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hemelytra two and a quarter millims. Length of cephalic stylus scant two millims.

Only males have thus far been examined. This insect closely resembles some of the black forms of the Phryganid genus *Leptocerus* Leach, with which it might readily be confused, but the curved stylus projecting from the head will at once show the hemipterist that its affinities are with the homopterous genus *Scolops* Germ, next to which it should be placed in a natural arrangement.

It was captured in Los Angeles, County, Cal. by Mr. D. H. Coquillett, and should be placed to the credit of the Division of Entomology of the U. S. Bureau of Agriculture.

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**PRELIMINARY SURVEY OF THE CICADIDÆ OF THE UNITED STATES, ANTILLES AND MEXICO.**

BY P. R. UHLER.

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**SELYMBRIA Stål.**

*S. modesta* Dist. Biol. Cent. Amer. Homopt. p. 14. One specimen from Orizaba, Mexico, Mr. Distant reports specimens from Mexico and Nicaragua.

**TYMPANOTERPES Stål.**

*T. gigas* Oliv. (Cicada) Enc. Method, v, V., p. 750, No. 15, tab. 3, fig. 4. *Cicada triupsilon* Walk. Brit. Mus. List. Homopt. I., p. 103, No. 2. *Cicada sonans* Walk. ib. p. 104, No. 4. *Cicada consonans* Walk. ib. p. 106, No. 7. *Tympanoterpes sibilatrix* Berg. Hem. Argent p. 210, No. 252. *Tympanoterpes gigas* Dist. Biol. Cent. Amer. Homopt. p. 14.

I have examined specimens from various parts of Mexico, and from Guatemala, Panama, Guiana, and Matto Grosso, Brazil. Specimens from Tamaulipas, Mexico, differ in no respect from others living farther South, although the species is a very variable one, especially in the amount and form of black marking on the upper surface of the body. The region of the Rio Grande of Texas is the most northern limit of this species, while the northern part of the Argentine Republic seems to be its most southern habitat. By including Trinidad in the Antilles, Mr. Distant unites the West Indian Fauna with the South American, but as this species has not been found to inhabit the true Antilles, such as Jamaica, Cuba, San Domingo or Porto Rico, we are not justified in referring it to the Antillean region, which has other forms peculiarly its own.

#### FIDICINA Amyot and Serv.

- 1 *F. picea* Walk. Brit. Mus. List. Homopt. v. 1, p. 81, No. 6. *Fidicina determinata* Walk. ib. Suppl., p. 14, *Fidicina pertinax* Stål, Stettin Ent. Zeit. V. XXV. 186, p. 62, No. 389.

I have received this species from Central and Southern Mexico and from Demerara.

- 2 *F. pronoe* Walk. (Cicada) Brit. Mus. List. Homopt. v. 1, p. 144, No. 82. *Fidicina vinula* Stål, Oefv. Vet. Akad. Foerh. 1854, p. 242; 1862 pp. 482, 500. *Cicada compacta* Walk. Insect. Saund. Homopt. p. 14.

Specimens have been sent to me which were collected near Cordova and Orizaba, Mexico; and I have examined others from Guatemala and Brazil. A soiled specimen from Southern Texas seems to belong to this species.

## CICADA.

1 *C. tibicen* Linn. Mus. Lud. Ulr. p. 160, No. 7, Syst. Nat. 1767, p. 707, No. 19. Collinson, Philos. Trans. vol. 54, 1765, p. 65, tab. 8. Fabr. Ent. Syst. v. IV., p. 18, No. 18. Syst. Rhyng p. 35, No. 12. *Cicada lyricen* De Geer, Mem. v. III., p. 14, tab. 32, fig. 23. *Cicada variegata* Fabr. Ent. Syst. IV., p. 19, No. 10. Germar. Thon. Ent. Archiv. II., p. 4, No. 44. *Cicada opercularis* Oliv. Enc. Method, vol. V., p. 749, No. 12. *Cicada pruinosa* Say, Jour. Acad., Phila., v. IV. 1825, p. 330, No. 1.

Some observations upon this species, communicated by J. P. Wild, a German resident of Baltimore, to Mr. Becker, of Paris, have been published in the Ann. Soc. Ent. France 2d ser. Bulet. v. 10, 1852, p. XVIII., in which the name *pruinosa* is confused so as to be spelt *bruneosa*.

The descriptions given by Linnaeus are too short to separate this from several other species inhabiting the same localities with those cited by that author; so that we are necessitated to consult later German and Swedish authorities for more adequate information. Accordingly, we find by reference to Dr. Germar, in Silbermann's Rev. Ent. v. II., p. 64, that the true *C. tibicen* Linn., is the common form, which is figured by Stoll in his Cigales, fig. 13. We are also informed by the same author that the *Cicada opercularis* Oliv. was described from this figure of Stoll, and consequently that the latter name is a synonym of the Linnaean one.

The description of Linnaeus, Mus. Lud. Ulr., p. 160, embraces the characters of two or three species, one of which appears to be the *C. mannifera* Fab., but the figures of Merian, Brown and Seba, cited in the same place, represent species very different from the true *C. tibicen*. More recently Dr. Stål has examined a type of

our insect in the collection of Fabricius, and from him I have received a positive identification of our species.

The late Mr. Francis Walker also kindly sent to me several specimens, from various parts of North America, which display a wide range of variation in the markings of the head and thorax. Individuals of this species are occasionally found which show but a trace of the brown W-shaped mark near the tip of the wing-covers. I have also examined two specimens, otherwise normal, from which this mark was entirely absent.

The same thing likewise occurs with *Tympanoterpes gigas* Oliv.; *Cicada canicularis* Harris; *C. dorsata* Say; *C. montezuma* Dist.; *C. biconica* Walk., and most commonly of all, with *C. auletes* Germ., (*marginata* Say.) The cause of this absence of the forked venal mark is not adequately known. It seems to be absent only in very few individuals of a species. Possibly, the less vigorous and sensitive condition of some individuals at the time of oxydation of the integuments hinders the complete flow of the blood to this part of the venation and fails to furnish the chemical elements upon which radiant energy acts in developing color.

2. *C. marginata* Say, Journ. Acad. Philada., v. IV., 1825, p. 330, No. 2, *Cicada auletes* Germ. Silb. Rev. Ent., v. II., p. 65, No. 26. *Cicada resh* Hald., Salt Lake Exped., p. 369, pl. 9, fig. 17. *Cicada sonora* Walk. Brit. Mus. Cat. Hom., v. I., p. 105, No. 5. *Cicada resonans* Walk. ib., v. I., p. 106, No. 6. *Fidicina literata* Walk. ib., p. 91, No. 23. *Fidicina figurata* Walk. ib. suppl. p. 19.

This large species is distributed throughout the Piedmont region of the United States from New York to Northern Florida. It is also found in the Gulf States, and spreads on through Texas, Arkansas and Missouri to Colorado and Utah.

The synonymy given by Mr. C. W. Woodworth for this Species, Psyche, vol. V., p. 68, is without foundation. The *Cicada bicosta* Walker, Hom. p. 112, (cited as *C. bicostata* by the above writer,) does not agree with any of the varieties of *C. marginata* known in the collections, still less can the tiny *C. aurifera* Say, be included among its synonyms.

Tamaulipas, Mexico, is the most southern limit thus far discovered for the *C. marginata*. A *Cicada* with the same specific name, from the East Indies, occurs in Olivier, Encyc. Method; but it will doubtless be found to belong to some other of the oriental genera when the species shall be subjected to further study.

3. *C. canicularis* Harris, Ins. injur. veg. 1842, p. 175; 1852, p. 190; 1862, p. 217, fig. 88. Emmons, Agric. New York, v. V., p. 152, pl. 9, fig. 5.

This form has a widely extended distribution in North America. It has been found in lower Canada, and at intervals across the continent as far west as to near the Black Hills in Dakota; from this region it spreads south into Central and Western Texas, and from thence into Mexico. East of the Mississippi river it has been found in all the States from Maine to Northern Florida, and specimens have been collected in Illinois, Ohio, Kentucky, Alabama, Louisiana, Arkansas, Kansas and Missouri.

It varies considerably in size and somewhat in the amount of black ornamentation upon the dorsal surface of the thorax. In many respects it approaches the pale variety of *C. tibicen*, but it differs from that species in having more prominent eyes, in the general marking of the pronotum, narrowed vertex, and differently shaped opercula. The mesothoric cross is also narrower, and more extended transversely than in the *C. tibicen*. After a severely close comparison of more than fifty specimens

of both these species, including both sexes, I am urged, against my former convictions, to accept this as a distinct species. A full knowledge of the life history of this insect may hereafter show that it is only a race of the former, but until such proof is adduced we are not in a position to unite the two forms in one species.

4. *C. superba* Fitch, First Report N. Y., 1856, p. 41.

This is also a variable species, in which the wing-covers are more or less suffused with brown near the tips, and the apical nervures sometimes bordered with still darker brown. It has been taken in Indian Territory, Central Texas, and in the region of the Rio Pecos, New Mexico. The structural elements agree closely with those of *C. tibicen*, and the pattern of marking is just such as we might expect to find in a weak race of the species in which the deep colors have failed to be filled out. The partial absence of dark color on the body seems to be in a degree compensated by the transfer of that color to the wing-covers and wings. Can the alkaline soils of its habitat aid in producing this modification of color in the superficial integuments?

5. *C. dorsata* Say, Journ. Acad. Philada., v. IV., 1825, p. 331, No. 3, *Cicada robertsonii* Fitch, First Report N. Y., 1856, p. 41.

This species inhabits the prairies and plains from Dallas county, Iowa, and eastern Nebraska to southern (not coastal) Texas. It is not uncommon in Colorado and New Mexico, and it extends east across the western borders of Missouri and Arkansas. Varieties of this species apparently approaching *C. marginata* Say occur in Texas and New Mexico; and a variety of the latter from North Carolina possesses many of the structural features of *C. dorsata*.



6. *C. aurifera* Say, Journ. Acada. Philada., v. IV., 1825, p. 332, No. 4.

Not yet rediscovered, and known only from the description of Mr. Say, who captured it near the Konza Indian settlements, probably in what is now Nebraska. It seems to be a pale variety of *C. canicularis*, which inhabits that State; but the size given is smaller than that of any specimen thus far brought to our notice.

7. *C. vitripennis* Say, Journ. Acad. Philada., v. VI., 1830, p. 236, No. 3.

Mr. Say's specimen was obtained in the region of the Arkansas river, probably in Colorado. It occurs in New Mexico, northern Texas, Arizona, Louisiana and Florida. Dr. Edward Palmer captured a specimen on the shore of Biscayne Bay, Southern Florida.

8. *C. pallida* Dist. Biol. Cent. Amer, Homopt, p. 8, pl. 2, fig. 7.

This species has been captured in Mexico and central Texas. By the pallor of its colors and obsoleteness of its markings it stands in about the same relation to *C. vitripennis* Say as *C. superba* Fitch does to *C. tibicen* Linn. Both of these species will most likely be suppressed when the life histories of the forms shall have been sufficiently studied.

9. *C. biconica* Walker, Brit. Mus. List, Homopt, v. 1., p. 120, No. 57.

This beautiful West Indian form is common on the island of Cuba, and I have seen also a specimen from Mexico, and another from southern Florida. Specimens of both sexes from Cuba vary widely in the amount of marking on the mesonotum. In a female specimen from near Havana the black lobate markings of the mesonotum are entirely obliterated.

10. *C. bicosta* Walker, Brit. Mus. List, Homopt. v. I., p. 112, No. 14. Distant, Biol. Cent. Amer. Homopt. p. 7, pl. 3, fig. 1.

Specimens cited by Mr. Distant were collected in Mexico and Costa Rica. In my own collection there is a female from Key West, Florida, captured by Dr. E. Palmer, and a male from Cape St. Lucas, Lower California, from the cabinet of John Xantus de Vesey.

From the colored figure of the Biologia and examination of my own specimens, I find a close resemblance and much agreement in structure between this and *C. biconica* Walk. The *C. bicosta* is a shorter winged and more robust form.

11. *C. montezuma* Dist. Biol. Cent. Amer. Hom. p. 8, No. 6, pl. 2, fig. 2.

This species extends from the region of San Diego, California, into Mexico, and from thence through Arizona and Texas to the vicinity of the Pecos river in New Mexico. It is quite distinct from our other native species, is apparently not very variable in pattern of marking, but it is decidedly variable in size. The great prominence of the front renders it very conspicuous.

12. *C. rudis* Walker, (*Fidicina*,) Brit. Mus. Cat. Hom. Supp. p. 13, Distant, Biol. Cent. Amer. Hom. p. 8, No. 5, pl. 2, fig. 20.

Inhabits Eastern Mexico, and is much like a fragmentary specimen in my collection from Arizona.

13. *C. crucifera* Walker, Brit. Mus. Cat. Hom. v. I., p. 196, No. 147, Distant. Biol. Cent. Amer. Hom. p. 8, No. 5, pl. 3, fig. 6.

A small, but interesting, form which has thus far been found only in Mexico.

14. *C. nigriventris* Walker, Brit. Mus. Cat. Hom. Supp. p. 21. Distant, Biol. Cent. Amer. Hom. p. 9, No. 8, pl. 2, fig. 6.

This species closely resembles a variety of *C. canicularis* Harris, from Texas and Louisiana. The types were obtained in Mexico, and other specimens have been collected in Costa Rica.

15. *C. psophis* Walker, Brit. Mus. Cat. Hom. v. I., p. 153, No. 92. Distant, Biol. Cent. Amer. Hom. p. 9, No. 10, pl. 2, fig. 11.

Hitherto found only in Mexico.

16. *C. ornea* Walker, Brit. Mus. Cat. Hom. v. I., p. 137, No. 75. Distant, Biol. Cent. Amer. Hom. pl. 3, fig. 3.

At present known only from Mexico.

17. *C. transversa* Walker, Ins. Saunders, Hom. p. 15, *C. alacris*. Stael, Stettin, Ent. Zeit. v. 25, p. 62.

The type came from Mexico. I have examined a specimen from Texas.

18. *C. hilaris* Distant, Biol. Cent. Amer. Hom. p. 9, No. 11, pl. 2, Fig. 10.

This species belongs to the division having the narrow head. Also in both form and proportions it makes an approach to the genus *Tibicen*. It has thus far been found only in Mexico.

19. *C. intermedia* Distant, Biol. Cent. Amer. Hom. p. 10, No. 12.

Inhabits Mexico. Possibly this will prove to be only a form of the preceding species.

20. *C. robusta* Distant, Biol. Cent. Amer. Hom. p. 10, No. 13, pl. 2, fig. 3.

Inhabits southern Mexico, where it seems to be quite common.

21. *C. dissimilis* Distant, Biol. Cent. Amer. Hom. p. 10, No. 14.

Inhabits Mexico. It is closely related to *C. robusta* Dist., but differs principally in having much longer opercula.

22. *C. cinctifera* New Sp. Piceous black, moderately polished, related to *C. biconica* Walk., but with a narrower body. Pectoral surface, sides of face, tip and middle of base of tergum coated with white powder. Eyes prominent, but less so, and with a smaller posterior lobe than in *C. biconica*. Vertex short, dull black, with a small orange lunule at base, an angular spot in the corner near each eye, and a broad border of the same color running from near each eye to the depressions just behind the protuberance of the front; the impressions deep and sharply defined, and the surface with two or three coarse wrinkles near each eye. Front moderately blunt, minutely pubescent, with a bright orange, oblong, smooth spot above, and an impressed one at base of the upper surface; the transverse ribs acutely defined, carried far up, and lineated with yellow. Cheeks broadly bordered with yellow; the rostrum testaceous pubescent, piceous at tip, reaching to the end of the posterior coxae. Coxae and trochanters striped with piceous black, the femora clouded, the tibiae tipped, and the tarsi annulated with the same color. Pronotum gently concave, short, with the anterior border broadly and slightly curved, thickened, yellow, and followed behind by a transverse impression; the surface rugose on the lateral diagonal areas, and transversely wrinkled at base; the posterior margin almost straight, broadly yellow, with the outer angles feebly prominent; the lateral margin broadly depressed, with a widely curved yellow sunken lobe from behind the middle to beneath the eye, the humeral lobe produced diagonally, obliquely subtruncated, flat wrinkled, minutely pubescent. Mesonotum strongly convex, longer than wide, with a basal pair of slender yellow lines which start in depressions at base and curving inward toward one another become clavate at tip; mesothoracic cross slender, transverse, orange, strongly curving, lateral margins of the meso-

notum thick and broadly upcurved. Wing-covers hyaline, long, with the costal vein, and basal veins greenish, the discoidal and apical ones dark brown, the basal areole subtrapezoidal, and marked exteriorly with a black streak; the w-brand almost obsolete; the first apical areole acute, narrow, as long as the third, and fully one-third longer than the second. Opercula greenish white, black at base, pruinose, triangular, a little rounded at tip, less than half as long as the venter. The middle line and exterior margin of the venter black, genital flaps of the male broad, valvate, last ventral segment broad, subtruncated, entire, the same segment of the female notched at the middle, sinuated each side of this, and with the latero-posterior angles produced into rounded lobes.

Male, length to tip of abdomen 26-28, width of pronotum 11, length of wing-covers 36, expanse of wing-covers 83 millims. Female, length to tip of abdomen 32-26, width of pronotum 10-11, length of wing-covers 33-37, expanse of wing-covers 76-85 millims.

Three specimens from Las Cruces, New Mexico, have been kindly sent to me by Mr. C. H. Tyler Townsend, and a large female was captured in Northern California by my friend, James Behrens.

**23** *C. reticularis*. New sp.

Pale fulvous, similar to *C. biconica* Walk. with the same arcuation of the front of the pronotum over the head, and lateral margins correspondingly curved behind the eyes; but having the opercula much shorter and bluntly rounded behind, with the wing-covers shorter and more coarsely veined. Head triangular as seen above, with the eyes very prominent and rather narrow. Vertex tawny yellow; clothed with sparse prostrate golden pubescence; at base is a triangular black spot which connects anteriorly with a transverse abbreviated

line that sends off a short branch each side of the base of the front; supra-antennal lobes short; marked with a black spot at the inner angle, the anterior margin also black until near the eye; front yellow, marked with black curved bands above, with the middle line smooth and unevenly grooved. Rostrum reaching the posterior coxae, piceous at tip. Front of pronotum much narrower than the head, remotely, minutely bronze pubescent, with the two exterior sutures, the apical half of the inner diagonal suture, connected with a hook posteriorly, two impressed dots at the forward end of the smooth middle line, and sutures posteriorly of the same line black; the lateral margin broad and flat, with the edge a little reflexed, marked with a black dot behind the middle, and powdered with white anteriorly; the humeral angles wide, bluntly rounded, pale fulvous like the posterior margin. Mesonotum strongly convex, pale chestnut brown, marked with four wedge-shaped black spots with rounded ends, the exterior pair being longer and followed exteriorly by a streak of the same color, a tinge of piceous across the disk, and each side back of this is a round black dot, the sides and area around the cross silvery pubescent, the cross compact, and with the arms strongly raised and curved; metomotal drum-segment long, convex, highly polished, chestnut brown, broadly tinged with piceous with the ample drum-covers pale. Underside pale ochre yellow coated with white. The opercula are less than half as long as the venter, pale ochreous, powdered with white, separated in the middle, bluntly rounded at the end. Legs pale ochreous, the anterior femora short and stout, with the surface above and below more or less piceous, the two spines long and stout, piceous beyond the base, the middle and posterior femora feebly carinated, the former set on both inner and outer surface with minute, black, spinous granules; tibiae sharp-edged, with the spines more or less black,

the tip of tarsi and the nails piceous. Wings of medium length, hardly acute, hyaline, with the costa piceous, but yellowish on the outer border, and set with minute black spines; veins coarse, piceous, but paler back of the nodus to base, basal areole slightly discolored, much longer than wide, the areoles chiefly large and long, cross-veins of the apical series brown on milky spots, the base of first apical areole and all the veins of this series on the middle and tip also brown, the apex of the seventh apical areole is more broadly marked on the outer end so as to form the figure of a hook; first apical one is long, narrow, acute at both ends and nearly twice as long as the second, both the first and second cross-veins oblique, sub-equal and a little bent; flaps of both wings more or less smoky, veins of wings pale brown, clearer yellow at base and near the flaps. Abdomen moderately stout, sub-conical, chestnut brown above, more or less banded with black, the surface silvery pubescent and powdered with white, the genital segment short, blunt, dark piceous above, pale beneath, and the last ventral segment moderately short, narrowed towards the tip, sub-truncated, with the outer angles broadly rounded.

Length to tip of venter 28 millims; width of pronotum 12 millims; expanse of wing-covers 87-89 millims

Two males of this beautiful species were collected on the south coast of Jamaica, east of Kingston, by my friend, Mr. Ross Harrison. The female remains unknown. This remarkable form contributes in miniature a type of marking which has thus far been recognized only in the tropics of South America, and heretofore represented by the great *Lyerman* of Guiana, the *Fidicina mannifera* of Fab.

## TIBICEN, Lat.

1. *T. septendecim* Linn. (*Cicada*), Syst. Nat. ed. XII., 1767, Pars. 2, p. 708, No. 20. *Cicada septendecim* Oliv. Encyc. Method. v. 5, p. 749, No. 13. *Tettigonia costalis* Fabr. Ent. Syst. Supp. p. 516, No. 22. *Tettigonia costalis* Coquebert Illust. 1, pl. 9, fig. 2. *Cicada septendecim* Germar, Thon. Ent. Archiv. 2, p. 4, No. 43. *Cicada tredecim* Riley, First Report Missouri, p. 19, is the race which appears at intervals of thirteen years, chiefly in the region south of the Ohio river. The dwarfed and modified form, which appears late in the season, belongs to both the 17 and 13 year races. It has been described by Dr. Fisher as *Cicada cassinii*, Philad. Acad. Nat. Sci. Proceed. v. 5, 1851, p. 272.

Observations are needed to establish the length of underground life required to develop some of the forms of this species. That one of them which has the *C. cassinii* as its last term, and which gives forth the more prolonged and hissing note, seems to be in a state of transition. It comes forth fully grown almost every year in the region north and southeast of Baltimore, and that too from the very spots whence the normal *septendecim* issued in 1868 and 1885. Specimens were collected by myself at several marked points every year between 1880 and 1885, and I have received specimens of the same, through the agency of friends, every year since down to 1890. I am impelled to the belief that these creatures undergo periods of rest in the young stages, varying in length, and not yet defined by writers upon this species.

2. *T. rimosa* Say. Journ. Acad. Nat. Sci. Philada. vol. VI., p. 235, 2. *Cicada noveboracensis* Fitch, Agricult. of New York. Insects by E. Emmons, p. 152, pl. 9, fig. 6.



The variety *noveboracensis* of Dr. Fitch has the orange color of the pronotum distributed in two broad spots on the sides, but in other respects it agrees quite nearly with the normal type distributed throughout the region west of the Mississippi river. A black variety occurs in Utah which lacks entirely the orange spots of the pro and mesonotum. The species extends quite across the North American Continent in the latitude of the great lakes, but while it does not appear south of Boston, in the eastern United States, it spreads along the Pacific highlands from Vancouver's Island to San Francisco.

3. *T. striatipes* Hald. (*Cicada*.) Stansbury, Exped., Great Salt Lake, p. 369; pl. 9, fig. 16.

The more prominent front of the narrow head with the yellow band across the vertex, the shorter first apical areole, and the yellow banded tergum will distinguish this species from the preceding. It seems to be confined to Utah, so far as is known at present, although the following species may prove to be only a variety of it.

4. *T. hesperia* Uhler, (*Cicada*.) Hayden, Geol. Survey of the Territ. Bulletin, 1876, p. 76, No. 5.

The type was captured near Denver, Col., and since then other specimens have been secured near San Francisco, and south of that city in the vicinity of San Diego. I have also seen a specimen from near Reno, Nevada.

5. *T. cupreo-sparsus* Uhler. Md. Acad. Sci. Trans. 1889, p. 43.

Three specimens are all that have yet been reported of this beautiful little species. Two were captured near Los Angeles, Cal., by Mr. Coquillett, and the other was taken near San Diego by Dr. Blaisdell.

6. *T. cruentifera* Uhler. New sp.

A large and long-winged, narrow, dull black species with bright orange costa and blood red flaps to both

wings. Surface smooth, hardly polished. Head short, a little narrower than the front of the pronotum, closely pubescent,, with the sutures sharply defined; front prominent, almost acutely ridged, carrying a round pit above, with the lateral raised border yellow, the supra-antennal tablet feebly prominent, partly bordered with yellow; antennae long, slender, black; rostrum pale piceous at base, reaching behind the middle coxae. Pronotum short, black, moderately pubescent, rugulose, emarginated in the lateral margin behind the middle, the edge in front of this with several short, blunt teeth; the posterior angles moderately produced, reflexed, and rounded, the anterior angles hardly rounded, armed with a blunt tooth. Sternum dull black, hoary pubescent, with the raised borders of the lateral and posterior segments bright orange. Legs bright orange, with the coxae, femora and tibiae broadly spread with black, the tarsi piceous, or black; wings hyaline, long but not narrowed at tip, with the base of both pairs piceous, into which the red color of the flaps runs and extends upon the supporting pieces of the thorax, veins coarse, piceous black, as also the post-costal rib beyond the anostomosis, the basal areole long and narrow, infuscated, bordered anteriorly by an orange yellow vein, first apical areole long and narrow, acute at both ends, second hardly shorter, acute at base, a little curved, together with the following five, the cross-veins short, a little curved, acutely diagonal, the middle ones straight, and much longer, basal ends of three principal veins of posterior wings pale yellow. Meso and metanotum hoary pubescent, becoming more like fur posteriorly, the inner two ends of the cruciform prominence tubercular and yellow, the lateral and posterior edges of the metanotum reddish yellow. Venter broadly red along the middle line, or with the segments bordered with red, and the lateral raised edge also slenderly red, tergum minutely pubes-

cent, the posterior edge of the segments red, but with the two apical segments more broadly banded with red, the genital sheath red, short, subacuminate, tooth of the apical segment of female short and acute, posterior border of the last segment of the male deeply emarginate.

Length to end of abdomen 25-26; width of base of pronotum 9-10; expanse of wing-covers 70-75 millims.

This is the brightest colored species of the genus thus far discovered in North America, which attains its richest coloring in the neighborhood of Reno, Nevada. Specimens of both sexes from this locality, captured June 21, were kindly sent to me by Mr. Hillman. A much less adorned variety occurs in other parts of Nevada, some of which were obtained for me by Baron Von Osten-sacken, who also collected two specimens in the vicinity of Webber Lake, on July 23 and 27.

7. *T. Blaisdellii*. New sp.

Black, polished. sericeous pubescent, long, narrow, parallel-sided. Head black, pubescent, having longer hairs on the side of the face and clypeus; vertex deeply excavated, especially on each side, the supra-antennal tablets broadly margined with yellow, the outer edge of cheeks yellow; sutures of the surface deep, the one on base of head short, broad, yellow; front long, prominent, convex, with the transverse ribs and longitudinal sulcus sharply defined, the clypeus with a sharp longitudinal carina; rostrum reaching upon the middle coxae, the basal joint yellow; antennae short, black. Pronotum deeply sutured, bordered narrowly with yellow, with the humeral angles strongly produced. coarsely wrinkled, broadly bordered with yellow continuously with the posterior margin; middle line wide, polished, yellow, the posterior margin abruptly reflexed, broadly yellow; the lateral margin a little expanded, with the edge crenulated; pleural margins thick, reflexed, yellow;

sternum and adjacent areas pubescent, with the meso and meta-pleural segments yellow, the remaining pieces and coxae bordered with yellow. Legs bronze pubescent, femora yellow on the knees and partly on the sides, sulcated; tibiae blackish, yellow on the inner side and tips, set with stiff hairs; tarsi blackish, pubescent, yellow on the sides, articulations and base of nails. Wing-covers and wings hyaline, the veins stout and chiefly black, the costal rib yellow along the middle line as far as to the nodus, origins of the basal veins orange yellow, the expanded vein of the clavus scabrous and coarsely punctate, with an angular black spot beyond the base, the radial cell large, wide, reaching beyond the middle of the wing-cover, and its bent apex forming the base of three ulnar cells, the cell below the radial one is narrow throughout one-half of its length, and beyond this it is greatly expanded towards its triangular tip, the cell next below this is shorter, but quite wide, with its inner vein strongly arched, and with a kind of triangular fuscous nodus bounding its outer end; membrane and adjoining margin of the mesonotum reddish orange, the subapical cell acute fusiform, much shorter than the second or true apical cell. Wings with the second and fourth longitudinal sectors yellow to the middle, the membrane dull yellow, longitudinally clouded with fuscous, and with the thick vein similarly colored. Mesonotum having a triangular yellow spot connected with the lateral margin, the disk marked with four yellow marks, the anterior of which form the posterior end of the impressed loop, while the two a little farther back are sagittate, and connected with the mesothoracic cross by a slender line from each. Abdomen much longer and narrower than in *T. rimosus* Say, black, polished, with the edges of the segments, both above and below, bright yellow; apical flap of the last ventral segment, (male) much narrower than the segment to which it is attached,

it is narrowed at base, broadly rounded on the outer corners, and hardly emarginated on the apical margin; inferior genital sheath long, moderately narrow, wrinkled and hairy. Opercles yellow, widely emarginated on the outer side, with a long black spot exteriorly; the meracanthi long, auriculate, curved inwards; the tympani of medium size, thick texture, exposed, and placed latero-superiorly. Length to apex of abdomen 20-24; expanse of wing-covers 59-66; and width of base of pronotum  $9\frac{1}{2}$ -11 millims.

Only males have yet been examined. Specimens have thus far proved scarce. This curious species was discovered in the vicinity of San Diego, Cal., May 10-11, by Dr. F. E. Blaisdell, of Coronado, to whom the species is dedicated as a small token of the esteem in which his entomological zeal is held by the writer.

The peculiarity of the venation of the radial and adjoining cells might suggest the idea of giving characters for a new genus, but all the other elements of structure accord so closely with *Tibicen* that no sufficient reason seems to be foresent for making the separation. Through the elongation and expansion of these cells a close relation with *Platypedia* is suggested.

8. *T. canadensis* Provancher. (*Cicada*.) Naturaliste Canad. Cicadides 1889, p. 213, No. 3.

From the Province of Quebec. The description suggests a possibility of this being a synonym of *T. striatipes* Hald. But without actual examination of the specimen no satisfactory statement can be made. The description cited is almost worthless.

#### MELAMPSALTA Kolenati.

*M. parvula* Say. (*Cicada*.) Journ. Acad. Philad. 1825, vol. 4, p. 333, No. 5, *Cicada pallescens* German. Thon. Entom. Archiv. 1830, vol. 2, p. 8, No. 93. *Cicada Calliope* Walk. Brit. Mus. List. Hom. vol. 1, p. 212, No. 165.

Common in various parts of the United States, and quite variable in color and pattern of marking. When fresh, the ground color is pale green, with the marking of the head, thorax and tergum brownish black; but when dried and kept for some time in the cabinet, it becomes pale or dark straw yellow. Specimens from Florida are much narrower than those from Illinois, Kansas and Nebraska. A male from Texas is faded straw yellow, with a little black on the vertex and about the antennae. The males are sometimes much smaller than the females.

By a mistake in copying manuscript this species was placed in *Carineta*, and was so printed in *Entomologica Americana*, 1888, vol. 4, p. 22. Mr. Walker's specimen was found at Warm Springs, North Carolina.

#### CARINETA Amyot and Serv.

1. *C. trivittata* Walk. Ins. Saund. Biologia Cent. Amer. Hom. p. 20, pl. D, fig. 13.

This is a Central American form which spreads north into Mexico, and which constitutes a type quite different from that hitherto best known from Brazil, Guiana, etc.

2. *C. marginella* Walk. Brit. Mus. List, Hom. Suppl. p. 21. *Carinet ancilla* Stål, Stettin. Ent. Zeit. vol. 25, 1862, p. 57, No. 380. *C. marginella* Dist. Biologia Cent. Amer. p. 21, No. 7, pl. 2, fig. 16.

Inhabits Mexico, and thus far has not been found as far north as Arizona.

3. *C. lugubrina* Stål, Stettin. Ent. Zeit. vol. 25, 1862, p. 57, No. 381. Distant, Biologia Cent. Amer. p. 21, pl. 2, fig. 19.

A very small species, hitherto not found north of Mexico.

## TETTIGADES Amyot and Serv.

T. *mexicana* Distant, Biologia Cent. Amer. p. 6, pl. 2, fig. 9.

Captured in Mexico. This species is as yet not represented in the collections of any of the museums of the United States. The type is in the Berlin Museum.

## ODOPOEA Stål

1. O. *azteca* Distant, Biologia Cent. Amer. p. 4, No. 3 pl. 1, fig. 4.

Thus far found only in Mexico.

2. O. *imbellis* Walk. Brit. Mus. List. Hom. Suppl. p. 2, Distant, Biologia Cent. Amer. p. 4, pl. 1, fig. 3 Stål, Ann. Soc. Ent. France, Ser. 4, vol. 1, p. 617.

Found in Mexico, and not known to occur north of that country.

3. O. *montezuma* Walk. Brit. Mus. List. Hom. vol. 1, p. 36, No. 6. Distant, Biologia Cent. Amer. p. 4. No. 1, pl. 3, fig. 5.

Known only from Southern Mexico.

4. O. *signoreti* Stål, Stettin. Ent. Zeit. 1862, vol. 25, p. 59, No. 385, Distant, Biologia Cent. Amer. p. 5, pl. 1, fig. 10.

Inhabits Mexico.

5. O. *medea* Stål, Stettin. Ent. Zeit. 1862, vol. 25, p. 60, No. 386.

As yet not found north of the City of Mexico.

6. O. *jamaicensis* Distant, Entom. Soc. Lond. Trans. 1881, p. 629.

Inhabits Jamaica.

7. O. *mesochlora* Walk. (*Cicada*), Brit. Mus. List, Hom. p. 129, No. 67.

Reported as found in Jamaica. Not present in the collections of the United States. From the description it is supposed to belong to this genus.

8. *O. tomentosa* Walk. (*Cicada*.) Brit. Mus. List. Hom. Supp. p. 22.

Found in the Island of St. Thomas. Supposed to belong to this genus.

9. *O. dilatata* Oliv. (*Cicada*.) Encyc. Method, vol. 5, p. 747, No. 6, Fab. Ent. Sost. vol. 4, p. 18, No. 5.

Fabricius gives the *habitat* Jamaica for this species. It seems to be unknown to modern collectors, but it is evidently quite near to a species in my collection which is common in Eastern San Domingo.

10. *O. chariclo* Walk. Brit. Mus. List. Hom. p. 146, No. 84.

A male in the British Museum, from Cuba, is the type from which the specific characters were drawn by Mr. Walker. The type must have been a faded specimen of the dark variety; for the average specimens when clean and fresh are clear pale green, without the faded tawny markings described by Walker. The black band across the vertex is usually composed of a chain of more or less round spots. The drum-covers are commonly pale green, clothed with silvery white pubescence.

11. *O. sagrae* Guerin (*Cicada*.) La Sagra, Hist. Isle Cuba, p. 426.

This is a large and conspicuous species, which appears to be common in the Isle of Cuba. Numerous specimens have been sent to me through the kindness of Professor Poey and Dr. Gundlach.

12. *O. walkerii* Guerin. (*Cicada*.) La Sagra, Hist. Isle Cuba, p. 426.



Hitherto found only in the Island of Cuba, where it seems to be comparatively common. Specimens of both sexes were sent to me by Dr. Gundlach.

13. *O. poeyi* Guerin. (*Platypleura*.) La Sagra, Hist. Isle Cuba, p. 425, pl. 13, fig. 16.

This is the most remarkable of all the species yet discovered in the West Indies, if not in all America. Thus far it has been reported only from the Island of Cuba, where it is far from common.

The opacity of its wing-covers, varied by marbled grayish and brown tints, gives it somewhat the appearance of the Brazilian *Phenax variegata* Fab., but the genus *Phenax* does not extend to the Antilles, so that the pattern of marking fails to enter the domain of mimicry, so far as these two insects are concerned. The dried leaf style of wing here presented might contribute towards the protection of this *Odopoea* in certain situations, but we know so little of its habits that nothing certain can be stated with regard to this question.

14. *O. Cariboea*. New sp.

Form of the small type of *Odopoea imbellis* Walk. Pale chestnut brown tinged with green, marked with blackish piceous. Head wide depressed above, more triangular than in *O. Sagrae* Guer., with the lobe between the eye and tylus broad; eyes prominent; vertex with a large piceous central spot enclosing the ocelli, connected each side with a crescentic mark of the same color, and with a dark line on the margin above the antednae; the front barred each side with curved piceous lines, and with a line of the same color each side of the smooth middle line, the lateral lobes clouded above and below with piceous, sides of epistom and tip of rostrum piceous, the rostrum reaching a little beyond the posterior coxae; antennae blackish piceous, pale greenish

at inner end of basal joint. Pronotum a little less expanded than in *O. imbellis* Walk., almost acute angled, the margin before the angle short a little curved, the margin behind the angle a little sinuated, and then curved inward at origin of the wings; incisures of the surface linearly brown, as also the lateral margin anteriorly, and behind the outer angle is a lunate blackish spot, the posterior broad margin and lateral expansion greenish; mesonotum broad, moderately convex, with two obconical marks at base, exterior to which each side is a similar but obscure and longer mark extending almost to the tip, posterior part of the disk crossed by a brown band composed of three angular spots; the surface more or less covered with sericeous prostrate pubescence; the cruciform dorsolum prominent piceous, with the sinus in front deeply and abruptly incised, and the posterior lobes broadly rounded. Opercula about one-fourth the length of the abdomen, greenish testaceous, narrowly separated, almost quadrate, with the posterior margin feebly curved, and the lateral margin reflexed, and slightly sinuated; the drums uncovered for about one-half of their inner surface, with their exterior cover inflated. Legs greenish yellow, the anterior femora short and stout, with two stripes above, angular marks at base and a band at tip; the tips of all the tibiae, an obscure band across their middle, and the tarsi piceous; posterior spine of the anterior femora slender and oblique. Wing-covers and wings tinged with milky white, the veins dark brown, but paler towards the base, costal one tinged with green, first apical areole long and narrow, marked with brown on the inner end of the vein, but little shorter than the third areole, first cross-vein quite short, acutely oblique, waved, enclosed by a brown spot, second areole much shorter and wider, third areole somewhat wider than the second, very acute at inner end, with the cross-vein

longer than the first, curved and covered by a larger brown spot, third cross-vein longer, bent, forming a blunt angle, less broadly marked with brown, fourth cross-vein nearly equal and parallel to the third, but more bent, and invaded by a smaller brown spot, the basal areole narrow subquadrangular, a little tinged with fulvous, tips of the apical veins more or less distinctly tinged with brown; posterior margin of the clavus conjointly with the posterior flap fuscous; areoles of the wings mostly long and narrow, the sixth apical one wide, and much expanded towards the tip, the flap with a basal crescentic fuscous spot connected with an emittent streak which keeps on to the border. Abdomen subconical, polished, humped at base, acutely produced in the female, but long and almost parallel-sided and posteriorly depressed in the male; the tergum sericeous pubescent, marked with lines of piceous spots which spread apart into four series as they run back, the sides abruptly contracted behind the drum-covers; the apical segment contracted, marked with three or four blackish stripes: the last ventral segment short, narrow, entire, with the sides oblique.

Length to tip of abdomen 30–32 millims; greatest width of pronotum 15–16 millims; expanse of wing-covers 100 millims.

A female from near the City of San Domingo was kindly given to me by Dr. George H. Horn, and a pair, male and female, were secured for me in the vicinity of Samana Bay, at the eastern end of the Island of San Domingo. They were captured during the month of May, 1883, in company with other, more abundant species, by Mr. M. A. Frazar.

This beautiful species appears to me to be the one figured and described by M. Palisot de Beauvois, in his *Insectes recenillis en Afrique et en Amerique*. 1805, p. 132, pl. 20, fig. 5, where he confuses it with the *Cicada*

*tympanum* of Fabricius. The Fabrician species is a well known Brazilian form which belongs to the genus *Zammara* Amyot. The last named author has added to the confusion by referring the species of Beauvois to the largest and finest form of *Zammara* yet discovered in Brazil, and has given it the name *Z. strepens*. This *Zammara* has nearly the same markings of pronotum and wings as our species from San Domingo, but it belongs to a different genus. The Brazilian one is much too large and broad to agree with the figure of Beauvois. Moreover, the species of Beauvois was given as from San Domingo, presumably from near Cape Haitien, where he lived and collected many insects, and from which country no large *Zammara* of this type has yet been collected. The *Z. strepens* Amyot, Hemipt. p. 469, No. 2, is common near Rio de Janeiro, and it appears to be merely the best developed form of *Z. tympanum* Fabricius.

15. *O. domingensis*. New Sp.

Form nearly of *O. Sagrae* Guerin but with the head a little more blunt and narrow, the sides of pronotum angular and more widely expanded, the opercula feebly arcuated, and the last ventral segment much shorter and deeply emarginate. Ground color much suffused with reddish in the tawny, on the greenish olive tints of the fresh specimens; while the flaps of both wings, including partly the basal areole, are tinted with bright carmine. Head short and blunt, excavated, depressed and flat, anteriorly with a curved band of black spots crossing the line of the ocelli, other black spots are present upon the top of the front and on the supra-antennal lobes, front moderately blunt, grooved from below the top to near the tip, smooth, greenish, silvery pubescent, infuscated above; rostrum reaching upon the posterior coxae, blackish at tip, eyes prominent, but less so than in *O. Sagrae*, the width across them including the vertex is a

little less than the width between the wing-covers. Pronotum tawny, silvery pubescent, as wide as the abdomen is across the middle, sutures, anterior sub-margin and lateral margin black, anterior angles prominent, lateral expansions angular, with the anterior side a little shorter than the posterior one, and with a tabulated and reflexed border; the mesonotum convex, smooth, silvery pubescent on the sides, not much wider than the head across the eyes, two long black spots run back from the base, which are bounded by the looped impression, a small spot stand, each side of these, and exterior to the latter is a curved streak parallel with the exterior margin, impression in front of the cruciform dorsolum is marked with a three-pointed large black spot, the dorsolum more or less infuscated, and wrinkled in the impression of each side. Beneath greenish testaceous, polished, silvery pubescent on the sides. Opercula pale, about one-fourth the length of the venter, lobate at the inner ends which are separated by a narrow space; drums exposed inwardly, with small inflated covers exteriorly. Legs greenish fulvous, with the knees more or less clouded with brown, the anterior femora stout, marked above, at tip and exteriorly with brown, and with the two teeth piceous; tibiae with an obscure brown band on the middle, the tibial spines, as well as the tarsal nails also piceous. Wings of the usual long and narrow form, transparent, spotted with brown near the tips of the apical veins, as well as at the base of each apical areole, excepting the sixth, the mark at the end of the seventh apical vein is bent into the form of a hook, the first and third areoles sub-equal in length, acute at base, narrow and nearly one-third longer than the second, base of all the wings more or less fulvous around the red of the flaps and basal areole, with the fold of the wing flap and the exterior margin of all the wings brown, Tergum polished, humped and piceous at

base, and this color continued back upon the middle, and posterior border, of the segments. The female is lighter colored and less obscured by brown than the male.

Length to tip of abdomen 23–26 millims; width across middle of the pronotum 10–11 millims; expanse of wings 72–79 millims.

These fine insects were found in large numbers near Samana Bay, San Domingo, in the month of May, by Mr. Frazar. All the females thus far examined have been much smaller than the males. The spur on the last tergal segment of the female is acute, and longer than in the other species which we have studied.

16. *O. cuncta* Walker, (*Zammara*.) Brit. Mus. List. Homopt. vol. 1, p. 39, No. 9.

Unknown to me except in the description cited above. It is said to be an inhabitant of Jamaica.

17. *O. plena* Walker, (*Zammara*.) Brit. Mus. List. Homopt. vol. 1, p. 38, No. 8.

Captured in Jamaica by Mr. P. H. Gosse.

18. *O. erato* Walker, (*Zammara*.) Brit. Mus. List. Homopt. vol. 1 p. 41, No. 11.

Inhabits the same locality as the preceding species.

19. *O. suffusa* Walker, (*Zammara*.) Brit. Mus. List. Homopt. vol. 1, p. 37, No. 7.

Inhabits the Island of San Domingo.

I have ventured to place the four last species in the genus *Odopoea*, as the descriptions seem to warrant such a disposition.

#### ZAMMARA Amyot and Serv.

1. *Z. smaragdina* Walker, Brit. Mus. List. Homopt. vol. 1, p. 33, No. 3. Distant, Biol. Cent. Amer. Hom. p. 3, No. 1, plate I. fig. 1, *Z. angnlosa* Walker, Brit. Mus. List. Homopt. vol. 1, p. 34, No. 4.

This superb insect appears to be quite common in southern Mexico; but it has not yet been found in any of the provinces bordering the territory of the United States. It is a genuine tropical form which extends at least as far south as to the Isthmus of Panama.

2. *Z. calochroma* Walker, Brit. Mus. List. Homopt. Suppl. p. 4, *Z. smaragdula* Walker, Insecta Saund. Homopt. p. 4, *Z. callichroma* Stål, Stettin, Ent. Zeit. vol. 25, 1862, p. 57.

Also inhabits Mexico and extends southward in distribution as far as Bogota, Venezuela.

It is likewise a tropical form, which is quite variable in size and in the pattern of marking of the wings.

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#### ADDITIONS TO THE FAMILY CICADIDÆ.

By P. R. UHLER.

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##### CICADA Linn.

1. *C. sordidata*. New sp.

Narrow, obscure fulvous, extensively spread with minute, prostrate, bronze pubescence above, covered with white powder beneath, and on the face and coxae, markings obscure. Head across the eyes wider than the base of the pronotum, the vertex is chiefly blackish piceous, but it has a pale brown spot each side, midway between the ocelli and eyes, the sunken transverse line in front of the anterior ocellus waved, the eyes quite prominent, front blunt, with the transverse ribs slender and piceous, rostrum greenish yellow, stout, reaching to near the tip of the posterior coxae. Pronotum short, a little narrowing anteriorly, fulvous, with the posterior wide margin, the sutures, wedge shaped central mark and transverse ribbed lunule behind it piceous; anterior margin reflexed lateral margin a little sinuated behind the middle, with