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Studies on Costa Rican Odonata.

I—The Larva of *Cora*.

By PHILIP P. CALVERT, PH. D.

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(With Plates II and III)

In the course of our entomological researches in Costa Rica, a brief outline of which has already appeared in ENTOMOLOGICAL NEWS,* I collected some Odonate larvae of a form hitherto undescribed and which, it now appears, are certainly of the genus *Cora*. One of these was found at Peralta, Costa Rica, March 24, 1910, in a shallow brook in the woods west of the railroad station, clinging to a submerged stone. The altitude was about 335 meters, or 1100 feet. This larva died a few days later and was preserved in alcohol. A second is recorded in our diary, from Juan Viñas, April 27, 1910, as follows: "About half a mile farther [westward from the farther waterfall along the railroad from Juan Viñas station] is a third fall, or rather cascade, reached by a little trail through a bit of exceedingly thick damp woods full of wild ginger [*Costus* sp., Costa Rican name cañagria], heliconias,

* Vol. XXI, pp. 334-337, July, 1910.

Studies Amongst the Coccinellidae, No. 2, (Col.).

By F. W. NUNENMACHER, Piedmont, California.

Since my last paper on Coccinellidae* several friends and correspondents have sent me material in various genera including several species new to science, and as some of these are of considerable interest it seems worth while to publish the following descriptions at this time:

Genus PSYLLOBORA Mulsant.

Psyllobora koebelei n. sp.

♂.—*Color*: Whitish yellow with chocolate brown markings disposed as follows: Pronotum with the five common discal spots, each elytron with one juxta-scutellar and one median basal dot, one marginal small dot placed a little before the middle, and one irregular blotch roughly quadrate in form, placed its own width from the margin and close to the suture and rather behind the middle. Mouth parts testaceous; ventral surface black except mesothoracic episterna, which are white and last four ventral segments, which are testaceous, as are the legs. Form convex, subovate; *head*, impunctate; *pronotum* very finely and sparsely punctured; *elytra* moderately coarsely punctured; *ventral surface*, sternum moderately coarsely punctured; abdomen smooth.

Length, 2.25 mm. *Width*, 2 mm.

Type—♂ in my collection.

Type locality—Nogales, Santa Cruz Co., Ariz. vi. 02. (Koebele)

This species, which feeds on the scale infesting mistletoe, comes nearest to *P. luctuosa* Muls., from which it can readily be told by the elytral design. The type was kindly given me by Mr. A. Koebele in whose collection there are several specimens. According to his observations (No. 2426), this species, when alive, has a ground color of beautiful shimmering silvery green.

Genus AXION Mulsant.

Axion incompletus n. sp.

♂.—*Color*: Head light ferrugineous, pronotum and elytra black, the former with the anterior angles ferrugineous and a beaded line of the same color along the entire anterior margin, each elytron with a median double coalescing spot at the callus, nearer the margin than the suture, the shape of this spot being obliquely and roundly oblong with a prolongation towards the base of the elytron; ventral surface uni-

* See ENTOMOLOGICAL NEWS for April, 1909, p. 161 ff.

formly ferrugineous except the head, which is infusate, mesosternum, tibiae and tarsi piceous. *Form* as in *tripustulatus* DeG., head slightly nitid, almost impunctate; *maxillary palpi* black, last article inflated, somewhat flattened, truncate and excavated at apex; *pronotum* somewhat shining, almost impunctate; *scutellum* very small; *elytra* with texture as in head and thorax; *ventral surface* with sternum finely and thickly punctured, except the mesosternum, which is smooth and very nitid, ventral sternites finely, thickly and striately punctured except the base of the segments, which are smooth; fifth ventral rather deeply notched; *legs* with femora slightly rugose, tibiae smooth and sparsely pubescent.

Type—♂ in my collection.

Type locality—Lincoln Park Beach, Chicago, Ill., (Wolcott).

This form can be told at a glance from *tripustulatus* DeG. by the absence of the sutural spot. I owe the type to the kindness of my friend, Mr. Frederick Knab, of Washington, D. C.

Genus **HYPERASPIS** Chevrolat.

***Hyperaspis lateralis*, var. *flammula* n. var.**

Color, structure and ornamentation as in *lateralis* Muls., except that the marginal vitta of each elytron is longer and is connected with the common discal spot by an isthmus of the same color as the vitta and spot; this isthmus rises from a point at about the posterior third of the vitta.

Type—♂ ♀ and one cotype (♀) in my collection.

Type locality—Montana.

Geo. Dist.—Montana, 2 specimens; Golden, Col. vii, 18. 09. one specimen (W. J. Gerhard).

I have seen examples of this variety in several collections in the east including the Horn collection of the American Entomological Society. The ♂ ♀ type was kindly given me by Mr. Chas. Liebeck of Philadelphia, the cotype from Colorado by my friend Mr. A. B. Wolcott. In the latter the elytral pattern shows slight signs of a reversion towards the typical design.

***Hyperaspis wellmani* n. sp.**

Color: Shining black, elytra with reddish yellow markings, disposed similarly to those of *lateralis* Muls., except that the marginal vittae distinctly increase in width posteriorly and do not reach as nearly the

base of the elytra as in the species mentioned, also the discal and subapical spots are constantly smaller and regularly circular, ventral surface black except that portion of the reflexed margin of the elytra occupied by the marginal vittae. *Form* regularly oval; *head* very sparsely and minutely punctured; *pronotum* a little more heavily and thickly punctured; *scutellum* large with a few coarse punctures; *elytra* more thickly punctured than head, but less thickly than pronotum; *ventral surface* with mesosternum smooth, episternum of mesothorax very coarsely punctured. *Head* of ♂ chrome yellow, the anterior border of the pronotum narrowly, and the lateral borders heavily margined with the same color, the lateral margin not quite reaching the base, anterior pair of legs and tarsi of all yellowish.

♀.—Entirely black except elytral markings, tarsi dark fuscous.

Length.—♂ 2.5 mm., ♀ 3.1 mm.

Width.—♂ 1.7 mm., ♀ 2.1 mm.

Type.—♂ ♀ and five cotypes, one ♂ and four ♀ ♀, in my collection.

Type locality.—Goldfield, Esmeralda Co., Nevada, vi. 27. 07 (Nunenmacher).

In general form and markings the specimens are remarkably constant. I have many times bred *lateralis* and the larva of *wellmani* is strikingly different from that species. The following table will aid in separating the adults:

- | | | |
|--------|--|------------------|
| 1. (2) | Marginal vittae broad, not increasing posteriorly, episternum of mesothorax mediumly punctured, foveae for reception of hind tibiae rather shallow, size large and form more convex than the following species | lateralis |
| 2. (1) | Marginal vittae narrow, distinctly increasing posteriorly, episternum of mesothorax very coarsely punctured, foveae for reception of hind tibiae deep, size smaller and less convex than preceding species | wellmani |

Hyperaspis wolcotti n. sp.

♀.—*Color*: Head, pronotum and scutellum black, the pronotum with rather wide stramineous lateral margins, elytra piceous with stramineous markings arranged as follows: A wide marginal, strongly sinuous vitta extending from the humeral angle of each elytron to a point near the suturoapical angle; for about its posterior third, this vitta does not entirely reach the margin of the elytron; a narrow edging of the elytral ground color appearing outside of the vitta; the apical end of the vitta is constricted near the extremity tending to form an apical spot; a second straight juxta-sutural oblique vitta extends from the base of the elytron to about two-thirds its length, the obliquity being from near

the scutellum outwards and backwards; ventral surface uniformly dark fuscous, legs dark testaceous. *Form* narrowly oval, not very convex with sides subparallel; *head* shining, very sparsely and minutely punctured; *maxillary palpi* dark testaceous, last article securiform, the apex strongly pointed; *pronotum* very shining, rather more strongly densely punctured than the head; *scutellum* small with a few minute punctures; *elytra* much more coarsely and thickly punctured than the pronotum; *ventral surface*, sternum moderately coarsely punctured except mesosternum, which is smoother in center; episternum of mesothorax more heavily punctured, abdominal segments with bases rather smooth but becoming more coarsely punctured and pubescent towards the sides; *legs* with ridges, somewhat pubescent.

Length.—♀ 2.25 mm., width 1.25 mm.

Type—♀ and two cotypes in my collection.

Type locality—Buffington, Ind. (Pine Barrens) vii. 26. 10. (*A. B. Wolcott*).

This species can be readily separated from any of the other species by the elytral pattern and less convex subparallel form. The type was received from my friend, Mr. A. B. Wolcott.

Hyperaspis ploribunda n. sp.

♂ ♀—*Color*: Head, pronotum and scutellum black, elytra dark fuscous, palpi, antennae, tarsi and inflexed sides of elytra very dark testaceous. *Form*, oblong oval, depressed, somewhat widened posteriorly; *head* extremely finely, sparsely and shallowly punctured; *pronotum* finely and closely punctured; elytra less thickly and closely punctured than pronotum, the punctuation being thickest and coarsest towards the scutellum; the punctures are all very shallow; *ventral surface* sparsely and shallowly punctured.

♂ smaller than ♀, with sixth ventral slightly notched.

Length.—♂ 1.5 mm., ♀ 1.75 mm.

Width.—♂ 1.1 mm., ♀ 1.25 mm.

Type—♂ ♀ in my collection.

Type locality—Goldfield, Esmeralda Co., Nevada, vi. 29. 07. four specimens. (*Nunenmacher*).

When I first collected these insects I thought they were specimens of *H. arcuatus* Lec.

I wish to express my thanks to my friend Dr. Creighton Wellman, of Oakland, for advice and criticism during the preparation of this paper.