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OBSERVATIONS ON *MICOUTALIS CALVA* SAY.

BY IGNAZ MATAUSCH,

Roselle, N. J., 1911.

Two years ago, on September 26, I found the first insect of this species, a female, near Irvington, N. J. Last year I did not see a single one, but this season, on August 20, while examining an elder bush near Roselle, N. J., for a larger genus (*Acutalis*), I found two very small insects like it, but of a considerably smaller size, which proved to be *Micoutalis*; one of these I captured, but the other escaped.

While hunting around that bush, where numerous ironweed-plants (*Vernonia noveboracensis*) had been in full bloom, I found one very small nymph belonging, as I saw, to a small kind of *Membracida*. Soon afterward I found more of these nymphs, and at the same time more of the adult insects of *Micoutalis*. I thought they probably were the nymphs of that species, and to make sure I collected a number which I succeeded in rearing, as all (with the exception of one which died) were in the last nymphal stage. They matured, and both sexes have been obtained; on August 22d, the first, a male; on 23d a female; on 24th another female; on 26th more males and females. On this last day the plant wilted, and on the 28th all died.

On September 3, when the plants in the field began to wither, I collected two more nymphs which matured, one on September 11 and the other the following day, both females. On September 4 I found one soft nymph, of a brilliant yellow-red color, just after the change from the preceding stage into the last nymphal stage; but its bright color did not last, and after about one hour turned to a yellowish-red brown.

They seem to be very delicate, for after being handled in that

condition the insect died the next day. Whether these insects have this bright color, after each molt, as does *Euchenopa binotata* (which are at first always of yellow and red), I cannot state, but they probably do.

On September 15 a frost set in and on the 17th only very scattered blossoms were found and the plants began to dry. At this time only one nymph was collected which matured on September 22 into a splendid female. After that time none were found until October 8, when only a few smaller plants were partly green; then I discovered one nymph of which I made a water-color picture

Fig. 1. Nymph and egg of *Micoutalis calva* Say.

on the 12th of October. By supplying a fresh plant I found it fully developed on October 14.

After that I could not find any food plant in nursing condition so I tried *Trifolium pratense* and *T. hybridum*. The insect was kept on those plants till December 3 when I found it dead, fastened to the stem with its sucking bristles. The figure shows the nymph in the stage before maturity; they are nearly equal to the adult in size and vary somewhat according to the sex; averaging 3.5 mm. in length. In color some are dull green, others yellowish-brown, or red-brown; but the majority are purple, the exact color of the stems toward the upper parts of the plants. Before trans-

forming into the adult they fasten themselves by means of their piercing mouthparts often near or on the bud of the flower, as I found quite a number of shed skins at these places.

Metamorphosis takes place usually very early in the morning as on my morning examinations I always found the insects in their adult stage in full color, although in one instance when I collected on September 4 a male of a somewhat grayish-white, which soon became yellow, then passed through brown into black in a little less than half an hour. It is a very lively insect as an adult; but the nymphs hardly move, as I found them resting all the time on the thinner stems near the flowers, always with the head directed downwards. This habit is also most frequently characteristic of the adult, as I noticed on September 4 when I was vainly watching them for some time, in hopes of observing one in the act of oviposition.

The adult male insect is about 3.2 mm. in length, the female 3.6 mm., and the colors as well as the pattern vary considerably in both sexes. I found in one case a male with the whole prothorax, except the humeral angles, shining black. In case of one female the lateral marginal markings were absent, while in another the anterior pair of legs of the femora were light brown. The claws in living specimens are bright green. The abdomen varies from bright green in some specimens, through all shades to bright yellow, usually mixed with more or less bright red dorsally. The pygofer is always green, a little blackish at the apex in the male; in the female the ovipositor is sometimes green but generally black, the black often extending along the side of the ovipositor and forming an oval marking.

On August 20 and on the following day both sexes were collected, the males in greater number. On September 3 and 4th I collected 7 females and 5 males. On September 17 only females were found, of which two were collected for observation. One died on September 26 and the other was killed and both examined for eggs; one containing 9, the other 13. On September 24 three other females were captured for the same purpose, the first dying on October 5 containing only 3 eggs, the second on October 14 containing 9 and the third on the 19th when 11 eggs were found; in the insect I kept in captivity till December 3 I found 10 eggs. On October 1 I did not succeed in finding a single insect, but on

the 8th of this month in addition to the above mentioned nymph, the last adult insect was seen.

The eggs are green or yellowish-green in color, measuring about 0.7-0.8 mm. in length, 0.2 mm. in width, slightly curved in shape, and almost equally pointed on both ends. Fig. a.

As I could not find any of the females in the act of ovipositing although I examined all the plant parts where females were seen resting, and then after having kept the females so long in captivity without any egg being deposited, I doubt whether the insects lay their eggs in the food plant. They may do as I have observed in the case of *Campylenchia curvata* which feeds on *Solidago* and is found depositing its eggs on *Vernonia*.

THE PERIOD OF INCUBATION OF THE EGGS OF *SAMIA CECROPIA*.

During the spring of 1911 it was found convenient to gather data on the relation of each day's deposit of *Cecropia* eggs to their period of incubation.

The table on p. 70 shows the number of days required for the hatching of the eggs of each of 36 females for the 1st, 2d, 3d, 4th, 5th, 6th, and 7th day's deposit. Queries indicate that the eggs did not hatch at all.

The periods recorded are counted from the days when the great majority of each day's lot hatched. In some instances a small part of the caterpillars emerged a day earlier, and in a few other cases a few stragglers were observed later.

The table clearly shows that the period of incubation of the eggs deposited between May 16 and June 26 varied from 6 to 11 days, the great majority being 8 or 9 days. The table also shows that the period of incubation is practically the same for each day's deposit; first or last oviposition does not seem to cause the period of incubation perceptibly to vary.

We see a few periods of 10 days and one of 11 days occurring during the early experiments, but possibly climatic conditions at that season can account for this prolonged time.

ST. LOUIS, MO., February 14.

PHIL RAU.

ALEXANDER—MEGISTOMASTIX