

**A SYNOPTICAL ARRANGEMENT OF THE GENERA OF
THE NORTH AMERICAN JASSIDÆ, WITH DE-
SCRIPTIONS OF SOME NEW SPECIES.**

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No systematic catalogue of our North American Homoptera has as yet been published, and each student follows his own convenience in the arrangement of the genera and their division into higher groups. As a contribution to this chaotic condition of affairs I wish here to place before our entomologists an arrangement I have used in my own work and found quite satisfactory. It will be noticed that I have adopted the awkward method of employing a *superfamily* term equivalent to Puton's family Jassides. My excuse for doing this is primarily that of convenience as the division termed *superfamily* seems to be of greater, and those termed *family* of less value than the other family groups in this suborder. It is to Fieber that we are indebted for the first thorough systematic arrangement of the genera of the Jassidæ, and his work still is, and must probably remain, the basis for future studies in this group. Stål, though our first authority on the Heteroptera and most families of the Homoptera, has given us very little assistance in the Jassidæ. He seems to have had but little appreciation of the generic characters obtaining here, or of the value of those he did indicate.

The following synopsis of the Jassidæ has reference to our North American fauna only, and would probably require a farther subdivision in one or two of the *tribes* in any general view of the family. For example, *Hecalus* and its allies should probably be separated from the Dorydini, which, with *Dorydium* and *Dorycephalus* as typical genera, have a more simple elytral venation. Tribe Jassini should perhaps stand as the first tribe of the *Jassina*. I have transposed the groups represented by *Deltocephalus* and *Cicadula* as the position in which they are ordinarily placed seemed unnatural. The group of genera represented by *Selenocephalus* has not yet been reported from this country; it appears to be particularly characteristic of the Palaearctic region. Four of the genera included in the following synopsis are still unknown to me in nature, and for the characters of these I have depended entirely on the work of Fieber,

Uhler and Signoret. Two or three generic groups still undescribed I have omitted until farther study can determine their true relationships.

For the higher families of the *Cicadines* I would suggest the following arrangement, adopting Stal's subfamilies throughout. In the lower *Jassoiidea* only are the genera given. In this table I have included only such groups as must enter into a list of our North American fauna :

Order **HEMIPTERA** Linn.

Suborder **HOMOPTERA** Latr.

Group **CICADINA** Burm.

Family I. **CICADIDÆ**.

Family II. **MEMBRACIDÆ**.

Subfamily **HOPLOPHORIDA** Stal.

- " **MEMBRACIDA** Stal.
- " **DARNIDA** Stal.
- " **SMILIIDA** Stal.
- " **TRAGOPIDA** Stal.
- " **CENTROTIDA** Stal.

Family III. **FULGORIDÆ**.

Subfamily **FULGORIDA** Stal.

- " **DICTYOPHARIDA** Stal.
- " **CIXIIDA** Stal.
- " **DELPHACIDA** Stal.
- " **ACHILIDA** Stal.
- " **TROPIDUCHIDA** Stal.
- " **DERBIDA** Stal.
- " **ISSIDA** Stal.
- " **RICANIIDA** Stal.
- " **ACANONIIDA** Stal.
- " **FLATIDA** Stal.

Family IV. **CERCOPIDÆ**.

Subfamily **CERCOPIDA** Stal.

- " **APHROPHORIDA** Stal.

Superfamily **JASSOIDEA**.

Family V. **ULOPIDÆ**.

Genus *Ulopa* Fall.

Family VI. **LEDRIDÆ**.

Genus *Ledra* Fab.

Fam. VII. **BYTHOSCOPIDÆ**.

Genus *Idiocerus* Lewis.

- " *Macropsis* Lewis.
- " *Pachyopsis* Uhler.
- " *Bythoscopus* Germ.
- " *Pediopsis* Burm.
- " *Agallia* Curtis.

F. VIII. **TETTIGONIDÆ** Fieb

Subfamily **TETTIGONINA** Berg.

Genus *Diestostemma* A. & S.

- " *Acrobelus* Stal.
- " *Oncometopia* Stal.
- " *Phera* Stal.
- " *Cyrtodisca* Stal.
- " *Homalodisca* Stal.
- " *Amblydisca* Stal.
- " *Aulacizes* A. & S.
- " *Proconia* Lep. & Serv.
- " *Dilobopterus* Sign.
- " *Pæciloscarta* Stal.
- " *Tettigonia* Geoff.
- " *Diedrocephala* Spin.
- " *Helochara* Fitch.
- " *Eucanthus* Lep. & Serv.

Subfamily **GYPONINA** Stal.

Genus *Xerophlœa* Germ.

- " *Gypona* Germ.
- " *Stragania* Stal.
- " *Zinneca* Am. & Serv.
- " *Penthimia* Germ.

Fam. IX. **JASSIDÆ** Fieb.

Subfamily **ACOCEPHALINA**.

Genus *Strongylocephalus* Flor.

- " *Acocephalus* Germ.
- " *Xestocephalus* VanD.

Subfamily JASSINA.

Tribe DORYDINI.

- Genus *Cochlorhinus* Uhler.
 " *Dorycephalus* Kusch.
 " *Hecalus* Stal.
 " *Spanbergiella* Sign.
 " *Parabolocratus* Fieb.
 " *Paramesus* Fieb.

Tribe DELTOCEPHALINI.

- Genus *Platymetopius* Burm.
 " *Deltocephalus* Burm.
 " *Allygus* Fieb.
 " *Goniagnathus* Fieb.

Tribe ATHYSANINI.

- Genus *Athysanus* Burm.
 " *Eutettix* Van D.
 " *Phlepsius* Fieb.
 " *Acinopterus* Van D.

Genus *Scaphoideus* Uhler.

- " *Thamnotettix* Zett.
 " *Limotettix* Sahlb'g.
 " *Chlorotettix* Van D.

Tribe JASSINI.

- Genus *Jassus* (Fab.) Stal.
 " *Terulia* Stal.

Tribe CICADULINI.

- Genus *Cicadula* Zett.
 " *Gnathodus* Fieb.

Subfamily TYPHLOCYBINA.

- Genus *Alebra* Fieb.
 " *Empoasca* Walsh.
 " *Kybos* Fieb.
 " *Dicraneura* Hardy.
 " *Typhlocyba* Germ.
 " *Eupteryx* Curtis.

Synopsisal Tables.*

Ocelli on the face below the anterior edge of the head.

Family BYTHOSCOPIDÆ.

Ocelli on the disc of the vertex..... Family TETTIGONIDÆ.

Ocelli on or near the anterior edge of the head, or wanting.. Family JASSIDÆ.

Family TETTIGONIDÆ.

Front large, prominent, strongly convex, cheeks long and narrow, anterior edge of the head obtuse, or rounded..... Subfamily TETTIGONIDA Berg.

Front flat, or slightly convex; more or less impressed across the base beneath the prominent and acute, or rounded and overhanging anterior edge of the head; cheeks at least moderately expanded..... Subfamily GYPONINA Stal.

Family JASSIDÆ.

Ocelli placed superiorly close to the anterior edge of the head.

Subfamily ACOCEPHALINA.

Ocelli on the anterior edge of the head, or wanting..... (A).

- A. First sector of the elytra forked near its base, the inner branch generally united to the second sector by one or two transverse nervures, usually one or both branches of the first sector are again forked, forming two or three antiapical areoles; supernumerary cell present in the wings; ocelli present..... Subfamily JASSINA.

* I have omitted from this synopsis the Ulopidae and Ledridae, or Scaridae of some authors. The former has all the tibiae 4-angled and armed along their edges with a few weak bristles. In the latter only the elongated hind tibiae are 4-cornered and armed with numerous spines, and generally the outer is more or less expanded and foliaceous, and the pronotum is elevated into a curved horn above each shoulder. One American species of *Ledra* has been described, but I have not yet seen an example. Of *Ulopa* our first species is described in the present paper.

- First sector of the elytra forked *close* to its base, thus forming apparently three sectors, which run straight and undivided to the angular nervures separating the four apical areoles; no transverse nervures between the first and second sectors; wings without a supernumerary cell; ocelli usually wanting.....Subfamily TYPHLOCYBINA.

Tribes of the JASSINA.

Anterior edge of the head thin and sharp, or more or less foliaceous.

DORYDINI

Anterior edge of the head sometimes acute, but generally obtuse or rounded never thin and foliaceous (A).

- A. Elytra with two transverse nervures between the first and second sectors of the corium.....DELTOCEPHALINI.

- Elytra with but one transverse nervure between the first and second sectors of the corium (B).

- B. Elytra without a series of antiapical areoles, or with but one formed by the forking of the outer branch of the first sector; vertex subquadrate, hind and lateral margins elevated, before feebly arcuated, with the edge strongly rounded, or produced and tumid before with an obtuse apex.

JASSINI.

- Elytra with a series (generally three) of antiapical areoles..... (C).

- C. Outer branch of the first sector of the elytra with two forks evident.

ATHYSANINI.

- Outer branch of the first sector of the elytra with its outer fork obsolete, or nearly so; anterior edge of the head well rounded, vertex but little if at all longer on the middle than next the eyeCICADULINI.

Synopsis of the genera of the Jassidæ.

Subfamily ACOCEPHALINA.

Head rounded anteriorly, the edge thin, vertex transversely striated before parallel to the anterior edge; apex of the wings broadly rounded.

Strongylocephalus.

Head more or less angled or conical before, the edge either acute or obtuse, or rounded and tumid, apex of the wings narrower, subacute; vertex not striated before parallel to the anterior edge..... (A).

- A. Anterior edge of the head acute or subacute in the female, obtuse or rounded in the male; vertex more or less distinctly longitudinally rugose, the disc depressed or but feebly convex.....**Acocephalus.**

- Head tumid and rounded before, ocelli placed on the rounded anterior edge superiorly, distant from the eyes; vertex convex, closely evenly punctured, without longitudinal rugæ.....**Xestocephalus** n. gen.

Subfamily JASSINA.

Tribe DORYDINI.

Vertex greatly elongated, at least twice as long as broad (A).

Vertex not more than twice as long as broad (B).

- A. Vertex anterior to the eyes spoon-shaped**Cochlorhinus.**

- Vertex ligulate in form**Dorycephalus.**

B. Elytra with two transverse nervures between the first and second sectors.

Paramesus.

— Elytra with but one transverse nervure between the first and second sectors (C).

C. Frontal suture extending only to the antennal pit..... **Hecalus.**

— Frontal suture continued to the ocelli on the acute anterior edge of the head, vertex shorter..... **Parabolocratus.***

Tribe DELTOCEPHALINI.

Vertex flat, more or less strongly, angularly produced, meeting the front in a right angle or less (A).

Vertex short, more or less convex and sloping, not strongly, though sometimes obviously angled before, anterior edge rounded or obtuse, rarely meeting the front in less than a right angle, in which case the elytra are furnished with supernumerary transverse veinlets in the costal areole and along the claval suture (B).

A. Vertex strongly produced and acutely angled before; front long and narrow **Platymetopius.**

— Vertex rarely, if ever more than right angled before; front less than twice as long as broad **Deltocephalus.**

B. Anterior edge of the vertex generally obtuse, sometimes quite sharply angled; elytra with a number of supernumerary transverse veinlets, mostly along the costa and claval suture, and more or less closely reticulated with brown pigment lines on the discal areoles..... **Allygus.**

— Vertex short, rounded almost from the base, but little longer on the middle than next the eye, front very broad, clypeus constricted near its base.

Goniagnathus.

Tribe ATHYSANINI.

Elytra short, without an appendix, rarely exceeding the abdomen in length; front broad, width at the ocelli and the length equal, or the former the greater; vertex convex, more or less angled before, or prominent and tumid, with the apex and edge rounded..... **Athysanus.**

Elytra longer, sometimes considerably longer than the abdomen, valvate, with an appendix, or narrowed to an acute point at apex..... (A).

A. Elytra normal, but moderately, if at all narrowed toward the apex, with a distinct appendix..... (B).

— Elytra strongly narrowed to an acute point at the apex of the second apical areole, appendix wanting..... **Acinopterus.**

B. Vertex flat and produced, strongly angled before, generally marked with concentric bands on or below the sharp anterior edge, length at the middle at least one and a half times that next the eye; outer antiapical areole of the elytra narrowed to a point at apex or stylate, the post-nodal generally crossed by one or more arcuated veinlets, which, with the stigmatal and one or two first apical veinlets are strongly recurved to the costa, antennal setæ elongated..... **Scaphoideus.**

* I have been unable to include genus *Spanbergiella* Sign. as it is unknown to me in nature, and I do not possess that part of Signoret's "Essai" containing its characters. Mr. Uhler places it near *Hecalus* Stal. to which it must be closely related.

- Vertex not more than one and one-half times as long on the middle as next the eye, sometimes of nearly equal length across its whole width; elytral venation normal, the outer antiapical areole nearly or quite as wide at apex as at base, the post-nodal without recurved veinlets....(C).
- C. Vertex sloping, either flat or convex, transversely impressed on the disc; form broad and stout, usually distinctly narrowed posteriorly; front broad, pronotum usually transversely wrinkled and the elytral nervures strong.....(D).
- Form narrower and more elongated; vertex usually short and convex, rarely with a transverse discal impression, in this case the front is narrow and the form slender.....(E).
- D. Elytra mostly reticulated with ramose, fine brown, pigment lines.

Phlepsius.

- Elytra without ramose brown pigment lines, or with but few on a median fulvous band.....**Eutettix.**
- E. Vertex short, scarcely longer on the middle than next the eye, the anterior edge strongly rounded, front broad.....(F).
- Vertex longer on the middle, or even angled, the anterior edge less broadly rounded or subacute, front narrow, sides of the pronotum carinated.

Thamnotettix.

- F. Smaller and more slender insects. Pronotum considerably longer on the middle than at the shoulders, hind angles broadly rounded, sides very short, terete; ocelli rather distant from the eyes.....**Limotettix.**
- Larger and stouter insects. Pronotum scarcely longer at the middle than at the shoulders, anterior edge quite strongly arcuated, hind angles prominent, sides long and carinated, ocelli placed very near the eyes; colors usually pale, green or greenish, with thin elytra and slender nervures; disc of the pronotum transversely wrinkled....**Chlorotettix.**

Tribe JASSINI.

- Anterior feet normal, the tibiae not dilated.....**Jassus.**
- Anterior tibiae dilated, femora normal.....**Terulia.**

(In *Petalopoda* Spangb., from South America, the anterior femora also are dilated, the tibiae widely so, almost foliaceous).

Tribe CICADULINI.

- First two sectors of the wings coalescing before the apex, the resulting nervure uniting with the costa some distance before the tip of the wing, thus forming but two apical areoles.....**Gnathodus.**
- First two sectors of the wings united for a greater or less distance, but soon again separating and attaining the apex of the wing, thus forming three apical areoles.....**Cicadula.**

A generic synopsis of the Bythoscopidae may be found in "Entomologica Americana," vol. v, p. 125, and a similar one at page 166 of the same volume. In Stal's "Hemiptera Fabriciana," ii, p. 60, is a synopsis of the genera of the Tettigonina or the Proconina, as he terms this group; and of the Typhlocybina Mr. Woodworth has published a synopsis in "Entomologica Americana," vol. v, p. 214.

Descriptions of New Species.

1. **Ulopa canadensis** n. sp.—*Brachypterus* form; aspect of *U. reticulata* Fab. nearly; small, rufous-brown or piceous, roughly punctured and tuberculate, vertex deeply cleft. Length 2.5—3 mm.

Vertex as long as the pronotum, closely punctured, middle one-third deeply excavated more than half way to the base, the rounded lateral lobes flat, with the edges thickened and armed with a row of hair-bearing tubercles. Front slightly convex below, flat above with a shallow transverse depression connecting the two overhanging rounded lobes of the vertex, ocelli placed at the extremities of this depression about mid-way from the median line to the eyes, base of the front slightly expanded over the antennal scrobe; clypeus subcylindrical, a little contracted at base. Pronotum feebly angularly concave behind, of equal length across its whole width; anterior angles broadly rounded, behind which is an irregular transverse impression, hind angles subacute, the edge tuberculate; lower angle of the propleura produced, subacute; mesoscutum broadly rounded behind. Abdomen strongly compressed, forming a dorsal keel continuous with a median carina, beginning near the anterior margin of the pronotum. Elytra coriaceous, exhibiting about four stout longitudinal nervures, elliptical in form, reaching onto the third abdominal segment; venter cavernous with the broad connexivum deflexed at right angles, at maturity becoming nearly flat; hind femora short, feebly curved and tumid at base and apex, tibiæ armed with a row of short, weak bristles on each angle; whole surface, the disc of the vertex excepted, dotted with small hair-bearing tubercles, which, on the pronotum and scutum, are arranged in longitudinal and diverging lines; rostrum attaining the hind coxæ. Eyes prominent. Color rufous-brown, varying to piceous, or sometimes almost to a tawny yellow mottled with darker. Legs and beneath paler, the femora and two annulations on the tibiæ darker; anterior edge of the vertex between the rounded lobes yellowish.

Canada. Described from six male examples, which, with other specimens of the same species, were received from Mr. Alva H. Kilman, of Ridgeway, Welland County, and Mr. W. Hague Harrington, of Ottawa. The latter in his "List of Ottawa Hemiptera" says of this species "Common in moss, etc. Collected in November." I had formerly supposed these insects immature, but a pair taken in coitu shows them to be *brachypterus* adults. Two or three females have been examined by me, but at present I can find only males in my collection. This is an interesting addition to our American insect fauna.

2. **Eutettix pictus** n. sp.—Form of *luridus*, but a little broader anteriorly; glossy piceous-black; scutellum, anterior half of the pronotum, base of the vertex, a transverse band on the face, and the legs pale yellowish white. Elytral suture with an oval white spot. Length 5.5 mm.

Female: Vertex scarcely longer on the middle than next the eye, strongly impressed across the disc, anterior to which the punctures are arranged transversely, posteriorly with longitudinal rugæ becoming oblique toward the sides, hind edge smooth, basal median line and a spot on either side impressed, the latter minutely

punctured. Head black; a broad transverse band covering the apex of the front and the base of the cheeks, about four short arcs on the base of the front, the two uppermost strongly oblique, a spot on the middle of the clypeus, the ocelli, antennæ and basal half of the vertex, yellowish white. Pronotum broad and short, longer than the vertex, hind edge feebly concave, sides distinctly carinated, surface transversely wrinkled; the anterior one-half and the narrow posterior margin pale yellow; tergum dark brown, the segments narrowly edged with greenish white and marked with a triangular yellow spot next the sides, the ultimate blackish, with a broad white apical margin; disc of the venter with a large whitish cloud; pectoral pieces narrowly edged with pale, tarsi tinged with brown. Elytra becoming paler toward their apex, marked near the tip of the clavus with a common oval white spot, and on the costa by a whitish hyaline vitta, which is deflected at the stigmatal nervure and becomes obsolete at apex of the middle antiapical areole; last ventral segment as long as the three preceding, its hind angle broadly concave with a short, obtuse, median tooth, the prominent lateral angles rounded, basal angles marked by a whitish cloud; pygofers short and stout, nearly as long as the oviduct, the scattering apical spines and narrow sutural edge whitish, the latter feebly waved.

Pennsylvania. Described from a single female example which I owe to the kindness of Mr. C. W. Johnson, of Philadelphia. This remarkably elegant and distinct species has the glossy black and yellowish colors, and the elytral markings, nearly, of *Th. clitellarius* Say, but the ornamentation of the head and pronotum, and its larger size and broader form will at once distinguish it. The characters of the vertex beginning this description are characteristic of this genus, though somewhat modified in most of the species, and with its stout form and broad front will distinguish it from *Thamnotettix*. I find that, as in *Athysanus*, some species of *Eutettix* have the sides of the pronotum much more distinctly carinated than do others.

Another large species of this genus of which but a single specimen has as yet come to my notice is so evidently distinct from our other described forms, I venture to describe it here to complete the list of our North American species so far as they are known to me.

3. ***Eutettix marmoratus*** n. sp.—A little larger and broader than *luridus*; glossy brown, varied with whitish, fulvous and black. Length 6 mm.

Female: Head and pronotum proportionately about one-tenth wider than in *luridus*; front nearly as wide as long, in *luridus* quite distinctly longer; color of the head soiled white: a broad band across the anterior edge, a line crossing the vertex anteriorly between the ocelli connected with an irregular spot touching the hind edge near each eye, and a faint cloud on the base of the front, fulvous; sutures of the face, a dash below each eye, about seven broken arcs on the front, two dots at the tip of the vertex, its basal margin and impressed median line, piceous; ocelli pale, antennal setæ fulvous; disc of the pronotum brown irrorate with paler and with a white median line; anterior margin ful-

vous, behind each eye are three black dots set on a pale ground and two more are faintly indicated at the middle; scutellum fulvous brown, clouded with darker and marked by five marginal and two basal whitish spots; pectoral pieces and a spot on the anterior coxæ black, the former edged with pale. Legs white dotted with brown, forming three or four longitudinal lines on the femora; tergum blackish with a pale spot on each side of the two posterior segments; venter dark brown, becoming whitish posteriorly, connexivum pale with a brown dot and dusky edge to each segment. Elytra semi-pellucid, tinged with smoky-fulvous, a large cloud on the base, a smaller one on the base of the antiapical areoles, a common oval spot on the commissural margin near the tip of the clavus and a round dot anterior to this a little within the pale commissural nervure, white; nervures and claval suture brown, the former concolorous on the white basal patch; middle antiapical areole extended basally more than in *luridus*. Wings faintly smoky, nervures strong, brown; last ventral segment long, with a small subacute median tooth either side of which the hind edge is straight and a little retreating to the square lateral angles; disc brown, the posterior margin pale; pygofers stout, slightly exceeded by the brown oviduct, pale whitish with a brown cloud on either side, and a smaller one at the base of the ovipositor, and dotted at the base of the scattering pale bristles.

North Carolina. Collected on Mt. Balsam, July 23, 1890, by Mr. W. J. Palmer, Jr., of this city, to whom I am indebted for a number of interesting species from the mountains about Asheville, N. C. In the present species the outer angles of the ultimate ventral segment of the female are less rounded and the hind edge is straighter and more retreating with the sides shorter than in *luridus*, *subæneus* and *pictus*.

4. **Thamnotettix inornata** n. sp.—Allied to *Th. melanogaster* Prov., but larger and wanting the four conspicuous black spots on the anterior margin of the head; pale yellowish or greenish white; tergum, at least in part, a few marks on the base of the vertex and pectoral pieces, and a spot at the base of the antennæ black. Length 5.—5.5 mm.

Female.—Vertex flat, with the anterior edge rather sharp, one-half longer on the middle than next the eye, apex subacute; ocelli and one or two nearly obsolete wavy lines along the anterior edge, brown; clypeus and front about as in *melanogaster*. Elytra semi-pellucid, apex slightly enfumed, nervures slender; wings white, tergum black, the broad lateral margin and narrow hind edge of some of the segments yellow, apical segment yellow, with a transverse black median band and brown base, genital segment yellow, black at base; venter pale, with a triangular spot at base more or less extended, and the suture of the connexivum slenderly, black; pectoral pieces marked with a black cloud of variable extent, tips of the tarsal joints and a series of dots at the base of the tibial spines brown. Ultimate ventral segment long, hind edge truncated or slightly waved. The lateral angles are sometimes moderately produced, and at the middle may be a brown spot divided by the slight median ridge. Pygofers large, acutely narrowed at apex, considerably exceeded by the brown oviduct.

New York. Described from eight female examples captured at Lancaster during July and August. Sometimes the vertex, front

of the pronotum, scutellum, etc., are quite strongly tinged with yellow, and there is generally a distinct brown dot at the outer angle of the loræ.

5. ***Deltocephalus simplex*** n. sp.—Large, pale yellow tinged with greenish. Abdomen black, with a broad yellow margin, the venter sometimes clouded with brown; vertex one-fourth longer on the middle than next the eye, anterior edge with an oval black spot above each ocellus and a larger triangular one on the apex, bisected by a slender, yellow, longitudinal line; front broad, marked with a triangular brown patch resting on the apex and reaching nearly to the base and divided longitudinally by a pale line, and on either side by about eight brown arcs; clypeus broad, scarcely narrowed apically, with the sutures very feebly arcuated. Elytra subhyaline, tinged with yellow on the costa and slightly fuliginous at tip; nervures prominent, yellow; breast claws and oviduct black.

Genital characters: ♂.—Valve broad and short, obtuse; plates triangular, about twice the length of the valve, apex acute, sides moderately excavated with long bristles. Female: Apical edge of last ventral segment excavated either side of the narrow, acute, median tooth, the apical angles prominent, rounded; pygofers slightly exceeded by the oviduct. Length 4–5 mm.

Described from one male and four female examples. Canton Marsh, Md., October 2d, Mr. Uhler. Astoria, L. I., July and Hoboken, N. J., June, Mr. E. B. Southwick. This large, clearly marked species may be readily distinguished by the four large black spots on the anterior edge of the vertex and the black abdomen. The hind tibiæ are sometimes blackish below.

6. ***Deltocephalus Osborni*** n. sp.—Large and broad, of a uniform tawny yellow color and bearing a slight resemblance to *Athysanus obsoletus*. Length about 5 mm.

Vertex nearly one-half longer at the middle than next the eye; anterior edge obtuse, whitish below, above marked with a distinct geminate dark brown spot at tip and two small paler ones either side of each ocellus; hind edge and an oblique vitta from the base of the brown impressed median line to each ocellus, whitish; front with an interrupted median line and about six arcs paler; clypeus but little narrowed toward the apex, pale with a tawny median line; loræ and cheeks pale, the sutures tawny. Pronotum with five nearly obsolete longitudinal lines; scutellum with a pale area on either side; tergum dusky in the female, in the male black, with a broad pale border, ornamented with two black points on each segment; venter more or less blackish along the sides and on the connexivum, with a cloud on the middle of the basal segment. Elytra a little longer, or at times slightly shorter than the abdomen, nervures strong, whitish, bordered more or less with fuscous.

Genital characters: ♂.—Valve short, rounded behind; plates broad-triangular, but little more than twice the length of the valve, their tips but slightly produced, acute. Female: Last ventral segment rather short, its outer angles cut off obliquely exposing the rounded outer corners of the plates, the short hind edge feebly arcuated either side of the nearly obsolete median tooth; pygofers

large and thick, very slightly exceeded by the oviduct, the sides of the latter and a spot on the apex of the last ventral segment black.

New York and Iowa. Described from one male and four female examples taken at Lancaster, N. Y., Sept. 3, 1888. These were swept from grass and weeds near the borders of a low swampy wood. I have also had the pleasure of examining an Iowa specimen received from Prof. Herbert Osborn, the well-known entomologist, to whom I dedicate this large species in recognition of the kind and ready response always received to any appeal for assistance or material from him.

7. *Deltocephalus cinerosus* n. sp.—Form and size of *D. Melsheimeri* nearly; grayish yellow, marked with fulvous brown; elytra cinereous, the areoles mostly edged with fuscous. Length 3—3.5 mm.

Venter flat; length on the middle nearly twice that next the eye; disc fulvous-brown, with a pale longitudinal vitta including the black impressed line; anterior submargin with a dark brown broken line abbreviated at the pale polished tip and touching the ocelli; front with about nine brown arcs coalescing at the apex and on either side of the pale median line, sutures black; clypeus moderately narrowed apically, its sides straight; disc of the pronotum dusky with five pale longitudinal lines; scutellum brown within the basal angles and on either side of the apical field. Elytra cinereous, nervures paler, marked with white on the transverse veinlets, the areoles mostly bordered with fuscous; disc of the venter and connexivum, two bands on the anterior and intermediate femora, and a series of points at the base of the tibial spines, dark brown; tergum black, broadly edged with yellow. Wings whitish hyaline.

Genital characters: ♂.—Valve large, triangular, obtuse; plates hardly twice the length of the valve, ovate-lanceolate, obtuse and moderately divergent at apex; pygofer black, considerably longer than the plates and closely beset with stiff white bristles; disc of the valve and plates blackish. Female: Apex of the last ventral segment with a minute notch between two short truncated teeth, either side of which the margin retreats to the rounded angles, the apical teeth and a cloud behind them black; pygofer stout, nearly equaling the blackish oviduct.

California. Described from one male and four female examples received from Mr. D. W. Coquillett (No. 267), under Mr. Uhler's MS. name here adopted. This little gray form varies somewhat in the extent of its dark markings. It bears a marked resemblance to *D. inimicus* Say, but it is smaller, with a longer vertex, and wants the six black points so conspicuous in that species. It is still nearer *D. configuratus* Uhler, but its more slender form and the characters of the genitalia will readily distinguish it. A closely related European species is *D. breviceps* Kirschb.

8. *Deltocephalus signatiformis* n. sp.—Allied to *D. Sayi* in form and ornamentation, but smaller, with a shorter vertex. Length 3—3.5 mm.

Vertex a little sloping, nearly flat, about one-third longer on the middle than next the eye, anterior edge rounded as in *Melsheimeri*; front broad, sides nearly rectilinear almost to the apex, where they are suddenly incurved; clypeus long and narrow, basal suture straight, the sides straight and parallel, apex rounded; loræ nearly semicircular, small; cheeks broad, forming an unusually wide margin beyond the loræ and attaining the apex of the clypeus.

Genital characters: ♂.—Valve broad and short, about the length of the last ventral segment; plates about twice the length of the valve, together nearly semicircular in form; pygofers moderately exceeding the plates, narrow and obtuse at apex. Female: Apical margin of last ventral segment with an inversely triangular median notch reaching to near the center and including on its base a blunt tooth, hind edge either side of this notch quite deeply excavated with the outer angles prominent and rounded; pygofers broad, with numerous stout apical spines. Color ashy gray, sometimes tinged with fulvous. Vertex with four quadrate black spots on the disc and two smaller ones at tip, sometimes with a few blackish lineations near the ocelli, median impressed line brown; front black, with numerous dots and broken arcs, broadest next the base and sides, an apical transverse band, and generally a large cordate spot on the disc a little anterior to the middle, whitish; cheeks whitish, with a dusky cloud at the base of the antennæ and sometimes another below the eyes; clypeus with a black apical patch, which may be produced along the middle nearly to the base; loræ marked with black at its upper and lower angles, sutures black. Pronotum mottled with brown and marked by about five pale longitudinal lines; scutellum with a spot within each basal angle, two dots between these and the arcuated impressed line, black. Elytra whitish, with about three broad fulvous clouds, in which the areoles are margined with fuscous; nervures white, obscured on the fulvous areas. Beneath black, sometimes with the apical ventral segment fulvous and with the pectoral pieces edged with pale.

Colorado. Described from one male and two female examples received from Mr. C. P. Gillette, and captured by him among the mountains in the northwestern part of the State. This is a very pretty little species.

9. ***Deltocephalus Weedi*** n. sp.—Aspect of the preceding, but with a longer and sharper vertex and clearer markings; light testaceous-brown marked with fuscous and white. Length 3 mm.

Vertex one-half longer on the middle than next the eye, flat and strongly angled before; disc marked with a transverse brown band springing from a piceous spot against the anterior angle of the eyes and extended posteriorly either side of the black impressed median line, anteriorly it is bisected by a branch extending backward from the middle of a transverse arcuated white line which reaches the anterior edge a little before the ocelli; on the apex are two angular piceous spots and above and interior to each ocellus is an oval one; basal areas either side of the median line edged with whitish; front convex, sides nearly rectilinear from the antennæ to the base of the clypeus, the latter convex and narrowed apically; face black, about three basal arcs and a few points on the front, a spot at the interior angle of the loræ, a similar one above this on the cheek, and a large irregular area on the outer angles fulvous; sometimes these markings are much extended covering most of the cheeks, loræ and sides of the clypeus.

Pronotum about as in *signatifrons*; lateral angles and five longitudinal lines white; two apical dots and an irregular arcuated spot or band on the anterior submargin and a cloud on the posterior disc dusky or piceous; scutellum marked as in *signatifrons*, or with the apical field mostly brown. Elytral nervures broadly white tinged with testaceous in places, the areoles quite uniformly edged with fuscous. Wings highly iridescent; tergum and all beneath black, edges of all the segments and pleural pieces pale. Legs spotted and banded with pale. The female has the last ventral segment and legs pale, with the hind edge of the former and the base of the anterior and intermediate femora and a few spots on the tibiæ brown; the spines long, stout and pale in both sexes.

Genital characters: ♂.—Last ventral segment feebly concave behind; valve short, the hind edge nearly straight, very feebly angled at the middle; plates short and broad, triangular, obtuse at apex; pygofer a little longer than the plates, the broad arcuated apex appearing beyond their tips. Female: Last ventral segment a little longer than the preceding, but slightly shorter on the middle, regularly concavely arcuated behind, the lateral angles prominent, right angled; pygofer broad, their obtuse apex nearly equaling the stout oviduct.

Mississippi. Described from numerous examples received from Mr. Howard Ewerts Weed, whose industry has brought to light many new and interesting members of the little-known Jassid fauna of the "Mississippi Bottoms," and it is with pleasure I embrace this opportunity of acknowledging my indebtedness to his labors and generosity by dedicating to him this neat little species.

THE NORTH AMERICAN PEMPHREDONIDÆ.

BY WILLIAM J. FOX.

Before proceeding I wish to thank Mr. E. T. Cresson and Prof. C. V. Riley for favors received. I have made this paper as short as possible, omitting all generic descriptions, as in a few years the rapidly increasing number of new species will undoubtedly demand a more exhaustive treatise on them. The types of all our species have been before me, except those few described by Say and Kohl, and of course those which I have been unable to identify. The following table, taken from Cresson's "Synopsis," will serve to distinguish the genera:

Anterior wings without a third discoidal cell, therefore only one recurrent nervure.

Anterior wings with two submarginal cells.

Abdomen sessile; recurrent nervure joining the first transverse cubital nervure.....**Spilomena** Shuck.

Abdomen petiolate; recurrent nervure received in the middle of the first submarginal cell.....**Stigmus** Jur.

Anterior wings with one submarginal cell.....**Ammoplanus** Gir.



Van Duzee, Edward P. 1892. "A synoptical arrangement of the genera of the North American Jassidæ, with descriptions of more new species." *Transactions of the American Entomological Society* 19, 295–307.

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