

attachment, or with no cocoon, in or on the ground; the Hesperidæ in a folded leaf, or in two or three leaves brought together, having the tail of the pupa attached to the end of the case by a Y-shaped thread, and the body held by another Y-shaped thread (But. 256). The Papilionidæ and Lycænidæ weave "a carpet of silk" by which the hooks of the tail are held fast, and spin a real girdle of many threads, into which they thrust head and anterior segments. But, in the Nymphalidæ, there is no girdle, and the pupa hangs by the tail from the carpet of silk. Finally, as we have seen, many of the Satyrinæ weave no carpet, indeed have no hooks by which the pupa could hang, and so pupate naked in or on the ground, or in some cases, as in *Semele*, in a cocoon. Others that do not make a cocoon, spin threads by which leaves are girdled about them, a style which Mr. Scudder calls a cocoon "by courtesy," as *Erebia Epipsodea* and some examples of *Galathea*. All these last, therefore, behave in the manner of the moths.

Oddly enough, Mr. Scudder has got himself in a state of mind to claim that these unattached pupæ have reached the greatest advance of all. "We see, therefore, a regular progression from the lower to the higher butterflies, in the loss, first, of the cocoon, next, of the girt; and, as if this were not enough, some of the highest butterflies have even lost the last remnant of silk and fallen to the ground." That is to say, a reversion to the habits of the moths is an advance in grade. Continuing: "As if to show that the suspension by the tail alone is a stage beyond that of hanging by tail and girdle, we have a clear proof that all the Suspensi have passed through the stage of the Succincti, since *the straight ventral surface of the abdomen*, assumed perforce by the Succincti when they left the cocoon stage, and became attached to hard surfaces, *still remains in the chrysalids of the Nymphalidæ*" (these italics are Mr. Scudder's), "where it no longer serves any purpose—as clear and striking an indication that the Suspensi outrank the Succincti, as that the pupa is higher than the larva."—But., 258.

I deny the fact alleged, that the pupæ of the Papilionidæ, which being the first to leave the cocoon stage, and "perforce assumed" a flat ventral surface, have that sort of a surface. I never saw such a thing in one of the Papilioninæ; they are all rounded, as in *Turnus*, or rounded and bent back in the middle, as in *Asterias*, *Troilus* and *Philenor*. In many, as the whole of *Turnus* group, the dorsal side is straighter and flatter