *Chlorus* Giglio-Tos. Body and legs moderately hirsute.

Head large and broad, about as wide as the front edge of the pronotum; eyes large and prominent, nearly twice as long as the cheeks below them; vertex but little broader than the width of the basal antennal joint, the fastigium depressed and spatulately deeply sulcate; frontal costa fading before the clypeus. Antennae filiform, a little longer than the head and pronotum together. Pronotum with the anterior lobe cylindrical, the hind lobe considerably expanding, much shorter than the anterior; the transverse sulci quite distinct, front edge subtruncate, hind edge subangulate or broadly rounded. Tegmina greatly abbreviate, broadly ovate, their inner edges not quite touching. Hind femora large and robust, considerably surpassing the apex of the abdomen. Anterior and middle femora robust. The latter a very little enlarged apically, the last ventral segment short, entire at apex; supraanal plate scutellate, the cerci long, slender, pointed, and decurved at apex. Interspace between the mesosternal lobe nearly or quite as broad as long, but narrower than the lobes themselves. Prosternal spine broad at base, short, acuminate.

Type of the genus.—The species *femoratus* described herewith.

There are apparently two species of this genus at hand. They may be separated as follows:

TABLE FOR DETERMINATION OF SPECIES.

a. Larger (male, 15.5 mm.). Hind femora very robust, without indications of dusky bands across their upper edge; their lower sulcus and tibiae deep purple.

femoratus, new species

aa. Smaller (male, 11 mm.). Hind femora less robust, their upper edge with two dusky bands, the lower sulcus scarlet; tibiae grayish-purple or lavender.

minor, new species

EUROTETTIX FEMORATUS, new species.

A medium-sized brownish ferruginous locust with lobate tegmina and robust femora that greatly surpass the tip of the abdomen in the males.

Sides of head, back of eyes, and pronotum provided with a moderately broad piceous band that becomes much dimmer on the hind lobe. Lower half of lateral lobes of pronotum, together with the front edge and an oblique line running to base of hind femora testaceous. Tegmina uniformly dark brown. Sides of basal abdominal segments largely piceous. Hind femora above and externally ferrugineo-testaceous, the former dotted with fuscous, the latter streaked with piceous along the middle; inner face and lower edge, together with the sulcus, strongly reddish purple, the greater part of the former dark piceous; genicular lunules pale. Hind tibiae and tarsi rather closely hirsute. Venter and pectus testaceous.

Length of body, male, 15.5; of pronotum, 3.75; of tegmina, 3; of hind femora, 9.35 mm.

Type.—Cat. No. 9752, U.S.N.M.

Habitat.—A single male specimen collected during October by W. T. Foster at Sapucay, Paraguay.

EUROTETTIX MINOR, new species.

This insect differs from *femoratus* chiefly in its much smaller size and in coloration.

Length of body, male, 11; of pronotum, 2.85; of tegmina, 2; of hind femora, 7 mm.

Type.—Cat. No. 9753, U.S.N.M.

Habitat.—Asuncion, Paraguay; 2 male specimens collected in September by the author. They were found in a closely grazed pasture.

PARADICHIROPLUS Brunner.

TABLE FOR DETERMINATION OF SPECIES.

- a.* Hind tibiae provided with nine spines in outer row.
- b.* General color yellowish, the dorsum of pronotum and abdomen dusky. Head black.....*bilobus* Giglio-Tos
- bb.* General color greenish olivaceous, the dorsum of pronotum and abdomen light. Head concolorous.....*bruneri* Giglio-Tos
- aa.* Hind tibiae provided with eight spines in outer row.
- b.* Hind tibiae of the ordinary form, the lateral edges not expanded and acute.
- c.* Moderately robust, the head large. General color ferruginous, irregularly and obsolete variegated with greenish fuscous.....*bipunctatus* Giglio-Tos
- cc.* More slender, fusiform, the head not large. General color brownish olivaceous.....*fusiformis* Giglio-Tos
- bb.* Hind tibiae expanded apically and with the lateral edges acute.
aberrans Giglio-Tos

PARADICHIROPLUS BILOBUS Giglio-Tos.

Paradichroplus bilobus GIGLIO-TOS, Boll. Mus. Zool. Anat. Torino, XII, 1897, No. 302, p. 34.

Habitat.—This species is recorded only from the Province of Jujuy, Argentina, and from the Bolivian Chaco. It is quite likely distributed into Paraguay as well. Not in the material studied.

PARADICHIROPLUS BRUNNERI Giglio-Tos.

Plate XXXVII, fig. 5, female; Plate XXXVIII, fig. 6, male.

Paradichroplus brunneri GIGLIO-TOS, Boll. Mus. Zool. Anat. Torino, IX, 1894, No. 184, p. 25.

Habitat.—Not in the collections, but reported from Asuncion, Province of San Pedro, etc. (Giglio-Tos, Bruner). It also occurs in Argentina, where it is abundant as far south as Rosario de Santa Fe.

PARADICHIROPLUS BIPUNCTATUS Giglio-Tos.

Paradichroplus bipunctatus GIGLIO-TOS, Boll. Mus. Zool. Anat. Torino, XII, 1894, No. 184, p. 26.

Habitat.—A single female from Sapucay, Paraguay, is referred here. It was collected by W. T. Foster. Reported from Asuncion and the Province of San Pedro (Giglio-Tos). It also abounds in northern Argentina and the Bolivian Chaco.

PARADICHIROPLUS FUSIFORMIS Giglio-Tos.

Paradichroplus fusiformis GIGLIO-TOS, Boll. Mus. Zool. Anat. Torino, XII, 1897, No. 302, p. 35.

Habitat.—Not contained in the collections, but reported from Asuncion, Paraguay, San Lorenzo, Province of Jujuy, Argentina, and San Francisco, Bolivian Chaco, as well as a couple of localities in Brazil.

PARADICHIROPLUS ABERRANS Giglio-Tos.

Paradichroplus aberrans GIGLIO-TOS, Boll. Mus. Zool. Anat. Torino, IX, 1894, No. 184, p. 28.

Habitat.—Reported by Giglio-Tos from the Colonia Rizzo, on the Rio Apa, Paraguay.

Judging from the structure of the hind tibiae of this insect, as described by Giglio-Tos, it is more or less aquatic in its habits.

OSMILIA Stål.

The two Paraguayan species of this genus may be separated as follows:

- a. Larger. Base of wings light bluish *violacea* (Thunberg)
 aa. Smaller. Base of wings sordid yellowish-hyaline *obliqua* (Thunberg)

OSMILIA VIOLACEA (Thunberg).

Gryllus violaceus THUNBERG, Mém. Acad. St. Petersb., IX, 1824, p. 413.

Acridium (Osmilia) violaceum STÅL, Recens. Orthopt., I, 1873, p. 68.

Osmilia violacea GIGLIO-TOS, Boll. Mus. Zool. Anat. Torino, IX, 1894, No. 184, p. 18.

Habitat.—Several specimens of the two sexes, Sapucay, Paraguay (W. T. Foster); Asuncion and Colonia Risso, Paraguay (Giglio-Tos). It is also commonly met with in Brazil, Bolivia, and northern Argentina.

OSMILIA OBLIQUA (Thunberg).

Gryllus obliquus THUNBERG, Mém. Acad. St. Petersb., IX, 1824, p. 414.

Acridium (Osmilia) obliquum STÅL, Recens. Orthopt., I, 1873, p. 69.

Osmilia obliqua GIGLIO-TOS, Boll. Mus. Zool. Anat. Torino, IX, 1894, No. 184, p. 18.

Habitat.—Province of San Pedro and Asuncion, Paraguay (Giglio-Tos); not in collections now studied. Brazil; northern Argentina.

EXPLANATION OF PLATES.

PLATE XXXVI.

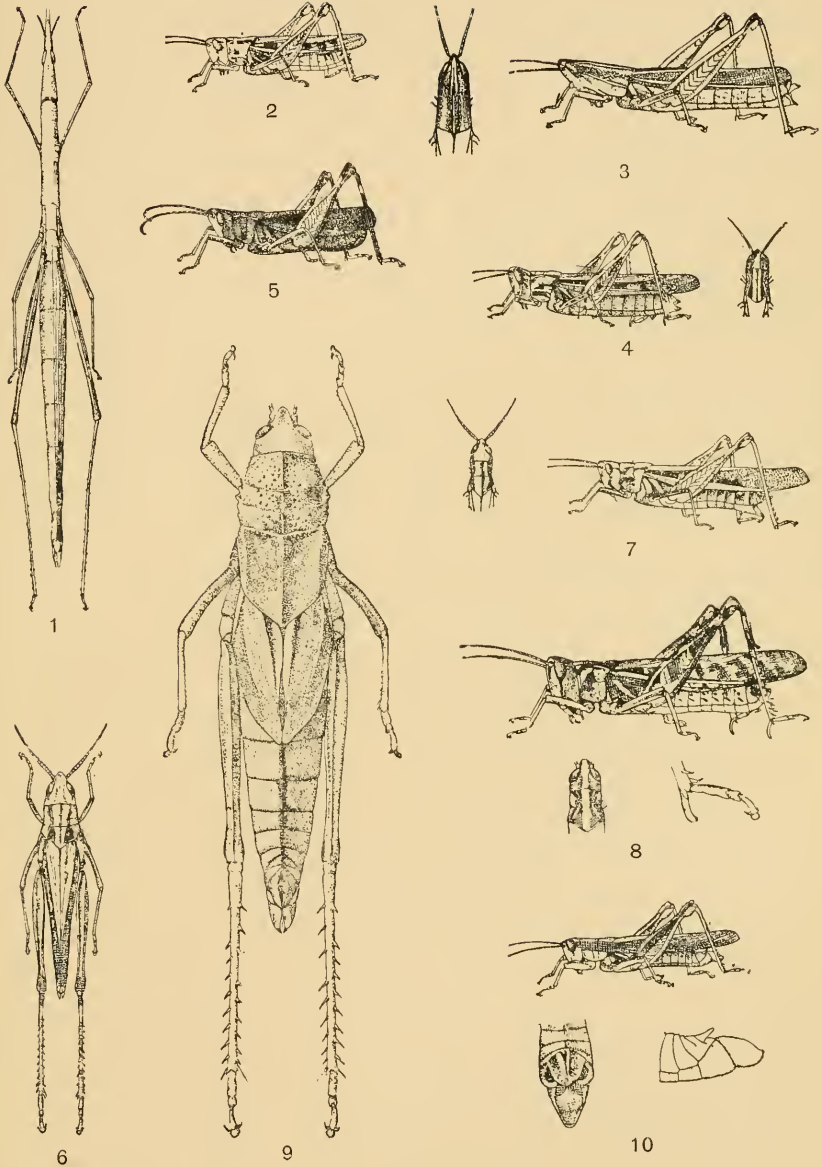
- FIG. 1. *Cephalocema costulata* Burmeister; p. 619.
 2. *Stirapleura variabilis* Bruner; p. 634.
 3. *Sinipta dalmani* Stål; p. 630.
 4. *Euplectrotettix conspersus* Bruner; p. 637.
 5. *Dichroattix viridifrons* Bruner, male; p. 632.
 6. *Dichroattix viridifrons* Bruner, female; p. 632.
 7. *Parorphula graminea* Bruner; p. 626.
 8. *Plectrotettix pictus* Bruner; p. 636.
 9. *Elaeochlora viridicuta* (Serville), female; p. 651.
 10. *Dichroplus elongatus* Giglio-Tos; p. 681.

PLATE XXXVII.

- FIG. 1. *Grac horrida* Philippi; p. 640.
 2. *Zoniopoda tarsata* (Serville); p. 652.
 3. *Zoniopoda omnicolor* (Blanchard); p. 655.
 4. *Schistocerca paranensis* (Burmeister); p. 676.
 5. *Paradichroplus bruneri* Giglio-Tos, female; p. 693.
 6. *Diponthus communis* Bruner; p. 657.
 7. *Tropinotus levipes* Stål; p. 648.
 8. *Spathalium hispidum*, male, Bruner; p. 639.

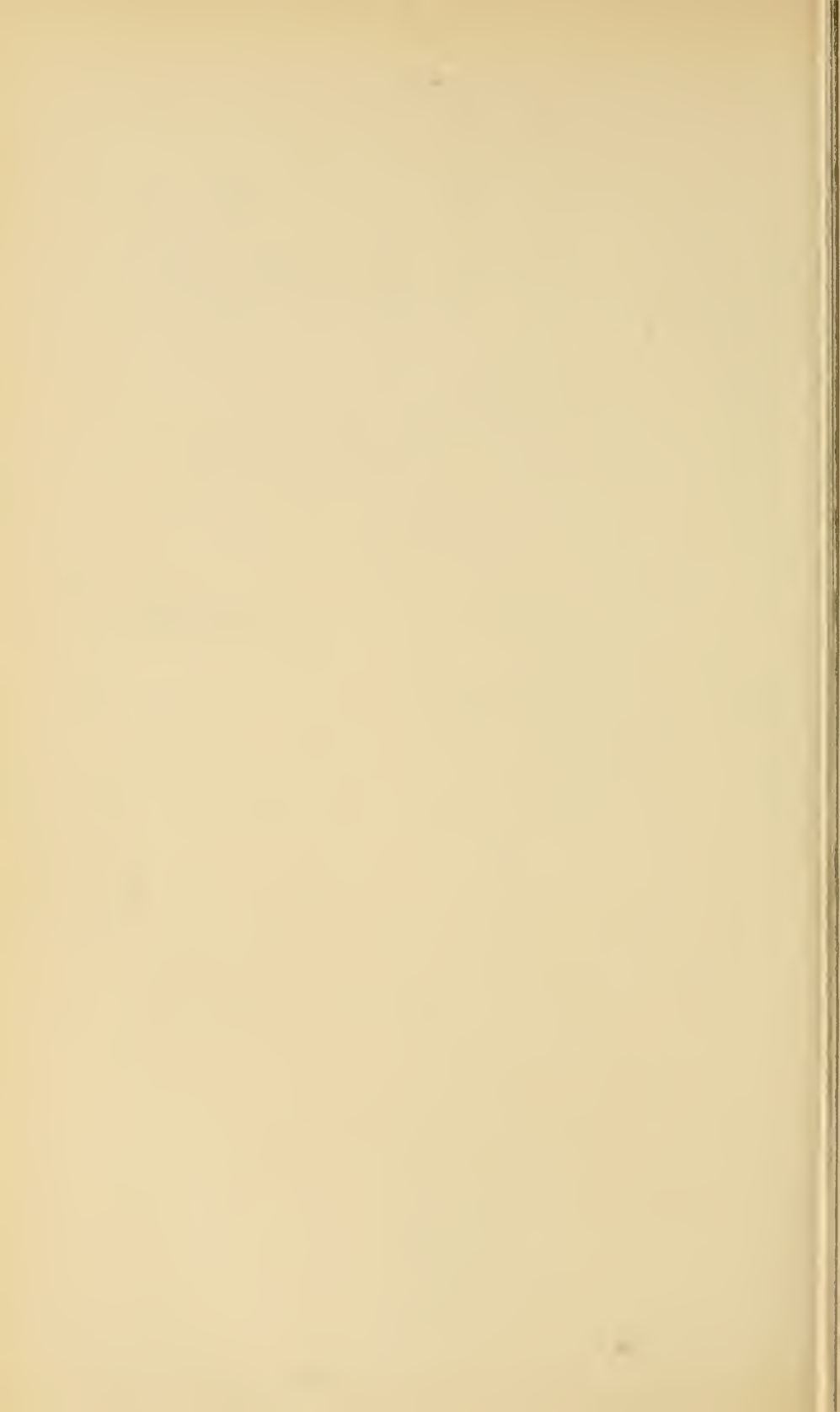
PLATE XXXVIII.

- FIG. 1. *Leptysmia pallida* Giglio-Tos; p. 658.
 2. *Chromacris stollii* (Pictet and Saussure); p. 651.
 3. *Dichroplus punctulatus* (Thunberg); p. 681.
 4. *Dichroplus punctulatus* (Thunberg); p. 681.
 5. *Ossa viridis* Giglio-Tos; p. 638.
 6. *Paradichroplus bruneri* Giglio-Tos, male; p. 693.
 7. *Elaeochlora viridicuta* (Serville), male; p. 651.
 8. *Atrachelacris unicolor* Giglio-Tos, female; p. 677.
 9. *Atrachelacris unicolor* Giglio-Tos, male; p. 677.
 10. *Aleus lineatus* Stål; p. 668.
 11. *Spathalium hispidum*, female, Bruner; p. 639.



PARAGUAYAN ACRIDIDÆ.

FOR EXPLANATION OF PLATE SEE PAGE 694.





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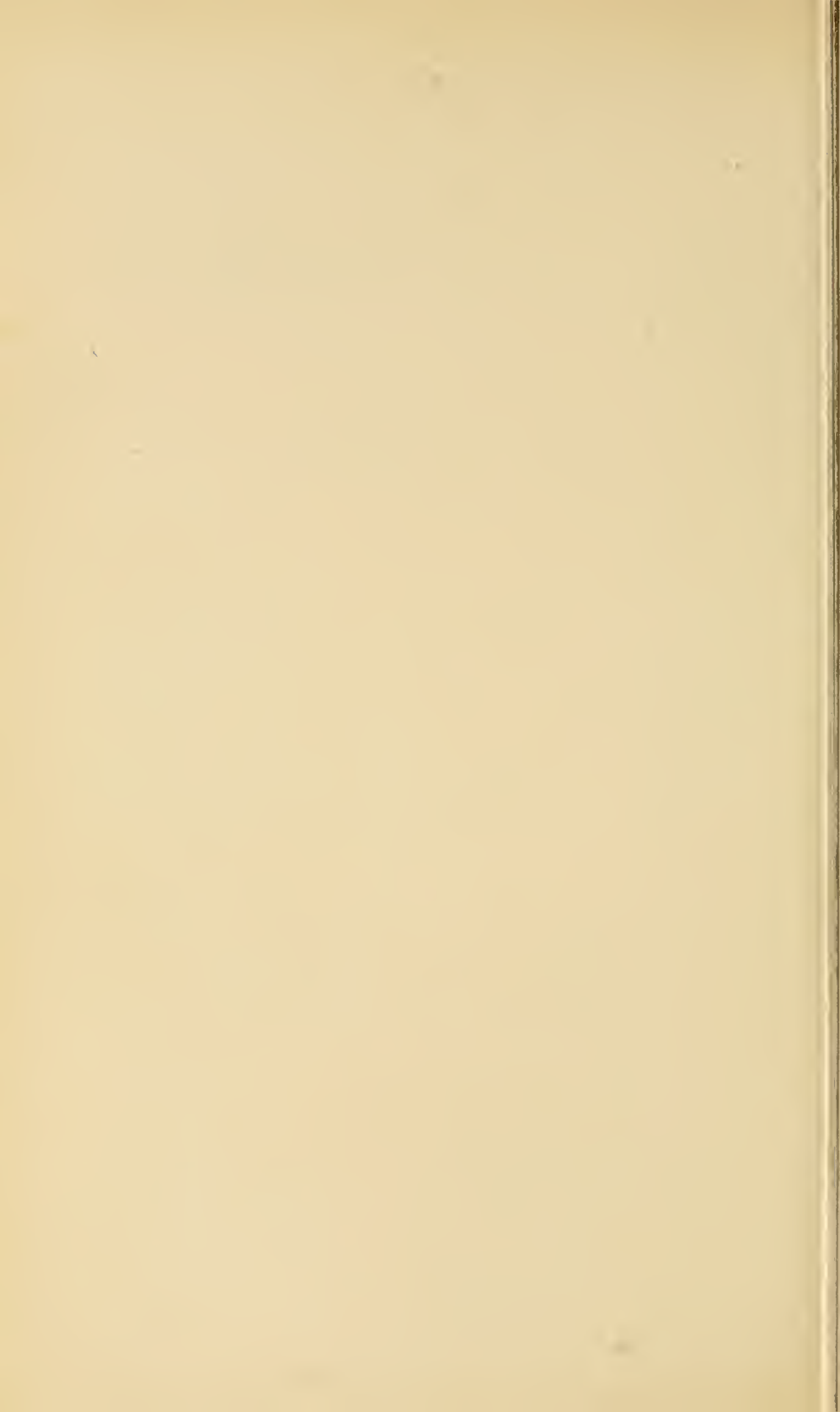
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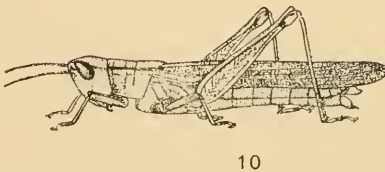
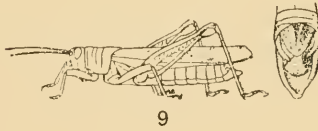
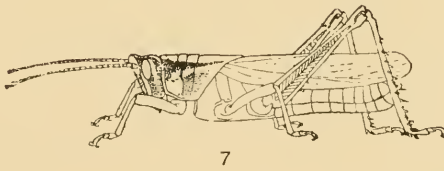
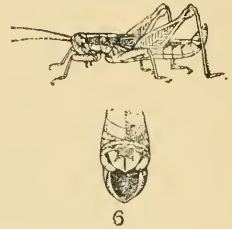
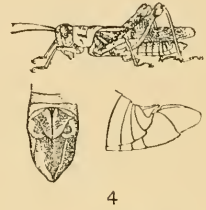
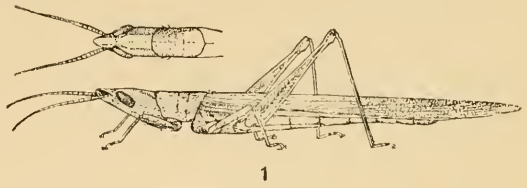


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PARAGUAYAN ACRIDIDÆ.

FOR EXPLANATION OF PLATE SEE PAGE 694.





PARAGUAYAN ACRIDIDÆ.

FOR EXPLANATION OF PLATE SEE PAGE 694.

