

ADDITIONS TO THE WESTERN JASSID FAUNA.

BY E. D. BALL, FORT COLLINS, COLO.

Thamnotettix chiragrica, n. sp.—Form and size of *T. parallela* nearly, superficially resembling *Cicadula punctifrons*, var. *Americana*. Length, 6 mm.; width, very nearly 2 mm.

Vertex twice wider than long, half longer on middle than against eye, disc convex slightly sloping, rounded to the face, front very broad and short, width at base and length about equal, the disc convex. Pronotum a third longer than the vertex, over twice wider than long; elytra long, almost parallel margined to the apex, venation distinct, apical cells short, their bases truncate, the antepical cells long.

Colour: vertex pale greenish yellow, a pair of round black spots on the posterior margin, slightly nearer the eyes than to each other, a pair of larger, quadrate spots between the ocelli and the eyes, face pale yellow, a few dark arcs on upper part of front, the upper bounding pair crescentiform uniting on the tip of the vertex, a pair of black spots above the antennal sockets and a black band margining the eyes below. Pronotum olive, shading to yellowish in front, a pair of approximate median spots on the anterior submargin, a larger pair against the eyes and a pair of dots just inside the latter, on either side, black. Scutellum pale yellow, a pair of round spots on the disc and a larger, triangular pair just within the basal angles, black. Elytra dark fuscous, the veins and margins milk-white in sharp contrast. Below pale yellow; ovipositor and spot on the last segment black.

Genitalia: ultimate ventral segment of the female three times the length of the penultimate, the lateral margin roundly narrowing, the posterior margin roundly emarginate, the disc posteriorly striated, the middle half angularly elevated.

Described from a single female from Phoenix, Ariz. This is so distinct and easily-recognized a species that there can be no danger in describing it from the single specimen.

Thamnotettix Osborni, n. sp.—Form and general appearance of *Kennicottii*, but smaller and lighter coloured. Length, 5 mm.; width, 1.25 mm.

Vertex longer and narrower than in *Kennicottii*, less than twice as wide as its middle length, disc convex, evenly rounding to the front; front long and narrow, scarcely narrowing until just at the clypeus, genæ scarcely angled, extending below the loræ.

Colour very similar to *Coquilletti*, vertex and face pale creamy washed with orange, ocelli and an irregular spot on either side the vertex at the base, fulvous. Pronotum pale orange fulvous, a narrow transverse band on the middle. Scutellum yellow, brownish or fuscous triangular spots within the basal angles. Elytra fulvous, the anterior half of the corium subhyaline, veins on clavus and the sutural margin narrowly white, claval suture broadly white, with the band on pronotum forming a long triangle.

Genitalia: ultimate ventral segment of female half longer than penultimate, posterior margin broadly rounding, sharply notched either side of a strap-shaped, produced, median tooth; male valve small, almost concealed beneath the large ultimate segment; plates narrow, triangular, the sides convex at base, nearly straight beyond.

Described from a number of specimens taken at Fort Collins and Wray, Colo., and Kimball, Neb. This species is the western representative of *Kennicottii*, with which it has formerly been confused. It may be distinguished by its smaller size and lighter colour as well as by the distinct genitalia.

Thamnotettix Heidemanni, n. sp.—Form of *Cockerelli* nearly, but smaller, the head broader and blunter. Grayish green sprinkled with blood red dots. Length, 4 mm.; width, 1–1.25 mm.

Vertex very slightly angled in front, twice wider at base than its middle length, transversely depressed posteriorly, passage to the front rounded, ocelli rather distant from the eyes, front parallel margined until below the middle, then regularly narrowing to the clypeus, pronotum scarcely twice the length of the vertex, elytra together wedge-shaped.

Colour: vertex and face pale yellow, sutures and about five short arcs on the front fuscous, pronotum pale olive, the anterior margin lighter, scutellum yellow, and orange spot inside each basal angle. Elytra milky subhyaline with a greenish cast, the black tergum showing through. Whole upper surface and face minutely dotted with blood red.

Genitalia: ultimate ventral segment of the female two and one half times as long as the penultimate, the posterior margin broadly rounding or slightly produced on the middle third; male valve small, rounding, about half the length of the ultimate segment, plates broad at base, almost circularly rounding and then extending as a pair of style-like points, pygofers long, tubular, oblique, equalling or exceeding the plates.

Described from eighteen specimens from Cerro Summit and Alder, Colo., both high mountain points.

Thamnotettix Cockerelli, n. sp.—Form and general appearance of *Kennicottii* nearly, with indistinct red mottlings. Length, 5–6 mm.; width, 1.5 mm.

Vertex more than twice wider than long, very little produced in the middle, bluntly angled, with the front transversely depressed behind the middle; face parallel margined to below the antennæ, then narrowing to the nearly parallel-margined clypeus; elytra rather long and strongly appressed behind.

Colour: vertex, face, anterior margin of pronotum and scutellum pale yellow, disc of pronotum and elytra grayish brown with a strong coppery reflection, the whole insect mottled with blood red, veins on elytra light, sutures of front black-lined.

Genitalia: ultimate ventral segment of the female very long, nearly as long as the pygofers, posterior margin broadly and evenly rounding; male valve short, rounding, plates broad at base, evenly rounding to beyond the middle, then produced as acute style-like points, the lateral margin, especially of the points, heavily fringed with stout hairs; a dark line just inside the margin at the base.

Described from numerous specimens from Ward, Rist Canon, Marshall Pass, and Palmer Lake, Colo. Taken from well back in the foothills up to 9,500 ft.

Thamnotettix perexigua, n. sp.—Resembling *Chlorotettix lusoria* and *necopina*, but without the fulvous colour. Length, 8 mm.; width, 2 mm.

Vertex but little longer on middle than at the sides, roundly angled, transversely depressed across the disc; front broad, only slightly convex in either diameter; clypeus long, slightly constricted in the middle; pronotum with the lateral margins long, humeral margins short; elytra long, strong, scarcely narrowing behind.

Colour: Vertex and face slightly greenish-orange, a spot above and another below each ocellus, a waved line along the anterior margin of the vertex, broken in the middle, fuscous; pronotum with a little more of the green than the vertex; elytra a bright greenish-yellow, subhyaline, showing the dark tergum; below bright yellow.

Genitalia: Male valve very short, one-third the length of the ultimate segment, a blunt tooth in the centre; plates long, compressed, a furrow running obliquely through each one, the part outside the furrow curving up and forming a somewhat boat-shaped organ; at the apex of

each plate is a long filament-like appendage resembling that commonly met in *Scaphoideus*.

Described from a single male specimen from Cuernavaca, Mex. (O. W. B.)

Chlorotettix tunicata, n. sp.—Form and general appearance of *Balli*, vertex as in *galbanata*. Length, 7 mm.; width, 1.25 mm.

Vertex half longer on middle than against eye, twice wider than long, disc convex, front and vertex evenly rounded except at apex, which is slightly conical.

Colour pale green, elytra subhyaline, greenish.

Genitalia: ultimate ventral segment of female half longer than penultimate, lateral angles rounding, posterior margin roundly emarginate, one-third the depth of the segment, sometimes slightly notched in the middle, either side of which there is a brown cloud; male valve broad, slightly longer than the ultimate segment, obtusely angulate, plates broad at base, roundly narrowing to a very obtuse, almost truncate, apex, together the shape of a blunt-pointed spoon, convex below with a marginal fringe of coarse spines.

Described from three females and three males from Onaga, Kan. (Crevecoeur). This species may be readily separated from any other described by the male plates.

Chlorotettix nudata, n. sp.—Resembling *stolata* in form and colour; the vertex is more angled and the fulvous reflection less prominent. Length, 7.5 mm.; width, nearly 2 mm.

Vertex twice longer on middle than against eye, slightly conically pointed, front shaped as in *lusoria*, loræ long and narrow. Elytra long, slightly flaring in the middle, appressed behind.

Colour: pale green, an orange cast on face and vertex, a slightly brownish or fulvous cast on pronotum and elytra, elytra subhyaline, the nervures indistinct.

Genitalia: ultimate ventral segment of the female very short, scarcely as long as the penultimate segment; posterior margin divided into four lobes by a narrow slit in the middle and a pair of broad, shallow notches a little more than half way towards the sides, the margin thin, the plates visible at the base of the pygofers; male valve narrow, obtusely angular, as long as the ultimate segment, plates broad at base, three times the length of the valve, gradually narrowing to the acute slightly produced tips.

Described from one female and one male from Ames, Iowa. Readily separated from any of the species with angled vertices by the genitalia.

Cholorotettix stolata, n. sp.—Form and general appearance of *lusoria* slightly narrower and without the mark on the vertex. Length 7–8 mm.; width 1.5 mm. Male slightly smaller.

Vertex nearly flat on disc, rounding anteriorly, one-third longer on middle than against eye, twice wider than long, front convex line between vertex and front distinct, ocelli prominent, transparent, distant from eyes; elytra long and very narrow, venation as in *lusoria*, indistinct.

Colour: vertex pale yellow, sometimes with a greenish cast, pronotum olive, the disc with a fulvous cast; elytra hyaline green, with an iridescent fulvous tinge.

Genitalia: ultimate ventral segment of the female very long, truncate posteriorly or very slightly emarginate, the centre with a brown mark; male valve as long as the last ventral segment, the apex rounding, the margin notched at the middle, plates rather narrow at base, rapidly roundly narrowing to before the middle, then extending as long attenuate finger-like points.

Described from three females and one male from Cimmaron, Col. Taken in a mountain valley. The genitalia of both male and female are very much like those of *unicolor*, while in shape of head and general appearance it is closely allied to *lusoria* and *nudata*.

Lonatura nebulosa, n. sp.—Form and size of *salsura* nearly, resembles *noctivaga*, but with shorter ovipositor and longer elytra. Length, ♀ 3.5 mm., ♂ 3 mm.; width 1.25 mm.

Brachypterous form: vertex slightly convex, one-fourth wider than long, nearly twice longer on middle than against eye, not quite so long as the pronotum; front longer and narrower than in *noctivaga*, resembling *megalopa*; elytra covering all but two segments of abdomen, evenly rounding behind; venation rather weak, not reticulate.

Colour: vertex dirty straw, a pair of large angular black spots back of the point of the vertex, connected outwardly with a pair of slightly smaller round ones just inside the ocelli; back of these is an interrupted transverse brown band, a brownish fuscous spot against each eye, inside of which is an oblique, olive dash; pronotum pale olive and straw, with a pair of brown spots on the anterior margin equidistant from the median line and the eye, elytra subhyaline, the veins on the inner half milky-

white ; abdomen straw colour, with a transverse row of fuscous dots on the middle of each segment, pygofer with a black mark above.

Genitalia : ultimate ventral segment of the female as long as the penultimate, the posterior margin slightly rounding, the disc strongly elevated ; male valve very small, rounding, plates triangularly narrowing half their length, then produced into bluntly-tipped points, the margin fringed with long hairs.

Described from a single pair taken at Fort Collins, Colo. The four large black spots in a row on the margin of the vertex will readily distinguish it from any but *noctivaga*, from which the smaller size, narrower face and longer elytra will at once separate it.

Lonatura noctivaga, n. sp.—Form of *salsura*, but larger. Pale straw colour, with four black spots on the vertex and two on the elytra. Length, ♀ 5.5 mm., ♂ 4 mm. ; width 1.5 mm.

Brachypterous form : vertex slightly obtusely angled, one-fourth wider than long, two-thirds as long against the eye as on middle ; face broad, slightly convex, front almost as broad as long, parallel-margined to the antennæ, then rapidly narrowing, to the long parallel-margined clypeus. Pronotum transverse, scarcely as long as the vertex. Elytra short, obliquely truncate, covering only the first two abdominal segments. Venation obscure, reticulate, especially along the clavus and apical margins of corium.

Colour : vertex creamy white ; a pair of black spots just back of the apex, and a large pair between these and the ocelli, the median line, an oblique dash on either side of the disc, and some irregular marks against the eyes, olive. Pronotum creamy, with four olive stripes. Elytra creamy, or olive, with light veins ; a black spot on the posterior margin, and sometimes another between this and the scutellum. Abdomen creamy, with olive stripes, or dark olive with creamy stripes.

Genitalia : ultimate ventral segment of the female half longer than the penultimate ; lateral margin roundingly narrowing ; posterior margin truncate or slightly emarginate, with a slight, triangular, median tooth ; ovipositor very long, extending beyond the pygofer ; male valve short, rounding ; plates long, acutely triangular, the lateral margins slightly concave, fringed with a single row of stout hairs.

Described from numerous specimens from Stratton, Neb. ; Lamar, and Fort Collins, Colo.

Deltocephalus caperatus, n. sp.—Resembling *Weedi*, but with less flaring elytra; anterior half of vertex black, with a white cross upon it. Length 3 mm.; width 1.25 mm.

Vertex slightly obtusely angled, slightly wider than its median length, one-third longer on middle than against eye, rounding to the front with a slightly produced apex; front convex, rather narrow, lateral margins rounding to the broad clypeus, suture between clypeus and front indistinct; elytra rather broad and stout, broadly rounding behind; venation strong, the central anteapical cell divided, outer sector of clavus tied before the middle of the claval suture.

Colour: vertex, posterior half pale yellow, with a fuscous dot against eye, anterior half shining black, with a strong white cross in the middle, the tip of the cross in a round white spot on the apex of the vertex, the lateral arms also ending in round spots; ocelli in white spots, a yellow line against each eye connecting them with the yellow posterior half of the vertex. Pronotum and scutellum olive, with slightly fuscous markings. Elytra olive subhyaline, the veins broadly white, distinct, narrowly fuscous margined. Face black above, with light arcs, lighter below, a dark band along the apex of front, a stripe on the clypeus, which widens apically; sometimes fuscous margins on loræ and genæ.

Genitalia: ultimate ventral segment of the female twice longer than penultimate, the lateral margins strongly emarginate from the base, the lateral angles rounding, posterior margin twice incised, forming three rounding lobes; beneath the ultimate segment, and visible as a triangular lobe at each lateral angle, is a second membrane as in *compactus*.

Described from three females; one each from: Ray, Colo.; Stratton, Neb., and Ames, Iowa. Readily recognized by the white cross in a black field.

Deltocephalus comatus, n. sp.—Form and general appearance of *colonus*, Uhl. Pale green, with dark spots on vertex, pronotum and scutellum. Length 3 mm., width 1 mm.

Vertex slightly wider than long, obtusely angulate before, but little longer on middle than at eye; eyes long and narrow, pronotum longer than vertex; over half its length within the anterior curve; face rather narrow, rounding; genæ narrow, straight beneath the eyes. Elytra slightly longer than abdomen; venation of the weak *nigrifrons* type.

Colour: vertex pale yellow, a pair of large round spots on the anterior margin near the eyes, a small approximate pair at tip, another pair of small

ones against the eyes, just within the posterior angles, and an oblique dash on either side the disc, black. Pronotum olive, becoming yellowish anteriorly, a pair of elongate spots on the anterior margin just within the eyes ; an approximate pair of round ones just back of these, and an oblique dash on either side of the disc, before the middle, in line with the inner margin of the eyes, black. Scutellum pale yellow, a large black triangle well within the lateral angles. Elytra pale green, nervures slightly lighter. Front olive fuscous, a few short arcs and a median stripe, which includes the clypeus, light.

Genitalia : ultimate ventral segment of female about half longer than penultimate; lateral angles slightly rounding, the posterior margin elevated in the middle, and sometimes slightly obtusely toothed; male valve large, very obtusely angulate, plates stout, convexly rounding to a blunt tip, fringed with stout spines.

Described from numerous specimens from Orizaba, Yautepec, and other Mexican points. This species and the following are closely related to *colonus* of Uhler, and belong to the *nigrifrons* group. This species may be readily distinguished from any of the others by the heavy black markings on the pronotum.

Deltocephalus sonorus, n. sp.—Form and general appearance of *nigrifrons* nearly, longer and narrower than *comatus*, olive and fuscous, with milky nervures and reflections. Length 3.25 mm., width less than 1 mm.

Vertex and pronotum similar to those of *comatus*, the eyes long and narrow, enclosing over half of the pronotum. Elytra very long and narrow, with a large appendix ; venation strong, two cross nervures, the central anteapical cell very long, dumb-bell shaped but not divided, the apical cell beyond this, small, curved, less than half of the size of the third one.

Colour : vertex a pale dirty yellow ; four black spots on the anterior margin, the outer pair often larger than the others, farther from eyes than from inner pair ; sometimes a fuscous dot against the eye and irregular brownish markings on disc. Pronotum pale olive and yellowish, with five luteous stripes ; scutellum with orange spots along the base. Elytra subhyaline, the veins light, sometimes margined with fuscous. Face brownish fuscous, with light arcs on the front, sometimes the lower part of the face light, with the satures and a stripe on the clypeus fuscous.

Genitalia : ultimate ventral segment of the female half longer than

penultimate, posterior margin slightly waved; male valve angulate, plates concavely, acutely pointed.

Described from sixteen examples from Tucson, Ariz. (Dr. Kunze.)

Deltocephalus elimatus, n. sp.—Form of *sonorus*, but still longer and narrower. Golden green, with black spots on the vertex. Length 4 mm.

Vertex short but decidedly angulate, one-fourth wider than long, two-thirds the length of the pronotum, disc sloping, rounding to the front; front rather narrow above, almost straight margined to the broad clypeus. Elytra very long and narrow, Dicraneura-like; venation similar to *sonorus*, but weak, and lacking the second cross nervure.

Colour: vertex pale yellow, a fuscous spot at apex, a pair of round black spots on the margin nearer the eyes than the apex, and a pair of orange marks on the disc. Pronotum golden or greenish, with five luteous lines. Elytra subhyaline greenish, with a golden reflection. Face yellow, a spot below each ocellus and the antennal pits black.

Genitalia: ultimate ventral segment of female rather narrow at the base, then produced into a remarkably long, blunt-tipped, spatulate process, which is curved up along the margin and at tip; male valve rather long, rounding; plates wide at base, enormously elongated, narrowing to a blunt tip, five times the length of the valve.

Described from three specimens from Sante Fe, Mex. (Barrett.)

The remarkable genitalia of both sexes will readily distinguish this species.

Deltocephalus gnarus, n. sp.—Form and general appearance of *minutus*, V. D., nearly, with a longer vertex and front. Black, with a few markings, and the elytra milky white in female. Male darker. Length, ♀ 2.5 mm., ♂ 2.25 mm.; width 8 mm.

Vertex slightly obtusely angled, the margins straight, one-fourth wider at base than long, one-third longer on middle than against eye, as long as pronotum; front rather narrow, one third longer than wide, the margins gently curved. Pronotum strongly transversely wrinkled; elytra a little longer than body; venation weak; two cross nervures present; the outer anteapical cell very small, acuminate anteriorly.

Colour: vertex shining black, circles around the ocelli, a slender line connecting them with the apex, a cross back of the apex, the margin against the eye, and a pair of oblique dashes on posterior disc, approxi-

mate on the margin, light. Pronotum shining black, a row of submarginal spots, sometimes a median line, and the posterior margin narrowly light. Scutellum black, the lateral margin interruptedly light. Elytra subhyaline white, veins milky. Sometimes in the male the disc of the elytra is darkened up, omitting the cross nervures and the apices of the claval veins. Face black, with margins and arcs on the front light.

Genitalia : ultimate ventral segment of the female twice longer than penultimate ; lateral margin roundly narrowing ; posterior margin truncate, curved around pygofers ; male valve rather large, obtusely angulate ; plates as wide as the valve, roundly narrowing to the slightly produced, acuminate, points.

Described from eight specimens from Ames, Iowa; taken by the writer on a patch of "dog-hair" *Juncus* growing on the margin of a pond.

Cicadula pоторia, n, sp.—Form and general appearance of *D. gnarus*. Smaller and darker than any other described *Cicadula*. Length, ♀ 2.5 mm., ♂ 2.25 mm.

Vertex nearly right-angled, twice as long on middle as at eye, half wider than long, margin rounding, apex conical, front narrow, wedge-shaped, the margins straight. Pronotum slightly longer than vertex. Elytra considerably longer than the body, obtusely rounding behind. Venation strong, apical cells long, curved, outer branch of first sector obsolete, two antepical cells.

Colour : female—vertex dark fuscous, the margins, a median line and two dashes on either side, yellow, the posterior dash almost enclosing a round black spot ; front brownish, with fuscous arcs ; lower part of face yellow, with sutures and a stripe on clypeus fuscous. Pronotum and scutellum yellow on margins and fuscous on discs, omitting a yellow longitudinal stripe. Elytra milky subhyaline, sometimes mottled with fuscous on disc. Male—often the same colour and marking as female; sometimes darkened up until all the light markings are gone except a triangle across face above antennæ.

Genitalia : ultimate ventral segment of female short and straight, or slightly waved posteriorly ; pygofers very short and thick ; male valve short, oval ; plates triangular, their apices produced into long, divergent, style-like, upturned processes.

Described from ten specimens taken from *Juncus*, along with *D. gnarus*, at Ames, Iowa.

Phlepsius josea, n. sp.—Form of *humidus*, but much smaller. Colour red. Length 5.25 mm., width 1.5 mm.

Vertex flat, very slightly depressed posteriorly; half wider than long, nearly twice longer on middle than against eye; anterior margin thick but foliaceous; front narrow, wedge-shaped; clypeus small, linear. Pronotum little longer than the vertex. Elytra moderately stout, compressed behind.

Colour: ground colour pale yellowish olive, but so thickly sprinkled with irregular spots and blotches of blood-red as to give a red appearance to the whole insect, both above and below. The vertex and scutellum have a more decided yellowish cast. The eyes slaty brown. In the light specimens, the red spots are gathered on the nervures of the wings, but in the darker ones the nervures are indistinct.

Genitalia: ultimate ventral segment of the female half longer than the penultimate; the posterior margin roundly truncate, with the lateral angles rounded off; male valve very small, rounding, almost concealed under the long, ultimate segment; plates broad at base, semicircularly rounding, then produced into long, style-like, attinent points.

Described from two males and one female, from the mountains of Colorado. One specimen each from Alder, North Park, and Dutch George's, on the Poudre.

CHANGE OF PREOCCUPIED NAMES.

(1) *Parasa prasina*, Dyar, Psyche VIII., p. 273, 1898 (Central America), is preoccupied by *Parasa prasina*, Alph., Deut. ent. Zeit., 1895, p. 186 (Western China). The Central American species may be called *Parasa wellisca*.

(2) The genus *Callarctia*, Leech, Trans. Ent. Soc., Lond., 1899, p. 168 (West China), is preoccupied by *Callarctia*, Packard, Proc. Ent. Soc., Phil., III., p. 114, 1864 (North America). The Chinese genus may be called *Euleechia*.

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A GENERAL INDEX to the thirty volumes of the Annual Reports of the Entomological Society of Ontario, extending from 1870 to 1899, has been prepared by the Editor of this magazine, and is now in course of publication by the Ontario Department of Agriculture. It will be ready for distribution before the end of the year, and will, no doubt, be of great value to all who have occasion to consult these Reports.