

speaking, is made, is in the sub-families most closely allied to the Hesperidæ, among the groups of Parnasinæ and Anthocharinæ." (I very much doubt any cocoon in an Anthocharis, myself); quite ignoring the cocoon of *Semele*, as figured on our plate. "And, again in exceedingly feeble instances, where the necessities appear to be overwhelmingly great, among the higher Nymphalidæ, which have lost even the last remnant of the cocoon of moths, viz., in some of the Satyrinæ, which lack cremastral hooks and undergo their transformations ordinarily in the rudest form of a cell, which they can construct above or at the surface of the ground by the mere movements of the body and the spinning of one or two threads of silk." The "necessities" may have been overwhelmingly great in the case of *Semidea*; but what of *Jutta*, a species of the same genus, living in Maine, and of *Semele* and *Galathea*, at the level of the sea, in temperate Europe! Among the great sub-family Satyrinæ, with its multitude of genera, of nearly all of which the habits at pupation are unknown, it is probable enough that the heterocerous style of pupation is common. To refer such cases, in a group claiming to be farthest removed from the moths, to atavism from the moths, will not do. There are too many of them. And the same sort of ancestral traits crop out in the color and sexual markings of the imago, in the egg and larva, as well as in the pupating habit.

In the "Butterflies" three "prime figures," as they are called, are given, viz: The pupating habit, with the flat ventral surface of the pupa among the Nymphalidæ, the papillae on tongue, and the atrophy of the fore legs. In the But. N. E., so far as I see, the papillae prime is dropped, as well it might be. We are told in the former work, p. 255, that this feature consists in the complication of the structure of the papillae of the tongue. In the Papilios and Skippers "these are merely minute tubercles, \* \* \* seldom rising much above the surface. In the Lycænidæ they are longer and more frequent, while in the Satyrinæ they are often half the breadth of the tongue in length, closely crowded together, and often trifid at their tips." (Of course this feature can only be made out by a powerful microscope.) How one of these conditions is an advance on the other is not explained, and I will venture to say is not explainable. Each species of animal, mammal, butterfly, or what not, has a tongue suited to its habits. A cow or a sheep has that organ adapted to grass feeding, a giraffe has one that is half a yard long, and prehensile at that, and feeds off the tree tops; but whoever heard that the