

very gradually enlarging to the ocellus, below which it is subobsolete; lateral foveolæ wanting; eyes moderate, subpyriform; antennæ about as long as the pronotum, with the post-basal joints distinctly depressed. Pronotum rather short, feebly rounded in front, slightly rotundato-angulate behind, the lateral carinæ subparallel, faintly sinuate, the disk narrowest behind the middle of the prozona, which is barely longer than the metazona. Tegmina barely surpassing the hind femora, the discoidal area scarcely narrowing distally and scarcely narrower than the widest part of the ulnar area, rather densely reticulate proximally, with two rows of irregular cells distally; wings with the veins of the anterior area more or less roseate. Hind femora as long as the abdomen, not very slender, green, feebly ferruginous beneath.

Length of body, 20 mm.; pronotum, 4 mm.; tegmina, 15.5 mm.; hind femora, 13 mm.

1 ♀. Mt. Alvarez, Mexico, E. Palmer.

ORPHULELLA SCUDDERI.

Ophula Scudderi Bol., Mém. Soc. Zool. France, I., 142 (1888).

I have specimens taken at La Firmina, near Bemba, Cuba, by Wright, and on the Isle of Pines by myself.

ERRATUM.

Page 121 (C. E., May, 1899), near the bottom, for "*Eudeopsylla*" and "*Eudeopsylla nigra*," read "*Udeopsylla*" and "*Udeopsylla nigra*."

SOME NEW SPECIES OF DELTOCEPHALUS.

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

✓*DELTOCEPHALUS AREOLATUS*, n. sp.

Resembling *imputans*, Osb. & Ball, but with a much longer vertex; vertex longer than in *producta*, Walk. Olive green, a spot on the middle and another at the tip of each elytron and all below black. Length, ♀, 4 mm.; ♂, 3.5 mm.; width, 1.75 mm.

Vertex flat, strongly acutely angled, the tip rounding, almost twice as long as the pronotum, fully twice longer than width between eyes, margin sharp, angle with the face acute; front depressed, almost as much above the ocelli as below, lateral margins straight, continuous with those of the clypeus; loræ small, two-thirds the width of the clypeus; pronotum

over twice wider than long — half the length within the anterior curve; clytra flaring, venation of the reflex-veined type, the second cross nervure wanting.

Colour: vertex yellowish olive, the tip ivory white, margined with black, pronotum olive, the anterior third yellowish, elytra pale olive, a large fuscous blotch back of the cross nervure between the sectors, and another on the margin of the third apical cell, reflexed veinlets white, margined anteriorly with fuscous, all below, except tarsi and part of the genitalia, black.

Genitalia: female, ultimate ventral segment twice the length of the penultimate, lateral margins strongly narrowing posteriorly, posterior margin angularly excavated one-third the depth of the segment, with a rounding medially cleft tooth equalling the lateral angles; male, valve triangular, the apex produced, plates narrow at base, nearly twice longer than valve, narrowing towards the blunt, angularly divergent apices.

Described from one female from Arizona (Kunze), one from College Park, Md. (Johnson), and one male from Md. (Heideman). This is another of the reflex-veined group, and would fall between *producta* and *imputans*; from the former it is readily separated by its colour, and from the latter by the much longer vertex.

✓ DELTOCEPHALUS FLEXULOSUS, n. sp.

Form of *reflexus* nearly with narrower vertex and elytra, resembling *abbreviatus* in colour and ornamentation. Light cinereous, with the margins of the nervures and the markings on the vertex fuscous; face black above, white below. Length, ♀ 4 mm., ♂ 3.5 mm., width 1.25 mm.

Vertex one-third longer than pronotum, nearly that much longer than its basal width, disc flat, the margins sharp; face as in *reflexus*; pronotum distinctly narrower than the eyes, twice wider than long; elytra longer, narrower than in *inflatus*, with a similar venation, veins on clavus separate or only connected by a cross nervure.

Colour: light cinereous washed with pale yellow, traces of pale olive or fuscous lines on the pronotum; margins and tip of vertex ivory white, an orange line just inside the margin and a fuscous circle around tip; elytra pale, the nervures creamy white with narrow fuscous margins, a fuscous spot either side the cross nervure on the clavus, and a larger pair next the first cross nervure on the corium, the apical margin and the anterior margins of the reflexed veinlets fuscous; upper half of face shin-

ing black, with traces of four light arcs, lower half light lemon-yellow.

Genitalia: female, ultimate ventral segment resembling *abbreviatus*, twice longer than penultimate, lateral margins narrowing posteriorly, posterior margin angularly emarginate, a broad wedge-shaped median tooth extending beyond the lateral angles, the apex slightly notched in the middle and arcuated either side; male, valve broad, triangular, plates narrow convex, half longer than valve; pygofers longer than plates, compressed ventrally, forming a blade-like structure, for the reception of which the plates are notched half way to the base.

Described from numerous specimens taken at Fort Collins, Colo., and back into the mountains to the Little Beaver (9,500 feet), also specimens from Windsor, Estes Park, Denver and Holly in Colo., and from Western Kansas. The black on the upper half of the face will serve to separate it from all but *reflexus* and the following species, and from these it may be distinguished by the flat pygofers and the notched plates.

✓ DELTOCEPHALUS STYLATUS, n. sp.

Similar in form and colour to *flexulosus*, but broader, as broad as *inflatus*, with the black on the face and the flaring elytra of *reflexus*. Length 4.5 mm., width 1.75 mm.

Vertex one-third longer than pronotum, little longer than its basal width; width across eyes equal to the combined length of pronotum and vertex; front and clypeus proportionally broader than in *flexulosus*; elytra longer than abdomen in most specimens; venation as in *inflatus*, the basal angle of the third apical cell a right angle, claval nervures separate.

Colour: pale cinereous, vertex greenish, markings on margin and tip as in *flexulosus*, a transverse band on either side before eye and a spot in the middle of either side at the base fuscous; pronotum with a sub-marginal row of fuscous spots; elytra pale, with dark margined nervures and fuscous markings as in *flexulosus*.

Genitalia: female, ultimate ventral segment over two and one-half times as long as penultimate, lateral margins nearly parallel, posterior margin straight, produced on the middle third into an obtusely triangular tooth, which is bifid at the apex and bears a small lateral tooth at about the middle of either side; male, valve equilaterally triangular, plates narrow, extending beyond the valve scarcely its length, roundly divergent at the apex, where they are half as wide as at the base, their tips roundly emarginate, pygofers inflated, extending considerably

beyond the plates, their inner margins extending into a pair of narrow, curved, black, style-like processes.

Described from five males and five females swept from prairie grass at Little Rock, Iowa, by the author.

DELTOCEPHALUS MISSELLUS, n. sp.

Form and general appearance of *Sayi*, but smaller and lighter coloured, resembling the European *picturatus* and *flori*, but readily separated by the genitalia. Length 2.75-3 mm., width 1 mm.

Vertex flat, right angled before, its length and basal width equal, one-third longer on middle than against eye, slightly longer than pronotum; face as in *Sayi*, the front narrow, wedge-shaped, the lateral margins continuous with those of the clypeus; pronotum over twice wider than long; elytra broad and short, broadly rounding behind, the apical cells little longer than their apical width; elytra shorter than the abdomen in the female, longer in the male.

Colour: pale cinereous washed with yellowish brown, the anterior half of the vertex, except the lateral margin, brownish fuscous, divided into four quadrants by a light cross, the anterior pair darkest on the oblique margins; pronotum irregularly marked with fuscous; elytra pale cinereous, the nervures whitish, irregularly margined with fuscous, the white emphasized on all the transverse nervures; face olive fuscous, short arcs on the front, a median line on the lower half, a spot on the loræ and the margins of the clypeus and genæ light; below fuscous, legs light, anterior femora annulate.

Genitalia: female, ultimate ventral segment half longer than penultimate, the posterior margin slightly, roundly produced in the middle half, the apex nearly truncate; male valve obtusely triangular, plates broad at base, rapidly narrowing to the acute slightly divergent points, not quite half longer than the valve, concealing the pygofers.

Described from numerous specimens taken between Rist Canon (6,000 feet) and the head waters of the Little Beaver (9,500 feet), one specimen from each, Estes Park, Pinewood and Steamboat Springs, and several from Marshall's Pass, all points being in the mountains of Colo.

DELTOCEPHALUS VINCULATUS, n. sp.

Form and structure of *signatifrons* nearly, broader and more distinctly marked. Pale cinereous marked with rust brown and fuscous; two broad, transverse fuscous bands on the pale elytra. Length, ♀ 3.5 mm., ♂ 3 mm.; width 1.75 mm.

Vertex flat, slightly obtusely angled, one-third wider than the middle length, over three-fourths the length of the pronotum, face and facial angle as in *signatifrons*; pronotum shorter, over twice wider than long; elytra equalling the abdomen in the female, slightly longer in the male, shorter than in *signatifrons*, with a very slight appendix, venation as in *cruciatus*.

Colour: vertex with the margins, a median stripe and a short transverse bar before the middle always light, the remainder of the disc with a very variable amount of fuscous, fading out posteriorly into a rust brown; pronotum irregularly marked with rust brown—in the darker specimens arranged in longitudinal stripes; elytra pale, subhyaline, the nervures white, a broad, slightly oblique band across the middle, another before the tip, and spots on the margins of the second and third apical cells fuscous.

Genitalia: female, ultimate ventral segment short, the lateral angles acute, posterior margin roundly emarginate either side of a large, acutely pointed, black tooth, which is cleft nearly to its base; either side of this tooth the oblique finger-like plates are exposed; male valve obtusely angulate, longer than the ultimate segment, plates broad at base, slightly narrowing to the truncate tips, where they are two-thirds the basal width, two and one-half times the length of the valve, set obliquely together, forming a trough.

Described from numerous specimens swept from the meadows of the Little Beaver, in the mountains west of Fort Collins, Colo.

CTENUCHA CRESSONANA.

In the recent volume published by the British Museum (Natural History), Sir Geo. Hampson refers this species, described by me in 1863, as the same with *C. venosa*. The material in the British Museum from North America: Texas, Grote and Zeller collections, is all *C. venosa*. *C. Cressonana*, from Colorado, is clearly distinct, a larger species more of the type of *C. virginica*, and I can only suppose that unacquaintance with my type has led to the present lumping. I may also add, that it can hardly be settled in the British Museum, whether the Californian *Scepsis Packardi*, which has lighter tinted primaries, and greater extension of a paler yellow on the head, be a local race of *S. fulvicollis* or not. From analogy in the group, it will probably prove distinct.

Roemer Museum, Hildesheim, Germany. A. RADCLIFFE GROTE.