

"A careful comparison of a considerable series shows that there is no difference whatever in the genital armour of *Proserpina* and *Ursula*." We should like to have heard whether there is any difference between the armour of *Arthemis* and *Ursula*. The form *Proserpina* is undeniably related to *Arthemis*, only supposably to *Ursula*. If the genitalia, as evidence of specific value, are worth anything, then there should be no differences whatever between *Arthemis* and *Proserpina*. Therefore, if these organs in *Proserpina* are like *Ursula*, as Mr. Scudder tells us, in *Arthemis*; they must also be like *Ursula*. But it is implied in the foregoing statement that this is not the case, but that *Arthemis* is unlike both *Proserpina* and *Ursula*. The preparatory stages tell a very different story, and I prefer to believe their testimony rather than that of the other.\*

Why any where *Arthemis* has a co-form, or how such form has come to be, is not explainable, any more than why *Papilio Turnus* has a black female as well as a yellow one. The fact is all we know. From the Northern States to the Arctic Circle, in just the territory occupied by

\*Are the genitalia valuable in determining species? I doubt it much. We do not need to examine them to prove that two species plainly distinct in the imago are really so as *Papilio Turnus* and *Phileor*. It is when the imagos are puzzling that help from any quarter would be welcomed; as in case of the *Grapta C album*, *Comma*, *Satyrus* and *Faunus*. Will they help us here? Looking at Mr. Scudder's plates, I see that what I consider natural genera, as *Colias*, *Argynnis*, *Limenitis*, etc., have each their own type of these organs. It is not to be supposed that they are cast in moulds like so many iron pots, and knowing that every other organ varies, we have the right to believe that the genitalia vary also. How much is the question. In the plates the figures are not drawn to an uniform scale and the organs are differently exposed, probably drawn as they had dried. Some seem to have shrunk in the drying others perhaps are done from green subjects, and are full and plump. But taking them as they stand: on pl. 33 all these species of *Limenitis* seem to be essentially alike, and I apprehend that the variation between them is no greater than would be found between individuals of each. So the three *Argynnis*, *Atlantis*, *Cybele* and *Aphrodite* are essentially alike. *Grapta Progne* cannot be distinguished from *G. Comma*, though they belong to different sub-groups, while *G. Faunus* differs conspicuously from *Comma*, though these two belong to the same sub-group, and can be but one remove from a common ancestor. On pl. 34 *Phyciodes Tharos* and *Batesii* are alike; and quite a lot of *Theclas*, together with *Incisalis Niphon* and *Irus*, seem all alike and nowhere specifically different. On pl. 35, the three *Colias*, *Interior*, *Philodice* and *Eurhythme*, are as like as three marrowfats. My friends why are things thus?

If the test is not infallible it is not to be trusted. If it fails anywhere it may fail often. Now, on page 329, under the head of *Grapta Interrogationis*, we read these words: "The two forms (of this species, to wit, *Fabricii* and *Umbrosa*) differ so greatly and so constantly from each other, not only in the colouring but in the form of the wings, and even in the abdominal appendages (the genitalia), that they have been considered distinct species!" That is, if they had not, by breeding from the egg, been proved to be one species by the evidence of the genitalia they would be considered as two! It seems to me this settles at once and for all the value of these organs as tests of species. The study of them may amuse an idle hour, the drawings of them are very pretty, but that they are of any value so far as concerns closely related species does not appear.