

Three males, one female, Platte Canyon, Colorado, bred from larvæ on *Cercocarpus parvifolius*, where they occurred in small proportion mixed with the dominant *Teras foliana* Walsingham. The larvæ were not differentiated.

Type.—No. 6771, U. S. National Museum.

Mieza psammitis Zeller.

Larvæ from Mr. A. N. Caudell, Victoria, Texas.

Larva. Head rounded bilobed, clypeus broad, rather high; pale testaceous, clypeus brownish with brown sutures and a white streak on each side; retracted in joint 2, which in turn is partly retracted in joint 3. Body a little narrowed at the ends, robust, flattened, shaped much as in the Cochlidiidæ, but less elliptical; feet normal, weak, the planta with a single row of small tufted crochets. A round, eversible area just below the spiracle on joints 5 to 12 projects prominently in the inflated specimens. Pale green, with longitudinal yellowish white lines, obsolete on the anterior retracted segments. They are addorsal (i), two subdorsal, the upper (ii) broadest, lateral, suprastigmatal, broken into spots, two subventral, enclosing the eversible area, the lower one much broken, and scattered dots indicating two more lines above the feet. Feet all pale; spiracles small, circular, brown ringed. Tubercles small and obscure, with single setæ; i nearly directly dorsad to ii, whitish, slightly elevated, iii close to the spiracle and above it, iv and v below the eversible area, separate, iv dorsad to v by the diameter of a tubercle, vi subventral basally, vii on the leg base; no secondary setæ apparent. Skin finely granular shagreened.

Cocoon elliptical, brown, rather hard, much as in *Mieza igninix* Walker.

Lives on *Bumelia lanuginosa*.*

—Mr. Currie read the following paper :

THE ODONATA COLLECTED BY MESSRS. SCHWARZ AND
BARBER IN ARIZONA AND NEW MEXICO.

By ROLLA P. CURRIE.

A list of the dragonflies collected in Arizona and New Mexico during the summer of 1901 by Messrs. E. A. Schwarz and H. S. Barber is of sufficient interest to merit publication. Collecting operations extended from the last week in May till the middle of August, and 172 specimens were secured, representing 24 species and two varieties. Of this number one species, an *Ischnura*, is here described as new and named in honor of Mr. Barber who

*Proc. Ent. Soc. Wash., v, p. 127, 1903; compare Journ. N. Y. Ent. Soc., iv, p. 87, 1896.

devoted special attention to securing these insects. It may be well, by way of introduction, to give a brief account of the localities visited, as Mr. Schwarz and Mr. Barber have described them to me.

The last week in May and the first two weeks in June were spent at Williams, as well as the last of June and several days in July before and after visiting the Grand Canyon. Here a small stream flowing down from Bill Williams Mountain had been dammed in several places to furnish water for the saw-mill; thus a number of good sized ponds or small lakes had been made, and along the shores of these, and of another pond on a small stream about a quarter of a mile distant, the dragonflies were taken. Mr. Barber tells me that these streams had dried up before he left Williams, leaving water in the ponds only. The altitude of Williams is about 6700 feet.

Flagstaff, with an elevation of 6,940 feet, had a permanent supply of running water. Otherwise the country was much like that of Williams. Here about a week was spent and Odonata were collected along an open sewer of running water, and also at a reservoir situated about three miles from the town.

At Ashfork the country was extremely dry everywhere and the only water to be found was a small pond of waste from the railway engine tank, although the dry bed of a creek indicated that there had been water there at one time. This place has an elevation about 1,000 feet less than that of Williams.

Hot Springs, in Yavapai County, about fifty miles north of Phoenix, proved a most interesting collecting ground, and many new and rare species in various groups of insects were captured here. At this place the new species of *Ischnura* was found. In the "four tanks," a succession of large water-filled pot-holes in the rocks, a number of interesting dragonfly larvæ were obtained, while adults of various species were flying over a small stream fed by the hot springs. Near the hotel were several fountains of tepid water piped from the springs, and around these all the specimens of *Telebasis salva* were taken, while *Argia violacea*, variety *pallens*, occurred along a sewer leading from the buildings. The altitude of Hot Springs is about 2,300 feet.

Within the Grand Canyon nearly all the specimens were collected along a spring-fed stream, about a foot and a half wide and six inches deep, lined on either side by willows and tall, coarse grass. The spring is situated about 4,000 feet below the brink of the canyon and some 2,000 feet above the river. Mr. Barber descended the canyon to this point on two successive days for the purpose of making collections. Here, among other species, he found the Mexican *Heterina vulnerata* and *Cordulegaster diadema*.

Mr. Schwarz tells me that swallows and dragonflies are the

only winged creatures he saw flying down into the canyon. Butterflies and other insects, and birds other than swallows, would turn back upon reaching the brink as if afraid to venture further. As there is no water around the Bright Angel Hotel or anywhere in its vicinity, and none below the brink till one comes to the spring just mentioned, it appears that the species captured at the brink (*Argia moesta*, *Herpetogomphus compositus* and *Sympetrum corruptum*) must have come up from the spring, or, in other words, ascended from the Lower Sonoran zone to the Transition zone. It is noteworthy, however, that these are all species which have a wide geographical distribution not confined to any one zone; no exclusively Lower Sonoran species was seen to ascend to the brink of the canyon or was found above its normal habitat. The elevation above sea level of the Bright Angel Hotel, on the brink of the canyon, is about the same as that of Williams.

At Winslow most of the species were obtained along an irrigation ditch full of clear, swiftly-running water, although a few were taken over a very muddy, stagnant branch of the Little Colorado river. Winslow's elevation is very much less than that of Williams, probably about 5,400 feet.

Las Vegas Hot Springs, New Mexico (altitude 6800 feet) was the last locality visited. Here the first two weeks of August were passed, collections being made along the Gallinas river, and here, among other species, *Hyponeura lugens* and *Argia vivida*, variety *plana*, occurred.

The following list includes all the adults taken. The nymphs were submitted for study to Dr. James G. Needham. I am indebted to Dr. Philip P. Calvert for obligingly going over and verifying my determinations and helping me in many other ways. The bibliographic references to the species are not given here but may be found—for the Zygoptera, in the Odonata part of the *Biologia Centrali-Americana*, and for the Anisoptera, in Kirby's "Synonymic Catalogue of Neuroptera Odonata or Dragonflies."

Hetærina vulnerata Selys.

Bright Angel, Colorado Canyon, 2700 feet, July 12 (6 ♂♂), July 13 (4 adult and 4 teneral ♂♂, 7 ♀♀).

Hyponeura lugens (Hagen).

Las Vegas Hot Springs, New Mexico, August 11 (1 ♂), August 9 (1 ♀).

Argia moesta (Hagen).

Bright Angel [Hotel], July 11 (1 ♂), July 10 (1 ♀); Bright Angel, Colorado Canyon, 2,700 feet, July 12 (6 ♀♀), July 13 (3 ♀♀); Williams, June 30 (1 ♀); Hot Springs, June 23 (1 ♀), June 24 (1 ♀).

Argia vivida Selys.

Bright Angel, Colorado Canyon, 2,700 feet, July 12 (12 adult and 3 teneral ♂♂, 1 pair in copula, 4 adult and 6 teneral ♀♀), July 13 (6 adult and 1 teneral ♂, 4 pairs in copula, 4 adult and 5 teneral ♀♀).

Argia vivida Selys, variety **plana** Calvert.

Las Vegas Hot Springs, New Mexico, August 3 (2 ♂♂), August 9 (1 ♂).

Argia violacea (Hagen).

Bright Angel, Colorado Canyon, 2,700 feet, July 13 (1 ♂, 1 ♀), July 12 (1 ♀).

Argia violacea (Hagen), variety **pallens** Calvert.

Hot Springs, June 23 (1♂), June 24 (6 ♂♂, 1 ♀) June 25 (1 ♂), June 26 (1 ♂).

Argia agrioides Calvert.

Hot Springs, June 22 (1 adult and 1 teneral ♂, 1 ♀), June 23 (3 adult and 1 teneral♂, 3 ♀♀), June 24 (1 adult and 2 teneral ♂♂, 1 ♀), June 25 (1♂♂, 2 ♀♀, 1 pair in copula), June 26 (3 adult and 2 teneral ♂♂, 1 ♀), June 28 (1 ♀); Las Vegas Hot Spring, New Mexico, August 7 (1 ♂).

Enallagma civile (Hagen).

Williams, June 1 (1 ♂); Winslow, July 31 (1 ♂).

Enallagma carunculatum Morse.

Winslow, July 31 (2 ♂♂).

One ♀ from Williams, May 27, and 1 ♀ from Winslow, July 31, are either *civile* or this species. No character has yet been discovered for separating the ♀♀ of these two *Enallagmas*.

Enallagma praevarum (Hagen).

Williams, June 1 (1 ♂, 1 pair in copula), June 6 (1 ♂), June 15 (3 ♂♂, 1 ♀), June 30 (1 ♂), July 15 (1 ♀); Winslow, July 31 (1 ♂, 4 ♀♀), Las Vegas Hot Springs, New Mexico, August 2 (1 ♀).

Telebasis salva (Hagen).

Hot Springs, June 23 (9 ♂♂, 1 ♀).

Ischnura damula Calvert.

Flagstaff, July 4 (1 ♂).

Ischnura demorsa (Hagen).

Williams, June 6 (1 ♂), June 15 (1 ♂); Flagstaff, July 4 (1 ♂, 1 black ♀).

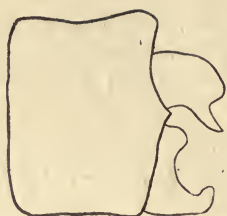


FIG. 6.—*Ischnura damula*, profile view of 10th abdominal segment and appendages of ♂. × 24.



FIG. 7.—*Ischnura barberi* n. sp., profile view of 10th abdominal segment and appendages of ♂. × 24.

Ischnura barberi, n. sp.

♂.—Metallic black, the following blue, green or yellowish; lips (except a transverse basal stripe on labrum), rhinarium, frons, genæ, head below, an isolated round postocular spot each side, margins of prothorax, sides of meso- and metathorax (except a short superior line on first lateral suture and a long one on the second), an antehumeral stripe each side and a transversely oblique line each side, behind or above them, pectus, feet (except a superior stripe on femora and tibiæ and extreme apex of tarsal joints), 1 (except a basal spot on dorsum), sides and venter of 2-7, all of 8 and 9, 10 (except dorsum). A transverse, basal, interrupted yellow ring on 3-7. Dark band on 2 narrowed apically, that on 3-6 widened on apical fourth, constricted just before it, much less constricted on 6.

Forked elevation on 10 not much more than half as high as 10, rising at a gradual slope and in a straight line from the base of the segment; forked in less than its apical half; branches forming an angle of about 90°. Superior appendages short, rather stout, about one-half as long as 10, tubercular, with a pointed, inferior, apical process, which is hardly longer than the other part of the appendage. Inferior appendages nearly as long as 10, yellowish except at tip, broad at base, the outer side prolonged as a process the tip of which is acute and curved inwards; inner side also prolonged into a broad, flattened, rounded, shorter process, thus making the appendage bifid.

Wings clear. Fore wings with eight postcubitals in first series. Nodal sector arising between the third and fourth (nearer the fourth) postcubital on fore wings, near third on hind wings (on left wing at the third, on right wing between second and third, on this specimen). Pterostigma on front wings surmounting a little less than one cell, longer than wide, outer side straight; blackish, the outer corner pale; on hind wings paler.

Abdomen 24.5, hind wing 15.5 mm.

Hot Springs, June 24 (1 ♂).

Type.—No. 6891, U. S. National Museum.

This species is very similar to *Ischnura denticollis* Burmeister

(*exstriata* Calvert), but is larger, possesses an antehumeral stripe, is without black markings on 8 and 9, the appendages are stouter and are longer in proportion to the length of the last segment, while the inferior process of the superiors is shorter. The inner prolongation of the inferior appendages seems to be a peculiarity of this species.

Progomphus obscurus (Rambur).

Bright Angel, Colorado Canyon, 2,700 feet, July 12 (1 ♂).

Ophiogomphus severus Hagen.

Las Vegas Hot Springs, New Mexico, August 3 (1 ♂).

I had first determined this, from the description and figure, as *O. occidentis*, but Dr. Calvert, when I was in Philadelphia last winter, corrected the determination and showed me types of both species for comparison.

Herpetogomphus compositus (Hagen).

Bright Angel, Colorado Canyon, 2,700 feet, July 12 (1 ♂), July 13 (2 ♂♂, 2 ♀♀); Bright Angel [Hotel], July 10 (1 ♀); Bright Angel, 6,800 feet, July 13 (1 ♂).

Cordulegaster diadema (Selys).

Bright Angel, Colorado Canyon, 2700 feet, July 13, in stream in "Willows" (1 teneral ♀).

A cast skin, probably of this species, was taken on a rock near the place where the imago was captured. I think the species has not previously been recorded from the United States.

Æschna multicolor Hagen.

Winslow, July 3: (1 ♂); Williams, July (1 ♂ fragment—five terminal abdominal segments and appendages).

Anax junius (Drury).

Winslow, July 31 (1 ♂, 1 pair in copula).

Pantala hymenæa (Say).

Hot Springs, June 25, "laying eggs in fountain" (1 ♀).

Libellula saturata Uhler.

Williams, June 3 (1 ♂), June 15 (1 ♂), July — (2 ♂♂); Hot Springs, June 23 (1 ♂); Bright Angel, Colorado Canyon, 2,700 feet, July 12 (1 ♀), July 13 (2 ♂♂, 1 ♀).

Sympetrum corruptum (Hagen).

Williams, June 1 (6 ♂♂), June 2 (2 ♂♂), June 5 (1 ♀), June 6 (3 ♂♂), June 30 (1 ♂), July 3 (2 ♂♂), July 16 (1 ♀); Flagstaff, July 4 (1 ♂); Ashfork, June 18 (1 ♀); Bright Angel [Hotel], July 11 (2 ♀♀); Bright Angel, Colorado Canyon, 2,700 feet, July 12 (1 ♀); Winslow, July 31 (5 ♂♂, 2 ♀♀).

Mesothemis simplicicollis (Say), variety *collocata* Hagen.

Winslow, July 31 (1 ♂).