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NOTES ON NORTH AMERICAN CICADAS WITH DESCRIPTIONS OF NEW SPECIES.

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In 1906 Distant's catalogue of the Cicadidæ of the world appeared, and it has since been an invaluable guide with reference to the literature of our North American species. The writer has, however, suggested on several occasions that some of the names appearing as synonyms really represented valid species, as for instance in this JOURNAL for March, 1915, where the seven names listed under *Rihana grossa* were stated to represent five species. Most of these names had been proposed by Francis Walker in 1850 and 1858, and fortunately many of his types are carefully preserved in the British Museum.

In 1920 Prof. Z. P. Metcalf, of North Carolina, sent specimens to Mr. Distant, who compared them with Walker's types. In 1921 Mr. James P. Chapin kindly carried several specimens to the British Museum that were compared for me by Mr. K. G. Blair of that institution. In 1922 Dr. Joseph Bequaert took a still larger number of specimens to the British Museum, and spent some time in making comparisons. To all of these gentlemen I am very greatly obliged for the aid they have rendered. The result of their findings is recorded on the following pages, and it will be noted that no change in nomenclature is necessary except in the case of *Cicada sayi* Smith and Grossbeck (1907), which should hereafter be known as *Tibicen chloromera* (Walker), 1850.

Tettigonia grossa Fabricius (1775).

This species was considered in this JOURNAL for March, 1915, p. 2, and the conclusion reached that *grossa* was probably not a native of the United States, and that our large species of the eastern states should be called *auletes* Germar.

Dr. Bequaert reports: "The type is in the Banks Collection; is a male from 'Brazil.' The shape of the opercula is slightly different from that of *auletes*. Length of fore wing 53 mm."

The following four species, namely *sonora*, *literata*, *resonans* and *figurata*, were proposed by Walker, and later the names were placed as synonyms of *grossa* and *auletes* by Distant in 1906. The last two were restored to specific rank in this JOURNAL for March, 1915.

Cicada sonora Walker (1850).

Dr. Bequaert reports: "The type is a male without locality label, but with a number referring to an old register where the locality is given as 'N. Holland.' The pruinosity of the abdomen has apparently been completely rubbed off, but there is certainly none on the middle segments. The opercula have the size and shape of those of *auletes*. The color markings are similar, though the yellowish is more extended on the mesonotum than in *auletes*. Length of fore wing 59 mm."

Fidicina literata Walker (1850).

Dr. Bequaert reports concerning this insect: "The type is a male without locality. Upon comparison this proves to be identical with *auletes* in size and shape of opercula, in the extension of pruinosity (absent on the middle segments), in the shape and size of the wings. Length of fore wing 58 mm."

Tibicen resonans (Walker).

Cicada resonans Walker (1850).

A figure of this insect was published in this JOURNAL for March, 1915.

In 1920 Prof. Metcalf sent a North Carolina specimen, which I have seen, to Mr. Distant, and received a reply that it was "identical" with Walker's type.

In 1922 Dr. Bequaert compared a specimen from Mississippi, and reported as follows: "The type is a female without locality. I have

compared it with your specimen of *resonans* and found the two identical. Length of fore wing 53 mm."

Tibicen figurata (Walker).

Fidicina figurata Walker (1858).

A figure of this insect was published in this JOURNAL for March, 1916.

In 1921 Mr. Blair stated: "The specimen sent agrees best with *figurata* in distribution of the black markings (though they are a little more extensive and confluent) and in some of the wing veins being black, but the basal membranes of fore wings are brighter yellow."

In 1922 Dr. Bequaert wrote: "The type is a female without locality. Compared with your specimen it agrees perfectly; having narrow wings (length of fore wing 48 mm., greatest width of fore wing 14 mm.); blackish basal cell; orange membranes at the base of the wing; pruinosity over all segments; the markings too are very much alike."

Thopha varia Walker (1850).

Placed as a synonym of *dorsata* Say by Distant (1906).

Dr. Bequaert's memorandum on this specimen is as follows: "The type is a male without locality. It agrees with your specimen of *dorsata* Say, having especially the short and broad wings (fore wing 45 mm. long, 18 mm. greatest width). The markings and especially the pruinose spots of the abdomen are the same."

Fidicina crassa Walker (1858).

This was considered a synonym of *dorsata* Say by Distant 1906, and Dr. Bequaert was requested to compare the type with specimens of *dorsata* and *dealbata* Davis. His findings are as follows: "The type is a male without locality. It agrees also with *dorsata* Say (length of wing 43 mm.; width of wing 18 mm.)."

Tibicen chloromera (Walker).

Thopha chloromera Walker (1850).

Cicada sayi Smith and Grossbeck (1907).

Chloromera was placed as a synonym of *Rhina tibicen* Linn. by Distant (1906), but as this last-mentioned species was described from Madame Merian's figure of a Surinam or South American insect, as

shown by Smith and Grossbeck, Entomological News, April, 1907, and as no native insect has been found to fit the figure, it is concluded that it is not a North American species.

The original description of *chloromera* is in part as follows: "Body black above, tawny and tinged with green beneath: head a little narrower than the fore-chest, adorned with several small tawny marks, and on each side of the front with one of larger size; face slightly convex, not at all prominent, adorned with a pale tawny elliptical mark, tawny with blackish bands on each side in front: mouth tawny with a pitchy tip, reaching the middle lips: eyes rather prominent: scutcheon of the fore-chest adorned with two oblique black stripes, which are united behind; fore-border black excepting a little interval in the middle; hind-scutcheon [posterior margin of pronotum] adorned on each side with three greenish tawny spots, one large, the other two small; sides not angular, but slightly excavated in front and slightly convex near the base of each fore-wing: scutcheon of the middle-chest adorned with a tawny slender double U-shaped mark whose inner sides are interrupted in front and behind, on each side of this are two oblique tawny stripes which are united behind; the middle pair are broader than the other pair, and their inner sides are excavated; hind border slightly excavated in the middle; cross-ridge tawny: abdomen obconical, longer than the chest, black above, tawny beneath: drums very large, pale tawny, much more than half the length of the abdomen, slightly overlapping . . . wings colourless, bright green at the base; veins ferruginous, green towards the base and along half the length of the fore border; first and second cross-veins clouded with brown. Length of the body 17 lines; of the wings [expanse] 48 lines."

This description seemed to cover *sayi* so well, particularly the statement concerning the long opercula, that Dr. Bequaert was requested to try and find Walker's type and compare with a male and female *sayi* sent for that purpose. His report is as follows: "The type is a male with a label 'T. W. Harris, N. America.' It has large opercula; no black stripe on the under side of the abdomen; the wing is evenly bent on the outer margin; the uncus is shaped as in *sayi*; the markings of the thorax are much the same. I should regard this as *sayi* S. & G."

Tibicen azteca (Kirkaldy) 1909.

Cicada pallida Distant (1881), preoccupied.

A figure of this insect was published in this JOURNAL for December, 1917. Dr. Bequaert compared a male from Oklahoma with the type, and reported as follows: "The type is a male without locality label. It agrees exactly with your specimen, especially in the shape of the opercula. There are in the British Museum collection next to the type of *pallida*, two males and one female of this species, from 'Texas, Belfrage.'"

Tibicen olympusa (Walker).

Fidicina olympusa Walker (1850).

Cicada milvus Walker (1858).

Cicada sordidata Uhler (1892) was placed as a synonym of *Cicada viridifascia* by Distant (1906), but was instead considered a synonym of *olympusa* in this JOURNAL for March, 1916, p. 59, and the insect was figured. In 1921 a male from Florida, the type locality, and known to be *olympusa*, was compared by Mr. Blair, and he reported as follows: "The specimen sent agrees well with both above types [*olympusa* and *milvus*] except that black markings of both pro- and mesothorax are more intense and more extended (in the types the lateral marks on mesothorax are more shadowy and distinctly smaller than the median pair). In the types the basal half of costa is distinctly greenish without black vein, as indeed are all the veins except towards the apex of the wing."

Tibicen viridifascia (Walker).

Cicada viridifascia Walker (1850).

Cicada reperta Uhler (1892).

Cicada viridifascia Walker was so identified from Florida by Mr. E. P. Van Duzee in the Bulletin of the Buffalo Society of Natural History, 1909, p. 184, and in this JOURNAL for March, 1916, p. 60, the writer suggested that *Cicada reperta* Uhler (1892) was a synonym. In 1920 Prof. Z. P. Metcalf sent to Mr. Distant a specimen from North Carolina known to be *reperta*, which Mr. Distant stated was "identical" with *viridifascia*.

Okanagana occidentalis (Walker).

Cicada occidentalis Walker (1866).

In 1921 a female of what was thought to be *occidentalis* from

Wallace, Idaho, and two female *bella* from Utah, were compared by Mr. Blair with specimens of *occidentalis* in the British Museum. He reported as follows: "I am unable to find the type specimen, which should bear the reg. no. 64.18, but there are 6 other specimens collected by J. K. Lord, one of which bears the name *occidentalis* in Walker's handwriting. These may be regarded as cotypes, and place the identity of the species beyond question. They agree well with the specimen sent with this name. They are placed by Distant, both in the collection and in his catalogue, as synonymous with *O. rimosa* Say, but I believe that two, if not three, species have been here confused; *O. occidentalis* being distinguished by the clear, or nearly clear, basal cell, the narrow orange posterior border of the pronotum not extending up the sides, etc."

In 1922 Dr. Bequaert was given a female *occidentalis* from Wallace, Idaho, a female *bella* from Stockton, Utah, and a male *rimosa* from Cumberland, Maine, for comparison. He reported as follows: "The true type is lost, but another female with a label '*occidentalis*' in Walker's writing has been selected by Distant as cotype. It has the last ventral segment twice notched as in your *occidentalis*."

With the specimens handed to Dr. Bequaert for comparison were cicadas related to those about which information was sought and they received due consideration. They were *pruinosa*, *linnei*, *lyricen* and *similaris*; also *marginalis*, *resh* and *dealbata*.

Tibicen pruinosa (Say). Variety. Pl. II, Fig. 1.

In the summer and fall of 1921 Miss Louise Knobel of Hope, Arkansas, sent me 236 males and 243 females of this species. It is remarkable that more females than males were collected. Under date of August 25, 1921, she wrote that *pruinosa* was present in great numbers and sang in the late afternoon. On September 15 she wrote: "Maybe you don't know that Mr. Pruinosa is Hope's greatest nuisance this season . . . the chorus is very loud from about 3 till 7 P.M. . . . nearly all I have sent you were taken in town from our shade trees at all hours of the day, but mostly from 3 till 7 P.M. while singing." In 1922 Miss Knobel heard the first *pruinosa* on June 12, singing about midday. At Hallowell, Kansas, Dr. R. H. Beamer heard the first one singing on June 25. Mr. A. E. Brower has collected them on several occasions in October at Willard, Missouri, and

Miss Anna Bennett collected a male at Hydro, Oklahoma, in October, 1915.

Among the great number of specimens sent by Miss Knobel there was a remarkably colored individual which is figured on the accompanying plate. It is a female and has a dorsal line of silvery pruinose spots on the abdomen, one on each segment. This is interesting because several species of cicadas, as for instance *dorsata*, *dealbata* and *bifidus*, regularly have a dorsal line of spots on the abdomen, and *marginalis* occasionally has. In *pruinosa* such a condition seems to be of great rarity, and shows an interesting tendency of maculation. In *linnei*, *figurata* and *similaris*, there is occasionally in fresh specimens an inconspicuous dorsal line of golden pubescence on the abdomen.

Tibicen robinsoniana Davis.

This species was described from Virginia in the March, 1922, number of this JOURNAL. Recently two males have been found in my collection from Hollister, Missouri, collected by Dr. Harry H. Knight, July 22, 1915. This considerably extends the known range of the species. Dr. Knight at the time wrote me that these particular specimens had a peculiar song, stating: "The one labeled *z-z-zip* is a species that I found among black-jack and other scrub oaks on the flint ridges."

In *Biologia Centrali-Americana*, Distant described *Cicada hilaris* and *Cicada intermedia*,¹ both from "Mexico"; the description of *intermedia* is very brief. The writer has had for some time several specimens of a cicada marked "*intermedia?*" and recently Dr. Paul B. Lawson of the University of Kansas sent an additional specimen. This last was photographed both above and below, and the pictures sent to the British Museum. Mr. W. E. China kindly compared these with the type of *intermedia*, and reports that my specimen appears to be distinct, "by the greater width of the head, larger size and in the color markings and pilosity. *Intermedia* has two white pilose spots on the inner margins of the tympana, and a white pilose band at the base of the first abdominal segment on either side. There is no white

¹ Both of these names had been previously used when Distant described these cicadas in 1887, and were therefore preoccupied.

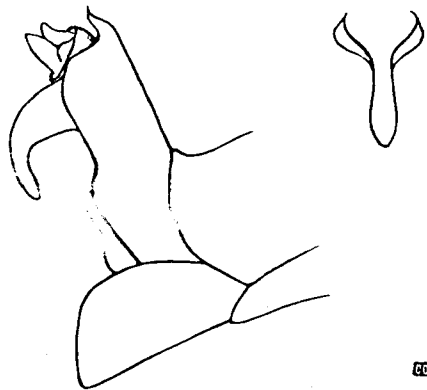
edge to the mesonotum as indicated in the photograph, nor are there two light spots on the anterior margin of the mesonotum." The basal cells of the tegmina are ochraceous in *intermedia* "with a dark spot anteriorly towards the apex of the cell. The opercula are of the same shape and size in both specimens. *Intermedia* has the basal cross vein of the second and third apical cells suffused with piceous." It expands 57 mm.

From *Cicada hilaris*, as described and figured in Bio. Cent.-Am., the specimens under consideration differ in having a proportionately broader head (broader than the base of the pronotum) and in being larger. Also the basal margin of the eighth abdominal segment (called sixth in description) is creamy white as stated both in the text and shown on the plate. *Hilaris* expands 52 mm.

From the above we conclude that the following species is distinct.

Tibicen chiricahua new species. Pl. I, Figs. 1, 2, and 3.

Head across eyes broader than the posterior width of the pronotum; front moderately produced; no median sulcus, transverse rugæ well defined. Many white hairs on the face, the remainder of the under side of the body with but few hairs except on the legs. The opercula are broadly rounded at extremities and overlap; the last ventral segment is not truncated, but is rounded and feebly notched at the extremity. Uncus bent as shown in the illustration, and not forked at the extremity. Sides of the body conspicuously parallel for a considerable distance, more so than in *townsendi*, *bifidus*, or *duryi*, which it somewhat resembles. The tip of the abdomen of the female gradually tapers about as in *duryi*; is more drawn out than in some other species that have the last few segments rather suddenly constricted.



TIBICEN CHIRICAHUA

Body above black; head with an orange spot at base and apex of front, one on each lateral and two on posterior margin. Pronotum with large dull testaceous spots centrally; lateral and posterior margins black edged with orange, also an orange line on the front margin for about the length between the eyes; the orange is broadest on the sides near rounded posterior angles. Mesonotum with two curved orange colored lines centrally extending backward from the front margin about half way to the cruciform elevation, and in the allotype, as well as in some of the paratypes, there is a silvery, pruinose spot bordering outwardly, each of the curved lines near its anterior extremity. Outer margin of mesonotum and near the base of both pair of wings also pruinose. The cruciform elevation is orange, black centrally, with a black band crossing each of the anterior limbs. Abdomen black above with a rather large dull orange spot centrally and a pruinose silvery spot at the inner anterior margin of each tympanum. Also, silvery pruinose each side on segment three, and slightly on the other segments to eight which is slightly pruinose on its posterior two thirds, the basal third being black. There is also a feeble orange spot each side on segment eight. In the allotype the posterior margin of segment eight is pale. Underside of body salmon colored, particularly the opercula and central part of the abdomen, otherwise variegated with black about the face, legs, and along the sides, the ventral part of the abdomen being almost entirely pale in some specimens. Fore wings with the basal area dark, lighter near the inner margin, surrounding veins orange or orange and black; venation darker about marginal cells; first and second cross veins clouded. The basal membranes of both pair of wings are grayish tinged with orange.

MEASUREMENTS IN MILLIMETERS.

	Male Type.	Female Allotype.
Length of body.....	28	22
Width of head across eyes.....	9.5	8.25
Expanse of fore wings.....	71	60
Greatest width of fore wing.....	11.5	10.5
Greatest width of operculum.....	6	
Greatest length of operculum.....	7.5	

Type male, Pinery Canyon, Chiricahua Mts., altitude 6,000 ft., Cochise Co., Arizona, June 12, 1919, and allotype female from same locality, June 25, 1919 (Witmer Stone). Collection Academy Natural Sciences, Philadelphia.

In addition to the type and allotype the following specimens have been examined: Pinery Canyon, Chiricahua Mts., Arizona, June 30, 1919, female (A. Wetmore), expands 62 mm.; Nogales, Arizona, August, male (Oslar), expands 69 mm.; Magdalena, New Mex., male (Strickler), expands 73 mm., and in collection of the University of Kansas.

The following species resembles *Tibicen chiricahua*, but is much larger, and has differently shaped opercula and uncus. Only the type is known.

Tibicen parallela new species. Pl. I, Figs. 4 and 5.

Head across eyes broader than the posterior width of the pronotum; front moderately produced, no median sulcus; transverse rugæ well defined. Many white hairs about the face, also numerous hairs on the under side of the abdomen, more than in *chiricahua*. The opercula overlapping at base with extremities rounded, but not as broadly so as in *chiricahua*; they are more spreading toward the tips and in shape resemble those of *townsendi*. Last ventral segment broad at the extremity and with a shallow, open notch. Uncus as in the illustration, broad at the base and with the apical part not as slender and curved as in *chiricahua*. Sides of the body noticeably parallel, about as in *chiricahua*.



TIBICEN PARALLELA

Body above black, with a rusty appearance, owing to being sparsely covered with scattered, short, pale hairs, that are particularly abundant about the cruciform elevation, and on the abdominal segments. Head with an orange spot at base and apex of front, otherwise black above. Pronotum black. Mesonotum with two curved orange colored lines centrally extending backward from the front margin about half way to the cruciform elevation. Outer margin of mesonotum, and near base of both pair of wings, orange. The cruciform elevation is black, fore limbs orange, each crossed by a black band. Abdomen black above with a small pruinose spot each side at the base of segment three; also segments three to eight inclusive with a dull orange spot each side at the posterior angle. Under side of body pale, pruinose on each side of the abdomen, also about the base of the legs. Fore wings with the basal area clouded about as in *townsendi*, and not as darkly so as in *chiricahua*; the first and second cross veins hardly clouded; the venation in both pairs of wings brownish, costal margin paler. Membranes at the base of the fore wings are bright orange, more so than in any related species except *duryi*, where they are reddish in color. The anal vein bordering this orange membrane

anteriorly is broad and dark colored, showing conspicuously in contrast. The basal membrane of hind wings is not quite as highly colored.

MEASUREMENTS IN MILLIMETERS.

	Male Type.
Length of body.....	32
Width of head across eyes.....	12
Expanse of fore wings.....	87
Greatest width of fore wing.....	12.5
Greatest width of operculum.....	6
Greatest length of operculum.....	7.5

Type male, Albuquerque, New Mexico, August 20, 1911 (Oslar). Davis collection.

Tibicen knighti Davis.

This species was described and figured in this JOURNAL for December, 1917, from five males collected in Sabino Canyon of the Santa Catalina Mountains, Arizona, altitude 6,500 to 7,000 feet. A further note on its habits appeared in the March, 1921, number. In 1921, Mr. Edward P. Van Duzee collected eight specimens of this species while on a trip along the shore of the Gulf of California, and kindly sent them to me for examination. The records are as follows: San Pedro Bay, Sonora, Mex., July 7, 1921, 2 males; San Carlos Bay, 3 males and 2 females, July 8, and one male, July 9, 1921. The specimens were fresh and the dorsal surface, except where rubbed off, quite generally covered with short, soft, silvery colored prostrate hairs. The last ventral segment of the female is not broadly notched with a second notch within, as in *castanea*, but quite the reverse; it is singly notched, and on each side of the notch the margin of the segment is produced into points. It is really within the area of this projection that the notch occurs.

Mr. Van Duzee wrote of this insect: "The larger species from San Carlos Bay had a louder chirp or song which sounded farther away than it really was, but was not difficult to locate, and the insect did not seem at all timid; I think I took all I heard."

Pacarina puella new name. Plate II, Figs. 3 and 4.

In Mr. Van Duzee's Catalogue of the Hemiptera of America North of Mexico (1917), *Pacarina signifera* (Walker) is recorded from Texas and Central America. The species was described by Francis Walker in 1858 as *Cicada signifera* from Orizaba, Mexico. Lately

in looking over a copy of Germar in Thon, Ento. Archiv., ii, 2, p. 7 (1830), the name *Cicada signifera* was noticed. On page 144 of Distant's Catalogue of 1906 he credits the species described by Germar to South Africa, and places it in the genus *Psilotympana* Stål (1861). On page 8 of Germar's paper of 1830 he describes a second *Cicada signifera* giving the locality as Brazil. Later in Silb. Rev. Ent., ii, p. 63 (1834), Germar changed the name of this second *signifera* to *Cicada stigmatica* (see Distant's Catalogue, 1906, p. 134).

From the above it is evident that in 1858 when Walker described his *Cicada signifera* two other cicadas had already received that name from Germar and one of the names was in good standing. It would therefore appear that Walker's *signifera* should receive a new name, and *Pacarina puella* is here proposed.¹ It is a surprise that Kirkaldy did not bestow one in his article on "Hemiptera Old and New," Canadian Entomologist, 41, p. 391, 1909, when he changed a number of preoccupied names of cicadas. Among our North American cicadas that have received new names for the reason mentioned are *Cicada marginata* Say, 1825, changed by Walker to *Cicada marginalis*, 1852, and *Cicada pallida* Distant, 1881, changed by Kirkaldy to *Cicada azteca*, 1909. The name *calliope* Walker, 1850, now placed in the genus *Melampsalta*, has taken the place of *parvula* Say, 1825, and *palescens* Germar, 1830, for the reason that both of these names were preoccupied at the time they were proposed.

A Guatemalan specimen of this species is figured under the name of *Proarna signifera* by Distant in Biol. Centr.-Amer., Rhynch. Hom., t. ii., fig. 21. In the writer's collection there are two males and a female labeled Monterey, Mexico, July, 1899, received from Prof. E. D. Ball. In the eastern half of Texas the species appears to be rather common. Specimens have been examined from Brownsville, Victoria, Floresville, Gillette, Rio Frio, Sabinal, Hondo, San Antonio, Anhalt, Southerland Springs, New Braunfels, Kerrville, Baby Head and Chillicothe. The dates of capture for the Texas specimens are in May, June and July. In the U. S. National Museum there is a male labeled Alexandria, La., Aug. 12, 1910 (H. Pinkun). As far as the writer is aware this is the first published record for Louisiana.

¹ This change is supported by the ruling in Entomological Code, by Banks and Caudell, where it is stated: "In case of primary homonyms the later name shall be changed, no matter to what genus they are now referred."

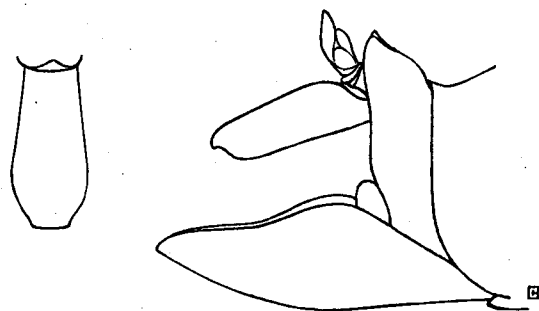
The insect also probably occurs in Oklahoma, as Chillicothe, Hardeman County, Texas, is near the border line.

In the Annals and Magazine of Natural History (8), vol. 8, p. 134 (1911), Distant states that the species was "only previously known from Central America. The Geneva Museum possesses a series of specimens taken at Dallas, Texas. Some of these agree with the typical form, others have the spots on the mesonotum nearly confluent, thus giving it an almost black appearance. Others, apparently bleached specimens, have nearly all of the macular markings obliterated, including those on the tegmina."

Okanagana nigrodorsata new species. Pl. II, Fig. 2.

Resembles both *occidentalis* and *bella*, but is almost wholly dull black on the dorsal surface of the body, except for some small inconspicuous spots on the front of the head and at the base of the wings. It is not as shining as in *occidentalis*, nor blue-black and shining as in *bella*. It also may be separated by the elongate-shaped uncus, which is figured. From *ornata* it differs greatly in color, and in the shape of the last ventral segment both in the male and female.

Head rather small and not quite as broad as the front margin of the pronotum; front moderately produced, about as in *bella*, and more so than in *occidentalis*; median sulcus well defined. Pronotum with the humeral angles rounded; the anterior angles prominent and slightly rounded. Sides of the pronotum usually with a few irregular sinuations. Last ventral segment with the sides curved inward to the extremity which is somewhat truncate, rounded at the sides or outer angles.



OKANAGANA NIGRODORSATA

Uncus when viewed in profile not hooked at the extremity and much slimmer in proportion to its length than in either *occidentalis* or *bella*; when viewed from behind, with a shallow notch at extremity. Last ventral segment of the allotype doubly notched. Fore, and hind wings with the costa pale

orange to the end of the radial cell, darker beyond. Venation of both fore and hind wings dark in color; basal cell almost black. Membranes at base of all wings orange variegated with black, especially on the hind wings. The wings are of the broad type, as in *occidentalis* and *bella*, and not of the narrower form, as in *rimosa*.¹ Head black except the supra-antennal plates, and narrow, interrupted, transverse stripe in front of the anterior ocellus, which are pale. Pronotum black. Mesonotum and metanotum black except a small orange spot at the base of each wing. Tergum black. Uncus black; valve black, edged above with pale, also a pale spot on under side. Abdomen black beneath, each segment edged on the posterior margin with orange. Legs contrastingly variegated with orange and black; upper side of femora and about one half of each tibia black, then almost wholly orange to end of legs, except claws, which are darkened.

MEASUREMENTS IN MILLIMETERS.

	Male, Type.	Female Allotype.
Length of body.....	24	23
Width of head across eyes.....	7	6.25
Expanse of fore wings.....	60	61
Length of valve.....	5	

Type male, Mt. Hough, Plumas Co., Calif., 7,000 ft., June 19, 1918 (Frank Morton Jones). Davis collection.

Allotype female, near Davis Creek, Modoc Co., Calif., July, 1922 (Dr. A. W. Lindsey). Davis collection.

The following paratypes have been examined: Webber Lake, Calif., July 23, two females (O. Sacken); Tuolumne Co., Calif., two females (no date label), also male with no locality or date label, collection U. S. Nat. Museum. Angora Lake, Tahoe, Calif., July 11, 1915, three males (E. P. Van Duzee), collection Calif. Academy of Sciences. Onion Valley, Calif., "8, 9, 13," male (H. E. Burke), and Tuolumne River, Sierra Nevadas, Calif., elevation 8,000 ft., July 11, 1922 (Victor Duran), writer's collection.

Okanagodes gracilis Davis.

This curious insect, with a protruding front and a narrow pronotum, was described and figured in this JOURNAL for June-September, 1919, and later a note on its discovery by Mr. Morgan Hebard at Bagdad, San Bernardino, Calif., in August, 1919, appeared in the March, 1921, number.

Mr. Edward P. Van Duzee has sent me six specimens for examination that have been placed at least for the time being under this name, for ultimately they may prove to be a second species of *Okanagodes*. They show slight structural differences, they are generally

¹ See JOURNAL, N. Y. Ento. Soc., Vol. XXVII, pl. XX.

smaller and much darker in color than specimens from Utah, Arizona and California. They were collected as follows: Smith's Island, Angles Bay, Gulf of Calif., June 27, 1921, male (J. C. Chamberlin); Angel de la Guardia Island, Pond Island Bay, Gulf of Calif., June 30, 1921, female, and July 1, 1921, three males and one female (E. P. Van Duzee). Mr. Van Duzee writes: "The small species from Pond Island Bay was taken on weeds and grass or even on the stones, on a rocky hillside a few feet above the floor of the valley; they have a short, sharp chirp like a house cricket only fainter, which was audible about 75 feet."

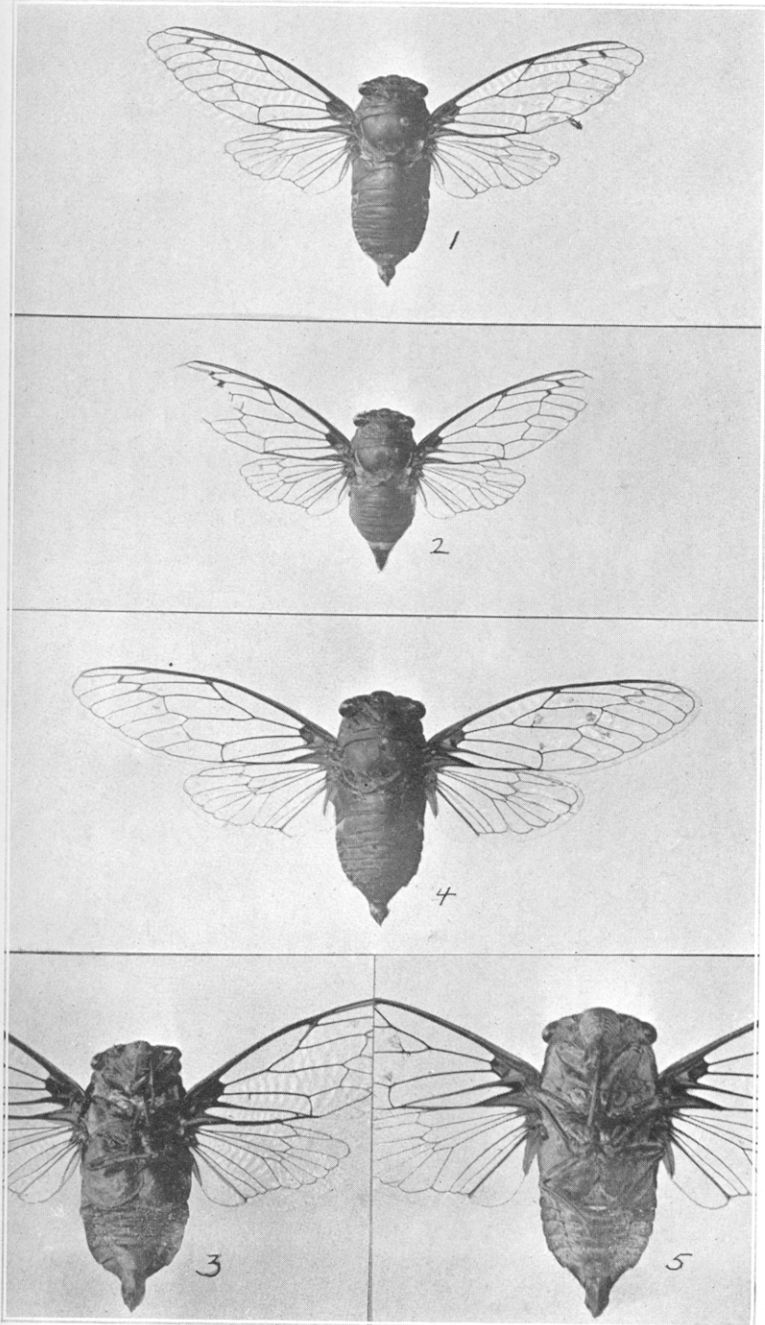
EXPLANATION OF PLATES I AND II.

PLATE I.

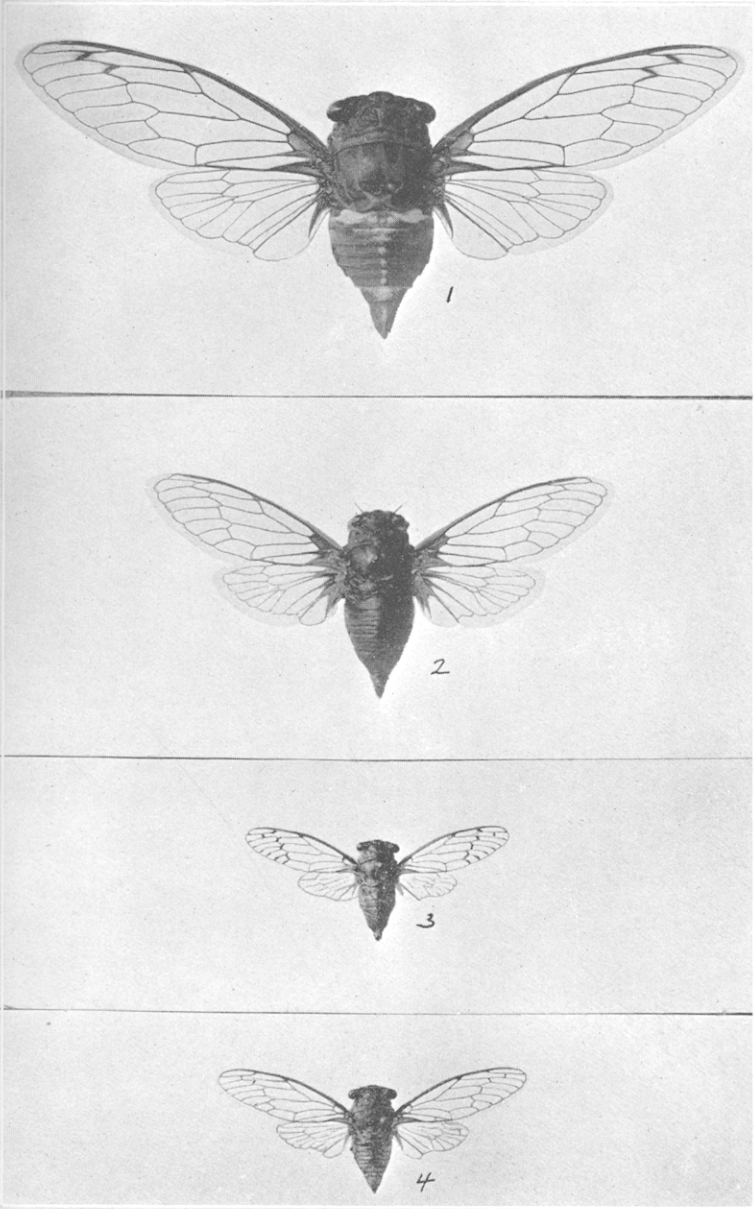
- FIG. 1. *Tibicen chiricahua*. Type.
 FIG. 2. *Tibicen chiricahua*. Allotype.
 FIG. 3. *Tibicen chiricahua*. Enlarged.
 FIG. 4. *Tibicen parallela*. Type.
 FIG. 5. *Tibicen parallela*. Enlarged.

PLATE II.

- FIG. 1. *Tibicen pruinosa*. Variety.
 FIG. 2. *Okanagana nigrodorsata*. Type.
 FIG. 3. *Pacarina puella*. Male from Gillette, Texas.
 FIG. 4. *Pacarina puella*. Female from Victoria, Texas.



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