

I. SOUTH AMERICAN ACRIDOIDEA.

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The present paper follows that published in November, 1910, in the Seventh Volume of these ANNALS entitled "South American Tetrigidæ." Both that and this are reports on portions of the extensive collection made by H. H. Smith and owned by the Carnegie Museum.

While the account of the grouse-locusts here referred to was made rather complete for the whole continent, it is impracticable to continue the same style of treatment for the remaining families of South American Acridoidea. Accordingly with few exceptions only the actual material at hand will be noted. Nevertheless several synoptical tables of the species of important genera are included, where it is thought such additions will prove helpful to orthopterological students, while studying the insects belonging to the fauna of South America.

The types of the various species now described are, with few exceptions, the property of the Carnegie Museum. The others are in the collection of the writer.

Additional reports on this same collection of Orthoptera are in course of preparation and will appear later. These include representatives of the Grylloidea and Locustoidea (Phasgoneuroidea).

The arrangement or sequence of the various families and genera as found in the following pages, while not exactly in accord with my conception of the classification of these insects, follows rather closely that of W. F. Kirby as contained in his *Synonymic Catalogue of Orthoptera*, Vol. III.¹

Family EUMASTACIDÆ.

But few representatives of the *Eumastacidæ* are at hand, although the group is practically tropical in its distribution. Only two genera are found in the material before me.

¹ A *Synonymic Catalogue of Orthoptera*, Vol. III, Orthoptera Saltatoria, Part II (Locustidæ vel Acridiidæ). Printed by order of the trustees of the British Museum, 1910.

Genus EUMASTAX Burr.

1. *Eumastax tenuis* Perty?

Mastax tenuis PERTY, Delect. Anim. Brasil., 123, tab. XXIV, fig. 3 (1830).

Eumastax tenuis BURR, Essai sur les Eumastacides, pp. 44, 45 (1899).

Mastax virescens WESTWOOD, Arc. Ent., I, p. 100 (1841).

Mastax minuta BOLIVAR, An. Soc. Esp., X, p. 481 (1881).

The collection now being reported upon contains a single female specimen, which is doubtfully referred here. It was taken in June by H. H. Smith.

Habitat.—Para, Brazil.

Genus MASYNTES Karsch.

Masyntes KARSCH, Ent. Nachr., XV, pp. 26, 31 (1889).

The insects which comprise the genus *Masyntes* are confined to tropical America. They appear to have their center of distribution in Paraguay and southern Brazil. A single species, however, occurs in Cuba. The several forms may be separated by the annexed synoptic table:

SYNOPSIS OF THE SPECIES OF MASYNTES.

- A. Tegmina fully developed, abbreviated or rudimentary, and in some cases even aborted.
 - b. Fastigium of the vertex emarginate, bifid. Pronotum furnished with oblique lateral carinae. [Cuba.] *gundlachi* Scudder.
 - bb. Fastigium of the vertex rounded, entire. Pronotum without lateral carinae.
 - c. Smaller (♂, 14–15 mm., ♀, 20 mm.). Pronotum truncate behind.
 - d. Middle of pronotum of ♀ minutely excised. Hind femora of ♀ 15 mm. long. [Paraguay.] *borellii* Giglio-Tos.
 - dd. Middle of pronotum of ♀ entire. Hind femora of ♀ 12.25 mm. long. [Chapada, Brazil.] *chapadensis* sp. nov.
 - cc. Larger (♂, 18–20 mm., ♀, 25–26 mm.). Pronotum rounded or subangulate behind.
 - d. Tegmina and wings fully developed. Posterior margin of pronotum rounded. [Paraguay.] *tigris* Burr.
 - dd. Tegmina and wings somewhat abbreviated. Posterior margin of pronotum subangulated. [Chapada, Brazil.] *brasiliensis* sp. nov.
 - AA. Tegmina and wings missing. Fastigium of the vertex rounded. [Bahia, Brazil.] *saurus* Burr.

2. *Masyntes brasiliensis* sp. nov.

About the same in size and with the general appearance of *M. tigris* Burr, but differing from that species in the shorter hind femora

and tegmina and in the posterior margin of the pronotum, which is distinctly but broadly angulated, instead of rounded, as in Burr's species.

General color above obscure fuscous, modified by having the disk of the pronotum dull testaceous, and the sixth (♀) and sixth and seventh (♂) abdominal segments above lemon-yellow. Under side of body, front including clypeus and labrum, base of mandibles, lower third of sides of pronotum, and the lower part of the mesopleura, flavous. Anterior legs ochraceous, the hind femora flavous with an olivaceous tinge on basal three-fifths, the carinae black or blackish, on the apical two-fifths orange-yellow and twice fusco-fasciate; the knees also black. Hind tibiae somewhat obscure or infuscated and provided with a sub-basal pallid annulus, the tarsi more or less flavous.

Vertex rounded, entire, slightly produced in advance of the elongate prominent eyes, and, viewed laterally, meeting the front in a somewhat acute angle. Frontal costa sulcate throughout, reaching the clypeus. Antennae as described for *M. tigris*, the first and second and greater part of third joints flavous, remainder dark fuscous or black. Pronotum somewhat longer than wide, the posterior lobe a little expanding, the median carina linear and fairly prominent throughout; hind margin widely, and somewhat roundly, angulate, the anterior margin straight; sides longer than high, the lower margin oblique, in the male nearly straight, in the female somewhat sinuate, the posterior angle decidedly acute (♂) or but slightly so (♀). Tegmina and wings strongly infuscated, abbreviated in both sexes, about three-fifths (♂) or one-fourth (♀) the length of the abdomen. Hind femora moderately robust, all the carinae finely serrated, as long as the abdomen in the female, and nearly one-half longer in the male. Tip of male abdomen about as described for *tigris*; the supra-anal plate and cerci also much the same as in that species. Subanal plate, or last ventral segment, scarcely pubescent, its apex not sinuate; valves of the ovipositor rather straight, long, and slender, the lateral margins quite strongly toothed.

Length of body, ♂, 17.5 mm., ♀, 26 mm.; of pronotum, ♂, 2.2 mm., ♀, 2.9 mm.; of tegmina, ♂, 7 mm., ♀, 4.75 mm.; of hind femora, ♂, 13 mm., ♀, 16 mm.

Habitat.—The types were collected by H. H. Smith. The male comes from Corumba, Brazil, where it was taken during the month of March; the female bears the label "Chapada, Campo, Oct." Other specimens are at hand from the same localities and bear the same dates.

3. *Masyntes chapadensis* sp. nov.

This insect is most closely related to *M. borellii* Giglio-Tos, from which it differs chiefly in the shorter hind femora and the entire, instead of excised, middle of the hind margin of the pronotum. In color *chapadensis* differs from *borellii* by having the front, labrum, and clypeus dull brown, instead of yellowish; the median carina of the pronotum is concolorous, instead of yellow. The tegmina and wings are also decidedly shorter in the present species than in the one with which it has been compared.

Length of body, ♂, 14 mm., ♀, 20 mm.; of pronotum, ♂, 2 mm., ♀, 2.3 mm.; of tegmina, ♂, 2.7 mm., ♀, 2.15 mm.; of hind femora, ♂, 10.5 mm., ♀, 12.5 mm.

Habitat.—There are specimens at hand from both Chapada and Corumba, Brazil. They were taken during February and April. The types are in the Carnegie Museum.

Family TRUXALIDÆ.

Representatives of the family Truxalidæ are widely distributed over the surface of the earth, although no single continent seems to be greatly favored in this dissemination. Under these conditions it is needless to state that there are numerous genera and species now known and new ones continually being discovered. The present collection contains several of these latter, as may be seen by referring to succeeding pages.

Genus HYALOPTERYX Charpentier.

Hyalopteryx CHARPENTIER, Orthopt. Descr. et Depict., pl. XLVI (1845).

The present genus is confined to South America, where its representatives abound in Brazil, eastern Bolivia, and Paraguay.

4. *Hyalopteryx rufipennis* Charpentier.

Hyalopteryx rufipennis CHARP., Orthopt. Descr. et Depict., pl. XLVI (1845).

Habitat.—Chapada, near Cuyaba, Matto Grosso, Brazil, a single female (H. H. Smith), January.

The synoptic table given by me in my List of Paraguayan Locusts (Proc. U. S. Nat. Mus., XXX, p. 623) runs this insect as above, which is evidently correct.

Genus *TRUXALIS* Fabricius.

Truxalis FABRICIUS, Syst. Ent., p. 279 (1775).

Truxalis, as at present restricted, belongs to the American hemisphere, where it is represented on both continents by the following named species.

5. *Truxalis brevicornis* (Linnæus).

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

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

Acridium ensicorneum DE GEER, Mem. Ins., p. 449, pl. XLII, figs. 1, 2 (1773).

Opsomala punctipennis SERVILE, Hist. Nat. Ins. Orthopt., p. 590 (1838).

Truxalis viridula PALISOT DE BEAUVOIS, Ins. Afr. et Amer., p. 80, pl. III, fig. 1 (1807).

Oxycoryphus burkhartianus SAUSSURE, Rev. et Mag. Zool., p. 315 (1861).

Truxalis adspersa BLANCHARD, Voy. Amer. Merid., VI, pt. 2, p. 216, pl. XXVII, fig. 2 (1837-1843).

Habitat.—Specimens of this insect are at hand from Corumba and Chapada, Brazil, where they were taken during the months of March and July respectively (H. H. Smith). It also occurs throughout Brazil, Paraguay, much of Argentina, and northward through Central America, Mexico, and the United States east of the Mississippi river, even to the Canadian border.

Genus *ORPHULA* Stål.

Orphula STÅL, Recens. Orthopt., I, p. 105 (1873).

A genus of medium-sized locusts belonging to tropical America. Species are found in both North and South American countries. At least seven of them have been recognized.

6. *Orphula pagana* Stål.

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

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

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

Habitat.—Corumba and Chapada near Cuyaba, Matto Grosso, Brazil, March to August (H. H. Smith). Also other Brazilian, Paraguayan, Bolivian, and Argentinian localities.

Genus *ORPHULELLA* Giglio-Tos.

The locustid genus *Orphulella* is typical of the New World and is well represented in both North and South America. Its members are

numerous in all grassy openings, in meadows, on savannas, prairies, and even the pampas and llanos, where they are the common grasshoppers of the respective regions in which each species is found. At least fifty apparently distinct forms have been described. More than half of these occur in North America, where representatives abound from well in Canadian territory to the Isthmus of Panama. In South America at least one species has been described from as far south as the Rio Negro of Argentina, while all of the West Indies are within the range of several other forms. These locusts are slightly below the medium in size and inconspicuous in appearance. The colors of most of them are quite variable, while the characters which separate the species are not strongly apparent, even to the trained entomologist. Undoubtedly several additional forms will be found, when the various regions within the range of their distribution have been more carefully explored. A later and more critical study of the genus may also result in the better separation of the species.

SYNOPSIS OF THE SOUTH AMERICAN SPECIES OF ORPHULELLA.²

- A. Lateral carinæ of the pronotum interrupted between the anterior and posterior sulci.
 - b. Size larger (♀, 21-23 mm.).
 - c. Separate sections of the carinæ lunate; the tibial claws normal. Antennæ filiform. *obscura* Bruner.
 - cc. Separate sections of the carinæ straight; tibial claws long and strong, the second of inner ones nearly twice the length of the first, recalling *Stirapleura*. Antennæ subensiform. *interrupta* sp. nov.

² In presenting this synoptical table the writer wishes to state that he does so with a knowledge that it is only temporary, and very incomplete even for the described forms. Walker's *Stenobothrus gratiosus* (Cat. Derm., Brit. Mus., IV, p. 758) belongs to the genus *Orphulella* and seems to fall near *O. punctata*, from which it may be distinct. Male specimens of green color are very rare in *punctata*. The insect described by Bolivar as *Orphula patruelis* may also belong to the genus *Orphulella*. If so, its "distinctly ensiform" antennæ would place it near either *crassa* or *interrupta*. Possibly Walker's *Stenobothrus concinnulus* (l. c., p. 759) also belongs here, although Kirby places it with *Orphulina* (Cat., p. 119). It would come somewhere in the vicinity of *intricata*. The *Chrysochraon* ? *abbreviatum* Scudder (Proc. Bost. Soc. Nat. Hist., XII, p. 339) is also, according to a later statement of that author, a member of the genus *Orphulella* (see l. c., XXVII, p. 206). It very likely belongs near *peruna* Bruner and *chipmani* Bruner in the section with straight lateral carinæ in advance of the principal sulcus. *O. intricata* appears twice in the table. It is very similar to *insularis* both in size and general appearance, although much of the territory between the habitat of the two lacks closely related representatives.

bb. Size smaller (♀, 15 mm.). *gracilis* Gig.-Tos.

AA. Lateral carinæ of the pronotum complete or subinterrupted between the anterior and posterior sulci.

b. Body normal, neither greatly compressed nor unusually robust.

c. Lateral carinæ in advance of the last transverse sulcus, decidedly arcuate, angulate, or more or less strongly divergent. Antennæ variable.

d. Size larger (♀, 19-22 mm. in length).

e. Body unusually slender; tegmina and wings in both sexes greatly surpassing the tips of hind femora and apex of abdomen. Dusky maculations confined to discal field of the tegmina.

elongata sp. nov.

ee. Body normal in form, not especially slender. Tegmina and wings but little longer than ♀ abdomen.

f. Pronotal carinæ quite strongly arcuate. The dusky maculations of the tegmina generally distributed, occupying most of the wing. [Tropical America.]

punctata De Geer.

ff. Pronotal carinæ gently arcuate. The dusky maculations of the tegmina confined to the discal field.

g. Hind margin of the disk of pronotum distinctly angulate. Body moderately robust; the fastigium of the vertex, even of ♀, right-angled. [Costa Rica.]

meridionalis Bruner.

gg. Hind margin of the disk of pronotum rounded; the fastigium of the vertex, even of the ♂, gently obtusangulate. [Brazil.] *costalis* Walker.

dd. Size smaller (♀, 12.5 mm. to 18 mm. in length).

e. Lateral carinæ of the pronotum always complete.

f. Antennæ filiform, but little, if at all, flattened.

g. Lateral foveolæ of the vertex well-defined, elongate triangular. [Brazil and Paraguay.] . . . *expandens* Walker.

gg. Lateral foveolæ almost obliterated. [St. Domingo.]

decisa Walker.

ff. Antennæ robust, short, the joints depressed or flattened. [Para, Brazil.]

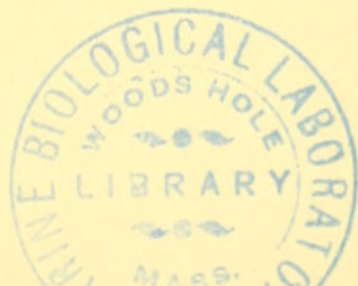
g. Lateral foveolæ of the vertex faint, almost linear, the bounding walls scarcely apparent. [Isle of Trinidad.]

insularis Bruner.

gg. Lateral foveolæ of the vertex well defined, about twice as long as basal width, the bounding walls prominent. [Argentina.] *intricata* Stål.

ee. Lateral carinæ of the pronotum sometimes faint or subinterrupted between the transverse sulci. [Argentina.] . . . *intricata* Stål.

cc. Lateral carinæ in advance of the last transverse sulcus straight, or very gently arcuate, little, or not at all, divergent. Antennæ slender, filiform.



- d. Size smaller (σ^7 , 12-13 mm., φ , 15-18 mm.).
- e. Form graceful, size smaller (σ^7 , 12 mm., φ , 16.5-17 mm.) [Isle of Trinidad to northern Brazil.] *chipmani* Bruner.
- ee. Form more robust, size larger (σ^7 , 13 mm., φ , 17-18 mm.). [Central Peru.] *peruna* Bruner.
- dd. Size larger (σ^7 , 15 mm., φ , 23-25 mm.). [Cuba and Isle of Pines.] *scudderi* Bolivar.
- bb. Body robust, strongly compressed, making the insect appear unusually deep.
- c. Lateral carinæ of pronotum in advance of last transverse sulcus straight, parallel. Antennæ heavy, the basal joints strongly depressed. *crassa* sp. nov.
- cc. Lateral carinæ of pronotum in advance of the last transverse sulcus more or less strongly arcuate. Antennæ comparatively slender, the basal joints but little flattened.
- d. Lateral foveolæ of vertex shallow, elongate-triangular; hind femora with the apex normal, moderately robust. *grossa* sp. nov.
- dd. Lateral foveolæ of vertex rather deep, basal width one-half the length; hind femora with the apex small, unusually slender. *compacta* sp. nov.

7. *Orphulella obscura* Bruner.

Orphulella obscura BRUNER, Proc. U. S. Nat. Mus., XXX, p. 627 (1906).

Habitat.—Chapada, Corumba, and Para, Brazil, from April to September. Several specimens of both sexes (H. H. Smith).

This insect is very variable in color, but in every case is quite readily recognizable on account of the rather heavy fuscous markings of the pronotum, tegmina, and legs. It does not appear to be as common as some of the other species of the genus, or else its habits are of such a nature as to render it less liable to detection and capture.

8. *Orphulella interrupta* sp. nov.

This locust, as shown by the above synoptic table of the South American species of the genus, is most closely related to *O. obscura* and *O. gracilis*, both of which it approaches in having the lateral carinæ of the pronotum interrupted between the sulci. From the former it may readily be separated by the slightly larger size and the form of the separate sections of the carinæ; from the latter by its much larger size and the more robust hind femora. Antennæ short, the proximal joints a little flattened.

General form somewhat robust; the head large, a little wider than the front edge of the pronotum, the occiput very gently arcuate when viewed laterally, the vertex somewhat ascending, rather deeply sulcate, nearly twice as broad as long, the antero-lateral carinæ meeting in an

obtuse angle, lateral foveolæ scarcely differentiated, but rather included in the antennal scrobes. Eyes fairly prominent, a trifle longer than the anterior edge of the cheeks below them; the ocelli large, the lateral pair located at the end of a short downwardly directed carina which would ordinarily mark the posterior extremity of the foveola, and very close to the upper one-fourth of the eye. Frontal costa prominent, broad, gently sulcate, strongly punctate, expanding but little below, reaching the clypeus. Lateral carinæ also prominent, evenly divergent, and reaching the base of the mandibles. Pronotum of moderate length, quite strongly constricted laterally at middle, the two lobes about equal in length; lateral carinæ widely interrupted at middle, on anterior lobe most prominent at front margin, convergent posteriorly, and terminating just in advance of the first transverse sulcus; on hind lobe heaviest at the transverse sulcus, divergent, and fading before reaching the posterior edge at shoulders; hind margin broadly angulate. Tegmina of moderate width, sparsely veined, extending a little beyond the apex of hind femora; intercalary vein well developed, the apex rounded. Hind femora robust, passing the abdomen by the length of the genicular area; hind tibiæ rather strongly hirsute, the inner claws or spurs heavy, elongate, the second nearly twice the length of the first, reminding one of this feature in the species of *Sterapleura*, eight- or nine-spined externally, ten- or eleven-spined internally. Interspace between the mesosternal lobes quadrate, a little narrower than the lobes themselves.

General color ochraceo-testaceous, the head, pronotum and pleura, as well as anterior legs, streaked and strongly conspersed with ferruginous; the pronotal carinæ pallid, very faintly bordered with piceous; tegmina smoky hyaline, marked along the disk and anterior field with quadrate brown patches and spots, these separated by areas of pallid cross-veins. Hind femora marked with faint fuscous patches on upper edge and black dots along the external carinæ, the lower outer edge infuscated, hind tibiæ cinereo-testaceous conspersed with brown, the spines black-tipped. Antennæ ferruginous.

Length of body, ♀, 22 mm., of pronotum, 4 mm., of tegmina, 19.5 mm., of hind femora, 13.6 mm.

Habitat.—Chapada, Brazil, in July (H. H. Smith, collector).

The type, which is unique, is in the collection of the Carnegie Museum.

9. *Orphulella gracilis* Giglio-Tos.

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

Habitat.—Several specimens from among the collections studied have been determined as this species. They come from Chapada, Brazil (H. H. Smith).

10. *Orphulella elongata* sp. nov.

Related to *O. punctata* De Geer, but much slenderer and more graceful in form.

Female.—But little heavier than the males of *O. punctata*. The head very gently wider than the anterior edge of the slightly compressed pronotum, the occiput somewhat ascending above the plane of the pronotum, of moderate length; fastigium of the vertex very gently acuminate, the antero-lateral walls but little elevated above the disk; lateral foveolæ profound, somewhat elongate-triangular, the upper side gently arcuate. Eyes of moderate size, acuminate above, their anterior edge straight. Antennæ slender, filiform. Pronotum with the anterior and posterior lobes about equal in length, quite strongly compressed, especially on the anterior half; the lateral carinæ strongly and evenly arcuate in front of the last transverse sulcus, approaching closest at middle, where they are but half as far apart as on the hind margin of the posterior lobe. Tegmina long and slender, reaching about one-fifth of their length beyond the tip of the abdomen, their veins very inconspicuous. Hind femora slender, their apex scarcely reaching the tip of the abdomen; hind tibiæ slender, externally ten-spined.

General color dull brown, varied with testaceous on face, lower half of sides of pronotum, abdomen, and legs. Occiput, disk of pronotum, and dorsal edges of tegmina pale testaceous, the latter marked rather evenly along the dorsal angle and on the disk with fuscous dots, those on the disk much more pronounced. Wings rather strongly infuscated apically and along the anterior margin. Hind femora with the usual fuscous markings on the upper edge and along the lower outer carina; hind tibiæ fusco-cinereous, with a paler basal annulus. Antennæ pallid (at least on basal half, the only portion remaining on the type specimen).

Length of body, ♀, 20 mm., of pronotum, 2.4 mm., of tegmina, 19 mm., of hind femora, 10.5 mm.

Habitat.—A single ♀, the type, Corumba, Brazil, where it was taken during April by H. H. Smith.

There are two males of this genus before me which possibly belong to this species. They approach quite closely to those which are unhesitatingly referred to *O. punctata* De Geer, but seem to be separable from that species in their more elongate form and slightly longer wings, in one of them surpassing the apex of the abdomen by fully one-third of their length. One of the specimens has the dorsal portion of the tegmina pale grass-green, while the other follows closely the coloration as described for the female. The carinae of the pronotum here, as well as in the female, are pallid, and are bordered within on the hind lobe by a widening streak of black as is frequently the case in members of the genus.

The measurements of these males are as follows: Length of body, 14.5 mm., of pronotum, 3 mm., of tegmina, 15–15.5 mm., of hind femora, 8.5–9 mm.

Habitat.—Corumba, Brazil, March. One of them bears the additional label "highlands."

11. *Orphulella punctata* De Geer.

Acrydium punctatum DE GEER, Mém. Ins., III, p. 593, pl. 42, fig. 12 (1773).

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

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

Stenobothrus mexicanus WALKER (*nec* Saussure), Cat. Dernapt. Salt. Brit. Mus., IV, p. 756 (1870).

This is the most abundantly represented species of the genus, and specimens are at hand from all the Brazilian localities at which Smith collected. Much variation in color and also considerable in size is observable among the material at hand. The species was taken practically throughout the year.

12. *Orphulella meridionalis* Bruner.

Orphulella meridionalis BRUNER, Biol. Cent. Amer., Orthopt., II, pp. 77, 81 (1904)

Habitat.—Costa Rica and southward. Not contained among the material now reported upon.

13. *Orphulella costalis* Walker.

Stenobothrus costalis WALKER, Cat. Dermap. Salt., Brit. Mus., IV, p. 759 (1870).

Habitat.—It is barely possible that individuals of the insect described as *Stenobothrus costalis* by Walker are at hand among the two

hundred or more specimens before me from Brazil, the locality cited by that author.

14. *Orphulella intricata* Stål.

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

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

Habitat.—Argentina, and perhaps also southern Brazil. Not noticed among the large series of specimens of the genus *Orphulella* at hand.

15. *Orphulella expandens* Walker.

Stenobothrus expandens WALKER, Cat. Dermap. Salt., Brit. Mus., IV, p. 758 (1870).

Orphulella expandens KIRBY, Syn. Cat. Orthopt., III, p. 122 (1910).

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

Habitat.—Chapada, Brazil, September to April (H. H. Smith). Numerous specimens.

16. *Orphulella insularis* Bruner.

Orphulella insularis BRUNER, Journ. N. Y. Ent. Soc., XIV, p. 150 (1906).

Habitat.—Like the next species this locust is confined to the Windward islands of the West Indies and northern South America.

It too is absent from the material being reported upon, and is included for purposes of comparison.

17. *Orphulella chipmani* Bruner.

Orphulella chipmani BRUNER, Journ. N. Y. Ent. Soc., XIV, p. 149 (1906).

Habitat.—Trinidad, British Guiana, and Para, Brazil, and perhaps also other portions of northern South America.

The present collection does not contain representatives of this species, but from its known range it must have been overlooked by H. H. Smith.

18. *Orphulella peruna* Bruner *nom. nov.*

Zonocerus bilineatus SCUDD., Proc. Bost. Soc. Nat. Hist., XVII, p. 268 (1874).

Orphulella? bilineatus SCUDD., l. c., XXVII, p. 210 (1896).

Habitat.—Along the upper Amazons in Brazil, Ecuador, and Peru. Not represented in the present collection. While Scudder did not definitely place this insect in *Orphulella* there seems to be but little doubt that it belongs here. The name *bilineata* was preoccupied in the genus *Orphulella* by *Stenobothrus bilineatus* Scudder from North America, the latter being an *Orphulella*, hence the change of name

19. *Orphulella scudderi* Bolivar.

Orphula scudderi BOLIVAR, Mem. Soc. Zool. France, I, p. 142 (1888).

Orphulella scudderi BRUNER, Biol. Cent. Amer., II, pp. 77, 82 (1904).

Habitat.—Cuba and Isle of Pines.

Included here merely to show relationship to some of the preceding forms.

20. *Orphulella crassa* sp. nov.

Body unusually robust, compressed, and deep for the genus, reminding one strongly of an *Orphula* and also of *Orphulella mexicana* Saussure. Tegmina of female somewhat abbreviated, their apex sub-oblique. Wings with the disk tinged with yellow or vinaceous, their apical half somewhat infuscated. Lateral foveolæ of vertex shallow and inconspicuous.

Head about as wide as the front edge of the pronotum, rather higher than usual, viewed laterally slightly elevated above the pronotum, the front strongly oblique, nearly straight, meeting with the vertex at an acute angle; the latter a little longer than wide and somewhat acuminate even in the female, the antero-lateral walls profound and provided within by an unusually deep sulcation. Eyes large, prominent, their length about equaling (♂) or a little shorter (♀) than the anterior margin of the cheeks below them. Antennæ in the female with the joints on basal half strongly depressed, about as long as the head and pronotum taken together, in the males rather heavy, the basal joints but little depressed, somewhat exceeding the combined length of head and pronotum. Pronotum a little narrower in front than behind, compressed, the lateral lobes a little higher than long, the lower margin sinuate; anterior lobe plainly longer than the posterior one, lateral carinae entire and parallel in advance of the last transverse sulcus, rather strongly divergent back of it, posterior margin obtusangulate. Meso- and metathorax unusually deep, these with the deep basal abdominal segments giving the insect an abnormal perpendicular diameter. Tegmina irregularly and moderately strongly veined, in the females somewhat abbreviated, little if any surpassing the apex of the abdomen; in the males fairly broad, of normal length. Hind femora robust, their apex passing the tip of the abdomen in both sexes; hind tibiæ ten- to eleven-spined externally. Mesosternal lobes separated by a space equal in width to the lobes themselves, their inner edge broadly rounded.

General color variable, ranging from green, pale testaceous, fer-

ruiginous, to dull fuscous. Upper edges of sides of pronotum just below the carinæ, passing to outer margins of disk on hind lobe black in most instances, absent in some. Tegmina in females faintly maculate along disk and occasionally also on dorsal field; in the males only along disk and apically. Sometimes the dorsum from fastigium to hind edge of pronotum provided with a narrower or broader pallid band, in some individuals continuing as a pallid coloring of the dorsal area of the tegmina.

Length of body, ♂, 15 mm., ♀, 22–24 mm.; of pronotum, ♂, 3.35 mm., ♀, 4 mm.; of tegmina, ♂, 13.5 mm., ♀, 14–15 mm.; of hind femora, ♂, 10.5 mm., ♀, 15 mm.

Habitat.—Rio de Janeiro, September to November, H. H. Smith.

21. *Orphulella grossa* sp. nov.

Reminding one at first glance of *O. crassa*, to which it bears a general resemblance in form and size. It may, however, be readily separated from that insect by its having the lateral carinæ of the pronotum in advance of the principal transverse sulcus arcuate, instead of parallel; in having the two lobes of the pronotum equal in length; the antennæ slender and filiform, instead of heavy and flattened basally; and by the normally rounded apices of the tegmina, which project beyond the tip of the abdomen.

Head moderately robust, a little wider than the anterior edge of the slightly compressed and constricted pronotum; fastigium about as long as broad, its antero-lateral margins meeting at a right angle, and bordered behind by a shallow lunate depression; lateral foveolæ elongate, acutely triangular. Face less strongly oblique than in the same sex of *O. crassa*, the frontal costa evenly divergent below, continuous to the base of the clypeus, scarcely sulcate, but more or less punctulate above and below. Pronotum with the two lobes of about equal length, the lateral carinæ arcuate and twice interrupted by the transverse grooves in advance of the principal sulcus; the lateral lobes about as long as high, their lower edge rather strongly sinuose; hind margin widely angulated, the apex somewhat rounded. Tegmina normal, their apex rounded and extending beyond the tip of abdomen and knees. Hind femora of normal length. Interspace between the mesosternal lobes about as long as broad, the inner edge of the lobes themselves evenly rounded.

Length of body, ♀, 22 mm., of pronotum, 4.5 mm., of tegmina, 19 mm., of hind femora, 12 mm.

Habitat.—The single female at hand, the type, comes from Para, Brazil, where it was collected during the month of April.

In general the color of this insect is dirty testaceous varied with brown, very similar in pattern to dark-colored specimens of *O. punctata* De Geer, recalling that insect, save in the more robust and deeper body.

22. *Orphulella compacta* sp. nov.

Most nearly related to the *O. grossa* described above, but differing from that insect in the shorter tegmina and wings, the somewhat flattened antennal joints, the remarkably slender apical third of the hind femora, and the very strongly impressed triangular lateral foveolæ of the vertex, which are a little longer than the basal width. Size of insect medium. General color dull wood-brown varied with testaceous bands and flecks. Head not especially large, equal in width to the anterior edge of the pronotum and a little higher than it. The vertex gently depressed, not quite as long as the distance between the eyes, its antero-lateral walls moderately heavy, and meeting at the fastigium in a right angle, the disk quite deeply sulcate in advance of the upper extremity of the eyes; the latter fairly prominent, a little longer than the anterior edge of the cheeks below them. Frontal costa with the lateral margins evenly divergent below, sulcate, and sparsely punctulate throughout. Antennæ slender, the basal joints somewhat flattened, but not transversely enlarged, about as long as the combined length of head and pronotum. Latter with the two sections about equal in length, gently constricted on the sides at middle; lateral carinæ evenly arcuate in advance of the principal transverse sulcus and also severed by the middle sulcus about equally distant at the hind and front margins of this lobe; lateral lobes a little higher than long; hind margin of disk obtusangulate. Tegmina of moderate width, their apex rounded and only reaching the tip of the abdomen; hind femora robust at base, but very slender on apical third, reaching tip of wings and abdomen. Hind tibiæ nine-spined externally. Meso- and metasternal lobes and interspace as described for *O. crassa*.

Length of body, ♀, 19 mm., of pronotum, 3.6 mm., of tegmina, 14 mm., of hind femora, 11 mm.

Habitat.—The type, and only specimen at hand; bears the labels "Rio de Janeiro" and "Oct."; it was collected by H. H. Smith, and is contained in the Carnegie Museum.

The color of this insect as mentioned above is dull wood-brown

varied with flecks and bands of pale testaceous on face, occiput, sides of pronotum, and pleura in the usual patterns common to representatives of this and related genera. The tegmina also bear traces of pale and dark flecks along the disk. The lower outer carina of femora is also alternately pallid and infuscated; the tibiæ are pale cinereous and more or less flecked with brown. Very likely this species, like many of its congeners, will be found to vary greatly in color.

Genus LINOCERATIUM Bruner.

Linoceratium BRUNER, Biol. Cent. Amer., Orthopt., II, pp. 31, 84 (1902, 1904).

A tropical American genus of Locusts related to *Orphulella*, only two species of which are known.

23. *Linoceratium australe* sp. nov.

Very similar in size and appearance to *L. boucardi* Bruner, but differing from that insect in the form of the lateral carinæ of the pronotum, the more equal size of the sexes, and in the present species lacking the infuscation on the genicular region of the hind femora and tibiæ, which is so marked in *boucardi*.

Length of body, ♂, 13.5 mm., ♀, 17 mm.; of pronotum, ♂, 2.5 mm., ♀, 3 mm.; of tegmina, ♂, 13 mm., ♀, 15 mm.; of hind femora, ♂, 8.77 mm., ♀, 10 mm.

Habitat.—Corumba, Brazil, March to May, several specimens of both sexes bearing the number 2120 (H. H. Smith). The types are in the collection of the Carnegie Museum.

The two species of the genus *Linoceratium* thus far known may be separated as follows: The first is the type of the genus.

- A. Lateral carinæ of the pronotum in advance of the principal sulcus, gently arcuate. Genicular area of the hind femora infuscated. [U. S. of Colombia and Central America.].....*boucardi* Bruner.
- AA. Lateral carinæ of the pronotum in advance of the principal sulcus straight, gently convergent posteriorly. Genicular area of hind femora without infuscation. [Corumba, Brazil.].....*australe* sp. nov.

Genus ORPHULINA Giglio-Tos.

Orphulina GIGLIO-TOS, Boll. Mus. Zool. Anat. Torino, IX, No. 184, pp. 8, 9 (1894).

This is another of the tropical American truxaline genera of locusts, which occurs in the region covered by the present paper.

24. *Orphulina acuta* Rehn.

Orphulina acuta REHN, Proc. Acad. Nat. Sci. Phila., LVIII, pp. 23-25, figs. 7, 8 (1906).

Habitat.—São Paulo, Brazil. Several specimens contained in H. H. Smith's collection from Chapada are doubtfully referred to Rehn's *O. acuta*. They were collected during the months of May to August inclusive (H. H. Smith).

25. *Orphulina pulchella* Giglio-Tos.

Orphulina pulchella GIGLIO-TOS, Boll. Mus. Zool. Anat. Comp. Torino, IX, No. 184, p. 10 (1894).

Habitat.—Same locality as the preceding. Also several specimens from Chapada, Brazil, which are referred to this species (H. H. Smith).

Genus PARORPHULA Bruner.

Parorphula BRUNER, 2d Rept. Locust. Com. Buenos Aires, pp. 22, 25 (1900).

The representatives of the present genus are denizens of grassy fields, and range from southern Brazil to the Rio Negro of Argentina. At least four species are known. They may be separated as follows:

SYNOPSIS OF THE SPECIES OF PARORPHULA.

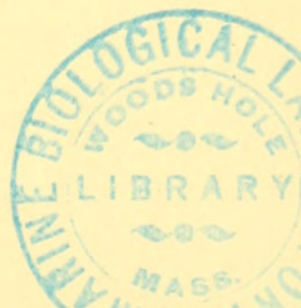
- A. Tegmina in the male not especially broad.
 - b. General color of insect more or less green.....*graminea* Bruner.
 - bb. General color of insect testaceous varied with brown and fuscous.
 - c. Dorsum of pronotum and dorsal field of the tegmina pallid.
 - pallidinota* Bruner.
 - cc. Entire body together with the tegmina more or less varied with pale and dark streaks.....*strigata* Bruner.
 - AA. Tegmina of male unusually broad, reminding one of these organs in *Cocytotettix*. Color variable, but never green.....*latipennis* sp. nov.

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

26. *Parorphula latipennis* sp. nov.

Readily recognized by the unusually broad tegmina as well as fenestrate anterior area of the wings in the male, which characters at once suggest the genus *Cocytotettix* Rehn (*Fenestra* Brunner v. Wattenwyl). The strongly posteriorly divergent lateral carinae of the pronotum, the absence of the longitudinal carina of the vertex and occiput, and the rather general infuscation of the wings, along with other characters place it in *Parorphula*.

Head slightly ascending, about the same length as the pronotum;



the fastigium of the vertex slightly acuminate, about as long as the distance between the eyes, the lateral margins raised so as to form a well-defined wall in advance of a bordering groove, the disk well rounded, without a longitudinal median ridge. Beneath this bounding carina are located the elongate, slightly arcuate lateral foveolæ, which are acuminate anteriorly. Eyes rather prominent, pyriform, about as long (♂) or a little shorter than (♀) the anterior genicular groove below them. Antennæ decidedly ensiform, somewhat longer than the combined length of the head and pronotum. Frontal costa rather prominent, deeply sulcate; the head viewed laterally with the front quite strongly retreating, straight; lateral carinæ prominent, sharp, continuous to the base of clypeus. Pronotum compressed and with the sides parallel on anterior lobe, the hind lobe rather strongly divergent, the lateral carinæ as well as the median sharp, prominent, cut about the middle by the last transverse sulcus; anterior lobe sparsely and the posterior one closely punctulate, the hind margin widely and roundly angulate. Tegmina in both sexes extending beyond the tip of the abdomen, in the male very wide on the apical half, in the female normal, gently obliquely truncate at apex, with a well-defined intercalary vein in the female, but a very poor one in the male. Wings of male with the costal area very wide and provided with twelve or thirteen transverse parallel veins, giving to this portion a very conspicuous fenestrate appearance. Posterior femora only moderately robust, surpassing the tip of the abdomen in both sexes; hind tibiæ eleven-spined externally. Last ventral segment of male abdomen short, acuminate; cerci about as long as the supra-anal plate, slender, tapering but little, the apex blunt; interspace between the mesosternal lobes quadrate or subquadrate, somewhat narrower than the lobes themselves.

General color variable, but possibly never to any extent green, usually testaceous, brunneous, or fuscous, varied more or less prominently with darker and lighter lines, flecks, and mottlings. Eyes ferruginous or castaneous; upper edge of sides of pronotum longitudinally banded with piceous, partially crossing to the disk on the hind lobe, the lateral carinæ pallid. Occiput, disk of pronotum, and dorsal field of tegmina usually pallid; disk and costal area of tegmina generally brown or fuscous, mottled, or maculate with pallid, but sometimes only the longitudinal veins dark and the remainder pallid or testaceous. Legs testaceous, more or less varied with fuscous;

sometimes in very dark specimens almost black, varied with dashes of testaceous. Sides of abdomen and pleura pallid, the underside largely black. Wings clouded or smoky, save on the fenestrate area, where they are transparent and vitreous.

Length of body, ♂, 20 mm., ♀, 24 mm.; of pronotum, ♂, 3.5 mm., ♀, 4.1 mm.; of tegmina, ♂, 19 mm., ♀, 23.5 mm.; width of male tegmina, 4.6 mm.; length of hind femora, ♂, 12 mm., ♀, 15 mm.

Habitat.—Chapada, Brazil, June to August (H. H. Smith.).

Genus TOXOPTERUS Bolivar.

Toxopterus BOLIVAR (*nec* KOCH), An. Soc. Españ., XIX, p. 313 (1890).

27. *Toxopterus miniatus* Bolivar.

Toxopterus miniatus BOLIVAR, Anales Soc. Españ. Hist. Nat., XIX, p. 314 (1890).

Habitat.—Specimens of both sexes of this truxaline locust with beautifully deeply red-colored wings are at hand. They were collected throughout the season from January to December. The majority of the specimens bear the label "Chapada," although there is a single male labeled "Rio de Janeiro, November."

Other specimens, which were collected in Bolivia, Paraguay, and extreme northern Argentina, have been examined.

LEUROCERUS gen. nov.

The present genus is erected to receive the insect described by J. A. G. Rehn as *Cocytotettix linearis* (Proc. U. S. Nat. Mus., XXX, p. 374, 1906).

Elongate, slender, wings of male without the fenestrate area so characteristic of the various species of *Cocytotettix* Rehn (*Fenestra* Brunner v. Wattenwyl, but not of Giglio-Tos). Head about as long as the pronotum. Antennæ gently ensiform in both sexes, of medium length. Eyes pyriform, nearly twice the length of the anterior edge of the cheeks; vertex almost as wide as the broadest part of the fastigium, which is formed much as in *Amblytropidia* and provided with lateral walls and a well-developed median carina. Front rather strongly oblique; the frontal costa moderately prominent, sulcate, or with the disk merely depressed below the lateral walls, frequently provided with a well-defined median ridge or carina above the ocellus. Pronotum with the sides nearly parallel, the lateral carinæ nearly as prominent as the median; the lateral lobes almost as high as long, the

lower edge but little sinuate, the last transverse sulcus situated about the middle, it alone severing the median carina; posterior margin of disk obtusangulate. Tegmina of moderate width, the costal margin only gently lobate near the base, the apex rounded, the middle area without a well-defined intercalary vein. Wings, even of male, lacking the fenestrate area so prominent in *Truxalis*, *Orphula*, and their allies, in this respect resembling *Amblytropidia*, to which group it belongs.

28. *Leurocerus linearis* (Rehn).

Cocytotettix linearis REHN, Proc. U. S. Nat. Mus., XXX, p. 374 (1906).

Habitat.—Chapada, near Cuyaba, Matto Grosso, Brazil, April to September, numerous specimens of both sexes (H. H. Smith).

This insect is more closely related to *Amblytropidia* than to *Cocytotettix*.

Genus AMBLYTROPIDIA Stål.

Amblytropidia STÅL, Recens. Orthopt., I, pp. 93, 107 (1873).

The genus *Amblytropidia* is confined to the New World, where its representatives are found from the southern United States to central Argentina. The majority of its species, however, occur in the tropical portions of both North and South America, where they are to be met with in savannas or grassy openings in the forests, and to some extent in the forests themselves. At least eighteen distinct species of the genus have already been discovered. As in several other truxaline genera, the species of this genus are rather closely related and somewhat difficult to separate. The annexed synoptic table will, it is hoped, assist the student in determining the described forms:

SYNOPSIS OF THE SPECIES OF AMBLYTROPIDIA.

- A. Median carina of the vertex quite prominent. Last transverse sulcus of the pronotum situated plainly behind the middle.
- b. General structure, especially of the females, quite robust; the majority of species rather pale-colored. Tegmina of females, as a rule, not, or but little, surpassing the tips of the hind femora, in some instances a little shorter than the abdomen. The latter concolorous above.
- c. Antennæ of female (those of the male always relatively longer) a trifle longer than the head and pronotum combined. Tegmina provided with fuscous spots.
- d. Smaller. [Brazil.].....*ferruginosa* Stål
- dd. Larger. Hind tibiæ with thirteen spines in the outer row. [Central America, Guatemala.].....*magna* Bruner.
- cc. Antennæ of female no longer, often noticeably shorter, than the combined length of the head and pronotum. Tegmina variable.

- d.* General color brunneo-testaceous, immaculate, or with faint fuscous dots on tegmina.
- e.* Larger (σ^7 , 20–23 mm.).
 - f.* Tegmina pale testaceous, unspotted. [Paraguay and Argentina.] *australis* Bruner.
 - ff.* Tegmina with faint fuscous dots along dorsal edge. [Corumba, Brazil.] *geniculata* sp. nov.
- ee.* Smaller (15.5–16 mm.). Tegmina faintly maculate with fuscous. [Chapada, Brazil.] *minor* sp. nov.
- dd.* Color variable, frequently both vittate and maculate.
 - e.* Insect often more or less markedly longitudinally striped with green.
 - f.* Smaller. General color pallid testaceous or greenish. Tegmina often provided with a subcostal pale line, or the dorsum with lateral green stripes reaching from the eyes to the middle of the tegmina. The latter as long as the abdomen. [Paraguay and Southern Brazil.]
vittata Giglio-Tos.
 - ff.* Larger. General color dark wood-brown or fuscous.
 - g.* Tegmina provided (φ) with a dirty white subcostal line. Dorsum concolorous. [Corumba, Brazil.]
corumbæ Bruner.
 - gg.* Tegmina without the subcostal line. Dorsum often entirely green. [Paraguay and Southern Brazil.]
robusta Bruner.
- bb.* General structure moderately graceful, even in the females. Chief color usually more obscure, being brown or even fuscous. Tegmina of females always extending beyond the tip of the abdomen. Abdomen of male usually tinged above with orange or ferruginous.
- c.* Hind tibiæ eleven- to thirteen-spined externally.
 - d.* Prevailing colors brown.
 - e.* Hind tibiæ twelve- to thirteen-spined externally. [British Guiana and Trinidad.] *trinitatis* Bruner.
 - ee.* Hind tibiæ eleven- to twelve-spined externally. [Chapada, Brazil.] *chapadensis* Rehn.
 - dd.* Prevailing color olive-brown in male. Female not known. [Mexico, eastward.] *auriventris* Bruner.
- cc.* Hind tibiæ fifteen- to sixteen-spined in outer row. [West coast of Central Mexico.] *elongata* Bruner.
- AA.* Median carina of the vertex less prominent. Last transverse sulcus of the pronotum situated about the middle.
 - b.* Hind tibiæ provided with fifteen to nineteen spines in the outer row.
 - c.* Form of insect rather robust. Color variable. [Costa Rica, Central America.] *costaricensis* Bruner.
 - cc.* Form of insect slenderer. Color rather uniform. [Mexico, southward into South America.]

- d. Anterior portion of the disk of pronotum narrower than the hind portion; lateral carinae of male pronotum concolorous, disk and sides not decidedly infuscated. [Mexico.]
mysteca Saussure.
- dd. Anterior portion of the disk of pronotum about equal to the width of the hind portion, the disk and sides more or less strongly infuscated.
- e. Sides of basal abdominal segments strongly marked with black. [Mexico.] *ingenita* Bruner.
- ee. Sides of basal abdominal segments not infuscated or black. [Southern Brazil.] *interior* sp. nov.
- bb. Hind tibiae provided with but fourteen spines on outer row. [Eastern U. S. southward.] { *occidentalis* Saussure.
subconspectus Walker.

29. *Amblytropidia ferruginosa* Stål.

Amblytropidia ferruginosa STÅL, Recens. Orthopt., I, p. 107 (1873).

Habitat.—Four males and one female taken at Chapada, Brazil, during the months of March, May, and November (H. H. Smith).

These specimens on account of their markedly ferruginous color and agreement in size with Stål's measurements warrant me in placing them under *ferruginosa*. They are quite distinct from all other forms, which have been examined by me.

30. *Amblytropidia australis* Bruner.

Amblytropidia ferruginosa GIGLIO-TOS (*nec* Stål), Boll. Mus. Zool. Anat. Torino, IX, No. 184, p. 13 (1894); BRUNER, Locusts of Argentina, p. 32 (1900).

Amblytropidia australis BRUNER, Biol. Cent. Amer., Orthopt., II, pp. 62, 64 (1904).

Habitat.—Paraguay and Argentina. Not contained among the material collected by H. H. Smith and now being studied. Nevertheless there is little doubt as to its occurrence in southern Brazil.

31. *Amblytropidia geniculata* sp. nov.

Very similar to *A. australis* Bruner, but slightly larger, somewhat more graceful, and with longer tegmina and wings. As indicated in the synoptical table, there are faint fuscous dots present on the dorsal area of the folded tegmina. The apex of hind femora and base of tibiae are strongly infuscated.

Length of body, ♂, 21–23 mm., of pronotum, 3.45 mm., of tegmina, 17–18 mm., of hind femora, 13–13.5 mm.

Habitat.—Corumba, highlands, March to July (H. H. Smith).

Only males are at hand, but these all agree in having traces of fuscous dots on the tegmina, and in having these members decidedly more elongate than in the same sex of *A. australis*. There are from twelve to fourteen spines on the external margin of the hind tibiae.

32. *Amblytropidia minor* sp. nov.

A small, but moderately robust species, in which the apex of the hind femora and base of tibiae are strongly infuscated. Tegmina with the costal margin undulate, the apical one-fourth plainly narrower than remainder, reminding one a little of these members in some of the species of *Stenobothrus*, *Chloëaltis*, etc. Hind tibiae twelve-spined externally.

Male.—Head rather large, very little wider than the anterior portion of the pronotum. Eyes large and moderately prominent, quite plainly more than twice the length of the anterior margin of the cheeks; fastigium of the vertex well rounded, and provided with strong antero-lateral margins and a median longitudinal carina, the latter becoming almost obliterated on the occiput; frontal costa prominent, wide, and provided with strong lateral carinae, which gently approach at the ocellus, broadly and quite profoundly sulcate, continuous to the clypeus and provided near the upper end with a rather prominent median carina. Antennae linear, their length about one-fourth greater than the head and pronotum combined. Latter with the sides and carinae parallel, the hind lobe decidedly shorter than the front lobe, the surface of sides and disk of hind lobe closely, and rather finely, punctulate, remainder subglabrous; anterior margin a little rounded, the hind margin obtusangulate. Tegmina moderately broad and with the costal field more strongly developed than usual in the genus, reaching beyond the apex of the abdomen as far as the tips of the hind femora, the intercalary region without definite vein. Hind femora robust on basal, slender on apical half, extending about one-fourth their length beyond the tip of the abdomen. Interspace between the mesosternal lobes nearly quadrate, *i. e.*, about as wide as long, the inner edges of the lobes but little rounded.

General color pale brownish-testaceous, the face, sides of head, pronotum and pleura in part dull brown. Basal portion of hind tibiae and genicular area of hind femora both internally and externally strongly infuscated. Tegmina somewhat infuscated apically and faintly conspersed with scattered fuscous dots.

Length of body, ♂, 13-14 mm., of pronotum, 3 mm., of tegmina, 12 mm., of hind femora, 10.5 mm.

Habitat.—Chapada, near Cuyaba, Matto Grosso, Brazil. May and June (H. H. Smith, collector). The type bears the additional label "2109."

33. *Amblytropidia vittata* Giglio-Tos.

Amblytropidia vittata GIGLIO-TOS, Boll. Mus. Zool. Anat. Torino, IX, No. 184, p. 13 (1894); BRUNER, Proc. U. S. Nat. Mus., XXX, p. 631 (1906).

Habitat.—Chapada, near Cuyaba, Matto Grosso, Brazil, April to July and September (H. H. Smith). Described from Luque, Paraguay, and also reported from São Paulo, Brazil. A very distinct species.

34. *Amblytropidia corumbæ* sp. nov.

Very similar to *A. interior* in general appearance, but differing from it in the larger size, the shorter hind lobe of the pronotum, and in having fewer spines on the outer margin of the hind tibiae.

Head of medium size, in the male about as wide as in the female, a little narrower than the anterior margin of the pronotum. Vertex prominent, the fastigium decidedly wider than the narrowest part between the eyes, rounded, cribrately punctate, and provided with a strong median carina, which continues across the occiput; eyes prominent, elongate, fully twice (♀) or almost three times (♂) the length of the anterior edge of the cheeks below them. Frontal costa prominent, broad, of equal width throughout, the lateral walls heavy, in the male broadly sulcate throughout, in the female only below the ocellus, but with the surface punctate above, the upper portion between the fastigium and ocellus in both sexes exhibiting a coarse median ridge. Antennæ slender, filiform, in the female about as long as the head and pronotum combined, in the male decidedly longer. Pronotum quite strongly and cribrately punctate, its sides parallel (♂) or slightly expanding on the hind lobe (♀), the latter plainly shorter than the anterior one; anterior margin of the disk gently rounded, the posterior edge obtusangulate, with a very slight emargination on either side. Tegmina and wings fully developed, a very little surpassing the apex of the hind femora; the former of moderate width, without a definite intercalary vein, except towards the outer portion of the area, where a trace of one is present in the female specimen before me. Hind femora somewhat slender and elongate, the apical third noticeably more graceful than usual in

the section of the genus to which the present species belongs. Outer row of spines on hind tibiae thirteen in number. Mesosternal lobes separated by a slightly elongate space, which is deeply cleft at middle by a very profound longitudinal groove or sulcus, as in one or two other species of the genus.

General color pale chocolate-brown, varied on the femora and abdomen by testaceo-ferruginous. In the female there is a very marked subcostal dirty white line bordered above by one of dark brown; remainder of tegmina wood-brown and dimly and irregularly conspersed with fuscous flecks. Genicular area of hind femora and immediate base of hind tibiae strongly infuscated as in this sex of *robusta*, *australis*, and *minor*.

Length of body, ♂, 24.5 mm., ♀, 36 mm.; of pronotum, ♂, 4.35 mm., ♀, 7 mm.; of tegmina, ♂, 21 mm., ♀, 30 mm.; of hind femora, ♂, 15.5 mm., ♀, 23 mm.

Habitat.—Corumba, Brazil, the ♂ in March, the ♀ in April. Collected by H. H. Smith. Types (♂ and ♀) in Carnegie Museum.

35. *Amblytropidia robusta* Bruner.

Amblytropidia robusta BRUNER, Proc. U. S. Nat. Mus., XXX, pp. 631, 632 (1906).

Habitat.—Sapucay, Paraguay. Also at hand from Puerto Bertoni, Paraguay, but not among the H. H. Smith material from Chapada and other localities in southern Brazil.

36. *Amblytropidia chapadensis* Rehn.

Amblytropidia chapadensis REHN, Proc. U. S. Nat. Mus., XXX, p. 371 (1906).

Habitat.—Corumba and Chapada, Brazil, September to November (H. H. Smith).

A similar, but somewhat slenderer species than the preceding.

37. *Amblytropidia interior* sp. nov.

About the same size and having the general appearance of the North American species, *A. occidentalis* Saussure, but differing from that insect in its somewhat more robust form and by having fifteen instead of fourteen spines on the outer edge of the hind tibiae. Anterior and posterior lobes of the pronotum about equal in length.

Vertex between the eyes at its narrowest point a little less than the width of the fastigium at its widest part just in advance of their upper anterior margin, the median carina rather broad and prominent

in front, becoming narrower and fainter posteriorly, but continuing across the occiput to the anterior margin of the pronotum; disk and top of head coarsely and shallowly punctulate. Eyes rather large, but not especially prominent, in the male fully twice, in the female one and two-thirds times the length of the anterior margin of the cheeks immediately below them. Antennæ filiform, not quite (♀) or a trifle longer (♂) than the combined length of the head and pronotum, the basal joints a little flattened, but not expanded; frontal costa prominent, its sides rather coarse, nearly parallel, and reaching the clypeus, the middle shallowly sulcate and coarsely punctulate, most apparent below the ocellus. Face quite strongly oblique when viewed in profile. Pronotum of moderate length, gently expanding caudad, the two sections about equal in length, median carina prominent, severed at middle by the last transverse sulcus; lateral carinae weaker, most apparent in front, becoming less strong and diverging evenly to the rear; posterior margin obtusangulate, the disk feebly cribrately punctulate, most apparent on the hind lobe, lateral lobes and pleura also similarly marked. Tegmina and wings perfectly developed, passing the tip of the abdomen in both sexes, the former without a definite intercalary vein or definite sub-basal costal lobe. Hind femora fairly slender, surpassing the tip of the abdomen about one-fourth (♂) or one-fifth (♀) of their length; hind tibiae fifteen-spined externally. Interspace between the mesosternal lobes fully twice as long as broad (♂) or a little less (♀).

General color dark wood-brown, more or less tinged with ferruginous and testaceous on the abdomen above and below. Tegmina more or less strongly maculate or conspersed along the disk with black or fuscous. In some specimens the tegmina possess a pallid subcostal line, and the disk of the pronotum and occiput are provided with longitudinal fuscous and pallid lines. Wings vitreous; becoming very faintly clouded apically. The principal longitudinal veins fuscous, most of the cross-veins and the longitudinal veins on anal field pallid.

Length of body, ♂, 20.5 mm., ♀, 29 mm.; of pronotum, ♂, 4 mm., ♀, 5 mm.; of tegmina, ♂, 12 mm., ♀, 23 mm.; of hind femora, ♂, 13.5 mm.

Habitat.—Chapada, Brazil, from June to October. They bear the number "2094" of H. H. Smith. Types in the Carnegie Museum.

Genus STAUORHECTUS Giglio-Tos.

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

The species of this genus are distributed over portions of Argentina, Bolivia, Paraguay, and southern Brazil. The described forms may be separated as follows:

SYNOPSIS OF THE SPECIES OF STAUORHECTUS.

- A. Caudal femora without, or with rather indistinct, pregenicular annuli of yellow.
 - b. Size large; female ranging from 30 to 38 mm. in length of body.
 - longicornis* Giglio-Tos.
 - bb. Size medium; female ranging from 28 to 30 mm. in length of body.
 - longicornis variegatus* Rehn.
- AA. Caudal femora with very pronounced pregenicular annuli of yellow. Size rather small.
 - b. Tegmina of both sexes much shorter than the abdomen. Antennæ unicolorous, black.....*brevipennis* Rehn.
 - bb. Tegmina of both sexes equal to, or longer than, the abdomen. Antennæ with pallid tip.....*intermedius* sp. nov.

38. *Staurorhectus longicornis* Giglio-Tos.

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

Habitat.—Corumba and Chapada near Cuyaba, Matto Grosso, Brazil, where it was taken in large numbers from March to August inclusive (H. H. Smith). The variation in color is great, and there is also quite a disparity of size among the specimens at hand. None of the individuals examined seem to belong to the form *longicornis variegatus* Rehn (see Proc. U. S. Nat. Mus., XXX, p. 377 (1906)).

39. *Staurorhectus brevipennis* Rehn.

Staurorhectus brevipennis REHN, Proc. U. S. Nat. Mus., XXX, p. 377 (1906).

Habitat.—Corumba, Matto Grosso, Brazil, during July (H. H. Smith). Several specimens.

40. *Staurorhectus intermedius* sp. nov.

About the size of, and somewhat similar to, *Staurorhectus brevipennis* Rehn, but differing from that insect in having the tegmina and wings fully developed, the lateral carinæ of the pronotum almost obliterated on the anterior lobe, and in having the long, slender, black antennæ pale-tipped. Valves of ovipositor similar to those of *Amblyscapheus glaucipes* Rehn (*lineatus* Bruner).

Head large, as long as, and a little wider than, the anterior edge of the pronotum, the occiput a very little ascending above the level of the former, the face viewed in profile rather strongly oblique; eyes large and fairly prominent, oval, plainly longer than the anterior edge of the cheeks immediately beneath them, separated on the vertex by a space a trifle greater (σ^7) or fully one and one-half times the diameter of the basal antennal joint (φ), the fastigium horizontal, about as long as wide in the male or plainly wider than long in the female, deeply sulcate in the former in the form of the bowl of a spoon, in the latter with a lunate sulcation immediately back of the front end, antero-lateral carinae meeting at front in an acute angle (σ^7) or forming a very slightly obtuse angle (φ), lateral foveolæ scarcely apparent. Frontal costa narrowed above and roundly uniting with the fastigium, plane above the ocellus, gradually widening, and continuous to the clypeus, very gently sulcate at the ocellus; lateral or facial carinae prominent, rather strongly divergent below. Antennæ graceful, filiform, about equal to (φ) or a third longer (σ^7) than the hind femora. Pronotum a little longer than high, its sides about parallel, the disk of the hind lobe flattened, rather profusely punctulate; the lateral carinae sharp and prominent, convergent to the principal sulcus, interrupted till the immediate anterior edge of the front lobe, where they appear as oblique dashes; median carina slender, but plainly visible throughout; hind margin subangulate. Tegmina narrow, their apex rounded, fully as long (φ) or plainly surpassing the tip of the abdomen (σ^7), the dorsal field closely, but not prominently, veined, the discal area without an intercalary vein. Hind femora long, rather robust on basal half, but slender on apical half, extending beyond the apex of the abdomen by one-fourth (φ) or fully two-fifths of their length (σ^7). Hind tibiae provided with eleven spines in the outer row. Valves of the ovipositor short and robust; last ventral segment of the male abdomen short and roundly acuminate, the cerci moderately robust, straight, evenly tapering, and, like the tibiae and tarsi, lengthily hirsute. Interspace between the mesosternal lobes slightly transverse in both sexes.

Sides of head back of eyes, upper half of lateral lobes of pronotum, upper edges of pleura and costal and discal fields of tegmina, black, duller in the females; dorsal portion of tegmina grass-green, anterior and middle legs greenish-olive, duller in females; fastigium, vertex, and middle of occiput, together with the disk of pronotum, longi-

tudinally fasciate with flavous; front, lower portion of cheeks, lower half of pleura, and underside of body, flavous tinged with green (♂) or pale testaceous tinged with olive (♀). Hind femora chiefly orange-red with the apex black, preceded by a prominent pale annulus; upper edge of femora more or less conspersed with fuscous, and in the females tinged with cinereous along the upper half of the outer disk; hind tibiae strongly infuscated, except for a rather prominent sub-basal pale annulus. Antennae infuscated, or black, with the immediate apical joints pallid.

Length of body, ♂, 17.5 mm., ♀, 25 mm.; of pronotum, ♂, 3 mm., ♀, 4.30 mm.; of tegmina, ♂, 12.5 mm., ♀, 17.5 mm.; of hind femora, ♂, 13 mm., ♀, 17 mm.

Habitat.—Three males and four females, Para, Brazil; one male, Santarem, Brazil; and two females, Chapada, near Cuyaba, Matto Grosso, Brazil. April to June (H. H. Smith).

The types, ♂ and ♀, are deposited in the Carnegie Museum.

In some of its characters the present species approaches the genus *Amblyscapheus* Bruner, as indicated above; but the robust form and presence of lateral pronotal carinae, although much interrupted, place it in *Staurorhectus* Giglio-Tos, along with *longicornis* Giglio-Tos and *brevipennis* Rehn, both of which are before me, as I write. Three of the females coming from Para have the dorsal field of the tegmina testaceous, instead of green.

Genus *ISONYX* Rehn.

Isonyx REHN, Proc. Acad. Nat. Sci. Philad., 1906, p. 36.

There is but a single species in the present genus which according to its author is related to *Borellia* Rehn as well as to *Staurorhectus* Giglio-Tos. Possibly it is also allied to *Stereotettix* Rehn.

41. *Isonyx paraguayensis* Rehn.

Isonyx paraguayensis REHN, Proc. Acad. Nat. Sci. Philad., 1906, pp. 36-39, figs. 11-13.

Habitat.—Sapucay, Paraguay (Foster). This insect is not contained in the H. H. Smith material now under examination, but as the Chapada region has a fauna similar to that of Sapucay, Paraguay, it evidently occurs in southern Brazil as well. In size it is the same as *Borellia carinata* described by the same author.

Genus *BORELLIA* Rehn.

Borellia REHN, Proc. U. S. Nat. Mus., XXX, p. 379 (1906).

According to Rehn this genus is quite closely related to *Staurorhectus* Giglio-Tos. Its representatives are confined, so far as known, to southern Brazil.

42. *Borellia carinata* Rehn.

Borellia carinata REHN, Proc. U. S. Nat. Mus., XXX, pp. 379-381 (1906).

Habitat.—The large series of specimens at hand are labeled "Chapada," "Chapada near Cuyaba, Matto Grosso, Brazil," and "Rio de Janeiro." They were taken during the months of May, June, July, and October (H. H. Smith).

Genus *EUPLECTROTETTIX* Bruner.

Euplectrotettix BRUNER, Locusts of Argentina, pp. 38, 39 (1900).

A genus somewhat closely related to *Scyllina* Stål, but quite readily separable from the latter by the pronotal characters. The species are several in number and occur from southern Brazil southward.

43. *Euplectrotettix ferrugineus* Bruner.

Euplectrotettix ferrugineus BRUNER, Locusts of Argentina, pp. 39-40 (1900).

Habitat.—Several males are at hand from Chapada, Brazil, where they were taken in September by H. H. Smith.

44. *Euplectrotettix scyllinæformis* sp. nov.

Robust, grayish, mottled with brunneo-ferruginous and fuscous, vertex without the least trace of lateral foveolæ, the lateral carinæ of pronotum present only on the anterior edge of the front lobe. Hind tibiæ red, without pallid basal annulus, the external margin ten-spined.

Head large, a little wider than the anterior portion of the pronotum, the occiput evenly rounded and somewhat elevated above the general level of the disk of pronotum; eyes of moderate size, not prominent, rather widely separated above; the vertex short, blunt, nearly twice as wide as long and transversely deeply lunately sulcate, the area usually occupied by the lateral foveolæ coarsely punctulate; frontal costa roundly confluent with the vertex, of nearly equal width throughout, not prominent, in no manner sulcate, rather uniformly punctulate, even below the ocellus. Antennæ filiform, rather heavy, and about as long as the head and pronotum combined. Pronotum gently constricted at middle, the posterior margin but little wider than the

anterior, median carina moderately developed; hind margin subangulate. Tegmina of normal width, without intercalary vein, the costal margin not fenestrate as in *ferrugineus*, the most nearly allied species of the genus. Hind femora normal, surpassing the apex of the abdomen by the length of the genicular portion, the tibiae weakly spined, and with rather small, not very unequal, inner claws.

General color as described above; the tegmina irregularly conspersed with brunneo-fuscous, beyond the middle showing a tendency towards maculation. Hind femora with traces of fuscous bands above, a preapical annulation below, and internally deep coral-red.

Length of body, ♂, 19 mm.; of pronotum, 3.6 mm.; of tegmina, 18 mm.; of hind femora, 12.5 mm.

Habitat.—Chapada, Brazil, September (H. H. Smith).

The type is the only specimen at hand. It is the property of the Carnegie Museum.

Genus SCYLLINA Stål.

Scyllina STÅL, Recens. Orthopt., I, pp. 94, 112 (1873).

Pseudostauronotus GIGLIO-TOS (*nec* Brunner), Zool. Jahrb. Abth. Syst., VIII, p. 801 (1894).

Plectrophorus MCNEILL (*nec* Férrussac), Proc. Davenport Acad. Sci., VI, pp. 198, 258 (1900).

Plectrotettix MCNEILL, Psyche, VIII, p. 71 (1897).

45. *Scyllina uniformis* Rehn.

Scyllina uniformis REHN, Proc. U. S. Nat. Mus., XXX, p. 384 (1906).

Habitat.—Chapada near Cuyaba, Matto Grosso, Brazil, during the months of April to July inclusive (H. H. Smith).

46. *Scyllina brunneri* (Giglio-Tos).

Pseudostauronotus brunneri GIGLIO-TOS, Zool. Jahrb., Abth. Syst., VIII, p. 810 (1894).

Scyllina brunneri REHN, Proc. U. S. Nat. Mus., XXX, p. 385 (1906).

Habitat.—Chapada, Brazil, March and April (H. H. Smith). It is also known from Caiza, Bolivia, and Paraguay.

47. *Scyllina suffusa* Rehn.

Scyllina suffusa REHN, Proc. U. S. Nat. Mus., XXX, pp. 385-387 (1906).

Habitat.—Chapada, Matto Grosso, Brazil, in September (H. H. Smith).

Not recognized among the material at hand, but there remains quite a lot of specimens of the genus which have not been carefully studied.

48. *Scyllina smithi* Rehn.

Scyllina smithi REHN, Proc. U. S. Nat. Mus., XXX, pp. 387-388 (1906).

Habitat.—Chapada, near Cuyaba, Matto Grosso, Brazil; also Rio de Janeiro (H. H. Smith). They were taken during the period embraced by the months of April to October inclusive.

49. *Scyllina schistocercoides* Rehn.

Scyllina schistocercoides REHN, Proc. U. S. Nat. Mus., XXX, pp. 388-390 (1906).

Habitat.—May to October at Corumba and Chapada, Brazil (H. H. Smith).

Several other species of the genus undoubtedly occur in the same general region. They are *S. brasiliensis*, *conspersa*, *varipes* Bruner, and *S. borellii* Giglio-Tos.

Genus STEREOTETTIX Rehn.

Stereotettix REHN, Proc. U. S. Nat. Mus., XXX, p. 381 (1906).

50. *Stereotettix paralogistes* Rehn.

Stereotettix paralogistes REHN, Proc. U. S. Nat. Mus., XXX, p. 381 (1906).

The collection contains a large series of a small grasshopper, which I refer to this species. Both sexes are represented. Aside from considerable variation in color and some in size, there are two distinct types of pronotal structure as regards the lateral carinæ. In the typical form these are complete, straight, and nearly parallel. In the other form they are interrupted and rather strongly arcuate, as in *Stiropleura*. A few specimens are at hand, in which these carinæ are present only as short anterior and posterior extremities of what might have been decussate lines (X). Since there are no apparent other differences in the two forms, and intermediate forms exist, not even varietal names need be suggested. Only in those individuals having these carinæ interrupted to a greater or lesser degree is there a noticeable tendency towards arcuation.

Habitat.—Chapada, near Cuyaba, Matto Grosso, Brazil, March to October (H. H. Smith).

In some of the individuals there is also a tendency towards wing abbreviation, in which case the tips of these members do not reach the apex of the abdomen. This feature is usually, but not always, most apparent among the females.

Genus STIRAPLEURA Scudder.

Stirapleura SCUDDER, in Wheeler, Ann. Rept. U. S. Geol. and Geogr. Surv., W. 100th Merid., 1876, Append. JJ, p. 290 (1876).

51. *Stirapleura brunnea* Rehn?

Stirapleura brunnea REHN, Proc. U. S. Nat. Mus., XXX, p. 390 (1906).

Several specimens of a locust, which appears to be most closely related to the present species, are before me. While these insects are quite variable in their coloration, and to some extent also in the form and prominence of the lateral carinæ of the pronotum, they might all be included under a single species. Rehn's measurement of the pronotal length of his types, however, is too great by .5 mm. for the males and by .7 mm. for the females now at hand. Otherwise they agree almost exactly.

I had placed this insect aside under the manuscript name *Pelopedon obscurum*, and should a remeasurement of Rehn's types prove the figures as given by him to be correct, I would then consider the two forms distinct, and suggest the above name for these individuals. The present form and the insect described by Rehn as *Stereotettix paralogistes* are also rather closely related generically.

Habitat.—Chapada, near Cuyaba, Matto Grosso, Brazil, May to September (H. H. Smith). Numerous specimens of both sexes. Collection of Carnegie Museum.

Family LOCUSTIDÆ [Ædipodidæ].

This family is very poorly represented in South America, and is especially so in the present collection.

Genus CÆLOPTERNA Stål.

Cæloptera STAL, Oefv. Vet.-Akad. Forh., XXX, no. 4, p. 53 (1873).

Only a single species of this subaquatic Ædipodine genus is known, notwithstanding its rather wide distribution.

52. *Cælopterna acuminata* (De Geer).

Acrydium acuminatum DE GEER, Mém. Ins., III, p. 501, pl. 42, fig. 10 (1773).

Cælopterna acuminata STÅL, Recens. Orthopt., I, p. 145 (1873).

? *Paulinia mucosa* BLANCHARD, in D'Orbigny, Voy. Amer. Merid., VI, no. 2, p. 216, pl. 27, fig. 6 (1843).

Cælopterna stalli SCUDDER, Proc. Bost. Soc. Nat. Hist., XVII, p. 277 (1875).

Epacromia selecta WALKER, Cat. Dermapt. Salt. Brit. Mus., V, Suppl., p. 84 (1871).

Cælopterna acuminata var. *brevipennis* GIGLIO-TOS, Boll. Mus. Zool. Anat. Torino, IX, no. 184, p. 7 (1894).

Habitat.—Corumba, Brazil, and Asuncion, Paraguay (H. H. Smith).

As suggested by the present writer in a former publication (Proc. U. S. Nat. Mus., XXX, p. 637) this insect is more or less aquatic in its habits. It is also nocturnal and is best collected after night, when it is attracted to bright lights.

Family OMMEXYCHIDÆ.

The representatives of the present family are medium-sized to large locusts, with more or less strongly rugose, or even with spined, pronotum and hind femora. They all belong to the South American continent, where the majority of forms occur to the southward of the equator, even entering the pampean region of Argentina as far as the Rio Negro. The different species are frequently confined to special food-plants, upon which they congregate in large numbers.

The four genera belonging to the family are separated as follows:

TABLE FOR DETERMINING THE GENERA OF OMMEXYCHIDÆ.

- A. Body more or less graceful and cylindrical, somewhat rugose. The antennæ filiform. Pronotum feebly carinated.
 - b. Tegmina and wings fully developed, extending considerably beyond the tip of the abdomen in both sexes. Carinæ of hind femora smooth. Internal angles of the mesosternal lobes rounded at apex. *Parossa* nom. nov.³
 - bb. Tegmina and wings frequently abbreviated. Carinæ of the hind femora toothed or crenulated. Internal angles of the 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 lateral toothed, leaf-like expansion; its hind border broadly angulated, and adorned with five flat, tooth-like projections, the middle one furcate. . . *Spathalium* Bolivar.
 - bb. Tegmina and wings missing. 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.

Genus PAROSSA nom. nov.

Ossa GIGLIO-TOS (*nec* MOTSCH.), Boll. Mus. Zool. Anat. Torino, IX, no. 184, p. 15 (1894).

Paulinia KIRBY (*nec* BLANCHARD), Syn. Cat. Orthopt. Brit. Mus., III, p. 296, (1910).

³ The insect described and figured by Blanchard (D'Orbigny, *Voy. Amer. Merid.* VI, No. 2, p. 216, pl. 27, fig. 6 (1843), and which Kirby considers congeneric with *Ossa bimaculata* and *O. viridis* of Giglio-Tos, seems more likely to represent the *Acrydium acuminata* De Geer. Hence the suggestion of the name *Parossa* to replace the preoccupied name *Ossa* of Giglio-Tos.

53. **Parossa bimaculata** (Giglio-Tos).

Ossa bimaculata GIGLIO-TOS, Bol. Mus. Zool. Anat. Torino, IX, no. 184, p. 17 (1894).

Paulinia bimaculata KIRBY, Syn. Cat. Orthopt., III, p. 296 (1910).

Habitat.—Chapada, Brazil (H. H. Smith).

Genus **OMMEXECHA** Serville.

Ommexecha SERVILLE, Ann. Sci. Nat., XII, p. 285 (1831).

54. **Ommexecha servillei** Blanchard.

Ommexecha servillei BLANCHARD, Ann. Soc. Ent. France, V, p. 613, pl. 22, figs. 2, 3 (1836).

Habitat.—Corumba, Brazil, during March and April (H. H. Smith).

55. **Ommexecha brunneri** Bolivar?

Ommexecha brunneri BOLIVAR, An. Soc. Españ., XIII, pp. 28, 493 (1884).

Habitat.—Benevides and Para, Brazil, where specimens, which are referred here with doubt, were taken in the months of May and July by H. H. Smith.

56. **Ommexecha germari** Burmeister.

Ommexecha germari BURMEISTER, Handb. Ent., II, p. 655 (1838).

Habitat.—Specimens of both sexes are at hand. They come from Corumba, Brazil, where they were collected in March and April by H. H. Smith.

Genus **SPATHALIUM** Bolivar.

Spathalium BOLIVAR, An. Soc. Españ., XIII, pp. 21, 30, 493 (1884).

57. **Spathalium serrulatum** (Thunberg)?

Gryllus serratulus THUNBERG, Mém. Acad. Petersb., IX, 396, 414 (1824).

Ommexecha serrulata STÅL, Recens. Orthopt., I, p. 136 (1873).

Habitat.—Specimens of an insect referred with some doubt to this species are at hand. They were collected at Chapada, Brazil, during March and November by H. H. Smith.

58. **Spathalium bolivari** sp. nov.

A comparatively large, rather robust locust, with beautiful blue wings, in which the basal part is black, more or less conspersed with hyaline points, veins, and cross-veins mostly deep cærulean. General color of insect brownish purple, or vinaceous.

Head, pronotum, pleura, and femora granulately tuberculate and

rugose. Head large, in both sexes a little narrower than the anterior edge of the pronotum; occiput ascending, transversely rugose or wrinkled, separated from the vertex by a rather definite, but somewhat interrupted, transverse carina, which extends from eye to eye near their upper posterior margin; vertex even with the top of the eyes, not at all (♀) or only gently (♂) depressed at middle, quite evenly sloping downward anteriorly, and suddenly narrowed just in advance of the eyes at the fastigium to the width of the frontal costa; latter quite prominent between the antennæ, deeply sulcate, viewed laterally, produced anteriorly as far as the length of the rather large basal antennal joints; ocellus located high on the front, being on a line with the lower edge of the antennæ, the costa somewhat interrupted, but in a manner continuous to the clypeus. Antennæ rather slender for a representative of this group, the basal joints somewhat flattened, but nowise giving these appendages an ensiform appearance, about fifteen-jointed. Eyes small, globular, the diameter about one-half (♂) or slightly less (♀) than the length of the anterior margin of the cheeks immediately below them. Pronotum with the anterior, posterior, and lateral margins quite conspicuously tuberculately spined, greatly expanding behind, the median carina quite strongly developed on the anterior lobe and so profoundly severed by the transverse sulci as to form two rather prominent triangular posteriorly directed teeth, on the posterior lobe continuous, low and narrow, hind margin of disk obtusangulate, remarkably thickened and provided along its upper edge with about six tubercular spines on each side of the middle. Tegmina and wings complete, a little longer than the abdomen in both sexes; the former tapering, coriaceous, profusely, but not strongly, veined, in the disk some of the cross-veins heavier and forming a series of oblique carinæ; the tegmina are also conspicuously marked by two or three longitudinal series of hyaline spots, which are without the characteristic veining of the other portions of the member. Hind wings one-half longer than wide, pointed, rather sparsely veined. Abdomen robust at base, rapidly and evenly tapering caudad. Hind femora quite strongly compressed, the superior carina hirsute, scarcely serrate, and not at all undulate; outer disk not regularly pinnate, but instead, rather coarsely and irregularly squamose; genicular lobes acuminate. Hind tibiæ robust, about as long as the femora, nine- to ten-spined externally, eleven- to twelve-spined internally. Mesosternum very broad, the interspace between the lobes fully

twice as wide as the lobes themselves, the inner margin of the lobes very oblique and broadly rounded. Anterior margin of the prosternum strongly carinate, gradually rising from the sides towards the middle, where it culminates in a fairly long acuminate spine. Dorsum of mesothorax provided immediately beneath the hind lobe of the pronotum with a conspicuous red cere, which shows only during flight, when the wings are expanded, or when the front edge of the pronotum is depressed—a "catch color" common to both sexes, but most conspicuous in the female.

General color, as indicated above, dark vinaceous-brown or purplish; on the face, cheeks, sides of pronotum, pleura, and femora more or less cinereo-testaceous, often tinged with brown and ferruginous. Abdomen bluish-black above, on sides and below testaceous and tinged with roseate, orange, or ferruginous. Anterior and middle tibiae fasciate with fuscous; hind femora below infuscated, internally fasciate with fuscous, the entire genicular area and basal fourth of tibiae strongly piceous, the latter apically becoming vinaceous. Antennae fuscous, fasciate with flavous.

Length of body, ♂, 18.5 mm., ♀, 32.5 mm.; of pronotum, ♂, 5.1 mm., ♀, 8 mm.; greatest width of pronotum, ♂, 6.5 mm., ♀, 10 mm.; length of tegmina, ♂, 14 mm., ♀, 25 mm.; of hind femora, ♂, 9.5 mm., ♀, 14 mm.

Habitat.—Chapada, near Cuyaba, Matto Grosso, Brazil, where it was taken from November to April by H. H. Smith, "No. 2083." Types in the collection of the Carnegie Museum.

This insect bears some resemblance at least in the color of the wings to *Ommexecha cærulans* Bolivar, but is much larger.

Family PYRGOMORPHIDÆ.

Genus ALGETE Bolivar.

Algete BOLIVAR, Bol. Soc. Españ. Hist. Nat., V, p. 213 (1905).

59. *Algete brunneri* Bolivar.

Algete brunneri BOLIVAR, Bol. Soc. Españ. Hist. Nat., V, p. 214 (1905).

Habitat.—Pernambuco, Brazil, during the month of May (coll. L. Bruner). Not contained among the H. H. Smith material.

This insect was found feeding on a herbaceous plant very similar to the common "Catnip." This plant grew in profusion on the premises of an abandoned homestead in the outskirts of the city. Specimens were taken *in coitu*.

Genus OMURA Walker.

Omura WALKER, Cat. Dermapt. Salt. Brit. Mus., III, p. 503 (1870).

60. *Omura congrua* Walker.

Omura congrua WALKER, Cat. Dermapt. Salt. Brit. Mus., III, p. 503 (1870).

Protomachus depressus STÅL, Bihang Svensk. Akad. Handl., IV, no. 5, p. 53 (1876).

Habitat.—The collection contains specimens of this insect coming from both Para and Santarem, Brazil. They were collected during the months of April to July inclusive.

61. *Omura congrua* var. *brunneri* n. var.

Very similar to the typical form, but differing from it in being much smoother, in having shorter antennæ, and in its somewhat smaller size.

Length of body, ♂, 30 mm., ♀, 46 mm.; of pronotum, ♂, 4.6 mm., ♀, 7 mm.; of antennæ, ♂ and ♀, 8.5 mm.; of hind femora, ♂, 13 mm., ♀, 17 mm.

Habitat.—Demerara, British Guiana, March and April, 1901 (R. J. Crew, collector).

Specimens of this insect are in the collection of the present writer.

Family CYRTACANTHACRIDÆ (Acridiidae).

The spine-breasted locusts comprise by far the most extensive family of these insects for the world as a whole. Especially is this statement true as regards the American continent, where its representatives greatly outnumber those of all the other families of locusts combined. Not only do we find a preponderance of species in the group, but of genera as well; and in many instances the individuals of species are likewise excessive. It is among the representatives of this family that we find the greatest diversity in size, form, coloration, and even of habits. Our largest, and, aside from some of the grouse-locusts, smallest, representatives of the suborder belong here. Most of the species, which are at times present in different regions of America as pests, are likewise members of this family.

Living among the rankest vegetation in forest, jungle, swamp, savanna, or pampa, prairie, plain, and even in desert regions, as a majority of the representatives of the family do, an unusually large percentage of the forms still remain unknown. Notwithstanding this fact upwards of one hundred and forty distinct genera are already known from the South American continent alone. Every small col-

lection coming from any part of that country contains both new genera and species. The present collection, as will be observed by an examination of succeeding pages, furnishes a very fair quota of such forms.

When we consider the comparatively small tracts and few sections of that vast country, which have been visited and explored by collectors, as compared with the portions, which still remain unexplored, we cannot avoid wondering what the great forests and swampy districts of the tropics will yield to the votaries of science in the way of future discoveries in the family.

It had been the intention of the writer at this time to present a carefully prepared synopsis of the South American genera of this family. A dearth of the proper material and lack of sufficient time has, however, necessitated its postponement to some future date.

Genus PRIONOLOPHA Stål.

Prionolopha STÅL, Recens. Orthopt., I, p. 27 (1873).

The present genus was erected for the reception of the *Gryllus* (*Bulla*) *serratus* of Linnæus, which occurs throughout most of tropical America. According to orthopterologists there is but a single species recognized, although many synonyms have been created by the description of supposedly distinct forms.

62. *Prionolopha serrata* (Linnæus).

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

Acridium serratum DE GEER, Mem. Ins., III, no. 10, p. 493, pl. 41, fig. 6 (1773).

Gryllus serratus FABRICIUS, Syst. Ent., II, 6, p. 288 (1775).

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

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

Tropinotus serratus SERVILLE, Ann. Sci. Nat., XXII, p. 273 (1839).

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

♂ *Acrydium serratofasciatum* DE GEER, Mem. Ins., III, no. 11, p. 495, pl. 42, fig. 2 (1773).

♂ *Pamphagus lateralis* THUNBERG, Mém. Acad. Petérsb., V, p. 260 (1815).

Gryllus Locusta cymbiformis STOLL, Spectres, Saut., p. 12, pl. 4b, figs. 14, 15 (1813).

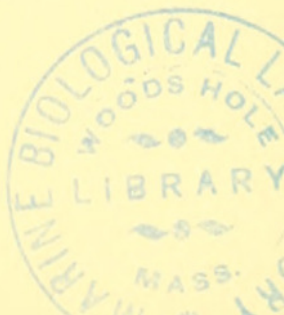
Pamphagus cymbiformis BLANCHARD, Hist. Ins., III, p. 38 (1840).

Gryllus Locusta scutatus STOLL, Spect., Saut., p. 39, pl. 21b, fig. 81 (1813).

Acrydium dentatum OLIVIER, Encycl. Meth., VI, p. 216 (1791).

Xiphocera elegans WALKER, Cat. Dermapt. Salt. Brit. Mus., III, p. 528 (1870).

Habitat.—Specimens of this insect in the present collection are at hand from Para, Chapada, and Corumba, Brazil (H. H. Smith).



The specimens from Corumba are decidedly larger and more robust than the others. They also differ in having longer and heavier hind legs with much longer spines on the inner side of the hind tibiæ, while the crest of the pronotum is higher and more evenly arcuate than in individuals examined from elsewhere. Specimens of the present species have been examined by me from Central America, U. S. of Colombia, Venezuela, British Guiana, Trinidad, Paraguay, Peru, and Ecuador.

Genus *ALCAMENES* Stål.

Alcamenes STÅL, Bihang Svensk. Akad. Handl., V, no. 4, pp. 14, 54 (1878).

The genus *Alcamenes* Stål is strictly South American, and its representatives are confined to southern Brazil, Paraguay, and northern Argentina. Several distinct species are known. These insects are rather closely related to the genus *Prionolopha* of the same author. The annexed table will aid in the separation of the species so far as known:

SYNOPSIS OF THE SPECIES OF *ALCAMENES*.

- A. Pronotum with the median carina tectiformly elevated. The posterior lobe much longer than the anterior.
 - b. Anterior and middle sulci of the pronotum obsolete above. Tegmina twice maculate. Hind tibiæ twelve- to thirteen-spined in outer row.
 - granulatus* Stål.
 - bb. Anterior and middle sulci of the pronotum strongly impressed, cutting the crest. Hind tibiæ ten- to eleven-spined externally.
 - c. Tegmina not maculate.
 - d. Tegmina lanceolate, one-half to three-fourths the length of the abdomen, the costal border only gently lobate... *cristatus* Bruner.
 - dd. Tegmina acuminate, very short, not extending beyond the apex of second abdominal segment, the costal border very strongly lobate.
 - lobipennis* sp. nov.
 - cc. Tegmina at least faintly maculate, their hind border strongly arcuate and pale bordered..... *brevipennis* Giglio-Tos?
 - AA. Pronotum with the crest 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. Hind margin obtuse. Hind femora slender.
 - brevicollis* Stål.
 - bb. Body robust. The posterior sulcus of the pronotum strongly impressed. Hind margin a right angle. Hind femora tumid at base.
 - clarazianus* Pictet et Saussure.

63. *Alcamenes lobipennis* sp. nov.

Having about the same size and general build as *A. cristatus* Bruner, but readily separated from that species by the very strongly lobate anterior border of the much shorter tegmina, and the smaller and less prolonged last ventral segment of the male abdomen.

Head large, fully as wide as the front edge of the pronotum; the occiput and cheeks rounded, the former finely transversely rugose, the latter smooth; eyes prominent, elliptical, a very little narrower above, in the male as long as, and in the female one and one-fourth times the length of the anterior edge of the cheeks below them; fastigium horizontal, in the male very gently acuminate, in the female a little obtuse, the disk flat, somewhat rugoso-granulate and provided with a well-defined median carina which continues over the occiput to the anterior angle of the pronotum; frontal costa most prominent above between the base of the antennæ and the union with the fastigium, where it is as narrow as the diameter of the second antennal joint, from this joint evenly divergent below and fading so as to be nearly obliterated before reaching the clypeus, scarcely sulcate. Face shallowly and coarsely punctulate. Pronotum rugoso-granulose, on disk of hind lobe with vien-like raised lines, strongly tectate; the anterior lobe shorter than the posterior one, all three transverse sulci profound, and deeply severing the crest which is smooth; anterior edge slightly acute, the posterior edge very much so; the posterior border of the lateral lobes and the lateral edges of the hind prolongation of disk forming together a continuous arc. Tegmina short, not extending beyond the middle of the third (♂) or the second (♀) abdominal segment, the basal half of the costal field very strongly lobed, the lower extremity of lobe almost touching the hind coxal scrobe. Abdomen compressed, carinate, tapering, the last ventral segment of the male small, compressed, acuminate; supra-anal plate triangularly acuminate, tectate, its middle on basal two-thirds deeply sulcate; cerci small, conical, hirsute. Posterior femora comparatively slender, very slightly exceeding the abdomen in length, their carinæ faintly serrate. Antennæ robust, the basal joints slightly depressed; in the male as long as, in the female about three-fourths the length of the hind femora. Posterior tibiæ eleven-spined on outer margin. Prosternal spine robust, long, the apical half strongly bent to the rear, its apex gently overlapping the front edge of mesosternum.

General color of typical specimens apple-green, slightly varied by

piceous, dull brown, and testaceous. Lateral margins of fastigium together with upper antennal foveæ piceous to glossy black immediately in advance of the eyes. Ocelli amber-yellow; the eyes ochraceous. Lateral carinæ of male faintly embrowned, as are the upper edges of the hind femora and the tibiæ. Tibial spines pallid at base, the apical portion black. Antennæ greenish basally, becoming somewhat infuscated apically, most pronouncedly so in the male.

Length of body, ♂, 32 mm., ♀, 45 mm.; of pronotum, ♂, 16.5 mm., ♀, 22.5 mm.; of tegmina, ♂, 8 mm., ♀, 10 mm.; of hind femora, ♂, 18 mm., ♀, 22.5 mm.

Habitat.—Chapada, near Matto Grosso, Brazil, May (H. H. Smith). The types are contained in the collection of the Carnegie Museum.

Two additional specimens (♂ and ♀) are at hand. They come from the same locality. These are uniformly dark wood-brown instead of green. The male was taken during March, the female in August.

64. *Alcamenes brevipennis* (Giglio-Tos)?

Prionolopha brevipennis GIGLIO-TOS, Boll. Mus. Zool. Anat. Torino, XV, no. 377, p. 4 (1900).

Among the material at hand is a single female specimen of another species of *Alcamenes* which is very doubtfully referred to *Prionolopha brevipennis* Giglio-Tos. The description published by the author of that species is so brief as not to be at all characteristic and could be applied to one of several species of *Alcamenes*. His insects were undoubtedly green or greenish, varied with fuscous and black on the head and pronotum. The specimen at hand is dark brunneo-ferruginous with a black bordered pronotal crest and a pallid dorsal edge on the closed tegmina, which latter also exhibit traces on the disk of dull fuscous mottlings. The hind femora are rather robust, the carinæ quite strongly spined and the upper lateral apices prominently toothed. In size this specimen agrees fairly well with the measurements of Giglio-Tos so far as the pronotum, length of the tegmina and of the hind femora are concerned, but, instead of measuring 55 mm. in length, as mentioned by him, this one is fully 70 mm. long.

Habitat.—This insect comes from Corumba, Brazil, where it was taken during the month of March (H. H. Smith). It is the property of the Carnegie Museum.

Should this insect prove to be distinct from *brevipennis* Giglio-Tos it may be known as *Alcamenes marginipennis*.

Genus MUNATIA Stål.

Munatia STÅL, Bihang. Svensk. Akad. Handl., III, no. 14, p. 28 (1875).

65. *Munatia minor* (Giglio-Tos).

Procolpia minor GIGLIO-TOS, Boll. Mus. Zool. Anat. Torino, IX, no. 184, p. 17 (1894).

? *Munatia australis* BRUNER, Proc. U. S. Nat. Mus., XXX, p. 644 (1906).

Habitat.—There are specimens at hand from Chapada, Para, Rio de Janeiro, etc., as well as from Montevideo. They were collected from March to November (H. H. Smith).

There are great variations in robustness, length of wing, coloration, etc., in the measurements of specimens before me as I write, possibly sufficient to warrant the making of at least two, if not three species. The generic affinities of these insects are certainly closer to *Munatia* than to *Procolpia* as suggested by both Rehn and Giglio-Tos.

Genus COLPOLOPHA Stål.

Colpolopha STÅL, Æfv. Vet.-Akad. Forh., XXX, no. 4, p. 53 (1873).

66. *Colpolopha obsoleta* (Serville).

Tropinotus obsoletus SERVILLE, Ann. Sci. Nat., XXII, p. 274 (1831).

Xiphocera obsoleta BURMEISTER, Handb. Ent., II, p. 613 (1838).

Colpolopha obsoleta PICTET ET SAUSSURE, Mitth. Schweiz. Ent. Ges., VII, p. 338 (1887).

Xiphocera basalis WALKER, Cat. Dermapt. Salt., Brit. Mus., III, p. 522 (1870).

Habitat.—The present collection contains specimens, which were collected during June and July at Para, Brazil (H. H. Smith).

Genus DIEDRONOTUS Bolivar.

Diedronotus BOLIVAR, Bol. Soc. Españ., VI, p. 396 (1906).

Tropinotus SERVILLE (*nec* Kuhl), Ann. Sci. Nat., XXII, p. 272 (1831); STÅL, Recens. Orthopt., I, pp. 27, 44 (1873); BRUNER, Proc. U. S. Nat. Mus., XXX, pp. 640, 645 (1906).

Tropidonotus STÅL (*nec* Schleg.), Bihang. Svensk. Akad. Handl., V, no. 4, p. 14 (1874); PICTET ET SAUSSURE, Mitth. Schweiz. Ent. Ges., VII, p. 335 (1887); GIGLIO-TOS, Boll. Mus. Zool. Anat. Torino, XIII, no. 311, p. 41 (1898).

The genus *Diedronotus* Bolivar (*Tropinotus* Serville) is confined to tropical America, where it is represented by a rather large number of attractive species. While enjoying a range extending from Yucatan in the north to the Rio Negro in the Argentine Republic, its center of distribution seems to be in southern Brazil and Paraguay. At least fifteen species have been heretofore described. To these

two others are now added. All of these may be separated by the subjoined synoptic table.

SYNOPSIS OF THE SPECIES OF DIEDRONOTUS.

- A. Crest of the pronotum more or less crenulate, or even serrulate, posteriorly.
Genicular angles of the hind femora acute, a little lengthened.
- b. Tegmina and body cinereous, testaceous, or ferrugineous, usually, but not always, more or less mottled or streaked with brown or fuscous.
- c. Markings of the tegmina either large and forming more or less well-defined bands, or else showing as longitudinal lines along the principal veins.
- d. Hind tibiæ twelve-spined. The anterior field as well as the disk of the wing chiefly rose-color. [U. S. of Colombia.]
rosulentus Stål.
- dd. Hind tibiæ nine- to eleven-spined. The anterior field of the wing more or less completely infuscated.
- e. Hind femora very long, reaching considerably beyond the tip of the abdomen in both sexes. Crest of the pronotum deeply cleft by all three sulci, the lobes distinctly separated.
discoideus Serville.
- ee. Hind femora shorter, only reaching the tip of the abdomen (♀) or but little surpassing it (♂). Crest of the pronotum less deeply cleft, the lobes at least closely approximate.
- f. Tegmina moderately slender, the apex quite obliquely truncate, in some instances decidedly acuminate.
- g. Maculation of tegmina typical, consisting of several transverse bars and large blotches and distributed over most of the wing.....*angulatus* Stål.
- gg. Maculation of tegmina almost or quite wanting.
- h. Size small. Tegmina and wings but little surpassing the apex of the abdomen. General color of the tegmina testaceo-ferruginous, marked on basal half with a large triangular spot. [Cordoba, Argentina.]
schulzi Bruner.
- hh. Size large. Tegmina long, slender, acuminate, pale cinereous, the infuscation of tegmina confined chiefly to the longitudinal veins. [Western Brazil and East Peru.].....*strigatus* sp. nov.
- ff. Tegmina unusually wide.
- g. Pronotal carina high and strongly arched, wings not especially infuscated. [Yucatan and Honduras.]
mexicanus Bruner.
- gg. Pronotal carina of moderate elevation, not strongly arched; wings strongly bordered with deep fuscous. [Montevideo.].....*fuscipennis* sp. nov.
- cc. Markings of tegmina small, irregularly scattered over the wing, save for a row in basal half of the discal area.

- d.* Pronotum short, the crest low, and but little produced posteriorly.
Hind tibiae with nine spines in the outer row.
modestus Giglio-Tos.
- dd.* Pronotum longer, considerably produced posteriorly. Hind tibiae
with ten spines in the outer row.....*conspersus* Bruner.
- bb.* Tegmina and body uniformly colored, without maculations 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* Bruner.
- AA.* Crest of the pronotum smooth posteriorly. Genicular angles of the hind
femora shorter and more rounded.
- b.* Hind tibiae provided with fewer (ten) spines in outer row.
- c.* General form somewhat graceful; markings of tegmina very regular.
Crest of the pronotum evenly arched.....*regularis* Bruner.
- cc.* General form rather robust; markings of tegmina somewhat irregular.
Crest of pronotum less evenly arched.....*guarani* Rehn.
- bb.* Hind tibiae provided with more (eleven to nineteen) spines in outer row.
Color variable.
- c.* Color in part, or largely, green; the discal area of tegmina with, or with-
out, dark spots.
- d.* Posterior femora punctate, and with all the carinae nigro-serrate.
Hind tibiae armed with eleven or twelve spines on the outer
margin. [San Leopold, Central Brazil.].....*scabripes* Stål.
- dd.* Posterior femora nearly smooth, only partially nigro-punctate on
the carinae. Hind tibiae armed with thirteen to sixteen spines
on outer row.
- e.* Larger and more robust (male 36, female 51 mm.); the disk of the
tegmina provided with a row of prominent dark subquad-
rate spots. Hind femora rather robust basally. Hind
tibiae thirteen or fourteen-spined.....*laevipes* Stål.
- ee.* Smaller and slenderer (male 33, female 40 mm.); disk of tegmina
immaculate, or only showing traces of the discal spots.
- f.* General color ochraceous, varied with chestnut and cinnamon-
brown. Outer row of spines on hind tibiae numbering
thirteen to fifteen. [Chapada, Brazil.]
attenuatus Rehn.
- ff.* General color at least of pronotum and tegmina largely green.
Outer row of spines on hind tibiae numbering fifteen
to sixteen. [São Paulo, Brazil.].....*gracilis* Bruner.
- Color ochreous or ferrugineo-testaceous.
- d.* Hind tibiae with ten to twelve spines in outer row, crest of pronotum
arcuate. Tegmina with a pale costal line.....*lineatus* Bruner.
- dd.* Hind tibiae with eighteen to nineteen spines in outer row, crest of
pronotum straight. Tegmina without a costal line.
laufferi Bolivar.

67. *Diedronotus angulatus* (Stål).

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

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

Habitat.—Corumba and Chapada, Brazil (H. H. Smith).

The specimens at hand are somewhat variable in color, but are quite typical of the species as found elsewhere.

68. *Diedronotus strigatus* sp. nov.

Tropinotus strigatus BRUNER, Horæ Soc. Ent. Rossicæ, XXXIX, p. 469 (1910) (MS.).

A moderately large, somewhat slender species, in which the tegmina are narrow and quite long, with the apex acuminate. Lateral angles of the disk on the pronotum strongly toothed. General color testaceo-cinereous, more or less strongly strigate with grayish fuscous, and without the usual large transverse maculations.

Head fully as wide as the anterior edge of the pronotum, the occiput short, gently arcuate, and quite prominently transversely ridged, especially in the female; vertex between the eyes about equal in width to the shorter diameter of one of them, the fastigium flat, triangular, the apex slightly acute, even in the female, its lateral edges straight, slightly raised above the disk, disk provided with a longitudinal carina which continues posteriorly across the occiput. Frontal costa fairly prominent, sulcate, finely punctate, its sides evenly divergent, continuous to the clypeus. Antennæ slender, the basal joints depressed or flattened. Eyes fairly prominent, as long as the anterior edge of the cheeks below them. Pronotum as well as head and body studded with sharp granulations and with the lateral carinæ prominent, straight, evenly divergent behind and strongly toothed, their hind end forming a distinct angle with the hind margin of disk; crest or median carina moderately high, profoundly severed by the transverse sulci and strongly crenulato-serrulate towards the hind margin. Posterior and anterior margins of disk acuminate, the former very much so. Tegmina and wings long and narrow, the former decidedly acuminate at their apex. Posterior femora strongly serrate, about normal in length, rather slender on apical half, the genicular lobes acute. Hind tibiæ long and slender, ten-spined on the outer margin. Prosternal spine compressed, the apex directed to the rear at almost a right angle.

General color testaceo-griseous, minutely and sparsely flecked

throughout with black granules. The tegmina conspicuously strigate with fuscous along the border and longitudinal veins. Wings with the disk and border colored much as in *T. angulatus* Stål. Sides of pronotum and pleura also more or less strigate with fuscous. Hind tibiae of the general color, the spines black-tipped.

Length of body, ♂, 31 mm., ♀, 45 mm.; of pronotum, ♂, 11 mm., ♀, 15.5 mm.; of tegmina, ♂, 29 mm., ♀, 41 mm.; of hind femora, ♂, 20 mm., ♀, 26 mm.

Habitat.—This insect comes from Chapada, Brazil, where it was collected by H. H. Smith. The type is contained in the collection of the Carnegie Museum.

Aside from the color variations this insect differs from typical *angulatus* in the longer, narrower tegmina and wings, and in having eleven instead of nine or ten spines on the outer margin of the hind tibiae. In addition to the present form there are two or three others which occur in the same general region. It is quite probable that these variations represent several species now in the course of formation.

69. *Diedronotus fuscipennis* sp. nov.

A rather large, robust, moderately granular species, with wide tegmina and wings, in which the median carina of the pronotum is profoundly severed by the transverse sulci as in *mexicanus*, *angulatus*, and *discoideus*. In general appearance it approaches the former more closely.

Head of moderate size, set into the front edge of the robust pronotum nearly to the hind margin of the small eyes; vertex somewhat wider than the short diameter of one of the eyes, the fastigium horizontal, flat, with a longitudinal median carina, which continues over the occiput, its lateral edges straight and meeting in front at about a right angle. Frontal costa prominent, gently sulcate, from between the antennae nearly to the clypeus, the sides gently approaching just below the ocellus. Antennae very gently ensiform; the eyes about three-fifths the length of the anterior edge of the cheeks below them. Pronotum robust, the median carina cristate, of moderate altitude, straight on the anterior, arcuate on the posterior lobe, where it is gently crenulate; lateral carinae crenulate or nodulose, broadly arcuate, rounded, joining with the posterior lateral edges of the disk instead of at an angle as in *angulatus* and *strigatus*; the anterior edge of disk a right-angle instead of acute, the hind margin somewhat

acute; disk of hind lobe provided on each side with two rather prominent converging raised lines. Tegmina wide for this genus, quite closely veined and coriaceous on basal half, less dense on apical portion, the apex subobliquely docked. Wings a little less than twice as long as broad, all of the costal field, the anterior portion of radial field, and a broad border on the latter, strongly infuscated, the fenestrate area alone transparent. Abdomen robust, strongly carinated above. Hind femora robust, as long as the abdomen, granular, and somewhat serrate; hind tibiae moderately heavy, the outer edge provided with eleven spines. Prosternal spine large, robust, and the apical half strongly bent to the rear.

General color cinereo-testaceous, more or less varied on sides of head, pronotum, pleura, and tegmina with ferruginous and dull brown. The tegmina with faint traces of the characteristic dark basal maculae and subapical transverse fasciae so characteristic of *discoideus*.

Length of body, ♀, 50 mm., of pronotum, 17.5 mm., of tegmina, 45 mm., of hind femora, 30 mm.

Habitat.—The only specimen at hand, the type, bears the label "Montevideo." It is in the Carnegie Museum.

As indicated by the name, the present species has the wings very strongly infuscated, save in the basal portion of the radial field, where the color is bright orange.

70. *Diedronotus regularis* (Bruner).

Tropinotus regularis BRUNER, Ent. News, XVI, pp. 215, 216 (1905).

Diedronotus regularis KIRBY, Syn. Cat. Orthopt., III, p. 361 (1910).

Habitat.—Chapada, Brazil, in July, a single female (H. H. Smith).

Mr. Rehn's *Tropinotus guarani* is quite closely related to this insect.

71. *Diedronotus scabripes* (Stål)?

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

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

Diedronotus scabripes KIRBY, Syn. Cat. Orthopt., III, p. 361 (1910).

Habitat.—The single female specimen in the present collection was taken in June at Chapada, near Cuyaba, Matto Grosso, Brazil (H. H. Smith).

72. *Diedronotus attenuatus* (Rehn).

Tropinotus attenuatus REHN, Proc. U. S. Nat. Mus., XXXVI, pp. 118–120, figs. 6, 7 (1909).

Habitat.—A large series including both sexes, is at hand from Chapada near Cuyaba, Matto Grosso, Brazil. They were taken during the months of May, June, and July (H. H. Smith).

This species comes closest to *D. gracilis* (Bruner) from São Paulo.

73. **Diedronotus lineatus** (Bruner).

Tropinotus lineatus BRUNER, Proc. U. S. Nat. Mus., XXX, pp. 646, 648 (1906).

Diedronotus lineatus KIRBY, Syn. Cat. Orthopt., III, p. 361 (1910).

Habitat.—Chapada, near Cuyaba, Matto Grosso, Brazil, a single male specimen collected in June (H. H. Smith).

This insect also occurs at Sapucay, Paraguay, where it was collected by W. T. Foster. (Collections U. S. Nat. Museum, L. Bruner, and Philadelphia Acad. Sciences.)

Genus **CORYACRIS** Rehn.

Coryacris REHN, Proc. U. S. Nat. Mus., XXXVI, p. 111 (1909).

Very closely related to *Elæochlora* Stål, and composed of insects with fully developed tegmina and wings in both sexes. The species, so far as known, are confined to southern Brazil, Paraguay, and Argentina along the Rio Parana. The type of the genus is the following species.

74. **Coryacris angustipennis** (Bruner).

Elæochlora angustipennis BRUNER, 2d Rept. Locust Comm. B. Aires, p. 58 (1900).

Coryacris diversipes REHN, Proc. U. S. Nat. Mus., XXXVI, pp. 111-114, figs. 1, 2 (1909).

Habitat.—Specimens of both sexes were collected during March at Corumba, Brazil, by H. H. Smith.

75. **Coryacris** sp.

There is before me, as I write, a single female specimen of this genus which bears the label "Pedras de Amolar, near mouth of São Lorenzo Rio, P." While colored similarly to *C. angustipennis*, referred to above, this individual is nearly or quite twice as large. The measurements follow:

Length of body, ♀, 64 mm., of pronotum, 14 mm., of tegmina, 57 mm., of hind femora, 36.5 mm., of antennæ, 26 mm.

Female specimens of *C. angustipennis* before me vary from 48 to 55 mm. in length.

This large individual has the apical two-fifths of the tegmina rather regularly and plainly conspersed with fuscous dots. It bears the

collector's number "2118" (H. H. Smith). I would suggest the name *Coryacris conspersipennis* as suitable for it.

Genus *ELÆOCHLORA* Stål.

Elæochlora STÅL, Öfv. Vet. Akad. Forh., XXX, no. 4, p. 52 (1873).

The genus *Elæochlora* Stål is composed of a dozen or more species of rather large and showy locusts. All of the known forms are South American, and most of them tropical in their distribution. Possibly a few of the described species will eventually be placed in other genera. In fact, quite recently Mr. James A. G. Rehn has redescribed the *E. angustipennis* Bruner under the name *Coryacris diversipes*, as will be seen by reference to the next to the last of preceding forms mentioned in the present paper.

There are two or three distinct types of structure observable among the species of this genus, and it was the intention of the writer to construct a synoptical key for their separation. The lack of several of them for comparisons, together with the press of other duties, has, however, made it necessary to defer this action for the present.

76. *Elæochlora trilineata* (Serville).

Xiphicera trilineata SERVILLE, Ann. Sci. Nat., XXII, p. 272 (1831).

Xiphocera trilineata, BURMEISTER, Handb. Ent., II, p. 614 (1838).

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

Habitat.—If I have rightly determined this insect, there is a specimen at hand from Rio de Janeiro, Brazil, where it was taken during the month of December by H. H. Smith.

77. *Elæochlora viridicata* (Serville).

Xiphicera viridicata SERVILLE, Ins. Orthopt., p. 614, pl. 14, fig. 3 (1839).

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

Habitat.—Chapada, Brazil, during the months of December, January, and April (H. H. Smith).

78. *Elæochlora pulchella* Rehn.

Elæochlora pulchella REHN, Proc. U. S. Nat. Mus., XXXVI, pp. 126-128, figs. 13, 14 (1909).

Habitat.—Corumba, Brazil, during March and April (H. H. Smith).

79. *Elæochlora humilis* Rehn.

Elæochlora humilis REHN, Proc. U. S. Nat. Mus., XXXVI, pp. 124-126, figs. 11, 12 (1909).

Habitat.—Rehn's type came from Chapada, near Cuyaba, Matto Grosso, Brazil (H. H. Smith).

80. *Elæochlora hymenæa* (Gerstæcker).

Xiphocera hymenæa GERSTÆCKER, Stettin. Ent. Zeit., XXIV, p. 186 (1873).

Elæochlora longispina PICTET ET SAUSSURE, Mitth. Schweiz. Ent., V, pp. 344, 345 (1887).

Habitat.—A male specimen from Rio de Janeiro, taken in September, is placed here (H. H. Smith).

81. *Elæochlora brevipennis* sp. nov.

This species, like Rehn's *E. arcuata*, belongs to the section of the genus which contains *trilineata*, *viridicata*, *humilis*, and *pulchella*. It is most closely related to *arcuata* in the form of its tectate pronotal carina. But it differs from that species in the more rugose pronotum, the more robust hind femora, and the smaller eyes, as well as in the shorter and less acuminate tegmina. Its color is wood-brown, fuscous, and testaceous, the only tinge of green about it being on the outer face of the hind femora.

General form robust, the size medium; head fairly large, nearly as wide as the front edge of the pronotum, the occiput viewed in profile gently rounded, a little lower than the anterior middle of the pronotum; vertex wide, its width equal to the longest diameter of one of the eyes, the fastigium with its front slightly ascendant, very gently sulcate, about as long as its basal width, the lateral margins very gently rounded. Frontal costa prominent above, sulcate throughout, its walls evenly divergent below and reaching the base of the clypeus. Antennæ rather slender, as long as the head and pronotum combined, composed of twenty-two or twenty-three segments. Eyes not very large, but fairly prominent, about one-fourth shorter than the anterior edge of the cheeks below them, nearly elliptical. Lateral ocelli small, situated just in advance of the lower portion of the upper fourth of the eyes on a lateral continuation of the fastigium of the vertex and just back of its anterior carina. Pronotum very strongly rugose and studded both on the disk and lateral lobes with large rounded tubercles, slightly recalling the genus *Helionotus*, the median carina heavy, strongly arched, and thrice severed by the three transverse sulci, the posterior one most profound and situated plainly back of the middle; hind margin slightly obtuse-angled, the margin studded with several rounded tubercles; lateral carinæ also strongly and numerously

toothed, on each side just in advance of both the second and third sulci prominently so by a single tooth much longer and heavier than the others; the front margin also somewhat angulate and less prominently studded with tubercles than the hind margin. Tegmina short, broad, their apex rounded, reaching just beyond the hind margin of the third abdominal segment, the costal edge lobate. Abdomen compressed, strongly carinate above, rapidly tapering, the last ventral segment pyramidal, acuminate; the supra-anal plate tectate, elongate-triangular, rather deeply sulcate at middle on basal half. Anal cerci short, slender, pointed. Prosternal spine pyramidal, rather slender; meso- and meta-sternal lobes widely separated, the space about equal to the width of the lobes themselves. Hind femora robust, slightly surpassing the apex of the abdomen; hind tibiae nine-spined on outer margin, the inner spines also nine in number, slightly curved, and a very little larger than the external ones.

General color above brunneo-fuscous, varied on the disk and sides of pronotum and dorsal portion of head and abdomen with streaks and patches of testaceous and piceous. Front between the anterior edges of the eyes and cheeks dark ochraceous, the posterior lower cheeks also of a similar shade, but fading into the darker anterior edges and occiput. Legs and lower portion of body testaceous mottled and flecked with cinereo-fuscous. Tegmina dark brown, conspicuously and moderately widely bordered with dirty yellow or testaceous. Inner spines of hind tibiae black, the outer ones, together with the tibiae, themselves pallid. Antennae brownish testaceous basally, infuscated apically. Eyes mahogany-brown.

Length of body, ♂, 30 mm., of pronotum, 11.5 mm., of tegmina, 8.75 mm., of hind femora, 15 mm., greatest width of pronotum, 8 mm.

Habitat.—A single ♂, the type, comes from Chapada, Brazil (Campo), where it was collected by H. H. Smith during the month of October. It is deposited in the Carnegie Museum.

Genus *CALLONOTACRIS* Rehn.

Callonotacris REHN, Proc. U. S. Nat. Mus., XXXVI, pp. 128-129 (1909).

This unique locustid genus is confined to southern Brazil, where it is represented by a single species.

82. *Callonotacris lophophora* Rehn.

Callonotacris lophophora REHN, Proc. U. S. Nat. Mus., XXXVI, pp. 129-132, figs. 15-18 (1909).

Habitat.—Three males and one female, Chapada, near Cuyaba, Matto Grosso, Brazil, in January and April (H. H. Smith, No. 2082).

So far as known the types, ♂ and ♀, are the only other specimens in collections.

Genus *CHROMACRIS* Walker.

Chromacris WALKER, Cat. Dermapt. Salt. Brit. Mus., IV, p. 643 (1870).

83. *Chromacris miles* (Drury).

Gryllus Locusta miles DRURY, Ill. Exot. Ent., II, p. 79, pl. 42, fig. 2 (1773).

Locusta (Rutodideres) miles WESTWOOD, Drury, Ill. Exot. Ent., II, p. 89, pl. 42, fig. 2 (1837).

Rhomalea miles PICTET ET SAUSSURE (in part), Mitth. Schweiz. Ent. Ges., VII, p. 349 (1887).

Chromacris miles BRUNER, Biol. Cent. Amer., Orthopt., II, pp. 238, 239 (1907).

Habitat.—The present collection contains specimens taken at Para, Corumba, and Chapada, near Cuyaba, Matto Grosso, Brazil. They were collected during the months of April to November (H. H. Smith).

The species occurs in Central America and much of tropical South America.

84. *Chromacris latipennis* (Pictet et Saussure).

Rhomalea latipennis PICTET ET SAUSSURE, Bull. Soc. Ent. Suisse, VII, p. 351 (1887).

Chromacris latipennis KIRBY, Syn. Cat. Orthopt., III, p. 373 (1910).

Habitat.—The collection before me as I write contains a single male, which is referred to this species. It was taken at Chapada during the month of April (H. H. Smith).

Genus *ZONIOPODA* Stål.

Zoniopoda STÅL, Recens. Orthopt., I, pp. 32, 51 (1873); BRUNER, Proc. U. S. Nat. Mus., XXX, p. 652 (1906).

The present collection contains several specimens of the genus *Zoniopoda* Stål, two of which appear to be new. This fact, together with the known center of distribution of the genus, has made it appear worth the while to include here a revised synoptic table of the species.

SYNOPSIS OF THE SPECIES OF *ZONIOPODA*.

- A. Posterior femora always, and tibiae in most instances, banded with either black, yellow, or red, or with all three colors.
 - b. Body and tegmina mostly green or greenish.
 - c. Head and legs more or less prominently marked with red and black.
- Hind tibiae banded.....*tarsata* Serville.⁴

⁴ Rehn in his paper on Non-Saltatorial and Acridoid Orthoptera from Sapucay, Paraguay, claims that *Zoniopoda tarsata* and *Z. cruentata* Blanchard are distinct. (See *Proc. Acad. Nat. Sci. Phila.*, 1907, p. 175.)

- cc. Head entirely green. Hind femora with a narrow black band on each side at base of condyle; hind tibiæ green or coralline.
juncorum Berg.
- bb. Body as well as head and legs largely, or at least strongly, varied with black.
- c. Tegmina dark olive to black.
- d. The veins of the tegmina yellow or testaceous.
- e. Pronotum longitudinally striped with black and yellow.
- f. Head largely blood-red.....*omnicolor* Blanchard.
- ff. Head not varied with red.....*emarginata* Stål.
- ee. Pronotum not longitudinally striped with black and yellow.
- f. Pronotum chiefly yellow and testaceous and provided with a median and a subfrontal black band. Body and legs largely pale. Knees, coxæ, and head, red.
fissicauda Bruner.
- ff. Pronotum glossy black, bordered broadly behind and narrowly in front with pale testaceous or dirty white. Body and limbs largely black, pale marks on head tinged with red.
exilipes Bruner.
- dd. Veins of tegmina infuscated, same color as the remainder of wing. Pronotum, body and legs as in preceding species (*exilipes*).
collaris sp. nov.
- cc. Tegmina blackish-fuscon, tessellate with yellow, wings red.
picta Bolivar.
- AA. Posterior femora not at all banded, unicolorous, or at most with the carinæ pallid as compared with the ground-color.
- b. Body very robust, the tegmina and wings abbreviated; the hind femora comparatively short. General color black, the head banded with pallid and red. Pronotum broadly pale-margined behind. Coxæ and abdomen red-maculate. Tegmina with reddish veins; wings in part bright carmine; hind tibiæ coral-red.....*robusta* sp. nov.
- bb. Body slenderer; tegmina and wings normal, the hind femora also normal. General color green or greenish. Pronotum not margined with pallid.
- c. Pronotum unicolorous, in nowise striped or banded.
- d. Body of insect rather robust; the vertex quite wide and strongly depressed, median carina of the pronotum prominent; hind tibiæ green, or at most tinged with pink; subanal plate coarse and long.
- e. Hind wings cærulean.....*iheringi* Pictet et Saussure.
- ee. Hind wings rose-tinted.....*hempeli* sp. nov.⁵

⁵ *Zoniopoda hempeli* sp. nov.

A single male specimen is at hand in which the posterior or radial field of the wings is bright rose-color instead of cærulean. The antennæ are colored much as those of *mimicula* Rehn, but are even more decidedly fasciate than in that species, while the vertex is fully as broad as the shortest diameter of one of the prominent eyes and has the fastigium rather strongly depressed as in *iheringi* Pictet et Saussure. The last ventral segment is quite prominent, elongate, compressed, acuminate and

dd. Body of insect slenderer, the vertex narrower, but little depressed; median carina of the pronotum low; hind tibiae and tarsi scarlet; last ventral segment strongly produced, acuminate, the apex with a strong V-shaped emargination.

mimicula Rehn.

cc. Pronotum with more or less decided longitudinal flavous lines. Hind tibiae greenish-yellow, the tarsi scarlet.....*similis* Bruner.

85. *Zoniopoda tarsata* (Serville).

Acridium tarsatum SERVILLE, Ann. Sci. Nat., XXXI, p. 283 (1831).

Acrydium tarsatum GRAY, Griffith, Anim. Kingd., XV, p. 781 (1832).

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

Gryllus servillei GUERIN, Icon. R. Anim., Ins., pl. 54, fig. 9 (1829).

Habitat.—Rio de Janeiro, in November (H. H. Smith).

According to Rehn a number of the references to the present species should be referred to the next.

86. *Zoniopoda cruentata* (Blanchard).

Acridium cruentatum BLANCHARD, D'Orbigny, Voy. Amer. Mer., VI, no. 2, p. 216, pl. 27, fig. 5 (1837-1843).

Zoniopoda cruentata REHN, Proc. Acad. Nat. Sci. Philad., LIX, p. 175 (1907).

Zoniopoda tarsata BRUNER (*nec* SERV.), Locusts of Argentina, pp. 53, 61 (1900); *ib.*, Proc. U. S. Nat. Mus., XXX, p. 652 (1906).

Habitat.—Said to be Argentina, Uruguay, Paraguay, etc. Not contained in the present collection. (See Rehn, *Proc. Acad. Nat. Sci. Philad.*, 1907, p. 175.)

87. *Zoniopoda similis* Bruner.

Zoniopoda similis BRUNER, Proc. U. S. Nat. Mus., XXX, p. 652 (1906).

Habitat.—Chapada, Brazil, during November, two males (H. H. Smith).

88. *Zoniopoda iheringi* Pictet et Saussure.

Zoniopoda iheringi PICTET ET SAUSSURE, Mitth. Schweiz. Ent. Ges., VII, p. 356 (1887).

Habitat.—Chapada, Brazil, in April (H. H. Smith).

narrowly but fairly deeply emarginate at apex, about one-half longer than wide. The pronotum is quite strongly rugoso-punctulate, has the transverse sulci deeply impressed and the hind edge of the disk very faintly more than a right-angle. Hind tibiae robust, eleven-spined externally, pale greenish-yellow, not at all tinged with pink or red. Entire insect quite strongly hirsute.

Length of body, ♂, 27.5 mm., of pronotum, 6.1 mm., of tegmina, 23 mm., of hind femora, 14 mm.

Habitat.—São Paulo, Brazil (A. Hempel). The type is in the writer's collection.

89. *Zoniopoda mimicula* Rehn.

Zoniopoda mimicula Rehn, Proc. U. S. Nat. Mus., XXXVI, pp. 132-134, figs. 19, 20 (1909).

Habitat.—Two males, Chapada, Brazil, where they were collected in March and November by H. H. Smith. One of these specimens bears the collector's number, 2108.

90. *Zoniopoda collaris* sp. nov.

As indicated in the foregoing synoptic table of the species of *Zoniopoda*, *collaris* is quite closely related to *exilipes* Bruner, from which it differs chiefly in the color of the tegmina, the slightly more robust form, and in having the head tinged with red or orange, instead of with pale yellow or dirty white.

Length of body, ♂, 30 mm., of pronotum, 6.25 mm., of tegmina, 28.5 mm., of hind femora, 16 mm.

Habitat.—Chapada, near Cuyaba, Matto Grosso, Brazil, where it was taken by H. H. Smith in January. The type is unique. It is deposited in the collection of the Carnegie Museum.

I am inclined to believe that this is only a color-variety of *Z. exilipes*, but keep it separate until we have more material from which to draw conclusions.

91. *Zoniopoda robusta* sp. nov.

A very robust, short-winged insect, in which the color is black, varied with flavous and red. Hind wings with a color-pattern somewhat similar to that found in several of the species belonging to the genus *Chromacris*.

Head large, smooth; the front perpendicular, viewed in profile a little arcuate, from in front about as broad above as below, moderately high; occiput short, arcuate; vertex very wide, fully three times the width of the frontal costa at the ocellus; the fastigium short and very strongly depressed, its anterior portion sulcate and continuous with that of the frontal costa. Frontal costa only moderately prominent above, its sides nearly parallel save at its lower extremity, where it gradually fades before reaching the base of the clypeus. Eyes small, elliptical, the anterior edge less convex than the posterior, in the male a very little shorter, in the female one-half shorter than that portion of the cheek immediately below them; lateral ocelli large, conspicuous, located in the upper portion of the antennal scrobe just below the lateral carinae of the vertex and in advance of the upper third of the

eyes. Antennæ long and filiform, unicolorous, in the female at least one and one-half times the combined length of head and pronotum (missing in male specimen). Pronotum short, without lateral carinæ, rather wide, but a trifle longer than its greatest width; the anterior lobe glabrous, but sparsely and minutely punctulate, its sides parallel; hind lobe closely and rather deeply punctulate, expanding posteriorly, the disk flattened; median carina fairly prominent, thrice severed by the profound transverse sulci and thereby giving to it a lobate appearance; anterior margin straight, strongly reflexed; posterior margin widely angulate, the apex rounded; lateral lobes higher than long, the lower posterior angle broadly rounded. Tegmina somewhat abbreviated, in the male just reaching the tip of the abdomen, in the female about two-thirds as long as the abdomen, tapering towards the apex, the latter rounded, sparsely, but rather heavily, veined. Wings somewhat shorter than the tegmina, nearly as broad as long, the anterior field with a rather strong fenestrated area, colored much as in the species of *Chromacris*. Hind femora moderately robust, evenly narrowing apically, the pennæ regular and few, carinæ smooth; genicular lobes short, rounded; hind tibiæ robust, eight-spined on outer row. Prosternal spine of moderate size, acuminate, directed gently to the rear. Meso- and meta-sternal lobes widely separated, the interspace of both broader than long; tip of male abdomen blunt, the last ventral segment short, the supra-anal plate triangular, tectate.

General color glossy black. Head perpendicularly vittate with prominent flavous bands, which are more or less strongly tinged with orange-red, these bands are arranged one at the posterior border of each cheek, and one on each side of the face following and including the lateral carinæ and continuing below across the clypeus and labrum, and above across the vertex and occiput, where they join with the upper extremities of the genal lines. Pronotum with most of the posterior lobe and a small portion of the lower lateral edges of the anterior lobe flavous as in *collaris* and *exilipes*. Tegmina with the principal and cross-veins testaceo-vinaceous. Pleura with oblique narrow lines in advance of the coxæ. Hind femora with the carinæ and edges of pennæ of outer face flavous; hind tibiæ except base and immediate apex blood-red. Coxæ, sides of meso- and meta-sternum, each of the ventral segments of abdomen and of the dorsum on each side above and below conspicuously maculate with sealing-wax red.

Length of body, ♂, 26.5 mm., ♀, 40 mm.; of pronotum, ♂, 6.5

mm., ♀, 9 mm.; of tegmina, ♂, 17 mm., ♀, 19 mm.; of hind femora, ♂, 17.5 mm., ♀, 18.5 mm.; of hind tibiæ, ♂, 17 mm., ♀, 18 mm.

Habitat.—Chapada, Brazil, April (H. H. Smith). The types belong to the Carnegie Museum.

In some respects this insect approaches *Chromacris* and in others it agrees best with *Zoniopoda*. It is especially to *Z. omnicolor*, *collaris*, and *exilipes* of the last genus that it shows relationship.

Genus PRIONACRIS Stål.

Prionacris STÅL, Bihang. till K. Svensk. Vet.-Akad. Handling., V, no. 4, pp. 19, 55 (1878).

Representatives of this genus are confined to tropical South America, where they are among the larger and more showy species. Thus far three have been described. They may be separated as follows:

SYNOPSIS OF THE SPECIES OF PRIONACRIS.

- A. Disk of wings tinged with rosaceous, general color of insect yellowish-olive. [New Granada.].....*compressa* Stål.
- AA. Disk of wings tinged with green or blue. General color of insect dark olive or brown.
 - b. Wings tinged with cærulean. [Upper Amazons.].....*cærulescens* Bolivar.
 - bb. Wings tinged with green. [Paraguay and southern Brazil.]...*erosa* Rehn.

92. *Prionacris erosa* Rehn.

Prionacris erosa REHN, Proc. Acad. Sci. Philad., LX, pp. 176-179, figs. 10, 11 (1908).

Habitat.—Chapada, Brazil, a single female specimen, which was taken during the month of April by H. H. Smith.

Since Rehn's description included only the male, the following measurements of the female may be of value: Length of body 46 mm., of pronotum, 10.5 mm., of tegmina, 45 mm., of hind femora, 21.5 mm. Otherwise this sex is practically the same as the male.

Genus TITANACRIS Scudder.

Titanacris SCUDDER, Proc. Bost. Soc. Nat. Hist., XII, p. 352 (1869).

The large lobe-crested locusts, which comprise the present genus, are confined to tropical America, where they are fairly well distributed from southern Mexico to southern Brazil. They were rather carefully studied by Scudder (*l. c.*) and later by Pictet and Saussure (Mitth. Schweiz. Ent. Ges., VII, pp. 362, 363, 1887).

93. *Titanacris velasquezi* (Nieto).

Acridium velasquezii NIETO, Rev. et Mag. de Zool., 1857, p. 360, pl. 12.

Lophacris velasquezii SCUDDER, Proc. Bost. Soc. Nat. Hist., XII, p. 354 (1869).

Acridium olfersii SAUSSURE, Rev. et Mag. de Zool., 1861, p. 162.

Titanacris velasquezii PICTET ET SAUSSURE, Bull. Soc. Ent. Suisse, VII, p. 365 (1887).

Habitat.—A single specimen is at hand from Para, Brazil, where it was taken in August by H. H. Smith.

94. *Titanacris albipes* (De Geer).

Acridium albipes DE GEER, Mém. Ins., III, p. 487, pl. XL (1773).

Titanacris albipes SCUDDER, Proc. Bost. Soc. Nat. Hist., XXI, p. 353 (1869).

Gryllus (Locusta) cristatus, var. *d.* LINNÆUS, Mus. Ulr. Reg., p. 137 (1764).

Habitat.—Two male specimens of the present species were taken at Chapada, Brazil, during September by H. H. Smith.

Genus *TROPIDACRIS* Scudder.

Tropidacris SCUDDER, Proc. Bost. Soc. Nat. Hist., XII, p. 346 (1869).

The present genus contains the largest of our American locusts, with perhaps a single exception. They occur from southern Texas to middle Argentina and Paraguay. At least six distinct species have been recognized, but many more described. The synonymy of the different species is quite complicated, and possibly never will be entirely deciphered. The different forms are separated by Pictet and Saussure in their Catalogue d'Acridiens, pp. 28-29. Practically all of the recognized forms, save possibly one, are to be found in Brazilian territory.

95. *Tropidacris collaris* (Stoll).

Gryllus (Locusta) collaris STOLL, Spect. Saut., p. 39, pl. 21b, fig. 80 (1813).

For additional synonymy see Kirby's catalogue Orthoptera, III, p. 379.

Habitat.—Specimens are before me from Para, Chapada, and Corumba, Brazil. They were captured during the months of June to August inclusive (H. H. Smith).

96. *Tropidacris latreillei* (Perty)?

Acrydium latreillei PERTY, Del. Anim. Art., p. 123, pl. 24, fig. 4 (1832).

See Kirby for additional synonymy, *l. c.*

Habitat.—A single female from Chapada, near Cuyaba, Matto Grosso, Brazil, is referred here with some doubt. (Collected by H. H. Smith in January.)

97. **Tropidacris cardinalis** Pictet et Saussure.

Tropidacris cardinalis PICTET ET SAUSSURE, Bull. Soc. Ent. Suisse, VII, pp. 359, 360 (1887).

Gryllus dux FABRICIUS (*nec* DRURY), Spec. Ins., I, p. 362 (1781).

Habitat.—The present collection contains three males, labeled as coming from Honduras.

98. **Tropidacris grandis** (Thunberg).

Gryllus grandis THUNBERG, Mém. Acad. Petersb., IX, pp. 393, 403 (1824).

Tropidacris grandis STÅL, Recens. Orthopt., I, p. 49 (1873).

Tropidacris fabricii SCUDDER, Proc. Bost. Soc. Nat. Hist., XII, p. 349 (1869).

Acridum dux BRULLE (*nec* DRURY), Hist. Ins. IX, p. 225, pl. 20 (1835).

Habitat.—Rio de Janeiro, Brazil, during December, two males bearing H. H. Smith's number 2076.

Genus NAUTIA Stål.

Nautia STÅL, Bihang. Svensk. Akad. Handl., V, no. 4, pp. 42, 87 (1878).

(*Edalometopon* REHN, Proc. Acad. Nat. Sci. Philad., LVII, p. 418 (1905).

These insects belong to tropical America. Species are found in both North and South America.

99. **Nautia ornatipes** Bruner.

Nautia ornatipes BRUNER, Biol. Cent. Amer. Orthopt., II, p. 243 (1907).

Robust, the pronotum but little expanding posteriorly, broadly rounded behind, and produced over the base of the tegmina, anterior margin sinuose. Antennæ subensiform, moderately heavy, and about as long as the hind femora. The latter with comparatively few and smooth paginæ on outer face, the genæ large, black, marked with white on the genicular lobes.

Vertex rather narrow, about as wide as the diameter of the second antennal joint, the fastigium triangular, about as long as broad, but little depressed, longitudinally sulcate; frontal costa prominent between the base of antennæ effaced below the transverse facial groove. Front not greatly oblique, strongly and coarsely punctulate. Eyes large, but not very prominent, æneous, and the facets showing more plainly than usual. Occiput short, and, together with the cheeks, prominently punctate. Pronotum rugoso-punctate, much more closely so on the hind than on the front lobe, the transverse sulci continuous, but not profound; the median carina showing plainly on the hind, but absent from the front lobe; lateral lobes a trifle higher

than long. Pleura strongly punctate. Tegmina coriaceous, having rather more the appearance of being punctate than close-veined, the apex broadly rounded, not reaching the apex of the abdomen. Abdomen short, tapering, the valves of ovipositor straight, slender, more or less hirsute, and somewhat similar to the cerci, the upper pair somewhat the stronger and longer. Hind tibiae and tarsi rather densely hirsute, the former provided with seven spines on both sides, the latter with the second joint a little longer than the first. Prosternal spine robust, short.

General color brownish olive, the sides of pronotum above and the tegmina along the discal field provided with a pale testaceous or dirty white band. Antennae blackish above, reddish beneath, with the black encroaching inwardly below. The hind femora are of a paler olive-green and beautifully marked externally near the base by bright blood-red blister-like patches, which give to the whole insect a very notable appearance.

Length of body, ♀, 29 mm., of antennae, 14 mm., of pronotum, 9 mm., of tegmina, 15 mm., of hind femora, 18 mm., of hind tarsi, 10 mm.

Habitat.—A single female specimen is at hand from Bartica, Demerara, British Guiana, where it was taken by R. J. Crew. (Coll. L. Bruner.)

100. *Nautia vitta-genæ* Bruner.

Nautia vitta-genæ BRUNER, Biol. Cent. Amer. Orthopt., II, p. 243 (1907).

As shown by the synoptic table of the species of this genus, as published in the *Biologia Centrali-Americana*, the present species is most closely related to the one just described. Besides the differences mentioned there it varies from *N. ornatipes* in having the antennae, which are black, linear, instead of subensiform; in the much shorter and more closely punctate pronotum, the sides of which are plainly longer than high; in having the tegmina fully as long as the abdomen; in the uniform coloration of the hind femora; in the reddish, instead of olivaceous and fuscous, hind tibiae and tarsi; in having the pale longitudinal line on the tegmina dark pink, bordered narrowly above and below, instead of pale testaceous or dirty white; and in having the eyes much more prominent. The present species has the fastigium of its vertex decidedly depressed and much slenderer than in the species with which it has been compared.

Cerci of male very robust basally, directed posteriorly, so that the upper edge of the basal two-fifths lies parallel with the body, the lower

edge roundly narrowing, so that at the end of the parallel portion they are graceful and nearly equal, and from this point are directed upwards, a little inwards, and again bowed outwards. Prosternal spine robust, subquadrate, short, the apex somewhat acuminate.

Length of body, ♂, 26 mm., of antennæ 18 mm., of pronotum, 7 mm., of tegmina, 16 mm., of hind femora, 15 mm., of hind tarsi, 9 mm.

Habitat.—A single male taken by R. J. Crew at the same locality as the preceding species. (Coll. L. Bruner.)

101. ***Caloscirtus rubripennis*** gen. nov. et sp. nov.

A rather small, fairly robust, olive-green locust, with bright blood-red hind-wings, red dorsum of abdomen, and elongate, slender, red antennæ; and in which the hind femora are decidedly robust and provided with tuberculate or semiserrate upper carinæ.

Head slightly wider than the front edge of the pronotum, the occiput short, eyes large and moderately prominent, nearly one-third longer than that portion of the cheeks below them, vertex narrow, less than half as broad as the frontal costa, between the base of antennæ; fastigium somewhat depressed. sulcate, and separated from the frontal costa by a rather prominent transverse carina; frontal costa a little prominent between the antennæ, shallowly sulcate, and provided in the middle with a broad longitudinal carina, broadest above, but narrowing towards the ocellus, below which point it is obsolete. Face rugose and coarsely punctate, the lateral carinæ inconspicuous and slightly bowed outward at their middle, but little further apart at their lower than upper end; cheeks also coarsely punctate, likewise the occiput in part. Antennæ twenty-two-jointed, slender, nearly as long as the hind femora (♂) the basal joint large, about as broad as the greatest width of the frontal costa. Pronotum coarsely rugoso-punctate, a trifle expanded on the hind lobe; median carina distinct, interrupted by the well-marked transverse sulci; anterior margin roundly advanced upon the occiput in middle, obtusangulate behind. Pleura coarsely punctate. Tegmina rather narrow, sparsely, but strongly, veined, as long as the abdomen; wings a little shorter than the tegmina, obtuse, and with the outer margin strongly undulate. Hind femora robust and provided with coarse, large knees, their upper edges sub-serrate on carinæ and coarsely punctate, the paginæ together with the lower carinæ and face smooth, genicular lobes sub-

acuminate; hind tibiæ heavy, short, six-spined on outside and rather strongly hirsute; hind tarsi with the second joint about one-half as long as the first. Last ventral segment of male abdomen short, pinched from sides so as to form a short longitudinal ridge; supra-anal plate with the sides nearly parallel on basal half, then suddenly contracted to about one-half the width and completed as a triangular projection the center of which is provided with a median carina, which separates and forms a loop towards the base of the plate, each side of disk provided with three or four dark tubercles; anal cerci heavy, two and one-half times as long as wide and twisted on outer half. Prosternal spine very short and broad at base, but with the apex terminating in a small short tubercle. Entire insect sparsely hirsute, save on lower side of abdomen apically, where the hairs form two decided tufts.

General color pale olive-green, paler below. Hind femora and tibiæ much darker green, the sides of genæ and base of tibiæ blood-red, on the latter followed by a dusky patch and then by a narrow pale annulus; tarsi testaceous. Tegmina brownish-olive with a narrow, but well defined, median longitudinal testaceous vitta on each, running from the base to the apex. Basal joints of antennæ pale, beyond bright red.

Length of body, ♂, 15.5 mm., of antennæ, 9.5 mm., of pronotum, 4 mm., of tegmina, 11.5 mm., of hind femora, 10.5 mm.

Habitat.—A single male collected during early April at Demerara, British Guiana, by R. J. Crew. (Coll. L. Bruner.)

Genus HISYCHIUS Stål.

Hisychius STÅL, Bihang. Svensk. Akad. Handl., V, no. 4, pp. 44, 89 (1878).

The representatives of the present genus of apterous locusts are confined to tropical America and mostly to the northern half of South America. Three species have thus far been characterized, and now a fourth is added. These may be separated by the annexed synoptical key.

SYNOPSIS OF THE SPECIES OF HISYCHIUS.

A. Antennæ linear. Fastigium of the vertex declivant.

b. Knees of hind femora concolorous. Spines of hind tibiæ entirely black.

c. Larger (♀, 45 mm. long). Lower outer carina of discoidal area of hind femora adorned with alternating conspicuous black teeth, or spines.
[Peru.].....*nigrispinus* Stål.

cc. Smaller (♀, 33 mm. long). Lower outer carina of discoidal area adorned with small inconspicuous teeth. [Para, Brazil.]...*brasiliensis* sp. nov.

plainly dentate. Outer margin of the hind tibiæ with six spines in addition to the apical spine. Prosternal spine small, slender, conical on a broad heavy base.

Length of body, ♀, 33 mm., of pronotum, 6 mm., of hind femora, 19 mm.

Habitat.—Para, Brazil, a single ♀, where it was taken during the month of April by H. H. Smith. The type is deposited in the Carnegie Museum.

Group LEPTYSMÆ and Allies.

There are in America a number of genera of long-winged, slender, cylindrical locusts, of nearly uniform greenish color, which have the margins of their hind tibiæ developed into more or less acute lamellæ, which aid these semi-aquatic locusts in swimming, when, accidentally or otherwise, they find themselves in water. The following table is an attempt at a preliminary arrangement of the genera.

TABLE FOR SEPARATING THE GENERA OF LEPTYSMÆ AND ALLIES.

- A. Posterior tibiæ slightly expanding apically, the margins acute.
 - b. Mesosternal lobes with their inner margins nearly straight and touching for most of their length. Tegmina acuminate.
 - c. Fastigium of the vertex as long as, or longer than, the longest diameter of the eyes.
 - d. Fastigium of the vertex provided with decided longitudinal grooves or sulci.
 - e. The vertex furnished with but a single longitudinal groove.
 - f. Form of insect cylindrical, the fastigium with its sides rounded, and the median sulcus of nearly equal width throughout.

Leptyisma Stål.
 - ff. Form of insect more robust, the fastigium with its sides straight, and the median sulcus narrowing rapidly behind.

Columbacris gen. nov.
 - ee. The vertex furnished with more than one longitudinal groove.
 - f. Vertex with four such grooves. *Leptysmima* Giglio-Tos.
 - ff. Vertex with many grooves. *Oxyphyma* Saussure.⁶
 - dd. Fastigium of the vertex without definite longitudinal grooves or sulci. *Cylindrotettix* Bruner.
 - cc. Fastigium of the vertex shorter than the longest diameter of the eyes.

Stenacris Walker.

⁶ The genus *Oxyphyma* Saussure (*Rev. Zool.*, XIII, p. 156, 1861) is placed in this group on the authority of W. F. Kirby (*Syn. Cat. Orthopt.*, III, p. 412, 1910). Saussure's description is so meager, however, that its exact location is somewhat problematical. The habitat of Saussure's insect is also doubtful.

- bb. Mesosternal lobes with their inner margins more or less distant.
- c. Posterior margin of the pronotum rounded.
- d. Tubercle of the prosternum transverse, broad, the apex truncate to emarginate.....*Oxybleptella* Giglio-Tos.
- dd. Tubercle of the prosternum conical, more or less acute.
- e. Body very graceful, or slender. The front strongly oblique. Head much exerted, conical. Antennæ distinctly ensiform. Eyes rather elongate, viewed from above strongly convergent, meeting at an acute angle. Pronotum distinctly dilated posteriorly, the lower edge of sides straight, oblique. Tegmina plainly dilated towards the apex.
Inusia Giglio-Tos.
- ee. Body more robust. Front less oblique. Head only gently exerted, not conical. Antennæ filiform, or with immediate basal segments alone flattened. Eyes not at all, or but little, elongated, when viewed from above slightly convergent, forming an obtuse angle. Pronotum not, or but little, dilated posteriorly; the lower edge of sides straight on posterior half, emarginate on anterior half. Tegmina narrowed toward the apex.
- f. Pronotum cylindrical, the dorsum straight viewed laterally, the metazona not elevated. Frontal costa below the ocellus and the lateral carinae of the face subobsolete. Eyes rather oblique, less prominent.
- g. Head back of the eyes not narrowing posteriorly; eyes less prominent; antennæ somewhat incrassate, the immediate basal joints flattened; anal field of tegmina pallid. Mesosternal lobes distant.....*Stenopola* Stål.
- gg. Head back of eyes narrowing posteriorly; eyes strongly prominent. Antennæ linear; tegmina ferruginous, the anal field concolorous. Mesosternal lobes less distant.
Oxyblepta Stål.
- ff. Pronotum gently dilated posteriorly, the dorsum when viewed laterally sinuate, subselliform, the metazona gently elevated, the humeral angles rather distinct. Frontal costa and lateral carinae of the face distinct. Eyes less oblique and strongly prominent.....*Henia* Giglio-Tos.
- cc. Posterior margin of the pronotum obtusangulate, sometimes truncate, entire, or emarginate at middle.
- d. Angle of the posterior margin of the pronotum entire, not incised. Tegmina greatly surpassing the hind femora.
- e. Tegmina with their apices subacuminate. Frontal costa not prominent between the antennæ. Eyes less strongly convergent and not distant from anterior edge of pronotum.
Paracornops Giglio-Tos.
- ee. Tegmina with their apices distinctly rounded. Frontal costa

prominent between the antennæ. Eyes quite strongly convergent, and sometimes distant from the anterior edge of the pronotum.

- f.* Frontal costa obliterated on lower half of face. Antennæ more than twice the length of the pronotum. The latter smooth.

Euparnops Scudder.

- ff.* Frontal costa continued below the middle of the face. Antennæ one-half longer than the head and pronotum combined. The latter gently punctulate. *Cornops* Scudder.

- dd.* Angle of the posterior margin of pronotum incised or emarginate. Tegmina not surpassing the hind femora.

- e.* Frontal costa percurrent, sulcate throughout. Fastigium of the vertex subhorizontal.

- f.* Prosternal tubercle large and broadly transverse, its apex broadly emarginate. Hind margin of pronotum truncate. Tegmina and wings much abbreviated, lateral.

Eumastusia Bruner.

- ff.* Prosternal tubercle small, pyramidal, acute. Hind margin of pronotum obtusangulate. Tegmina and wings three-fifths the length of abdomen. *Mastusia* Stål.

- ee.* Frontal costa subobsolete below the ocellus, not sulcate. Fastigium declivant. *Tetratænia* Stål.

- AA.* Posterior tibiæ not at all, or but little, expanded apically, the margins rounded.

Copiocera Burmeister.

Genus LEPTYSMA Stål.

Leptysma STÅL, Recens. Orthopt., I, pp. 42, 85 (1873).

At least a dozen distinct species of tropical American locusts are referable to the genus *Leptysma* Stål. These insects are subaquatic by nature, hence their haunts along the margins of streams, in swamps, and on low, wet grounds, where rank grass-like vegetation abounds.

Although the present collection contains at least a half dozen distinct forms, half of which are new, the lack of material precludes the attempt to monograph the genus. The species *marginicollis* Serville and *mexicana* Saussure plainly belong to a distinct genus from the remainder of the forms referred here.

103. *Leptysma gracilis* Bruner.

Leptysma gracilis BRUNER, Proc. U. S. Nat. Mus., XXX, p. 658 (1906).

Habitat.—Specimens of this insect are at hand from Chapada, Brazil (H. H. Smith). The type locality is São Paulo, Brazil (Hempel).

This is the next to the smallest of the known species, and, although not fully characterized in the paper cited, is so characteristic that it cannot be mistaken.

104. **Leptysma dorsalis** (Burmeister).

Mesops dorsalis BURMEISTER, Handb. Ent., II, p. 610 (1838).

Habitat.—Chapada, Brazil, during the month of May (H. H. Smith).

The present writer considers *dorsalis* distinct from the next species.

105. **Leptysma filiformis** (Serville).

Opsomala filiformis SERVILLE, Ins. Orthopt., p. 593 (1839).

Leptysma filiformis STÅL, Recens. Orthopt., I, p. 85 (1873).

Habitat.—Specimens, which have been referred here, come from both Benevides and Chapada, Brazil. They were taken during July and August by H. H. Smith.

106. **Leptysma obscura** (Thunberg).

Truxalis obscura THUNBERG, Nova Acta Upsal, IX, pp. 77, 79 (1827).

Leptysma obscura STÅL, Recens. Orthopt., I, p. 86 (1873).

Habitat.—Chapada, Brazil, during the months of May to October inclusive, an extensive series of both sexes (H. H. Smith).

107. **Leptysma intermedia** sp. nov.

Belonging in the first division of the genus, and related to *L. argentina* and *L. gracilis*, but differing from both of them in its larger size and somewhat more robust form. A species with well-marked longitudinal lateral pallid stripes bordered above by piceous. Tegmina and wings comparatively shorter than in the related species.

Head horizontal, the occiput slightly shorter and somewhat narrower than the pronotum; eyes elongate lentiform, plainly longer than the anterior edge of the cheeks below them, separated above by a linear space; fastigium about equal to one of the eyes in length, slightly depressed anteriorly, gently acuminate, the lateral margins gently arcuate and faintly raised, median longitudinal sulcus not profound, becoming more pronounced anteriorly. Front viewed in profile nearly straight and horizontal, the frontal costa of moderate width and sulcate throughout, the lateral walls somewhat approaching and becoming less pronounced just below the ocellus. Antennæ robust, ensiform, about reaching the base of hind femora. Pronotum cylindrical, punctulate throughout, sparsely and faintly on the anterior, and quite closely and more strongly, on the posterior lobe; median carina inconspicuous, but plainly visible throughout, the

transverse sulci plain, the last about one-third of the distance from the hind to the front margins, these latter broadly rounded. Tegmina and wings narrow, their apex acuminate and extending about one-sixth of their length beyond the tip of the abdomen. Hind femora rather slender, about two-thirds the length of the abdomen; hind tibiae quite strongly expanded apically, the external edge provided with nine to eleven spines, somewhat irregularly arranged. Prosternal spine inflated apically, strongly punctulate and hirsute, directed caudad. Last ventral segment elongate, wedge-shaped, its apex entire or without the lateral backwardly directed spines or teeth; supra-anal plate provided with two short parallel black carinae at middle of base and one wart-like projection of the same color, while the hind margin of the preceding segment is also marked with four of these spots.

General color pale grass-green above, the underside more pallid; sides of head, lower edges of sides of pronotum, and middle of pleura conspicuously marked by a rather wide stripe of white, which is bordered above by piceous; eyes testaceo-ferruginous, front and antennae brown with a vinaceous tinge. Dorsum of abdomen tinged with orange-testaceous or ochraceous.

Length of body, ♂, 35 mm., of pronotum, 4.85 mm., of tegmina, 29.5 mm., of hind femora, 13.5 mm., of antennae, 13 mm.

Habitat.—The type bears the label "Uacarizal, Feb." It was taken by H. H. Smith, and is deposited in the Carnegie Museum. Eight other specimens, 7 ♂♂ and 1 ♀ are referred to this species. They were taken at Corumba during the month of March.

108. **Leptysma uniformis** sp. nov.

Very similar in size and structure to *L. filiformis*, but differing from that insect both in color and some structural features. Quite uniformly grass-green and without the lateral longitudinal pale stripes found in the majority of the species of the genus.

Form slender, cylindrical, the head horizontal, including the fastigium about one and one-half times the length of the pronotum; fastigium moderately large, its sides gently convergent anteriorly, the immediate apex more or less acuminate, its center strongly longitudinally canaliculate; eyes large, but not prominent, in the males a very little exceeding the anterior margin of the cheek in length, in the female about equaling it, separated above by a space

one-half the diameter of the first antennal joint. Antennæ moderately large and heavy, regularly ensiform, the basal half triquetrous, somewhat exceeding the head and pronotum taken together. Frontal costa quite prominent, its sides parallel, sulcate throughout, the ocellus large and situated below the middle. Pronotum cylindrical, closely, regularly, and quite deeply, punctulate, both the anterior and posterior margins broadly rounded, the median carina plainly visible throughout (♀) or interrupted on anterior lobe (♂). Tegmina and wings long, narrow, acuminate, greatly surpassing the apex of both the hind femora and the abdomen. Hind femora slender, their apex extending a trifle beyond the outer margin of the fifth abdominal segment; hind tibiæ slender, but little expanded apically, the outer margin bearing eight to nine spines, which are somewhat irregularly arranged. Subgenital plate, or last ventral segment of male abdomen, somewhat elongate and tapering, the apex emarginate and terminating with short, blunt, lateral teeth; the contorted process above of moderate size, laterally compressed, and provided at apex with a slightly curved finger. Supra-anal plate quadrate on basal half, reduced to one-half the width and spatulate on apical half, slightly sulcate at middle throughout, on the basal half provided with two black longitudinal carinæ and two tubercles of the same color. Prosternal spine strongly hirsute, subcylindrical, quite long, and strongly directed to the rear.

Length of body, ♂, 31 mm., ♀, 42 mm.; of pronotum, ♂, 4 mm., ♀, 5.35 mm.; of tegmina, ♂, 29 mm., ♀, 39 mm.; of hind femora, ♂, 11 mm., ♀, 15 mm.; of antennæ, ♂, 11.5 mm., ♀, 15 mm.

Habitat.—The material comprising this species comes from Chapada, near Cuyaba, Matto Grosso, Brazil. The various specimens were collected by H. H. Smith, during the months of July, August, and September. The types are deposited in the Carnegie Museum.

109. **Leptysma grossa** sp. nov.

Quite large (50 mm. in length) and with an unusually large head and wide ensiform antennæ. Tegmina long, narrow, and very acuminate; the hind wings apparently wanting (at least this is true of the single ♀ specimen at hand). Sides of head, lower edges of pronotum and pleura, provided with a rather conspicuous pale band, which extends from the lower anterior edge of each eye to the insertion of the hind femora. Face and pectus somewhat hirsute.

Head large and coarse, nearly twice as long as the pronotum, the front edge of which it slightly exceeds in width; eyes of moderate size, not prominent, separated by a space equal to about one-half the diameter of the basal antennal joint; the fastigium very large and three-fourths the length of the occiput, deeply and broadly sulcate longitudinally at middle, separated from the vertex by a transverse sulcus, and bordered at sides and behind by a prominent rounded carina; lateral ocelli small, wholly within the deflexed area of the fastigium bounded by the lateral carina referred to above. Antennæ large, coarse, somewhat longer than the combined length of the head and pronotum, only the apical joints filiform; inserted considerably in advance of the lateral ocelli. Face nearly straight viewed in profile, the frontal costa quite prominent, of nearly equal width throughout and fairly deeply sulcate in advance of a line drawn between the lower anterior edge of the eyes, below or back of this shallow and fading. Pronotum somewhat widest in front, closely and minutely punctulate, the median carina distinctly visible throughout; anterior and posterior margins of disk rounded, the latter very gently emarginate at middle. Tegmina narrow, a fourth longer than the abdomen, the longitudinal veins fairly prominent, cross-veins faint, wings either very minute or entirely aborted. Anterior and middle legs minute; hind femora slender, reaching to middle of the fifth abdominal segment; hind tibiæ expanding but gently apically, their lateral edges scarcely laminate, nine to eleven spines externally. Valves of the ovipositor short, robust, supplied with strong apical and lateral teeth as well as with a discal row on base of upper pair. Prosternal spine slender, the apical half strongly bent to the rear, its apex rounded; anterior edge of mesosternum quite strongly advanced as a coarse blunt projection towards the middle of the prosternum.

General color pale testaceous. Sides of head, lower edges of pronotum and middle of pleura longitudinally striped with dirty white bordered by dull olivaceous. Antennæ, fastigium, and tegmina above, more or less tinged with rufous. Hind tibiæ tinged with pale glaucous or greenish gray. Pulvilli, tarsi beneath, and tibial spines, more or less piceous.

Length of body, ♀, 50 mm., of antennæ about 20 mm., of head to tip of fastigium, 12.5 mm., of occiput 6 mm., of pronotum, 6.5 mm., of tegmina, 49 mm., of hind femora, 23.5 mm.

Habitat.—The single female at hand, the type, comes from Chapada,



Brazil, and is contained in the Carnegie Museum. It was in all probability taken by H. H. Smith.

Genus COLUMBACRIS gen. nov.

Related to *Leptyσμα*, *Stenacris*, *Cylindrotettix*, and *Leptysmia*, but differing from all of these in the form and comparative size of the fastigium of the vertex and the last ventral segment of the male abdomen.

Head large, moderately robust, horizontal, the face very oblique, slightly wider than the anterior edge of the cylindrical pronotum, which it equals in length. Vertex between the eyes about as wide as the greatest width of the antennæ, the fastigium large, a trifle exceeding the eyes in length, mitriform, the disk but gently sulcate on basal half, the front acuminate, the sides gently bowed and carinate. Frontal costa very prominent above, and broadest between the antennæ, profoundly sulcate throughout, continued to the base of the clypeus. Lateral or facial carinæ inconspicuous. Eyes prominent, very strongly oblique, and likewise divergent posteriorly, elongate-elliptical, as long as the anterior edge of the cheeks below them. Lateral ocelli large, situated on the lateral carinæ of the fastigium just opposite the insertion of the basal joint of the antennæ. The latter arising from a rather deep scrobe plainly in advance of the upper anterior extremity of the eyes. Pronotum cylindrical, rather closely and minutely punctate, most closely so on the posterior lobe and near the anterior border; second and third transverse sulci continuous, plain, the first rather faint and present only on the disk; front and hind margins rounded, the posterior about one-half as long as the anterior lobe. Lower lateral edges of pronotum straight on posterior half, oblique on anterior half. Tegmina of medium width, elongate-lanceolate, a little surpassing the apex of the abdomen. Wings long, narrow, apex of anterior field acuminate, the veins heavier and greenish, the radial field vitreous, delicate, and with more or less dusky veins. Hind femora rather robust and elongate for the group, the apex not quite reaching the base of the supra-anal plate; hind tibiæ strongly dilated apically, the margins sharply laminate, seven to eight-spined externally and twelve to thirteen-spined internally. Mesosternal lobes contiguous for about one-half their length. Prosternal spine heavy, enlarged, and bent to the rear on apical half, strongly hirsute. Supra-anal plate rather broad on basal half, with

a wide raised margin, then contracted to a little less than one-half its basal width, and projected between the cerci as a widely hollowed finger as far as the length of the wide basal half. Cerci very broad at base, suddenly contracted from above to about one-fourth the width, directed backward, then suddenly upward and tapering, the apex transverse, acuminate, piceous; the base of supra-anal plate provided with four to six piceous tubercles.

At first glance the representatives of this genus remind one of *Inusia*, but the contiguous mesosternal lobes place it along with the genera referred to above in connection with the comparisons drawn between genera. It does not come very close to *Leptysma* as will be seen by a comparison of the size and form of the fastigium of the vertex. The same may also be said on comparing it with *Stenacris*. Its ensiform antennæ will readily separate it from the latter genus.

110. **Columbacris caudata** sp. nov.

Uniformly pale grass-green, without traces of paler and darker lateral, longitudinal bands. Its general appearance is that of a slender *Arnilia* (*Stenacris*), but it is quite distinct from the various representatives of that genus, as indicated by the elongate triangular vertex, the very strongly oblique front, the decidedly ensiform antennæ, and the very pointed and slightly downwardly curved last ventral segment of the male abdomen.

Length of body, ♂, 31 mm., of pronotum, 4.6 mm., of tegmina, 25 mm., of hind femora, 13.5 mm., of antennæ, 9.5 mm., or about as long as the combined length of the head and pronotum.

Habitat.—The type, a male, comes from Corumba, Brazil, where it was taken during March by H. H. Smith. It is the property of the Carnegie Museum.

An additional specimen, also a male, without antennæ and hind legs is at hand. It comes from the same locality and bears a like date. This second specimen has a slightly slenderer fastigium of the vertex than the type, but otherwise is practically the same.

Genus LEPTYSMINA Giglio-Tos.

Leptysmia GIGLIO-TOS, Boll. Mus. Zool. Anat. Torino, IX, no. 184, p. 34 (1894).

The present genus is composed of several medium-sized sub-cylindrical locusts, which bear a rather striking resemblance to the species of *Leptysma*, but which are readily separated from the representatives of that genus by the four-grooved fastigium of the vertex.

111. *Leptysmina rosea* Giglio-Tos?

Leptysmina rosea GIGLIO-TOS, Boll. Mus. Zool. Anat. Torino, IX, no. 184, p. 35 (1894).

Habitat.—Specimens from the Rio Paraguay below Asuncion are referred to this species (H. H. Smith). They differ somewhat from the description given by Giglio-Tos, but not sufficiently to warrant describing them as new. See also note after *L. gracilis*.

112. *Leptysmina gracilis* sp. nov.

Similar to, but decidedly smaller and slenderer than *L. rosea* Giglio-Tos. Sides of head from lower edge of eyes, the lower edges of pronotum and pleura pale-striped, bordered above by piceous, which latter color gradually fades into the testaceo-olivaceous, or testaceo-brunneous, of the upper side.

Head horizontal, a trifle narrower than the front edge of the pronotum, its sides parallel to the eyes; latter fairly prominent, and a trifle longer than the anterior edge of the cheeks, with a metallic lustre, and narrowly banded lengthwise alternately with piceous and testaceous, separated above by a space about one-half (♂) or two-thirds (♀) the diameter of the basal antennal joint; fastigium of the vertex as in *rosea*, but with the longitudinal carinae and sulcations less profound than in that species. Frontal costa of equal width and moderately sulcate throughout, viewed laterally nearly straight. Antennae with the basal segments flattened, subtriquetrous, a little longer than the head and pronotum combined in both sexes. Pronotum closely and rather finely punctulate throughout, the median carina visible, and of equal prominence throughout, the transverse sulci faint, the last one cutting it at about one-third of the length from the hind margin; posterior margin broadly rounded, the anterior edge truncate at middle. Tegmina lanceolate, their apex acuminate, and extending beyond the tip of the abdomen in both sexes. Femora a little robust, the anterior and middle pair short, the posterior ones evenly tapering, reaching to, or just beyond, the apex of the sixth abdominal segment in both sexes. Last ventral segment of male abdomen elongate-acuminate, the sides developed into lobe-like projections, as described in connection with the diagnosis of *L. rosea*. Supra-anal plate very similar to that of the other described species. Prosternal spine variable, but not laterally compressed.

General color above pale testaceo-olivaceous. Sides as described

above. Legs and under side greenish flavous; hind tibiae amber-yellow, twelve- to fourteen-spined on outer edge.

Length of body, ♂, 28–30 mm., ♀, 37 mm.; of pronotum, ♂, 4.6 mm., ♀, 5.9 mm.; of tegmina, ♂, 23–27 mm., ♀, 32 mm.; of hind femora, ♂, 12–12.5 mm., ♀, 15 mm.

Habitat.—The collection contains three males and one female specimen of this insect, which were collected at Corumba, Brazil, three of them were taken during March and the other during July (H. H. Smith). Type in the Carnegie Museum.

There are two male specimens of another species of the genus at hand which were taken below Asuncion on the Rio Paraguay. I have referred them to *L. rosea* Giglio-Tos with some doubt, as they are perceptibly larger than the measurements given for that species. In structure these latter specimens (♂) are about as robust and nearly as large as the females of *gracilis* just described. They have been temporarily labeled as *Leptysmia tenuipennis* sp. nov.

Genus STENACRIS Walker.

Stenacris WALKER, Cat. Dermapt. Salt. Brit. Mus., IV, p. 651 (1870).

Arnilia STÅL, Recens. Orthopt., I, pp. 42, 85 (1873).

This is still another of the genera of the subaquatic locusts belonging to America. The various forms are all tropical, or subtropical, in their distribution. Seven distinct species are credited to South America by Kirby. Only one of these has been recognized among the material at hand.

113. *Stenacris gracilis* (Giglio-Tos).

Arnilia gracilis GIGLIO-TOS, Boll. Mus. Zool. Anat. Torino, XII, no. 302, p. 30 (1897).

Habitat.—Corumba, Brazil, lowlands, during March and December (H. H. Smith).

Genus OPSOMALA (Serville).

Opshomala SERVILLE, Ann. Sci. Nat., XXII, p. 267 (1831).

Opsomala BURMEISTER, Handb. Ent., II, p. 610 (1838).

Opomala AGASSIZ, Nomencl. Zool. Ind. Univ., p. 262 (1846).

Chrostheipus BOLIVAR, Ann. Mus. Genova, XXXIII, p. 137 (1893).

The insects which Kirby separates under the present generic name resemble those belonging to *Stenacris* Walker, but have a less complicated structure of the last ventral segment, or subanal plate, of the male abdomen. They too belong to tropical America, and all but one are confined to the South American continent.

114. *Opsomala viridis* Serville.

Opshomala viridis SERVILLE, Ann. Sci. Nat., XXII, p. 268 (1831).

Opsomala viridis BURMEISTER, Handb. Ent., II, p. 611 (1838).

Arnilia viridis BRUNER, Biol. Cent. Amer., Orthopt., II, pp. 254, 255 (1908).

Habitat.—Specimens, which are referable to this species, come from Rio de Janeiro and Corumbá, Brazil, where they were collected during November and March by H. H. Smith.

115. *Opsomala coccineipes* (Bruner).

Arnilia coccineipes BRUNER, Proc. U. S. Nat. Mus., XXX, p. 659 (1906).

Opsomala coccineipes KIRBY, Syn. Cat. Orthopt. Brit. Mus., III, p. 419 (1910).

Habitat.—Corumbá, Brazil, during the months of March to July inclusive (H. H. Smith).

116. *Opsomala stali* sp. nov.

A large and robust insect, most nearly related to *O. coccineipes* Bruner and *O. viridis* Serville, as shown by the synoptic table of the species of this genus, published in the second volume of the Orthoptera of the *Biologia Centrali-Americana*, pp. 254-255, May, 1908.

Size large, the head robust, ascending; occiput about as long as the anterior lobe of the pronotum, gently arcuate; vertex about as wide as the frontal costa at the ocellus, depressed anteriorly and separated from the fastigium by a profound transverse sulcus; the fastigium ascending, triangular, rather large, a trifle broader than long, the lateral margins gently arcuate, the apex very gently acuminate, the disk rugose; lateral ocelli large, situated on the lateral carinæ very near the upper anterior extremity of the eyes. Frontal costa prominent, sulcate throughout, the lateral walls heavy, smooth, meeting above in an acuminate angle, the apex of which just touches the depressed point of the fastigium. Lateral facial carinæ rather strongly divergent in their lower half, where they gradually diminish in prominence. Front shallowly, but coarsely, punctulate. Antennæ coarse, subensiform, the basal joints somewhat depressed or flattened, their inner lower surface quite strongly infuscated. Pronotum cylindrical, rather closely and strongly punctulate, the anterior and posterior margins above rounded; median carina inconspicuous, but visible throughout, cut by all three transverse sulci, by the hind one most profoundly. Tegmina and wings comparatively wide, surpassing the tip of the abdomen fully one-third of an inch (♀), the apex of the former

acuminate. Hind femora rather long, robust; hind tibiae heavy, evenly expanding apically, the edges sharp, ten-spined externally, fourteen-spined internally. Prosternal spine moderately robust, a little compressed laterally, broadly rounded apically and gently directed to the rear.

General color flavo-testaceous tinged with green on head, pronotum, pleura, and tegmina (possibly pale grass-green in life). Sides of head below the eyes, lower edges of pronotum, and lower portion of pleura, marked by a rather wide pallid band bordered above by a faint trace of piceous. Under side and legs bright flavous; the posterior tarsi rufous. Antennal joints on basal two-thirds strongly marked with black internally and below. Wings strongly infuscated.

Length of body, ♀, 44 mm., of pronotum, 6.75 mm., of tegmina, 40 mm., of hind femora, 20.5 mm.

Habitat.—A single female, the type, was taken at Chapada, near Cuyaba, Matto Grosso, Brazil, in June by H. H. Smith. It is deposited in the Carnegie Museum.

On account of the robust structure of the head and thorax of this insect it has a strongly wedge-shaped form when viewed laterally, the abdomen being evenly slenderer from the base to its apex.

117. *Opsomala interior* (Bruner).

Arnilia interior BRUNER, Biol. Cent. Amer. Orthopt., II, p. 254 (1908).

Opsomala interior KIRBY, Syn. Cat. Orthopt., III, p. 419 (1910).

Habitat.—Corumba and Cuyaba, Brazil, on lowlands during March (H. H. Smith).

Genus OXYBLEPTELLA Giglio-Tos.

Oxybleptella GIGLIO-TOS, Boll. Mus. Zool. Anat. Torino, IX, no. 184, p. 33 (1894).

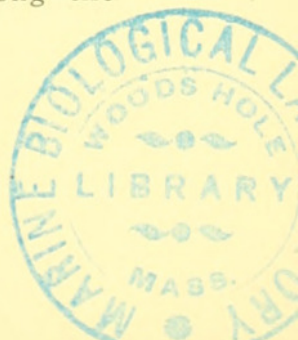
Two representatives of this genus are known. They both belong to the region now under consideration.

118. *Oxybleptella sagitta* Giglio-Tos.

Oxybleptella sagitta GIGLIO-TOS, Boll. Mus. Zool. Anat. Torino, IX, no. 184, p. 33, pl. 1, fig. 7 (1894).

Habitat.—Specimens, taken at Chapada, Brazil, during the months of May, June, and July by H. H. Smith, are referred to this species.

James A. G. Rehn described a second species of the genus from this same locality (*Proc. U. S. Nat. Mus.*, XXXVI, pp. 136-139, figs. 21, 22, 23, 1909). It has not been definitely recognized among the material before me now.



Genus OXYBLEPTA Stål.

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

Stenopola STÅL, Bihang. Svensk. Akad. Handl., V, no. 4, p. 39 (1878).

This is still another genus of the subaquatic locusts which is confined to tropical South America. At least five species are known. Two of them are among the material now being studied.

119. *Oxyblepta puncticeps* (Stål).

Opsomala puncticeps STÅL, Eugen. Resa, Orthopt., p. 325 (1860).

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

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

Oxyblepta puncticeps KIRBY, Syn. Cat. Orthopt. Brit. Mus., III, p. 415 (1910).

Habitat.—Corumba, Brazil, during March to July inclusive (H. H. Smith).

120. *Oxyblepta bohlsi* (Giglio-Tos).

Stenopola bohlsi GIGLIO-TOS, Zool. Jahrb. Syst., VIII, p. 813 (1895).

Oxyblepta bohlsi KIRBY, Syn. Cat. Orthopt. Brit. Mus., III, p. 416 (1910).

Habitat.—Corumba and Chapada, Brazil, where they were collected during the months of March to July inclusive by H. H. Smith.

Genus PARACORNOPS Giglio-Tos.

Paracornops GIGLIO-TOS, Boll. Mus. Zool. Anat. Torino, IX, no. 184, p. 31 (1894).


Cornops STÅL (*nec* SCUDDER), Bihang. Svensk. Akad. Handl., V, no. 4, p. 40 (1878).

The representatives of this genus are fairly abundant at suitable locations throughout the tropical parts of Central and South America. Four species have been recognized heretofore and two others are now added.

121. *Paracornops longicorne* sp. nov.

About the size of *P. longipenne* De Geer, but differing from that insect by having a larger head with more prominent eyes and a very slender and short acuminate, instead of a long blunt cylindrical, prosternal spine.

Head moderately large, plainly broader than the anterior margin of the pronotum; the eyes prominent, viewed from above their hind margins forming a little less than a right angle, but greater than in the insect that has been determined and which is referred to in the synoptic key as *longipenne* (*Proc. U. S. Nat. Mus.*, XXX, p. 662, 1906); width of vertex about equal to the diameter of the first antennal joint (♂) or fully one and one-half times as great (♀), the fastigium

very gently depressed, about as long as (σ^7) or a little less (φ) than its greatest width, the antero-lateral margins raised, the disk slightly and irregularly rugose, not longitudinally sulcate, but with its anterior portion a little lower than the bounding wall. Frontal costa viewed laterally fairly prominent above, straight, continuous to the clypeus; plain above the antennæ, coarsely punctate and sulcate below. Antennæ filiform, in the female a very little longer than the combined length of the head and pronotum, in the male slightly longer than the hind femora. Front quite profusely and strongly punctulate, the lateral carinæ prominent, divergent, and somewhat bowed below the middle. Pronotum rather strongly punctulate, of about equal width in front and behind, a little contracted laterally at middle, the transverse sulci visible throughout, but not at all prominent, the last one located decidedly back of the middle; median carina slight, but visible throughout; anterior margin broadly and evenly rounded, the hind margin obtusangulate, lower lateral margins strongly sinuate, the posterior angle rounded. Pleura punctulate. Tegmina and wings narrow, the former with about one-fourth (σ^7) or one-sixth (φ) of their length extending beyond the tip of the abdomen, their apex plainly rounded. Hind femora moderately robust, evenly tapering, as long as (φ), or somewhat longer than (σ^7), the abdomen, the genicular lobes acuminate; hind tibiæ gently expanded apically, the lateral edges plainly, but not greatly, lamellate; external row of spines, six, the internal row, nine in number. Interspace between the mesosternal lobes a little wider than long. Prosternal spine small, acuminate, emanating from the rear of a low rapidly narrowing pyramidal base. Male abdomen evenly and rapidly tapering, the last ventral segment abruptly upturned and contracted at sides so as to form a small pyramidal apex; supra-anal plate of peculiar form, the basal half being a very heavily rimmed depressed semi-circle with two short sub-parallel median carinæ and a lateral basal tubercle of black; the apical half a much narrower -shaped projection which is also very strongly rimmed. Cerci of the curved type typical of this group of insects, the apical half slightly transverse and gently spatulate; valves of the ovipositor short and rather strongly margined with teeth, the outer margin of the upper pair provided with four prominent teeth.

Occiput, disk of pronotum, and dorsal edges of the folded tegmina in the male dark olivaceous green, in the female tinged with brown; sides of head back of eyes, upper half of sides of pronotum and upper

portion of meso- and meta-pleura together with the disk and anterior margin of the elytra in the male shining black, becoming paler towards the apex of the latter, in the female piceous, gradually fading into the brownish olive of the dorsum; below this line and in the face bright greenish yellow. Hind tibiae greenish glaucous, infuscated apically. Hind femora with the knees of male infuscated externally, internally black, in the female ferruginous; base of hind tibiae marked above with a longitudinal black patch. Antennae basally testaceous to ferruginous, becoming infuscated on apical half.

Length of body, ♂, 19.75 mm., ♀, 26 mm.; of pronotum, ♂, 3.9 mm., ♀, 4.75 mm.; of tegmina, ♂, 20 mm., ♀, 22 mm.; of hind femora, ♂, 11.75 mm., ♀, 13.5 mm.; of antennae, ♂, 13 mm., ♀, 8.5 mm.

Habitat.—The types, ♂ and ♀, come from Para, Brazil, where they were collected during the month of June. They are the property of the Carnegie Museum.

122. *Paracornops dorsatum* sp. nov.

Quite similar in color and general appearance to *P. longipenne*, or the insect that has been determined as that species, but smaller and decidedly slenderer. Prosternal spine transverse at base, evenly and quite abruptly tapering to the acuminate apex, which is directed gently towards the front.

Head of moderate size, no wider than the front edge of the pronotum; face and cheeks below the eyes profusely, but not very coarsely, punctulate. Eyes subglobose, not prominent, slightly longer than the anterior edge of the cheeks immediately below them, their hind margins forming nearly a right angle, separated at the vertex by a space slightly greater than the widest portion of the frontal costa; fastigium of the vertex about as long as wide, shallowly sulcate at middle anteriorly, the raised margins meeting in a right angle. Frontal costa not prominent, of nearly equal width throughout, punctulate and shallowly sulcate from between the antennae almost to the clypeus, where the lateral carinae become obsolete. Facial carinae divergent, straight, fairly prominent. Antennae filiform, a little longer than the head and pronotum combined. Pronotum subcylindrical, rather closely and granularly punctulate, the hind lobe a little expanding, its posterior extremity obtusangulate; median carina visible throughout, severed only by the last transverse sulcus, which is inconspicuous

like the others. Tegmina of moderate width, a little surpassing the tip of the abdomen, their apex rounded. Hind femora normal, their external genicular lobes scarcely acuminate; hind tibiae gently expanded apically, the outer margin six-spined, inner margin nine-spined. Mesosternal lobes separated by a quadrate space decidedly wider than long, about equal to one and one-half times the width of one of the lobes. Valves of the ovipositor strong and longer than usual, the apical hook long and strong; the lateral edges of the basal portion four- or five-toothed, the outer one much the largest.

General color brunneous above, very pale flavous below the dusky lateral lines and on the legs, possibly greenish yellow in life. Genicular region of hind femora and apical portion of hind tibiae infuscated. The dusky bands are dark piceous, almost jet-black next to the pallid lower parts, and gradually fading into the brownish upper parts.

Length of body, ♀, 22 mm., of pronotum, 4 mm., of tegmina, 19.5 mm., of hind femora, 11.75 mm.

Habitat.—The only specimen at hand, the type, was collected by H. H. Smith during November. It comes from Chapada, near Cuyaba, Matto Grosso, Brazil, and is in the collection of the Carnegie Museum.

123. *Paracornops aquaticum* Bruner.

Paracornops aquaticum BRUNER, Proc. U. S. Nat. Mus., XXX, pp. 662, 663 (1906).

Habitat.—Specimens of this insect are at hand which bear the labels, "Corumba, Brazil, lowlands." They were taken during the months of February and March by H. H. Smith.

The type specimen was taken by the writer at San Bernardino, Paraguay, during the month of September.

Genus EUMASTUSIA gen. nov.

Related to *Oxybleptella* GIGLIO-TOS, but differing from that genus chiefly in the emarginate pronotum and the greatly abbreviated tegmina and wings.

124. *Eumastusia koebelei* (Rehn).

Mastusia koebelei REHN, Proc. U. S. Nat. Mus., XXXVI, pp. 142-144, figs., 26, 27 (1909).

Habitat.—Chapada, near Cuyaba, Matto Grosso, Brazil, 1 ♂ and 1 ♀, August and September respectively (H. H. Smith).

Genus MASTUSIA Stål.

Mastusia STÅL, Bihang. Svensk. Vet.-Akad. Handl., V, no. 4, pp. 39, 84 (1878).

The genus *Mastusia* is entirely confined to South America, at least so far as known at present. Two species have been described previously, and now a third is added. The relationship of the present species to the other described forms is shown by the annexed synoptical table.

SYNOPSIS OF THE SPECIES OF MASTUSIA.⁷

A. Size larger (30 mm. or more in length).

b. General color olivaceous. Tegmina abbreviated, not greatly, if any, longer than the pronotum (♀ 32 mm. in length). Peru...*quadracarinata* Stål.

bb. General color grass-green. Tegmina more elongate, nearly the length of the abdomen (♂ 30 mm. in length). Upper Amazon.

spectabilis Bolivar.

AA. Size smaller (♀ 26 mm.). Tegmina and wings two-thirds the length of the abdomen. Wings blue.....*cæruleipennis* sp. nov.

125. *Mastusia cæruleipennis* sp. nov.

A medium-sized moderately robust species, in which the head is quite noticeably wider than the anterior edge of the pronotum. The tegmina and wings two-thirds the length of the abdomen, the former brown with a narrow pallid longitudinal line along the angle, the latter cærulean. Antennæ with the apical joint pallid.

Head rather large, somewhat obese, rounded on sides and occiput, considerably higher than long; the eyes fairly prominent, elongate oval, somewhat pointed above, a little longer than the anterior edge of the cheeks below them; vertex fairly wide, of the same width as the frontal costa between the antennæ, and provided with a deep coarse pit, which separates it from the fastigium; the latter short, fully twice as wide as long, its surface back of the lateral and anterior margin gently depressed; lateral ocelli large, ferruginous, located on a small deflexed triangular area just in advance of the upper portion of the eyes. Face somewhat oblique, viewed in profile straight; the frontal costa prominent, widely sulcate throughout, continued to the clypeus; lateral or facial carinæ prominent, divergent below, and reaching from the posterior extremity of the fastigium to the base of the mandible. Antennæ filiform, about as long as the head and

⁷ The *Mastusia koebeleri* Rehn belongs to a new genus (*Eumastusia*) more closely related to *Oxybleptella* Giglio-Tos than to *Mastusia*, as will be recognized by the widely transverse prosternal spine and other characters. It may be considered as the type of that genus.

pronotum combined, the basal joint quite large, nearly as great in diameter as the width of the vertex between the top extremity of the eyes, twenty-one-jointed. Pronotum cylindrical, quite strongly punctulate, most closely so on the hind lobe, on the upper field of the lateral lobes provided with two rather large quadrate glabrous patches; anterior and posterior margins of disk broadly rounded, the middle of hind edge a little emarginate; the three transverse sulci continuous, the posterior one most profound, the hind lobe slightly less than one-half the length of the front lobe. Tegmina and wings somewhat shorter than the abdomen, reaching to the posterior extremity of the sixth abdominal segment, the apex of the former rounded. Hind femora quite large and robust, somewhat passing the tip of the abdomen; the hind tibiae quite conspicuously expanded apically, their lateral edges strongly acute, seven-spined externally, ten-spined internally. Prosternal spine slender, erect, the apex acuminate and directed very gently to the front. Mesosternal lobes not touching on their inner edges, the space about half as wide as long. Valves of the ovipositor moderately long, the upper pair straight, robust, but little tapering, the apex obliquely docked, the outer margin finely serrate; lower pair slenderer, the outer third tapering and gently hooked, the outer margin also more or less closely serrate. Under-side of apical segments and valves of ovipositor strongly hirsute.

General color above brunneo-testaceous, the sides back of eyes piceous; below testaceous or flavous; hind femora olivaceous, above and externally, inside and below pale flavous; hind tibiae pale glaucous, the apical half of spines black; the tarsi infuscated. Antennae greenish at base, becoming strongly infuscated on apical half, the extreme apex dirty white.

Length of body, ♀, 26 mm., of pronotum, 5 mm., of tegmina, 13 mm., of hind femora, 15.5 mm.

Habitat.—Benevides, Brazil, H. H. Smith collector. The type is in the collection of the Carnegie Museum.

CHLOROHIPPUS gen. nov.

Related to both *Chrostheipus* Brunner v. Wattenwyl and *Copiocera* Burmeister, but differing from both of these genera as well as from *Epiprora* Gerstaecker in a number of respects. General form moderately robust, subcylindrical, the head, pronotum, and pleura densely and strongly punctulate, the former less densely so on occiput; anterior

and middle legs slender, short; hind legs robust and also rather short. Tegmina and wings considerably surpassing the apex of the abdomen, the former of nearly equal width on basal two-thirds or three-fourths, their apex acuminate.

Head large, robust, horizontal, somewhat broader than the front edge of the pronotum, the occiput nearly or quite as long as the pronotum, viewed laterally very gently arched; vertex horizontal, acuminate, a little longer than wide, the sides straight, somewhat laminate. Eyes small, not prominent, elongate pyriform, rather widely separated above. Frontal costa prominent between the antennæ, which are located opposite the upper third of the eyes, deeply sulcate, suddenly constricted and lowered and again widening in advance of the large ocellus, below this evanescent. Lateral or facial carinæ prominent, smooth, extending from near the outer edge of the antennal pits to the base of the mandibles where they unite with a transverse ridge which borders the lower face and forms a walled area of the front. Antennæ moderately robust, the basal joints depressed, giving to these members a subensiform appearance. Pronotum of moderate length, gently divergent behind, all three transverse sulci continuous, more or less sinuouse and severing the inconspicuous median carina, the posterior lobe a trifle shorter than the anterior lobe; anterior margin very broadly rounded, the hind margin subangulate; lower lateral edges gently sinuose, the posterior angle a right-angle, the immediate apex rounded. Tegmina slightly coriaceous, moderately long, the apical third or fourth tapering, the apex bluntly acuminate; wings transparent, delicate, a trifle more than twice as long as broad. Hind femora moderately robust, evenly tapering, two-thirds the length of the abdomen; tibiæ also robust, considerably shorter than the femora, seven- or eight-spined externally, nine-spined internally. Abdomen moderately large, tapering but little before the extreme apex; the valves of the ovipositor and cerci all finger-like, hairy, the latter unarmed with teeth or hardened apex for digging. Prosternal spine transverse, the apex entire; mesosternal lobes subangulate within, the interspace at middle about one-third of the width of one of the lobes.

126. *Chlorohippus roseipennis* sp. nov.

General color pale grass-green above. Anterior and lower edges of cheeks, lateral carinæ of face, lower margins of sides of pronotum

and lower portion of pleura, anterior and middle legs, lower half of hind femora, and venter flavous. Antennæ pallid on basal half above, black beneath and infuscated on apical half above. Lunules of hind femora ferruginous. Hind tibiæ oil-green, the spines black. Wings clear transparent rose-color on base, becoming very delicate cærulean on apical third, the veins concolorous. In one specimen the wing is tinged with very delicate gray-blue and has a rather large faint patch of smoky brown on the radial field towards the posterior border, and the basal nervures are delicate lavender. Eyes castaneous.

Length of body, ♀, 44 mm., of head 7.75 mm., of pronotum 6.75 mm., of tegmina, 37 mm., of hind femora, 16.5 mm., of hind tibiæ, 13 mm.

Habitat.—Chapada, near Cuyaba, Matto Grosso, Brazil, July and August (H. H. Smith). The type is deposited in the Carnegie Museum.

Genus *COPIOCERA* Burmeister.

Copiocera BURMEISTER, Handb. Ent., II, pp. 602, 611 (1838).

Glaphyracris WALKER, Cat. Dermapt. Salt. Brit. Mus., IV, p. 653 (1870).

The representatives of the genus *Copiocera* are all confined to tropical America, where they occur in damp localities in and about forests from Nicaragua to southern Brazil. Most of the species are dark-colored, varied on the abdomen with red or orange markings.

127. *Copiocera austera* Gerstæcker.

Copiocera austera GERSTÆCKER, Mitth. Ver. Neu-Vorpomm., XX, p. 36 (1889).

Habitat.—The specimens at hand are labeled "Rio de Janeiro," where they were taken in November by H. H. Smith.

Genus *CHROSTHEIPUS* Brunner v. Wattenwyl.

Chrostheipus BRUNNER V. WATTENWYL, Ann. Mus. Civ. Genov., Ser. 2, XIII, p. 137 (1893) footnote.

This genus was undoubtedly established especially for the reception of Serville's *Opsomala varipes* which certainly does not belong in the same genus along with *O. viridis*, *coccineipes*, *interior*, etc. It should not be included as a synonym of *Opsomala*.

128. *Chrostheipus varipes* (Serville).

Opsomala varipes SERVILLE, Ins. Orthopt., p. 584 (1839).

Habitat.—A single female specimen of this insect is at hand from Rio de Janeiro, where it was taken in December by H. H. Smith.

The relationship of this insect is much closer to *Copiocera* than to any of the insects which possess hind tibiae with lamellate margins. Its build is very robust and the prosternal tubercle is large, heavy, and transverse, and has its apex emarginate; the antennae are pale-tipped, while the hind tibiae have the series of spines on the external margin interrupted as in *Copiocera*. The description as given by Serville (*l. c.*) agrees with this insect in every respect except size, which is a little greater than that given, as will be seen by the following measurements:

Length of body, ♀, 69 mm., of head 11 mm., of pronotum, 9.25 mm., of tegmina, 35 mm., of hind femora, 24 mm., of hind tibiae, 18 mm.

Serville's citation of "Amerique septentrionale" as the habitat is certainly an error, since no record has since been made of a capture of a specimen of the species in that country, or for that matter, in any other country.

Genus EPISCOPOTETTIX Rehn.

Episcopotettix REHN, Trans. Amer. Ent. Soc., XXIX, p. 13 (1902).

129. *Episcopotettix sulcirostris* Rehn.

Episcopotettix sulcirostris REHN, Trans. Amer. Ent. Soc., XXIX, p. 13 (1902).

Habitat.—The type of this species, a male, according to its author, bore the label, "Forest of San Juan, Mexico." Unfortunately the female specimen now at hand is without a label of any kind.

Genus HOMALOSAPARUS Rehn.

Homalosaparus REHN, Proc. Acad. Nat. Sci. Philad., LX, p. 17 (1908).

The present genus was erected for the reception of a locust allied to *Abila* and *Phæorparia*. Since that date a second species of the genus has been added. These insects are ferruginous in color with roseate hind wings. They are confined to southern Brazil and Paraguayan territory, so far as known at present.

130. *Homalosaparus canonicus* Rehn.

Homalosaparus canonicus REHN, Proc. Acad. Nat. Sci. Philad., LX, pp. 17-20, figs. 2, 3 (1908).

Habitat.—São Paulo, Brazil (A. Hempel). Not represented in the Carnegie material at hand.

131. *Homalosaparus sordidatus* Rehn.

Homalosaparus sordidatus REHN, Proc. U. S. Nat. Mus., XXXVI, pp. 155-157, figs. 36, 37 (1909).

Habitat.—Corumba and Chapada, near Cuyaba, Matto Grosso, Brazil, May to August, many specimens of both sexes (H. H. Smith).

Genus *BUCEPHALACRIS* Giglio-Tos.

Bucephalacris GIGLIO-TOS, Boll. Mus. Zool. Anat. Torino, IX, no. 184, p. 30 (1894).

The insects, which comprise the present genus, thus far have been found over only a comparatively limited area in Bolivia, northern Argentina, Paraguay, and Brazil. Two species have been described heretofore, and now two others are added, although one of these latter is far from being typical of the genus. All of the species, except the type, are based on single individuals. Judging from the structure of the hind tarsi and what is known of the habits of related forms, it is surmised that these locusts are arboreal in habit and possibly also rather rare. It would be interesting to know something more concerning the structure of the male genitalia, as well as the comparative size of the sexes, in the different species. They may be separated as follows:

SYNOPSIS OF THE SPECIES OF *BUCEPHALACRIS*.

- A. Form rather graceful, cylindrical, or subcylindrical. Tegmina and wings a little shorter than the abdomen; the former with comparatively few veins. Hind tibiae glaucous.
 - b. General color olivaceous, the tegmina tinged with rose or vinaceous. Size smaller (♀, 23-25 mm.).
 - c. Head large and decidedly wider than the front edge of the pronotum. *borellii* Giglio-Tos.
 - cc. Head smaller, but little wider than the front edge of the pronotum. *fuscipennis* sp. nov.
 - bb. General color dull grayish brown, the tegmina not tinted with rose or vinaceous. Size larger (♀, 30 mm.). Hind femora provided with three fuscous bands, inner face and lower sulcus blood-red. *paraguayensis* Bruner.
- AA. Form rather robust. Tegmina and wings considerably shorter than the abdomen; the former rather closely veined. Hind tibiae coral-red. Upper lateral edges of pronotum dusky-banded. . . . *corallipes* sp. nov.

132. *Bucephalacris fuscipennis* sp. nov.

General form slender, subcylindrical, reminding a little of the representatives of the genus *Coscineuta*, but certainly nearer to *Bucepha-*

lacris in many of its characters. General color olive-green, the tegmina with a strong tinge of vinaceous. Wings heavily infuscated.

Head of moderate size, scarcely wider than the front edge of the pronotum, rather evenly and finely punctulate; eyes large, prominent, fully a third longer than the anterior edge of the cheeks below them, the vertex not quite as wide as the diameter of the first antennal joint; fastigium about as long as broad, very gently depressed, its disk rather strongly rugose-punctulate, and with the anterior border truncate and strongly transversely carinate. Frontal costa prominent, plane, and with parallel sides above the ocellus, weak, much narrower and sulcate below. Antennæ filiform, slender, about one-fourth longer than the head and pronotum combined, the basal joint unusually long. Lateral or facial carinæ moderately prominent, divergent, reaching the clypeus. Pronotum subcylindrical, the hind lobe somewhat expanding, rather finely and closely punctulate, the anterior edge heavily bordered, a little advanced upon the occiput, with the middle gently and widely emarginate; posterior margin of disk evenly rounded, the transverse sulci continuous, the median carina faintly present on hind lobe only. Pleura finely punctulate. Tegmina rather narrow, a little tapering, their apex rounded, not quite reaching the tip of the abdomen. Hind femora rather robust, evenly tapering, the pinnæ of outer disk regular, as long as the abdomen. Hind tibiæ hirsute, robust, seven-spined externally and eight-spined internally; first and second tarsal joints about equal in length, the third joint almost as long as the first and second combined. Prosternal spine broadly pyramidal, its apex blunt, slightly hirsute; mesosternal lobes separated by a space considerably wider than long, the inner edge of the lobes widely and obliquely rounded caudad. Valves of the ovipositor normal.

General color dark brunneo-olivaceous, the pleura marked with blotches of dirty yellow. Eyes dark brown. Tegmina tinted with vinaceous on basal half of costal field and towards the apex discally. Genicular portion of hind femora infuscated, the lunules ferruginous; hind tibiæ glaucous. Antennæ with the basal joint olivaceous, remainder black. Wings strongly infuscated.

Length of body, ♀, 23 mm., of pronotum, 4.3 mm., of tegmina, 14.5 mm., of hind femora, 12.5 mm.

Habitat.—The type, the only specimen examined, was collected at

Benevides, Brazil, where it was taken by H. H. Smith during the month of July. It is in the Carnegie Museum.

133. *Bucephalacris corallipes* sp. nov.

The present species is characterized by the red hind tibiae, the banded pronotum, and the comparatively short tegmina and wings. In size it approaches *B. paraguayensis* most closely.

Head large, about as wide as high, slightly exceeding the anterior edge of the pronotum in width. Eyes large and prominent, strongly divergent, in length nearly double the anterior edge of the cheeks immediately below them. Vertex rather narrow, about the same width as that of the diameter of the first antennal joint; fastigium provided anteriorly with a longitudinal median carina, depressed, a little shorter than wide, the anterior edge truncate, and furnished with a rather prominent transverse carina which separates the disk from the frontal costa. Latter moderately prominent and with parallel sides between the antennae, in nowise sulcate, but furnished with a few punctures, at the ocellus suddenly both narrower and much lower, slightly sulcate, and becoming nearly obsolete. Facial carinae divergent, not prominent, but continuous to the outer base of the clypeus. Front alone strongly punctured, the cheeks and occiput comparatively smooth. Pronotum closely, and fairly coarsely, punctulate, a little longer than wide, the hind lobe with its sides divergent caudad; anterior margin a little advanced upon the occiput, its center very gently emarginate; the posterior margin very broadly subangulate; the median carina slight, most apparent on the hind lobe; the transverse sulci slight, continuous, the posterior one most profound. Pleura quite profusely, and the meso- and meta-sternum sparsely, punctulate. Tegmina and wings abbreviated, a little more than one-half the length of the abdomen, the former rather profusely veined on basal two-thirds, comparatively narrow, somewhat tapering. Wings with the apex nearly squarely docked, scarcely longer than broad, smoky hyaline, the veins infuscated. Hind femora rather slender, not reaching the tip of the abdomen; the tibiae and tarsi hirsute, the former six-spined externally and eight-spined internally, the latter with the first and second joints about equal in length. Prosternal spine short, robust, pyramidal, the apex blunt; mesosternal interval subquadrate, a little wider than long. Valves of ovipositor normal.

General color dark olive-green, the disk of pronotum bordered on either side by a moderately prominent, but not wide, piceous band, which reaches from the anterior to posterior margins. Legs greenish olive, the inner side and lower sulcus of hind femora flavous, the genicular region somewhat tinged with ferruginous; hind tibiæ and tarsi coral-red.

Length of body, ♀, 28.5 mm., of pronotum, 4.5 mm., of tegmina, approximately 12 mm., of hind femora, 13 mm.

Habitat.—Corumba, Brazil, April. The type is in the Carnegie Museum.

Genus *ZOSPERAMERUS* Bruner.

Zosperamerus BRUNER, Biol. Cent. Amer. Orthopt., II, pp. 214, 274 (1907-8).

This is a genus composed of medium-sized tropical locusts, which, so far as at present known, are confined to Central America and the northern parts of South America. These insects are characterized by their excessively long and slender hind tarsi, the colored base and infuscated apical half of the wings and by the very slender filiform antennæ. Three species have been described in the past and a fourth is now added. These four species may be separated by the following key:

SYNOPSIS OF THE SPECIES OF *ZOSPERAMERUS*.

- A. Size smaller (♀, 22 mm., ♂, 17 mm.). General color greenish olive to dark brunneo-cinereous, varied with bands and mottlings of dirty white or testaceous.
 - b. The femora of all the legs conspicuously banded with pallid and fuscous. [Nicaragua, Central America.].....*zonatipes* Bruner.
 - bb. Femora less conspicuously banded.
 - c. Face, cheeks, lateral lobes of pronotum, pleura, and hind femora conspicuously marked with dirty white patches. [Peru, S. America.]
albopictus Bruner.
 - cc. Face, cheeks, lateral lobes of pronotum, pleura, and hind femora very obscurely marked with testaceous. [Para, Brazil.]
brasiliensis sp. nov.
- AA. Size larger (♀, (?), ♂, 27 mm.). General color luteous, varied with red and black. [Para, Brazil.].....*marginalis* Walker.

134. *Zosperamerus brasiliensis* sp. nov.

As indicated by the above synoptic table the present species is rather closely related to both *zonatipes* and *albopictus*. From the former it differs by the less conspicuously banded femora and from the latter by its more obscure and even color.

General form slender, the tegmina and wings somewhat abbreviated, not quite reaching the middle of the genicular area of the hind femora, the former rather narrow and gently tapering apically, the apex rounded. Head rather large, broad, and not especially high, very perceptibly wider than the anterior margin of the pronotum; eyes very large and prominent, considerably longer than the anterior margin of the cheeks below them, separated above by the narrow vertex, which is no wider than the diameter of the basal antennal joint; fastigium of the vertex horizontal, slightly transverse, with its anterior margin provided with a raised border, which separates it from the upper extremity of the very wide frontal costa; this latter fully three times the width of the vertex between the eyes, plane, save for a few coarse punctures and a very gentle sulcation just above the ocellus, the sides parallel to the ocellus, where they suddenly approach and continue down the face, giving off laterally a short spur midway between the point of narrowing and the clypeus and producing a cross-like effect in the face. Lateral or facial carinae very gently bowed outward, their upper and lower extremities about equidistant. Front rather strongly and profusely punctulate, viewed in profile straight and only gently oblique. Antennae with the basal joint rather large, the remaining joints very slender, about one-third longer than the combined length of the head and pronotum. The latter rather strongly and closely punctured, selliform, the median carina weak, apparent only on the hind lobe, all three of the transverse sulci continuous, the last most profound, situated very slightly back of the middle; anterior margin very gently and roundly emarginate at middle, the hind edge evenly rounded. Hind femora somewhat robust, evenly tapering towards the apex, the pinnæ of outer face quite regular, the genicular lobes acuminate. Hind tibiae plainly shorter than the femora, a little expanded at apex, the external row of spines composed of seven in number; hind tarsi remarkably long and slender, the second joint cylindrical, slightly longer than either the first or third. Mesosternal lobes separated by a space about equal in width to the lobes themselves, the latter with their inner edge rounded. Prosternal spine robust, slightly transverse, the apex widely rounded.

General color dull brunneo-cinereous with an olivaceous tinge, varied on front, occiput, cheeks, pronotum, and legs by markings of dull testaceous. Legs dimly fasciate; hind tibiae cinereo-plumbeous, the hind tarsi carmine, striped longitudinally with black on the first

and second joints. Eyes castaneous, the antennæ pallid at base, infuscated beyond.

Length of body, ♀, 22 mm., of pronotum, 3.35 mm., of tegmina, 12.5 mm., of hind femora, 11.5 mm.

Habitat.—Para, Brazil (H. H. Smith). Type in Carnegie Museum.

Genus ABILA Stål.

Abila Stål, Bihang. Svensk. Akad. Handl., V, no. 4, pp. 21, 56 (1878).

135. *Abila smaragdipes* sp. nov.

Size medium, the form somewhat slender. General color above brunneo-ferruginous, face and lower half of sides of pronotum pallid, the underside testaceous; wings transparent smoky orange-red. Legs oil-green, the tarsi and genicular area of hind pair ferruginous. Antennæ linear, black.

Head large and prominent, plainly wider than, and considerably ascending above the dorsum of the pronotum, occiput transversely rugose; eyes prominent, nearly twice as long as the cheeks below them. Vertex about twice the width of the basal antennal joint, separated from the fastigium by a transverse depression and an inconspicuous elevation, the fastigium short, shallowly sulcate, and strongly depressed, the sulcation almost confluent with the shallowly sulcate frontal costa. Latter continued to the base of the clypeus and with its sides but slightly divergent anteriorly; lateral or facial carinæ fairly prominent, rather strongly divergent below. Antennæ linear, longer than the head and pronotum combined. Pronotum rather closely punctulate and irregularly rugulose anteriorly and posteriorly, subcylindrical, gently and roundly constricted at middle, without lateral carinæ, the median weak; the transverse sulci inconspicuous, but the last and middle ones continuous nearly to the lower margins of the lateral lobes; anterior margin a little sinuose, hind margin rounded. Tegmina of moderate width, extending beyond the abdomen and apex of femora in both sexes, their basal portion more or less coriaceous and very closely and irregularly veined, beyond submembranous and less closely veined, the apex obliquely truncated. Hind femora long and slender, considerably surpassing the tip of the abdomen in both sexes, the genicular lobes acuminate, superior carinæ somewhat serrated and terminating in a minute spine. Hind tibiæ a little enlarged apically, nine-spined externally, and ten-spined internally.

Externally the apical spine is present and almost as prominent as the others. The spines on the inner margin are heavier, longer, and somewhat curved, as compared with the outer ones. Last ventral segment of male abdomen gently upturned, long, slender, and acuminate. Cerci slender, acuminate, hirsute. Prosternal spine moderately slender, long, acuminate, the apex directed gently to the front. Interspace between the mesosternal lobes elongate, narrower than the lobes themselves, the inner margins of which are evenly rounded.

General color as described above. Tegmina brownish ferruginous, the dorsal margin a little paler, quite evenly, but faintly, conspersed with fuscous blotches. Occiput, and posterior portion of cheeks, together with the upper half of sides of pronotum and upper edges of pleura, brown. Eyes dark castaneous. Tibial spines and the spiracles black.

Length of body, ♂, 27 mm., ♀, 38 mm.; of pronotum, ♂, 4.1 mm., ♀, 6.5 mm.; of tegmina, ♂, 23 mm., ♀, 33.5 mm.; of hind femora, ♂, 16 mm., ♀, 23 mm.

Habitat.—The collection contains three males, which were taken at Para, Brazil, in July, and a single female labeled "Santarem" (H. H. Smith). The types are in the collection of the Carnegie Museum.

Genus ADELOTETTIX Bruner.

Adelottettix BRUNER, Tiré Horæ Soc. Ent. Russicæ, XXXIX, p. 476 (1910).

The present genus is composed of several rather dull-colored locusts of moderately large size. They seem to be confined to middle America, representatives occurring from Yucatan to Peru and Brazil. Judging from their general dull brownish color these insects live in the tropical forests among fallen leaves, or upon the shaded trunks of trees. Only females have thus far been examined by me. The species *collaris* may be taken as the type of the genus. The following table will assist in separating the known forms:

SYNOPSIS OF THE SPECIES OF ADELOTETTIX.

- A. Tegmina rather sparsely veined, especially apically.
 - b. Hind tibiæ brunneo-testaceous, nine-spined on both edges. Pronotum collared with black. [Yucatan.].....*collaris* Bruner.
 - bb. Hind tibiæ with apical half deeply red, seven- to eight-spined. Pronotum not collared with black. [Peru.].....*obscurus* Bruner.
- AA. Tegmina profusely veined even on apical half. Hind tibiæ vinaceous red, seven-spined externally. [Para, Brazil.].....*brunneus* sp. nov.

136. *Adelotettix brunneus* sp. nov.

Somewhat similar to both *A. collaris* and *A. obscurus*, but differing from both of them in its smaller size and more profusely veined tegmina.

Head very little, if any, wider than the front edge of the pronotum. The eyes large and prominent, about one-fourth longer than the anterior edge of the cheeks, separated above by a space equal to the diameter of the basal antennal joint; fastigium a very little depressed anteriorly, a trifle longer than wide; occiput and vertex smooth; frontal costa about as described for the other species; face, anterior and lower edges of cheeks, pronotum, and pleura profusely, and somewhat finely, punctulate. Tegmina quite profusely veined, of moderate width, and exceeding the length of the abdomen by about as much as their width, the apex broadly rounded. Hind femora robust, of moderate length, the genicular lobes angulate, the angle slightly less than a right angle. Hind tibiae slenderer than in the other described species, eight-spined internally, seven-spined externally, the apical one wanting. Prosternal spine short, robust, slightly transverse, the apex broadly rounded; mesosternal lobes slightly wider than the interspace between them.

General color testaceo-brunneous, the hind femora a little paler. Tegmina brown with testaceous veins. Lunules of hind femora and base of tibiae piceous; tibiae and tarsi of hind legs vinous red. Antennae black with two basal joints brunneo-testaceous and the apical three orange.

Length of body, ♀, 38.5 mm., of pronotum, 7 mm., of tegmina, 32 mm., of hind femora, 16 mm.

Habitat.—The single specimen at hand, the type, comes from Para, Brazil, where it was taken by H. H. Smith in May. It is in the Carnegie Museum.

Genus *ADIMANTUS* Stål.

Adimantus STÅL, Bihang. Svensk. Akad. Handl., V, no. 4, p. 38 (1878).

A very characteristic tropical American locustid genus, to which at least three recognized forms belong.

137. *Adimantus vitticeps* (Blanchard).

Acridium vitticeps BLANCHARD, in D'Orbign, Voy. Amer. Mérid. Ins., p. 216, pl. 27, fig. 4 (1846).

Adimantus vitticeps BRUNER, Proc. U. S. Nat. Mus., XXX, p. 666 (1906).

Habitat.—Corumba, Brazil (H. H. Smith).

Genus ZYGOCLISTRON Rehn.

Zygoclistron REHN, Ent. News, XVI, p. 39 (1905).

The present genus is composed of medium- or slightly above medium-sized insects of modest coloration, which evidently live upon or near the ground in or at the edges of forests. Two species have been described in the past, and now a third is added. These insects are found in southern Brazil and Paraguay. They may be separated by the subjoined table.

SYNOPSIS OF THE SPECIES OF ZYGOCLISTRON.

- A. Tegmina of females, at least, much shorter than the abdomen. Pronotum strongly rugose.....*trachystictum* Rehn.
- AA. Tegmina of females fully developed, as long as, or longer than, the abdomen. Pronotum less strongly rugose.
 - b. Smaller (♀ 43 mm.). General color testaceo-ferruginous, not tinged with green or greenish, nor plainly banded with flavous...*modestum* sp. nov.
 - bb. Larger (♀, 54 mm.). General color chrome-green, bay, and saffron; head, pronotum, and pleura conspicuously banded with flavous.
superbum Rehn.

138. *Zygoclistron modestum* sp. nov.

As indicated by the preceding synoptic table, the present species is readily separable from both of the other known species by its plain and nearly uniform color; from *trachystictum* by the fully developed tegmina and wings and the smoother pronotum; and from *superbum* by its smaller size and the absence of flavous bands. In general form and appearance similar to the figure of the latter (*Proc. Acad. Nat. Sci. Philad.*, 1907, p. 182, fig. 12).

Size medium; head of moderate size, the occiput short, gently bullate; vertex between the upper extremity of the eyes a little wider than the shortest diameter of one of them, the fastigium separated from the rest of the vertex by a plainly depressed transverse line, its posterior width nearly twice that of its length, the antero-lateral edges slightly elevated, meeting at an obtuse angle, the middle widely and shallowly sulcate. Frontal costa fairly prominent, its upper end very narrow, the sides strong and evenly divergent below, continuous to the clypeus, deeply and widely sulcate throughout; lateral or facial carinæ also prominent, rather strongly divergent below. Eyes elongate, subpyriform, a little longer than the anterior edge of the cheeks below them. Antennæ moderately robust, about as long as the head and pronotum combined. The latter subcristate, transversely rugoso-

punctulate, much more closely so on the posterior lobe, the sides parallel; median carina prominent, profoundly severed by all three of the transverse sulci, the intervening sections roundly lobate; both the anterior and posterior margins obtusangulate. Pleura also quite strongly and coarsely punctulate. Tegmina complete, fully as long as the abdomen, the venation quite prominent; anterior margin gently lobate on basal fourth. Hind femora slender, the superior carina gently serrate; the tibiae normal, eight-spined externally. Valves of the ovipositor slender, moderately curved. Interspace between the mesosternal lobes narrow, more than twice as long as broad, the inner edges of the lobes themselves evenly rounded. Prosternal spine fairly prominent, the apical third compressed from the sides, its anterior margin directed cephalad into a dull finger-like lobe.

General color as described above. Wings orange-vermilion basally, becoming smoky apically, the extreme apex slightly paler. Spines on inner side of hind tibiae somewhat longer than those on outside, their external edge infuscated to base, the inner basal portion pallid, with the apex black.

Length of body, ♀, 43 mm., of pronotum, 9 mm., of tegmina, 34 mm., of hind femora, 18.5 mm.

Habitat.—The collection contains three female specimens of the species, all of which were taken at Chapada, near Cuyaba, Matto Grosso, Brazil, one of them in the month of July and the others during August. The type is the property of the Carnegie Museum.

Genus ALEUAS Stål.

Aleuas STÅL, Bihang. Svensk. Akad. Handl., V, no. 4, pp. 25, 69 (1878).

The several species comprising the present genus belong to southern Brazil, Paraguay, Uruguay, and Argentina. At least five forms are known, four of them having been previously described, while the fifth is now added. They must be separated as follows:

SYNOPSIS OF THE SPECIES OF ALEUAS.

- A. Hind tibiae armed externally with six or seven spines. Wings either fully developed or more or less abbreviated. Pronotum strongly rugosopunctate.
- b. Tibiae normally with but six spines on the outer margin.
- c. Tegmina slightly surpassing the apices of the hind femora.

vitticollis Stål.

- tc. Tegmina much abbreviated, less than half as long as the abdomen.

brachypterus Bruner.

bb. Tibiæ with seven spines on the outer margin.

c. Tegmina and wings abbreviated, one-half the length of abdomen or less.

curtipennis sp. nov.

cc. Tegmina and wings surpassing the tip of the abdomen... *gracilis* Stål.

AA. Hind tibiæ armed externally with eight or nine spines. Wings always full developed. Pronotum not rugose-punctate..... *lineatus* Stål.

139. *Aleuas vitticollis* Stål.

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

Habitat.—Corumba, Brazil, in April (H. H. Smith). Also found in Paraguay and southward.

140. *Aleuas gracilis* Stål?

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

Habitat.—A single specimen, also from Corumba, is referred to this species with doubt. It was collected during the month of March by H. H. Smith.

141. *Aleuas curtipennis* sp. nov.

A medium-sized brachypterous species, in which the hind femora are more or less strongly infuscated on the lower sulcus and internally, and the hind tibiæ are coralline.

Head large, about as wide (σ^7) or a little wider than the anterior edge of the pronotum (φ), the occiput gently arcuate, about one-half the length of the pronotum; eyes elongate, moderately prominent, their anterior edge nearly straight, a little longer than the anterior edge of the cheeks below them, separated above by a space equal to the shortest diameter of one of them in the female, and by two-thirds such diameter in the male. Fastigium gently depressed, somewhat sulcate in both sexes. Frontal costa prominent, acuminate above, the lateral walls sharp, in the female parallel from the antennæ to clypeus, in male slightly contracted just below the ocellus, in both sexes sulcate; facial carinæ also prominent, divergent. Face feebly and sparsely punctulate, viewed in profile gently arcuate, somewhat oblique. Antennæ filiform, slender, annulate, in the male as long as the head and pronotum combined, in the female somewhat less. Pronotum with the sides parallel, strongly rugoso-punctate, much more closely so on the posterior lobe; the dorsum viewed laterally gently arcuate, the median carina prominent, severed behind the middle by the last transverse sulcus, the posterior margin broadly angulate. Tegmina smooth, abbreviated, elongate elliptical, in the female

nearly reaching the tip of the third and in the male that of the fourth abdominal segment, their apex rounded, the veining peculiar and profuse, giving to these organs the appearance of being closely and regularly punctulate. All the legs short and heavy. Posterior femora not reaching the tip of the abdomen in either sex. Abdomen carinated, moderately slender in the male, more robust in the female. Last ventral segment of the male abdomen acuminate; supra-anal plate roundly triangular, the immediate apex slightly produced and acuminate, its disk bulging, rugose, the basal third nearly covered by two large flat attingent, triangular teeth, projecting from the hind margin of the preceding segment. Cerci moderately long and slender, evenly tapering from base to apex. Prosternal spine of medium size, pyramidal, directed gently to the rear, the apex a little blunt, especially in the male. Interspace between the mesoternal lobes much narrower than long, in the female one-half, in the male one-third, as wide as the lobes themselves.

General color flavo-testaceous, more or less streaked and mottled on head and pronotum with brunneous and olivaceous. Tegmina pale brunneo-flavous. Antennæ fuscous, the apex of each joint pallid, giving them a strongly annulated appearance. In the female the disk of the pronotum and middle of the occiput are marked with a wide longitudinal dull brown band which is bordered on each side by one of dirty testaceous; sides of head and lateral lobes of pronotum alternately and irregularly longitudinally streaked with dark olivaceous and testaceous. Face, pleura, and external face of hind femora also somewhat varied with dark olivaceous. Hind tibiae and tarsi coralline, somewhat paler basally externally, lunules of hind femora black, the internal lower genicular lobes red.

Length of body, ♂, 26.5 mm., ♀, 38 mm.; of pronotum, ♂, 5.85 mm., ♀, 8.25 mm., of tegmina, ♂, 9 mm., ♀, 10 mm.; of hind femora, ♂, 12.5 mm., ♀, 16 mm.

Habitat.—Chapada, Brazil, ♂, April, ♀, May (H. H. Smith). The types are in the collection of the Carnegie Museum.

Genus *PARALEUAS* Giglio-Tos.

Paraleuas GIGLIO-TOS, Boll. Mus. Zool. Anat. Torino, XIII, no. 311, pp. 47, 57 (1898).

The genus *Paraleuas* is made up of small or medium-sized locusts, which bear some resemblance to the larger species of *Bucephalacris*,

which occur in the same general region. Like the representatives of *Jodacris* and *Abracris* Walker (*Omalotettix* Bruner) they are to be met with among the dead leaves and herbage growing beneath the larger shrubs and trees composing the forests, which prevail over much of Brazil and Paraguay.

142. *Paraleuas fosteri* Bruner.

Paraleuas fosteri BRUNER, Proc. U. S. Nat. Mus., XXX, pp. 669, 670 (1906).

Habitat.—Several specimens of this insect are at hand from Corumba, Brazil. They were taken during the months of March and July (H. H. Smith).

143. *Paraleuas frater* Rehn.

Paraleuas frater REHN, Proc. U. S. Nat. Mus., XXXVI, pp. 144-146, figs. 28, 29 (1909).

Rehn describes a new *Paraleuas* (*l. c.*) which seems to be distinct from any of the previously described species, as well as from the one characterized here, although it approaches the latter most closely.

Habitat.—Rehn's specimens came from Chapada, Matto Grosso, Brazil, where they were taken by H. H. Smith.

The described species of this genus may be separated by a table given in the paper just cited. The present collection, however, contains numerous specimens of what appears to be a fifth species. It comes closest to the *P. minor* from which it differs in the somewhat longer tegmina and wings. Like that insect it is without banded hind femora. Its measurements are as follows: Length of body ♂, 15 mm., ♀, 18 mm.; of pronotum, ♂, 2.65 mm., ♀, 3.15 mm.; of tegmina, ♂, 14 mm., ♀, 16.5 mm.; of hind femora, ♂, 8.5 mm., ♀, 10.5 mm.

Habitat.—A large series of specimens is at hand from both Corumba and Chapada, Brazil, where they were taken during the months of April to October inclusive (H. H. Smith).

The color of this insect is rather uniform brunneo-ferruginous with inconspicuous lighter and darker markings on the head, thorax and tegmina. The hind femora are not banded with fuscous. I have called this insect *Paraleuas longipennis*. This may be the *P. frater* Rehn, listed above.

144. *Paraleuas punctipennis* Bruner?

Paraleuas punctipennis BRUNER, Proc. U. S. Nat. Mus., XXX, pp. 670, 671 (1906).

Habitat.—There are specimens of a third *Paraleuas* at hand which are referred to this species, although they vary somewhat from the type which has been used for comparisons. They come from Corumba and Rio de Janeiro, where they were collected in May and October by H. H. Smith.

Genus *ORTHOSCAPHEUS* Bruner.

Orthoscapheus BRUNER, Proc. U. S. Nat. Mus., XXX, p. 671 (1906).

This genus is related to *Jodacris* Giglio-Tos, and occurs in the same general region. Only a single species is known.

145. *Orthoscapheus roseipennis* Bruner.

Orthoscapheus roseipennis BRUNER, Proc. U. S. Nat. Mus., XXX, p. 672 (1906).

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

Habitat.—Corumba, Brazil, during the months of March to July inclusive (H. H. Smith).

As noted in the paper where described (*l. c.*, p. 672) this insect may prove to be Giglio-Tos's *Osmilia coriacea*. However, by the use of that author's synoptic table of genera of South American Acridiens it runs to *Jodacris* instead.

Genus *JODACRIS* Giglio-Tos.

Jodacris GIGLIO-TOS, Boll. Mus. Zool. Anat. Torino, XII, no. 302, p. 32 note (1897).

Judging from the material before me, the present genus is composed of several somewhat closely allied species of locusts, which inhabit open woods, where they live among the fallen leaves and spend much of the time upon herbage, shrubs, and the trunks of trees. Accordingly they are inconspicuously colored. At least one of the species, *ferruginea*, is quite variable in its coloration. They probably deposit their eggs in decaying wood, or the bark of trees, since the present writer, while at San Bernardino, found the insects to be quite insistent in their desire to stick to fallen trees which had begun to decay.

SYNOPSIS OF THE SPECIES OF *JODACRIS*.

- A. Larger (♂, 19–20 mm., ♀, 22 mm.). Body rather robust. The sides of pronotum, tegmina, and femora quite prominently mottled, or marked with fuscous.

- b. Cerci of male moderately robust, tapering but little on basal two-thirds, the outer third very slender and gently curved upwards and inwards, the heavy portion provided at apex with a short inwardly directed flattened lobe, or tooth.
- c. Inwardly directed lobe or tooth of cerci of male normal; apical portion of upwardly directed apex of main prong long and slender. Insect rather strongly variegated with fuscous.....*ferruginea* Giglio-Tos.
- cc. Inwardly directed lobe or tooth of cerci of male large, hatchet-shaped; apical portion of upwardly directed apex of main prong shorter and more robust. Insect uniformly ferrugineous...*chapadensis* sp. nov.
- bb. Cerci of male less robust, evenly tapering to the small inwardly directed tooth, beyond this very slender and gently curved both downwards and inwards.....*intermedia* sp. nov.
- AA. Smaller (♂, 16, ♀, 20 mm.). Body fairly slender. The sides of pronotum, tegmina, and femora inconspicuously, or not at all, marked with fuscous. Apical slender portion of cerci strongly and abruptly bowed inwards and crossing at tips.....*furcillata* Rehn.

146. *Jodacris ferruginea* (Giglio-Tos).

Anniceris ferrugineus GIGLIO-TOS, Boll. Mus. Zool. Anat. Torino, IX, no. 184, p. 30 (1894) in part.

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

Habitat.—Chapada, Brazil, during May to November inclusive. A large series of both sexes, H. H. Smith, one of the specimens bearing the collector's number, 2097.

147. *Jodacris chapadensis* sp. nov.

Uniformly brunneo-ferruginous throughout, and without marks or mottlings of fuscous or pallid, except for the dark fuscous outer lower sulcus of the hind femora and an internal preapical band of the same color, the lunules not infuscated. A little larger and slightly more robust about the thorax than *J. ferruginea* Giglio-Tos. Cerci of male of the same general pattern as in that species, but with the internal branch much larger and forming an obliquely arranged hatchet-shaped thickened blade, the main branch directed posteriorly and gently curved upwards, somewhat shorter and more robust than in the species to which it has just been compared. Supra-anal plate with a long finger-like apical projection, the lateral margin thickened basally and broadly upturned, the disk raised, and gently sulcate near the base, but irregular beyond.

Length of body, ♂, 20 mm., ♀, 22 mm.; of pronotum, ♂, 3.57

mm., ♀, 4 mm.; of tegmina, ♂, 19 mm., ♀, 19.5 mm.; of hind femora, ♂, 11 mm., ♀, 11.5 mm.

Habitat.—Corumba and Chapada near Cuyaba, Matto Grosso, Brazil, May to October. A number of specimens of both sexes (H. H. Smith). The types, ♂ and ♀, are in the Carnegie Museum.

In color this species reminds one strongly of the distinct and much smaller *J. furcillata* of Rehn.

148. *Jodacris intermedia* sp. nov.

About the same size, but noticeably slenderer than *J. ferruginea* Giglio-Tos, to which it is most closely related. Especially characterized by the very narrow vertex of the male, in which this feature is almost linear.

Head small, the width no greater than the anterior edge of the pronotum; eyes large, very prominent, broadly elliptical, a little more than twice as long as the anterior edge of the cheeks below them, diverging so that their hind margins form a right angle; vertex exceedingly narrow, scarcely half as wide as the diameter of the second and subsequent antennal joints, the fastigium rather small, about as long as its basal width, horizontal; frontal costa very prominent above between the antennæ, plane, except for a few scattered punctures, and about as wide as the first antennal joint, almost obliterated below the ocellus, viewed laterally the front is moderately strongly oblique and sparsely, though somewhat strongly, punctulate. Antennæ robust, filiform, nearly one-third longer than the head and pronotum combined. Pronotum shaped much as in the same sex of *ferruginea*, but a trifle narrower in proportion to its length; median carina plainly visible throughout, save between the first and second transverse sulci, the hind lobe closely punctulate and a trifle more than one-half the length of the anterior lobe; anterior margin broadly rounded, with the faintest possible indication of being very widely emarginate, posterior margin of disk very obtusangulate. Pleura quite plainly and coarsely punctulate. Tegmina and wings only slightly surpassing the apex of abdomen and tips of hind femora. Latter robust, about as long as the abdomen. Hind tibiæ seven-spined externally, eight- or nine-spined internally. Abdomen moderately slender, the apex not upturned, ending in a short, roundedly acuminate last ventral segment; supra-anal plate elongate triangular, with a low median transverse carina, the lateral margins reflexed, or upturned.

and the base of disk gently longitudinally sulcate. Cerci about a third longer than the supra-anal plate, as described in the synoptic table of the species, reaching the tip of the last ventral segment. Interspace between the mesosternal lobes quadrate, a little wider than the lobes themselves. Prosternal spine minute, acuminate, situated at the hind margin of a robust quadrate base.

General color (after preservation in spirits) dirty flavo-testaceous, varied on the pronotum, pleura, and front with dull brown. Tegmina showing traces of fuscous dots. Wings rather strongly infuscated, especially apically. Hind femora without traces of transverse bands or the usual dark lower sulcus, the lunules of apex of hind femora piceous, the lobes dirty white; hind tibiae slightly infuscated at apex, very likely pale glaucous in life.

Length of body, ♂, 19 mm., of pronotum, 3.6 mm., of tegmina, 13.5 mm., of hind femora, 10 mm., of antennae, 8.5 mm.

Habitat.—The type, a male, bears the label "Santarem." It is the property of the Carnegie Museum.

149. *Jodacris furculata* Rehn.

Jodacris furculata REHN, Proc. U. S. Nat. Mus., XXXVI, pp. 147-149, figs. 30, 31 (1909).

Habitat.—Chapada near Cuyaba, Matto Grosso, Brazil, during August. A fair series (H. H. Smith).

Genus ABRACRIS Walker.

Abracris WALKER, Cat. Dermapt. Salt. Brit. Mus., IV, p. 642 (1870).

Omalotettix BRUNER, Proc. U. S. Nat. Mus., XXX, p. 642 (1906).

The genus *Omalotettix* Bruner, according to W. F. Kirby of the British Museum, is the same as *Abracris* of Walker, which was based on *A. dilecta* from Santarem, Brazil. This genus was reviewed in the Biologia Centrali-Americana where the annexed synoptic table of the known species was published. It is modified herewith to include Walker's species *dilecta*.

SYNOPSIS OF THE SPECIES OF ABRACRIS.

- A. Hind femora with the lower edge and sulcus more or less infuscated, or blackened, and their upper edges and outer disk more or less fasciate.
 - b. Smaller (length, ♂ 13-15 mm., ♀, 19 mm.). Hind femora provided with a conspicuous fuscous patch on the outer face. *signatipes* Bruner.
 - bb. Larger (length, ♂ 16-20 mm., ♀ 19-24 mm.). Hind femora either without fuscous bands, or with bands.

- c.* Hind femora with the basal fuscous oblique band well defined and continuous.
- d.* General color dull luteous, the tegmina cinereous, their veins tawny [Santarem.].....*dilecta* Walker.
- dd.* General color wood-brown; the tegmina gray-brown, their veins obscure brown for the most part. [British Guiana; Victoria, Brazil.].....*meridionalis* Bruner.
- cc.* Hind femora with the basal band more or less obliterated on the outer face.
- d.* Males and females nearly equal in size, the former 20 mm., the latter 24 mm. in length. [Brazil.].....*chapadensis* Bruner.
- dd.* The sexes unequal in size, ♂ 17 mm., ♀ 21 mm. in length.
nebulosa Bruner.
- AA.* Hind femora with the lower outer edge and sulcus pallid, the upper edge and outer face only faintly fasciate.
- b.* Darker, varying from wood-brown to brunneo-ferruginous, not at all, or but faintly, conspersed with fuscous. [South America.]
cæruleipennis Bruner.
- bb.* Lighter, varying from testaceous to brunneo-cinereous, profusely conspersed throughout with fuscous. [Brazil.].....*conspersipennis* Bruner.

150. *Abracris nebulosa* (Bruner).

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

Omalotettix nebulosa BRUNER, Proc. U. S. Nat. Mus., XXX, p. 63 (1906).

Jodacris ferruginea GIGLIO-TOS, Boll. Mus. Zool. Anat. Torino, XII, no. 302 (1897) in part.

Habitat.—The specimens of this species contained in the present collection come from Corumba, Brazil. They were taken during April by H. H. Smith.

151. *Abracris signatipes* (Bruner).

Omalotettix signatipes BRUNER, Proc. U. S. Nat. Mus., XXX, p. 673 (1906).

Habitat.—There are several specimens at hand coming from Corumba, Brazil, also taken in April by H. H. Smith.

152. *Abracris dilecta* Walker.

Abracris dilecta WALKER, Cat. Dermapt. Salt. Brit. Mus. IV, p. 642 (1870).

This species is larger than *signatipes* Bruner, and comes nearer *meridionalis* Bruner, from which latter it appears also to be distinct.

Habitat.—The locality of Walker's insect is given as Santarem, Brazil. Not represented in the present collection, nor in any material examined by me.

153. **Abracris chapadensis** (Bruner).

Omalolettix chapadensis BRUNER, Biol. Cent. Amer. Orthopt., II, pp. 280, 282 (1908).

In size and general form similar to *A. meridionalis*, but readily separable from it by the complete absence of the oblique obscure bands on the outer face of the hind femora and by the uniformly cinereous hind tibiae, which show a close relationship of *chapadensis* to *nebulosa*, *cæruleipennis*, and *conspersipennis*. In the present species the cerci of the male are longer and slenderer than usual, and, instead of being forked, have the apex slightly expanded and flattened. The last ventral segment of the abdomen of the male is small, short, and comparatively blunt, being nearly equalled by the supra-anal plate and quite reached by the cerci.

Head of moderate size, as wide as the anterior edge of the pronotum; viewed laterally considerably elevated above the pronotum; eyes prominent, as wide above as below, separated by a very narrow sulcate vertex scarcely as wide as the diameter of the slender antennal joint; fastigium somewhat depressed, about as long as wide, very gently sulcate anteriorly, the margins provided with a well-defined carina; lateral ocelli large, occupying more than half the space between the eyes and the upper, lateral edges of frontal costa. Latter prominent and widest above between the antennae, and, when viewed in profile, somewhat roundly produced anteriorly; above the ocellus coarsely punctulate, plane, below the ocellus narrowed and sulcate, continuous to the clypeus. Facial carinae prominent, nearly straight, and but gently divergent below. Antennae fairly robust, in the male about one-fourth longer than the head and pronotum combined. Pronotum subcylindrical in advance of the principal sulcus, expanding gently on the posterior lobe; the anterior edge emarginate, posterior edge widely and roundly angulate, the surface of disk and sides of hind lobe closely and confluent punctulate. Tegmina with the edges nearly parallel, extending beyond the tip of the abdomen about one-fourth their length, rather closely and strongly veined. Hind femora, normal, a little surpassing the apex of abdomen. The latter evenly tapering, the last ventral segment small, short, and comparatively blunt; supra-anal plate elongate-triangular, the sides gently arcuate, with the middle elevated and widely and deeply sulcate, the sulcation slightly constricted midway from the base towards the apex. Cerci as described above. Mesosternal lobes separated by a subquadrate

space about equal in width to the lobes themselves. Prosternal spine rather long, slender, straight and acuminate.

Length of body, ♂, 20.5 mm., of pronotum, 4 mm., of tegmina, 21 mm., of hind femora, 12 mm.

Habitat.—The type was collected during December at Chapada, Brazil, by H. H. Smith. It is deposited in the Carnegie Museum. Other material is at hand from the same locality.

154. *Abracris cæruleipennis* (Bruner).

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

Omalotettix cæruleipennis BRUNER, Proc. U. S. Nat. Mus., XXX, p. 674 (1906).

Habitat.—Chapada, Brazil (H. H. Smith).

155. *Abracris conspersipennis* sp. nov.

Omalotettix conspersipennis BRUNER, MS., Biol. Cent. Amer. Orthopt., II, p. 281 (1908).

About the size of, and most nearly related to, the *A. cæruleipennis* Bruner, which occurs most abundantly somewhat to the southward of the habitat of the present species. *Conspersipennis* is a pale testaceous insect, which is strongly and quite evenly conspersed throughout with dull brown.

Of medium size and robustness, noticeably a little more stoutly built than either *cæruleipennis* or *nebulosa*, the body and legs quite strongly hirsute, the tegmina less so. Head of moderate size, fully as wide as the anterior edge of the pronotum; eyes fairly prominent, but less so than in the species with which compared, the vertex between them about as wide as the frontal costa in both sexes, the fastigium quite strongly depressed, about twice as wide as long. Frontal costa plain and broadest above the ocellus, sulcate below, and continuous to the clypeus. Antennæ moderately robust, about as long (♀) or a little longer (♂) than the head and pronotum combined. Front, cheeks, pronotum, and pleura closely and strongly punctulate, and also more or less decidedly rugose, the raised portions pallid. Tegmina of moderate width and length. Hind femora robust. Hind tibiæ rather heavy, plainly expanded apically, the spines large and strong, largely pallid, but with black tips.

Length of body, ♂, 16 mm., ♀, 20 mm.; of pronotum, ♂, 3.15 mm., ♀, 4 mm.; of tegmina, ♂, 16 mm., ♀, 19 mm.; of hind femora, ♂, 8.5 mm., ♀, 10.6 mm.

Habitat.—Chapada, Brazil (H. H. Smith). The types, ♂ and ♀, are in the Carnegie Museum.

156. *Abracris meridionalis* (Bruner).

Omalotettix meridionalis BRUNER, Biol. Cent. Amer., Orthopt., II, pp. 280, 281 (1908).

In general appearance very similar to *A. signatipes* (*Omalotettix signatipes*) Bruner, but decidedly larger than that species, from which it differs also by having the oblique fuscous bands of the hind femora continuous with the transverse patch across the upper edge. The tegmina and wings of *meridionalis* are comparatively longer than in the species with which compared, while the former are darker in color and have their veins more uniformly obscure. In *meridionalis* the cerci of the male are nearly straight, rather evenly tapering, and have the inner fork minute and shorter than the outer, as compared with the somewhat curved form and strong inner toothed structure, as found in *signatipes*.

General color of head, sides of pronotum, pleura, legs, and abdomen, ferrugineo-testaceous, marked on head back of eyes, on the upper portion of the sides and disk of pronotum, and on the pleura, with dark brown, giving to these parts the appearance of being banded with the pallid coloring. Antennæ testaceo-ferruginous. Hind femora marked above by two strong broad transverse fuscous bands, the anterior or basal one of which continues uninterruptedly obliquely forward upon the outer disk two-thirds of the distance to its lower margin; the lower outer margin of the femur is strongly marked with black. Hind tibiæ dark plumbeous, with a sub-basal pallid annulus in an infuscated area, the apex also decidedly infuscated.

Length of body, ♂, 17.5 mm., ♀, 23 mm.; of pronotum, ♂, 3.6 mm., ♀, 4.35 mm.; of tegmina, ♂, 18 mm., ♀, 23 mm.; of hind femora, ♂, 10.25 mm., ♀, 12.4 mm.

Habitat.—The types which are in the author's collection were collected by R. J. Crew at Demerara, British Guiana. Other specimens are at hand from Victoria, Brazil (Coll. L. Bruner).

Genus CHRYSOPSACRIS Bruner.

Chrisopsacris BRUNER, Biol. Cent. Amer., Orthopt., II, p. 282 (1908).

This genus is composed of medium-sized locusts with comparatively large head, long filiform, twenty-jointed antennæ, prominent sub-

globular eyes, narrow vertex, short strongly punctate pronotum, more or less abbreviated tegmina and wings, long robust hind femora, and forked male cerci. The type of the genus is the *Gryllus bucephalus* Marschall⁸ as determined by the author.

Head medium or large, a little wider than the front edge of the pronotum; the occiput short, rounded; face rather oblique, even in the females; frontal costa prominent between the antennæ, less prominent and irregular below the ocellus, plane, or shallowly sulcate above, more deeply so below; lateral or facial carinæ somewhat divergent below; fastigium sulcate, a little depressed and angulately united with the frontal costa; vertex between the eyes very narrow (♂) or nearly as wide as the frontal costa at its widest part (♀). Antennæ filiform, about twenty-jointed, moderately long, in the males of some species longer than the hind femora. Pronotum coarsely and deeply punctate, rather short, sub-cylindrical, a little widening posteriorly, without lateral carinæ, the transverse sulci prominent, anterior edge truncate, or a little rounded, hind border obtusangulate, hind lobe much the shorter. Tegmina and wings abbreviated, so as to equal the length of abdomen, fusiform, rather prominently veined, plain, or mottled. Wings short and broad, blue, with black or fuscous tips. Abdomen short and tapering. Hind femora fairly robust, extending beyond the apex of abdomen in both sexes. Hind tarsi long and slender, the third joint as long as first and second, second one-half the length of first, or less; tibiæ and tarsi rather lengthily hirsute. Hind tibiæ seven-spined in outer row, the apical one wanting. Upper valves of the ovipositor strongly serrate or crenulate. Tip of the male abdomen short and prow-shaped; the cerci rather heavy, acuminate, and with an inner tooth near the middle. Prosternal spine pyramidal, straight, acuminate. Lobes of the mesosternum widely separated, the space as broad as, or broader than, the lobes themselves.

The insects comprising this genus bear a general resemblance to the various members of *Bucephalacris* Giglio-Tos, but differ in a number of respects. The most apparent difference, however, is in the comparative length of the hind tarsal joints. As described by Giglio-Tos the species of *Bucephalacris* have the first and second joints equal, while in *Chrysopsacris* the representatives have them very unequal, the length of the second being only one-half, or even less than that, of the first.

⁸ *Ann. Wiener Mus.*, 1835, p. 217, No. 10, pl. XVIII, fig. 9.

By referring to the locality cited, it will be seen that at least three species of the genus are known. These are separated by a synoptical table. None of the representatives are at hand among the material now being studied.

Genus *MACHÆROPELES* Rehn.

Machæropeles REHN, Proc. U. S. Nat. Mus., XXXVI, p. 152 (1909).

This genus of locusts belongs to the *Vilernæ* but seems to be quite a distance removed from any of the other genera of the group. Thus far only a single species is known.

157. *Machæropeles rostratus* Rehn.

Machæropeles rostratus REHN, Proc. U. S. Nat. Mus., XXXVI, pp. 152-154, figs. 34, 35 (1909).

Habitat.—There are at hand a large series of both sexes. They come from Chapada and Corumba, Brazil, where they were taken during the period embraced in the months of April to August inclusive (H. H. Smith).

Genus *LEPTOMERINTHOPRORA* Rehn.

Leptomerinthoprora REHN, Proc. Acad. Nat. Sci. Philad., 1905, p. 436.

The various members of the present genus are distributed over Central America and the northern and central countries of South America. Four of the previously described forms come from Costa Rica and another from Para, Brazil. A sixth species is now added. It was taken at Chapada, Brazil. These species may be separated as follows:

SYNOPSIS OF THE SPECIES OF *LEPTOMERINTHOPRORA*.

- A. General form rather robust. The antennæ heavy, short, and annulated with flavous.
 - b. Hind femora dull clay-color or brunneo-testaceous, either plain, or marked with oblique fuscous bands and mottlings.
 - c. Femora plain, tinged with green.....*brevipennis* Rehn.
 - cc. Femora obscurely marked externally with oblique and internally with transverse bands; antennæ inconspicuously annulate.
 - modesta* Bruner.
 - bb. Hind femora green or greenish, unadorned, apex testaceous. Antennæ pale annulate.
 - c. Most of face, cheeks below the eyes, and pale lines on pronotum, pleura, and tegmina bright wax-yellow.....*flavovittata* Bruner.
 - cc. Most of face, cheeks below the eyes and pale lines on pronotum, pleura, and tegmina brownish-testaceous.....*smaragdipes* Bruner.

AA. General form rather slender. The antennæ slender, long, and without annulations of flavous.

b. Hind femora with a large testaceous patch externally near the base; antennæ much longer than head and pronotum combined, filiform. [Chapada, Brazil.].....*gracilicornis* sp. nov.

bb. Hind femora clouded externally with blackish; antennæ but little longer than head and pronotum combined, subensiform. [Para, Brazil.]
equalis Rehn.

158. *Leptomerinthoprora gracilicornis* sp. nov.

Below the medium in size, slender, and with filiform antennæ, which equal the hind femora in length. The latter with a conspicuous large pale testaceous patch on upper half of outer face near base; lower sulcus and inner face near base carmine.

Head small, scarcely as wide as the anterior edge of the pronotum; front gently retreating; eyes prominent, oval, the vertex narrow, less than the diameter of the comparatively slender antennæ; fastigium of medium size, about as broad as long, the antero-lateral margins rounded, the disk rather widely and fairly deeply sulcate. Frontal costa quite prominent between the antennæ, where it is plane, with a few coarse punctures, suddenly lowered before the ocellus, where it is sulcate and narrowed to middle of front, when it again widens and continues to the clypeus; lateral or facial carinæ slender and continuous, but little divergent below, spaces between costa and lateral carinæ occupied by an interrupted supplemental carina. Pronotum without lateral carinæ, rather evenly divergent posteriorly, hind lobe closely and deeply punctulate, anterior lobe and face faintly so; median carina moderately well developed throughout, interrupted by all three of the transverse sulci; anterior margin roundly advanced at middle upon the occiput, hind margin widely angulate. Tegmina and wings abbreviated, about one-half the length of the abdomen, the former a little overlapping above, the costal margin gently arcuate, the veins moderately profuse, but not prominent, their apices rounded. Abdomen slender, tapering; valves of the ovipositor short, slender, of normal form. Anterior and middle femora slender, hind femora robust at base, slender apically, the upper carina minutely serrate basally, and terminating in a small triangular tooth on the apex; hind tibiæ slender, somewhat sinuose, lengthily hirsute, seven-spined externally, nine-spined internally. Interspace between the meso-sternal lobes plainly wider than long, fully equalling in width the

lobes themselves. Prosternal spine pyramidal, of medium size, acuminate.

General color above brown, the disk of pronotum and sides of occiput narrowly bordered on each side by a narrow longitudinal dirty yellow line; sides of face, back of lower edges of eyes, and lower edges of sides of pronotum together with a spot in advance of the insertion of middle legs, similarly marked. Tegmina uniformly brown. Hind femora externally and above embrowned, save for the large pallid sub-basal patch referred to above, and the genæ, which are also more or less pallid. Bounding carinæ of outer disk of femora alternately dark and pallid. Hind tibiæ testaceous basally, becoming dusky apically. Spines black; antennæ, anterior and middle legs, and hind tarsi, testaceous. Dorsum and sides of abdomen sparsely maculate with dull brown.

Length of body, ♀, 16 mm., of pronotum, 3.65 mm., of tegmina, 5.5 mm., of hind femora, 10.5 mm.

Habitat.—Chapada, Brazil, where it was taken by H. H. Smith in April. The type is in the collection of the Carnegie Museum.

Genus VILERNA Stål.

Vilerna STÅL, Recens. Orthopt., I, pp. 38, 71 (1873).

The genus *Vilerna* of Stål is confined to tropical America, where representatives occur from middle Mexico to northern Argentina. All of the species are of medium size and brunneo-ferruginous in color. They live among the low herbage in and about forests, where they have a tendency to gather upon plants like the pineapple and aloes about the bases of the thorny or serrate leaves where they are well protected from enemies.

159. *Vilerna æneo-oculata* (De Geer). *

Acrydium æneo-oculata DE GEER, Mém. Ins., III, p. 502, pl. 42, fig. 11 (1773).

Vilerna æneo-oculata STÅL, Recens. Orthopt., I, p. 71 (1873).

Acrydium sanguinipes OLIVIER, Encycl. Méth. Ins., VI, p. 231 (1791).

Acridium sanguinipes SERVILE, Ins. Orthopt., p. 670 (1839).

Habitat.—Benevides, Para, Rio de Janeiro, and Chapada, Brazil, April to July and October (H. H. Smith). It also occurs in Central America and all of the northern countries of South America.

160. *Vilerna rugulosa* Stål.

Vilerna rugulosa STÅL, Bihang. Svensk. Akad. Handl., V, no. 4, p. 61 (1878).

Habitat.—Specimens determined as this species are at hand from



both Para and Rio de Janeiro, Brazil, where they were taken during October and November by H. H. Smith.

It is the common species in Paraguay about Asuncion, where it was collected by the present writer in October.

161. **Vilerna flavipennis** Gerstæcker.

Vilerna flavipennis GERSTÆCKER, Mitth. Ver. Neu-Vorpomm., XX, p. 13 (1889).

Habitat.—Specimens determined as this species are at hand from Para and Chapada, Brazil. They were taken during the months of May to July inclusive by H. H. Smith.

Genus XIPHIOLA Bolivar.

Xiphiola BOLIVAR, Act. Soc. Españ. Hist. Nat., 1896, p. 17.

162. **Xiphiola borellii** Giglio-Tos.

Xiphiola borellii GIGLIO-TOS, Boll. Mus. Zool. Anat. Comp. Torino, XV, no. 377, pp. 5, 6 (1900).

Habitat.—Specimens of this species are at hand both from Rio de Janeiro and Chapada, Brazil, where they were collected during the months of May to August inclusive (H. H. Smith).

Genus OSMILIOLA Giglio-Tos.

Osmiliola GIGLIO-TOS, Boll. Mus. Zool. Anat. Torino, XII, no. 302, p. 32 (1897).

163. **Osmiliola aurita** Giglio-Tos.

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

Habitat.—A pair of specimens are at hand that have been determined as this species. They come from Chapada, Brazil (H. H. Smith).

Genus RHABDOSCIRTUS gen. nov.

Related to *Xiphiola* Bolivar and *Saparus* Giglio-Tos, but differing from both in a number of respects, as will be seen by an examination of the following description:

General shape of insect fusiform, being rather robust in the vicinity of the mesothorax, from which it tapers both anteriorly and posteriorly. Head of medium size, a trifle narrower than the front edge of the pronotum; eyes large, prominent, elliptical, a little longer than the cheeks below them; vertex narrow, almost linear, depressed; the fastigium a little elevated anteriorly, somewhat longer than broad; frontal costa

produced between the antennæ, about as broad as the basal joint, not sulcate, but coarsely punctate above the ocellus, somewhat narrowed and much weaker below and continued to the clypeus, sulcate; lateral or facial carinæ subparallel, the face rugose between them. Antennæ twenty-jointed, rather long, heavy, and ensiform, or subensiform. Pronotum coarsely rugoso-punctate, without lateral carinæ, evenly divergent posteriorly, the dorsum rounded, and with a well-defined median carina; hind lobe shorter than the front, separated by a strongly defined transverse sulcus; anterior margin straight, posterior margin broadly obtusangulate. Tegmina long and narrow, rather closely veined on basal, more distantly on distal, half. Wings blue, infuscated apically, long, and narrow. Abdomen rather short, tapering, strongly carinated above; valves of the ovipositor acuminate, the outer edge of the upper pair crenulate. Hind femora extending beyond the tip of the abdomen, more than ordinarily robust, and with the upper carina serrate; hind tarsi with the second joint much shorter than the first. Space between the mesosternal lobes subquadrate, wider than long. Prosternal spine slender, straight. Hind tibiæ with seven spines in outer row, the apical spine wanting.

164. *Rhabdoscirtus vittatus* sp. nov.

The type of this genus is *vittatus*. It is of medium size, has the general color black, varied with flavo-testaceous vittæ as follows: one extending from the base of the antennæ down each side of the face to the base of mandibles, one from the back of each eye diagonally across the cheeks and lower portion of sides of pronotum and pleura to base of middle legs, one on each side of occiput and disk of pronotum and along dorsal angle of folded tegmina for two-thirds their length. The tegmina are also provided with a second and shorter line of this color just back of their costal edge. There is another on each side, which runs from the base of the tegmina to the insertion of the hind femora. These latter have a conspicuous stripe along the lower edge of their outer face, and a second one extending from near the middle of the base diagonally upward and to the rear, where it crosses to the inner face about one-third the distance towards the apex. A second short diagonal band of this color crosses the upper edge just beyond the middle. The palpi are pale, their apical joints being terete. The anterior edges of the three segments of the thoracic sternites are also pale. The wings are rather dark transparent blue with dusky apices.

Length of body, ♀, 24 mm., of antennæ, 13.75 mm., of pronotum, 6 mm., of tegmina, 24 mm., of hind femora, 14.25 mm.

Habitat.—A single female, the type comes from Demerara, British Guiana, where it was collected by R. J. Crew. (Coll. L. Bruner.)

Genus *ANABLYSIS* Gerstæcker.

Anablysis GERSTÆCKER, Mitth. Ver. Neu-Vorpomm., XX, p. 14 (1889).

165. *Anablysis pantharina* Gerstæcker.

Anablysis pantharina GERSTÆCKER, Mitth. Ver. Neu-Vorpomm., XX, p. 15 (1889).

Habitat.—A couple of male specimens of medium-sized locusts are at hand from Para, Brazil, which answer the description of this species. They were taken during July by H. H. Smith.

166. *Anablysis* (?) *fusco-maculata* sp. nov.

Very similar in color and general appearance to *Anablysis pantharina* Gerstæcker, as determined by me, but with comparatively smaller eyes, and without the prominent tooth or spine at the apex of the superior carina of the hind femora. The two terminal joints of the maxillary palpi flattened and amplified, conspicuously ivory-white.

General form elongate, subcylindrical, moderately graceful and fairly hirsute throughout. Head as wide as the anterior margin of the pronotum; eyes large, prominent, subglobular, at least two-fifths longer than the anterior margin of the cheeks; the vertex depressed, a little narrower than the frontal costa, longitudinally sulcate throughout; the fastigium still more depressed, and surrounded by a carina forming an almost circular anteriorly depressed area. Frontal costa prominent between the antennæ, deeply and widely sulcate, below the ocellus much lower and with the feeble sides gently divergent, fading before reaching the clypeus; lateral or facial carinæ prominent, nearly parallel. Antennæ filiform, long and slender, about twice as long as the combined length of head and pronotum. Pronotum subcylindrical, feebly biconstricted laterally, the hind lobe gently expanding; anterior edge broadly collared and roundly advanced upon the occiput; first transverse sulcus faint, second and third profound, the last located about one-third the length of the pronotum from its hind margin which is widely angulate. Tegmina rather narrow, sparsely veined, the edges nearly parallel, somewhat abbreviated, a little shorter than the abdomen, their apex rounded. Hind femora moderately slender, surpassing the abdomen by the length of the genicular

area, the lateral lobes of the latter rounded, the superior carina nearly smooth, terminating at the apex in a minute blunt tooth. Hind tibiae six-spined externally. Anterior and middle femora not at all inflated. Abdomen elongate, not tapering, the apical portion gently clavate; last ventral segment short, smooth, roundly triangular, the apex entire; supra-anal plate scutiform, the disk rather complicated by ridges and depressions, and the margin more or less sinuose, the apex a little produced and depressed; cerci moderately heavy, long and evenly tapering, directed backwards and a little upwards, plainly passing the supra-anal plate. Mesosternal interspace slightly transverse, broadening caudad, plainly wider than the lobes themselves, the inner margins of which are rounded. Prosternal spine small, located on the heavy anterior margin of the prosternum, which gradually widens and increases in height as it approaches the center.

Pale brunneo-testaceous with a faint olive tinge on occiput, pronotum and legs, strongly and rather profusely maculate with fuscous and dull black. Fastigium, front below the ocellus, sides of head below the eyes and lower half of lateral lobes of the pronotum dirty yellowish white; scrobes of antennae, frontal costa above, eyes, head immediately back of them, upper half of sides of pronotum, and pleura together with tegmina, largely fuscous, becoming black and interrupted on the latter so as to form a series of three or four oval or quadrate maculations. Mouth-parts, except palpi, and underside piceous; anterior and middle legs conspicuously annulated with fuscous, hind femora flecked with fuscous, which tends to the formation of bands, the genicular lunules faintly embrowned, but not fuscous; hind tibiae more or less infuscated, becoming darker as the apex is approached. Antennae infuscated, with four or five pale annulations.

Length of body, ♂, 17–20 mm., of pronotum, 4–4.6 mm., of tegmina, 10 mm., of hind femora, 11 mm., of antennae, 12–13 mm.

Habitat.—Two males collected during July at Para, Brazil, by H. H. Smith. Type in the collection of the Carnegie Museum.

This insect does not exactly fit either *Anablysis* Gerstaecker or *Demonax* Stål, both of which it approaches in some of its characters. It seems, however, to come closest to the former. So far as the amplicate terminal joints of the palpi are concerned it approaches *Ommatolampis* and its allies, of which there are undoubtedly several undescribed genera belonging to tropical America.

Genus OMMATOLAMPIS Burmeister.

Ommatolampis BURMEISTER, Handb. Ent., II, p. 636 (1838).

Specimens of the present genus are to be found throughout tropical South America as well as the adjoining portions of Central America. As at present restricted, the representatives of the genus are apterous, or brachypterous, insects of medium size, in which the vertex is quite narrow and the palpi have the apical joints flattened and ampliate. The present writer has recently published a synoptical table of the species (*Horæ Soc. Ent. Ross.*, XXXIX, pp. 483-485, Dec., 1910).

167. *Ommatolampis collaris* sp. nov.

Ommatolampis collaris BRUNER, MS., *Horæ Soc. Ent. Rossicæ*, XXXIX, p. 484 (1910).

A moderately robust and comparatively smooth species with narrow tessellated back and testaceous tegmina, in which the prevailing color of the male is testaceous varied with fuscous and of the female nearly uniformly brunneo-testaceous.

Head large, the face rather short; eyes prominent, longer than the length of the cheeks below them, separated at the vertex by a space about equal to (♀) or a little less than (♂) the width of the frontal costa; fastigium depressed, shallowly sulcate; frontal costa not very prominent between the antennæ, widely and shallowly sulcate, in the male continuous to the clypeus, but in the female partly obliterated below the ocellus. Pronotum evenly rounded and gently expanding posteriorly, the transverse sulci rather profound in the males, much less so in the females; anterior edge rounded, the middle emarginate, hind edge truncate. Tegmina long and narrow, gently spatulate, sparsely but coarsely reticulate, reaching nearly (♀) or quite (♂) to the hind edge of the first abdominal segment. Abdomen carinate, evenly tapering, the tip of the male abdomen not upturned. Hind femora robust, the upper carinæ serrate and gently tuberculate, slightly surpassing the apex of the female abdomen and extending about one-fourth their length beyond in the male. Supra-anal plate broadly triangular, the lateral edges gently bowed, the disk provided with about eight black tubercles, the larger four of which are arranged equidistant along the base, the other four on the disk apically. Cerci of male pyramidal with an inner basal fold. Prosternal spine slender, straight, acuminate on a heavy base. Hind tibiæ seven-spined externally.

General color pale in the male to brunneo-testaceous in the female. In the male the occiput to lower edge of eyes, the anterior border together with the hind lobe of the pronotum, an oblique patch on each side in advance of the middle coxæ, the basal half and apical segments of the abdomen, and the knees and base of hind tibiæ, infuscated. Veins of wings widely testaceous on a black background. Hind tibiæ cinereous, in the males with an olivaceous and in the females a vinous tinge, the spines flavous with black tips. Antennæ infuscated apically.

Length of body, ♂, 21.5 mm., ♀, 27 mm.; of pronotum, ♂, 4.1 mm., ♀, 5.1 mm.; of tegmina, ♂, 4.5 mm., ♀, 5 mm.; of hind femora, ♂, 13.5 mm., ♀, 16.25 mm.; of antennæ, ♂, 14 mm., ♀, 12 mm.

Habitat.—Para, Brazil, in April where they were taken by H. H. Smith. Types in the Carnegie Museum.

Genus SITALCES Stål.

Sitalces STÅL, Bihang. Svensk. Akad. Handl., V, no. 9, p. 16 (1878).

The present genus is composed of small to medium-sized apterous, or subapterous, locusts of modest appearance. The several known or recognized species belong to tropical America, where they may be found among the herbaceous plants in and about the margins of forests. Most of the described species have been separated in a synoptical key published by the present writer (Biol. Cent.-Amer., Orthopt., II, p. 291, April, 1908). An additional species was also described by me recently from Peru (Horæ Soc. Ent. Rossicæ, XXXIX, p. 485, 1910).

168. *Sitalces robustus* Bruner.

Sitalces robustus BRUNER, MS. Biol. Cent.-Amer., Orthopt., II, p. 291 (1908).

Apparently most closely related to *volxemi* Stål, from which it differs most notably in the somewhat larger size, the brownish-olive instead of olive-green color, and in having the median pronotal carina well developed, instead of having it subobsolete. Outer margin of hind tibiæ eight-spined.

Eyes large and prominent, about one and one-half times as long as the anterior edge of the cheeks; very narrowly separated at the vertex, the interspace being slightly less than (♂) or just about the same as (♀) the diameter of the antennæ. Vertex depressed, the fastigium of moderate size, a little broader than long, rounded in front and bordered by a slight raised carina, the disk somewhat rugose and punctulate.

Antennæ moderately heavy, filiform, in the female about equal to, in the male a little longer than, the head and pronotum combined. Frontal costa most prominent above the ocellus, where it is plane, fully twice the width of the vertex between the eyes, and rather coarsely punctulate, at the ocellus sulcate, below less prominent, also punctulate. Facial carinæ moderately prominent, the interspace of front punctate. Pronotum rugoso-punctate, most closely on the hind lobe, divergent posteriorly; median carina well developed throughout, except that it is severed by all three of the transverse sulci, the last being most profound; hind margin angulately emarginate at middle, the front somewhat sinuate. Tegmina minute, lateral, about half as wide as long, in the female reaching half way across the metanotum, in the male extending to the anterior edge of the first abdominal segment. Auditory apparatus obsolete. Apex of male abdomen gently enlarged and upturned; supra-anal plate large, subquadrate, the sides raised, the middle tumid, deeply and narrowly sulcate, terminating in a finger-like projection beyond the apex. Hind margin of preceding segment provided at middle with two slender parallel finger-like projections, which lie in the basal part of the sulcation of the supra-anal plate. Cerci large, quite similar to those of *volxemi* Stål.

General color brownish olive, becoming piceous on occiput, cheeks, the upper portion of lateral lobes of pronotum, and pleura. Front, legs, and underside, pallid. A conspicuous patch on cheeks back of lower edge of eyes, lower edges of pronotum and blotches on pleura in advance of the insertion of middle and hind femora, sordid white or ivory. Hind femora olivaceous, with more or less of a yellowish tinge, the genicular portion pale ferruginous; hind tibiæ glaucous.

Length of body, ♂, 15 mm., ♀, 23 mm.; of pronotum, ♂, 3.15 mm., ♀, 4 mm.; of tegmina, ♂ and ♀, 1.25 mm.; of hind femora, ♂, 10 mm., ♀, 12 mm.

Habitat.—Para and Rio de Janeiro, Brazil, September to November, several specimens of both sexes (H. H. Smith). Collection of the Carnegie Museum.

169. *Sitalces nudus* Bruner.

Sitalces nudus BRUNER, MS. Biol. Cent.-Amer., Orthopt., II, p. 291; ib., Horæ Soc. Ent. Rossicæ, XXXIX, p. 486 (1910).

The present species, of which three specimens are at hand, is rather closely related to the *S. infuscatus*, a description of which immediately

follows. The *S. nudus* was partially characterized in the second paper referred to above. In size it is practically the same as *infuscatus*, from which it differs primarily in the entire absence of tegmina and also in the less infuscated coloration.

Habitat.—The three specimens at hand, one male and two females were taken at Santarem, Brazil, by H. H. Smith.

170. *Sitalces infuscatus* Bruner.

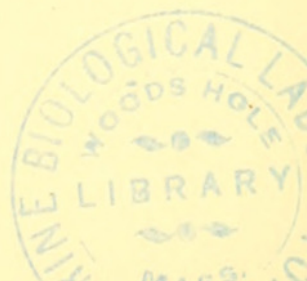
Sitalces infuscatus BRUNER, MS. Biol. Cent.-Amer., Orthopt., II, p. 291 (1908).

Resembling *S. ovatipennis* Bruner from British Guiana, but much darker colored, and having more disparity in size between the sexes.

Body moderately hirsute, the pronotum, and in the male the other thoracic and first abdominal segments, rather strongly punctulate, the remaining portions of the body smooth. Head a little wider than the anterior end of the pronotum; vertex narrow, fastigium depressed, and with the vertex longitudinally sulcate, bordered in front by a well marked carina. Frontal costa plane and prominent above the ocellus, becoming weaker and narrower below. Face viewed in profile rather oblique. Antennæ filiform, a little (♀) or decidedly (♂) longer than the combined length of the head and pronotum. Transverse sulci of latter coarse and deeply impressed, continuous across the disk. Tegmina minute, squamiform, scarcely reaching the middle of the metanotum. Auditory apparatus minute almost obsolete. Hind femora normal, plainly extending beyond the apex of the abdomen in both sexes. Apical portion of male abdomen not enlarged, the last ventral segment short and blunt; supra-anal plate triangular, its lateral edges thickened, crossed at middle by a transverse carina, beyond this the plate is gently bent downwards; cerci long and slender, the apical third curved gently inwards. Prosternal spine minute on a rather robust base.

General color above dark brown to black, and, in some specimens, exhibiting traces of two occipital, two lateral pronotal, and a medio-dorsal, pale, bands. Cheeks below eyes, lower margins of sides of pronotum, and middle of pleura, marked by bright yellow lines. Face, except antennal grooves and the dusky band across the upper extremity of the frontal costa between them, the pectus, and much of lower portion of abdomen, flavous; legs olivaceous, the hind tibiæ greenish glaucous. Genicular lunules and base of tibiæ ferruginous.

Length of body, ♂, 11 mm., ♀, 15.5 mm.; of pronotum, ♂, 2.1



mm., ♀, 2.9 mm.; of tegmina, ♂ and ♀, 1 mm.; of hind femora, ♂, 7 mm., ♀, 9 mm.

Habitat.—Chapada and Benevides, Brazil, in April (H. H. Smith). Types in collection of the Carnegie Museum.

Genus PARASITALCES gen. nov.

This genus is established for a medium-sized entirely apterous, smooth-bodied locust, which reminds at first glance of a *Sitalces*. A closer examination, however, soon discloses many important differences, sufficient to place it in a distinct genus, as will be seen from the subjoined diagnosis.

General form elongate fusiform, rather strongly hirsute throughout, very much so on tibiae and tarsi. Head rather large, fully as wide as (♀), or slightly wider (♂) than the anterior edge of the pronotum; viewed in profile the front is moderately oblique in the female and quite strongly so in the male; the occiput smooth and fairly long. Eyes prominent, about as long as (♀) or a little longer than (♂) the anterior edge of the cheeks, separated above by a space equal to the diameter of the antennae in the females, narrower, almost linear in the males; fastigium of moderate size, plainly wider than long, the antero-lateral margin carinated, its anterior middle gently sulcate and narrowly continuous with that of the frontal costa. Latter fairly prominent above between the antennae, where it is broadest and nearly thrice (♂) or at least twice (♀) the width of the vertex between the eyes, sulcate throughout and continued to the clypeus. Facial carinae prominent, but little divergent below. Antennae filiform, twenty-two jointed, somewhat longer than the combined length of the head and thorax. Prothorax without lateral carinae, expanding on posterior lobe, which is short and closely and minutely punctulate; anterior edge broadly rounded, posterior margin truncated, both slightly emarginate at middle. Pleura in advance of meso- and meta-coxae closely punctulate. Auditory apparatus rather small, oval. Hind femora with carinae smooth, about normal in form, the outer disk regularly paginate, about as long as the abdomen in the female, a very little exceeding it in the only male specimen at hand, which is somewhat distorted. Outer margin of hind tibiae six- to eight-spined. Interspace between the mesosternal lobes slightly transverse, plainly wider than the lobes themselves. Prosternal spine short, minute, located on a robust quadrate base. Male abdomen gently clavate.

the last ventral segment triangular, with its apex entire; supra-anal plate subquadrate, a little broader than long, the lateral margins raised and gently convergent caudad, the middle widely costate and sulcate, abruptly lowered half way to the apical, which latter is truncate. Cerci large, heavy, with a large flat inwardly directed median tooth sufficiently long to touch the apex of that from the opposite cercus, the main prong also flat, somewhat twisted and gently bowed inwardly.

171. *Parasitalces sexnotata* sp. nov.

General color above brunneo-olivaceous becoming paler medio-dorsally and caudad; below flavous, sides of head, back of eyes, and upper portion of sides of pronotum, piceous; front, cheeks, and sides of pronotum below the piceous band, pale yellowish white, more or less tinged with green. Legs olive-green, the hind tibiæ greenish glaucous, the lunules and lower margin of hind femora tinged with ferruginous. Sides of occiput and lateral margins of disk of pronotum conspicuously marked with orange patches, three on a side, *i. e.*, one on each side of the occiput and two on each side of the disk of the pronotum. There is also quite a conspicuous blood-red patch on the pleura in advance of, and above, the insertion of the hind femora. Antennæ flavous, becoming somewhat infuscated apically.

Length of body, ♂, 14 mm., ♀, 20-22 mm.; of pronotum, ♂, 2.6 mm., ♀, 3.5 mm.; of hind femora, ♂, 8.35 mm., ♀, 11.75 mm.

Habitat.—Chapada, Brazil, in April, three females and one male (H. H. Smith). Types in the collection of the Carnegie Museum.

Genus SCHISTOCERCA Stål.

Schistocerca STÅL, Recens. Orthopt., I, p. 64 (1873); SCUDDER, Proc. Amer. Acad. Arts & Sci., XXXIV, p. 441 (1899).

The genus *Schistocerca* is one of the most characteristic of the American genera of locusts, or short-horned grasshoppers. Its representatives are for the most part quite large, and rather showy and striking in appearance. Quite a number of the species are counted among the destructive locusts of their respective regions. Especially is this last remark true with reference to the tropical and subtropical parts of the Americas, where such forms as *S. americana*, *cancellata*, and *paranensis* are at times responsible for much injury to the agricultural interests, and the destruction of the vegetation of the cattle-ranges and even of the forests as well. The genus has been worked

up by Scudder (*l. c.*, pp. 441-476). Since that time several additional species have been added by Rehn and myself, and still another is described in the present paper.

172. *Schistocerca desiliens* Scudder.

Schistocerca desiliens SCUDDER, Proc. Amer. Acad. Arts & Sci., XXXIV, pp. 443, 445 (1899).

Habitat.—This species is represented by thirteen specimens. They come from Rio de Janeiro, Para, and Chapada, Brazil, where they were taken during the months of May and November by H. H. Smith.

173. *Schistocerca flavofasciata* (De Geer).

Acrydium flavofasciatum DE GEER, Mém. Ins., III, p. 488, pl. XL, fig. 8 (1773).

For additional synonymy see Scudder or Kirby.

Habitat.—This species is quite widely distributed in the tropical portions of South America. Only four specimens happen to be contained in the present collection. They come from Chapada, near Cuyaba, Matto Grosso, and Para, Brazil. The former were taken in April and the latter during May (H. H. Smith).

174. *Schistocerca idonea* Scudder.

Schistocerca idonea SCUDDER, Proc. Amer. Acad. Arts & Sci., XXXIV, pp. 444, 461 (1899).

Habitat.—The collection before me contains a single male and two females. They were taken at Chapada, near Cuyaba, Matto Grosso, Brazil, during the months of May and August by H. H. Smith.

These specimens are quite typical and come from the same region as did Scudder's types ("Crapada" which must certainly be a misprint for "Chapada").

175. *Schistocerca* sp.?

There are at hand five specimens, two males and three females, of another species of the genus. They do not quite fit any of the descriptions available, but appear to be related to *S. americana* Drury. They are, however, a little smaller and lack the infuscations of the costal margin of the tegmina.

Habitat.—Para, Brazil, during May (H. H. Smith).

176. *Schistocerca pallens* (Thunberg).

Gryllus pallens THUNBERG, Mém. Acad. Petersb., V, p. 237 (1815).

Acridium (*Schistocerca*) *pallens* STÅL, Recens. Orthopt., I, p. 66 (1873).

Schistocerca pallens BRUNNER ET REDTENBACKER, Proc. Zool. Soc. Lond., 1892, p. 210.

Habitat.—A series of thirteen specimens of this fine locust are before me. They bear the label "Chapada, Brazil," and were collected during the months of May to July inclusive by H. H. Smith.

177. *Schistocerca formosa* sp. nov.

This insect, as the name would imply, is a remarkably beautiful one in comparison with the various other species of the genus. In color it is bright olive-green, testaceous, red, purplish brown and white. It is also one of the largest representatives of the genus.

Head large and high, a little wider than the front edge of the pronotum, mandibles, clypeus, and labrum unusually large; eyes large, but not especially prominent, in the male nearly elliptical, but in the female with the front edge sub-straight; vertex rather broad, quite as wide (♂) or nearly equal (♂) to the shortest diameter of the eyes, the fastigium broad and coarse, quadrate, and shallowly sulcate; frontal costa broad and prominent, of nearly equal width throughout, broadly sulcate in the vicinity of the ocellus, coarsely punctate above. Antennæ just reaching (♀) or a very little surpassing (♂) the hind border of the pronotum, the basal joint large. Pronotum long, roundly tectate on anterior lobe, but more flattened behind; median carina coarse and prominent throughout. The sides not especially "pinched" so as to give the insect the strangulated appearance common to *S. paranensis*, *pergrina*, and *exsul*, surface profusely and coarsely punctulate; transverse sulci coarse, but not deeply impressed, the last situated a little behind the middle; hind margin broadly and roundly angulate even in the male, front margin broadly rounded. Tegmina of medium width, extending beyond the tip of abdomen in both sexes. Hind femora rather long and fairly heavy, nearly reaching the apex of abdomen in both the male and female. Front and middle femora only moderately robust in male. Last ventral segment of male abdomen deeply and narrowly notched. Prosternal spine long, coarse, and directed to the rear, its apex pointed and resting on the front edge of the mesosternum.

Head, pronotum, and pleura of meso- and meta-thorax pinkish

testaceous or dull salmon-colored broadly streaked with olive-green. The former with the frontal costa, lateral facial carinae, and front edge of mandibles, a dash from the lower edge of eyes to lower hind angle of cheeks, the vertex and occiput on the latter divided by a forward projecting wedge of the salmon-color, olive-green. Pronotum with a broad slightly widening median, longitudinal light band, bordered on each side of disk by one of olive-green, and below this another light band followed by an oblique one of the green, the lower edge obliquely and rather broadly pale, a little lighter than the remaining light portions. Pleura with two oblique green bands between others of the salmon-color. Upper half of hind femora greenish, the lower half pale; hind tibiae red, with black-tipped pale spines; middle and front femora greenish, the tibiae and tarsi reddish. Under side of body pale testaceous, abdomen above with more or less of a greenish olive tinge. Tegmina with a broad pale dorsal band and a whitish costal one on basal half; disk brown with a pale longitudinal median streak, the bounding longitudinal veins of the discal area red. Wings somewhat infumated. Antennae in the male red basally, darker apically, in the female lighter, reddish testaceous.

Length of body, ♂, 52 mm., ♀, 69 mm.; of antennae, ♂, 16 mm., ♀, 19 mm.; of pronotum, ♂, 10.5 mm., ♀, 13 mm.; of tegmina, ♂, 49 mm., ♀, 63 mm.; of hind femora, ♂, 26 mm., ♀, 36 mm.

Habitat.—One male and one female, Cacagualito (1,500 ft.), Dept. Magdalena, Colombia, S. A., during the month of November. Types in Carnegie Museum.

This is by all odds the most attractive species of the genus which has thus far come to light, and differs so greatly from all the described forms that a knowledge of its haunts would be interesting. A smaller and somewhat similarly colored species occurs in the vicinity of São Paulo, Brazil. The latter is the insect which Rehn described as *Schistocerca gratissima* (*Proc. Acad. Nat. Sci. Philad.*, Feb., 1908, pp. 20-22, figs. 4, 5).

Genus ATRACHELACRIS Giglio-Tos.

Atrachelacris GIGLIO-TOS, Boll. Mus. Zool. Anat. Comp. Torino, IX, no. 184 pp. 19-20 (1894).

The genus *Atrachelacris* is confined to southern Brazil and southward. Its representatives are unicolorous, green, and somewhat hirsute. They differ from the representatives of *Dichroplus*, their nearest ally, in the comparatively smaller head.

178. *Atrachelacris unicolor* Giglio-Tos.

Atrachelacris unicolor GIGLIO-TOS, Boll. Mus. Zool. Anat. Comp. Torino, IX, no. 184, p. 21 (1894).

Habitat.—Paraguay and northern Argentina. Not represented in the H. H. Smith collection made in southwestern Brazil.

179. *Atrachelacris gramineus* sp. nov.

Very similar to *A. unicolor* Giglio-Tos in general appearance, but larger, more robust, and of a yellowish instead of olive-green color. Strongly hirsute throughout.

Head rather small, plainly narrower than the front edge of the pronotum, into which it is set almost to the eyes. Latter very little (♂) or not any (♀) longer than the anterior margin of the cheeks, separated above by a space a very little greater than the widest portion of the frontal costa, the fastigium depressed and very broadly and shallowly sulcate, most apparently so in the male, where this area is plainly bounded by lateral carinae, which are continuous with the sides of the costa; the latter moderately prominent, broad, and continuous to the clypeus, widest just above the ocellus, sulcate throughout, but most profoundly so below the ocellus; antennae somewhat exceeding the combined length of the head and pronotum. Pronotum strongly divergent caudad, its surface irregularly longitudinally rugose, the rugae inconspicuous, except when viewed with a magnifier, the hind lobe slightly longest; hind margin obtusangulate, the immediate apex rounded. Tegmina sparsely veined, the basal third coriaceous, remainder more or less membranous. Hind femora robust and coarse, the carinae prominent, very prominently hirsute; anterior and middle femora of male not greatly enlarged; hind tibiae eight- to nine-spined externally, heavy. Tip of male abdomen as in *unicolor*, but the cerci less robust at base and quite strongly incurved apically; last ventral segment noticeably longer, and with its apex more acuminate than in the type species.

General color pale yellowish green on head, pronotum, tegmina, pleura, hind femora above and externally, and tibiae; sides of abdomen, venter, lower edges and inner face of hind femora, and pectus greenish pale flavous. Antennae flavous, sometimes with a rufous tinge apically. Lunules of hind femora tinged with rufous. Tibial and tarsal claws, spines of hind tibiae, and tips of valves of ovipositor, black; eyes wax-yellow.

Length of body, ♂, 24 mm., ♀, 29–30 mm.; of pronotum, ♂, 5.75 mm., ♀, 7.35 mm., of tegmina, ♂, 19 mm., ♀, 25 mm.; of hind femora, ♂, 13.5 mm., ♀, 18 mm.

Habitat.—Southern portion of the province of Santa Fe, northern Buenos Aires, Entre Rios, etc., in Argentina.

Whether or not this form is sufficiently distinct to warrant the making of a separate species, I cannot say. Some of the differences mentioned in the description are quite important, but others are not. The larger size and more robust build of the temperate region form is an extraordinary feature, as compared with the smaller and less robust stature of the tropical form.

Genus *DICHOPLUS* Stål.

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

"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, which 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. Specimens of at least seven distinct species are at hand.

180. *Dichroplus fuscus* (Thunberg).

Gryllus fuscus THUNBERG, Mém. Acad. Pétersb., V, p. 235 (1815).

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

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

Habitat.—There are several specimens at hand, including both sexes. They were collected at Chapada, Brazil, during the months of May and July by H. H. Smith.

181. *Dichroplus gracilis* sp. nov.

Of about the size and general appearance of *D. punctulatus* Thunberg, but very distinct from that species in a number of its structural features. Sides of pronotum without the usual dusky bar, hind femora beneath and internally bright blood-red, fuscous bands reduced

to faint traces on upper edge. Vertex much wider than normal in members of the genus. Head and anterior lobe of the pronotum smooth, scarcely at all punctulate.

Head of moderate size, slightly wider than the anterior edge of the pronotum, the occiput well rounded and gently elevated above the plane of the pronotum; eyes not at all prominent, scarcely if any longer than the anterior edge of the cheeks, separated at the vertex by a space fully one and one-half times the width of the frontal costa between the antennæ; fastigium depressed, scarcely sulcate even anteriorly, the antero-lateral margins reaching as carinæ a trifle more than half way to the eyes; frontal costa fairly prominent between the antennæ where it is plane, coarsely punctulate, and about twice the width of the second antennal joint, at the ocellus a little contracted, below gently expanded, and somewhat sulcate to the base of the clypeus. Facial or lateral carinæ fairly prominent and about parallel. Antennæ moderately robust, the joints a little depressed on upper side, rather profusely and strongly pitted, somewhat longer than the head and pronotum combined. Pronotum a little contracted at middle, expanding posteriorly, the anterior middle rounded, the hind margin broadly angulate; median carina obliterated in front, present, but faint on the hind lobe, the two lobes about equal in length. Tegmina and wings fully developed, plainly surpassing both the femora and the apex of the abdomen, the discal field provided with a prominent intercalary vein. Hind femora fairly robust, or about normal, extending a little beyond the tip of the abdomen, the tibiæ strongly hirsute, nine-spined on the outer edge. Middle and anterior femora but little inflated. Interspace between the mesosternal lobes a little longer than wide; prosternal spine robust, somewhat compressed from the sides, and directed to the rear. Abdomen gently clavate, the last ventral segment triangular, about as long as its basal width, the apex entire, bluntly rounded; supra-anal plate broadly and roundly triangular, the lateral margins a little thickened and gently upturned, the disk widely and profoundly sulcate at base, where the marginal apophyses from the preceding segment project as short blunt protuberances within the sulcation. Cerci heavy at base, but suddenly narrowed beyond the basal fifth, directed backwards and upwards and gently bowed inwards, the apical third somewhat flattened and sulcate externally, the apex obliquely docked from above, total length nearly a third greater than that of the supra-anal plate.

General color wood-brown, irregularly marmorate with brunneo-testaceous; hind femora pallid externally, the upper margin irregularly flecked with brown, which shows a tendency to form two traces of transverse bars, discal borders alternately flavous and brunneous, the genicular lunules in nowise darkened; lower sulcus and internal face bright blood-red; hind tibiæ brunneous with a faint vinaceous tinge; the anterior and middle legs somewhat conspersed with brown. Antennæ pale ferruginous.

Length of body, ♂, 16.5 mm., of pronotum, 3.5 mm., of tegmina, 14 mm., of hind femora, 10 mm.

Habitat.—Chapada, near Cuyaba, Matto Grosso, Brazil, represented by a single male, the type, which was taken in April by H. H. Smith. Collection of the Carnegie Museum.

The wide vertex and scarcely sulcate fastigium of this insect are similar to these characters as found in the different species of *Leiotettix*, but other characters, as the form of the pronotum, etc., tend to place it with the species of *Dichroplus* instead. The nine spines in the outer row of the hind tibiæ and a faint longitudinal dark line on the hind coxæ would associate the present species with *fuscus* Thunberg and *exilis* Giglio-Tos, with closer relationship to the latter.

182. *Dichroplus arrogans* (Stål).

Acridium (*Podisma*) *arrogans* STÅL, Eugenes Resa, Orthopt., p. 333 (1860).

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

Pezotettix arrogans STÅL, Bihang. Svensk. Akad. Handl., V, no. 9, p. 6 (1878).

Dichroplus arrogans BRUNER, 2d Rept. Locust Com. B. Aires, pp. 72, 75, 76, figs. 36, 42 (1900).

Habitat.—This species is confined to Uruguay and middle Argentina. A specimen is at hand from Montevideo, where it was taken during December by H. H. Smith.

Dichroplus arrogans has a very similar appearance to that of the North American *Melanoplus atlantis* Riley and some of its near allies.

183. *Dichroplus punctulatus* (Thunberg).

Gryllus punctulatus THUNBERG, Mém. Acad. Pétersb., IX, p. 408 (1824).

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

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

Dichroplus punctulatus GIGLIO-TOS, Boll. Mus. Zool. Anat. Torino, IX, no. 184, p. 21 (1894).

Acridium (*Podisma*) *fraternum* STÅL, Eugenes Resa, Orthopt., p. 333 (1860).

Cyrtacanthacris munda WALKER, Cat. Dermapt. Salt. Brit. Mus., IV, p. 612 (1870).

Habitat.—Specimens are before me from both Chapada and Santarem, Brazil. They were taken in April and September by H. H. Smith.

184. ***Dichroplus brasiliensis*** Bruner.

Dichroplus brasiliensis BRUNER, Proc. U. S. Nat. Mus., XXX, p. 682 (1906).

Habitat.—Rio de Janeiro, Brazil, during the months of June to November inclusive (H. H. Smith).

185. ***Dichroplus robustulus*** (Stål).

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

Dichroplus robustulus BRUNER, Proc. U. S. Nat. Mus., XXX, pp. 679, 683 (1906).

Habitat.—Chapada, Brazil, where it was taken in March and November by H. H. Smith.

186. ***Dichroplus olivaceus*** sp. nov.

A medium-sized, but rather slender insect, reminding at first glance of *Atrachelacris unicolor* Giglio-Tos in color and general appearance, but possessing the characters in main of a *Dichroplus*. Head and pronotal characters similar to those of *D. gracilis* described in the present paper. Moderately hirsute throughout.

Head about as wide as the anterior edge of the pronotum, rather smooth, impunctate; the eyes of medium size, not prominent, no longer than the anterior margin of the cheeks below them, separated on the vertex by a space fully one-half wider than the greatest width of the frontal costa between the base of the antennæ; fastigium roundly depressed, very broadly and shallowly sulcate, decidedly wider than long, the antero-lateral carinæ arcuate and almost reaching the eyes; frontal costa prominent, almost twice as broad between the antennæ as the diameter of the basal joint of the latter, a little narrower at and below the ocellus, broadly, but not deeply, sulcate throughout, continued to the clypeus; facial carinæ parallel. Antennæ filiform (incomplete). Pronotum impunctate, gently expanded on the hind lobe, the median carina faint, present only on the hind lobe, the two lobes nearly equal in length, the hind margin slightly obtusangulate, the immediate apex rounded. Tegmina and wings somewhat surpassing the tip of hind femora and apex of abdomen, sparsely veined and membranous beyond the basal one-fourth, the discal field provided with a well defined intercalary vein. Anterior and middle femora only gently inflated, the hind femora about normal,

their apex extending a little beyond the tip of the abdomen. Hind tibiae eight-spined externally. Interspace between the mesosternal lobes decidedly longer than wide, and scarcely over half the width of the lobes themselves. Prosternal spine rather coarse and of considerable length, acuminate, directed gently caudad. Tip of abdomen gently clavate, the last ventral segment a little broader than long, the apex very broadly and roundly emarginate at middle. Supra-anal plate about as long as broad at base, the sides somewhat sinuose and rounded, with the edge a little thickened and upturned, the apex a little, but widely, produced, the middle longitudinally sulcate, for the most part narrowly, at the base a little wider, and receiving the small marginal apophyses of the preceding segment. Cerci as described for *D. gracilis*, but a little heavier.

General color dull olive-green, irregularly marmorate with flavous. Sides of head back of eyes and sides of pronotum without traces of the usual fuscous bar. Lunules of hind femora and hind tarsi stained with ferruginous, lower sulcus and inner face of former flavous.

Length of body, ♂, 21 mm., of pronotum, 4.85 mm., of tegmina, 17 mm., of hind femora, 12 mm.

Habitat.—Chapada, Brazil, in April. A single male (H. H. Smith). Collection of the Carnegie Museum.

Genus LEIOTETTIX Bruner.

Leiotettix BRUNER, Proc. U. S. Nat. Mus., XXX, pp. 643, 684 (1906).

The species of the genus *Leiotettix* are medium-sized locusts, which are related to both *Dichroplus* and *Scotussa*. They are found chiefly in Brazil and Paraguay, where they frequent grassy fields.

187. *Leiotettix viridis* Bruner.

Leiotettix viridis BRUNER, Proc. U. S. Nat. Mus., XXX, p. 685 (1906).

Habitat.—Specimens of this insect are before me bearing locality labels of both Chapada and Rio de Janeiro, Brazil. They were taken during the months of May, July, August, and October.

188. *Leiotettix sanguineus* Bruner.

Leiotettix sanguineus BRUNER, Proc. U. S. Nat. Mus., XXX, pp. 685, 687 (1906).

Habitat.—Chapada, Brazil (H. H. Smith).

Genus PARASCOPAS Bruner.

Parascopas BRUNER, Proc. U. S. Nat. Mus., XXX, pp. 643, 689 (1906).

Scopas GIGLIO-TOS (*nec* Bonaparte), Boll. Mus. Zool. Anat. Torino, IX, no. 184, p. 29 (1894).

189. *Parascopas chapadensis* Rehn.

Parascopas chapadensis REHN, Proc. U. S. Nat. Mus., XXXVI, pp. 159-162, figs. 38, 39 (1909).

Habitat.—Chapada, Brazil, in April (H. H. Smith).

190. *Parascopas obesus* (Giglio-Tos).

Scopas obesus GIGLIO-TOS, Boll. Mus. Zool. Anat. Torino, IX, no. 184, p. 29 (1894).

Parascopas obesus BRUNER, Proc. U. S. Nat. Mus., XXX, p. 689 (1906).

Habitat.—Corumba, Brazil, in March (H. H. Smith).

A third species, *P. sanguineus* Bruner, has been added to this genus (*Ent. News*, XXI, pp. 306-307, 1910). It comes from Puerto Bertoni, Paraguay, which is in the same general region.

Genus EUROTETTIX Bruner.

Eurotettix BRUNER, Proc. U. S. Nat. Mus., XXX, pp. 643, 691 (1906).

The representatives of the present genus seem to be confined in their distribution to a rather limited region embraced in Paraguay, northern Argentina, and southern Brazil. Like the majority of the other Melanopline locusts they are grasshoppers, *i. e.*, they are most frequently found in open grassy localities. The two previously known forms, together with a third now described, are readily separable by the annexed synoptic table:

SYNOPSIS OF THE SPECIES OF EUROTETTIX.

- A. Larger (♂, 18.5-19 mm.). Hind tibiae vinaceous, the lower sulcus of hind femora flavous with a pinkish tint internally near base. *robustus* sp. nov.
- AA. Smaller (♂, 11-15 mm.). Hind tibiae purple or lavender, lower sulcus purple, or scarlet.
 - b. Hind femora very robust, without indications of dusky bands across their upper edge. The lower sulcus deep purple. *femoratus* Bruner.
 - bb. Hind femora less robust, their upper edge with two dusky bands. The lower sulcus scarlet. *minor* Bruner.

191. *Eurotettix robustus* sp. nov.

A much larger and more robust insect than either of the previously described species, in which the tegmina of the female overlap on the dorsum. Hind femora robust, the tibiae vinaceous. While the general color of this insect is ferruginous, there is a faint tinge of olivaceous in the male above and on the anterior and middle femora.

Head inserted into pronotum almost to the eyes and about as wide, the occiput rounding and gently elevated above the plane of the pro-

notum; vertex as wide as the broadest portion of the frontal costa (♂) or about one-fourth wider (♀), the fastigium comparatively large and broadly, but shallowly, sulcate, roundly depressed, provided with a faint transverse carina where it meets the frontal costa. Latter flat and punctulate above, sulcate at the ocellus and below, about reaching the clypeus, of nearly equal width. Antennæ filiform, slender, almost as long as the hind femora. Pronotum expanding behind, the hind margin subangulate, the transverse sulci fairly prominent, especially the posterior, which is straight and situated plainly behind the middle; median carina visible only on the smooth hind lobe. Tegmina lobate, nearly as broad as long, in the female slightly overlapping on the dorsum, in the male not quite touching. Hind femora large and robust, in both sexes reaching beyond the tip of the abdomen by nearly the length of the knees. Hind tibiæ also rather robust and eight-spined externally. Tip of male abdomen not enlarged, the last ventral segment short, its upper or outer margin meeting in a slightly acute angle; supra-anal plate small, plain, triangular, its sides gently curved, the median base provided with a small sulcus; cerci rather long and slender, but little tapering apically, curved gently inward and to the rear. Mesosternal lobes separated by a space a little longer than wide. Prosternal spine of moderate size, acuminate. Valves of ovipositor comparatively small and slender—of normal form among the *Melanopli*.

General color above brunneo-ferruginous, profusely and irregularly mottled with fuscous; below flavous. Sides of head and upper half of sides of pronotum provided with well defined darker bands, most prominent in the male, face, cheeks below the eyes, and lower portion of lateral lobes of pronotum of latter sex pale flavous, as are also dashes on the pleura in advance of the base of the hind femora. Inner face of hind femora infuscated, the upper edge and genicular area also more or less strongly fuscous, in the male each femur is provided a little before its middle above with a well defined fuscous patch; lower edge flavous, in the female with a pinkish tinge basally and next to the inner edge.

Length of body, ♂, 18.5 mm., ♀, 24 mm.; of pronotum, ♂, 5 mm., ♀, 6.5 mm.; of tegmina, ♂, 3.25 mm., ♀, 5.5 mm.; of hind femora, ♂, 11 mm., ♀, 15 mm.

Habitat.—Several specimens comprising both sexes are before me coming from Chapada, near Cuyaba, Matto Grosso, Brazil, where

they were taken in April (H. H. Smith). Types in the Carnegie Museum.

Genus *CHLORUS* Giglio-Tos.

Chlorus GIGLIO-TOS, Boll. Mus. Zool. Anat. Torino, XIII, no. 311, p. 50 (1898).

This is another brachypterous genus of locusts of the group *Melanopli*, the representatives of which are, for the most part, confined to southern Brazil, Paraguay, and northern Argentina. At least four species are known, including the one now described.

192. *Chlorus brunneus* sp. nov.

Quite closely related to both *C. borellii* Giglio-Tos and *C. vittatus* Bruner in size and form, but differing from both of them by almost entirely lacking any green tints in its coloration. About the size of and having the pattern of its markings similar to those of *vittatus*. At once recognized by the pale greenish-yellow hind tibiae and the heavy longitudinal dusky marking on the outer disk of the hind femora; inner disk on apical half also black or very strongly infuscated. Lower sulcus and basal half of inner face deep blood-red, remaining portions flavo-ferruginous, irregularly conspersed above with fuscous, the genicular portion also strongly infuscated. Occiput and dorsum of pronotum infuscated and bordered on each side by the usual ferrugineo-testaceous bands. Cheeks below the eyes, lower half of lateral lobes of pronotum and pleural bands in advance of the middle and hind coxae, testaceous. Abdomen brunneo-testaceous, above conspersed with brown flecks, and at sides marked near base with rather large patches of piceous. Antennae pallid.

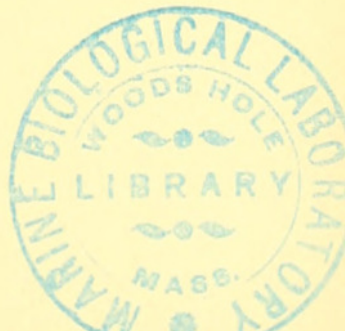
Length of body, ♀, 27 mm., of pronotum, 6.5 mm., of tegmina, 5.5 mm., of hind femora, 16 mm.

Habitat.—Corumba, Brazil, March, two females (H. H. Smith). In the Carnegie Museum.

Genus *PARADICHROPLUS* Brunner v. Wattenwyl.

Paradichroplus BRUNNER v. WATTENWYL, Ann. Mus. Genova, XXXIII, p. 145 (1893).

The genus *Paradichroplus* of Brunner is represented in South America by several species. These insects are, for the most part, confined to Paraguay and southern Brazil. The following table will aid in their separation:



SYNOPSIS OF THE SOUTH AMERICAN SPECIES OF PARADICHRPLUS.

- A. Hind tibiæ provided with nine spines in the outer row.
 - b. General color yellowish, the dorsum of the pronotum and abdomen dusky. Head black.....*bilobus* Giglio-Tos.
 - bb. General color greenish olivaceous, the dorsum of the pronotum and abdomen light. Head concolorous.....*brunneri* Giglio-Tos.
- AA. Hind tibiæ provided with eight spines in the outer row.
 - b. Hind tibiæ of the normal form, their lateral edges not expanded and acute.
 - c. Larger (♀, 22-25 mm.). Moderately robust, the head large. General color ferruginous, the abdomen with four or six basal segments twice spotted at middle with black.....*bipunctatus* Giglio-Tos.
 - cc. Smaller (♀, 18-21 mm.). Rather slender, the head normal. Color variable.
 - d. Color testaceo-ferruginous. Hind tibiæ orange-red; internal and external disk of hind femora infuscated or obscure.
rubripes sp. nov.
 - dd. Color more or less olivaceous. Hind tibiæ greenish; internal and external disk of hind femora not especially infuscated.
 - e. Genicular area of hind femora with black lunules.
fusiformis Giglio-Tos.
 - ee. Genicular area of hind femora pale ferruginous, without the dark lunules.....*geniculatus* sp. nov.
 - bb. Hind tibiæ expanded apically and with the lateral edges acute.
aberrans Giglio-Tos.

193. *Paradichroplus rubripes* sp. nov.

Very similar in general form to *P. geniculatus*, but noticeably larger. General color testaceo-ferruginous, the hind femora internally rather strongly infuscated, externally in the female strongly tinged with olivaceous; the tibiæ orange-red.

Head of moderate size, about the width of the anterior edge of the pronotum; eyes a little prominent, oval (♀), a little longer than the front edge of the cheeks below them, subglobular (♂), nearly twice the length of the anterior edge of the cheeks. Vertex as in *geniculatus*, the frontal costa rather wide and broadly sulcate, more or less punctured above the ocellus, in both sexes ending above the base of the clypeus. Antennæ slender, filiform, quite noticeably longer than head and pronotum together. Pronotum expanding posteriorly, viewed laterally tumid anteriorly; transverse sulci quite prominent, hind lobe closely and minutely punctulate, the median carina faint, most apparent on the posterior portion; hind margin gently and broadly emarginate. Tegmina minute, narrow, lateral, a very little surpassing the hind margin of the first abdominal segment. Hind

femora of moderate robustness, reaching a little beyond the apex of the abdomen in both sexes; tibiae provided externally with eight spines. Supra-anal plate triangular, the middle sulcate at base; cerci of male long, slender, gently incurved apically; last ventral segment short, narrowing, entire at apex. Prosternal spine pyramidal, of moderate size.

General color testaceo-ferrugineous with some fuscous mottlings on head, pronotum, and legs, much darkest in the male. Hind femora infuscated internally, tinged with olivaceous on the outer disk; the genicular lunules black. Hind tibiae pale orange-red; antennae of males testaceous, of females reddish becoming infuscated apically.

Length of body, ♂, 16 mm., ♀, 21 mm.; of pronotum, ♂, 3.1 mm., ♀, 4.1 mm.; of tegmina, ♂, 2.3 mm., ♀, 3 mm.; of hind femora, ♂, 9.5 mm., ♀, 12 mm.

Habitat.—The types, ♂ and ♀, together with a paratypical ♀ come from Corumba, Brazil, where they were taken during March by H. H. Smith. These insects are deposited in the Carnegie Museum.

194. *Paradichroplus geniculatus* sp. nov.

Most closely related to *P. fusiformis* Giglio-Tos, but differing from that species by having the knees of hind femora uniformly pale ferruginous, while the legs themselves are pale greenish olive. Abdomen of male strongly tinged with orange.

Size small, form rather slender. Entire insect sparsely hirsute. Head of medium size, about as wide as the front edge of the pronotum, the front gently oblique; eyes fairly large, but not prominent, in the female very little, in the male about one-fourth, longer than the anterior margin of the cheeks immediately below them, vertex a little wider than (♀), or not quite as wide (♂) as the basal antennal joint; the fastigium strongly depressed, in the male deeply, in the female shallowly, sulcate. Frontal costa prominent and profoundly sulcate throughout, slightly widest above the ocellus, in the female not quite reaching the clypeus. Lateral or facial carinae prominent, straight, but little divergent below. Antennae filiform, slender, somewhat exceeding the combined length of head and pronotum. Pronotum smooth, moderately divergent, without traces of lateral carinae and with the faint median carina showing only on the hind lobe; transverse sulci prominent; anterior margin broadly rounded upon the occiput, the posterior margin very widely shallowly and roundly emarginate.

Tegmina minute, lateral, narrow, in both sexes reaching slightly past the hind margin of the first abdominal segment. Hind femora robust, in the female reaching, and in the male extending beyond, the apex of the abdomen by the length of the genicular portion; the hind tibiae with eight spines externally. Abdomen carinated above, gently tapering, in the male not enlarged apically, the last ventral segment short, the apex entire; supra-anal plate triangular, sulcate at middle basally, the lateral edges somewhat margined; marginal apophyses small, inflated; cerci long and slender, the apical half curved inwards so that their points meet at the apex of the supra-anal plate. Prosternal spine rather robust, quadrate, pyramidal.

General color of female above rusty olivaceous, in the male inclining to dark brown on occiput and meso- and meta-thorax, with the abdomen of latter strongly tinged with reddish orange; cheeks behind lower margin of eyes and lower half of sides of pronotum together with pleura, pallid, bordered above by a piceous band in the males, but obliterated in the females, sides of basal segments of latter black-maculate. Underside pale testaceous, femora and tibiae of all the legs chiefly greenish olive, the knees of hind pair and all the tarsi strongly tinged with pale ferruginous. Antennae bright ferruginous to rufous.

Length of body, ♂, 14 mm., ♀, 18 mm.; of pronotum, ♂, 3 mm., ♀, 3.5 mm.; of hind femora, ♂, 8.75 mm., ♀, 9.5 mm.; of tegmina, ♂ and ♀, 2.5 mm.

Habitat.—Chapada, Brazil. Several specimens of both sexes, including immature individuals, collected during April by H. H. Smith. The types are in the collection of the Carnegie Museum.

195. *Paradichroplus fusiformis* Giglio-Tos.

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

Habitat.—Corumba and Chapada, Brazil, during March and April (H. H. Smith).

Genus *OSMILIA* Stål.

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

The genus *Osmilia* is made up of a number of closely related tropical American species, which are quite difficult to separate, especially in the case of the forms described by the earlier authors. At least four of the nine species listed by Kirby in his *Catalogue of Orthoptera* belong to Brazil.

196. *Osmilia violacea* (Thunberg).

Gryllus violaceus THUNBERG, Mém. Acad. Pétersb., IX, pp. 396, 413 (1824).

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

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

Habitat.—Numerous specimens of this species are before me as I write. They were taken at Para, Santarem, Corumba, Rio de Janeiro, Chapada, and other Brazilian localities. The dates of capture include the months of April to December inclusive (H. H. Smith).

Genus RHYTIDOCROTA Stål.

Rhytidochrota STÅL, Recens, Orthopt., I, pp. 35, 54 (1873).

197. *Rhytidochrota lævifrons* Stål.

Rhytidochrota lævifrons STÅL, Bihang, Svensk. Akad. Handl., V, no. 4, p. 78 (1878).

Habitat.—Two males and a single female, Para, Brazil, in April (H. H. Smith).

198. *Rhytidochrota turgida* Stål?

Rhytidochrota turgida STÅL, Recens. Orthopt., I, p. 54 (1873).

Habitat.—A single female specimen from Para, Brazil, is referred to this species with some hesitation. It, like the preceding, was collected during the month of April by H. H. Smith.

Genus PSILOSCIRTUS gen. nov.

There is still another of the numerous medium-sized apterous, or subapterous, South American locusts at hand, which cannot be made to fit any of the known genera. It is therefore my decision that hereafter it shall be designated as *Psiloscirtus olivaceus*. The present genus comes closest to *Rhachicreagra* Rehn, but differs from that insect in a number of respects. It also bears resemblance to *Rhytidochrota* Stål, as may be seen by a reference to the following diagnosis.

Body sparsely hirsute throughout, apterous, very coarsely punctulate and rugulose on head, thorax, and first abdominal segment. Head of moderate size, the vertex very narrow, linearly sulcate, the fastigium depressed, also longitudinally and narrowly sulcate, not quite merging with the sulcation of the frontal costa. Latter rather prominent between the antennæ, punctulate, fading below the ocellus. Eyes large, prominent, their longest diameter nearly twice the length of the front margin of the cheeks. Face somewhat oblique. An-

tennæ filiform, as long as the hind femora, composed of about twenty joints, which beyond the immediate basal ones are rather evenly, strongly, and profusely pitted. Pronotum subcylindrical, the posterior lobe being gently dilated, a little less than half as long as the anterior one, and straight behind; median carina wanting. Hind femora about two-fifths longer than the abdomen, moderately robust, the upper and lower carinæ serrate, the genicular lobes not acute. Hind tibiæ seven-spined externally and nine-spined internally. Tip of male abdomen upturned, the last ventral segment short, tapering, its outer margin entire. Supra-anal plate elongate-triangular, the lateral edges upturned and sinuate, the apex bluntly rounded, the middle roundly elevated and longitudinally faintly sulcate. Cerci rather broad at base, somewhat flattened, gently tapering to middle, where they give off a backwardly directed tooth, turn inward, and again fork, the inner branch being the larger and longer. Mesosternal lobes separated by a quadrate space a little narrower than the lobes themselves. Prosternal spine with a heavy base, but short and small.

199. *Psiloscirtus olivaceus* sp. nov.

General color olivaceous. On the head and thorax above tinged with ferruginous; on the femora and beneath with flavous. Genicular lunules of hind femora and surroundings strongly infuscated. Auditory apparatus large, nearly circular.

Eyes pale castaneous with a metallic lustre in certain lights. All three transverse sulci of pronotum continuous, fairly deep; the posterior one about one-fourth the length of the disk from the hind margin. Latter very gently, but widely, emarginate. Lower edges of pronotum, cheeks back of eyes, and pleura concolorous, without paler or darker markings. Anterior and middle femora only moderately inflated. Hind tibiæ and tarsi rather profusely hirsute.

Length of body, ♂, 14.5 mm., of pronotum, 3 mm., of hind femora 10.25 mm.

Habitat.—Benevides, Brazil, in July, a single male (H. H. Smith). This insect is in the Carnegie Museum.

Genus *EUSITALCES* gen. nov.

At first glance reminding one of a *Sitalces* Stål, but upon a closer examination showing a nearer relationship to *Rhachicreagra* Rehn. From the last named genus it differs in having but six spines on the outer

carina of the hind tibiae, instead of eight, in the more prominent and less depressed fastigium of the vertex, the blunter and shorter prosternal spine, and in having much larger and broader tegmina.

The type of this genus is the following described species which is represented by a single male from Bartica, Demarara, British Guiana. It was taken during late March or early April by Mr. R. J. Crew, and sent to the author, in whose collection it now is.

200. *Eusitalces vittatus* sp. nov.

Size rather small; antennae long and coarse; body very dark brown or black, striped with yellow; the femora stout and chiefly ferruginous, becoming olivaceous apically, the knees infuscated; the tibiae and tarsi greenish gray; face and venter yellowish.

Head moderately large, a little wider than the front edge of the pronotum, the occiput somewhat ascending above the plane of the pronotum; eyes large and prominent, subglobular, with a brassy tinge, separated above by a space scarcely more than one-half as great as the width of the frontal costa between the base of antennae; fastigium of the vertex triangular, about as broad as long, the center provided with a fairly broad longitudinal median sulcus, which narrows posteriorly and continues to the front edge of the occiput; frontal costa prominent above the ocellus, a little narrowed immediately below, then again expanding and continuous to the clypeus, broadly and deeply sulcate, with coarse walls; viewed laterally the face is nearly straight; facial carinae prominent, nearly parallel. Antennae coarse, about as long as the hind femora, twenty-jointed. Pronotum without lateral carinae, somewhat constricted laterally at the middle transverse sulcus, all three sulci profound, the median carina plain in front of anterior sulcus and prominent on the hind lobe; the latter considerably expanding posteriorly, front lobe sparsely punctate and somewhat transversely rugose, hind lobe closely and finely punctate; anterior edge of disk roundly emarginate, hind border angulately so, and with the edge slightly elevated in the emargination. Tegmina lobate, lateral, broadly oval, reaching nearly to the hind edge of the metathorax. Tympanum or auditory apparatus inconspicuous. Hind femora large, robust, extending beyond the apex of the abdomen nearly one-half of their length, the upper carina with faint serrations or tubercles, at the apex ending in a minute spine; terminal joint of hind tarsi equal to, or a little more than, the

first and second joints combined, the arolium large, transverse. Apex of male abdomen bluntly acuminate, short; supra-anal plate triangular, a little longer than basal width, sides somewhat elevated, apex rounded; cerci a little longer than plate, moderately heavy, directed backward and bent roundly inwards on apical half, forked, the lower prong longest and the slenderer of the two. Hind tibiae and tarsi strongly hirsute. Prosternal spine short and weak, directed slightly to the front.

Cheeks, thorax, and basal half of abdomen blackish, a line on hind edges of eyes above, across occiput and continued as a lateral border to the disk of the pronotum, the upper portion of tegmina, across first and showing as dots on the two succeeding abdominal segments, the dorsal carina of abdomen, also a band across the cheeks, the lower portion of sides of pronotum and mesothorax, yellow. There are also two similarly colored spots on the metathorax above the coxae of the hind femora. Antennae at base testaceous, changing to ferruginous towards the middle, and apically infuscated. Tibial spines pale, black-tipped.

Length of body, ♂, 12 mm., of pronotum, 2.85 mm., of tegmina, 1.15 mm., of hind femora, 8.9 mm.

Genus EUJIVARUS gen. nov.

Resembling the members of the genus *Jivarus* in their general characteristics, but at once separable from them by the absence of the terminal spine on the outer margin of the hind tibiae. Related to *Microtylopteryx* Rehn.

Insects medium or small in stature, fusiform or subfusiform, very coarsely, deeply, and somewhat closely punctulate throughout, but more especially so upon the pronotum and dorsum of meso- and metanotum. Tegmina very much abbreviated, lateral, lobiform, or spatulate, rather strongly veined near base and on the costal field, remainder simply sparsely but coarsely punctulate. Auditory apparatus minute. Pronotum without lateral carinae, evenly expanding posteriorly, the median carina fairly prominent throughout, severed by all three transverse sulci, the last at least two-thirds of the distance towards the hind margin; latter somewhat emarginately truncate at middle. Abdomen of both sexes strongly and evenly tapering apically as in *Rhytidichrota*; the supra-anal plate elongate, triangular, with the sides gently bowed and somewhat thickened, ending at about one-third the distance from the apex, the latter projecting as a flat-

tened median smaller triangular process. Cerci heavy at base, on outer half suddenly contracted to a rather slender finger three times as long as thick, the apex acuminate. Prosternal spine large, broadly transverse, the apex either simple or bilobed. Interspace between the mesosternal lobes nearly or quite as long as wide, the inner margin of the lobes themselves rounded, the interspace narrowest caudad. Hind tibiae six- to eight-spined externally. Two species are at hand. They may be separated as follows:

SYNOPSIS OF THE SPECIES OF EUJIVARUS.

- A. Larger (♀, 14-16 mm. in length). Sides of pronotum nearly as strongly and closely punctulate as the disk. Hind femora without fuscous transverse bands..... *fusiformis* sp. nov.
- AA. Smaller (♀, 13 mm. in length). Sides of pronotum, especially in the black band glabrous and almost entirely free from puncturation. Hind femora obliquely banded externally and transversely above with fuscous.
meridionalis sp. nov.

The species *fusiformis* may be considered the type of the genus.

201. *Eujivarus fusiformis* sp. nov.

Size small. General shape fusiform, evenly tapering both cephalad and caudad from the base of the hind femora. Head small, a little narrower than the front edge of the pronotum, into which it sets almost or quite to the hind margin of the eyes. Latter prominent, in the female about one-third longer than, in the male nearly double, the anterior edge of the cheeks in length; vertex rather narrow, scarcely as wide (♂) or as wide (♀) as the diameter of the rather robust filiform antennae, its posterior portion and anterior part of occiput longitudinally carinate; fastigium a little depressed, triangular, a trifle wider than long, in the middle widely and shallowly sulcate, the surface rather coarsely punctulate, separated from the upper portion of the frontal costa by a well-defined angle; front gently oblique, rather strongly punctulate, frontal costa prominent above between the antennae, at the ocellus and below very much less prominent, sulcate and continuous to the base of the clypeus, its sides rather coarse and somewhat sinuose. Antennae heavy, about as long as the head and pronotum together, seventeen-jointed, all but the two basal joints strongly pitted and hirsute. Terminal joints of palpi a very little flattened and squarely truncate at apex. Pronotum expanding posteriorly and evenly rounded above, without traces of lateral carinae, the deflected lobes almost as closely and deeply punctulate as the

disk, except on a narrow area anteriorly back of the eyes; median carina present and equally prominent, cut back of the anterior two-thirds by the last sulcus; posterior border sinuose, broadly emarginate, anterior border subtruncate; lower lateral edges also sinuose, the hind angle broadly rounded. Tegmina small, lateral, very narrow at base, the anal edge straight and longitudinally veined; costal edge rather strongly lobate, without veins, but deeply punctured, the apex rounded. Pleura strongly punctured. Auditory apparatus inconspicuous, entirely covered by the apical half of the tegmina. Abdomen strongly carinated above throughout, as is also the metathorax. Hind femora robust, the upper and lower edges punctured; the disk glabrous, carinae smooth, not at all serrate. Hind tibiae six- to seven-spined externally. The strongly transverse prosternal protuberance faintly, or not at all, notched at middle.

General color of occiput, sides of head back of eyes, the pronotum, except narrowly at lower edges, dorsum of meso- and meta-thorax, pleura for most part, and abdomen basally, dark brown to black. Most of front, cheeks below the eyes, lower edges of sides of the pronotum, two patches on pleura in advance of the insertion of the middle and hind legs, and lower side of insect, flavous. Sides and apical portion of abdomen, anterior and middle legs, upper and lower edges of hind femora, largely testaceous. Immediate base and several patches beyond internally of latter and the upper half of external disk varied with black or fuscous, the lower half of disk tinged with gray. Hind tibiae dull vinaceous red. Anterior and middle tibiae and tarsi, and sometimes the femora, fasciate and maculate with black. Antennae infuscated.

Length of body, ♀, 14 mm., of pronotum, 3.65 mm., of tegmina, 2.8 mm., of hind femora, 9 mm.

Habitat.—Chapada, near Cuyaba, Matto Grosso, Brazil, May to November (H. H. Smith). Type in the Carnegie Museum.

Several specimens are at hand in addition to the type. Two of these latter were collected during April and differ from the other in being of a much paler color dorsally and in having more fuscous on the hind femora. They do not, however, differ sufficiently to warrant describing them as distinct.

202. *Eujivarus meridionalis* sp. nov.

Smaller and more robust than *E. fusiformis*. The head fully as broad as the anterior edge of the pronotum; front less oblique than

in that species and the frontal costa but little produced between the antennæ. Eyes large and prominent, fully twice the length of the anterior edge of the cheeks below them, separated above by a space a little narrower than the diameter of the antennæ (♀) or by one almost linear (♂). Occiput heavily carinated longitudinally; the vertex as in *fusiformis*. Antennæ robust, about two-thirds (♀) or four-fifths (♂) as long as the head and pronotum combined. Pronotum with a glabrous area on upper portion of lateral lobes bordered above by a subcarina, which would take the place of lateral carinæ were these actually present. Tegmina more broadly expanded apically than in *fusiformis*, reaching hind margin of first abdominal segment, their dorsal edge pallid and irregularly rugose rather than veined, bowed both upwards and inwards apically; the disk shining black and strongly and irregularly punctulate. Basal abdominal segment plainly longitudinally ridged on dorsum between the tegmina and the medio-dorsal carina, the latter prominent and continuous with that of the occiput and thorax. Hind femora rather short and robust, a little surpassing the apex of the abdomen in the female, fully one-third of their length in the male. Outer margin of hind tibiæ eight-spined. Prosternal spine strongly transverse and bituberculate at apex.

General color-pattern as in the preceding species, but inclining to brown instead of testaceous. Hind femora plainly bifasciate transversely on upper edge, and obliquely on outer face, upper basal third with a conspicuous grayish brown patch. Anterior and middle legs pallid, more or less mottled and fasciate with fuscous; hind tibiæ as in *fusiformis*.

Length of body, ♂, 10 mm., ♀, 13 mm.; of pronotum, ♂, 2.5 mm., ♀, 3.25 mm.; of tegmina, ♂, 1.85 mm., ♀, 2 mm.; of hind femora, ♂, 6.5 mm., ♀, 7.65 mm.

Habitat.—Pernambuco, May (L. Bruner). Types in the author's collection.

Genus PYCNOSARCUS Bolivar.

Pycnosarcus BOLIVAR, Bol. Soc. Españ., VI, p. 392 (1906).

Polysarcus SAUSSURE (*nec* FIEBER), Rev. Zool., Ser. 2, XI, p. 392 (1859).

203. *Pycnosarcus atavus* (Saussure).

Polysarcus atavus SAUSSURE, Rev. Zool., Ser. 2, XI, p. 393 (1859).

Pycnosarcus atavus BOLIVAR, Bol. Soc. Españ., VI, p. 392 (1906).

Habitat.—Rio de Janeiro, Brazil. Three nymphs, one male, and five females, taken in October by H. H. Smith.



Bruner, Lawrence. 1911. "South American Acridoidea." *Annals of the Carnegie Museum* 8(1), 5–147. <https://doi.org/10.5962/p.14705>.

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