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A NEW SPECIES OF APHELONEMA WITH NOTES ON OTHERS.
(HOMOPTERA—FULGORIDÆ).

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These curious little bullet-headed or barrel-like insects are rather rare in collections and most of the species have been described from a small number of examples. The writer recently collected a number of specimens of a very distinct species and while working upon this discovered that a number of the described species appeared to be only color varieties of other forms. Some of the specimens seem to be definitely limited to a single color pattern while others are widely variable and occur in a number of patterns.

There appear to be three rather distinct groups in the North American representatives of this genus and it may be that, when the generic relationships of the South American and South European forms are better known it will be possible to assign them to three already described genera. The first group with its short vertex and almost circular front, slightly visible from above, is represented by *simplex* and its many varieties and as this species is the type of *Aphelonema* Uhler, the first genus to be described, this group will always bear that name. The second group, which has the vertex longer and the front vertical or slightly retreating, is represented by *histrionica* and *vittata* and is much closer to the European representatives for which *Peltonotellus* Puton (*Peltonotus* Muls. Ray.) has long been used. The third group, in which the vertex is long and angular and the front transverse and conical, as represented by *nigriviridia* appears to be closely related to some South American forms that have been placed in the genus *Plagiopsis* Berg.

The following key to the North American forms is arranged to show the three groups and is based entirely on structural characters, leaving color and genital characters as additional means of identification.

KEY TO THE NORTH AMERICAN SPECIES OF APHELONEMA UHLER

- I. Vertex short transverse, parallel margined. Front almost round, slightly inflated and inclined so as to be slightly visible from above . . . 1. *simplex* Uhl.
- II. Vertex almost as long as the pronotum. Front oval or elongate, vertical or retreating slightly.
 - A. Front oval flat, median carina strong.
 - B. Brachypterous elytra with few simple veins . . . 2. *histrionica* Stål.
 - BB. Brachypterous elytra with a closely anastomosing net work of veins.
 - Angle of clypeus with a slight acute protuberance 3. *rugosa* Ball
 - AA. Front elongate, lateral carinae only slightly curved, median carina fading out above 4. *bivittata* Ball
- III. Vertex long, five angular. Front inflated, retreating, broader than long, the pustular area much enlarged above.
 - C. Vertex longer than the pronotum, definitely angular. Front strongly retreating 5. *nigriviridia* n. sp.
 - C.C. Vertex about equalling the pronotum, weakly angled. Front convex above retreating below 6. n. sp. Doz.

I.—*APHELONEMA SIMPLEX* Var. *SIMPLEX* Uhler*Aphelonema simplex* Uhler, Bull. U. S. Geol. and Geog. Surv. 1 p. 356, 1876.*Aphelonema rosae* Metcalf, Jl. Eli. Mitch. Sc. Soc. 38, p. 188, 1923 (male).

Vertex short transverse, front almost circular slightly convex and inclined forward, the row of pustules continuous below. Female pale dirty straw, the pronotum and scutellum often pale yellow, the eyes and genital segments dark. Male varying from pale salmon to a definite pink with the eyes dark. Length; brachypterous form, female 3 mm., male 2 mm.

This is the common form from Eastern Colorado through Kansas and Iowa to Connecticut and New Jersey. Southward the darker forms are more common though this variety has been taken sparingly in Mississippi and Florida. Metcalf apparently did not recognize that the sexes are normally quite different in color and size and so redescribed the typical male from Virginia and Miss. as a new species under the name of *rosae*.

Aphelonema simplex var. *obscura* Van Duzee*Aphelonema obscura* Van Duzee, Bul. Buff. Soc. Nat. Sc. 10 p. 499, 1912.

Pale smoky brown varying to rusty brown on the abdomen. Clypeus and below still darker.

This variety was described as a distinct species from Georgia. It has been taken by the writer with typical *simplex* and intergrading forms in Kansas, Iowa and Florida. Long winged examples, even in the Mississippi valley are practically all obscurely colored with the wings hyaline.

Aphelonema simplex var. *dorsata* new var.

Head and pronotum straw color continued as a broad dorsal stripe to the apex of the abdomen. This stripe often mottled with milky white. A shining black stripe from the eye back to the apex of abdomen on either side. Legs and below pale reddish, the venter often dark.

Holotype, female, Feb. 17, 1926, Sanford, Fla.

Paratypes, two females from the same locality, Mar. 16 and June 4, all collected by the writer.

This variety is intermediate in character between *simplex* and *decorata* and was taken with examples of the latter.

Aphelonema simplex var. *decorata* Van Duzee*Peltonotellus decorata* Van Duzee, Proc. Acad. Nat. Sc. Phil. 69, p. 492, 1908.

Female with vertex pronotum and scutellum straw or orange yellow, the elytra and exposed abdomen piceous. Male with the same pattern but orange or fulvous and blue black. Face and below pale, the legs orange and the venter often dark.

This is the most common form in Florida, the only state from which it has been reported. In the winter period they lose their brilliancy and a number of gradations have been found varying towards the *dorsata* stripe on the one hand, the dull color of *obscura* or the straw and orange of *simplex* on the other. In the extreme form this appears as a quite distinct and striking species. Van Duzee found no structural differences between this form and *simplex* except in the pleural pieces and male genitalia and he had but a single male whose variation seems to be individual rather than specific. There does appear to be a slight but fairly constant variation in the shape of the face; in *simplex* this is almost circular while in *decorata* it is usually a trifle pointed below.

The varieties of *simplex* can all be separated from the related species by the round protruding front and the absence of black on the clypeus. They all occur in damp grassy meadows or along the edges of swamps. They apparently hibernate as adults. In the North they appear to be two brooded, one brood appearing in late June and July and the second in September and October. In Florida the first generation appears in March and April.

2 *APHELONEMA HISTRIONICA* Stal.

Peltonotus histrionicus Stal, Ber. Ent. Zeitschr. VI, p. 310, 1862.

Vertex about equalling the pronotum in length, much longer than in *simplex*, flat, the front margin straight. Front almost vertical, forming a slightly acute angle with the vertex, oval, truncated at both ends, strongly carinate. Brachypterous elytra with the venation simple. Straw-color with a broad white stripe, narrowly black margined, running from vertex to scutellum. Elytra white with a submarginal black stripe sometimes wanting. Abdomen with five black stripes, the median one narrow, the others broad and irregularly interrupted. Clypeus and genitalia shining black.

This is apparently a northern and mountain form. The writer has taken it above 10,000 ft. back of Ward, Colorado, in Iowa and Wisconsin and has examined examples from Pingree Park, Colo. (Drake) and The Catskills, N.Y. (Osborne and Drake) and a single shrunken example from Grants Pass, Oregon (Titus) probably belongs here. In addition it has been reported from Mass., Ont. and Nevada. It appears to extend from coast to coast in the northern portion of the United States.

Aphelonema histrionica var. *giffardi* Van Duz.

Aphelonema giffardi Van Duzee, Prob. Cal. Acad. Sc. 4th Ser. Vol 7, p. 309, 1917.

Resembling typical *histrionica* in size and form but darker in color with a light face and the costal area of the brachypterous elytra definitely dark.

The writer has examples of *histrionica* from Ward that have the light face and Dr. Drake has an example from Pingree Park, Colo just north of there that has the typical *giffardi* marking throughout. Van Duzee described this as a distinct species from Stockton, Calif., but the genital characters given are found in typical *histrionica* as individual variations, depending largely on position.

3. *APHELONEMA RUGOSA* Ball

Peltonotellus rugosus Ball, Can. Ent. 34, p. 263, 1902.

Resembling *histrionica* in structure with the front more nearly vertical, the clypeus more definitely angled and with a sharp median carina that is produced into an acute point on the angle. Brachypterous elytra densely and evenly reticulate. Color dirty straw with an obscure dorsal stripe margined by a series of black points. Abdomen with dots and ocellate spots. The males are often reddish with bright red legs.

This species has been taken by the writer in relatively dry situations along the base of the Rocky Mountains from the New Mexico line near Trinidad, Colo., on north through Palmer Lake and Fort Collins nearly to the Wyoming line and again on the west slopes of the Wasatch Mountains at Salt Lake and Logan, Utah. It has been reported from Kan. Ia., Dak. and Md. and from "Br. Amer." (The Eastern references may belong to the preceding species. In Colorado and Utah

a generation matures in June and early July and occasional adults have been taken late in August.

4. *APHELONEMA BIVITTATA* Ball.

Peltonotellus bivittatus Ball, Can. Ent. 34, p. 263, 1902.

Resembling *histrionica* in size and general structure but with a long and comparatively narrow face. The lateral carinae only slightly curved. The median carina disappearing above. Shining blue-black with a broad median and two oblique lateral stripes arising below the eyes. Face white the lateral carinae of front black. Pustulate area of pro and mesonotum obscurely marked. Macrop-terous elytra with the margin and all the membrane beyond the cross nervures, smoky, the nervures darker.

The writer has taken this species on "short grass" areas in extreme east-ern Colorado and western Kansas, in similar areas in western Nebraska, at Mandan, N. D., and on a "knoll" where short grasses occurred in extreme north-western Iowa. Specimens have been examined from Trinidad and Pingree Park, Colo., (Drake) and Onaga, Ks. (Crev.). It is probably limited to the short grass areas of the Plains region.

5. *Aphelonema nigriviridia* n. sp.

A small elongate greenish or straw colored species with black stripes some-what resembling *bivittata* but with a much longer vertex and broader face. Length, Female 2.5 mm, male 2 mm.

Vertex definitely longer than pronotum, obtusely angulate at apex and again before the eyes, where it is narrower than the margin of the face. Face extending out to the line of the eyes giving the appearance of a parallel margined vertex but really exposing a triangular pustulate compartment. Face sloping at an angle of nearly 45 degrees, broader than long, conically inflated with a sharp median carina and wing-like lateral ones. Clypeus broad, tumid, but little more retreating than the face. Brachypterous elytra short with but few simple veins. Color; female white, fading to straw, with a slightly iridescent greenish cast. A narrow median black line from the base of the vertex to an expanded spot on the apex of abdomen. Eyes dark, a narrow black line running back parallel with a similar line on the costa. Circular carinae on each segment of abdomen narrowly black from the margin to a pair of irregular stripes arising just inside the lines on the elytra. Below greenish; a smoky arc slightly below the vertex margin.

Male; like the female except that there is a broad shining black band ex-tending from the upper part of front across the eyes and including the outer third of the elytra and abdomen. Clypeus and legs except the joints dark. Sometimes there are traces of a pair of converging stripes arising on the lateral carinae of the scutellum and following the inner fork of the claval nervures.

Holotype female, *allotype* male and four pairs of *paratypes* collected by the writer at Sanford, Fla. This is a strikingly distinct little species which has been found only in the wetter portions of the "flat woods" and along the margins of swamps.

6. *APHELONEMA* sp.

Resembling *nigriviridia* but shorter with a much shorter vertex and more rounding front. Female pale green shading towards straw color with two or

three black spots on the median carina of the last abdominal segments. Male with the abdomen and legs bright orange. Length 2 mm.

Dr. Dozier has sent me examples of this species from Miss. He is describing it in a forthcoming publication.
