

A Preliminary List of the Hemiptera of San Diego County, California

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The Hemiptera enumerated below with few exceptions were taken by me during my residence in that county from December, 1912, to August, 1914. A few, however, were given me by Mr. W. S. Wright and others, and two or three are from localities just outside of the county. The following notes on localities and conditions are given for the benefit of those living in the east who are not conversant with the physical conditions found there.

Coronado and North Island: Low, flat land, lying between the bay and the Pacific ocean.

Ocean Beach, on the northwest side of Point Loma: Collections mostly made on or about the low sand dunes.

San Diego: Mostly in the fields and canyons east of Thirty-first street, on the chaparral at an altitude of about 300 feet, or along Mission Valley near the San Diego River and on the hillsides and in the canyons opening into the valley.

La Jolla, fourteen miles north of San Diego: Mostly about Scripps Institution for Biological Research, near the beach and on the hills and pueblo lands near by, with an altitude of from 300 feet to 800 feet on Mt. Soledad.

Torrey Pines, six miles north of La Jolla on the sandy hills, altitude about 400 feet, or along the valley of the Soledad River. The chaparral collecting here is the best along the coast in this county.

La Mesa, Lemon Grove and Grossmont, east of the city, at an altitude of from 500 to 800 feet. Here *Eriogonum* prevails in the chaparral and the best collecting is among the rocky hills about Grossmont.

Lakeside, on the San Diego River, about 20 miles east of the city. Here I worked along the river and on the hillsides north of the town. Altitude about 400 feet at the river.

Foster, two miles northeast of Lakeside and but little higher: Work done on the rocky hillsides up to 2000 feet.

Mussey's, a pretty oak-covered valley two miles farther north on the same creek, with much the same conditions as at Foster's, but better collecting ground: Work here was done in the valley and on the rocky hillsides, especially along the canyon to Barona Ranch.

Alpine, thirty miles east of San Diego, among the hills, altitude 1850 feet: Here there was good collecting everywhere in the little valleys and canyons and on the granite hillsides up to 4000

feet. "The Willows," two miles farther east, gives good valley conditions.

Hurlburt Ranch, near Descanso, altitude about 4000 feet, with conditions not very different from those found at Alpine.

"Twin Pines," on the road from Descanso to Julien and at an altitude of about 5000 feet. This was the highest point accessible by road in the Cuyamaca Mountains, and the vegetation was quite different from that found at lower levels; pine, broad-leaved oak, alder and cedar trees and many other more northern species being found here, and the insect collecting was distinctive and good.

Pine Hills, near Julien, altitude 4200 feet, was an excellent collecting ground with some of the mountain vegetation found at the "Twin Pines."

In San Diego County the collecting season for Hemiptera extends over the entire year, but most of the species have their regular season depending perhaps more on the rains than on the altitude of the sun. The greater number appear soon after the rains and are "in season" from March to July, while certain species and straggling examples of others may be found until well into October. In the higher altitudes from Alpine into the Cuyamaca Mountains the season is later. Introduced species on alfalfa and other crops are found throughout the year.

The lower lands near the coast are usually frostless or nearly so, but from about 1500 feet up there may be a few frosts severe enough to injure tomato plants if unprotected and most every winter there is a little snow on the Cuyamaca Mountains which may remain on the ground for a day or two. In the severe freeze of January, 1913, the temperature reached 16 degrees in San Diego city and went as low as 6 degrees in some of the neighboring canyons, but the exceptional severity of this freeze is proven by the fact that rubber trees more than fifty years old were killed to the ground; but even these conditions were local and tender vegetation not far distant would sometimes escape almost untouched.

One from the east is surprised to find that with such a climate there is both hibernation and aestivation among the insects. The principal controlling factor here is the moisture conditions. The rains, amounting to from ten to sixteen inches according to altitude, come during the winter months, from November to April, and this rainy season is the time of green fields and of flowers which appear in marvellous profusion and beauty. The young of many plant-feeding Hemiptera appear during February and March, but certain species occur much later.

On the eastern slope of the Cuyamaca Mountains the fauna partakes more of the desert type, but the little collecting I have done at Buckman's Springs and in Pine Valley was insufficient to indicate the character of that fauna. In addition to the species enumerated in this paper I have taken quite a number that I have been unable to determine with the material and time at my disposal.

I wish here to acknowledge my indebtedness to Mr. W. S.

Wright of San Diego, who has turned over to me many interesting Hemiptera and has given me valuable information respecting collecting grounds, and to Mr. J. L. Rose of Alpine, who has very kindly opened his Alpine home to me, where much of my back-country collecting has been done and which has proven an excellent place for Hemiptera work.

This paper enumerates 392 species or distinct varieties, of which 52 are new, and four new genera are characterized: *Pycnocoris*, *Platyceirix*, *Oeclidius* and *Rhynchopteryx*.

HETEROPTERA

Family SCUTELLERIDAE

1. *Sphyrocoris punctellus* Stal. Mussey's, April, one example.
2. *Homoemus parvulus* Germ. San Diego and Alpine; April.
3. *Homoemus proteus* Stal. Mussey's, August.
4. *Homoemus variegatus* n. sp.

Allied to *proteus* but much smaller; having much the aspect of *Symphylus albomaculatus* Dist., Length 4-5 mm.

Female: Head shorter and broader anteriorly than in *proteus*; black or bronze black, closely punctured and covered with mottled pale pubescence. Antennæ black, the incisures only pale; second and third joints subequal, fifth slightly longer than the fourth. Pronotum proportionately shorter and broader than in *proteus*, the humeral angles a little more produced and the sides more oblique, coarsely and irregularly punctured; color greyish tinged anteriorly with ferruginous, the surface on either side covered with matted pale hairs; disk marked with irregular oblique blackish rays, the most pronounced of which forms an imperfect M across the middle of the disk and includes an abbreviated white medium longitudinal line; on the anterior margin before this dark mark is a pair of roundish black spots. Anterior half of the narrowly rounded lateral margins white, posterior half black. Scutellum shorter and broader than in *proteus*, grey, distinctly punctured with black and varied with blackish arcs; on either side of the base is a white arcuate line ending in a marginal spot of the same color and between which is a vague paler area. These pale marks are really formed by a whitish transverse band across the middle partially interrupted by a transverse brown cloud and two oblique blackish rays; posterior one half largely blackish marked with a triangular whitish apical spot and an obscurely triangular cloud either side. Elytra as in *proteus*, grey and punctured, the costa dotted with black posteriorly and the surface under the scutellum black. Beneath pale along the middle line with a blackish area on either side of the disk, the submargins being ferruginous or castaneous. Middle of the venter with but few black punctures and clothed with a minute pale pubescence. Femora piceous black, pale at base and tip, with a rufous spot beneath; tibiæ and tarsi castaneous, the former piceous within, the latter black at apex. Osteolar canal less curved than in *proteus*; margins of the connexivum var-

Family VELIIDAE

195. *Microvelia americana* Uhler. Mussey's, August, 1913. Taken from a small canyon pool among the hills.
 196. *Rhagovelia obesa* Uhler. Hurlburd's Ranch, near Descanso, October.

Family GERRIDAE

197. *Hygrotrechus orba* Stal. Common everywhere on ponds and streams, March to October. I do not feel satisfied that I can distinguish this from *remigis* Say.

Family SALDIDAE

198. *Pentacora signoreti* Guer. March to May. Common on salt marshes along the coast and on the damp sands of San Diego river as far up as Lakeside. Young in March.
 199. *Saldula interstitialis* Say. Abundant everywhere in suitable places throughout the year. I have proposed *Saldula* to replace *Acanthia* of Reuter (not of Fabricius) with *salatoria* Linn. as type.

200. *Micranthia pusilla* n. sp.

Size and much the aspect of *humilis* Say, but with broader elytra. Elytra deep black with two white costal spots and the membrane strongly distinguished. Length 3 mm.

Head as in *humilis*, black, with a transverse white line at the base of the tylus. Antennae black, the joints subequal; the first a little shorter, the second longer than the third and fourth. Rostrum black. Pronotum broader posteriorly than in *humilis*, sides nearly straight, the humeral angles a little more rounded; hind margin broadly but shallowly excavated. Scutellum as long as broad, with a shallow transverse impression, and with the pronotum opaque, black and closely minutely sericeous pubescent. Elytra with a somewhat longer pubescence; deep black becoming velvety black toward the apex of the corium and on the tip of the clavus; corium with a square whitish spot resting on the costa and a double one close to the apex; usually there is a small white point on the middle of the corium, one at the inner apical angle and another near the tip of the clavus. Membrane strongly differentiated, whitish hyaline, a little enfumed, the nervures strong, brown; the areoles with a brown subapical mark and sometimes another near the base. Beneath and legs black, the knees, tibiae except at base and apex and the tarsi, their tips excepted, pallid. In the female the apex of the abdomen and sometimes the slender hind margins of the ventral segments are pale.

Described from three males and two females taken along the San Diego River at Lakeside, May 7th, 1913, and from a moist ravine at Alpine in June. Dr. J. C. Bradley also took this species at Sisson, Calif., in August, 1908. The species can be easily recognized by its small size, intensely black color, the strongly distinguished membrane and the four white marginal spots on the elytra.

201. *Ioscytus politus* Uhler. I took one example of the typical form of this species as described by Dr. Uhler by a pond in Rose Canyon near La Jolla, in September, 1913. In July,

1903, I found this species not uncommon about a pond at Elitch's Gardens at Denver, Colo., but these were a little larger with the elytra a clear reddish, the clavus only black.

Family NEPIDAE

202. *Ranatra brevicollis* Montd. One female I believe belongs here was captured in a pond near Barona Ranch at Mussey's in August. It was not fully developed and some of its characters were obscure. A very dark male taken by Mr. F. W. Kelsey in Pine Valley in the Cuyamaca Mts. in April may belong here.

Family BELOSTOMIDAE

203. *Abedus (Deinostoma) dilitatus* Say. What I believe to be the young of this species is common in most pools, especially back among the hills, but I have been unable to obtain an adult.

Family GELASTOCORIDAE

204. *Gelastocoris variegatus* Guer.? A very clearly marked form which I have provisionally determined as this is common along the San Diego River as far up as Lakeside. The silvery points on the elytra are very conspicuous in this species. May to July.

Family NOTONECTIDAE

205. *Notonecta mexicana* H. S. Mussey's, August, taken from a shaded pool. If I am correct in my determination of this species it is near *undulata* Say but is proportionately shorter.
 206. *Notonecta insulata* Kirby. One example of this species occurred at Mussey's with the preceding but I found it in numbers in a stream at Pine Valley in October, 1913.
 207. *Buenoa platycnemis* Fieb. Found in abundance in a pool in Rose Canyon near La Jolla in September.

HOMOPTERA

Family FULGORIDAE

208. *Amycle saxatilis* n. sp.

Allied to *amabilis*, broader and proportionately shorter than in *vernalis*; fuscous, irrorate with pale; tergum and base of the wings red or luteous. Length to tip of abdomen 11 mm., to tip of elytra 13 mm., alar expanse, 21 mm.

Head thin and strongly produced. Vertex a little longer than the pro- and meso-notum together, ligulate, narrowing to the middle then a little expanded and again narrowing to the broad subangular apex. Surface depressed with a linear medium groove and a discal carina either side which diverge at base, before the middle and again at apex, the submargins laminate-carinate. Front nearly flat; apex expanded to before the eyes, feebly sinuated at the an-

tennæ; the disk with fine longitudinal striæ, the carinæ nearly obsolete; clypeus more prominent, feebly convex, compressed and distinctly carinate toward the apex. Pronotum transverse, one half the length of the mesonotum, feebly angularly excavated behind and slightly sinuated, truncate before; disk with three prominent obtuse parallel carinæ and an impressed point on either side, the lateral carinæ placed just inside the outer angles of the vertex; post-ocular protuberance acute but shorter than in *vernalis*. Mesonotum feebly tricarinate, the lateral prominent near their base. Elytra parallel, a little sinuated at their middle, the areolar reticulations obscure basally. Hind tibiæ trispinose; abdomen strongly depressed, with two discal carinæ indicated, but irregular and broken.

Color fuscous brown inclined to greyish, minutely irrorated with pale, varied with darker on the middle field and apex of the vertex, cheeks, sides of the pronotum and on the chest including the apex of the clypeus and the coxæ; front and base of the clypeus paler. Elytra more greyish, minutely varied with fuscous especially toward their apex; the outer claval nervure interrupted by a whitish median spot. Wings smoky hyaline; luteus, or in fully colored examples red, on the basal half; the transverse veinlets and alternate longitudinal nervures heavy and fuscous in the smoky apical part. Tergum and sides of the metanotum fulvous or red, the narrow base and lateral margins and the genital segment fuscous.

Described from three males; two taken on the rocky hillsides at Grossmont and Lakeside in May, 1913, and one beaten from a pine tree at Torrey Pines on July 4th, 1914. I have repeated some generic characters here as no full description of the genus or any species has yet been published.

209. *Orgerius rhyparus* Stal. Taken occasionally from La Mesa to 4,000 feet in the Cuyamacas. Young from February to June, adults from June to October. It seems to prefer the canyons among the hills.
210. *Timodema miracula* Ball. Occurs with the last and well up in the Cuyamacas. Both of these species have the singular habit of standing in a nearly erect posture and when disturbed are powerful leapers. The black color with transverse white bands and flattened legs will distinguish this form.
211. *Orgamara acuta* Ball. I took a typical example of this odd looking insect on North Island, Coronado, June 30th, 1813, and a darker specimen at Lakeside in October. Young in May and June.
212. *Scolopsella reticulata* Ball. Mr. Frank Stephens has taken several examples of this species at La Puerta Valley on the eastern slopes of the Cuyamacas for which I am indebted to Mr. W. S. Wright. It is hardly likely that they occur on this side of the mountains.

213. *Scolops pallidus* Uhler. Abundant everywhere. In this species the disk of the metanotum is conspicuously pale, a character not mentioned by Dr. Uhler. There is a pale form of this species with immaculate nervures.

214. *Scolops piceus* n. sp.

Allied to *Belanocharis fumida* Uhler but certainly distinct. Black marked with whitish on the cephalic protuberance and beneath. Elytra subhyaline picous. Length to tip of cephalic horn 6-7½ mm.

Female: Cephalic horn long and slender, linear, white with a black line above and on either side; disk of the vertex convex, deep black and highly polished, its lateral carinæ marked with two white dots against each eye. Front slenderly tricarinate, regularly widened to the apex which is concavely arcuated; black dotted with pale, broadly white across the apex. Clypeus convex, polished, slenderly tricarinate, its base black with a few pale irrorations, apical portion pale. Pro- and meso-notum black, irrorate with pale. Pleuræ and abdomen black obscurely irrorate with pale. Legs pale the femora more or less varied with fuscous; anterior and intermediate tibiæ triannulated with white, spines of posterior tibiæ black. Elytra piceo-hyaline with a blackish cloud along the basal half of the costa and there may be a cloud at the tip of the first and second apical areoles. The male is smaller and darker with fewer pale irrorations.

Described from one male and three female examples. Mission Valley, San Diego, April; Foster on the rocky hillsides, May; Alpine, July. I cannot make this insect agree with Uhler's description of *fumida* and I believe it distinct. I see no reason for separating these species from *Scolops*.

215. *Catonia irrorata* n. sp.

Closely related to *fusca* but with the short vertex found in the typical section of the genus; front with two broad white bands; elytra fuscous with pale irrorations and nervures. Length 5-6 mm.

Vertex as in *impunctata* but proportionately wider and shorter, larger in the male but scarcely as long as half the width between the eyes. Front broader than in *impunctata* and *fusca*, the sides very feebly arcuated apex no wider than the base, scarcely excavated for the reception of the clypeus. Pronotum as in *fusca*, narrower and more acutely angled than in *impunctata*.

Color black, carinæ of the vertex, and pronotum and a spot in each basal fovea of the vertex pale. Front with a median transverse white band, base broadly and the apex more narrowly deep black, the basal band with two pale points on either side. Clypeus white, blackish at apex. Mesonotum piceous black with ten obscure fulvous spots, two in each lateral and three in each discal compartment. Elytra fuscous-brown with a blackish vitta before the middle and a more obscure and broken one behind and a third indicated by a large spot on the stigma; nervures pale lined with darker, the areoles with about two rows of pale points. Legs very

pale fuscous, the knees, apex of the tibiae and the hind tarsi paler. Abdominal segments edged with pale.

Described from two examples; a male taken May 6th at Brooklyn Heights in San Diego and a female taken March 11th at Alpine; both from manzanita bushes.

216. *Catonia fusca* Van D. Not uncommon on manzanita (*Arcostaphylos bicolor*) in the canyons east of San Diego and at Alpine, May and June.

217. *Catonia rubella* Van D. Abundant with the preceding, May and June.

218. *Catonia costata* Van D. Not uncommon on the rocky hillsides at Lakeside, Foster and Alpine. April to June.

219. *Oliarus californicus* n. sp.

Allied to *aridus* but with more of the aspect of *placitus*; elytral maculation of the female forming a short oblique vitta a little beyond the stigma, pale spot on the sides of the front small. Length 7-8 mm.

Vertex distinctly narrower and longer than in *aridus*, more parallel than in *placitus*. Front wider at base than in *aridus*, much wider than in *placitus*. Costal areole of the elytra wider. Male pygofers less deeply excavated than in *aridus*, the sides cut away obliquely to the dorsal angle, this edge slightly arcuated. In *aridus* the sides of the notch are much more nearly parallel and the apex is strongly produced in an obtuse lobe ventrally, the edge retreating dorsally for about half its length; median plate of the female broader and shorter.

Color black tinged with castaneous on the clypeus, median carina of the front, and on those of the mesonotum; lateral carinae of the front and of the vertex posteriorly whitish; carinae and hind margin of the pronotum narrowly pale, sides of the front with a small pale spot next the clypeus. Margins of the pleural pieces and ventral segments more or less pale. Legs pale fuscous, the knees, hind tibiae and tarsi whitish. Elytra whitish hyaline nervures pale with black punctures armed with long black hairs; before the middle is an oblique row of four black spots placed on the forks of the nervures; the apical and subapical nervures and the stigma clouded with brown and there is an oblique fuscous vitta covering the second apical areole and continued forward nearly to the subapical transverse nervures. These markings may be much reduced or in the male quite absent.

Described from many specimens of both sexes taken at most all places where I have collected in San Diego County, from May to October. This species is so close to *aridus* it is difficult to find good characters to distinguish it but they are obviously distinct. The form of the male pygofers, the small size of the pale spot on the sides of the front will best distinguish the males while the female can be recognized by the small frontal spots and the maculations on the elytra. *Placitus* is a larger eastern form with narrower base to the front and a longitudinal fuscous vitta on the apical half of the elytra of the female; *quinque-maculatus* and *vicarius*

have transverse elytral maculations. In some examples of *californicus* the disk of the mesonotum is distinctly castaneous.

220. *Oliarus complectus* Ball. Abundant everywhere. There are two forms of this species. In the more typical the mesonotum is black with the carinae at times ferruginous; in the other the mesonotum, or at least the median compartments, is castaneous or at times almost sanguineous. In some examples the elytra are milky hyaline but ordinarily they are hyaline or more or less infuscated. This species has also been found in the east.

221. *Oliarus fidus* n. sp.

A little larger than *complectus*; short and stout; black, elytral nervures heavy and punctate. Length 4-5 mm.

Vertex nearly quadrangular, scarcely longer than broad, but little surpassing the eyes; hind edge deeply emarginate; apical compartments broad, convex; sides rounded, not obviously sub-angled as in many of our species; clypeal suture indistinct; median carina distinctly forked at the apex of the head; mesonotal keels prominent, the four lateral regularly arcuated. Male pygofers with a shallow notch armed with a short blunt tooth, the sides regularly arcuated; styles slender, strongly curved from their base about an ovate opening, meeting above and then abruptly reflexed, curving backward and outward under the lateral projections of the dorsal plate, the latter narrow and distant, not contiguous as in many species.

Color black, the carinae of the head and pronotum pale. Rostrum, trochanters, knees, tibiae and tarsi testaceous; slender margins of the abdominal segments pale; genital segments pale brown. Elytra milky hyaline, nervures strongly dotted with fuscous and armed with black bristles making them conspicuous, the transverse veinlets infuscated. In fully colored females there is a row of three fuscous spots in the costal areole, an oblique row of three on the transverse veins of the clavus and middle of the corium, and some small faint clouds in the antepical areoles. Stigma small and inconspicuous.

Described from numerous examples taken on the rocky hillside south of the railway station at Foster on May 24th, 1913.

222. *Cixius cultus* Ball. Found occasionally everywhere but more frequently near the coast; May and June.

Genus Platycixius n. gen.

Allied to *Cixius*; head but little narrower than the pronotum; eyes narrow, oblique, feebly emarginate beneath. Vertex large, depressed, with a median carina and the lateral and anterior margins carinately elevated, base feebly arcuated. Front large, scarcely longer than broad, ecarinate, base as broad as the apex, tumid, sides arcuated, laminate outwardly, frontal ocellus conspicuous; clypeus tumid, apparently ecarinate. Pronotum longer than in *Cixius*, tricarinate, the lateral carinae running oblique and straight to the hind margin, behind the eye is a callous apparently connect-

bose. Hind tibiae unarmed. Elytra subparallel, the costa arcuated at base; claval veins united beyond the middle; radial and ulnar nervures united by a short transverse vein about half way to the fork of the ulnar; radial forked a little before the outer ulnar; apical areoles eleven, the first three beyond the large stigma transverse. Wings with two transverse veins and two stylate apical areoles. This genus is distinct by its broad convex ecarinate front, broad vertex, the form of the lateral carinae of the pronotum and the unarmed hind tibiae.

Type of the genus *Platycixius calvus* n. sp.

223. *Platycixius calvus* n. sp.

Vertex equally long and broad, slightly narrower before and feebly arcuated at apex, the median carina not attaining the apex. Front broadest a little beyond the middle, the apex feebly curved across the base of the clypeus. Pronotum hardly half the length of the vertex, deeply angularly emarginate behind. Mesonotal carinae subparallel, the median obsolete on apical third. Elytral nervures very obscurely granulated. Length to the apex of the abdomen 5 mm., to tip on the elytra about 6½ mm.

Color black, head, pronotum and legs luteo-testaceous, the former with a blackish shade about the frontal ocellus which extends down either side of the clypeus leaving a pale convex median vitta which is scarcely carinate. Narrow margin of the abdominal ring with the apex of the lateral carinae at the hind margin. Mesonotum large, tricarinate. Basal joint of the antennae large, subgloss-segments pale. Elytra faintly smoky hyaline, nervures strong, fuscous, a faint fuscous cloud along the apex and a crescentic fuscous mark on the seventh to the tenth apical areoles; stigma large and fuscous, becoming black at either end with a white callous within the base. Wings hyaline, nervures brown.

Described from one female specimen taken near a small stream at Mussey's, on April 12th, 1914.

224. *Microledrida fuscata* n. sp.

Closely allied to *asperata* Fowler but shorter and darker in color. Length 2½ mm.

Vertex produced for one half its length before the eyes, its carinae strong. Front rather strongly inflated, distinctly transverse, the carinae distinct but not as strong as those of the vertex, the frontal ocellus barely indicated. Clypeus long, acutely triangular, its basal suture regularly arcuated. Pronotum about one half the length of the vertex, its margins nearly parallel, median carina strong. Mesonotum longer than the vertex, tricarinate, the median feeble. Elytra broad, strongly inflated near the base, the sides almost straight for a space, apex subangularly rounded, with ten areoles beyond the stigma, the fifth and eighth small and triangular; nervures strong, punctate. Male genital segment broadly excavated the base of the sinus sometimes with a feeble tooth; stiles divergent at base, converging above leaving an oval opening, the subacute inner angle of the hammer-shaped apices in contact, their apical margins sinuated, not arcuated as in *asperata*; pygofers a little exceeding the plates.

Color fuscous-brown, obsoletely irrorated with pale on the head, pronotum and scutellum; clypeus, femora and abdomen black or nearly so, sometimes white pruinose; the latter with margins of the segments narrowly touched with fulvous. Anterior and intermediate tibiae pale, tipped with fuscous. Elytra whitish, nearly opaque, nervures and stigma fuscous, the former with large black punctures bearing black bristles; anterior fracture of the stigma white; apical margin with a fuscous spot at the tip of each nervure. In fully colored individuals there is a fuscous cloud at the base of the corium covering the basal disk of the clavus; two equidistant oblique fuscous spots on the costal area, the anterior of which may be continued behind in a large discal spot, and a rather vague smoky cloud across the base of the membrane, intensified on the stigma and base of the median apical areole. In pale examples the median fuscous band may be reduced to two spots on the costa, one on the disk, and a point at the apex of the clavus, and the posterior band to the two intensified spots. Commissural nervure always whitish.

Described from numerous examples beaten from a bush of *Heteromeles* (Christmas berry) at Alpine, San Diego Co., Calif., March 11th, 1914. These specimens may be slightly brachypterous which would account for their elytra being shorter than in Fowler's figure, but the color of the body and legs is much darker, the elytra are more maculated and the form of the male genitalia is different.

225. *Myndus occidentalis* n. sp.

Allied to *radicis* Osb. but more deeply colored; luteus to fulvous-yellow; front immaculate; elytral nervures dark. Length 4 to 4½ mm.

Vertex long as in *radicis* but less narrowed anteriorly. Front proportionately narrower than in *sordidipennis*, the sides not so strongly angled as in *radicis*. Pronotum reduced to a mere line at center. Elytral nervures infuscated and distinctly punctate as in *sordidipennis* but the costal nervure not heavier and the stigma hyaline, its basal nervure only thickened and brown. Last ventral segment deeply excavated with a blunt tooth in the fundus, the sides parabolic; pygofers of the male long, exceeding the connexival segments by at least a third of their length, the apical margin but slightly oblique; anal style black and considerably surpassing the tube.

Color fulvous, a little paler on the head, pronotum and legs; front immaculate. Elytra and wings hyaline with the nervures distinctly brown. Eyes, sides of the metanotum, an area on the tergum and the tarsal claws blackish.

Described from four male and three female examples taken at Lakeside in May 1913. Some of the specimens are darker or almost testaceous brown and it is possible that they represent the fully adult coloration.

226. *Oecleus decens* Stal. The species which I have so determined is not uncommon back from the coast from May to August. It differs from the eastern *borealis* in being larger and in having a somewhat different male genitalia. The color is darker than described by Stal but we find the same range of color in a number of allied Cixiinae. I prefer to place this form under *decens* until comparison with Mexican material is possible.
227. *Oecleus venosus* Van D. Several examples taken along the San Diego river at Lakeside and back of the sand dunes at Ocean Beach, all in May 1913.

Genus Oeclidius n. gen.

Vertex narrow as in *Oecleus* but widest at base and not at apex as in that genus. Front very narrow, concave, uniformly widening from the base to the clypeus, the carinate margins well elevated; median carina and apical ocellus wanting, the position of the latter sometimes indicated by a dark point. Clypeus slender, tricarinate. Pronotum narrow, angularly emarginate behind, with median keel and concentric anterior carina behind the eyes. Mesonotum tricarinate. Basal joint of the antennae longer than wide, papillose. Hind tibiae simple. Eyes notched beneath. Elytra short and broad, vitreous, the two claval veins straight, united before the middle, at tip reaching the commissure by a hook some distance from the apex; costal area very broad and expanded near the base; outer sector forked near its base and both opposite the apex of the clavus where they are united by strong transverse veins forming five anteapical areoles of which the inner and third are small and triangular. Middle apical areole elongate, oblong, interior to which are five (two stylate) and exterior four, their three veins springing from the side of the long median areole. All the nervures distinct, impunctate.

This genus differs from *Oecleus* in having the vertex narrower before, in the narrower ecarinate front the papillose basal joint of the antennae, the angularly emarginate pronotum and the elytral venation. It bears some resemblance to *Micrixia* Fowler but can at once be distinguished by the narrower vertex and front and different elytral venation. It bears a superficial resemblance to *Brixia* but has not the elongated second joint of the antennae found in that genus.

228. *Oeclidius nanus* n. sp.

Closely resembling *Oecleus tenellus* Fowler, which doubtless pertains to this genus, but smaller. Length to the tip of the closed elytra $3\frac{1}{2}$ mm.

Vertex attaining the front line of the eyes, the base of the frontal carinae only projecting; deep black, the carinae white, hind margin of the eyes flavous. Front and clypeus testaceous, the strong lateral carinae of the front paler; ocelli black. Rostrum reaching the last ventral segment, infuscated at apex. Pronotum white with the disk behind the eyes black. Mesonotum black, the

and meta-pleura infuscated on their disk. Abdomen black the extreme apex and larger lateral angles fulvous; carinae pale; meso-margins slenderly pale. Legs soiled testaceous, the tarsal spines infuscated. Elytra faintly hyaline-smoky, the nervures fuscous, those at apex stronger, the transverse nervures more heavily infuscated, with a larger smoky spot behind the stigma and another beyond the apex of the clavus. Wings vitreous with fuscous veins.

Last ventral segment of the male with a deep oblong sinus including most of the genitalia; pygofer slightly emarginate below, the stiles ligulate and approximate, at their apex extended laterally, and truncate, their apex considerably exceeded by the narrow pygofer.

Described from numerous examples swept from weeds, grasses and low bushes at East San Diego, La Mesa, Lemon Grove, Lakeside and Alpine in San Diego County, California, during April and May 1913.

229. *Dictyssa marginepunctata* Melich. Of this nearly black species I have taken single examples at San Diego, Lakeside, Mussey's and in the Cuyamacas, May to October. Taken on *Adenostoma*.
230. *Dictyssa obliquua* Ball. May to August. Common. This and the following species are to be found on sage brush, *Artemisia*.
231. *Dictyssa mutata* Melich. Common in May.
232. *Dictyssa fenestrata* Ball. La Jolla, June 25th, 1913; three examples.

233. *Dictyssa transversa* n. sp.

Small, pale grey; Elytra hyaline, veined with brown and crossed by two brown vittae. Length $2\frac{1}{2}$ mm.

Cineros brown; front brown with whitish carinae boarded with darker. Vertex, pro- and mesonotum varied with darker and with the median carinae obscurely paler; abdomen dark brown. Elytra whitish hyaline, reticulated with brown nervures and crossed by two narrow transverse brown vittae; the anterior at about the middle and more or less interrupted, the posterior just beyond the tip of the clavus, entire but somewhat irregular. The front a little narrower than in *mutata*.

Described from numerous specimens mostly taken on the slopes of Mt. Soledad at La Jolla, from September to November. Also taken at Alpine in March and October and at Torrey Pines in June. The closely reticulated hyaline elytra and the small size will distinguish this species. Like most of its congeners it lives on *Artemisia*.

234. *Naethus fenestratus* Melich. Mussey's and Alpine, June to August. On oaks in the chaparral.
235. *Naethus nigronervosus* Melich. June to October. Abundant on scrub oaks.
236. *Dictyobia permutata* Uhler. Foster, May; one example.

237. *Dictyobia atra* n. sp.

Size and form of *permutata*; deep black with a few pale marks on the carinæ and sutures, the elytra areolate with whitish-hyaline. Length 4-5 mm.

Closely allied to *permutata* and presenting no really good structural characters. It may, however, be readily distinguished by its velvety black color, especially on the elytra, becoming somewhat fuscous on the head, pronotum and scutellum with the carinæ slenderly and interruptedly edged with pale; disk of the front on either side and the clypeus brownish and there is a row of pale points near the lateral carinæ of the front, sometimes obscure; meso- and metasternum whitish. Pleural pieces more or less edged with pale; tip of the coxæ, knees and tarsi in part also pale. Abdomen black, the genital pieces and adjoining segments edged with pale; extreme tip of the mesosternum conspicuously pale. Elytra closely reticulated, the pale vittæ obscured by black veinlets; none of the pale areoles materially larger as they are in *permutata*. These pale areoles form a diagonal vitta from the middle of the clavus to the costa behind the middle; this vitta is expanded on the costa and constricted or almost broken at the middle where it sends a branch consisting of two areoles toward the inner apical angle. There is a pale spot consisting of from four to five areoles on the costal margin almost midway between the end of the vitta and the base. The costæ and apical margins have a row of white marks which become more regular and oval around the apex, and within this row at apex are two or three larger white areoles. All these markings consist of small whitish-hyaline areoles separated by the black veinlets.

Described from numerous examples taken on the chaparral from May to July, particularly at Alpine. This may be but a color variety of *permutata* but it is as distinct as are the several species of *Dictyssa*.

238. *Danepteryx manca* Uhler. Abundant everywhere on Adenotoma and Artemesia. It comes to maturity about April 1st but specimens may occasionally be found throughout the autumn and winter. This species varies from a fulvous brown to dark fuscous and sometimes a dorsal stripe and the elytra are whitish or grey.

239. *Acanalonia mollicula* n. sp.

Form of *clypeata* nearly but with the elytra more narrowed toward their apex. Pale green or brownish with the sutural and apical margins slenderly brown. Length 5-6 mm.

Vertex as in *clypeata*, distinctly subangularly produced, a very little longer on the middle than next the eye, slightly depressed on the disk, the anterior edge rounded. Front prominent basally, transversely convex, broader than its greatest length, deeply, angularly excavated for one half its length to receive the base of the clypeus. Pronotum scarcely as long as the vertex and like that obsoletely carinate. Mesonotum with the lateral carinæ feeble but discernable. Elytra nearly half as wide as long, costa strongly

rounded on the basal one third where they are widest, then narrowing and more feebly arcuated to near the apex which is regularly arcuated to the apex of the clavus. Costal area basally nearly twice the width of the first discal areole; reticulating nervures fewer than in *clypeata*.

Color dull green, or brownish in immature examples, with the costal margin broadly paler at base becoming nearly brown about the apex and still darker on the commissure of the clavus. Legs and clypeus pale brown; eyes dark brown.

Described from six examples, representing both sexes, taken in the country back of San Diego, California, mostly on the hills along Mussey's Grade beyond Foster, August 4th and 5th, 1913; one from Alpine at an altitude of 2,000 feet on October 4th, and one from the Cuyamaca mountains on October 5th at an altitude of 5000 feet.

This is nearest *clypeata* but the larger size and rounded base of the clypeus will distinguish that species. These both have the apex of the head a little produced but less so than in *conica* Say.

240. *Ormenis infuscata* Stal. San Diego and Alpine, May to July.

Rhynchopteryx n. gen.

Allied to *Cyarda* but much shorter; elytra scarcely longer than broad, produced in an abrupt tail at apex of the clavus.

Head bluntly conical, the vertex flat, a little depressed along the disk, passage to the front rounded. Front transverse, ecarinate, but little wider than long; sides narrowly foliaceous-carinate, feebly arcuated, apical margin a little concave; clypeus ecarinate. Pronotum shorter than the vertex rounded before, feebly subangularly excavated behind. Mesonotum about one and one half times the length of the pronotum, obsoletely bicarinate. Elytra scarcely longer than broad, much inflated, valvate, meeting below from the cauda nearly to the middle; the curve of the costa almost a parabola in the male, more oblong in the female; commissural angle produced in an abrupt lanceolate process; base of the clavus strongly granulate and there are a few scattering granules in the apical areoles; commissural margin of the clavus smooth and depressed and connected with an oval depressed area at about the middle of its length. Neuration reticulate over most of the surface, the longitudinal nervures scarcely traceable; transverse nervures of the costal area more regular; ulnar tubercle and base of the clavus prominent. Hind tibiæ with one tooth.

Type *Rhynchopteryx caudata* n. sp.

Differs from *Cyarda* by the broader front, longer vertex, shorter pro- and mesonotum and the short gibbous caudate elytra.

241. *Rhynchopteryx caudata* n. sp.

Dull testaceous brown varied with fuscous. Length to the tip of the cauda 4½-5mm.

Front impressed at apex; vertex with an impressed point on either side near the eye; pronotum scarcely reaching the middle of the eye; apex of the clavus prominent, rounded, surpassing the

apical margin of the corium; cauda lanceolate, extending beyond the tip of the clavus for three or four times its width at that point.

Color dull yellowish or testaceous brown varied with darker or fuscous; base of the front darker, a broad brown vitta extends from near the apex of the vertex to the tip of the mesonotum, sometimes including a pale median line. Generally the elytra are darker above with a fuscous cloud on the base of the clavus and about three along the middle of the corium, and there are two rows of brown points toward the costa. Cauda fuscous with a pale mark behind the apex of the clavus. Abdomen fuscous with the edges of the segments paler. Tip of the rostrum black. Whole insect more or less pruinose at times.

Described from numerous examples swept from wild sunflowers at La Jolla, Calif., in August, 1913. Very distinct by its broad valvate elytra abruptly produced in a short tail at apex.

242. *Lamenia californica* Van D. Taken on willows at Lakeside and Musseys, May to August.
243. *Megamelus marginatus* Van D. Coronado, June.
244. *Pissonotus marginatus* Van D. San Diego, December. One male with black femora and tibiae.
245. *Pissonotus delicatus* Van D. April to June. Swept from a fine grass growing on low spots. This species was described from a pale female; they are mostly darker.
246. *Pissonotus frontalis* Crawf. Seven examples which seem to be correctly referred here were taken on grass growing along water courses from San Diego to Alpine. They differ from *aphidioides* in being a little smaller, in having the frontal carina forked on a line with the lower angle of the eyes, the branches parallel, closely approximate and obscure over the apex of the head; antennae black beneath, apex of the front narrowly pale. The styles of the male are not "spatulate" but are transverse at apex as figured by Mr. Crawford, with their inner angles acute and black. This genus is quite distinct from *Dicranotropis*.
247. *Stobaera tricarinata* Say. Common, throughout the year.
248. *Stobaera concinna* Stal. Grossmont, in low lands near the flume. May. Crawford unites this species, *affinis* and *minuta* with *tricarinata* but they are quite distinct.
249. *Stobaera minuta* Osb. Alpine and Torrey Pines, May and June. In these the orange dorsal vitta is conspicuous.

250. *Stobaera bilobata* n. sp.

Much smaller than *tricarinata* with the elytra fuscous marked with a bilobate costal area. Length $1\frac{1}{2}$ to 2 mm.; macropterous $2\frac{3}{4}$ mm to tip of the elytra.

Head narrower than in *tricarinata*; fovæ of the vertex deep; front narrow, much constricted above, the sides slightly concavely arcuated. Lateral carinae of the pronotum strongly arcuated, at-

taining the hind margin a little exterior to those of the mesonotum. Macropterous elytra a little shorter than those of *tricarinata*. Male styles divergent and curved, tapering gradually from base to near the apex where they are abruptly bent and narrowed to an acute point, the points meeting above an ovate opening. Anal tube without ventral prolongations on either side. Tibial spur narrower than in *tricarinata*, scarcely more than half the length of the first tarsal joint.

Color variable as in *tricarinata*, in fully matured examples testaceous tinged with yellowish on the head, above blackish. Front obscurely dotted with pale especially toward its base; vertex immaculate or the carinae paler, the eyes anteriorly pale or subcarinae. Pro- and meso-notum smoky or almost black, the carinae touched with paler. Tergum dusky either side or at times almost black. Elytra smoky becoming nearly black on the base of the clavus and the inner base of the corium and on the square stigma; costa broadly white, divided into two lobes at the stigma, the basal lobe sloping off to the base of the costa, the apical subtriangular, occupying about half the membrane; nervures concolorous, sparingly dotted with black; commissural nervure white broadly interrupted with black on the apex of the clavus. Tips of the tarsal claws black. In pale examples the elytral markings become indistinct.

Described from numerous examples representing both sexes, taken at Alpine, Mussey's and Torrey Pines from June to August. I have tried to identify this form with *nigripennis* Crawford but it seems to be entirely distinct. All the carinae are very sharply defined in this species. The Torrey Pines specimens were taken on Biglovia.

251. *Liburnia consimilis* Van D. April to June. Abundant along water courses.
252. *Liburnia lineatipes* Van D. Lakeside, May.
253. *Liburnia oclusa* Van D. Lakeside and La Mesa, May to June.

Family CICADIDAE

254. *Proarna crepitans* n. sp.

Allied to *maura*, smaller and darker than *valvata*. Length to tip of abdomen 22 mm. to tip of elytra 34 mm., alar expanse 62 mm.

Male: Head as wide as the anterior lobe of the pronotum; front strongly striated, without median sulcus. Sides of pronotum strongly sinuated; humeral angles less produced and more rounded than in *valvata*; anterior lobe more angled. Rostrum reaching onto the hind coxæ. Opercula large, rounded apically, the sides quite strongly sinuated. Last ventral segment long, subtriangular, its apex roundedly emarginate; valve shorter than the last ventral segment, ovate, apex somewhat compressed and almost emarginate, dorsal aspect of the genital segment produced in a prominent subacute tooth, shorter and more angled than in *valvata*.

Color black. Vertex with three obscure pale marks on the posterior margin, another on the antennal ledge and a transverse one on the base of the front superiorly; front pale or fulvous with