

NOTES ON BUTTERFLIES, WITH DIRECTIONS FOR BREEDING THEM FROM THE EGG.

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(Continued from page 89.)

The eggs of butterflies are very interesting objects. As a rule, those of each natural genus (I speak of the North American fauna, for I know nothing of the eggs of tropical butterflies), are closely alike, as in *Pieris*, *Anthocharis*, *Colias*, *Terias*, *Callidryas*; and so, while each genus has peculiarities of its own, there is a family resemblance between these genera (of the sub-family *Pierinæ*). They are all of one general shape, long, slender, sub-conic, or spindle-shaped, set on end, but differently ribbed according to the genus. So the eggs of *Danais* and *Heliconia* and *Agraulis* each have their own pattern. All *Argynnis* eggs, whether of the large or small species (Groups 1 and 2), are thimble-shaped. On the other hand, *Euptoieta*, by its egg, is allied to *Argynnis*, while by the chrysalis, it is allied to *Melitæa*. It links the two genera, and in my Catalogue of Di. Lep., I place it between these two, instead of before *Argynnis*, as has usually been the arrangement. So *Melitæa*, *Phyciodes*, *Limenitis*, *Apatura*, *Paphia*, *Satyrus*, *Neonympha*, *Chionobas*, may all be distinguished as readily by the eggs as by the butterflies. *Lycæna*, *Lemonias*, *Thecla*, *Chrysophanus*, so far as I know them, all show generic peculiarities in the egg stage. So does *Papilio*, though some of the species, as *Philenor* and *Cresphontes*, have the surface covered with a rough crust, the usual type being smooth-surfaced. Now *Parnassius* is ranked as belonging to the *Papilionidæ* and to the sub-family *Papilioninæ*, which includes the genus *Papilio*. And here alone among the American butterflies, so far as the early stages are known, is an anomaly. By the egg, *Parnassius* should stand near *Lemonias* and *Lycæna*, while by the chrysalis it is near the *Hesperidæ* or some of the *Heterocera*. By the caterpillar, it is widely separated from *Papilio*, having a resemblance to that genus in but a single character, the tentacles on second segment. So it is that I am confident that in a proper systematic arrangement of families and genera, where the preparatory stages were taken into consideration, *Parnassius* would stand near *Lemonias*.

The eggs of *Hesperidæ* are largely dome-shaped, either sub-conic or half a sphere; of the latter type is *Ancyloxypha Numitor*, of the former