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FARTHER NOTES UPON ARGYNNIS MYRINA.

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In Vol. vii, Oct., 1875, I gave some account of my breeding *myrina* from eggs laid in July, 1875. I am able now to supplement this by the history of an earlier brood. My observations were made last year at Hunter, in the Catskill Mountains, and being at the same place in June of the present year, from 17th June to 1st July, I found this species abundant, and from the rubbed appearance of nearly all the individuals taken by me, I inferred that they had emerged at latest early in June. On the 19th I set two females on violet, in a gauze bag. On the 20th there were several eggs laid. The first butterfly from this lot emerged 15th July, but in their early stages these larvæ were not in my keeping, as I mailed them to Coalburgh. Other females gave eggs on 27th June; the larvæ hatched 3rd July. These I kept by me and brought to Coalburgh, following their changes carefully. The 1st moult occurred July 7th, the 2nd July 10th, the 3rd July 12th, the 4th on 15th; chrysalis on 18th; and the butterfly emerged 23rd July; 26 days from the laying of the egg. This is the history of half a dozen out of the fifty odd of the brood. The others were less regular in their changes, and the last two butterflies emerged 31st July, or 33 days from the egg. There were but four moults, and I was in error in stating last year that the species moulted five times. A remarkable proportion of the butterflies were females, at least four out of five. The first eleven which emerged were all females, and so were several of the last.

I turned the butterflies of this brood loose as they appeared, with the exception of three, hoping to naturalize the species here. They scattered up and down the valley at considerable distances as I occasionally discovered, but I rarely saw one within my grounds. On dissecting one of the three reserved, the abdomen was found filled with nearly mature

eggs. All these larvæ of both lots proceeded to chrysalis, none of them becoming lethargic, as do larvæ of many species of butterflies in their summer broods.

Early on 27th of July I turned out 12 *myrina*, which had emerged from chrysalis since the previous evening, and about nine o'clock I observed a pair in copulation in the grass near my house. They were perfectly quiet and I was able to examine the female carefully to see if there was any abrasion of scales on thorax above, or on the wings. She was perfect and I have no doubt was one of those turned loose that morning. Passing along an hour later, and seeing this pair still in the same spot, I placed the inner edge of my net gently by the female, and she immediately climbed up, dragging the male after her. From the net they were easily transferred to a box and left in quiet. At 7 p. m. they had not separated. By 6 next morning they had, and I at once set the female on a plant of violet, under a bag. Within an hour several eggs were laid on the leaves, and within 48 hours many more had been laid on the leaves and the bag, when I let the insect fly. I counted 93 eggs in all. I had noticed that the freshest possible females of *tharos* and of *nycteis* lay eggs readily on being shut up with their food plants, and the same thing with *Papilio ajax*, but hardly supposed the whole process was quite so rapid as in the present case. These eggs gave larvæ 4th and 5th of August, and the butterflies from them will again lay the eggs for the hibernating larvæ which will go to make the June brood of next year. Of this last brood of the year I as yet know nothing from observation. Whether the larvæ hibernate when half grown, as do the larvæ of many *Melitæas*, or as soon as hatched from the egg, as do the larvæ of *cybele* and other species of *Argynnis*, remains to be discovered.

In 1875, the eggs laid between 20th and 25th July produced butterflies by 3rd September. The eggs laid by the female 28th July, 1876, produces a corresponding brood with those of July, 1875, just mentioned. And this brood is the aestival of Scudder. But it should be called the autumnal, and the mid-brood, the butterflies of which have emerged between 15th and 31st July, as stated, the aestival, the early brood from hibernating larvæ being the vernal.

Description of Preparatory Stages of A. Myrina :

EGG—conoidal, slightly rounded at base, truncated and rounded at summit; marked by 14 (or about) thin vertical ridges, which are somewhat wavy, and mostly extend from base to summit, not quite meeting

about the depressed micropyle ; some of these ridges anastomose near the top, others lower, on the sides ; the spaces between the ridges roundly excavated and crossed by fine striae.

YOUNG LARVA—Length, .08 inch ; cylindrical, slightly tapering posteriorly, deeply creased at the junction of the segments ; color pale green, but brown patches nearly cover segments 5, 7, 9 and 11 ; furnished with rows of tubercles from which spring black hairs, which are long and curved forwards ; head obovate, a little broader than 2nd segment, pilose, brownish black.

After 1st moult, length .2 inch ; grayish mottled with brown ; armed with 6 rows of short, stout, black spines, which have short black bristles ; feet and legs blackish ; head cordate, smaller than second segment, pilose, black.

After 2nd moult, length .3 inch ; cinereous mottled with black, the spines as before ; at the base and on outer side of the spines of the 1st lateral row, on the 3rd, 5th, 7th, 9th and 11th segments, a yellow patch ; head as before.

After 3rd moult, length $\frac{4}{10}$ inch ; cinereous brown, mottled with darker in small patches ; a pale black dorsal line, enlarged on each segment into a rounded spot ; the yellow patches as before, but rather orange than yellow ; spines longer, those of 2nd segment decidedly so, being between two and three times as long as any others and projected forward over the head ; head as before, bronze color.

After FOURTH MOULT and MATURE—Length 1 inch ; color cinereous brown, mottled with velvet black, there being a large patch at the base of each spine of the two dorsal rows, and which is edged with a pale color ; spines long, tapering, irregular, honey-yellow, often orange at base, with black bristles ; those on 2nd segment about $3\frac{1}{2}$ times as long as any others and porrected ; legs and feet black ; head cordate, with rounded vertices, with black bristles over surface ; color bronze.

CHRYsalis—Length .6 inch ; compressed laterally throughout ; the wing cases very prominent and flaring at base ; the head case not much flattened, its vertices prominent, conical, the intervening space being roundly excavated ; the mesonotum prominent, sharply compressed, followed by a deep excavation ; on the dorsum two rows of sharp, conical tubercles, those on 7th segment much larger than the others, and all anterior to these two gilded ; the two tubercles at head case also large, umber colored ; color light brown, the wing cases streaked with darker ; or the whole surface is a dark brown.