

PROCEEDINGS
OF THE
CALIFORNIA ACADEMY OF SCIENCES
FOURTH SERIES

Vol. XI, No. 10, pp. 111-134

OCTOBER 15, 1921

X

CHARACTERS OF SOME NEW SPECIES OF NORTH
AMERICAN HEMIPTEROUS INSECTS, WITH
ONE NEW GENUS

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1. *Brochymena hoppingi*, new species

Allied to *affinis* and with the same winged form of male genital segment, but with shorter head and shorter second antennal segment; nearly black with the pronotal margins roundedly crenulate. Length, male 12; female, 14 mm.

Male: Head slightly longer than broad across the eyes; cheeks overlapping tylus, sometimes almost contiguous at apex; subapical angle obtuse or rounded; second antennal segment two-thirds length of third. Sides of pronotum with about five rounded teeth on anterior lobe, the humeral lobe rounded anteriorly as in *affinis* but scarcely crenulate, humeral angle less prominent; surface deeply punctured and sculptured, the callosities more prominent than in *affinis*. Scutellum a little shorter, scarcely raised at base, median line subcarinate, surface more deeply pitted than in *affinis*. Elytra closely and quite evenly punctured with a few smooth calloused points. Rostrum passing middle of third ventral segment; venter nearly smooth with small, scattering obsolete punctures, sulcus shallow but obvious. Genital segment greatly extended either side as in *affinis*, their apices distinctly surpassing line of sixth abdominal segment, hind margin heavily bearded.

Color, mostly black, the testaceous interspaces less conspicuous, lateral crenulations of pronotum rufous; membrane with but few pale vermiculate marks; femora with pale subapical mark and median annulus more or less distinct; antennal incisures very narrowly rufous; connexivum with small marginal spots and the incisures rufous, the median line of the venter narrowly rufous.

Female: Larger with pale markings a little more conspicuous, especially near apex of scutellum and on venter.

Described from five male and five female examples taken by Mr. Ralph Hopping from beneath bark of a dead conifer

in Vallecito, Co., Colorado, April 18, 1919. This species is quite distinct by its almost uniform dull black color. It differs from all our other species except *affinis* by the great lateral extension of the male genital segment.

It affords me pleasure to dedicate this interesting form to my friend, Mr. Ralph Hopping, in recognition of the valuable services he has rendered to entomology by his researches in forest insects.

Holotype, male, No. 749, and *allotype*, female, No. 750 Mus. Calif. Acad. Sci. A *paratype*, male, has been deposited in the Canadian National collection at Ottawa, at the request of Mr. Hopping. Other *paratypes* are in the Academy's collection.

Type locality, Vallecito County, Colorado.

2. *Trichopepla pleyto*, new species

Allied to *californica* but with broader pronotum and finer, concolorous punctures. Length 6 mm.

Head as in *californica*, with the cheeks more narrowed at apex and the whole surface more finely evenly punctured. Pronotum broader and flatter than in its ally, its width $2\frac{1}{2}$ times its greatest length (two times in *californica*), surface closely, finely punctured, omitting an irregular, incomplete, transverse vitta between the humeri, the callosities smooth; sides broadly expanded, flattened or slightly reflexed anteriorly, more oblique than in *californica* and slightly more arcuate; scutellum and elytra closely punctate. Antennæ, segment II a fourth longer than III and subequal to IV, V longest, II to IV becoming consecutively thicker. Rostrum attaining base of hind coxæ; segment II equal to III and IV together; osteolar canal long, flat and obtuse at apex. Male genital segment deeply excavated, its lateral angles truncate; this sinus in *californica* more shallow and trisinate. Whole surface clothed with scattering long pale hairs.

Color, pale testaceous slightly varied with fulvous-brown, most conspicuous being a cloud on disk of corium, a short vitta either side on pronotum, a longer one within the lateral margins, a faint cloud either side on base of scutellum including a pale point, an indefinite vitta either side the pale median line of head and a narrow one within the margins of the cheeks. Usually there is a piceous cloud behind the calli and another on the anterior angle of pronotum. Beneath slightly clouded, but without distinct ventral vitta; tibiæ and tarsi a little darker; antennæ beyond middle of segment II blackish; membrane hyaline, showing the brown surface of the tergum; connexivum indistinctly alternated.

Described from two males taken at Pleyto, Monterey Co., California, May 21, 1920, one male from Bradley, Monterey Co., May 17, 1920, and four from Bryson, Monterey Co., May 19, 1920. The finer, almost concolorous punctures

turation and broader flattened form give this insect much the aspect of a *Carpocoris*, but it has the longer osteolar canal of *Trichopepla*. Stål says this genus has the canal short and abrupt but this is true only when compared with such genera as *Thyanta*. He fails to compare his genus with *Carpocoris* with which it is closely allied.

Holotype, male, No. 751, and *allotype*, female, No. 752, Mus. Calif. Acad. Sci. *Paratypes* also are in the Academy's collection.

Type locality, Pleyto, Monterey Co., Calif.

3. *Tollius quadratus*, new species

Allied to *setosus* but with the antennæ more slender, the hairs clothing the body longer, the colors darker and more uniform, and the male claspers very differently formed. Length 9 mm.

Head obviously shorter and less produced before the eyes than in *setosus*. Antennæ more slender throughout with the first segment less incrassate than in the allied form and the fourth segment proportionately longer. Long hairs on the face arranged in three longitudinal bands as in the two allied species. Pronotum shorter than in *setosus*, its basal width one-fifth greater than the median length. Rostrum more slender, the basal segment nearly attaining base of gula (distinctly shorter in *setosus*), its apex reaching to the intermediate coxæ. Male claspers nearly quadrate, perhaps a little longer than broad, their inner margin converging somewhat apically and right-angled at apex, and armed with an almost terete projection at their outer angle which is nearly as long as the apical width of the clasper and a little oblique.

Color, grayish-brown, sparsely mottled with fuscous; vertex, neck and callosities infuscated; median line and sides of the face and two divergent vittæ on the neck dull castaneous; scutellum blackish with the basal angles and apex pale; membrane faintly mottled; beneath and legs dark castaneous varied with paler; tibiae and tarsi, except at apex, pale; antennæ pale with first and fourth segments piceous beneath. Whole body evenly clothed with long stiff black hairs and minute pale pubescence.

Described from one male taken by R. Mead at Monmouth, Fresno Co., California, late in August, 1915, and kindly sent to me for study by Dr. H. M. Parshley. The very characteristic male claspers with the shorter head and more slender antennæ makes the recognition of the male of this species a simple matter.

Holotype, male, No. 753, Mus. Calif. Acad. Sci.

Type locality, Monmouth, Fresno Co., Calif.

4. *Ischnodemus macer*, new species

Allied to *præcultus*, a little longer with shorter rostrum and black sericeous venter; black, basal three segments of antennæ, rostrum and legs fulvo-testaceous; elytra short, fuscous with pale costa and membrane. Length 4-6 mm.

Antennæ but little shorter than median line of head and pronotum together; segment I little longer than wide, attaining apex of tylus; II as long as anterior width of pronotum; III a little shorter than II, fusiform. Rostrum arched in all specimens before me but apparently reaching nearly to anterior coxæ; segment IV not longer than II; anterior femora more expanded than in *falicus*, its inner margin ciliate and armed at apical fourth with a short sharp tooth. Pronotum with a broad transverse minutely punctured area before the hind margin and an obvious sulcate median line on the anterior lobe. Elytra abbreviated, tip of corium attaining apex of first tergal segment; membrane ovate, reaching to middle of second segment, veins obscure.

Color, black, nearly opaque, clothed with minute sericeous scale-like pubescence and some longer gray hairs; hind margin of pronotum sometimes tinged with castaneous; antennæ, rostrum and legs fulvo-testaceous or at times almost castaneous; apical segment of antennæ black; elytra fuscous with costa pale yellowish and membrane white; connexival margins faintly castaneous.

Described from one male and two female examples taken by Mr. A. Koebele at Nogales, Arizona, September, 1906. In my own collection is one male taken by the late Prof. F. H. Snow on the Santa Rita Mountains, Arizona, which differs only in having the hind margin of the pronotum castaneous. This specimen was listed by me as *præcultus* Dist. ?, in 1909 (Can. Ent., xli, p. 375) but it undoubtedly is distinct and specifically identical with those described above.

Holotype, male, No. 754, and *allotype*, female, No. 755, Mus. Calif. Acad. Sci. *Paratype* in Koebele collection.

Type locality, Nogales, Arizona.

5. *Plinthisus martini*, new species

Minute, piceous or black, moderately polished; hind margin of pronotum castaneous; antennæ at base, rostrum and legs, honey-yellow; brachypterous elytra truncate, with the corium and clavus connate, the latter confused punctate. Length scant 2 mm.

Head two-thirds as wide across the eyes as basal width of pronotum; eyes small, contiguous to pronotum; rostrum slender, attaining hind margin of metasternum; segment I attaining base of head, II and III subequal, each

longer than I. Antennæ slender; segment I scarcely surpassing apex of head, III and IV subequal, fusiform, and with the apex of II sparsely pilose. Pronotum about a fifth broader than long, moderately convex, minutely punctate near the hind margin; sides about parallel, very obsoletely sinuated posteriorly, carinate with a concentric groove beneath; anterior angles rounded. Elytra in type material brachypterous, truncate at apex, clavus and corium connate, their surface minutely confused punctate. Abdomen polished, minutely punctate; suture between third and fourth ventral segments straight and attaining margin of connexivum in female, slightly bent and becoming nearly obsolete on connexivum in male. Pleuræ polished, impunctate; osteolar canal slender, curved backward along hind margin of a broad opaque area. Anterior femora much dilated, unarmed, anterior tibiæ strongly curved and expanded at apex with the basal segment of its tarsus as long as the apical two together.

Color, head, pronotum and elytra piceous or almost black, the hind margin of pronotum slightly castaneous; abdomen brown, segment I and base of II paler; rostrum and legs honey-yellow.

Described from five males and three females taken at Redwood Canyon, Contra Costa Co., Calif., February 11, 1920, from nests of wood rats, by Mr. J. O. Martin, to whom this species is gratefully dedicated. In addition, two male paratypes were taken by Mr. Martin from Berkeley hills, August 28, 1919. This tiny species is interesting in showing a difference between the sexes in the course of the suture between the third and fourth ventral segments. I am unable to detect the posterior opaque spot on fourth segment but probably it is distant from anterior if present at all.

Holotype, male, No. 756, and *allotype*, female, No. 757, Mus. Calif. Acad. Sci.; *paratypes* also in the Academy's collection.

Type locality, Redwood Canyon, Contra Costa Co., Calif.

6. *Eremocoris semicinctus*, new species

Aspect of *obscurus* but larger and rougher punctate with long-setose hind tibiæ and concolorous base of elytra bordered only with pale in male, anterior femora with large teeth. Length 9 mm.

Male: Head a little longer than broad across the eyes; bucculæ not attaining base of antennæ, segment I of antennæ passing clypeus by two-thirds its length; II a third longer than I; III two-thirds of II; IV two-thirds of III; rostrum attaining base of hind coxæ, segment I slightly passing base of head, II fully equal to III and IV together; mesosternal groove deep, the angular elevated sides forming a roughened tubercle; osteolar canal long, a little less than right-angled. Pronotum large, parallel, its length and width subequal; constriction shallow, at basal fifth; anterior lobe long, unusually convex, obscurely punctate, posterior flat, coarsely punctured; collum

linear, delimited by a row of punctures; explanate margins straight, narrow except across the constriction; hind margin broadly excavated. Scutellum broader than in *obscurus*: elytral punctures smaller than is usual; membrane complete. Anterior femora strongly incrassate, subsulcate beneath, the anterior edge armed with two large teeth, the apical the larger, and about three small ones either side the apical; anterior tibiae much curved, armed with three teeth on the expanded apex, followed basally by about six small ones; hind tibiae armed with numerous long erect stiff pale hairs.

Color, piceous black, becoming paler or more castaneous on antennae, rostrum and legs, and slightly so on elytra, incisures of first antennal segment and base of second and third segments; tibiae and tarsi honey-yellow; margin of pronotum for a space at middle and narrow costa to beyond tip of scutellum whitish; extreme tip of scutellum and spot on membrane at apex of corium pale.

Female: Brachypterous, darker, more roughly punctured, especially on anterior lobe of pronotum.

Described from one male taken by Dr. E. C. Van Dyke, July 24, 1910, at Paradise Valley, Kings River Canyon, Fresno Co., Calif., at an elevation of 7,000 feet, one female taken by Dr. Van Dyke on Cypress Ridge, near Fairfax, Marin Co., Calif., May 29, 1920, and another female taken by the writer at Fairfax, May 11, 1919. This is a much larger species than, and very different looking from, the eastern *ferus*, our only other species having the hind tibiae setose in both sexes.

Holotype, male, No. 758, and *allotype*, No. 759, Mus. Calif. Acad. Sci.; a *paratype* also in the Academy collection.

Type locality, Paradise Valley, King's River Canyon, Fresno Co., Calif.

7. *Eremocoris dimidiatus*, new species

Allied to *ferus* but larger and more parallel in form; elytra castaneous-brown with base abruptly pale. Length 7mm.

Head shorter than in *ferus*, minutely punctured either side beyond eyes; segment II of antennae nearly twice as long as I; III three-fourths of II, IV a little shorter than III; rostrum reaching middle of metasternum, segment I just passing base of head, II shorter than III and IV together. Pronotum about as long as its humeral width; sides parallel with anterior angles rounded; constriction near basal fourth; anterior lobe polished, impunctate, strongly convex; collum narrow, linear, strongly differentiated by a line of punctures; posterior lobe flat, coarsely punctured; expanded sides rather broad. Scutellum long, depressed, remotely punctured and transversely wrinkled. Clavus with usual four rows of punctures, the second broken and connate with third at base; membrane reaching tip of abdomen in type; Carinate posterior margin of prosternum forming an angle or obtuse carina across base of median tooth which is much bent inward between anterior

coxae; mesosternal sulcus deep, the tuberculate sides rough; osteolar canal broad and angled, the apex shorter than in allied species. Anterior femora shallowly sulcate beneath, the anterior edge with one large tooth and about five small ones either side, the basal larger; hind tibiae with irregular long hairs along its inner face, the outer surface nearly smooth.

Color, black, dull on the scutellum but more or less polished elsewhere; tip of tylus, basal segment of antennae, rostrum and legs honey-yellow; segments II to IV of antennae and anterior femora darker or piceous; collum and posterior lobe of pronotum castaneous, the latter with humeral angles and two oblique discal rays blackish; expanded pronotal margins whitish edged with fuscous; elytra testaceous to tip of scutellum, then abruptly fuscous-brown veined with castaneous; membrane brown with base and veins pale, both outer and inner angles with a large oval white spot; hind margin of meta-pleurae, acetabulae and genital segment castaneous.

Described from one male taken by me at Sunset, Colorado, July 19, 1903, at an elevation of 8,000 feet. This species has a longer, more pointed and flatter scutellum than *obscurus* and the hind tibiae are ciliate within but bare in *obscurus* where also the pale basal portion of the elytra is shorter and does not include the clavus as it does in *dimidatus*. *E. ferus* has the anterior lobe of the pronotum flatter and opaque, the hind tibiae entirely ciliate and the scutellum shorter.

Holotype, male, in collection of the author.

Type locality, Sunset, Colorado.

8. *Eremocoris opacus*, new species

Shorter, broader and more opaque than in any of our other species. Length 6 mm.

Head a fourth broader across the eyes than long, shagreened but scarcely punctate, opaque at base, somewhat polished and clothed with appressed golden pubescence anterior to middle line of eyes. Basal segment of antennae surpassing clypeus by a little more than half its length, segment II one-half longer than I; III and IV subequal, a little shorter than II. Pronotum almost a third wider than long, regularly narrowed anteriorly much as in *ferus*, moderately constricted at basal third, anterior lobe flattened as in *ferus*, nearly impunctate, dull black; collum narrow and distinct; expanded margins a little broader than in *obscurus*, armed by a single row of distant long hairs; posterior lobe coarsely punctured, hind edge less deeply excavated. Elytra more opaque than in *obscurus*, the expanded costa only a little polished; membrane complete, attaining apex of abdomen; scutellum a fourth broader than long; anterior femora of male about as in *obscurus*, armed with two strong teeth, the apical the larger, and about three small ones either side the apical large tooth; anterior tibiae much curved and expanded at apex where there are two larger teeth and about four smaller ones placed basally from these; rostrum attaining middle of hind coxae; segment I passing base of head, II subequal to III and IV together; mesosternal sulcus shallow, its sides scarcely tumid; osteolar canal right-angled; male genital segment feebly bi-tuberculate with a broad shallow apical sulcus.

Color, dull black becoming piceous or castaneous and polished on the an-

tennæ, legs, rostrum and venter, paler on the rostrum, tibiæ and tarsi, darker on the anterior femora and venter; collum, posterior lobe of pronotum, clavus and corium behind tip of scutellum castaneous somewhat varied with obscure brown; expanded lateral margins of pronotum to the tumid humeri and base of costa and corium creamy white; membrane fuscous with a large oval white spot at apex of corium and the base and nervures paler; surface clothed with sparse, short appressed golden pubescence.

Described from one male taken by me at Keen Camp in the San Jacinto Mountains, at 4,800 feet, June 8, 1917, and one male taken by Dr. Charles von Geldern at Cisco, Calif., in July, 1911. The broad form, short scutellum and opaque surface will distinguish this among our species with smooth hind tibiæ.

Holotype, male, No. 760, Mus. Calif. Acad. Sci.; a *paratype*, male (von Geldern specimen) also in Academy's collection.

Type locality, Keen Camp, San Jacinto Mountains, Calif., at 4,800 feet.

9. *Megalocerœa koebelei*, new species

Paler than *debilis*, with antennæ and legs more hairy and the clypeus less prominent; pale testaceous with slender rosaceous line behind the eye attaining hind margin of pronotum, and a similar one inferiorly on the sides of pectus and venter. Length $6\frac{1}{2}$ to 7 mm. to tip of venter.

Head as wide across the eyes as long from the basal constriction; a little narrowed behind the eyes so the latter do not quite touch the anterior angle of pronotum; vertex smooth, convex, slightly tumid above base of clypeus; median sulcus obsolete beyond the middle; clypeus very prominent and convex with deep sutures. Antennæ inserted close to anterior angle of eye; segment I as long as pronotum, cylindrical, becoming a little thinner on apical fourth; II nearly three times length of I and considerably thinner; III and IV successively thinner, III two-thirds length of II, IV one-half of III, I pale pilose, the hairs equal to thickness of III, II to IV subequal. Rostrum reaching on to second ventral segment, segment I attaining base of anterior coxæ. Pronotum two-thirds as long as wide, coarsely punctate; sides with a short obtuse carina behind collum, posteriorly ecarinate; callosities forming a narrow transverse ruga either side; median line obscurely carinate. Scutellum rugose-punctate, smooth at apex; basal lobe narrowly exposed, smooth. Elytra surpassing the abdomen, coarsely punctate, becoming smooth toward the costa. Male genital segment subacutely triangular; sinistral clasper slender, curved upward and acute at apex, the dextral short, blunt.

Color, yellowish luteous, a little deeper on head and scutellum; a longitudinal vitta behind the eye, fading out toward hind margin of pronotum, and another inferiorly nearly attaining apex of abdomen rosaceous or dark sanguineous, basal angles, depressed margins, and sometimes the median line of scutellum, sanguineous; antennæ rufous or rufo-piceous; tip of tibiæ and the tarsi blackish; eyes black; tergum with a sanguineous lateral vitta.

Described from one male and two female examples taken by Mr. A. Koebele at Nogales, Arizona, in September, 1906. This species should perhaps not be considered as congeneric with *gracilis* as the latter has the head longer and more depressed and the margins of the pronotum laminate, but in these respects *debilis* is nearly intermediate and is apparently more typical of the genus.

Named for Mr. A. Koebele who collected the specimens on which the description is based.

Holotype, male, No. 761, and *allotype*, female, No. 762, Mus. Calif. Acad. Sci.; a *paratype* in collection of Mr. Koebele.

Type locality, Nogales, Arizona.

10. *Lygidea solivaga*, new species

Smaller and paler than *rubecula*; color and aspect of a small *Platylygus*; fulvo-testaceous, in male marked with piceous on head and pronotum and tinged with rufous on elytra. Length $5\frac{1}{2}$ to 6 mm.

Male: Head vertical, produced below the eye for a space equal to three-fourths length of eye; vertex much swollen, more prominent than in *rubecula*, polished, its base depressed and slenderly carinate; clypeus prominent, convex; rostrum somewhat surpassing hind coxæ. Pronotum shaped as in *rubecula*, the sides straight and ecarinate; surface more closely and finely punctate, Callosities prominent; scutellum minutely transversely rugose; vertex, pronotum and scutellum with a median smooth line indicated. Antennæ long, slender; segment I as long as head viewed from above; II $3\frac{1}{2}$ times as long as I and nearly as thick, a little more slender at base; III and IV slender, together two-thirds length of II. IV nearly one-half of III. Elytra closely, minutely punctate. Sinistral male clasper small, but little wider at base, almost terete; dextral larger than sinistral, its superior angle somewhat produced and acute. Upper surface clothed with short, appressed pale hairs, more apparent on elytra.

Color, above fulvo-testaceous, paler on pronotum anteriorly and scutellum; head more fulvous with an oval piceous cloud either side anteriorly between the eyes; pronotum becoming fuscous toward sides and base, callosities polished black, collum and slender hind edge whitish, median line pale; scutellum with a brown cloud either side the pale median line, becoming piceous on basal lobe; elytra obscurely mottled with dull rufous, the apex of cuneus rufous; membrane faintly fuliginous with indications of a paler area at apex and smaller one either side; antennæ fuscous, segment I and immediate base of II and III pale; beneath piceous, polished, prosternum, margin of the pleuræ, osteolar region, coxæ and disk of venter yellowish; legs irrorate with rufous or brown, the base of femora pale.

Female: Fulvo-testaceous, almost uniform, base of pronotum more or less infuscated; antennæ slightly darker toward apex.

Described from four males and three females taken on pines on the summit of Mt. Eddy, Siskiyou Co., Calif., July 28, 1918.

Holotype, male, No. 763, and *allotype*, female, No. 764, Mus. Calif. Acad. Sci.; *paratypes* also in Academy's collection.

Type locality, summit of Mount Eddy, Siskiyou County, Calif.

11. *Neoborus illitus*, new species

Aspect of *amænus scutellaris* but still darker; black, shaded and varied with fulvous and brown. Length $5\frac{1}{2}$ mm.

Head vertical, produced below the eye for a space equal to length of eye; eyes unusually narrow, but little wider above; vertex with a large polished paler spot either side; depressed base and a spot against either eye, punctate; base strongly carinate; disk with faint arcs and a median sulcus; clypeus smooth, polished, its base poorly distinguished; cheeks tumid; pronotum broader anteriorly and more convex than in *amænus*, shaped more as in *Lygus*; coarsely punctate, polished; callosities oblong, highly polished, sides carinate; scutellum with a few transverse dragged punctures; elytra closely punctate; rostrum attaining base of intermediate coxæ. Antennæ rather short; segment I a little shorter than distance between eyes; II slightly longer than width of head including eyes; III and IV together two-thirds length of II; IV two-fifths of III. Anterior angle of propleura below eye produced in a narrow rounded lobe above base of anterior coxæ. Sinistral clasper shaped as in *amænus*, strongly curved with a dorsal tooth at base.

Color, piceous black; collum and tumid inner cheeks polished whitish; vertex with a large fulvous spot either side; anterior submargin of pronotum, three rays on disk, and the slender hind edge yellowish; scutellum yellow, basal lobe black; elytra with a pale ray along median vein; base of cuneus broadly pale; membrane fuscous with whitish spot at apex of cuneus indicating a transverse band; prosternum, coxæ and disk of venter pale yellowish; antennæ fulvo-testaceous, infuscated on inner surface of segment I and base of II; legs pale with middle of femora and base of tibiæ fuscous. Pale colors more extended in female.

Described from two males and nine females taken on ash trees at Fairfax, Marin Co., Calif., May 25, 1919. In form of pronotum allied to *Lygus* but the genital and most other characters indicate relationship with *Neoborus*. It shows much variation in extent of pale colors.

Holotype, male, No. 765, and *allotype*, female, No. 766, Mus. Calif. Acad. Sci.; *paratypes* also in Academy's collection.

Type locality, Fairfax, Marin Co., Calif.

12. *Neoborus pacificus*, new species

Allied to *canadensis*; uniformly whitish testaceous, with a black point on either pronotal callosity. Length 5 mm.

Male: Head vertical, produced below the eye for a space nearly equal to length of eye; clypeus strongly incurved below; cheeks tumid; vertex coarsely punctured with a spot against the inner angle of either eye and a concentric mark either side of middle line of vertex, anteriorly smooth; basal carina very slender; pronotum regularly, coarsely punctured, more convex than in *canadensis*; callosities small, transverse; sides ecarinate; collum and slender hind edge calloused and whitish; scutellum sparsely punctate, the edges smooth; elytra closely uniformly punctured; rostrum attaining posterior coxæ. Antennæ short; segment I a little longer than width of vertex between eyes; II about three times length of I; III nearly as long as I; IV a little shorter. Sinistral clasper shaped as in allied species but with the incurved apex longer and more slender and the basal tooth more prominent.

Color, uniformly testaceous, a little tinged with yellow, the punctures on head and pronotum more fulvous, the pale areas on vertex, collum, hind margin of pronotum and sides of scutellum whitish; callosities with round black dot at proximal end; antennæ slightly infuscated beyond the basal segment; tip of tarsi and a point on intermediate and posterior knees black; beneath tinged with fulvous with coxæ and disk of venter whitish; membrane faintly enfumed with pale lines along veins and spot on exterior margin, the apex of areole with short brown line.

Female: Similar to male, without brown line at apex of areole.

Described from one male and two female examples taken at Corvallis, Oregon, July 31, 1900.

Holotype, male, No. 767, and *allotype*, female, No. 768, Mus. Calif. Acad. Sci.

Type locality, Corvallis, Oregon.

13. *Neoborus viscicolus*, new species

Allied to *pacificus*, but more tinged with fulvous and more uniformly punctured, without the smooth areas on the vertex found in that species. Length $3\frac{1}{2}$ to $4\frac{1}{2}$ mm.

Front and clypeus convex, more prominent than in *pacificus*, with deep impression at base of clypeus; vertex closely punctate with four flattish areas forming an arc anteriorly; front closely punctate with four smoother areas either side; cheeks as in *canadensis*, less prominent than in *pacificus*. Pronotum unusually convex, coarsely closely punctate, more finely about callosities, the latter prominent and distant but without indication of a longitudinal smooth line; scutellum tumidly convex and with the elytra coarsely and closely punctate; antennæ as in *pacificus*, but with segment II more slender; rostrum reaching hind margin of metasternum.

Color, a clearer and more fulvo-testaceous than in *canadensis*, almost uniform, a little paler beneath and somewhat darker on the head; proximal end of callosities in one example with a piceous point as in *canadensis*; membrane faintly, almost uniformly fuliginous.

Described from two female specimens taken by me from mistletoe, *Phoradendron villosum*, growing on oaks at Sisson, California, July 24 and 26, 1918. The more convex form and different puncturation of head will distinguish this species from both *canadensis* and *pacificus*.

The paratype is larger and tinged with green on the abdomen and may be somewhat immature.

Holotype, female, No. 769, Mus. Calif. Acad. Sci.; the *paratype* also in Academy's collection.

Type locality, Sisson, Siskiyou County, Calif.

14. *Dichrooscytus vittatus*, new species

Allied to *irroratus*, but with a fuscous vitta across apex of corium, an oblique mark on inner angle of clavus, longer elytra and different male genitalia. Length 5 mm.

Head nearly vertical, more convex than in *suspectus*, about as in *irroratus* but with the vertex much broader; basal width of vertex subequal to length of pronotum in female, a little less in male, basal carina very feeble, the surface before it scarcely depressed; eyes much smaller than in *irroratus*; antennæ long, reaching to apex of cuneus; segment II four times length of I, subequal to the corium; III twice as long as IV, these together three-fourths of II; rostrum attaining apex of hind coxæ. Pronotum twice wider than long, nearly smooth, callosities small, distant; costal margin of elytra a little arcuate posteriorly, clothed with rather long prostrate pubescence; cuneus a little longer than its basal width. Sinistral male clasper broad for this genus, the two branches of nearly equal width; the ventral attaining apex of genital segment, broad and rounded at apex; dextral clasper short, rounded, with a minute hook at its dorsal angle.

Color, yellowish or greenish, more or less marked with sanguineous on the vertex, anterior lobe of pronotum, middle of scutellum and disk of corium; apex of corium with a rather broad transverse fuscous vitta, becoming sanguineous toward the costa; at inner angle of clavus a fuscous cloud which may be extended basally or even wanting; cuneus conspicuously pale, sulphur-yellow, sanguineous at tip; membrane hyaline, slightly infuscated at apex with a darker spot at tip of cuneus and in apex of each areole. Beneath, with the antennæ, rostrum and legs including coxæ, paler or whitish; pleuræ and sides of venter washed with sanguineous; tip of rostrum and of tarsi black; tergum sanguineous or blackish; tibial spines short, brown.

Described from two male and seven female examples taken by me at Huntington Lake, Fresno Co., Calif., July 27, 1919, at an elevation of 8,000 feet, one female from Colestin, Oregon, July 31, 1918, four females from Cayton, Shasta Co., Calif., July 14, 1918, and one pair taken at Fallen Leaf Lake, Eldorado Co., Calif., July 30, 1915. This is the species listed by me as *irroratus* in my report on

the Hemiptera of Lake Tahoe, but that species differs in wanting the fuscous markings on the elytra, in its narrower vertex and in the much longer and more pointed male clasper. I possess one specimen of what seems to be the true *rufipennis* Fallén, taken by me at Ward, Colorado, July 18, 1893, at an elevation of 9,500 feet, so that species should again be placed in our fauna. This specimen from Ward is a male and has the uniform coloration, fuscous vestiture, narrower vertex with weak basal carina and the smaller size of *rufipennis*.

Holotype, male, No. 770, and *allotype*, female, No. 771, Mus. Calif. Acad. Sci.; *paratypes* in the Academy's collection and in that of the author.

Type locality, Huntington Lake, Fresno County, Calif.

15. *Coquillettia uhleri*, new species

Aspect of *insignis*, longer and more slender, pale portions of elytra pale yellow, membrane almost entirely fuscous. Length 7 mm.

Head about as in *insignis*, produced beyond eye for a space about equal to greatest length of eye and to length of first antennal segment, subequal to width of vertex between eyes. Pronotum as in *insignis*, a little more than one-half as long as its basal width; scutellum almost equilateral; elytra nearly parallel, scarcely widened at apex of corium, distinctly so in *insignis*; tip of abdomen scarcely surpassing apex of corium; second antennal segment equal to sutural margin of clavus; III subequal to II, IV twice length of I; rostrum attaining apex of mesosternum.

Color, rufo-brunneus, clearer red on scutellum, anterior portion of pronotum and legs, tip of tibiae and tarsi infuscated; elytra pale canary-yellow, the clavus, broad apex of corium, and extreme tip of cuneus, olive-brown; membrane uniformly infuscated with margin next cuneus narrowly white; antennæ and legs clothed with minute fuscous hairs; cheeks, coxæ and pleural sutures a clearer red.

Described from one male taken by Mr. Fordyce Grinnell at Pasadena, Calif., May 29, 1909. In this species the apical fuscous band of the corium is a little shorter than the width of the corium at that point with its basal margin oblique, nearly parallel with the apical margin of the corium and quite broadly connecting with the fuscous of the clavus. This is the "variety" mentioned by Dr. Uhler in his description of *insignis*.

Holotype, in collection of the author.

Type locality, Pasadena, California.

Sericophanes noctuans Knight, I have taken at Soboba Springs in the San Jacinto Mountains, California, and at Cayton, Shasta Co., Calif. Mr. Knight was certainly right in placing this genus near *Pilophorus*. Another genus wrongly placed in the Halodapini in my catalogue is *Dacera* which undoubtedly should go in Division Myrmecoraria near *Mimoceps*.

16. *Coquillettia foxi*, new species

Allied to *insignis*, but smaller, more slender and very distinct by the white elytra marked by a black band on apex of corium. Length scant 6 mm.

Head more porrect than in *insignis*, the gula and margin of bucculae in nearly the same plane, quite strongly angled in allied species; segment I of antennae scarcely longer than width of eye viewed from the side, less than width of vertex between eyes; II a little more than length of claval suture; length of pronotum about half its basal width; elytra distinctly but not strongly widened at apex of corium; tip of abdomen reaching nearly to apex of cuneus; rostrum attaining intermediate coxae.

Color, pale rufo-fulvous becoming clearer red on scutellum and beneath, the abdomen in the holotype piceous; antennae infuscated with segment I and base of II paler; elytra white tinged with yellow on clavus, costal margin and middle of cuneus; apex of corium with a broad band of deep black which is one-half longer than width of corium at that point and is cut almost square across anteriorly at the apex of the clavus; cuneus white shading to pale yellow next the black apex; membrane infuscated on its apical half; tibiae and tarsi more or less infuscated, the posterior more strongly so; rostrum piceous on apical half; abdomen piceous, reddish at base with a pale band separating these portions.

Described from one male taken by Mr. C. L. Fox at Olancha, Inyo Co., Calif., June 5, 1917, and one male taken by Mr. J. O. Martin on the Mohave Desert, California, June 9, 1918.

I take pleasure in dedicating this distinct and pretty species to Mr. C. L. Fox in recognition of his valuable services in enlarging our knowledge of the insect fauna of California.

Holotype, male, No. 772, Mus. Calif. Acad. Sci.; a *paratype* also in the Academy's collection.

Type locality, Olancha, Inyo County, Calif.

The four species known to me may be separated by the following key:

- Apex of corium and the clavus similarly colored. 1
 Apex of corium deep black, clavus white. *fesi*, new species.
 1. Apex of corium and clavus dark red, narrowly edged with black, base of corium silvery white. *mimetica* Osb.
 Apex of corium and clavus olive brown. 2
 2. Pale portions of corium and cuneus yellowish, elytra scarcely widened apically, apical band of corium oblique anteriorly. *uhleri*, new species
 Pale portions of corium and cuneus white, elytra distinctly widened apically, apical band of corium nearly transverse anteriorly. *insignis* Uhler.

Coquillettia balli Parshley is still unknown to me but probably is allied to *amænus* Uhler, a species I have never been able to recognize.

17. *Lopidea taurina*, new species

Aspect of *heidemanni*, but with a thicker head; bright sanguineous, darker along middle of elytra and on scutellum. Length 6 mm.

Surface moderately polished, sparsely clothed with very minute fuscous hairs; elytra scarcely wider apically; front unusually convex; base of vertex normally depressed. Antennæ long; segment I equal to width of vertex; II one-half longer than width of pronotum. Sides of pronotum feebly sinuated, the carinate edge extended entirely around the humeri to basal angle of scutellum; cuneus surpassing abdomen by more than half its length. Sinistral male clasper slender, the incurved apex forked; dextral clasper subterete for a distance of twice its width, then broadly bifurcate, the branches lying at a right angle with the stem and parallel with the apex of the genital segment, terete, acute at apex, and together forming three-fourths of a circle; dorsal spine of the pygofer abruptly incurved and very acute.

Color, bright sanguineous, becoming darker on head which has the usual black marks; callosities, antennæ, rostrum and legs black, pronotum posteriorly, scutellum and disk of the elytra more or less piceous or almost black; beneath largely infuscated or black, the propleura bright sanguineous; membrane black.

Described from five males and six females taken by me at Colestin, Jackson Co., Oregon, August 1, 1918. In this very distinct species the dextral male clasper has much the shape found in *robinia* but the stem is slender and the two curved horns are subequal.

Holotype, male, No. 773, and *allotype*, female No. 774, Mus. Calif. Acad. Sci.; *paratypes* also in Academy's collection.

Type locality, Colestin, Jackson County, Oregon.

18. *Lopidea bifurca*, new species

Allied to *marginata*; yellowish brown, becoming clearer on the costal margin and cuneus. Length $5\frac{1}{2}$ mm.

Surface a little polished, clothed with scattering minute white deciduous hairs; base of vertex flattened with an angular impression each side near the basal carina; sides of pronotum more sinuated with the humeral angles more prominent than in *marginata*; apical lobe of scutellum scarcely impressed at base; costa feebly arcuated. Sinistral male clasper broad, subtriangular, its abruptly incurved apex notched above and incised, with the ventral member blunt, the dorsal acute; dextral clasper very broad, slightly wider at apex, abruptly bent inward beyond the middle, the broad thin apex incised, having an acute tooth above and a squarish lobe below with its oblique apex recurved and minutely crenulate. In *marginata* the dextral clasper is longer and narrower, nearly parallel, with its apex oblique and entire or nearly so.

Color, pale fuscous-brown becoming yellowish along the costa and on anterior and lateral margins of pronotum; cuneus clear testaceous-yellow; membrane smoky, darker at base; head tinged with fulvous, base of vertex, a broad arcuate vitta either side on front and clypeus, black; antennæ black, rather slender, with basal segment much thicker; callosities black; legs pale brownish touched with fuscous on the femora, tip of tibiæ and tarsi; beneath varied with pale fuscous and brown, becoming whitish on the pleuræ and coxæ; rostrum varied with black.

Described from 40 examples taken by me from a whitish weed growing along the railroad tracks at Colestin, Jackson Co., Oregon, August 1, 1918. This species has an immature look but this material is fully pigmented. Its dull colors match well the flower heads on which it lives.

Holotype, male, No. 775, and *allotype*, female, No. 776, Mus. Calif. Acad. Sci; *paratypes* in Academy's collection

Type locality, Colestin, Jackson County, Oregon.

19. *Lopidea puella*, new species

Smaller than *marginata*; smoky brown, the costa narrowly and the cuneus entirely whitish. Length $4\frac{1}{2}$ mm.

Surface moderately polished, clothed with short black hairs and a few white scale-like hairs; front strongly convex, base of vertex feebly impressed; antennæ short, segment I half as long as width of vertex; segment II shorter than width of pronotum at base, angular impression between the callosities very deep; sides of pronotum feebly arcuated, the carinate edge carried around the rounded humeri to basal angles of scutellum; elytral costa scarcely arcuated. Sinistral male clasper broad, subovate; dextral subtriangular at base, its dorsal angle armed with an acute erect spine, apical member bent at right angles across the aperture of the segment, elongate triangular, obtuse, longitudinally furrowed.

Color, testaceous or smoky brown; callosities, antennæ and head black, the latter with the orbital margins and cheeks yellowish, sides and anterior mar-

gin of pronotum paler; narrow costal margins and cuneus whitish, the latter tinged with pink and edged with fuscous; membrane smoky black; legs blackish; lower surface blackish varied with reddish, the propleura whitish; gula and sternum black.

Described from three males taken by me at Bryson, Monterey Co., Calif., May 18, 1920. This is the smallest western species of *Lopidea* known to me and is quite distinct by its brown color with pale costal line and cuneus and the very distinct male genital characters.

Holotype, male, No. 777, Mus. Calif. Acad. Sci.; *paratypes* in collection of the Academy.

Type locality, Bryson, Monterey County, Calif.

20. *Lopidea discreta*, new species

A large dark red species allied to *nigridea*, but with the red coloring of *heidemanni*; male claspers much as in *nigridea*. Length $6\frac{1}{2}$ mm.

Surface moderately polished, sparsely clothed with oblique stiff black hairs as long as the thickness of the fourth antennal segment; segment II of antennæ a fifth longer than basal width of pronotum; sides of pronotum rectilinear. Sinistral male clasper small, linear, abruptly incurved at apex; dextral shaped much as in *nigridea* but broader and more sinuated ventrally with the vertical apical margin rectilinear, its lower (ventral) angle armed with two contiguous teeth as long as their combined width; sinus at base of long apical spur with a short but distinct tooth.

Color, sanguineous; basal margin of pronotum, scutellum, clavus and corium as far as alnar nervure much darker or even black; callosities, base of vertex, a double vitta on front, clypeus, sutures of cheeks, antennæ, rostrum, legs, pectus and venter in part black, the propleura bright red; membrane deep fuscous.

Described from 24 specimens representing both sexes, taken at Huntington Lake, Fresno Co., Calif., during the last week of July, at an elevation of 7,000 feet. They occurred in numbers on elderberry bushes, on a blue-flowered lupine, and on a species of *Vicia*. It might be best to consider this a race or variety of *nigridea*, but it seems to me its characters on the whole are of specific value.

Holotype, male, No. 778, and *allotype*, female, No. 779, Mus. Calif. Acad. Sci.; *paratypes* in Academy's collection.

Type locality, Huntington Lake, Fresno County, Calif.

21. *Lopidea nigridea hirta*, new subspecies

Broader than *nigridea*, darker in color and more opaque and hairy with the antennæ thicker. Length $4\frac{1}{2}$ mm.

Surface opaque, dull, clothed with short, stiff, black hairs and a few minute white scale-like hairs intermixed; costa quite distinctly arcuated; sides of pronotum moderately sinuated; segment II of antennæ about equal to basal width of pronotum; base of vertex feebly impressed. Dextral male clasper longer and slenderer than in *nigridea*, its apical margin minutely but quite evenly crenulate, not at all produced and laciniate at its ventral angle.

Color, dark brownish sanguineous, becoming clearer red on the pronotum and costal margin of corium, the cuneus still lighter sanguineous; head marked as in typical form but less distinctly; callosities black.

Described from 29 examples representing both sexes, taken by me on San Miguel Island, Santa Barbara Co., Calif., May 20, 1919. The dark, opaque and hairy surface will best distinguish this subspecies.

Holotype, male, No. 780, and *allotype*, female, No. 781, Mus. Calif. Acad. Sci.; *paratypes* in collection of Academy.

Type locality, San Miguel Island, Santa Barbara County, Calif.

Under the name *nigridea* Uhler, I have placed a species commonly found on bushes in San Diego County and elsewhere in California, during May and June, which agrees exactly with Uhler's description except that segment II of the antennæ is as long as from the tip of scutellum to front of eyes, thus assuming a clerical error in the original description. In this species the dextral male clasper is broad, convex and strongly arched across the aperture of the genital segment, with its apex obliquely produced in a long acute spur which attains the dorsal line of the segment and is minutely serrated exteriorly; interior to the base of this spur is a shorter spine or tooth, sometimes minute.

22. *Ceratopsus apicatus*, new species

Closely allied to *fasciatus* Uhl., but with thicker antennæ, a pale band across apex of corium as well as one at apex of scutellum, a unicolorous membrane and darker legs. Length $4\frac{1}{2}$ to 5 mm.

Male: Head slightly more porrect and vertex more convex than in *fasciatus*; antennæ stouter throughout; segment II as long as III and IV together. Scutellum proportionately narrower than in *fasciatus*. Rostrum attaining apex of intermediate coxæ; segment I attaining base of head. Apex of

genital segment strongly subacutely produced, a little surpassing the valve; sinistral notch deep, abrupt, dextral shallow, sinuate; sinistral clasper small, forming a lobe at fundus of sinistral notch, dextral inconspicuous; plates long, produced for more than twice their basal width, rounded at apex. In *fasciatus* the ventral genital segment is short, truncate, not nearly attaining apex of valve; sinistral notch scarcely indicated, sinistral clasper long, acute at apex and curved to conform with apical margin of valve; dextral clasper ligulate, more than twice longer than wide, the plates short and subtriangular in form, with their apex rounded.

Color, castaneous-brown becoming paler on the head, pronotum and propleura and fuscous on antennæ beyond basal segment: elytra fuscous with a broad pale transverse band at apex of scutellum and a narrower one across apex of corium, leaving the intermediate fuscous band a little wider than basal pale band; cuneus and abdomen polished piceous black; membrane deep fuscous with black veins, faintly marked with a paler spot at apex of cuneus; in *fasciatus* there is a conspicuous pale band against apical margin of cuneus. Legs castaneous.

Female: Broader behind, as in *fasciatus*, the color paler anteriorly, sometimes with the corium almost entirely pale. In both sexes the upper surface is closely minutely punctured and clothed with short appressed pale hairs.

Described from 58 examples representing both sexes, taken from pine trees at Berkeley, Calif., September 29 and October 14, 1919, by Mr. J. O. Martin, and two females taken by me, one at Hoberg's Retreat, Lake Co., Calif., August 2, 1916, the other at Cayton, Shasta Co., Calif., July 15, 1918. This species could easily be confused with *fasciatus* but the thicker and darker antennæ, dark legs, black cuneus, darker membrane, narrower fuscous band on base of elytra, additional pale band at apex of corium and especially the very distinct male genital characters will distinguish the present species.

Holotype, male, No. 782, and *allotype*, female, No. 783, Mus. Calif. Acad. Sci.; and *paratypes*, all presented to the Academy by Mr. Martin.

Type locality, Berkeley, Calif.

23. *Orthotylus dodgei*, new species

Closely allied to *pacificus* Van D., separable by the blacker membrane and very different male genitalia; black, sides and abbreviated median vitta of pronotum, margins of elytra, and legs, yellowish. Length 6 mm.

Male: Head as in *pacificus*, the vertex flattened before the prominent basal carina; clypeus very prominent; segment II of antennæ rather longer than from tip of scutellum to apex of head, three times length of I. Pronotum as in *pacificus*, one-half wider than long; sides straight, carinate; surface transversely rugose behind the prominent callosities. Apex of abdomen attaining middle of cuneus. Surface clothed with rather long scattering pale hairs. Sinistral male clasper long, straight, somewhat clavate; dextral equally

long, parallel sided, flat, wider than hind tibiae, somewhat incurved and sinuated with its apex abruptly bent upward in the same plane and truncate.

Color, black; a line next eye from antennæ to base of vertex, interrupted a little before the base, a short line on anterior edge of pronotum, a broader vitta on basal lobe of pronotum and a similar one on each humeral margin, costal margin of corium, cuneus, rostrum and legs yellowish; knees with a dusky spot; apex of tarsi black; genital pieces partly pale. Female paler, with the antennæ mostly pale.

Described from two male and six female examples taken by me at Santa Cruz, Calif., June 3, 1919. This species could scarcely be distinguished from *pacificus* but for the very distinct male genitalia. *Orthotylus pacificus*, described from Victoria, B. C., I took at Northbend, Wash., July 9, 1920.

I am dedicating the present species to my friend Mr. E. A. Dodge of Santa Cruz, in recognition of his efficient work in the cause of entomology and of his courteous assistance to students of insects whose paths of effort are fortunate enough to meet his.

Holotype, male, No. 784, and *allotype*, female, No. 785, Mus. Calif. Acad. Sci.; *paratypes* also in the Academy's collection.

Type locality, Santa Cruz, Calif.

24. *Orthotylus marginatus* Uhler

A more careful study of my material in this species and *dorsalis*, in connection with additional specimens, has made it necessary to correct my former assignment of the males of these species. In his description of *Cyrtorrhinus marginatus*, Dr. Uhler has confused two species, a black form, margined with pale but wanting the pale median vitta on the pronotum and scutellum, and the species described below as *serus* in which this vitta is present and which Dr. Uhler mentions as a variation of *marginatus*. In my monograph of 1916, I placed this as a variation of *dorsalis*, and by some mishap, transferred the figure and description of the male claspers in these two species. The dextral clasper of *marginatus*, given as *dorsalis* (fig. 15), has its basal lobe too pointed. Better cuts of the claspers of these and related species will be published later. The true *Orthotylus marginatus* I have from Quinze Lake, Quebec, August 15, 1907,

and Hamburg, N. Y., June 14, 1902. Like *dorsalis*, it is a willow feeder.

25. *Orthotylus serus*, new species

Closely related to *marginatus* Uhler, differing in having a pale median vitta from front of pronotum to tip of scutellum, the inner limit of the pale costal vitta straight, and in the form of the male claspers. Length 6 mm.

Vertex distinctly flattened before the obtuse basal carina, this flattening in *marginatus* very feeble; clypeus little prominent with feeble impression at its base; eyes, viewed from the side, reaching well toward the gula, in *marginatus* distinctly smaller. Pronotum as in *marginatus*, its length three-fifths its basal width; the callosities connected by an elevated area anteriorly which is scarcely apparent in *marginatus*; the posterior lobe nearly smooth, distinctly shagreened in *marginatus*. Rostrum attaining the hind coxæ, in *marginatus* not surpassing the intermediate. Dextral male clasper forming two squarish denticulate lobes, the ventral produced for about twice its width, with a truncate apex, its upper angle subacutely prominent; basal lobe squarish, broader than long and oblique at apex; sinistral clasper triangularly enlarged at tip with its apex obliquely truncate and its upper angle subacute; no basal appendage discernable.

Color, black and yellowish testaceous; above black, lateral and posterior margins of the vertex, broad median vitta from front edge of pronotum to tip of scutellum, and broad costal vitta on the elytra pale, the latter with a straight inner margin and enclosing toward its apex an obscure smoky cloud; cuneus fulvo-testaceous with a large fuscous cloud against its inner margin; membrane deep smoky with dark nervures and a pale spot at apex of cuneus, sometimes much reduced. Whole upper surface clothed with long pale decumbent hairs. Beneath black with a broad pale vitta, extended along the sternum to tip of venter in female; genital pieces largely pale; legs dusky testaceous with the tarsi embrowned; rostrum pale, black at tip; antennæ black.

Described from three male and ten female examples taken by me as follows: Hamburg, N. Y., July 1, 1911; Gowanda, N. Y., August 2, 1907; Colden, N. Y., July 7, 1901; Salamanca, N. Y., July 24, 1911. It lives on thorn bushes (*Cratægus*, species).

Holotype, male, and *allotype*, female, in collection of the author; *paratypes* in his collection and in that of the California Academy of Sciences.

Type locality, Hamburg, N. Y.

Genus *Strophopoda*, new genus

Aspect of a small *Plagiognathus*, but with an obtuse facial angle; allied to *Chlamydatus* with a narrower head and a distinct suture at base of tylus.

Head nearly vertical, with the eyes two-thirds basal width of pronotum, distinctly wider than median length of pronotum; vertex swollen, separated from base of clypeus by a distinct incised line; facial angle a right angle; eyes vertical, oval; gula short; rostrum passing intermediate coxæ, segment I reaching to base of head. Antennæ inserted near apical angle of eye; segment I attaining apex of clypeus; II as long as width of head with eyes, linear, a little thickened in male; III and IV together equal to II, III a third longer than IV. Pronotum transverse, its length one-half its basal width and equal to its apical width, sides straight or nearly so. Elytra long, almost parallel in male, the costa a little arcuated in female; tip of cuneus attaining apex of abdomen. Posterior femora much thickened; third segment of hind tarsi not longer than II, the suture very obscure. Surface smooth, polished, thickly clothed with short pale deciduous hairs.

Type of genus, *Strophopoda aprica*, new species. This genus was included in my keys to the genera of the Miridæ, 1916, but not before validated by description of a species.

26. *Strophopoda aprica*, new species

Black, polished, short pale-pubescent; antennæ and legs in part whitish, tip of cuneus and a connecting spot on membrane white. Length $2\frac{1}{2}$ mm.

Characters as given for the genus; surface impunctate but minutely shagreened; male genital segment narrow, conical; sinistral clasper incurved and acute as in *Chlamydatus suavis*, the dextral broad, curved, truncate at apex.

Color, deep black, polished; base of vertex with a pale median dot; antennæ pale yellowish in female, somewhat infuscated in male; segment I black, white at apex; II and III narrowly fuscous at base, more apparent in female; edge of bucculæ narrowly white; segment II of rostrum fuscous brown; apex of cuneus and a line on its basal fracture white; membrane with a white spot at tip of cuneus; femora black, tipped with white; tibiæ white, with spines and large dots at their bases black; tarsi brown.

Described from numerous examples of both sexes taken at various places in San Diego Co., Calif., from sea level to 3500 feet in the Cuyamaca Mountains, from April to October.

Holotype, male, and *allotype*, female, in collection of the author; *paratypes* in his collection and that of the California Academy of Sciences.

Type locality, San Diego County, Calif.

27. *Chlamydatus monilipes*, new species

Allied to *suavis* Reut., but with the antennæ mostly pale and the tibiæ dotted. Length $2\frac{1}{2}$ mm.

Head with eyes about as wide as base of pronotum; vertex distinctly more convex than in *suavis*, with a nearly obsolete median sulcus; surface more dull and clothed with a shorter pubescence than in its ally. Male claspers formed as in *suavis*, the sinistral shorter and thicker.

Color, deep black, moderately polished; membrane uniformly infuscated; antennæ pale yellowish white becoming dusky on segments III and IV, basal two-thirds of I and narrow base of II black; femora black, tipped with white; tibiæ white strongly dotted with black at base of the black spines; tarsi whitish, the apical segment and claws blackish.

Described from seven males and three females taken by me at Alpine, San Diego Co., Calif., April 22, 1913. More recently Mr. Ralph Hopping has sent me a series of 15 taken by him at Mohave, Calif., May 3, 1919. Easily recognized by the pale antennæ and white legs with black femora and tibial dots. In this and the allied species the second antennal segment is thicker in the male.

Holotype, male, from Alpine, and *allotype*, female, in collection of author; *paratypes* in his collection and that of the California Academy of Sciences.

Type locality, Alpine, San Diego County Calif.

28. *Merragata slossoni*, new species

Narrower and paler than *hebroides* White, with the antennæ and legs more slender and less hirsute, apex of scutellum bifid. Length $1\frac{3}{4}$ mm.

Head more tumid on base of vertex than in *hebroides*, elevated above line of the ocelli by more than twice the diameter of the ocelli, the contour more convex when viewed from the side; above with a shallow median sulcus; antennæ nearly twice length of head as seen from above, segments I and II equal, I almost attaining apex of head, III shorter, IV fusiform, considerably longer and thicker than II but notably thinner than in *hebroides*; rostrum passing hind coxæ, segment I attaining anterior line of eye, II the anterior line of front coxæ, and III the middle of the mesosternum. Pronotum hardly twice wider than long, deeply constricted between the lobes, the median sulcus deep and passing anterior one-half of posterior lobe; collar distinct, distinguished behind by a line of deep punctures, a similar line following the posterior submargin, otherwise impunctate. Scutellum with a distinct median carina basally, its apex obtusely bifid.

Color, pale castaneous becoming almost black on scutellum, vertex and meso- and meta-pleuræ, the middle of vertex broadly, and a large lobate spot covering much of the posterior lobe of pronotum, paler or fulvo-testaceous. Elytra pale at base, infuscated toward apex, claval area entirely and an interstitial line on the corium white; membrane pale fuscous with four white spots, one basal, one elongated, at apex, and one either side at apex of corium; antennæ and legs pale yellowish testaceous, the apical segment of the former darker; apex of tarsi infuscated, the claws pale; rostrum pale becoming blackish at apex; pronotum sparsely clothed with soft pale hairs; thickened portion of corium and vertex with soft white pubescence, the depressions on pronotum and the pectus pruinose.

Described from one male taken at Biscayne Bay, Florida, by Mrs. Annie Trumbull Slosson, to whom I take pleasure in dedicating the species. The collection of the California Academy of Sciences contains four specimens of a species that agrees in every particular with Champion's description of *hebroides* White, taken on the hills back of Oakland, Calif., September 27, 1908. *M. foveata* Drake, is very close to *hebroides* but the white marks on the membrane are narrower, the general color is darker and the sulcus on the vertex has an obvious median longitudinal ridge. *M. brunnea* Drake is paler with the membrane almost uniformly whitish.

Holotype, male, in collection of the author.

Type locality, Biscayne Bay, Florida.

29. *Neæthus fragosus*, new species

Related to *grossus*; longer with the front distinctly longer than broad and the costa much less arcuated toward the base; elytra subopaque as in *grossus*, the veins more or less infuscated. Length, male 5, female 6 mm.

Vertex transverse, oblong, on the median line a little more than one-half the length of the pronotum, its anterior margin very obscurely angled; front oblong, slightly wider at apex, its greatest length a fifth more than the width; clypeus with an obtuse median keel. Pronotum strongly produced anteriorly, much more so than in *vitripennis*. Elytra longer and narrower, than in *grossus*, in female $3\frac{1}{2}$ by 5 mm., in *grossus* these measurements are $2\frac{1}{2}$ by $3\frac{1}{2}$ mm., opaque or slightly translucent, not at all transparent as in *vitripennis*; wings nearly as long as the elytra. Genital plates of male longer and more narrowed at the obtusely angled apex than in *grossus*.

Color, yellowish or greenish testaceous, in male usually becoming brownish on vertex and face, with a paler area on apex of front; veins of elytra sometimes distinctly infuscated, especially in the male.

Described from six males and five females taken by me on the summit of Mt. Wilson near the observatory, October 18, 1917. This species is longer and narrower than *grossus*, with the females distinctly larger and paler than the males. In none of these types is there suggestion of the maculation found in typical *grossus*.

Holotype, male, No. 786, and *allotype*, female, No. 787, Mus. Calif. Acad. Sci.; *paratypes* also in the Academy's collection.

Type locality, summit of Mount Wilson, Pasadena, Calif.

PROCEEDINGS
OF THE
CALIFORNIA ACADEMY OF SCIENCES
FOURTH SERIES

Vol. XI, No. 11, pp. 135-136

OCTOBER 15, 1921

XI

OUR NORTH AMERICAN SPECIES OF STRONGY-
LOCORIS (HEMIPTERA)

BY

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1. *Strongylocoris stygicus* Say

There can, I think, be no question as to the identity of Say's species. In this, as in the allied forms, the antennæ of the female are pale, with the base of segment I and extreme base and apex of II, black, and III and IV dusky. I have taken this species at Montreal, Canada, Portland, Me., Wellesley, Mass., and Buffalo, N. Y., and have received it from Quinze Lake, Quebec, and Washington, D. C.

2. *Strongylocoris atratus* Uhler

Closely allied to *stygicus*, but distinguishable by the shorter second segment of the female antennæ and the form of the male clasper. The apex of the dextral clasper shows considerable variation in the length of the "comb teeth" but all conditions seem to occur connecting the extremes, indicating intraspecific variation only. This species averages larger than *stygicus*. I have it from Ottawa, Ont., Montreal, Canada, Bretton Woods, N. H., Yaphank, N. Y., Ft. Collins, Colo., Cloudcroft, N. Mex., and San Diego, Calif., and in the collection of the California Academy of Sciences are specimens from several localities in California south of Sacramento. An examination of Uhler's types shows that

they were males and that the tibiæ were brown rather than black. The females of this species have the antennæ and legs marked with pale as in *stygicus*, although here the hind tibiæ are frequently brown as in the males.

3. *Strongylocoris robustus* Uhler

In this species the size and form are about as in corresponding sexes of *stygicus*, but the polished convex face will at once distinguish it. Here the dextral male clasper has the median angle obtuse, not forming a tooth, and the upper apical tooth of the fan-shaped apex greatly developed, the balance of the fan-shaped apex being represented by about two small teeth situated about midway between the median angle and the apex. My specimens are from Denver and Boulder, Colo., and in the collection of the California Academy of Sciences are specimens from Coolestin, Oregon, McCloud, Siskiyou Co., and El Cajon and San Diego, in San Diego Co., California.

4. *Strongylocoris croceipes* Uhler

This species is very distinct by its hairy upper surface and orange colored legs. I have seen it only from San Diego Co., California, and American Fork, Utah.

- | | |
|--|---|
| Front flattened, minutely rugulose-punctate. | 1 |
| Front convex, polished. | 2 |
1. Segment II of female antennæ a fifth longer than width of head across the eyes; dextral male clasper with median angle produced in a long tooth, thus forming a semicircle with the incurved angle of the fan-shaped apex. *stygicus* Say.
 Segment II of female antennæ not longer than width of head across the eyes; dextral male clasper with median angle obtuse or produced in a short tooth thus forming a shorter arc with the fan-shaped apex; the latter quadrifid, usually forming four acute teeth, the dorsal much the longer. *atratus* Uhler.
 2. Legs entirely orange; surface clothed with sparse long white sub-erect hair; base of vertex strongly carinate. *croceipes* Uhler.
 Femora, at least, black; surface nude, without long pale pubescence; base of vertex slenderly carinate. *robustus* Uhler

PROCEEDINGS
OF THE
CALIFORNIA ACADEMY OF SCIENCES

FOURTH SERIES

Vol. XI, No. 12, pp. 137-144

OCTOBER 15, 1921

XII

CHARACTERS OF EIGHT NEW SPECIES OF NORTH
AMERICAN ANTHOCORIDÆ OR FLOWER BUGS

BY

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1. *Xylocoris umbrinus*, new species

Allied to *cursorians* Fallén, but proportionately broader as in *discalis* Van D.; deep polished black, antennæ rostrum, corium and tibiæ brown or piceous. Length 3 mm.

Head a little shorter and broader than in *sordidus*, about as long as wide including the eyes, polished. Antennal seg. I scarcely attaining apex of head; III and IV equal, each but little shorter than II. Rostrum long, apparently nearly attaining intermediate coxæ. Pronotum as in *discalis*, highly polished, the lobes scarcely distinguished, the posterior minutely aciculate, not transversely impressed; sides straight, rounded to anterior angles, obtusely carinate, this carina reaching to middle of collum. Scutellum nearly flat, highly polished, feebly rugose posteriorly. Elytra uniformly polished, behind the fracture narrower than abdomen; costa feebly arcuate behind the middle of corium, surface with scattering minute pale hairs. Ostiolar canal shorter than in *discalis* and the *sordidus* group of species, bent toward, but not quite attaining, the anterior margin of the metapleura, the angle rounded, apex subacute. Hind tibiæ pale-pubescent, without longer soft hairs.

Color, deep shining black, basal two antennal segments and femora piceous-black; apical two segments of antennæ, rostrum and tibiæ pale piceous or brownish; elytra piceous-brown, clavus, or at least its inner margin, and the cuneus darker; membrane hyaline-white.

Described from one male taken by me at Bryson, Monterey Co., Calif., April 23, 1917, and one female taken from under the bark of an old fir log near Cayton, Shasta Co., Calif., July 14, 1918.

Holotype, male, No. 788, and *allotype*, female, No. 789, Mus. Calif. Acad. Sci.

Type locality, Bryson, Monterey Co., Calif.

Xylocoris californicus Reut., I have taken at Cayton, Shasta Co., Calif., and at Bryson, Monterey Co., Calif. It may be distinguished by the broad lunate and striate area anterior to the ostiolar canal and whitish elytra with the inner and commissural margins of the clavus, apex of the embolium and the cuneus, except its inner angle, piceous. *X. flaccidus* and *discalis* have the ostiolar canal long and curved, with its acute apex at the basal margin of the metapleura, and pertain to the section of the genus with *sordidus* Reut., while *umbrinus* has this canal shorter and more obtuse at apex, thus allying it with *cursitans* Fall.

2. *Anthocoris tristis*, new species

Allied to *dentipes* Champ., but larger, with the elytra, except the clavus, polished; antennæ, legs and base of elytra, deep piceous. Length $4\frac{1}{2}$ mm.

Head shorter, scarcely longer than median line of pronotum; surface minutely shagreened. Antennæ short, stout, scarcely longer than basal width of pronotum; seg. I reaching apex of head; II as long as width across the eyes; III and IV equal, together distinctly longer than II. Pronotum broad, strongly impressed across the disk; sides feebly sinuated, slenderly carinate as far as the collum, the latter broad; posterior lobe minutely rugose, the region of the callosities nearly smooth; scutellum smooth. Elytra rather narrow, polished, the clavus only opaque; membrane much exceeding the abdomen; outer vein indistinct, the others obsolete or nearly so. Rostrum hardly attaining the anterior coxæ; seg. I scarcely longer than broad; III but little longer than the width of the collum. Ostiolar canal short, broad, its hind margin broadly curved, the anterior slightly curved anteriorly. Beneath polished, the prosternum opaque and strongly rugose; ventral segments punctate becoming smooth along the hind margins; anterior femora with a small tubercle at apical third.

Color, deep black, the antennæ, rostrum, legs and elytra to apex of corium more or less piceous with the embolium paler; upper surface sparsely clothed with soft white pubescence; basal third of membrane obscurely whitish.

Described from one female taken in Yosemite Valley, California, in June, 1916, by Mr. Walter M. Giffard. The larger size, polished corium and embolium and the shorter third segment of the antennæ will most readily distinguish this form from *dentipes* Champ.

Holotype, female, No. 790, Mus. Calif. Acad. Sci.

Type locality, Yosemite Valley, Calif.

3. *Anthocoris dimidiatus*, new species

Allied to *nigripes*; polished black, second antennal segment, except its apex, and legs, castaneous; elytra yellowish testaceous as far as apex of clavus; basal half of membrane white; corium entirely opaque or subopaque. Length 3 mm.

Head as long as pronotum and basal lobe of scutellum combined, its length before the ocelli a little greater than width across the eyes; sides parallel to a point nearly one-half distance from front of eye to apex, then suddenly constricted and again somewhat expanded at tip; this character, common to all allied species, is more pronounced here. Antennæ slender, as long as head, pronotum and scutellum as far as the transverse depression; basal segment not attaining apex of head; II as long as head; III and IV subequal, fusiform, a little thinner than II. Rostrum reaching to middle of mesosternum; seg. I attaining anterior line of eye; II touching anterior coxæ. Prosternum deeply impressed across the middle; sides sinuated, the carinate edges not encroaching upon the collum; surface minutely rastrate punctate, the prominent callosities nearly smooth. Posterior lobe of scutellum minutely rastrate. Elytra subopaque over their whole surface, the thickened apical margin of the cuneus only polished; membranal veins moderately and about equally prominent, the inner pair scarcely approaching at base, the outer a little arcuate. Venter very minutely rastrate with base of segments polished.

Color, deep black; femora, apex of second antennal segment and the third and fourth piceous brown; basal two thirds of second antennal segment and tibiae honey-yellow. Elytra yellowish white as far as tip of clavus, becoming black beyond that point, with a pale mark on the thickened apex of the embolium; basal half of membrane milky white, the apical blackish; surface clothed with a few soft pale hairs.

Described from one female taken by me on the Felch Ranch, near Cayton, Calif., July 15, 1918. The long antennæ would seem to ally this species with *sylvestris*, but the opaque elytra and distinct membranal veins indicate closer relationship with *nigripes*, and will serve to distinguish it from *whitei* which it slightly resembles. With the type were taken two immature females, one winged but teneral, the other a nymph with the abdomen broad oval and the elytra short, attaining middle of third tergal segment, black with the scutellar margin of clavus castaneous, base of corium and embolium and narrow membrane white.

Holotype, female, No. 791, Mus. Calif. Acad. Sci.

Type locality, Felch Ranch, near Cayton, Shasta Co., Calif.

4. *Lyctocoris doris*, new species

Allied to *campestris* and belonging to that section of the genus; more elongated and darker in color; piceous-black

with the antennæ, rostrum and legs testaceous. Length 4 mm., width $1\frac{1}{3}$ mm.

Head longer than in *campestris*, longer than median length of pronotum and equal to its width across eyes; vertex with a few coarse punctures anteriorly, smooth about the ocelli. Segment I of antennæ not quite attaining apex of head; II as long as head; III and IV subequal, each two-thirds of second. Pronotum rugose as in *campestris*, the sides a little more sharply carinate and subinuate posteriorly, the surface depressed across disk behind middle. Elytra narrower than in *campestris*, parallel, opaque, closely punctured; membrane long and narrow, considerably exceeding abdomen; outer veins distinct, others obsolete or practically so. Rostrum attaining middle of hind coxæ; seg. I reaching almost to base of head. Orifices and canal as in *campestris*, the metastethal carina sharp and a little curved; mesostethus with a minute tubercle at base of intermediate coxæ. Anterior femora considerably thickened, fusiform, about twice thickness of intermediate.

Color, a deep opaque piceous-black, becoming a little paler on costal base, behind ocelli and along either side of tylus; antennæ, rostrum and legs honey-yellow or pale piceous.

Described from one pair taken in the cool foggy coastal belt of California, at Lagunitas, Marin Co., April 9, 1911, by Dr. E. C. Van Dyke.

Holotype, male, No. 792, *allotype*, female, No. 793, Mus. Calif. Acad. Sci.

Type locality, Lagunitas, Marin Co., Calif.

5. *Tetraphleps latipennis*, new species

Allied to *aterrima*; black, pronotum, the callosities excepted, and the elytra castaneous brown. Length $4\frac{1}{2}$ mm., width 2 mm.

Head as long as median length of pronotum; vertex broad and convex between the ocelli. Antennæ a little shorter than head and pronotum along median line; seg. I scarcely attaining apex of head; II as long as from tip of head to ocelli; III and IV together rather longer than II, IV slightly exceeding III. Rostrum attaining anterior coxæ; seg. II a little surpassing base of head. Prosternum transversely wrinkled, connate with the collum, obtusely angled between anterior coxæ, its edge obscurely carinate; mesosternum slightly carinate-produced between anterior coxæ, sulcate posteriorly, smooth with sides aciculate almost to anterior margin. Ostiolar canal straight, its margins distinctly elevated to an acute apex. Pronotum broad, sides well arcuated and slenderly carinate; collum broad and well defined, entirely free from lateral carinæ; region of callosities smooth, distinctly elevated; collum and posterior lobe closely punctate. Scutellum roughened but scarcely punctate, the usual median depression distinct. Elytra broad, costa rather strongly expanded at base, nearly straight; surface uniformly but moderately polished, closely punctate; membrane exceeding abdomen by about a fourth its length, the veins distinct, the outer abruptly curved and more prominent, surface with irregular transverse wrinkles which become longitudinal at

apex. Surface clothed with soft whitish pubescence, longer on pronotum and elytra, nearly or quite wanting on base of head, pleural pieces and base of ventral segments; head with six stiff bristles.

Color, piceous black; pronotum, excepting the region of the callosities, and the elytra castaneous brown; membrane smoky, a large basal spot emphasized at apex of cuneus and the borders of the veins nearly to their apex, pale.

Described from 36 examples taken by me from *Pinus albicaulis* at an altitude of 9,100 feet on top of Mt. Eddy, Siskiyou Co., Calif., July 28, 1918. No males or immature individuals were seen. The Academy also possesses a series taken by me at Huntington Lake, Fresno Co., Calif., in July, 1919, at an altitude of 7,500 feet, three taken by Mr. C. L. Fox at Dry Lake Lookout Station near Walker, Siskiyou Co., Calif., June 1, 1920, at 7,000 ft. elevation, and one taken by me at the Biological Station near Nanaimo, Vancouver Island, June 28, 1920, all females. This species seems to be quite typical of the genus *Tetraphleps*, and occurs only on pine so far as my experience goes. I would distinguish this genus primarily by the punctate elytra and form of the ostiolar canal. The membranal veins seem always to be prominent.

Holotype, female, No. 794, Mus. Calif. Acad. Sci.

Type locality, top of Mt. Eddy (altitude 9,100 ft.), Siskiyou Co., Calif.

6. *Tetraphleps furvus*, new species

Closely allied to *latipennis*, a little narrower and more polished with the elytra of a paler and more testaceous brown. Length 4 mm., width $1\frac{1}{2}$ mm.

Head narrower and flatter between the ocelli than in *latipennis*, the apex slightly notched either side the tylus. Antennæ longer and more slender; seg. I slightly surpassing the head; II as long as the entire head; III fully equal to IV in length and somewhat thinner. Rostrum slightly surpassing anterior coxæ; prosternum more flattened with margins more prominent than in *latipennis*; mesosternum less strongly aciculate on sides, ostiolar canal as in allied species. Pronotum more transverse, sides nearly rectilinear, a little rounded at anterior angles, slenderly carinate; region of callosities scarcely elevated; surface closely, obscurely punctate. Elytra parallel, costa subsinuate, veins less distinct and the punctures more distant and obscure than in *latipennis*; membrane longer, exceeding abdomen by about half its length, outer veins less abruptly curved, the inner less prominent; surface with obscure transverse wrinkles which become longitudinal at apex. Whole surface of body clothed with a pale pubescence, more highly polished than in *latipennis*.

Color, piceous black; pronotum and elytra testaceous-brown, the anterior disk of pronotum darker and embolium paler; membrane brown with a transverse row of pale marks at apex of cuneus.

Described from four males taken by me on a small (cedar?) tree at Ward, Colorado, July 1, 1903, at an altitude of 9,300 feet. With these were numerous young, so apparently the males were reaching maturity before the females and may perish much earlier which would account for the scarcity of males in all species of this genus as represented in collections.

Holotype, male, in collection of the author, *paratypes* in his collection and in that of the California Academy of Sciences.

Type locality, Ward, Colo.

My notes on the Provancher collection indicate that the type of *Tetraphleps canadensis* Provancher, was in poor condition, leading me to place it in genus *Lycocoris* but a study of these allied species now convinces me that it might have been rightly placed after all. It should not be difficult to procure additional specimens from pines about Cap Rouge, Quebec, which would soon settle the matter.

7. *Tetraphleps lepidus*, new species

Smaller and narrower than *latipennis* with more slender antennæ, seg. II being broadly pale in middle, the pronotum entirely black and ostiolar canal distinctly curved apically. Length $3\frac{1}{2}$ mm.

Female: Head as long as half the posterior width of pronotum, rounded at apex, the clypeus slightly exceeding the cheeks, base of vertex polished. Seg. I of antennæ distinctly shorter than apex of head; II equal to median length of pronotum, scarcely thicker at apex; III linear, one-half length of II; IV fusiform, equal to III. Pronotum closely, finely punctured, callosities polished; carinate sides a little expanded anteriorly but scarcely reflexed, straight, attaining middle of collum. Elytra slightly widened to apex of corium; membrane exceeding the cuneus by two-thirds its own width, subhyaline and somewhat opaque and brownish at base and apex, leaving a broad hyaline band at apex of cuneus. Rostrum attaining posterior coxæ; seg. I passing anterior angle of eye. Ostiolar canal distinctly curved anteriorly at apex. Whole upper surface moderately polished, closely minutely punctate except for the smooth areas on vertex and callosities, clothed with soft appressed pale hairs with apparently four longer stiff hairs on head.

Color, deep piceous or black; seg. II of antennæ, except base and apex, elytra, apex of femora and the tibiæ rufo-testaceous; sometimes base of first antennal segment, gula, and coxæ more rufo-piceous and the subcostal portions of the elytra may be infuscated.

Male: Darker in color with the second antennal segment thicker and black or nearly so, and the elytra piceous with a pale median dot on apical margin of corium, the membrane entirely fuscous.

Described from five males and 24 females taken by me on lodge pole pine at Huntington Lake, Fresno Co., Calif., July 24, 1919, at an altitude of 7,400 feet, all in the Academy's collections.

Holotype, male, No. 795, *allotype*, female, No. 796, Mus. Calif. Acad. Sci.

Type locality, Huntington Lake, Fresno Co., Calif.

Our five North American species of this genus may be roughly distinguished by the following key. *Xylocoris uniformis* Parshley is unknown to me in nature and the characters are taken from the description.

- Rostrum short, not attaining anterior coxæ; size large ($4\frac{1}{2}$ mm.); pronotum castaneous with black callosities. Calif. *latipennis*, new species.
- Rostrum at least attaining anterior coxæ; length 4 mm. or less 1
1. Ostiolar canal distinctly anteriorly curved at apex; rostrum attaining posterior coxæ. Calif. *lepidus*, new species.
Ostiolar canal straight 2
2. Rostrum scarcely surpassing anterior coxæ; membrane surpassing cuneus by three-fourths its width. Colorado *furvus*, new species
Rostrum attaining middle of mesosternum or longer 3
3. Black with the elytra castaneous-brown varied with darker; membrane with a pale spot either side, another at base and pale along the veins. Eastern States, Canada. *americana* Parsh.
Light brown, almost uniform; pale markings on membrane mostly obsolete. New Hampshire. *uniformis* Parsh.

8. *Melanocoris nigricornis*, new species

Allied to *obovatus* Champ., but with the antennæ longer and entirely black; piceous-black; elytra castaneous-brown. Length 4 mm., width $1\frac{1}{2}$ mm.

Head as long as median line of pronotum; apex broadly truncate, almost clavate; vertex broadly convex, the ocelli prominent, red. Antennæ about as long as median line of head and pronotum combined; segment I nearly attaining apex of head; II about three times length of I; III thinner and hardly longer than IV, these two together as long as II. Rostrum not passing anterior coxæ. Pronotum broad and unusually flattened; collum not distinguished; sides nearly straight, broadly expanded and rounded toward anterior angles; surface minutely transversely rugose, impressed across the middle. Elytra opaque, not visibly punctate; membrane passing abdomen by nearly one-half its length, very obscurely wrinkled, the veins about

equally prominent, the inner pair approximate at base and the outer sinuated as in *Tetraphlepa*. Ostiolar canal straight and prominent at apex, about as in *Tetraphlepa*. Whole surface opaque; superiorly clothed with fine pale pubescence which shows an inclination to serial arrangement about the clavus. Legs and antennæ minutely pubescent.

Color, dull piceous-black becoming obscure castaneous on the legs; elytra dull castaneous-brown, paler on the embolium and outer margin of cuneus; membrane slightly enfumed with an indistinct paler spot within the apex of the cuneus.

Described from three females, one taken by Mr. Walter M. Giffard at Summit, Placer Co., Calif., August 24, 1916, at an elevation of 7,000 feet; another taken by me on pine trees on Mt. Tahquitz above Keen Camp, Riverside Co., Calif., June 9, 1917, at an elevation of 7,000 feet; the third taken by Mr. Ralph Hopping on Jeffrey pine at Monmouth, Mono Co., Calif., May 9, 1919. The Summit specimen is the insect recorded by me as *M. obovatus* Champ., in Proc. Calif. Acad. Sciences, Ser. 4, VII, p. 262, 1917.

Holotype, female, No. 797, Mus. Calif. Acad. Sci.

Type locality, Summit, Placer Co., Calif.

PROCEEDINGS
OF THE
CALIFORNIA ACADEMY OF SCIENCES
FOURTH SERIES

Vol. XI, No. 13, pp. 145-152

OCTOBER 15, 1921

XIII

A STUDY OF NORTH AMERICAN GRASS-BUGS
OF THE GENUS *IRBISIA*

BY

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Four species of *Irbisia* have heretofore been reported from North America: *sericans* Stål, from Alaska; *brachycerus* Uhler, from Colorado; *solani* Heidemann, from California; and *mollipes* Van Duzee, from California. Six new forms are now added, making ten known species, for the separation of which a key is appended.

1. *Irbisia castanipes*, new species

Surface dull black, less polished than in most of our species; vestiture pale, rather long, appressed; legs uniformly castaneous; dextral male clasper long. Length 6 mm.

Head oblique, its length beyond eye one-third greater than greatest length of eye; vertex flattened; temporal areas conspicuous, shagreened; antennal segment II three times length of I, III and IV equal. Pronotum transversely rugose or obscurely punctate, the callosities small, shagreened; scutellum minutely transversely wrinkled; elytral punctures obscure. Vestiture very minute and sparse, cinereus; sides of pronotum with a few longer erect pale hairs anteriorly. Rostrum reaching apex of intermediate coxæ; lower surface polished. Sinistral clasper of male rather narrow, broadly curved, the sub-acute apex straight; dextral clasper short, little exceeding ventral apex of genital segment.

Color, opaque bronze-black above and on sides of pronotum; beneath deep polished black; legs castaneous, the femora and tarsi usually darker; apex of coxæ and base of trochanters pale; anterior margin of intermediate and posterior coxal cavities and the orifices polished ivory white.

Described from two males and nine females taken by me on pine at Keen Camp, San Jacinto Mts., Calif., June 6-12, 1917, at an altitude of 5000 to 7000 feet. This species agrees with *sericans* Stål, in the opaque surface, but the latter has the vestiture much longer and conspicuously gray, the dextral male clasper much longer, head less produced beyond eye, knees and tibiæ mostly pale, and all coxal cavities white. Of *sericans* I have before me two males, one macrop-terous and one brachypterous, taken by Dr. E. C. Van Dyke in Unalaska, the former at Glacier River, July 2, 1907, the latter at Mokushin Bay, July 15, 1907, one pair from Vancouver Island taken by the late Geo. W. Taylor, and a series taken by Dr. G. Dallas Hanna on the Pribilof Islands, Alaska.

Holotype, male, No. 798, and *Allotype*, female, No. 799, Mus. Calif. Acad. Sci.

Type locality, Keen Camp, San Jacinto Mountains, Calif.

2. *Irbisia californica*, new species

Polished black; vestiture long, golden-gray, suberect; legs fulvous or fulvo-testaceous; membrane with pale mark at apex of cuneus; sinistral male clasper large, abruptly el-bowed. Length about 7 mm.

Head oblique, produced beyond eye for a space one-half greater than length of eye; eye produced and much narrowed below; vertex flattened between antennæ; clypeus abruptly depressed at tip; temporal areas poorly distinguished; segment II of antennæ three times length of I; III and IV equal, together four times length of I. Pronotum rugosely punctured, the callosities large, shagreened; scutellum strongly wrinkled; elytra distinctly, closely punctured. Vestiture close long, golden-gray, erect on head and pronotum, somewhat appressed on the elytra; antennæ minutely gray-pubescent, this pubescence black on segment I and base of II, with a few longer bristles on base of I. Beneath mostly polished black, the venter with minute pale pubescence, the genital segment with a few long pale hairs; rostrum attain-ing middle of intermediate coxæ. Sinistral male clasper large, broad, ab-ruptly elbowed at apex of genital segment, its apical portion longer than basal, triangularly expanded immediately before its truncated apex; dextral clasper long, thick and terete, nearly attaining apex of sinistral.

Color, black, polished; rostrum and legs fulvo-testaceous, femora more or less marked with brown, beneath usually with a row of brown dots; tibial spines and tarsi black; coxæ mostly, margins of coxal cavities and orifices, white; membrane fuscous with small pale mark at apex of cuneus.

Described from numerous examples of both sexes repre-senting the following localities in California: Hills back

of Oakland, April 12, 1908, April 30, 1911, and May 8, 1910; Lagunitas, Marin Co., April 24, 1910, and Muir Woods, Marin Co., May 17, 1908, Dr. E. C. Van Dyke; Mt. Diablo, April 29, 1917; Leona Heights, Oakland, May 5, 1918; Ross, Marin Co., March 31, 1918; San Mateo Co., May 19, 1918; Carmel, Monterey Co., March 23, 1918, and Bradley, Monterey Co., April 23, 1917, E. P. Van Duzee; Portola Valley, San Mateo Co., May 4, 1917; Santa Cruz Co., June 9, 1917; Dublin Canyon, Alameda Co., May 6, 1917, W. M. Giffard; Santa Clara, April 20, 1914, Leroy Childs; Alameda Co., May, 1915, M. C. Van Duzee; Piedmont, Alameda Co., April 22, 1917, J. C. Bradley; Oakland, April 3, 1905, and Pasadena, April 30, and July 25, 1909, Fordyce Grinnell.

This species is found from Los Angeles Co., north at least to Marin Co., and probably much farther. About the Bay region it is often excessively abundant on grass on open hillsides. I have formerly determined this species as *sericans* Stål, but a study of typical specimens of the latter from Alaska shows them to be very distinct. The Pasadena specimens are a little smaller than those from farther north.

Holotype, male, No. 800, and *allotype*, female, No. 801, Mus. Calif. Acad. Sci.; E. C. Van Dyke collector.

Type locality, hills back of Oakland, Calif.

Paratypes in Academy collection, also in that of the author.

3. *Irbisia mollipes* Van Duzee

(Proc. Calif. Acad. Sci., Ser. 4, VII, p. 264, 1917.)

Polished black; pronotal punctures distinct, scarcely showing traces of transverse rugæ; vestiture long, gray; legs fulvous; sinistral male clasper broadly curved. Length $5\frac{1}{2}$ to 6 mm.

Head oblique; length beyond eye hardly more than greatest length of eye; eye well produced and narrowed below; vertex flattened between the antennæ; temporal areas scarcely distinguished. Segment II of antennæ three times length of I; III scarcely longer than IV, these together one-sixth longer than II. Pronotum deeply, distinctly punctured, showing scarcely a trace of the transverse rugæ; scutellum obscurely wrinkled; elytra closely, obscurely punctured. Vestiture long, dense, pale, erect on head and pronotum; rostrum attaining base of intermediate coxæ. Sinistral male clasper wide and convex at base, broadly curved, its acute apex short and

straight; dextral short, but little surpassing the subacute ventral apex of the genital segment.

Color, polished black obscured by the heavy vestiture above; beneath polished black. Rostrum, apex of coxæ and legs fulvous; margin of coxal cavities and orifices yellowish white; rostrum and tibiæ infuscated at apex; membrane uniformly smoky or with a very faint pale mark at apex of the cuneus.

This species was founded as a variety of *californica*, then misidentified as *sericans*. It is readily distinguished from *californica* by the form of the male claspers and the red legs. Material is before me from the following localities in California in addition to those listed in the original description: Ross, Marin Co., March 31, 1918; San Luis Obispo, April 24, 1919; Santa Cruz Island, May 17, 1919; Keen Camp, San Jacinto Mountains, June 8, 1917, Alpine, San Diego Co., March 11, 1914, E. P. Van Duzee; Pasadena, April 9 to May 1, 1909, Fordyce Grinnell; top of Las Vegas Range, N. M., June 28, 1902. The holotype was taken in Santa Cruz Co. by Mr. W. M. Giffard.

4. *Irbisia arcuata*, new species

Black, polished; vestiture white, short, appressed; face in profile regularly convex; legs fulvo-testaceous or castaneous on the femora, the tibiæ paler. Length 6 mm.

Head nearly vertical, produced beyond eye for a space nearly twice length of eye; eyes small, oval, little produced and narrowed below; vertex seen from side regularly arcuated from base to apex of clypeus; temporal areas scarcely elevated, a little shagreened posteriorly. Segment II of antennæ $2\frac{1}{2}$ times length of I; III one-half longer than IV, these together one-fourth longer than II. Pronotum strongly, transversely, rugosely punctured; callosities moderately elevated, shagreened, not conspicuous; scutellum strongly transversely wrinkled; elytra closely, distinctly punctate. Vestiture not dense, short, white, appressed. Beneath polished, minutely shagreened, the venter with longer appressed white hairs. Sinistral male clasper rather wide, broadly curved, flattened and obtuse at apex; dextral clasper long, surpassing the genital segment by one-half its length and attaining apex of sinistral.

Color, deep polished black; rostrum and legs fulvo-testaceous; femora more or less rufous or castaneous; tibiæ paler, their spines black; tarsi black; prosternum anteriorly, apex of coxæ and margin of coxal cavities whitish.

Described from one pair taken by me at Sunset, Colo., July 19, 1907, at an elevation of 8000 feet, and one pair labelled "Colo." received in exchange from Prof. C. F. Baker. The latter have the apical half of segment I of the antennæ castaneous. One male taken by me at Sunset with

the foregoing I believe to be the true *brachycerus* Uhler. It has the gray vestiture long and erect as described by Dr. Uhler, the vertex flattened between the antennæ, rostrum and legs piceous, becoming castaneous on the tibiæ, prosterum concolorous, coxal cavities and orifices broadly ivory-white and the dextral clasper short, scarcely surpassing ventral aspect of genital segment. Another male of this form was sent to me by Prof. Aldrich from Moscow, Idaho. In both these species the membrane is uniformly infuscated.

Holotype, male, No. 802, Mus. Calif. Acad. Sci.; *allotype* and paratypes in collection of the author.

Type locality, Sunset, Colo., at 8000 feet elevation.

5. *Irbisia setosa*, new species

Polished black, coarsely punctured and somewhat bronzed on the pronotum; vestiture of long erect fuscous hairs and minute white appressed ones; legs mostly black. Length 5-6 mm.

Head short, nearly vertical, produced beyond eyes for a space equal to length of eye; eyes large, ovate, narrowed below; vertex flattened between the antennæ; clypeus much incurved at apex; temporal areas prominent, shagreened. Segment II of antennæ three times length of I; III and IV equal, together a little longer than II. Pronotum coarsely, distinctly punctate, scarcely rugose; scutellum finely wrinkled; elytra roughened or obscurely punctate. Vestiture of erect stiff black hairs as long as thickness of femora, and very minute appressed white hairs. Beneath highly polished, black, with scattering pale hairs along middle to apex of genital segment. Sinistral male clasper broad and convex at base, curved and sickle-shaped, its acute apex scarcely exceeding the dextral clasper.

Color, deep black a little bronzed above, especially on pronotum; rostrum and legs dark castaneous or almost black on femora, the tibiæ paler, margins of coxal cavities scarcely touched with white; membrane uniformly infuscated.

Described from one pair taken by me at Cazadero, Sonoma Co., Calif., April 12-14, 1918; another pair taken by me at Bradley, Monterey Co., Calif., April 23, 1917; one male taken at Fairfax, Marin Co., Calif., May 7, 1919; and two males from the hills back of Oakland, Calif., taken May 12, 1908, by Dr. E. C. Van Dyke. This form may be distinguished by the long erect fuscous vestiture, which, however, is easily rubbed off, the short vertical head, black legs and male genital characters.

Holotype, male, No. 803, and *allotype*, female, No. 804, Mus. Calif. Acad. Sci.

Type locality, Cazadero, Sonoma Co., Calif.

6. *Irbisia sita*, new species

Polished black, head smooth; vestiture rather dense, long, gray; legs fulvous to castaneous; sinistral male clasper large, elbowed. Length 5-5½ mm.

Head nearly vertical; hardly longer below eye than length of eye; vertex slightly convex between antennæ, polished and impunctate; temporal areas scarcely distinguished; eyes long, much contracted below; clypeus strongly arcuate; second antennal segment 2½ times length of I; III and IV subequal, together a little longer than II. Pronotum deeply closely punctured, scarcely rugose, callosities scarcely elevated; scutellum feebly wrinkled; elytra obscurely punctate; rostrum attaining apex of intermediate coxæ. Beneath polished, clothed with conspicuous white hairs, a few on anterior coxæ, prosternum and disk of male venter and genital segment longer and suberect. Sinistral male clasper broad, abruptly elbowed as in *californica*, its broad flattened apex a little exceeded by the terete dextral clasper; vestiture long, soft, white, more erect on head and pronotum.

Color, deep polished black, bronzed on pronotum and scutellum and less so on elytra, not at all on head and beneath; rostrum and legs fulvous to castaneous, paler or more testaceous on tibiæ; extreme tip of tibiæ and tarsi black; prosternum, broad margins of coxal cavities, orifices and usually apex of coxæ white; tibial spines black; sutures of face sometimes pale.

Described from five male and five female examples taken by me in San Diego Co., Calif., in April and May, 1913-1914, one male and three females taken by me at Atascadero, Calif., April 23, 1919, and three males and one female taken by Fordyce Grinnell at Pasadena Calif., in April, 1909. This species, with *setosa* and *pæta*, constitutes a group of smaller forms more characteristic of the southern portion of the state. Of these, *pæta* may be distinguished by its small round eyes, *setosa* by the long stiff fuscous vestiture and black legs, and *sita* by its soft white vestiture and castaneous legs.

Holotype, male, No. 805, and *allotype*, female, No. 806, Mus. Calif. Acad. Sci.; *paratypes* in Academy's collection, also in that of the author.

Type locality, Foster, San Diego Co., Calif.

7. *Irbisia pæta*, new species

Polished black, coarsely punctate on pronotum; vestiture long, soft, white; eyes small, but little elongated; legs fulvous. Length 5½ mm.

Head moderately oblique, produced beyond eye for a space rather more than length of eye; vertex flattened between antennæ; clypeus strongly arcuate; temporal areas large, obscure, nearly smooth; antennæ short; segment II less than three times length of I; III and IV subequal, together nearly as long as I and II together. Pronotum coarsely punctate; scutellum obscurely rastrate but scarcely wrinkled. Vestiture long, white, nearly erect on head and pronotum. Beneath polished, with sparse, rather long white pubescence, longer on the male genital segment. Sinistral male clasper broadly curved, its apex exceeded by the long dextral clasper.

Color, deep polished black, a little bronzed on the pronotum; rostrum and legs fulvous, tibiæ becoming whitish testaceous as are the coxæ; orifices and narrow margin of coxal cavities white; membrane uniformly fuscous; apex of first antennal segment sometimes castaneous.

Described from three males taken by me in Balboa Park, San Diego, Calif., April 9, 1913. This species may be distinguished by the small, nearly round eyes, the fulvous legs and pale coxæ.

Holotype, male, No. 807, Mus. Calif. Acad. Sci.

Type locality, Balboa Park, San Diego, Calif.

A study of this genus with larger material at hand has enabled me to correct some former errors made by me. All the species in this genus have the head somewhat exserted with a black calloused area on the posterior face of the eye about which is a pale arc. As will be seen, many of our species, especially *solani* Heid., have the pronotum distinctly punctate, thus throwing them into Division Capsaria, according to my key of 1916, where they would run to *Lygidea* nearly, but their broader form, more hairy surface, black color and more exserted eyes, with the ocular callous mentioned above, will separate them. In the key of 1916, under *Irbisia* (page 207) the word "close," beginning the last line, should read "closer." The following key will distinguish our species:

Surface dull, opaque or nearly so 1
 Surface distinctly polished 2

1. Posterior lobe of pronotum coarsely, transversely wrinkled, impunctate; head shorter; vestiture conspicuous, yellowish; legs black, apex of coxæ, trochanters and tibiæ in part pale, 1, *sericans* Stål
 Posterior lobe of pronotum finely, transversely wrinkled and obscurely punctate; head longer; upper surface sparsely clothed with very minute gray pubescence; legs castaneous, darker on the femora. 2. *castanipes*, new species.
2. Face, viewed from side, regularly arcuated from base of vertex to tip of clypeus, not flattened between antennæ; vestiture sparse, white; legs fulvo-testaceous, the femora invaded with black; length 6 mm. 6, *arcuata*, new species.

- Face, viewed from side flattened between the antennae. 3
3. Eyes small, nearly round; vestiture rather long, dense, white, membrane uniformly black; legs fulvous. 9, *pata*, new species
Eyes larger, ovate, distinctly produced and narrowed ventrally. 4
4. Longer, 6 mm. or over. 5
Shorter, under 6 mm.; membrane uniformly infuscated. 7
5. Sinistral male genital clasper abruptly elbowed, the apical half vertical to the margin of the ventral segments. 6
Sinistral male genital clasper curved; sickle-shaped; vestiture rather dense and long, gray; membrane uniformly infuscated; legs blackish. 4, *brachycerus* Uhler.
6. Pronotum transversely rugose or rugosely punctate; vestiture golden-gray; legs soiled fulvo-testaceous, the femora, at least in part, apex of the tibiae, and the tarsi black. 3, *californica*, new species.
Pronotum distinctly punctured; vestiture close, gray; legs fulvous. 5, *mollipes* Van Duzee.
7. Sinistral male genital clasper abruptly elbowed as in *californica*; vestiture dense, whitish; legs fulvous to castaneous; beneath with a percurrent white vitta either side. 8, *sita*, new species.
Sinistral male genital clasper curved, sickle-shaped. 8
8. Surface subopaque, vestiture long, brownish, especially on head and pronotum; sides of pronotum distinctly sinuated, its surface minutely punctate. 7, *setosa*, new species.
Surface polished; vestiture short, gray, appressed, the head and pronotum usually denuded; sides of pronotum rectilinear, its surface more coarsely punctate. 10, *solani* Heid.