

A CONTRIBUTION TO THE KNOWLEDGE OF THE ACRIDIDÆ (ORTHOPTERA)
OF COSTA RICA.

BY JAMES A. G. REHN.

The following study was based on a series of two hundred and ninety-one specimens from various localities in Costa Rica, and in the collections of the Academy, Mr. Morgan Hebard of Chestnut Hill, Philadelphia, and the United States National Museum. These collections were represented respectively by one hundred and fifty-nine, one hundred and twelve, and twenty specimens.

The author wishes to thank Mr. Hebard and Dr. Ashmead of the National Museum for permission to study portions of the material, and for other favors rendered during the preparation of this and other papers.

It is proposed to follow this contribution at a later date with others on the Tettigonidæ and Gryllidæ of Costa Rica, interesting collections of which are now in hand.

Subfamily ACRIDINÆ (*Truxalinæ* Auct.).

TRUXALIS Fabricius.

1775. *Truxalis* Fabricius, Syst. Entom., p. 279.

Included *nasutus* and *brevicornis*, of which the latter is the type *nasutus* being one of the two congeneric species on which Linnæus based the genus *Acrida*.

Truxalis brevicornis (Johansson).

1763. *Gryllus brevicornis* Johansson, Amœn. Acad., VI, p. 398. [America septentrionali.]

San Carlos, Costa Rica. (Schild and Burgdorf.) [U. S. N. M.]
One female.

Carrillo, Costa Rica. [Hebard collection.] Ten males, ten females.

Both color phases are represented, some of the females having distinct though small maculations on the axillary field of the tegmina.

SILVITETTIX Bruner.

1904. *Silvitettix* Bruner, Biol. Cent.-Amer., Orth., II, p. 55. Type.—*S. communis* Bruner.

Silvitettix communis Bruner.

1904. *Silvitettix communis* Bruner, Biol. Cent.-Amer., II, p. 56. [Monte Redondo Juan Veñas and Pozo Azul, Costa Rica.]

Carrillo, Costa Rica. [Hebard collection.] Three males, four females.

Monte Redondo, Costa Rica. January, 1903. (C. F. Underwood.) [A. N. S. Phila.] Two males, four females.

Escazu, Costa Rica. January, 1903. (C. F. Underwood.) [A. N. S. Phila.] One male.

The variation in color noticed in the original description is apparent in the series studied.

AMBLYTROPIDIA Stål.

1873. *Amblytropidia* Stål, Recensio Orthopterorum, I, p. 107. Type.—*A. ferruginosa* Stål.

Amblytropidia costaricensis Bruner.

1904. *Amblytropidia costaricensis* Bruner, Biol. Cent.-Amer., Orth., II, p. 66. [Greytown, Nicaragua; San José, Costa Rica.]

Monte Redondo, Costa Rica. January, 1903. (C. F. Underwood.) [A. N. S. Phila.] One immature female.

ORPHULELLA Giglio-Tos.

1894. *Orphulella* Giglio-Tos, Boll. Mus. Zool. Anat. Comp. Torino, IX, No. 184, p. 10.

Included *punctata* (De Geer), *intricata* Stål, *gracilis* and *elegans* Giglio-Tos, of which the first may be taken as the type.

Orphulella punctata (De Geer).

1773. *Acrydium punctatum* De Geer, Mém. Hist. Ins., III, p. 503, t. 42, fig. 12. [Surinam.]

Tarbaca, Costa Rica. November, 1902. (C. F. Underwood.) [A. N. S. Phila.] One female.

Guatel, Costa Rica. April, 1902. (C. F. Underwood.) [A. N. S. Phila.] One female.

These specimens are referred here with some little doubt, but no material difference is detected on comparison with a female of *O. punctata* from St. Vincent, West Indies.

Orphulella costaricensis Bruner.

1904. *Orphulella costaricensis* Bruner, Biol. Cent.-Amer., Orth., II, p. 82. [San José, Costa Rica.]

Tarbaca, Costa Rica. November, 1902. (C. F. Underwood.) [A. N. S. Phila.] One female.

Guatel, Costa Rica. April, 1902. (C. F. Underwood.) [A. N. S. Phila.] Three males, eighteen females.

Monte Redondo, Costa Rica. January, 1903. (C. F. Underwood.) [A. N. S. Phila.] Eight males, five females.

This species is extremely variable in color as noticed by Bruner,

a great range of types being exhibited by the material studied. None of the specimens exhibit the median carina of the fastigium described by Bruner.

Subfamily OEDIPODINÆ.

LACTISTA Saussure.

Lactista punctata (Stål).

Monte Redondo, Costa Rica. January, 1903. (C. F. Underwood.) [A. N. S. Phila.] One male, one female.

These specimens have the median carina of the pronotum lower than in specimens from the States of Tamaulipas and Vera Cruz, Mexico, and the bluish tint of the caudal tibiæ is weaker and more fuscous in character.

A specimen from San Marcos, Nicaragua (C. F. Baker), agrees with the Costa Rican individuals in the points of difference from the Mexican type. The differences are, however, so slight that they appear unworthy of specific recognition.

HELIASTUS Saussure.

Heliastus costaricensis n. sp.

Type; ♀; Turrialba, Costa Rica. (Schild and Burgdorf.) [U. S. Nat. Mus., No. 8,173.]

Closely allied to *H. aztecus* Saussure from northern Mexico, but differing in the narrower and deeper fastigium, the deeper sulcation of the frontal costa, the more prominent eyes and the less sellate pronotum.

Size medium (about equal to that of *H. sumichrasti*); form moderately robust. Head very slightly elevated above the level of the pronotum, occiput moderately ascending; fastigium distinctly declivent and passing without any angle into the frontal costa; interocular region about twice as wide as the frontal costa; vertex and fastigium slightly excavated with a very slight median and distinct lateral carinæ; fastigium gradually narrowing to the frontal costa, which is broadly and distinctly sulcate with prominent carinæ, becoming obsolete a short distance ventrad of the median ocellus; antennæ distinctly exceeding the head and pronotum in length. Pronotum very slightly sellate, the dorsal outline but slightly depressed at the transverse sulci, all three of which are distinct and well marked; cephalic margin slightly arcuate, caudal margin obtuse-angulate with the angle somewhat rounded; median carina very slight cephalad, obsolete between the sulci, slight but distinct on the metazona, humeral angle very distinct on the metazona but rounded; surface of the metazona rugoso-punctate; lateral lobes deeper than long, sulci very distinct, the ventro-

caudal angle subrotundate and not produced. Tegmina exceeding the tips of the abdomen and the caudal femora by the length (cephalo-caudal) of the head, subequal in width, the costal dilation apparent but not very large; apex obliquely truncato-rotundate; intercalary vein indistinct, irregular and of an indefinite character. Wings equal to the tegmina in length when closed; costal margin a very faint reverse curve in outline; apex rather bluntly rounded. Interspace between the mesosternal lobes twice as broad as long; interval between the metasternal lobes about three times as broad as long. Caudal femora robust, the genicular region not strongly enlarged, tibiae slightly but distinctly shorter than the femora.

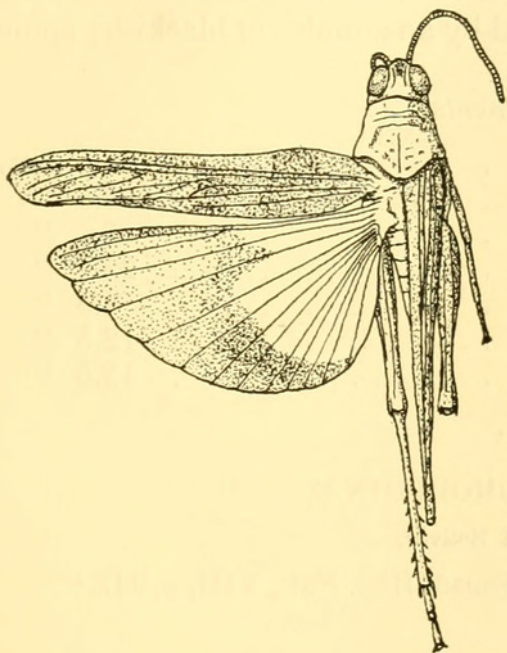


Fig. 1.

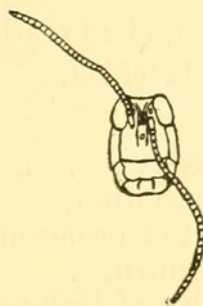


Fig 2.

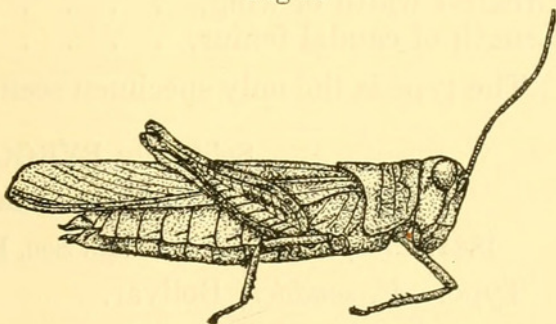


Fig. 3.

Heliastus costaricensis n. sp. Type. Fig. 1, dorsal view; fig. 2, cephalic view of head; fig. 3, lateral view.

General color, above raw umber, becoming fawn color on the sides of the head and pronotum. Head distinctly punctate with blackish-brown; antennae fawn annulate with blackish-brown, the annuli of each color increasing in size distad; eyes dark ferruginous. Pronotum with the metazona finely and closely punctulate with blackish-brown. Tegmina with two irregular transverse bands made up of burnt-umber annuli, one band median, the other premedian; the principal longitudinal veins are accompanied by rows of annuli of the same color and size, but more sparsely distributed and absent from the apical fourth, which is almost entirely hyaline; the median section of the tegmen

bears over all a faint but noticeable "bloom" of ecru-drab, such as is found in some other species of the genus. Wings with the disk scarlet-vermilion; fuscous band rather faint, prout's brown in color, and absent toward the costal margin, ulnar tænia very slight, apex slightly suffused and the apical half of the costal margin strongly and narrowly marked with vandyke brown. Abdomen fawn color. Caudal femora dorsad and ventrad cinnamon clouded with mars brown, lateral face dull hoary with a median streak of blue-black, varying in length on the two femora, extending nearly the entire length in one, and not passing the middle in the other; genicular region blackish; internal face gallstone yellow with two bars of black, one of which suffuses the ventral sulcus. Caudal tibiæ greenish-white at the base (immediate base blackish), distal half scarlet, separated by an annulus of blackish; spine tipped with blackish.

Measurements.

Length of body,	28	mm.
Length of pronotum,	5.5	"
Caudal width of pronotum,	5	"
Length of tegmen,	25	"
Greatest width of tegmen,	4.5	"
Greatest width of wing,	12.5	"
Length of caudal femur,	13.5	"

The type is the only specimen seen.

Subfamily PYRGOMORPHINÆ.

PROSPHENA Bolivar.

1884. *Prospheña* Bolivar, Anal. Soc. Españ. Hist. Nat., XIII, p. 447.

Type.—*P. scudderi* Bolivar.

Prospheña scudderi Bolivar.

1884. *Prospheña Scudderi* Bolivar, Anal. Soc. Españ. Hist. Nat., XIII, p. 447. [Guatemala.]

Tarbaca, Costa Rica. November and December, 1902. (C. F. Underwood.) [A. N. S. Phila.] Three males.

Previously known only from the type locality. The specimens range in color from greenish-yellow to dull green, the tegmina solid dull brownish, the caudal tibiæ and tarsi suffused with crimson to a variable extent, the spines yellow with the tips black.

Subfamily LOCUSTINÆ.

MUNATIA Stål.

1875. *Munatia* Stål, Bihang till K. Svenska Vet.-Akad. Handl., III, No. 14, p. 28.

Type.—*M. punctata* Stål.

***Munatia punctata* Stål.**

1875. *M[unatia] punctata* Stål, Bihang till K. Svenska Vet.-Akad. Handl., III, No. 14, p. 28. [Chiriqui.]

Tucurrique, Costa Rica. (Schild and Burgdorf.) [U. S. N. M.]
One male.

Turrialba, Costa Rica. (Schild and Burgdorf.) [U. S. N. M.] One
female.

Carrillo, Costa Rica. [Hebard collection.] One immature male, one
immature female.

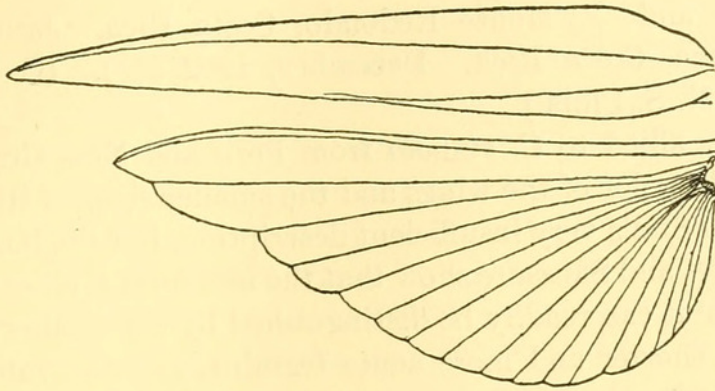


Fig. 4

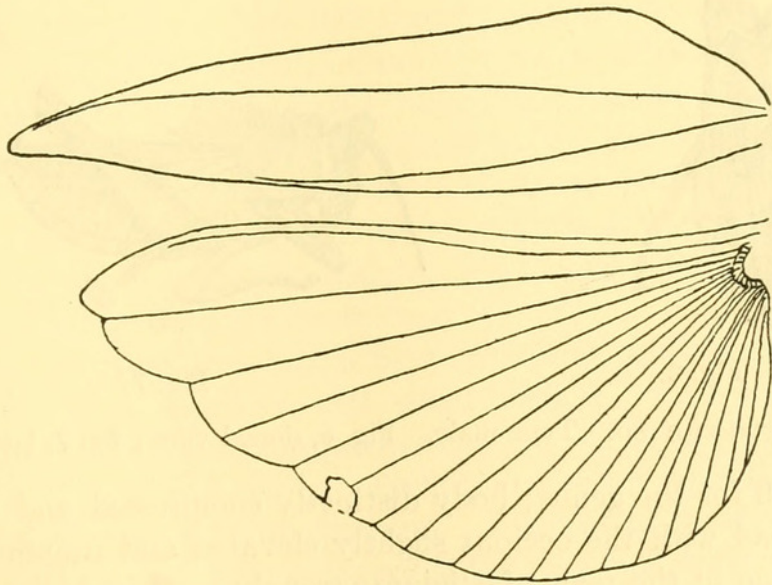


Fig. 5.

Munatia punctata Stål.—Fig. 4, tegmen and wing of male; fig. 5, tegmen and wing of female.

As far as can be determined from Stål's very brief diagnosis these specimens represent this species. The male does not present four blackish spots on the sides of the thorax, but has the median elytral

stripe faintly indicated, as well as possessing a very distinct longitudinal stripe of yellowish on the anal area. The female is more uniformly colored than the male, and has the yellowish-green disk more suffused with fuscous.

COLPOLOPHA Stål.

1873. *Colpolopha* Stål, Öfversigt af K. Vetensk.-Akad. Förhandlingar, 1873, No. 4, pp. 52, 53.

Type.—*C. sinuata* Stål.

Colpolopha bruneri n. sp.

Types: ♂ and ♀; Monte Redondo, Costa Rica. January, 1903 (♂). Tarbaca, Costa Rica. December, 1902 (♀). (C. F. Underwood.) [A. N. S. Phila.]

Apparently allied to *C. sinuata* from Peru and New Granada, but differing in the color of the wings and the smaller size. Little else can be made from Stål's very insufficient description, but the later remarks made by Pictet and Saussure show that the new form is close to *sinuata*. From *obsoleta*¹ it can readily be distinguished by the smaller size, more robust form, shorter and more acute tegmina, more elevated median carina of the pronotum and the heavier fastigium.

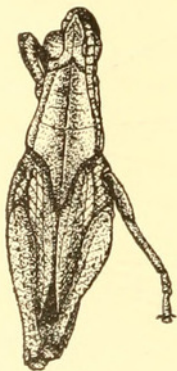


Fig. 6.

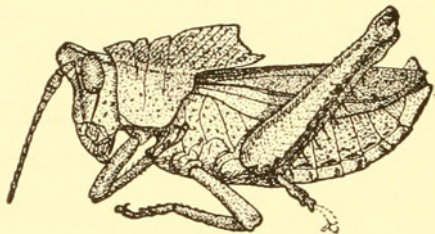


Fig. 7.

Colpolopha bruneri n. sp. Type male. Fig. 6, dorsal view; fig. 7, lateral view.

Size small for the genus; body distinctly compressed and semiscabrous. Head with the occiput slightly elevated and rounded in the female, plane in the male; fastigium strongly produced, but slightly shorter than the greatest length of the eye, subequal in the basal half, and but slightly narrower than the interocular space, apex rectangulate in the male, rounded in the female, broadly and shallowly excavated with a slight but distinct median carina continued back over the occiput, margins distinct and continued over the rostrum forming the

¹ Comparison made with a male from Demerara and a female from Cayenne.

lateral carinæ of the frontal costa; lateral foveolæ subtrigonal, subobsolete; frontal costa sulcate, parallel above the ocellus, expanding below and reaching the clypeal margin; accessory facial carinæ distinct; eyes ovate in the male, subelliptical in the female, slightly longer than the infraocular portion of the genæ in the male, slightly shorter in the female; antennæ depressed, slightly ensiform, slightly longer than the pronotum in the male, distinctly shorter in the female. Pronotum with the median crest rising evenly from the cephalic margin to within a very short distance of the apex of the caudal process where it is roundly and raggedly excised into a semicrescentic outline; transverse sulci distinctly and narrowly but not deeply cutting the crest; cephalic margin produced over the base of the occiput in a very acute harpoon-shaped process, caudal margin produced into a structure of similar character but of much greater size; lateral carinæ distinct, bluntly tuberculate; lateral lobes of the pronotum distinctly longer than deep. Prosternal spine erect, short, thick and rather blunt. Tegmina short, not reaching the apex of the abdomen and falling far short of the tips of the caudal femora, subsagittate, the apex acute, costal expansion distinct but short; surface subcoriaceous, irregularly reticulate. Wings two-thirds the length of the tegmina, the apex acute-angulate. Cephalic and median limbs short, the femora slightly but distinctly expanded distad. Caudal femora slightly compressed, considerably enlarged proximad and distinctly constricted in the pregenicular region, carinæ denticulate, the dorsal carina serratodentate; tibiæ slightly shorter than the femora, spines nine in number on each margin, those of the internal considerably longer and more curved than those of the external; caudal tarsi slender, the third joint distinctly shorter than the metatarsus.

General color, vandyke brown in the female, raw umber in the male, the whole surface sprinkled with small blackish-brown points, which, on account of the base color, are less conspicuous in the female than in the male. Eyes burnt umber. Pronotum with the lateral carinæ lined with blackish-brown on the prozona. Tegmina of the male vandyke brown, with a semicircular pale spot at the base of the costal expansion, a marking which is very faintly indicated in the female. Wings vermilion, apex and a rather dull tænia which extends to the base of the wing vandyke brown, the costal vermilion dull. Abdomen with the overlying maculations clear black. Caudal femora with a distinct "pepper and salt" appearance; caudal tibiæ very dull glaucous, spines suffused with blackish.

Measurements.

	♂	♀
Length of body,	22 mm.	39.5 mm.
Length of pronotum,	10 "	15.5 "
Greatest width of pronotum,	4.2 "	7 "
Length of tegmen,	13 "	22.5 "
Width of tegmen,	3.5 "	6.5 "
Length of caudal femur,	14.2 "	21 "

Two paratypic males have been examined in addition to the types.

I take pleasure in dedicating this species to Prof. Lawrence Bruner of the University of Nebraska, who has made, and is making, valuable contributions to our knowledge of American Acrididæ.

CIBOTOPTERYX² n. gen.

Type.—*C. variegata* n. sp.

Allied to *Elaochloa* Stål, but differing in the elevated and lobate median crest of the pronotum, the strongly tuberculo-dentate lateral carinæ of the same, and the short, peculiarly shaped tegmina.

Occiput rounded, rostrum projecting and separated from the interocular region by a distinct transverse depression; frontal costa not sinuate when viewed laterad; antennæ very slightly depressed. Pronotum with a distinct median crest, deeply cut by the transverse sulci

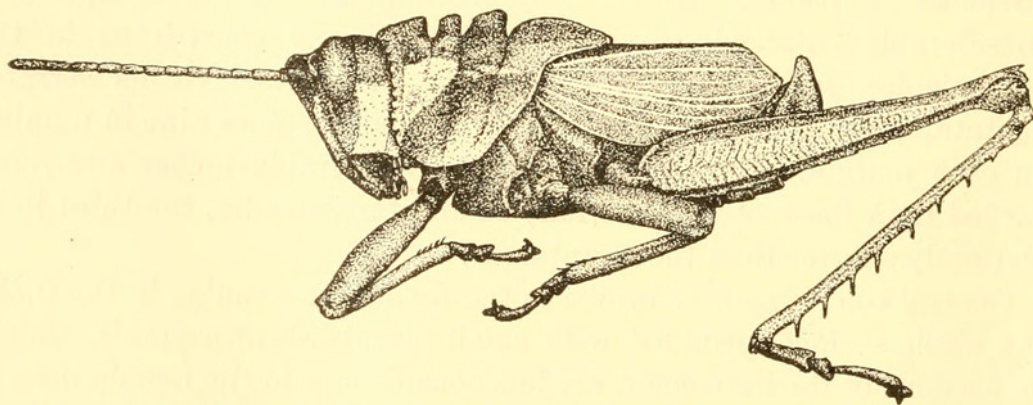


Fig. 8.—*Cibotopteryx variegata* n. gen. and sp. Lateral view of type.

and distinctly trilobate on the prozona; lateral carinæ tuberculate, parallel and descending ventrad on the prozonal lobes. Prosternal spine short, erect and acute. Tegmina short, not reaching the apex of the abdomen, rectangulate distad. Cephalic and median femora moderately inflated; caudal femora rather slender and weak.

Cibotopteryx variegata n. sp.

Type; ♂; Guatel, Costa Rica. August, 1902. (C. F. Underwood.) [A. N. S. Phila.]

² Κιβωτος, chest; πτερυξ, wing.

Size medium; surface of pronotum rugoso-tuberculate, of remainder of body subglabrous. Head with the occiput evenly rounded both longitudinally and transversely, dipping rather sharply down to the base of the fastigium; fastigium extending a distance cephalad of the eyes equal to the interspace, moderately elevated, acute, margins rather low but distinctly and roundly raised above the slightly excavated center, apex when viewed laterad rounding into the frontal costa; lateral foveolæ very slight and indistinct, trigonal; frontal costa narrow, rather strongly sulcate, equal in width above the ocellus except for the dorsal constriction, slightly inflated at the ocellus, distinctly constricted then regularly but slightly expanding below, reaching the clypeal margin; accessory facial carinæ quite prominent; eyes subovate, slightly shorter than the infraocular portion of the genæ, prominent when viewed dorsad; antennæ slightly exceeding the pronotum in length. Pronotum with the prozona moderately inflated, deeply cut by the transverse sulci; median crest rather high and developed into three quadrate lobes on the prozona, lower and evenly arched on the metazona; lateral carinæ tuberculate, bent ventrad at an angle of 45° cephalad of the second transverse sulcus, and joining the cephalic margin at the ventro-cephalic angle; margins tuberculate, cephalic very broadly obtuse-angulate with the angle truncate, caudal produced with concave sides and acute apex, caudal margin of the lateral lobes distinctly oblique, ventral margin subrotundate with the ventro-cephalic margin moderately distinct. Tegmina with the costal margin rather strongly arcuate, the apex rectangulate, anal area very slightly arcuate. Wings slightly shorter than the tegmina and completely covered by the same. Abdomen with the apex elevated; subgenital plate covered by the large lamellate cerci which meet on the median line; supraanal plate with the apex rectangulate. Cephalic and median femora slender proximad, moderately but distinctly inflated mesad and distad. Caudal femora slender, very slightly bowed, with the proximal inflation very slight, the genicular margin with a slight median spine; tibiæ about equal to the femora in length, spines nine in number on each margin, those of the internal margin much longer and more curved than those of the external margin, internal spurs much longer than the external; tarsi of moderate length, the metatarsus and third joint subequal in length.

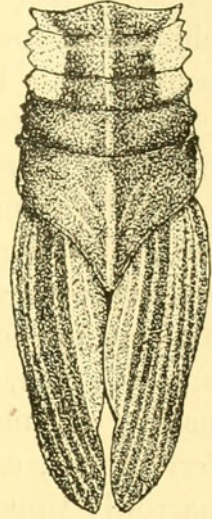


Fig. 9.—*Cibotopteryx variegata*. Dorsal view of pronotum and tegmina of type.

General color, above olive-green, slightly paler on the tegmina than on the dorsum of the head and pronotum; face, genæ, a diagonal line immediately dorsad of the lateral carinæ on the cephalic half of the prozona, and a diagonal bar on the caudal half of the lateral lobes chrome yellow, the last-mentioned streak being darker and more ochraceous. Frontal costa and mouth parts of the dorsal color; eyes chestnut; antennæ dragon's blood red, infusate apically; dorsal median oblique streak on the lateral lobes of the pronotum suffused with blackish; transverse sulci marked slightly with blackish. Tegmina with the longitudinal veins distinctly and the cross veins slightly marked with wax yellow on a ground of the general color. Cephalic and median femora olive green; caudal femora between apple green and oil green, the ventral face glaucous blue, genicular margin with a narrow edging of rufous; cephalic and median tibiæ and tarsi dull ferruginous, caudal tibiæ and tarsi poppy red, the spines and spurs narrowly tipped with black.

Measurements.

Length of body,	23	mm.
Length of pronotum,	10	"
Greatest width of pronotum,	5.8	"
Length of tegmen,	11	"
Width of tegmen,	6	"
Length of caudal femur,	17	"

The type is the only specimen known to the author.

TÆNIPODA Stål.

Tæniopoda centurio (Drury).

1773. *Gryll[us] (Loc[usta]) Centurio* Drury, *Illust. Nat. Hist. Exot. Ins.*, p. 78, Pl. XLI, fig. 3 and Index. ["Bay of Honduras in America."]

San Carlos, Costa Rica. (Schild and Burgdorf.) [U. S. N. M.]
Two males, one female.

This species has never before been recorded south of Honduras. One male has the general color decidedly purplish-black, the usual blotches on the tegmina absent and the veins pale against the solid dark ground.

Tæniopoda varipennis n. sp.

Types: ♂; Central America. [Hebard collection.] ♀; San José, Costa Rica. (Schild and Burgdorf.) [U. S. N. M., No. 8,174.]

Allied to *T. auricornis* (Walker) and *T. pulchella* Bolivar. From the former it differs in the slenderer form and more produced caudal process of the pronotum, and the longer and narrower tegmina. From

T. pulchella it can be separated immediately by the slenderer form and the shape of the caudal process of the pronotum.

Size medium (for the genus); male moderately slender, female short and heavy built. Head with the occiput and vertex rounded, subglobose; interspace between the eyes equal to the length of the eye in the female, equal to the width of the eye in the male; fastigium broad, subrectangulate, very distinctly declivent, slightly excavated, the lateral carinæ more marked than the rather faint median one; frontal costa very narrow, deeply sulcate, evanescent immediately below the median ocellus; lateral carinæ of the face distinct but not very sharp; eyes quite prominent and elliptical oval in the male, moderately prominent and subovate in the female; antennæ slightly depressed proximad, in an imperfect state slightly shorter than the head and pronotum. Pronotum compressed, metazona slightly longer than the prozona; median keel strongly elevated, compressed, roughly arcuate on the prozona, deeply slit but not distinctly divided by two transverse sulci, the caudal section being slightly higher than the cephalic; caudal

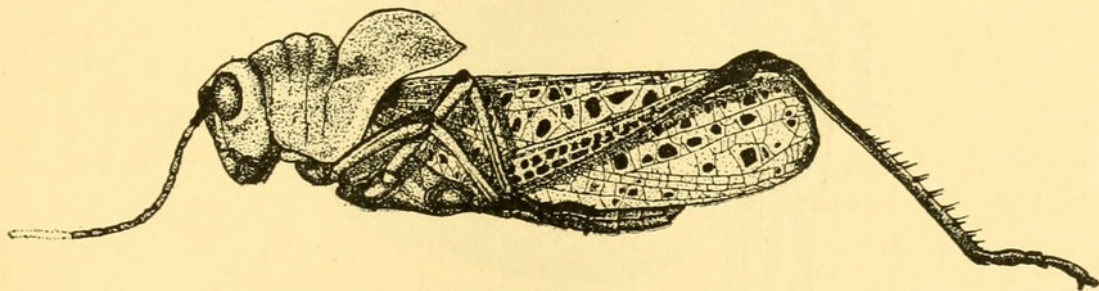


Fig. 10.—*Taniopoda varipennis* n. sp. Male type.

transverse sulcus deeply dividing the median keel; metazona with the keel strongly arcuate, lateral portions of the disk flattened; humeral angles very distinct, not extending much cephalad of the last sulcus; cephalic margin produced over the head in a small subrectangulate (♂) or obtuse-angulate (♀) process, caudal margin produced into a long and distinctly hastate process in the male and an acute-angulate one in the female; lateral lobes considerably longer than deep. Tegmina rather broad, costal border distinctly arcuate, apex rounded with a faint oblique truncation; in the male exceeding the apex of the abdomen by two-thirds the length of the pronotum, in the female not exceeding the apex of the abdomen. Wings with the expanded portion of the axillary field broader distad than proximad and with the cross veins oblique; second lobe strongly developed, particularly so in the female. Prosternal spine long, erect, acute. Interspace between the mesosternal lobes strongly transverse, the lateral angles rounded.

Interspace between the metasternal lobes about twice as wide as deep in the male, three times as wide as deep in the female. Limbs of the slender type usual in the genus, the caudal femora distinctly exceeding

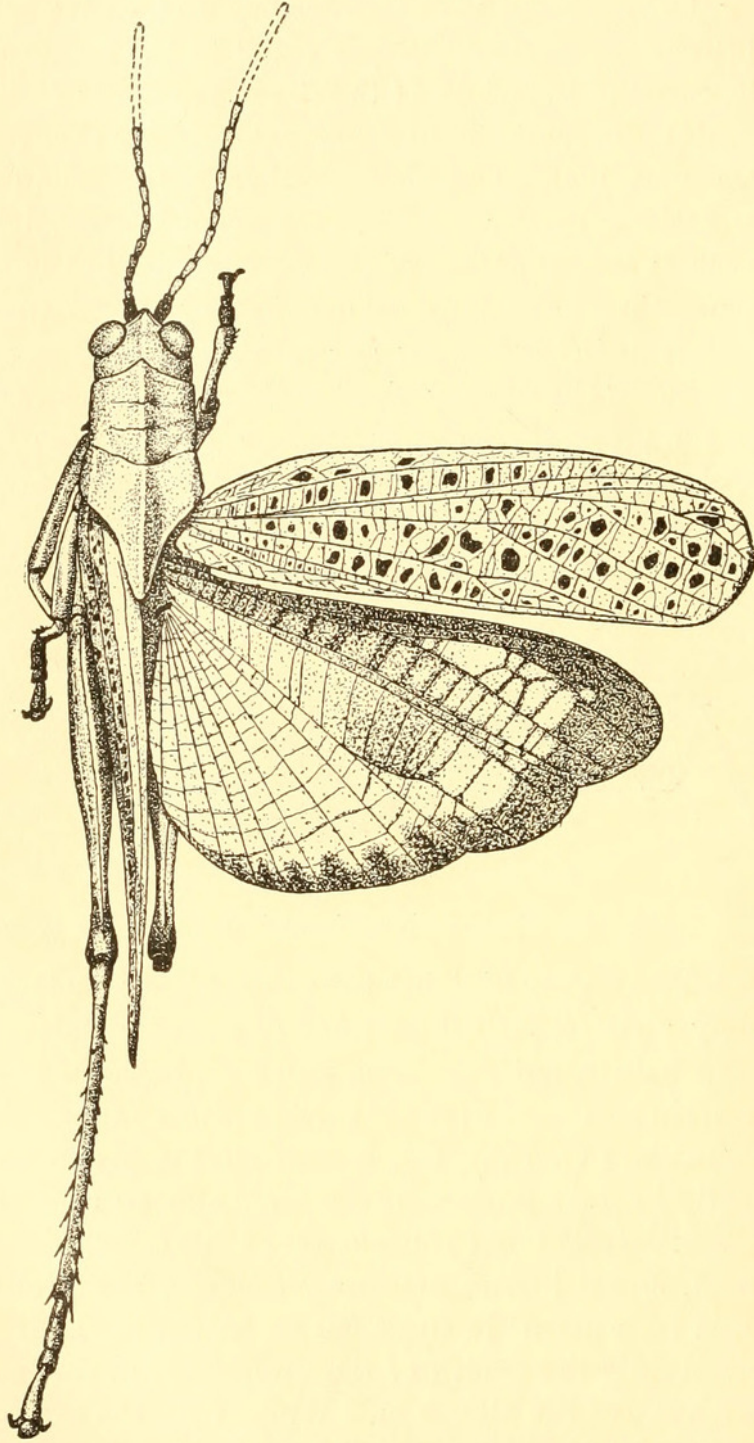


Fig. 11.—*Tæniopoda varipennis* n. sp. Male type.

the apex of the abdomen in the male, falling slightly short of the same in the female.

General color, above gallstone yellow with a strong greenish tinge on

the tegmina, becoming more ochraceous on the pronotum and head. Head with the mandibles and a transverse line on the clypeus shining black in the female, the base of the mandibles suffused with ochraceous in the male; antennæ orpiment yellow, the two basal joints shining black; eyes hazel. Tegmina with an irregularly distributed series of seal brown spots of varying size; apex narrowly and rather obscurely margined with the same color. Wings geranium red, the margins, except the proximal portion of the radial margin, broadly suffused with black, the dilated ulnar and axillary regions also colored as usual in the genus. Abdomen blackish-brown. Limbs dull ochraceous and black, the two distributed as in other species of genus.

Measurements.

	♂	♀
Length of body,	35.5 mm.	53 mm.
Length of pronotum,	14.5 "	19 "
Greatest width of pronotum,	7 "	10 "
Length of tegmen,	33 "	36 "
Greatest width of tegmen,	10 "	11 "
Greatest width of wing,	18.2 "	17.5 "
Length of caudal femur,	23.5 "	25.5 "

Two specimens have been examined in addition to the types, both of which are males, one topotypic of the same sex and in the Hebard collection, the other topotypic with the female and in the United States National Museum. These specimens are identical with the male type in all essential respects, some slight variation in the distribution of spots on the tegmina being all that is noticed. The San José male has the antennæ but very slightly damaged, and from this we see that the terminal joints are blackish.

The genus *Tæniopoda* as represented by the material in hand falls into two groups. All the known species are at hand except *T. superba* (Stål) and *gutterosa* Bolivar, which appear to be quite distinct from the forms studied. The eighty-nine specimens examined can be divided usually into two groups, as separated by Bolivar in his key of the genus.³ One type represented by *picticornis* (Walker) and *burmeisteri* Bolivar is characterized by the rather low and rather indistinctly biarcuate median crest of the pronotum. The other type represented by *centurio* (Drury), *auricornis* (Walker), *pulchella* Bolivar and *varipennis* Rehn is characterized by the elevated, strongly biarcuate median crest of the pronotum, while *T. tamaulipensis* Rehn is about intermediate between the two types.

³ *Bol. Soc. Españ. Hist. Nat.*, I, p. 265, 1901.

The type represented by *centurio* is especially interesting as all the species are in hand and their differential characters easily seen. Drury's *centurio* is quite distinct from the others and need not be considered as its size is diagnostic. The three others—*auricornis*, *pulchella*⁴ and *varipennis*—can be easily separated by the outline of the dorsal aspect of the pronotum, *pulchella* representing an extreme broad, inflated type with an almost rectangulate caudal angle (fig. 14), *varipennis* (fig. 12) representing the other extreme with the pronotum compressed and the caudal angle strongly and acutely produced. Between these two extremes is *auricornis*, presenting a rather broad pronotum with the angle acute but not long produced (fig. 13).

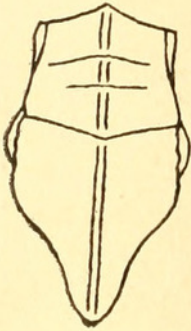


Fig. 12.

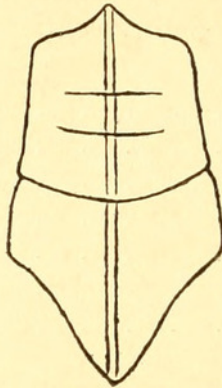


Fig. 13.

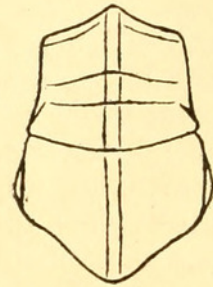


Fig. 14.

Fig. 12.—*Taniopoda varipennis*, dorsal view of female type. Fig. 13.—*T. auricornis*, ditto of female from Alta Mira, Tamaulipas. Fig. 14.—*T. pulchella*, ditto of female from Jalapa, Vera Cruz.

CHROMACRIS Walker.

Chromacris trogon Gerstaecker.

1873. *Romalea trogon* Gerstaecker, Stett. Entom. Zeit., XXIII, p. 186. [Costa Rica.]

San Carlos, Costa Rica. (Schild and Burgdorf.) [U. S. N. M.] Five males, three females.

Pozo Azul de Pirris, Costa Rica. May–June, 1903. (C. F. Underwood.) [A. N. S. Phila.] One male.

Carrillo, Costa Rica. [Hebard collection.] Seven males, two females.

This series is remarkably uniform in coloration.

RHICNODERMA Gerstaecker.

1889. *Rhcnoderma* Gerstaecker, Mittheil. Naturwiss. Ver. Neu-Vorpomm. Rügen, XX, p. 28

Type.—*R. olivaceum* Gerstaecker.

⁴ This is the species previously recorded by myself as *T. centurio*; see *Trans. Amer. Ent. Soc.*, XXVII, p. 228; XXIX, p. 12.

***Rhcnoderma humile* n. sp.**

Type; ♀; Tarbaca, Costa Rica. December, 1902. (C. F. Underwood.) [A. N. S. Phila.]

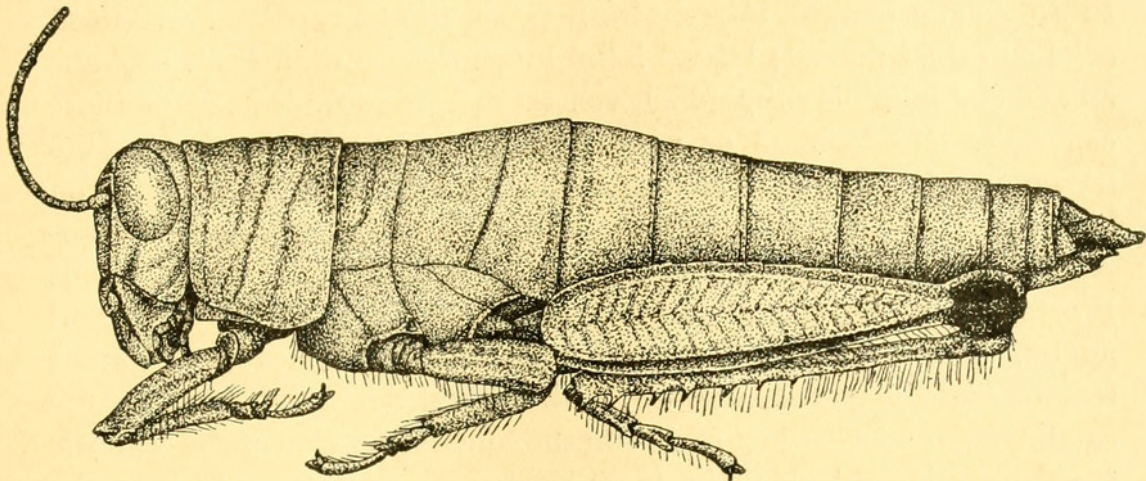


Fig. 15.—*Rhcnoderma humile* n. sp. Lateral view of type.

Allied to *R. olivaceum* from Chiriqui, but differing in the very low and weak median carina of the pronotum, the partially sulcate frontal costa and some color details.

Form subcylindrical, flattened ventrad; surface of the head, thoracic and basal abdominal segments regularly rugulose, smoother on the abdomen and ventral surface; limbs and ventral surface supplied with rather long, soft hairs, which are most numerous on the caudal tibiae. Head flattened transversely, but little deeper than broad; occiput and vertex gently rounded; fastigium depressed, declivent, longitudinally excavated mesad, separated from the face by a low carina; interocular space considerably wider than the width of the eye; frontal costa considerably excavated, intersected by a transverse carina between the bases of the antennae, about which is an oblong enclosed space, below constricted from the width of the dorsal section to half the same width, ventrad failing to reach the clypeal suture; supplementary facial carinae distinct; clypeus considerably inflated; eyes elliptically ovate, distinctly longer than the infra-ocular portion of the genae; antennae about equal to the head and pronotum in length, filiform. Pronotum short; cephalic margin slightly rounded with a distinct median emargination, which forms two blunt points on each side of the median line; caudal margin subtruncate; median carina very slightly marked and more noticeable, by the absence of rugosities than any distinct eleva-

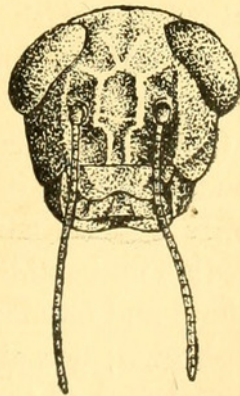


Fig. 16.—*Rhcnoderma humile* n. sp. Cephalic view of head.

tion; complete transverse sulci three in number, the caudal one placed close to the caudal margin, the cephalic sulcus distant from the cephalic margin a distance equal to the space from the second sulcus to the caudal margin, interspaces between the first, second and third sulci subequal dorsad; lateral lobes much deeper than long, cephalic and caudal margins subparallel, ventral margin rotundate, emarginate cephalad. No tegmina or wings present. Exposed portion of the mesonotum less than half as long as the metanotum; median carina on both segments marked as on pronotum. Abdomen very slightly compressed, distinctly but slightly carinate. Ovipositor jaws rather blunt. Prosternum with a low quadrate process with blunt slightly produced angles. Mesosternum and metasternum distinctly concave. Cephalic femora slightly bowed, inflated, with several depressed areas on the caudal face, and a distinct carina on the superior portion of the cephalic face, cephalic genicular lobe more produced and rotundate than the caudal one; tibiae equal in length and but slightly slenderer than the femora, straight; terminal tarsal joint very distinctly exceeding the basal two in length. Median femora about equal in the length to the cephalic femora, compressed, several slight or irregular carinae present, cephalic genicular lobe large and rotundate, caudal genicular lobe very slight and little more than a cingulum; tibiae and tarsi as in the cephalic limbs. Caudal femora not reaching to the apex of the abdomen, about four and one-half times as long as the greatest width, compressed, margins regularly but slightly arcuate, pregenicular constriction slight, carina distinct, the median dorsal slightly serrato-dentate, pattern of the pagina distinct but flattened and with little relief, genicular arch rather low, genicular lobes rectangulate apically with the ventral margin rotundato-sinuate; tibiae slightly shorter than the femora, lateral margins with seven rather blunt spines, including the apical one, internal margins with ten spines including the apical one; metatarsus and terminal tarsal joint subequal in length, second joint distinctly shorter than the others, the whole tarsus about half the length of the tibia.

General color cinnamon, eyes russet. Margins of the pronotum, and caudal margins of the metanotum and basal abdominal segments narrowly washed with a more or less distinct blackish-brown suffusion. Median limbs dull brownish caudad. Caudal femora marked along the lateral and median carinae and on the whole genicular faces with blackish-brown; dorsal portion of the genicular region ochre yellow distad, caudal face of the caudal femora blackish except for a narrow ochre yellow edging to the genicular region. Caudal tibiae and tarsi cephalad vinaceous-cinnamon, caudad dragon's blood red, spines with a small

apical touch of black. Hairs of the limbs and ventral surface silvery white.

Measurements.

Length of body,	32 mm.
Length of pronotum,	4.5 "
Greatest width of pronotum,	6.7 "
Length of exposed portion of meso- and metanotum,	7.2 "
Length of caudal femur,	14.5 "

The type is the only specimen seen.

COPIOCERA Burmeister.

1838. *Copiocera* Burmeister, Handb. d. Entom., Bd. II, Abth. II, I, p. 611.

Included *Gryllus euceros* Marschall and *Xiphicera erythrogastra* Perty, of which the former may be considered the type.

Copiocera specularis Gerstaecker.

1889. *Copiocera specularis* Gerstaecker, Mittheil. Naturwissen. Ver. Neu-Vorpomm. Rügen, XX, p. 35. [Chiriqui.]

San Carlos, Costa Rica. (Schild and Burgdorf.) [U. S. N. M.]
Four males, two females.

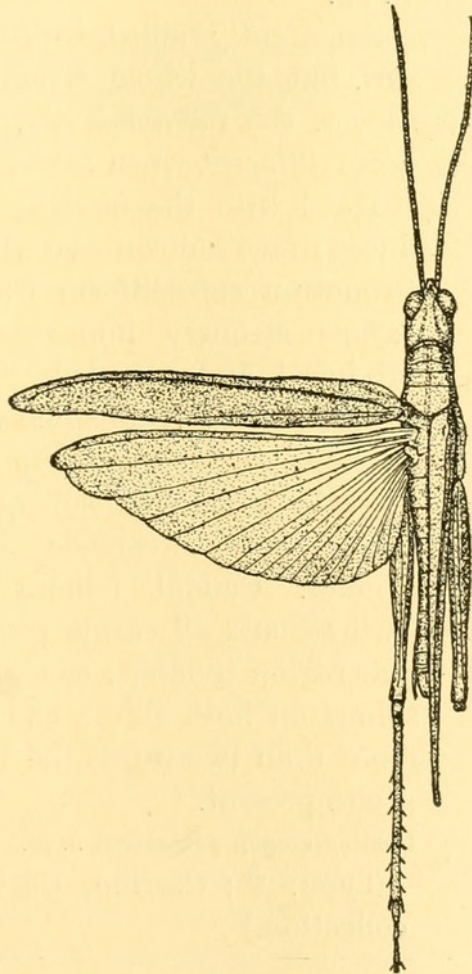


Fig. 17.—*Copiocera specularis* Gerstaecker. Male. Dorsal view.

Turrialba, Costa Rica. (Schild and Burgdorf.) [U. S. N. M.] One male.

This beautiful species can readily be recognized by the coloration, the blood-red abdomen, dull yellow genicular areas and the bluish-

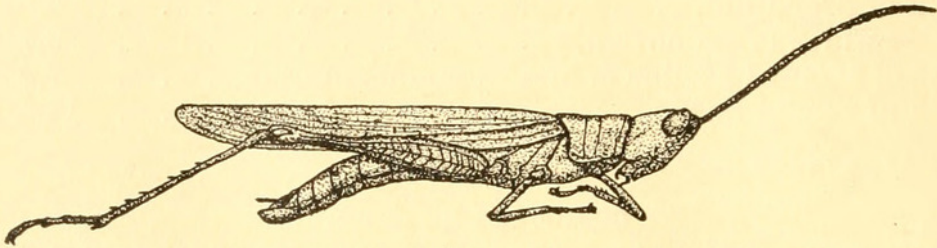


Fig. 18.—*Copiocera specularis* Gerstaecker. Male. Lateral view.

hyaline base of the wing. Some variation exists in the intensity of the color of the abdomen, several individuals being very dull gray brown with hardly any reddish tint, while others are fully colored. The colored base of the wing is more greenish than bluish in one female individual.

ÆDALOMETOPON⁵ n. gen.

Type.—*O. petasatum* n. sp.

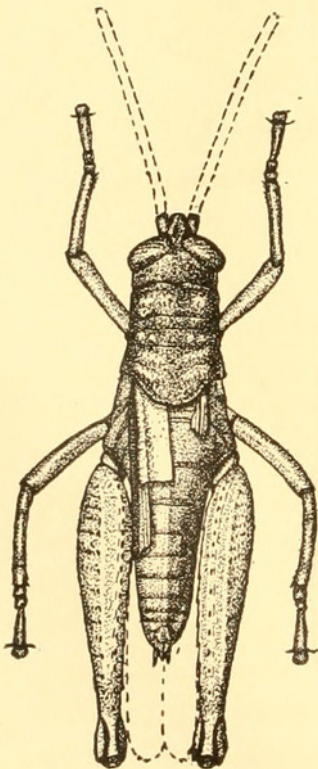


Fig. 19.—*Ædalometopon petasatum* n. gen. and sp. Type.

Apparently allied to *Bucephalacris* Giglio-Tos, but the whole structure has a different aspect, the form heavier, more inflated and quite different when taken in detail.

Head with the fastigium considerably produced; face subconcave when viewed laterad. Pronotum subselliform with the transverse carinae strongly impressed, caudal portion produced and rounded. Tegmina and wings present. Prosternal spine very blunt and low. Interspaces between the mesosternal and metasternal lobes subequal cephalad, the metasternal interspace strongly narrowed caudad. Caudal femora inflated, strongly carinate and all carinae serrato-dentate, genicular region inflated; caudal tibiae with apical spines on both sides; caudal tarsi elongate, more than two-thirds the length of the tibiae, arolia present.

Ædalometopon petasatum n. sp.

Type: ♀; Carrillo, Costa Rica. [Hebard collection.]

⁵ Οἰδαλεον, swelling; μετωπον, forehead.

Form subfusiform; entire surface, except the abdomen and ventral aspect, rugose. Head with the occiput and vertex gently rounded, descending to the extremely narrow interocular space; fastigium horizontal, produced from the interocular region at a level well below that of the vertex into a peg-like process about as long as the width of one of the eyes, compressed, faintly sulcate dorsad, expanding proximad, apex when viewed laterad rotundato-truncate; face retreating, subconcave when viewed laterad, frontal costa present as a slight short sulcation on the ventral aspect of the fastigial process; lateral ocelli placed on the dorsal aspect of the proximal part of the fastigium, median ocellus placed in the middle of the sulcation of the frontal costa; eyes ovate, the greatest length diagonal, greatest length slightly greater than the infraocular portion of the genæ; antennæ broken in the type. Pronotum rounded, subselliform, no median or lateral carinæ present; cephalic margin slightly rotundate with a broad shallow median emargination; caudal margin rounded rectangulate, no distinct angle present; transverse sulci strongly im-

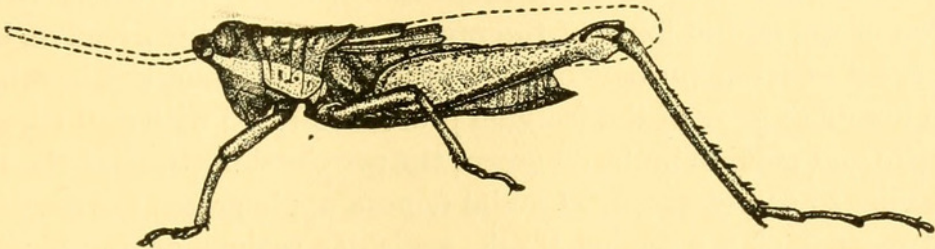


Fig. 2C.—*Edalometopon petasatum* n. gen. and sp. Type.

pressed, three in number, prozona slightly longer than the metazona; lateral lobes slightly longer than deep, cephalic margin slightly arcuate, ventral margin emarginate cephalad, broadly subrotundate caudad, caudal margin with the dorsal half with a distinct but very shallow emargination, the ventral half with a blunt angle which rounds into the ventral margin; a longitudinal group of irregular callosities presented in the usual position of the lateral carinæ. Tegmina broken, surface coriaceous, rugose. Wings broken. Abdomen somewhat compressed, carinate above; ovipositor jaws weak, slender, unarmed. Prosternal spine a blunt cone, quadrate in basal outline. Interspace between the mesosternal lobes slightly wider than deep, as wide as the lobes themselves, angles slightly rounded; interspace between the metasternal lobes equal to the mesosternal interspace cephalad, constricted caudad to slightly less than half that width. Cephalic femora moderately robust, about two-thirds the length of the pronotum.

Median femora similar to the cephalic but larger, only slightly shorter than the pronotum. Cephalic and median tarsi with the two proximal joints short, the terminal only moderately long, the whole rather robust. Caudal femora robust, two-thirds the length of the body, slightly more than four times as long as broad, median and lateral carinæ distinct, serrato-dentate, pattern of the pagina dentato-tuberculate, genicular region large, slightly less than one-fourth the total length, strongly arched, genicular lobes apically acute, rotundato-emarginate below, pregenicular constriction very distinct; caudal tibiæ distinctly shorter than the femora, supplied with eight spines on each margin, including the apical, spurs of the internal margin longer than the external spurs; caudal tarsi slender, elongate, two-thirds the length of the tibiæ, the segments increasing in length distad, surface rather evenly clothed with long hairs.

General color, above brownish-olive green, the head and pronotum with spots of naples yellow, a line of the same on the angle of the tegmina, and a broad bar, widening caudad, extending from the antennal fossæ to the insertion of the median limbs, across the whole ventral portion of the lateral lobes of the pronotum. Eyes tawny-olive, lined diagonally with regular bars of olive-brown, the well-marked bars being six in number; apex of the fastigial process suffused with dull lake red. Cephalic and median limbs oil green, the proximal portions of the tibiæ darkening to parrot green. Caudal femora apple green, the serrations and tubercles of the pagina black, genicular regions ochraceous-buff, the arches blackish; tibiæ proximad dull ochraceous-buff, blending to oil green then to ochraceous-buff distad, spines black practically to the bases, spurs tipped with black; tarsi ochraceous-buff, the claws oil green with black tips, hair white.

Measurements.

Length of body,	27.5 mm.
Length of pronotum,	7.5 "
Caudal dorsal width of pronotum,	5.7 "
Length of caudal femur,	18.2 "

The type is unique.

ANNICERIS Stål.

1878. *Anniceris* Stål, Bihang till K. Svenska Vet.-Akad. Handlingar, V, No. 4, pp. 37, 82.

Included *A. geniculatus* and *nigrinervis* Stål, of which the former may be considered the type.

Anniceris truncatus n. sp.

Type: ♀; Tarbaca, Costa Rica. November, 1902. (C. F. Underwood.) [A. N. S. Phila.]

Allied to *A. geniculatus* Stål from Peru and *A. olivaceus* Giglio-Tos from Darien; differing from the former in the horizontal fastigium, the uncarinate vertex and the rather different coloration; differing from the latter in the moderately distinct lateral carinae of the face and the more subdued color pattern.

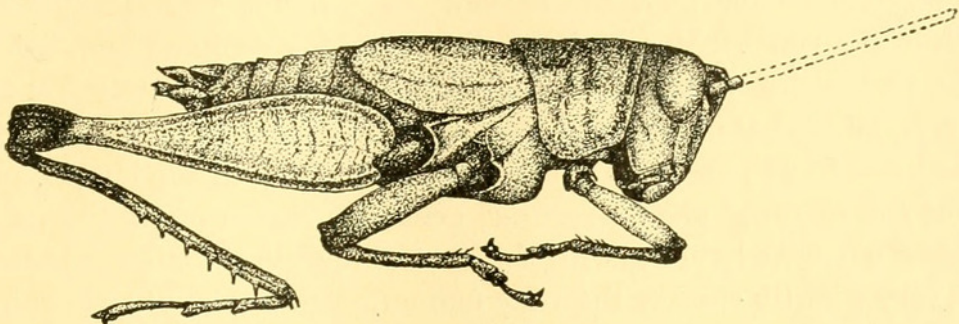


Fig. 21.—*Anniceris truncatus* n. sp. Lateral view of type.

Size small; form slightly compressed; surface rugulose. Head with the occiput and vertex gently rounded, descending easily to the base of the fastigium; interocular region narrow, slightly more than half the apical width of the fastigium; fastigium broad at the base, tapering evenly with a truncate apex, apical width about twice the length, dorsal surface slightly excavate near the cingulate margin; frontal costa not distinct below the insertion of the antennae, very slightly sulcate; face slightly retreating when viewed laterad; lateral ocelli inserted in the supraantennal margin of the base of the fastigium, median below the insertion of the antennae and slightly above the base of the fastigial process; eyes subreniform, moderately prominent, slightly longer than the infraocular portion of the genae; antennae missing. Pronotum rotundato-deplanate dorsad; median carinae very weak, more apparent caudad than cephalad; lateral carinae not present, but distinct shoulders on the metazona represent them; cephalic margin faintly arcuate; caudal margin subtruncate; transverse sulci three in number, the cephalic and caudal more apparent than the median, prozona almost half again as long as the metazona; lateral lobes of the pronotum distinctly deeper than long, cephalic margin slightly sinuate, ventral margin emarginate cephalad, rotundate caudad, caudal margin very slightly and broadly emarginate for its whole length, a slight ventro-caudal angle developed above the level of the ventral margin. Tegmina ovate-lanceolate, slightly longer than the pronotum, breadth contained twice

in the length, apex narrowly rounded; principal longitudinal veins distant, remainder irregularly reticulate. Abdomen compressed, carinate above; ovipositor jaws hooked apically. Prosternal protuberance very low and blunt, no spine present. Interspace between the mesosternal lobes wedge-shaped, slightly narrower than one of the lobes, but much wider than deep; interspace between the metasternal lobes about half the width of that between the mesosternal lobes, constricted caudad. Cephalic femora about four-fifths the length of the pronotum; tibiæ very slightly longer than the femora; tarsi about three-fourths the length of the tibiæ. Median limbs similar to the cephalic but slightly larger and more compressed. Caudal femora moderately robust, length equal to that of the head, pronotum and tegmina, greatest width at the basal fourth and contained about four times in the length, pattern of the external pagina regular, genicular region of medium size, the lobes moderately acute with the ventral margin sinuato-rotundate; tibiæ very slightly shorter than the femora, slightly sinuate, six spines present on the external margin, no apical spine, eight spines present on the internal margin including the apical spine; tarsi elongate, the joints slender.

General color olive-green, lighter on the tegmina than on the head and pronotum; eyes tawny-olive. An obscure postocular streak on the head and on the dorsal half of the prozona of the lateral lobes of the pronotum blackish, ventral half of the lateral lobes and all of the pleura except a narrow blackish dorsal section very dull gamboge-yellow. Abdomen above vandyke brown except the apex, which is ferruginous. Ventral surface cinnamon. Cephalic and median limbs oil green. Caudal femora oil green, the genicular region blackish; tibiæ and tarsi verdigris green, the spines narrowly tipped with blackish.

Measurements.

Length of body,	17	mm.
Length of pronotum,	4.1	"
Greatest dorsal width of pronotum	3.2	"
Length of tegmen,	6	"
Greatest width of tegmen,	3	"
Length of caudal femur,	11.6	"

The type is unique.

DELLIA Stål.

1878. *Dellia* Stål, Bihang till K. Svenska Vet. Akad. Handl., V, No. 4, pp. 37, 83.

Type.—*D. insulana* Stål.

Dellia miniatula n. sp.

Types: ♂ and ♀; Carrillo, Costa Rica. [Hebard collection.]

Differing from *D. insulana* in the heavy cerci, the smaller general size, the recurved apex of the male abdomen, and the general coloration.

Size small; form elongate, slightly compressed; surface polished, clothed with numerous hairs. Head with the occiput considerably inflated, descending to the extremely narrow interocular space; fastigium short, wedge-shaped, the apex truncate, with a very slight longitudinal sulcus, when viewed laterad the dorsal outline descends and

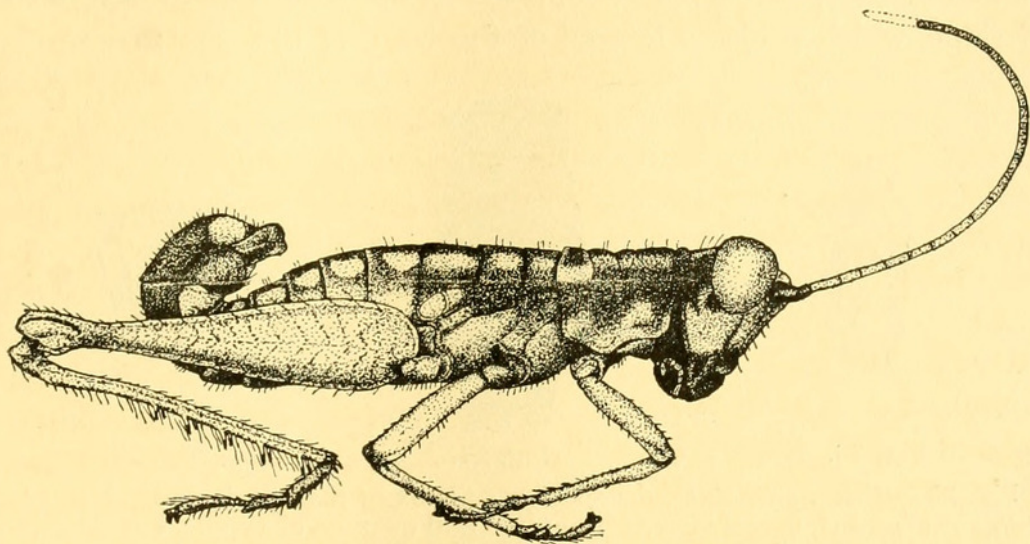


Fig. 22.—*Dellia miniatula* n. sp. Lateral view of male type.

rounds without any distinct angle in the regularly retreating face; no distinct frontal costa; lateral ocelli placed on the supra-antennal margin of the fastigium, the median placed near the point at which the fastigium blends into the face; eyes subovoid, very prominent and subglobose in the male, considerably elevated above the occiput, about twice as long as the infra-ocular portion of the genæ, moderately prominent and considerably inflated in the female, slightly less than twice as long as the infra-ocular portion of the genæ; antennæ very slender, filiform, about equal to the length of the body in the male, about equal to the length of the abdomen in the female. Pronotum rounded, without median or lateral carinæ, metazona of male slightly and of female distinctly punctate; cephalic margin subarcuate, the median portion slightly truncate; caudal margin with a broad, shallow angular emargination; transverse sulci four in number, very strongly impressed in the male, weaker but distinct in the female, metazona about one-third

the length of the prozona; lateral lobes slightly deeper than long, the cephalic margin slightly sinuate, ventral margin rotundate-emarginate cephalad, subrotundate caudad, the ventro-cephalic angle rectangulate, caudal margin slightly sinuate with the ventro-caudal angle rounded obtuse-angulate. Exposed portion of the mesonotum slightly longer than the metazona in the males, distinctly shorter in the female. Tegmina minute pads, not reaching caudad of the caudal margin of the mesonotum in either sex. Abdomen compressed, carinate above; apex of the male abdomen strongly recurved; cerci broad flattened subequal plates, directed mesad, the tips flattened and acute when viewed caudad, caudal margin of the cerci thickened and forming a sort of ridge, which projects laterad of the body of the cerci; supra-anal

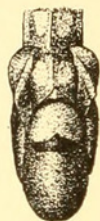


Fig. 23.

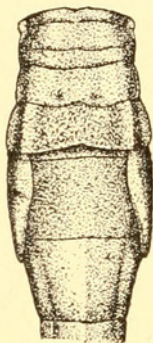


Fig. 24.

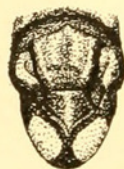


Fig. 25.

Fig. 23.—*Dellia miniatula*, dorsal view of apex of male abdomen. Fig. 24.—*Dellia ovatipennis*, dorsal view of pronotum and tegmina of type. Fig. 25.—*Dellia bimaculata*, dorsal view of apex of male abdomen.

plate vertical in position; subgenital plate on the dorsal aspect, bullate, apically produced into a triangular process. Prosternum inflated mesad, forming a transverse rounded ridge, no spine developed. Interspace between the mesosternal lobes slightly broader than deep, equal to one of the lobes in width, the angles rounded; interspace between the metasternal lobes very narrow, trigonal, nearly closed caudad. Cephalic femora slightly longer than the pronotum in the male, subequal in the female, cephalic genicular lobe larger and more rotundate than the caudal; tibiae equal to the femora; terminal tarsal joint much exceeding the proximal two in length, the whole tarsus about three-fourths the length of the tibia. Median limbs similar to the cephalic but perceptibly more robust. Caudal femora slender in the male and considerably exceeding the abdomen in its normal position, in the female more robust but exceeding the abdomen by nearly the length of the pronotum, in the female the greatest width is contained over four times in the length and in the male the width is almost

five times in the length, carinæ not serrate, pattern of the pagina distinct and rather widely spaced, genicular lobes slightly acute apically; tibiæ slightly shorter than the femora, slightly sinuate in the male, external margin with six spines, internal margin with seven or eight spines in the male and eight in the female including the apical spine; tarsi about half the length of the tibiæ, slender, the terminal joint elongate, arolia present.

Male.—General colors greenish-black on an oil green ground. Head with a dark occipital line and blackish postocular blotches, dorsal aspect of the fastigium pale apple green, ventral aspect and a median facial line blackish; eyes tawny olive; basal joints of the antennæ blackish, remainder umber; mouth parts blackish except palpi which are greenish-white. Pronotum with two faint parallel greenish longitudinal bars on the prozona and a distinct patch of clear oil green on the "shoulders" of the metazona; lateral lobes oil green ventrad. Mesonotum and metanotum each with a pair of parallel blotches of oil green; lower section of the pleura yellowish-green. Abdomen with each segment decorated dorsad with a pair of subreniform blotches of oil green; laterad dull apple green; ventrad the black of the segments is relieved by narrow pea green margins; subgenital plate with a large transverse subreniform spot of pea green; supra-anal plate pea green; cerci black. Cephalic limbs apple green blending to gamboge yellow on the proximal portion of the femora. Median limbs with extreme distal portion of the femora, the tibiæ and tarsi apple green; median and proximal portions of the femora carmine. Caudal femora oil green, the genicular arch faintly marked with blackish; tibiæ oil green proximad blending to verdigris green on the median and distal sections, spines brownish with black tips; tarsi very pale apple green. Hairs ashy brown.

Female.—Colors and color pattern similar to the male, but duller and with the following exceptions. Sulcation of the fastigium with a narrow line of blackish and the bars on the pronotum are much less distinct. Dorsal maculations of the mesonotum, metanotum and abdomen are solid, forming a broad, wedge-shaped maculation, narrowing caudad, on each segment; apex of the abdomen and contiguous segments blackish.

Measurements.

	♂	♀
Length of body,	13.5 mm.	16 mm.
Length of pronotum,	2.5 "	3.2 "
Greatest width of pronotum,	2.2 "	3.1 "
Length of caudal femur,	9 "	11 "

A paratype series of three males and sixteen females of this species have been examined. There is a slight difference in the size of some female individuals, several being slightly larger than the type. A tendency to the elimination of blackish marks on the abdomen is noticed in some female individuals, and in one the abdomen is about unicolorous.

Dellia bimaculata

Types: ♂ and ♀; Carrillo, Costa Rica. [Hebard collection.]

Differing from *D. miniatula* in the form of the male cerci, the less recurved apex of the male abdomen and the striking coloration.

Size about equal to that of *D. miniatula* in the female sex, slightly larger in the male; form similar to that of *D. miniatula*; surface slightly rugulose, rather uniformly clothed with moderately long hairs, especially on the limbs. Head with the occiput rounded and sloping toward

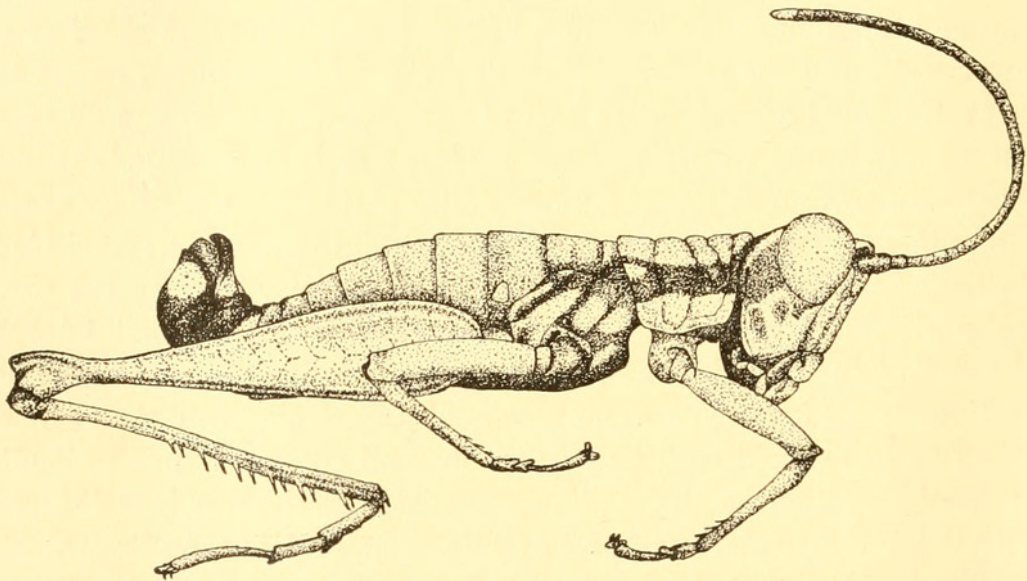


Fig. 26.—*Dellia bimaculata*. Lateral view of male type.

the fastigium; interocular space very narrow, in the male the eyes are subcontiguous; fastigium short, about as broad as long, distinctly but narrowly sulcate in both sexes, forming a distinct but narrowly rounded angle with the front, ventral aspect of fastigium slightly concave and passing insensibly into the face a very slight distance ventrad of the antennal insertions; eyes ovate and very prominent in the male, considerably elevated above the vertex and almost twice as long as the infra-ocular portion of the genæ, subreniform in the female, very slightly elevated above the vertex and slightly more than half again the infra-ocular length of the genæ; antennæ filiform, slightly shorter than the body in the male, considerably shorter in the female.

Pronotum slightly sellate; cephalic margin arcuate with a slight median truncation; caudal margin with a broad shallow angular emargination; transverse sulci four in number, more impressed in the male than in the female; prozona about twice the length of the metazona in the male, about three times in the female; lateral lobes slightly longer than deep, cephalic margin slightly sinuate, ventral margin strongly emarginate cephalad and rotundate caudad, ventro-cephalic angle rectangulate, ventro-caudal angle strongly rounded; metazona distinctly punctate. Exposed portion of the mesonotum not more than half the length of the metazona. Tegmina very small pads, not exceeding the mesonotum in length. Abdomen slightly compressed and weakly carinate dorsad; apex of the male abdomen erect and partially recurved, supra-anal plate subvertical, cerci narrower in the middle and apically than at the base, the tip curved mesad and subtruncate with a slight caudal blunt process, subgenital plate somewhat bullate with a distinct cingulate marginal ridge. Prosternum with a blunt swollen protuberance, more apparent than that found in *D. miniatula*, no spine present. Interspace between the mesosternal lobes considerably broader than deep, as broad as one of the lobes in the male, slightly broader in the female; interspace between the metasternal lobes very narrow, subcontiguous in the male. Cephalic femora as long as the pronotum in the female, slightly longer in the male; tibiae equal to the tarsi in length; terminal joint of the tarsi considerably longer than the two proximal joints, the whole tarsus three-fourths the length of the tibia. Median limbs as the cephalic but slightly larger. Caudal femora rather slender, more robust in the female than in the male, considerably exceeding the apex of the abdomen in both sexes, greatest width contained four and one-half times in the length in the male, and four times in the female, genicular lobes acute, carinae not serrate, pagina marked as in *D. miniatula*; tibiae distinctly shorter than the femora, slightly sinuate, very slightly in the female, spines on the external margin four to five in the female, six in the male, on internal margin seven in each sex; tarsi elongate, slender, over half the length of the tibiae, terminal joint very slightly shorter than the proximal two.

General color above dark oil green. Head with the vertex and fastigium pale apple green, the median sulcus slightly marked with a darker tint; face and sides of head dull french green; distinct postocular bar blackish; eyes raw umber; palpi oil green; antennae blackish with the segments tipped with cinnamon. Pronotum with a continuation of the postocular streak blackish, covering the dorsal half of the lateral lobes and extending over the humeral angle to the dorsum,

particularly on the metazona; humeral angle of the metazona and ventral half of the lateral lobes apple green. Mesonotum, mesopleura, metanotum and metapleura of the general tint dorsad with a distinct continuation of the postocular bar at their suture and the ventral portion of the pleura apple green, variegated with blotches of blackish chiefly along the sutures. Abdomen of the general color; recurved apex of the male abdomen blackish, the subgenital plate with two subcircular spots of olive yellow separated by a narrow line of black, cerci greenish-yellow proximad, blackish distad, supra-anal plate olive yellow. Cephalic and median limbs oil green. Caudal femora oil green with the genicular arches ochraceous-rufous; tibiæ oil green becoming blackish-brown distad, spines brownish with black tips.

Measurements.

	♂	♀
Length of body,	15.2 mm.	17.5 mm.
Length of pronotum,	2.6 "	3.2 "
Greatest width of pronotum,	2.5 "	3.1 "
Length of caudal femur,	10.2 "	10.5 "

A paratype series of two males and three females, including the types, have been examined. They are quite constant in size and coloration.

***Dellia ovatipennis* n. sp.**

Type: ♀; Carrillo, Costa Rica. [Hebard collection.]

Distinguished by the ovate tegmina, which are quite different from the linear type found in the other species, and also in the coloration; the blackish genicular region of the caudal femora resembling *D. insulana*.

Size rather small (when compared with females of *D. miniatula* and *bimaculata*); form as usual in the genus; surface polished, the metazona rather irregularly and feebly punctate. Head with the occiput considerably elevated, evenly descending to the vertex; interocular space narrow but equal to half the terminal width of the fastigium; fastigium very slightly shorter than the basal width, tapering, apically truncate, a very slight median longitudinal depression present; apex of the fastigium, when viewed laterad, rounded into the retreating face, the fastigial process losing its identity a short distance ventrad of the insertion of the antennæ; lateral ocelli situated at the base of the fastigium on the supra-antennal ridge, median ocellus placed at the ventral base of the fastigium; eyes ovate reniform, slightly but distinctly elevated above the vertex, greatest length distinctly greater than the length of

the infra-ocular portion of the genæ; antennæ equal to the head, pronotum and tegmina in length, filiform. Pronotum rounded; cephalic margin subtruncate, caudal margin truncate with a narrow triangular median emargination; transverse sulci four in number, distinctly but not deeply impressed, metazona less than half the length of the prozona; lateral lobes slightly longer than deep, a slight sinuosity dorsad on the cephalic margin, ventral margin with the usual cephalic emargination, the caudal portion subrotundate, caudal margin faintly arcuate. Tegmina about twice as long as the metazona, elliptical, the dorsal margin with a very slight emargination toward the apex. Abdomen very distinctly compressed, strongly carinated dorsad. Prosternum with a swollen tubercle which is bluntly conic, little elevated. Interspace between the

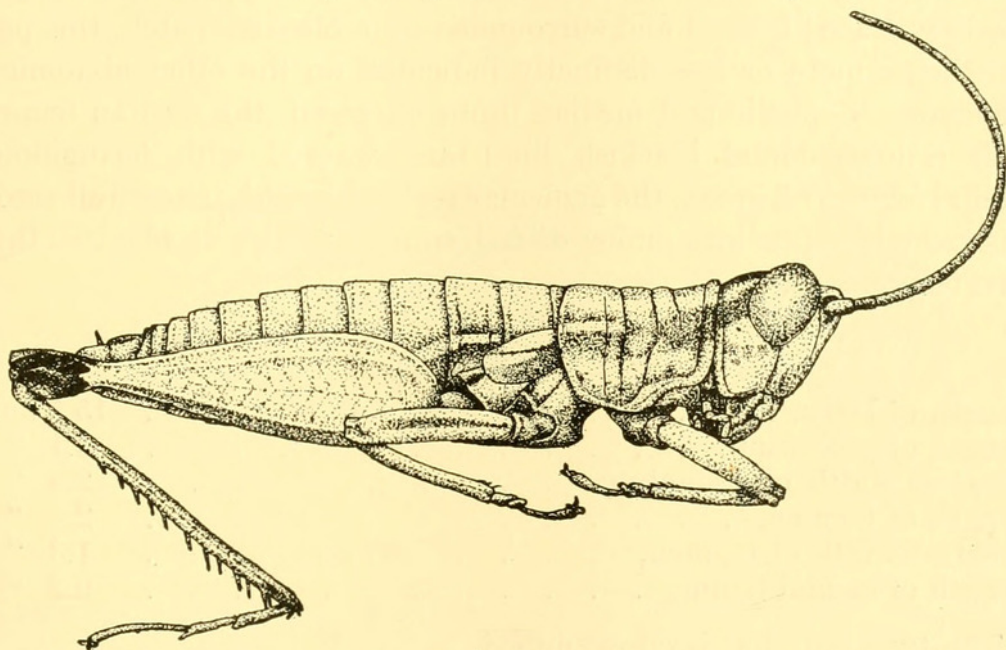


Fig. 27.—*Dellia ovatipennis* n. sp. Lateral view of type.

mesosternal lobes broader than deep, slightly broader than one of the lobes, the angles obtuse; interspace between the metasternal lobes narrow, constricted caudad by the converging lobes. Cephalic femora slightly shorter than the pronotum; tibiae equal to the femora in length; terminal tarsal joint about twice as long as the two basal joints together, the tarsus about three-fourths the tibial length. Median limbs similar to the cephalic but slightly slenderer and longer. Caudal femora rather short, very slightly exceeding the apex of the abdomen, greatest width slightly more than one-fourth of the length, pattern of the pagina distinct and regular, genicular region slightly inflated, lobes acute; tibiae slightly shorter than the femora, slightly sinuate in the proximal half, external margin with six spines, internal margin with eight spines

including the apical; tarsi over half the tibial length, the terminal joint slightly shorter than the proximal two, the second shorter than the first; arolia present.

General color olive green, the pronotum oil green. Head with distinct postocular bars and a triangular occipital patch blackish, face and genæ oil green; fastigium narrowly margined with yellowish-green; eyes raw umber; antennæ blackish-brown. Pronotum with a continuation of the postocular bar olive green in color, a distinct humeral line of citron yellow on the metazona, a pair of indistinct parallel lines on the prozona and the ventral half of the lateral lobes citron yellow. Tegmina dull citron yellow along the dorsal edge, the ventral section blackish. Abdomen with the proximal joint with a pair of straw yellow bars placed laterad and surrounded by a blackish patch, this pattern being more or less distinctly indicated on the other abdominal segments. Cephalic and median limbs oil green, the median femora with a longitudinal blackish line; tarsi washed with ferruginous. Caudal femora oil green, the genicular region blackish; tibiæ dull verdigris green blending into umber distad, spines umber with blackish tips; tarsi ferruginous.

Measurements.

Length of body,	15.5 mm.
Length of pronotum,	3.1 "
Greatest width of pronotum,	2.9 "
Length of tegmen,	2 "
Greatest width of tegmen,	1.3 "
Length of caudal femur,	9.2 "

The type only has been examined.

JODACRIS Giglio-Tos.

1897. *Jodacris* Giglio-Tos, Boll. Mus. Zool. Anat. Comp., Torino, XII, No. 302, p. 32.

Type.—*Anniceris ferrugineus* Giglio-Tos.

Jodacris(?) *costaricensis* n. sp.

Types: ♂ and ♀; Carrillo, Costa Rica. [Hebard collection.]

Differing from the previously known species of the genus in the shorter tegmina, the large and subcontiguous eyes, and the peculiar coloration. It is quite possible the species does not belong to the genus *Jodacris*, and in such case it represents a new genus.

Size small; form subfusiform; surface sparsely punctulate. Head with the occiput very slightly elevated, the vertex descending to the fastigium, slightly sulcate in the female, distinctly in the male; inter-

ocular region very narrow, the eyes subcontiguous in the male; fastigium much broader proximad than long, slightly tapering, the apex truncate and itself equal to the length, with a slight median excavation dorsad; lateral view of the fastigium with the apex broadly truncate and with a distinct dorsal angle in the male, slightly arcuate and with the angle reduced in the female; frontal costa extending but little below the ventral base of the fastigium and distinctly sulcate in the male, about limited to the ventral face of the fastigium and very slightly sulcate in the female; lateral ocelli placed at the base of the supra-ocular margin of the fastigium, median ocellus placed slightly below the insertion of the antennæ; face very strongly retreating in the male, distinctly declivent in the female, slightly concave in both sexes; eyes subreniform, quite

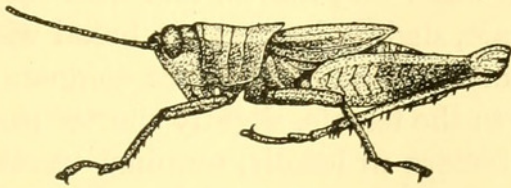


Fig. 28.

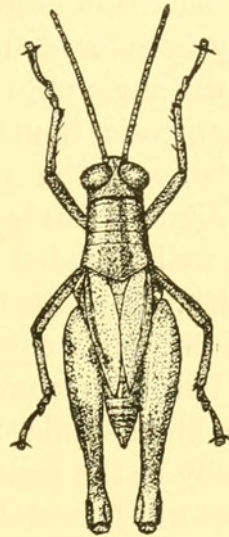


Fig. 29.

Jodacris(?) costaricensis n. sp. Female type. Fig. 28.—Lateral view. Fig. 29.—Dorsal view.

prominent in both sexes but very prominent in the male, considerably elevated above the interocular region, length of the eye distinctly (male) or slightly greater than the infra-ocular length of the genæ; antennæ of male slightly longer than the head and pronotum, filiform, slightly depressed distad. Pronotum very slightly tectate, median carina weakly indicated, no lateral carinæ present but humeral angle apparent; cephalic margin produced rotundate with a distinct but shallow median emargination, caudal margin very obtuse-angulate; transverse sulci three in number, all more deeply indicated in the male and of which the caudal alone intersects the median carina in the male, cephalic margin bordered caudad by a distinct depression which has the appearance of a sulcus in the female; metazona strongly punctulate,

about half the length of the prozona; lateral lobes distinctly longer than deep, cephalic margin oblique, slightly sinuate, ventral margin very strongly emarginate cephalad, the ventro-cephalic angle rectangulate, caudal section obliquely (ventro-cephalad) truncate, slightly sinuate, ventro-caudal angle obtuse, caudal margin about straight from the humeral angle. Tegmina very slightly shorter than the head and pronotum, lanceolate; the tips very acute in the female, narrowly rounded in the male; surface reticulate, the principal longitudinal veins distinct. Abdomen slightly compressed, carinate dorsad; apex of the male abdomen very slightly recurved, cerci erect, slender, tapering, slightly recurved distad, subgenital plate moderately produced, subspatulate, apically rounded. Prosternal spine small, very short, rather blunt, submamiform. Interspace between the mesosternal lobes slightly broader than long, slightly broader caudad than one of the lobes, the angle obtuse in the male, in the female the interspace is decidedly broader than one of the lobes and the angles are rounded; interspace between the metasternal lobes very narrow and with the lobes subcontiguous caudad in the male, slightly longer than broad with the angles well rounded in the female. Cephalic femora comparatively much heavier in the male than in the female, slightly shorter than the pronotum; tibiae equal to the femora in length, terminal tarsal joint about twice the length of the two small proximal joints, arolia broad. Median limbs similar to the cephalic but larger. Caudal femora robust, especially in the female, length exceeding that of the whole abdomen, greatest width contained three and a half (female) to three and three-fourths (male) in the length of the femur, genicular region moderately inflated, the lobes subrectangulate, carinae with very minute serrulations, pregenicular constriction marked, pattern of the pagina distinct and regular but not deeply impressed; tibiae slightly shorter than the femora, external margin with seven spines, internal with nine including the apical; tarsi about half the length of the tibiae, the distal joint distinctly exceeding the proximal in length, the median about half the length of the proximal, arolia rather broad.

General color, oil green marked with olive yellow on the head and pronotum. Head with the face and genae olive yellow, the postocular streak olive green; eyes walnut brown; antennae apple green rather obscurely annulate with prout's brown. Pronotum mesad olive green bordered laterad by bars of olive yellow, the postocular bar french green, rather obscure on the metazona, the ventral portion of the lateral lobes olive yellow. Tegmina olive green in the female, that tint shading distad to apple green in the male, a group of the principal longi-

tudinal veins marked with blackish. Abdomen dull brown, the segments margined caudad with a darker shade. Cephalic and median limbs oil green, marked at the articulations with blackish-brown. Caudal femora with the extreme proximal section and a section between the middle of the genicular region oil green, the intermediate portion and the genicular region chinese orange; tibiæ verdigris green, the extreme proximal section tinted with chinese orange, spines blackish apically; tarsi dull greenish.

Measurements.

	♂	♀
Length of body,	12.5 mm.	15 mm.
Length of pronotum,	3 "	4.7 "
Greatest width of pronotum,	2.2 "	3.2 "
Length of tegmen,	4 "	6 "
Greatest width of tegmen,	1.7 "	2.5 "
Length of caudal femur,	8 "	11 "

The types are unique.

SYLETRIA⁶ n. gen.

A member of the *Xiphiolæ*, and probably allied to the genus *Saparus* Giglio-Tos, from which it differs in a number of characters. A decided superficial resemblance to the genus *Machærocera* is noticeable.

Type.—*S. angulata* n. sp.

Form compressed. Head very deep; occiput separated from the vertex and fastigium by an elevated interocular region; fastigium slightly produced, slightly broader than long; frontal costa narrow, facial carinæ distinct; eyes elongate elliptical. Pronotum depressed above; median carina distinct but not highly elevated; no lateral carinæ but distinct humeral angles on the metazona. Tegmina elongate, apex obliquely truncate. Abdomen strongly compressed. Prosternal spine erect, conic. Interspace between the mesosternal lobes quadrate, between the metasternal lobes longitudinal. Caudal femora slender, dorsal carinæ serrate. Caudal tibiæ with nine spines on the external margin, no apical spine; internal margin with eleven spines including the apical.

Syletria angulata n. sp.

Type: ♀; Carrillo, Costa Rica. [Hebard collection.]

Size rather large; form distinctly compressed; surface uniformly rugulose. Head when viewed cephalad twice as deep as wide; occiput ascending to the vertex which is less than half the width of the fasti-

⁶ Συλητρία, a female plunderer.

gium and subangulate when viewed laterad; cephalad descending slightly, bearing two distinct lateral and a weak median carinæ; fastigium horizontal, the proximal width considerably greater than the length, the lateral carinæ of the vertex continued on the fastigium,

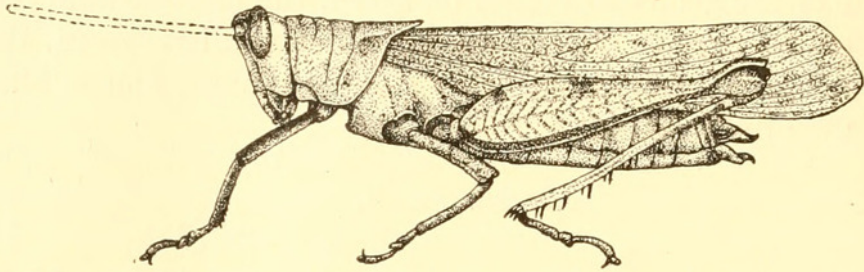


Fig. 30.—*Syletria angulata* n. gen. and sp. Lateral view of type.

distal portion angulate, the immediate angle blending into the frontal costa, broadly and shallowly excavated, the margins elevated, frontal costa narrow at its junction with the fastigium, expanding slightly between the antennæ, the margins below rather weak, constricted sharply below the ocellus, but ventrad to this of the normal width and reaching the clypeal margin, strongly punctate dorsad, sulcate at and below the ocellus; lateral facial carinæ distinct; lateral ocelli placed at the base of the fastigium, median ocellus placed ventrad of the slight dorsal expansion of the frontal costa; eyes elongate elliptical; antennæ missing. Pronotum with the median carina slight but distinct, slightly more elevated at the intersection of the caudal sulcus; cephalic margin subtruncate with a very small median emargination; caudal margin rectangulate, the angle very marked and the margin laterad very slightly emarginate; transverse sulci three in number, the metazona slightly longer than the prozona; lateral lobes longer than deep, the cephalic margin very slightly sinuate, ventral margin distinctly and sharply rotundate-emarginate cephalad, the ventrocephalic angle obtuse, caudal portion of the ventral margin and the ventro-caudal angle rounded into the caudal margin, which is arcuate with a very slight humeral concavity. Tegmina considerably exceeding the abdomen and caudal femora in

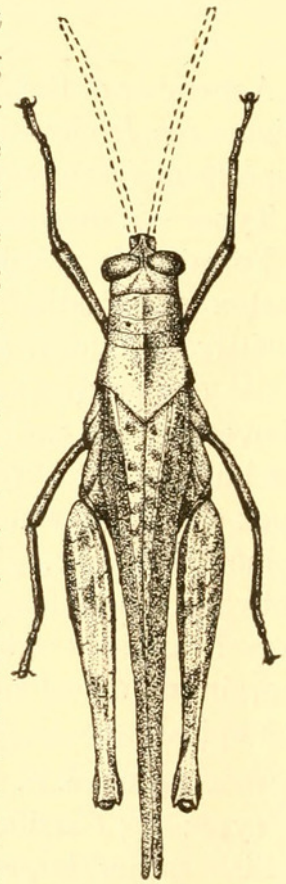


Fig. 31.—*Syletria angulata* n. gen. and sp. Dorsal view of type.

length, over twice the length of the head and pronotum together; greatest width in the apical fourth; costal expansion distinct, one-fourth the distance from the base, remainder of costal margin straight except near the apex where it is rounded; apex obliquely truncate, subrectangulate ventrad, obtuse-angulate dorsad; anal margin straight. Wings equal to the tegmina in length. Prosternal spine erect, acute, distinctly compressed. Interspace between the mesosternal lobes quadrate, slightly less than the width of one of the lobes, the lobes rounded. Interspace between the metasternal lobes longitudinal, about one and a half times as long as the caudal interspace, cephalic width slightly greater, lobes rounded. Abdomen strongly compressed, carinate dorsad. Cephalic femora straight, the greatest width in the distal third, length nearly three-fourths that of the pronotum, genicular lobes rounded, the cephalic much larger than the caudal; tibiae as long as the femora, the spines on distal portion strong; tarsi but little shorter than the tibiae, the median joint little more than a third the length of the proximal, the distal joint slightly exceeding the proximal and median in length, arolia present. Median femora about equal in length to the cephalic but more compressed, genicular lobes, tibiae and tarsi as in the cephalic limbs. Caudal femora elongate, slender, two-thirds the length of the tegmina, proximal portion considerably inflated, the greatest width contained four and a half times in the length of the femur, dorsal carinae serrate, pattern of the pagina elevated, distinct and regular, areas on the dorsal face finely tuberculate, ventral areas glabrous, pregenicular region distinctly constricted and extending a considerable distance proximad, genicular region little arched and produced into a pair of subacute processes dorsad, genicular lobes short, narrowly rounded at the apex; tibiae slightly shorter than the femora, slightly sinuate, external margin with nine spines, internal margin with eleven including the apical; tarsi about one-third the length of the tibiae, the proximal and distal joints subequal in length, median joint about half the length of the proximal, arolia present.

General color, broccoli brown minutely speckled with bistre. Head inclined toward tawny olive, two diverging subobsolete semilunate blotches of umber on the occiput; eyes prout's brown. Pronotum with the prozona very slightly lighter than the metazona, the whole uniformly dotted with bistre. Tegmina with numerous regularly disposed quadrate blotches of dilute bistre, those of the costal and anal areas smaller than the blotches of the discoidal area. Wings of the same tint as the tegmina. Segments of the abdomen margined with

blackish. Cephalic and median limbs speckled with bistre on the cephalic aspect, shiny black on the caudal aspect. Caudal femora isabella color on the dorsal and lateral faces, with three distinct bars of bistre on the dorsal face, one basal, one median, one caudo-median, and one genicular, the median and caudo-median slightly suffusing the lateral face, carinæ and dorsal tubercles bistre, externo-ventral area blackish, internal face and interno-ventral area scarlet vermilion, genicular region suffused with bistre; tibiæ scarlet vermilion, the proximal portion, a touch on the external face of the proximal section, the entire external spines and the tips of the internal spines blackish; tarsi scarlet vermilion.

Measurements.

Length of body,	33	mm.
Length of pronotum,	8	"
Greatest width of pronotum,	5	"
Length of tegmen,	30	"
Greatest width of tegmen,	5.5	"
Length of caudal femur,	19	"

This interesting new genus is represented only by the unique type. It bears a great superficial resemblance to the Truxalid genus *Machærocera*.

LEPTOMERINTHOPRORA⁷ n. gen.

A member of the *Xiphiolæ*, and probably related to *Xiphiola* Bolivar. The general structure is, however, very different, and suggests a relationship to the *Vilernæ*.

Type.—*L. brevipennis* n. sp.

Head with the fastigium trigonal, slightly projecting beyond the face; frontal costa precurrent. Pronotum with a distinct median carina, humeral angles marked; transverse sulci three in number; lateral lobes with the ventral margin emarginate cephalad and caudad. Tegmina little exceeding the pronotum in length, apex rectangulate, costal expansion marked. Prosternal spine erect, rather slender, blunt. Interspace between the mesosternal lobes slightly transverse, interspace between the metasternal lobes subquadrate. Caudal tibiæ with seven spines on the external margin, no apical spine; nine spines on the internal margin including the apical spine.

⁷ Λεπτος, thin; μηρυθος, cord; πρῶρα, face.

Leptomerinthoprora brevipennis n. sp.

Type: ♀; Pozo Azul de Pirris, Costa Rica. May-June, 1902. (C. F. Underwood.) [A. N. S. Phila.]

Size rather small; form elongate fusiform; surface of the pronotum and pleura rugoso-punctate. Head with the occiput and vertex rounded, not markedly elevated; interocular region slightly more than half the proximal width of the fastigium; fastigium produced trigonal, the apex rounded, shallowly excavated, margins distinct, lateral view of fastigium rounded, slightly projecting beyond and rounding into the slightly retreating face; frontal costa strongly constricted at the ocellus, subequal elsewhere, strongly sulcate except dorsad and ventrad; lateral ocelli placed close to the eye ventrad of the margin of the fastigium, median ocellus placed a short distance below the insertion of the antennæ; eyes reniform, slightly narrower dorsad than ventrad, slightly

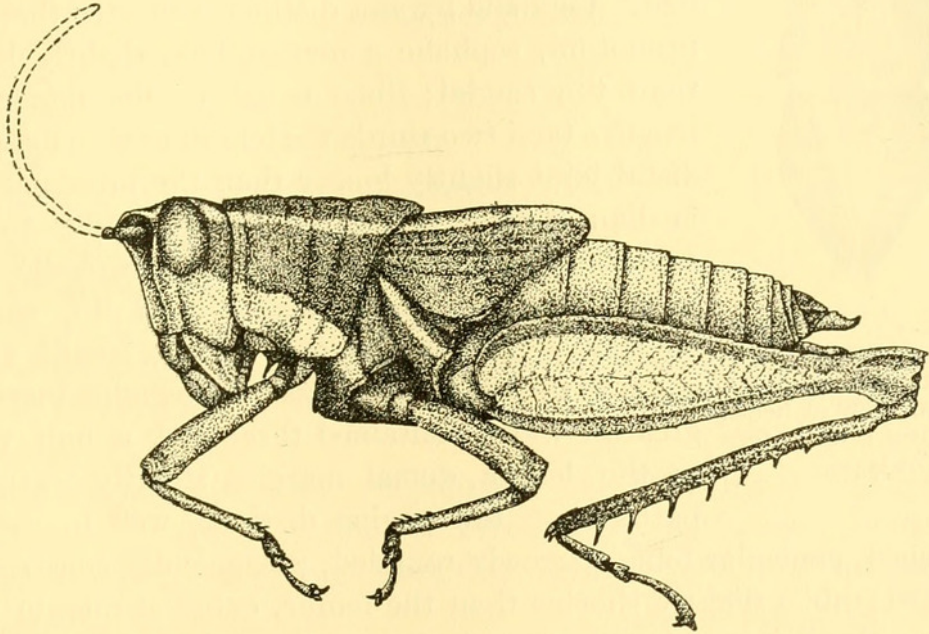


Fig. 32.—*Leptomerinthoprora brevipennis* n. gen. and sp. Lateral view of type.

longer than the infra-ocular portion of the genæ; antennæ missing. Pronotum moderately tectate, median carina slightly elevated; cephalic margin slightly produced and with a very slight median emargination; caudal margin rounded obtuse-angulate, the angle with a very slight emargination; transverse sulci three in number, a slight transverse depression extending parallel with the cephalic margin, metazona little more than half the length of the prozona; lateral lobes slightly longer than deep, cephalic margin regularly sinuate, ventral margin emarginate cephalad and caudad with a rounded median projection, ventro-cephalic angle obtuse, ventro-caudal angle rounded rect-

angulate, caudal margin slightly oblique. Tegmina slightly longer than the pronotum; costal area strongly and roundly dilated

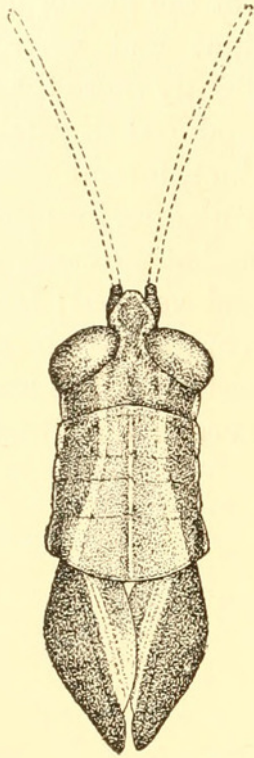


Fig. 33.—*Leptomerinthoprora brevipennis* n. gen. and sp. Dorsal view of head, pronotum and tegmina of type.

mesad; distal half acuminate, the apex narrowly rounded, anal area distinctly arcuate; principal longitudinal veins distinct, interspaces irregularly reticulate. Abdomen compressed, carinate dorsad; margins of the ovipositor jaws indistinctly serrulate. Prosternal spine erect, slightly tapering, the apex blunt. Interspace between the mesosternal lobes with the length contained nearly once and a half in the width, which latter is slightly greater than the width of one of the lobes, angles rounded; interspace between the metasternal lobes subquadrate, slightly broader cephalad than caudad. Cephalic femora distinctly shorter than the pronotum, cephalic genicular lobe slightly larger than the caudal; tibiae equal to the femora in length; tarsi two-thirds the length of the tibiae, the distal joint slightly longer than the proximal and median together. Median limbs similar to the cephalic but slightly more robust, cephalic genicular lobe decidedly larger than the caudal, lamellate. Caudal femora robust, length about equal to the head, pronotum and tegmina together, greatest width contained three and a half times in the length, dorsal margins slightly serrulate, pattern of the pagina distinct, well impressed,

flattened, genicular lobes narrowly rounded, pregenicular constriction marked; tibiae slightly shorter than the femur, external margin with seven spines, internal with nine, including the apical; tarsi slightly less than half the length of the tibia, distal joint about equal to the proximal and median joints together in length, arolia present.

General colors vandyke brown on clay color. Head with an irregularly triangular occipital patch and a distinct postocular bar, ventral portion of the antennal fossæ blotched with the darker tint; eyes walnut brown. Pronotum with the humeral angles and the ventral third of the lateral lobes of the lighter shade, remainder vandyke brown. Tegmina dark with the angles marked with clay color, which spreads over the distal portion of the anal area. Pleura with two bars of clay color, one on the mesothoracic episternum and in continuation of the clay-colored ventral portion of the lateral lobe of the pronotum, the

other on the ridge of the metathoracic episternum. Abdomen tawny olive. Limbs dull clay color with a slight greenish tinge, the caudal femora washed with cinnamon on the dorsal face, genicular arch raw umber; distal portion of the caudal tibiæ and caudal tarsi washed with bistre, spines tipped with blackish.

Measurements.

Length of body,	22.2 mm.
Length of pronotum,	5.9 "
Greatest width of pronotum,	4 "
Length of tegmen,	6.9 "
Greatest width of tegmen,	4 "
Length of caudal femur,	13.5 "

The type is unique.

SCHISTOCERCA Stål.

Schistocerca pyramidata Scudder.

Guatel, Costa Rica. August, 1902. (C. F. Underwood.) [A. N. S. Phila.] One female, one nymph.

Tarbaca, Costa Rica. December, 1902. (C. F. Underwood.) [A. N. S. Phila.] One female, one nymph.

Pozo Azul de Pirris, Costa Rica. August, 1902. (C. F. Underwood.) [A. N. S. Phila.] Four females.

Monte Redondo, Costa Rica. December, 1902, and January, 1903. (C. F. Underwood.) [A. N. S. Phila.] Two males, two females, eight nymphs.

San José, Costa Rica. September and December, 1902. (C. F. Underwood.) [A. N. S. Phila.] Five males, three females, one nymph.

This series is inseparable from Cuernavaca (topotypic) specimens.

Schistocerca malaohitica n. sp.

Type: ♀; Turrialba, Costa Rica. (Schild and Burgdorf.) [U. S. N. M., No. 8,175.]

Allied to *S. alutacea* and *venusta*, but distinguished by the more flattened disk of the pronotum and the striking and peculiar coloration.

Size rather large; form as usual in the genus. Head with the occiput and vertex very slightly rounded longitudinally, rather flattened transversely; interocular space very distinctly greater than the width of the frontal costa; fastigium broad, obtuse-angulate, subhorizontal, margins very slightly elevated, rounding into the frontal costa without angle; frontal costa subequal in width, continued to the clypeus, slightly expanded ventrad, sulcate at and ventrad of the ocellus, strongly punctate dorsad; eyes elongate subreniform, slightly longer

than the infra-ocular portion of the genæ; antennæ about as long as the head and pronotum together. Pronotum subdeplanate above, surface strongly rugoso-punctate; transverse sulci deeply impressed and all intersecting the median carina; median carina distinct and uniform in height throughout its length; metazona slightly longer than the prozona, very slightly bullate; cephalic margin obtuse-angulate, caudal

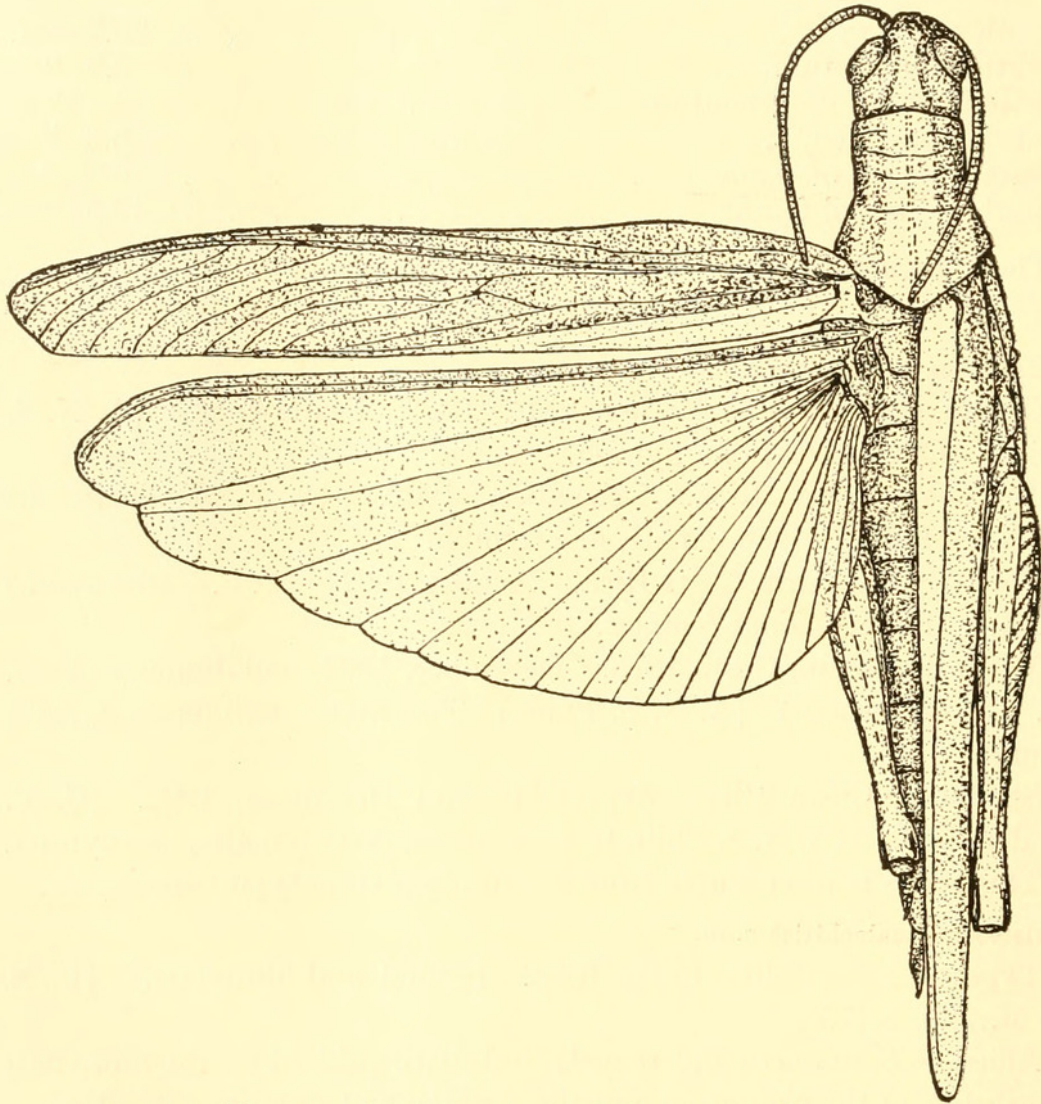


Fig. 34.—*Schistocerca malachitica* n. sp. Type.

margin rectangulate with the angle rounded; humeral angle distinct but rounded on the metazona, obsolete on the prozona; lateral lobes slightly longer than deep. Prosternal spine rather heavy, erect, apically rounded and blunt. Tegmina long, exceeding the tips of the posterior femora by the length of the pronotum. Interval between the mesosternal lobes distinctly longer than cephalic width, subcuneiform in shape. Interval between the metasternal lobes similar in

outline to that between the mesosternal lobes. Caudal femora elongate, reaching the base of the ovipositor jaws, dorsal carina distinctly serrate; tibiæ slightly but distinctly shorter than the femora, spines of the internal borders longer than those of the lateral borders.

General color very dull olive green on the head and thorax, abdomen raw umber. Pronotum with a broad subequal median stripe of oil green which is continued on to and involves the whole anal area of the tegmina. Head with a broad streak of dull tawny-ochraceous on the fastigium, vertex and occiput, bordered laterad by faint blackish lines; eyes ferruginous; antennæ olivaceous. Pronotum with the lateral portions of the dorsum bistre. Tegmina (exclusive of the anal areas) chestnut. Wings with the costal portion and the apical two-thirds suffused with chestnut fading into a pale apple green on the basal third. Cephalic

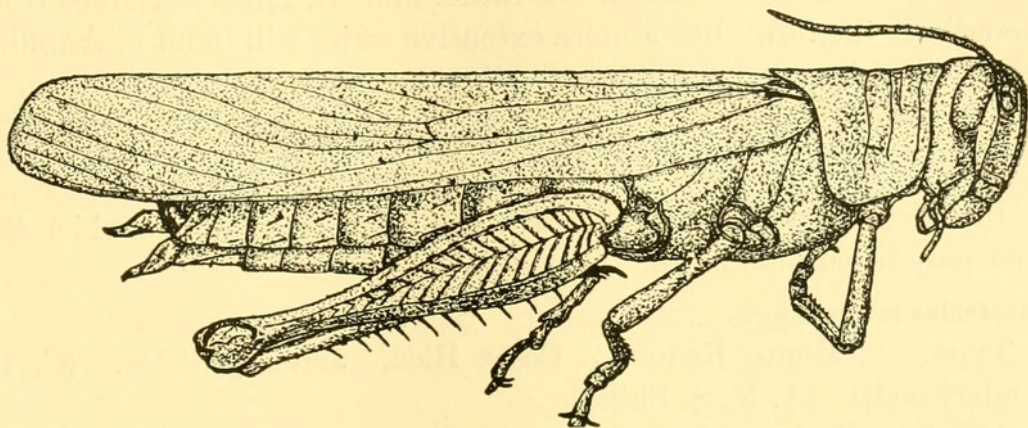


Fig. 35.—*Schistocerca malachitica* n. sp. Type.

alic and median limbs dull oil green, the genicular regions marked with gamboge yellow. Caudal femora oil green, basally suffused with hoary white, genicular arch black, the region immediately ventrad being ochraceous; tibiæ saffron yellow, the spines lemon yellow with the tips black.

Measurements.

Length of body,	54.5 mm.
Length of pronotum,	11 "
Greatest width of pronotum,	7.5 "
Length of tegmen,	50 "
Greatest width of tegmen,	8 "
Greatest width of wing,	20.5 "
Length of caudal femur,	27.5 "

The type is unique in the material studied.

AIDEMONA Brunner.⁸

Aidemona azteca (Saussure).

Monte Redondo, Costa Rica. January, 1903. (C. F. Underwood.) One male, one nymph. [A. N. S. Phila.]

Guatel, Costa Rica. April and September, 1902. (C. F. Underwood.) Three males, eighteen females. [A. N. S. Phila.]

This series appears to be rather uniform in size and of quite uniform coloration. The males differ somewhat from central Mexican (Jalisco, San Luis Potosi and Michoacan) specimens in the slenderer cerci, and both sexes in the shorter tegmina and wings, which but slightly exceed the caudal femora in the male, and are of proportionate length in the female. Specimens from the State of Vera Cruz are closer related to the Costa Rican type than to the more northern form. As the material of the male sex from Costa Rica is rather limited, I have refrained from describing the form, but a more extensive series will in all probability verify the observation made regarding the cerci.

DICHROPLUS Stål.

1873. *Dichroplus* Stål, Recensio Orthopterorum, I, p. 78.

Included *arrogans*, *patruelis*, *cliens* and *lemniscatus* Stål, of which the first may be considered the type.

Dichroplus morosus n. sp.

Type: ♀; Monte Redondo, Costa Rica. January, 1903. (C. F. Underwood.) [A. N. S. Phila.]

Allied to *D. punctulatus* and *conspersus*, but differing in the more obtuse-angulate caudal margin of the pronotum, the more uniformly sulcate frontal costa, as well as the duller coloration.

Size small; form as usual in the genus. Head with the occiput very slightly rounded and ascending; interocular space slightly more than half the width of the eye; fastigium strongly declivent, not excavated, margins slightly elevated, hardly separated from the frontal costa; frontal costa subequal, slightly expanding ventrad, moderately sulcate to and for a short distance below the ocellus; lateral ocelli situated close to the eye at the dorsal margin of the antennal fossæ, median ocellus situated between the antennæ and slightly ventrad; eyes subreniform, slightly longer than the infra-ocular portion of the genæ, the greatest width contained about once and a half in the length; antennæ slightly depressed, apically damaged. Pronotum depressed dorsad, no median carina except a slight ridge on the meta-

⁸ This generic name should be credited to Brunner (*Ann. Mus. Civ. Stor. Nat. Genova*, XXXIII, p. 145) instead of Scudder. It was based on Stål's "Divisio tertia" of the genus *Pezotettix*, of which the only species not eliminated—*azteca*—is the type.

zona, humeral angles distinct on the metazona; cephalic margin subtruncate; caudal margin obtuse-angulate; transverse sulci rather weak, three in number; lateral lobes as deep as long, the ventral angles obtuse. Tegmina slightly exceeding the tips of the abdomen and caudal femora, apex rounded, costal expansion slight but elongate. Abdomen considerably compressed. Prosternal spine erect, thick, conic, slightly retrorse, apex rather blunt. Interspace between the mesosternal lobes distinctly broader than long, equal to the one of the lobes in width, angles narrowly rounded; interspace between the metasternal lobes narrow, longer than broad, the lobes rounded. Caudal femora about twice the length of the head and pronotum together, the greatest width contained three and one-third times in the length, pattern of the pagina low but distinct, pregenicular constriction slight, genicular lobes rotundato-truncate; tibiae slightly shorter than the femur, armed on the external margin with nine spines, on the internal margin with nine including the apical.

General color bistre sprinkled, lined and blotched on a ground of wood brown. Postocular bar indistinct and face suffused with the darker shade; antennae wood brown irregularly marked with the overlying tint. Pronotum with the humeral angles and the ventral portions of the lateral lobes dull wood brown. Tegmina irregularly blotched and mottled, the intercalary area with regular alternating quadrate patches of shining black and wood brown. Abdomen wood brown marked with shining black. Limbs wood brown and vandyke brown blotched and imperfectly annulate; caudal femora with three irregular dorsal patches which extend over on the dorsal portion of the other unmarked wood brown lateral face, genicular region vandyke brown, tibial groove suffused with ochraceous-rufous; caudal tibiae dull ochraceous-rufous, the spines tipped with black.

Measurements.

Length of body,	17.5 mm.
Length of pronotum,	4 "
Greatest width of pronotum,	3 "
Length of tegmen,	14 "
Length of caudal femur,	9.7 "

The type only has been examined.

OSMILIA Stål.

Osmilia tolteca (Saussure).

Carrillo, Costa Rica. [U. S. Nat. Mus. and Hebard collection.] One male, five females.

Guatel, Costa Rica. April, 1902. (C. F. Underwood.) [A. N. S. Phila.] Eight males, nine females, one nymph.

Monte Redondo, Costa Rica. January, 1903. (C. F. Underwood.) [A. N. S. Phila.] Two males, three females, eight nymphs.

San José, Costa Rica. September, 1902. (C. F. Underwood.) [A. N. S. Phila.] Three nymphs.

Tarbaca, Costa Rica. November, 1902. (C. F. Underwood.) [A. N. S. Phila.] One female.

Pozo Azul de Pirris, Costa Rica. August, 1902, and January, 1903. (C. F. Underwood.) [A. N. S. Phila.] Four males, seven females.

This Mexican and Central American form can be distinguished from the South American *O. flavo-lineata* by the shorter tegmina and wings in both sexes and the broader head and less prominent eyes. Deme-rara specimens of *O. flavo-lineata* and Vera Cruz and Tamaulipas specimens of *tolteca* have been used for comparison.

RHACHICREAGRA⁹ n. gen.

Type.—*R. nothra* n. sp.

Allied to *Polysarcus* Saussure, but differing in the presence of minute tegmina, the greater number of joints in the antennæ, the slightly produced fastigium of the vertex, and the more distinctly forked cerci.

Form robust, obese in the female. Head with the vertex short, declivent, produced moderately beyond the face, frontal costa precurrent, sulcate; antennæ filiform, twenty-two to twenty-three joints. Median carina of the pronotum distinct, elevated, suberistate on the metazona. Metanotum and proximal segment of the abdomen with a median carina which is more elevated caudad. Tegmina minute, linear. Cerci of the male very distinctly forked. Prosternal spine erect, ungulic, acute, slightly antrorse. Interspace between the mesosternal lobes subquadrate in both sexes; interspace between the metasternal lobes subquadrate in the male, strongly transverse in the female. Arolia present.

Rhachicreagra nothra¹⁰ n. sp.

Types: ♂ and ♀; Carrillo, Costa Rica. [Hebard collection.]

Size rather small in the male, medium in the female; form robust in the male, decidedly obese in the female; surface rugoso-punctate, the dorsum of the thorax heavily sculptured. Head with the occiput and vertex evenly rounded, the interocular space about half the width of the cephalic margin of the fastigium in the male, slightly narrower than

⁹ *Ραχίς*, back; *κρεάγρᾱ*, hook.

¹⁰ *Νοθρά*, inactive, sluggish.

the cephalic width in the female; fastigium moderately declivent, slightly (male) or considerably (female) shorter than the proximal width, apex subtruncate, broadly and shallowly sulcate and rounding without demarkation into the frontal costa and sulcus, lateral view of the fastigium regularly rounded, blending imperceptibly into the face immediately ventrad of the median ocellus, the projection of the fastigium more pronounced comparatively in the male than in the female; lateral ocelli placed near the base of the fastigium on the supra-

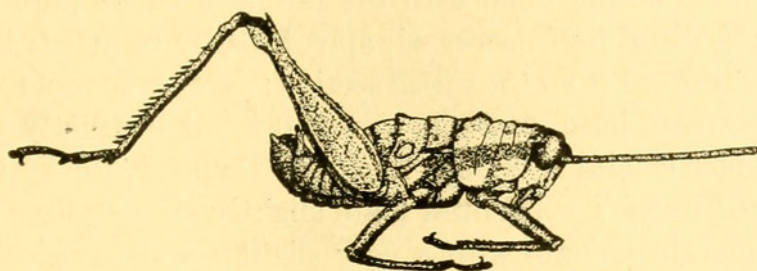


Fig. 36.—*Rhachicreagra nothra* n. gen. and sp. Lateral view of male type.

antennal margin; frontal costa slightly expanded dorsad, extending to the clypeal margin, slightly constricted immediately below the ocellus, sulcus distinct, moderately deep, narrower dorsad than ventrad; eyes subovate, quite prominent in the male and elevated above the vertex, very much (male) and distinctly (female) longer than the infra-ocular portion of the genæ; antennæ as long as the caudal femora. Pronotum tectate, the median carina elevated, on the metazona developed

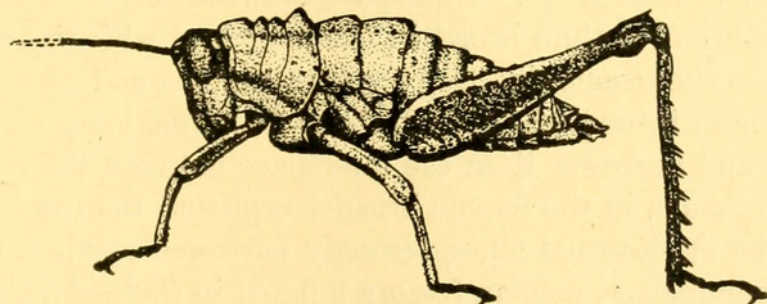


Fig. 37.—*Rhachicreagra nothra* n. gen. and sp. Female type, lateral view.

into a dentate crest, which is more apparent in the female than in the male; cephalic margin produced arcuate, the median section truncate; caudal margin emarginato-truncate; no lateral carinae present, but humeral angles distinct in the male; lateral lobes of the pronotum distinctly longer than deep, particularly in the male, cephalic margin sinuate with a distinct postocular emargination, ventral margin with a distinct cephalic emargination, subarcu-

ate caudad, caudal margin arcuate with a slight concavity dorsad of the rounded obtuse ventro-caudal angle; transverse sulci three in number, deeply impressed, the cephalic margin bordered caudad by an incomplete sulcus, prozona more than twice the length of the metazona. Exposed portion of the mesonotum very narrow; metanotum and proximal segment of the abdomen subequal in length, tectate, carinate, the caudal section elevated. Tegmina equal to the metanotum in length. Abdomen carinate dorsad, very distinctly compressed in the female; supra-anal plate of the male with the lateral margins parallel in the proximal half, distal half narrowed, apex broadly rounded, the lateral portions bent dorsad from the mesal section; cerci subequal to the fork, except at extreme base, cephalic arm short but distinctly separated from the longer caudal fork, tips narrowly rounded, the whole cercus evenly curved mesad; subgenital plate slightly shorter than proximal width, the margin arcuate with a very slight truncate apical process. Prosternal spine erect, acute, slightly antorse distinctly flattened,

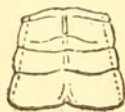


Fig. 38.



Fig. 39.

Rhachicreagra nothra n. gen. and sp. Types. Fig. 38.—Dorsal view of female pronotum. Fig. 39.—Dorsal view of apex of male abdomen.

transversely in the female. Interspace between the mesosternal lobes very slightly longer than broad in the male and with the angles rectangular, in the female slightly broader than long and with the angles as in the male; interspace between the metasternal lobes very broadly cunieforn and narrower than the interspace between the mesosternal lobes in the male, in the female broader cephalad than the interspace between the mesosternal lobes, strongly narrowed caudad, the angles acute. Cephalic and median femora inflated in the male, the cephalic slightly longer than the pronotum, median slightly larger, tibiae equal to the femora in length; tarsi two-thirds the length of the tibiae, the distal joint almost twice the length of the proximal and median joints. Cephalic and median femora of the female not strongly inflated, the cephalic no longer than the pronotum, otherwise the cephalic and median limbs are as in the male. Caudal femora about three-fourths (male) to two-thirds (female) the length of the body, graceful, greatest width contained about four times in the length of the femur, dorsal margin sparsely serrate, pattern of the pagina distinct, pregenicular

constriction more marked ventrad than dorsad, genicular arch very slight, genicular lobes obliquely rotundato-truncate at the apex; tibiæ very slightly shorter than the femora, slightly sinuate proximad, external margin with eight spines, no apical spine present, internal margin with nine spines including the apical; tarsi slightly less than half the length of the tibiæ, the distal joint slightly longer than the proximal and median joints, arolia large, transverse.

Male.—General dorsal color clay color, speckled with olive green, which latter is the color of a very distinct and broad postocular bar on the head, pronotum and dorsal portion of the pleura. Eyes mummy brown. Face, fastigium, mouth parts, genæ, ventral portion of the lateral lobes and a blotch on each episternum at the base of the limbs naples yellow, the face speckled with olive green. Lateral and ventrad aspects of the abdomen as well as the abdominal appendages, except the tips of the cercal forks (blackish), and limbs oil green. Genicular arches and tips of the tibial spines brownish-black. Antennæ olive yellow proximad, indian yellow distad, very obscurely blotched with dull brown.

Female.—Color pattern as in the male unless otherwise noted, the base colors replaced as follows: Dorsal clay color by ochraceous, olive green lateral stripes dull, naples yellow on head, pronotum and pleura replaced by dull ochre yellow. Antennæ dull ochre yellow. Cephalic and median limbs ochraceous, the femora marked ventrad with dull olive green. Caudal femora with the dorsal face ochraceous-cinnamon, the carina blotched and the distal half suffused with blackish, lateral, ventral and internal faces, tibiæ and tarsi more or less strongly suffused with blackish.

Measurements.

	♂	♀
Length of body,	16 mm.	24.5 mm.
Length of pronotum,	3.7 "	5.6 "
Greatest dorsal width of pronotum,	3.5 "	6.7 "
Greatest width across metapleura,	5 "	8 "
Length of caudal femur,	13.5 "	16.3 "

A series of paratype specimens, nine males, seven females, have been examined in addition to the types, as well as a male from Monte Redondo (C. F. Underwood; January, 1903; A. N. S. Phila.).

Considerable variation is noticed in the size of both sexes, while the range of color variation is chiefly in the intensity of the pattern. The Monte Redondo male, however, has the olive green shades replaced by

solid blue black, while the yellow markings of the head, pronotum and pleura are canary yellow, the contrast being very striking.

MICROTYPLOPTERYX¹¹ n. gen.

Type.—*M. hebardi* n. sp.

Allied to *Rhachicreagra* Rehn, but differing in the slenderer, more compressed and less obese form, the broader vertex and fastigium, the comparatively larger head (very noticeable in the female), the single-toothed cerci, and uninflated cephalic femora in the male.

Body more or less elongate fusiform. Head with the vertex short, horizontal, forming a more or less distinct angle with the front, dorsal outline trigonal, the interocular space over half the proximal width of the fastigium; frontal costa weak ventrad, with the sulcation continued on the fastigium; antennæ filiform, fifteen or more joints. Pronotum subarcuate longitudinally, tectate, median carina elevated caudad into a distinct suberistate process. Metanotum, proximal segment of the abdomen and in a lesser degree the succeeding segments of the abdomen with a dorso-caudal elevation on the median carina. Tegmina pad-like, considerably longer than broad, not longer than the pronotum. Cerci of the male undivided; subgenital plate compressed. Prosternal spine erect, slender, acute. Interspace between the mesosternal lobes subquadrate in the male, slightly transverse in the female; interspace between the metasternal lobes distinctly longitudinal in the male, subquadrate in the female. Caudal tibiæ with six to seven spines in the external margin, no apical spine; eight to nine spines, including the apical on the internal margin. Arolia present.

Microtyplopteryx hebardi n. sp.

Type: ♂ and ♀; Carrillo, Costa Rica. [Hebard collection.]

Size rather large (compared with *M. fusiformis*); form elongate subfusiform; surface punctate. Head somewhat compressed, the depth considerably greater than the thoracic depth, width at mandibular margins very slightly less (male) or equal (female) to the greatest width across the eyes; occiput gently rounded, vertex gently declivent, the interspace between the eyes equal to one-half (male) or two-thirds (female) the greatest width of the eye; fastigium with the proximal width twice the length, trigonal, with a slight median depression, dorso-cephalic angle narrowly rounded; face slightly retreating in the female, distinctly retreating in the male, slightly concave; frontal costa weak on the ventral half of the face, distinctly and broadly sul-

¹¹ Μικρα, small; πύλη, pad; πτερύξ, wing.

cate above the ocellus, rounding into the fastigial groove without interruption, slightly and narrowly sulcate below; lateral ocelli placed on the fastigial margin close to the eye; eyes short-ovate, quite prominent in the male, equal to (male) or considerably less than (female) the infra-ocular length of the genæ; antennæ filiform, in the male very slightly shorter than the caudal femora. Pronotum distinctly tectate,

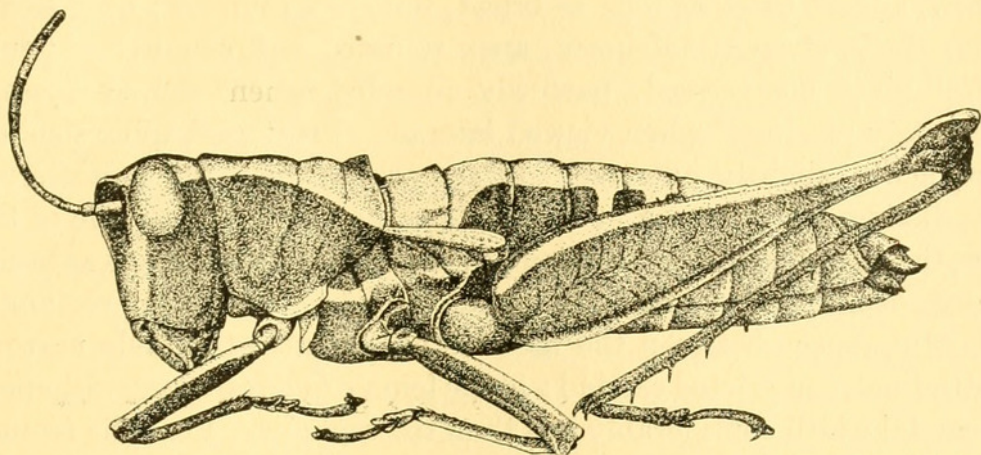


Fig. 40.—*Microtylopteryx hebardi* n. gen. and sp. Lateral view of female type.

elevated cephalad; median carina rather weak, a slight elevation present at the cephalic margin, a very distinct and slightly hooked ridge at the caudal margin, no lateral carinæ present but distinct lateral shoulders; cephalic margin arcuate in the male, subtruncate in the female; caudal margin very broadly, shallowly and triangularly emarginate; lateral lobes distinctly longer than deep, cephalic margin oblique, ventral margin obliquely emarginate cephalad, arcuate caudad,

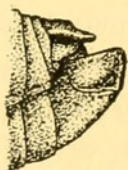


Fig. 41.

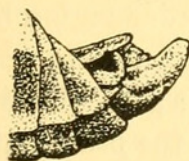


Fig. 42.

Fig. 41.—*Microtylopteryx fusiformis*, lateral view of apex of male abdomen. Fig. 42.—*M. hebardi*, lateral view of apex of male abdomen.

ventro-caudal angle subrectangulate in the male and obtuse-angulate in the female, caudal margin with a distinct rotundate emargination above the angle; transverse sulci two in number, rather weak, particularly in the female, metazona about one-fourth the length of the prozona in the male, less than one-fourth in the female; lateral shoulders arcuate when viewed laterad. Metanotum and proximal segment

of the abdomen subequal in length, a caudal projection developed as on the pronotum but to lesser degree. Tegmina slightly shorter than the prozona, linear, the greatest width in the apical third and contained about five times in the length. Abdomen somewhat compressed, carinate, and each segment with a very slight caudal lobule on the carina. Apex of the male abdomen not inflated, recurved; supra-anal plate narrow, almost twice as long as broad, the apex rounded; cerci short, rather thick, strongly falciform, apex rounded and compressed; subgenital plate compressed, narrowly rounded when viewed dorsad, moderately produced when viewed laterad. Prosternal spine slender, erect, acute, slightly antrorse. Interspace between the mesosternal lobes distinctly transverse in the male, almost as broad as one of the lobes, the angles narrowly rounded; in the female almost twice as broad as long, decidedly broader than one of the lobes, the angles rectangulate. Interspace between the metasternal lobes in the male narrow, longitudinal, constricted caudad; in the female quadrate wedge-shaped, the caudal width considerably less than the cephalic. Cephalic femora slightly longer than the pronotum in the male, subequal in the female, not inflated, cephalic genicular lobe larger than the caudal; tibiae equal to the femora in length; tarsi slightly shorter than tibiae, the distal joint considerably longer than the proximal and median joints united. Median limbs similar in structure and size to the cephalic. Caudal femora considerably inflated proximad, the length slightly less than that of the body in the male and equal to that of the metanotum and abdomen in the female, greatest width contained about four and a half times in the length, distal half evenly tapering to the narrowest pre-genicular portion, dorsal carina serrate, pattern of the pagina distinct but shallow, genicular region hardly arched, genicular lobes acute apically and sinuato-rotundate ventrad; caudal tibiae equal in length to the femora without the genicular dilation, slightly sinuate, external margin with seven spines, the proximal one of which is very short and subobsolete in the male, internal margin with nine spines including the apical, the proximal one short and subobsolete in the male; tarsi slightly less than half the tibial length, median segment about half the length of the proximal, distal segment about equal to the proximal and median together. Arolia quadrate.

General colors above mummy brown and ochraceous in the female, cinnamon and ochre yellow in the male, lateral aspects largely shining seal brown. Head with a broad stripe of dull sepia from the fastigium extending back over the occiput with a very narrow median line of cinnamon; ventral half of the genæ and face, except the dark frontal

costa, ochre yellow in the male, distinct postocular bar shining seal brown; head of the female from the dorsal margin of the postocular bar and the margin of the fastigium ventrad seal brown, more or less shining; eyes in the male mars brown, in the female burnt umber; antennæ with about the proximal third of the pale general color, the distal two-thirds of the darker shade. Pronotum with the lateral angles ochre yellow, the protuberance of the median carina blackish; lateral lobes shining seal brown except for an oblique bar of dull ochre yellow which crosses the ventro-caudal lobe and is continued more or less distinctly across the seal brown pleura. Tegmina bicolor, dorsad buff yellow, ventrad seal brown. Abdomen with the seal brown lateral portions distinctly separated from the dorsum, on the third and fourth segments the lighter dorsal shade is continued ventrad and obliquely cephalad a short distance in a subelliptical patch, the median carina of the pronotum seal brown. Cephalic and median limbs seal brown, lined above with pale ochre yellow. Caudal limbs seal brown, the dorsal aspect between ochre yellow and buff yellow, the median carina seal brown.

Measurements.

	♂	♀
Length of body,	14.2 mm.	24 mm.
Length of pronotum,	4 "	5.2 "
Greatest dorsal width of the pronotum, . . .	3 "	4.3 "
Length of tegmen,	2.5 "	3.5 "
Length of caudal femur,	12.5 "	15.5 "

A series of five paratypic specimens, three males and two females, have been examined in addition to the types. Little variation is noticed, except that two of the males have the lighter shades more greenish-yellow than the others.

The peculiar and striking appearance of this species should serve to readily distinguish it, the large head of the female and the lacquer-like character of the seal brown color being very striking.

I take pleasure in dedicating this species to Mr. Hebard, as a slight token of appreciation of much kindly interest and assistance.

***Microtylopteryx fusiformis* n. sp.**

Type: ♂ and ♀; Carrillo, Costa Rica. [Hebard collection.]

Allied to *M. hebardii*, but differing in the shorter limbs, the more robust body, the broader tegmina, rather different color pattern and a number of minor characters.

Size medium (female) to small (male); form fusiform, very slightly compressed; surface strongly punctate dorsad. Head with the occiput

and vertex little elevated, very slightly rounded, a slight median ridge present; interocular width about half the proximal width of the fastigium in the male, in the female about two-thirds; fastigium distinctly broader than long, trigonal, arched, very slight median sulcus present, fastigium when viewed laterad subrectangulate; frontal costa gradually constricted dorsad and rather sharply pinched ventrad of the ocellus, extending to the clypeal margin, sulcate throughout, more distinctly so dorsad and rounding into the fastigium; face retreating; eyes subelliptical, slightly longer than the infra-ocular portion of the genæ, moderately prominent in the male; antennæ in the male slightly longer than the head and pronotum, in the female distinctly shorter, slightly depressed, more so in the female than in the male, and with distal por-

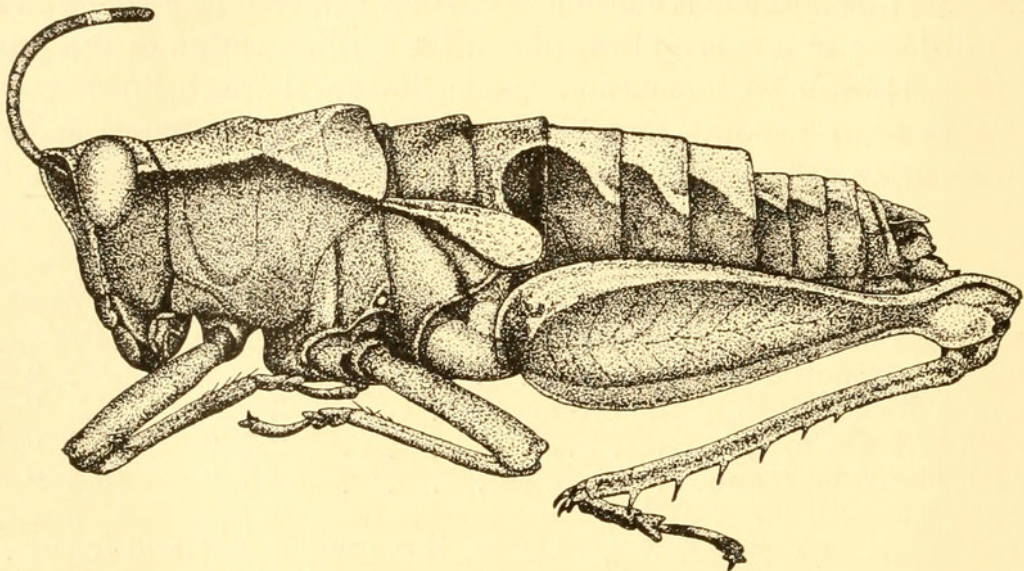


Fig. 43.—*Microtylopteryx fusiformis* n. sp. Lateral view of female type.

tion somewhat enlarged. Pronotum somewhat elevated caudad, tectate, the median carina distinct slightly sinuate caudad of the middle, the caudal elevation very distinct and compressed, lateral carinæ undeveloped but distinct sinuate angles as in *M. hebardi* are present, the disk of the pronotum when viewed dorsad being as narrow a third the distance caudad as at the cephalic margin, regularly expanding caudad; cephalic margin obtuse-angulate with the angle very slightly emarginate; caudal margin emarginato-truncate, the emargination covering the whole width and being very shallow; transverse sulci two in number, the cephalic being placed median and subobsolete in the female, metazona less than a third the length of the prozona; lateral lobes slightly deeper than long, cephalic margin oblique, slightly sinuato-emarginate, ventral margin emarginate cephalad, rounded caudad,

ventro-cephalic angle obtuse, ventro-caudal angle obtuse, caudal margin rotundato-emarginate. Tegmina two-thirds (male) to three-fourths (female) the length of the pronotum, enlarged distad, the greatest width being in the distal third. Metanotum and proximal abdominal segment with a distinct median carina which is developed on the metanotum and proximal segment of the abdomen into a compressed caudal process, similar but smaller than on the pronotum. Abdomen slightly but distinctly compressed. Apex of the male abdomen not recurved, the appendages very small; supra-anal plate trigonal, the apex slightly produced and narrowly rounded; cerci very short, thick and blunt, hardly longer than broad; subgenital plate compressed, rather deep, blunt. Prosternal spine erect, slender, acute. Interspace between the mesosternal lobes subquadrate in the male, slightly transverse in the female, the angles very narrowly rounded; interspace between the metasternal lobes very narrow, strongly longitudinal in the male, very slightly longitudinal with the angles rectangulate in the female. Cephalic femora three-fourths (male) to four-fifths (female) the length of the pronotum, evenly enlarging distad, especially in the female, cephalic genicular lobe slightly larger than the caudal; tibiae about equal to the femora in length; tarsi little shorter than the tarsi, distal joint about half again as long as the median and proximal joints together. Median limbs similar to the cephalic but slightly larger. Caudal femora robust, pregenicular constriction marked, length distinctly (male) or almost (female) equal to the length of the mesonotum and abdomen, greatest width in the proximal third and contained about three times in the length, dorsal carina irregularly and very weakly serrulate, pattern of the pagina regularly but not deeply impressed, genicular region distinctly arched, genicular lobes rectangulate; caudal tibiae slightly shorter than the femoral length, rather heavy, slightly sinuate, the external margin with six spines, no apical spine present, internal margin with seven spines including the apical spine; tarsi less than half the length of the tibiae, the distal joint only slightly longer than the proximal; arolia rather small.

General colors, above varying from prout's brown to raw umber, laterad shining seal brown. Head with all from the fastigium and dorsal margin of the usual portion of the postocular bar ventrad seal brown, a line on the clypeal margin, a line immediately caudad of dorsal section of the eye and the fastigial and dorsal frontal ceca carinae dull ochre yellow; eyes russet; antennae varying from seal brown to ferruginous, a slight distance proximad of the apex annulate with buff. Pronotum with lateral angles slightly lighter than the dorsum and more of

an ochre yellow, lateral lobes solid seal brown. Tegmina dull cream buff with a ventral line of seal brown, greatly narrowed distad. Abdomen with the lateral faces of the segments solid seal brown, the line of demarcation being oblique, dorso-cephalad, ventro-caudad, the proximal segment with a semicircular spot of seal brown, which is marked structurally by a ridge. Pleura and venter seal brown. Cephalic and median limbs solid vandyke brown. Caudal femora with the external face seal brown, varying somewhat in strength, dorsad ochraceous buff, rather obscure in the female, with two distinct and a third indistinct transverse bars in the male, internal face seal brown with indications of two lighter cross bars in the female, these bars quite apparent in the male; tibia and tarsi very dull ochraceous, a distinct annulus of rather dull citron yellow present on the proximal portion, spines tipped with seal brown.

Measurements.

	♂	♀
Length of body,	13.5 mm.	20.5 mm.
Length of pronotum,	3.5 "	5 "
Greatest dorsal width of pronotum,	3.2 "	5 "
Length of tegmen,	2.6 "	4.1 "
Length of caudal femur,	9 "	12 "

A paratypic series of fourteen individuals, four males and ten females, have been examined in addition to the types. They are quite uniform in character aside from a little variation in the intensity of the coloration, and may be readily separated from *M. hebardi* by the shape and length of the femora, as well as numerous other characters.



Rehn, James A. G. 1905. "A contribution to the knowledge of the Acrididae (Orthoptera) of Costa Rica." *Proceedings of the Academy of Natural Sciences of Philadelphia* 57, 400–454.

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