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ON CERTAIN STATEMENTS IN SCUDDER'S "BUTTERFLIES OF NEW ENGLAND."

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As Mr. Scudder has charged me with blunders of one sort or other, I am compelled to notice the matter, as silence on my part would properly be construed as an acknowledgement that he was right.

I. On p. 1805, the synonymy of *Argynnis* (Brenthis) *Freija* is given, closing thus: "*Argynnis Chariclea* Edw., in his catalogues." And on p. 1808, under *Chariclea*: "*Argynnis Freya* Edw., in his cat."

In the text, p. 1807, we read that "*Freija* is a circumpolar species in the strictest sense, being found on the northern shores of both worlds, and in each extending southward to the habitable zone. * * * In the New World it occurs from Alaska to Labrador, * * * and in the Rocky Mountain region as far south as Lake La Hache and Crow's Nest Pass, west of Fort McLeod. It is said by Edwards to occur in Colorado, but the specimens obtained there by Mr. Mead, to which he probably refers, belong to the next species" (*i. e.* to *Chariclea*), "while three from Nepigon, referred by him to *Chariclea*, belong here" (*i. e.* to *Freya*).

On page 1809, under *Chariclea*, we read: "This northern butterfly inhabits circumpolar lands on either side of the Atlantic, but extends much further southward on the western than on the eastern continent, being found * * * not only in Greenland and Labrador, but * * * even (in) Colorado," etc.

Now, although I knew I had not mistaken one of these species for the other, as alleged, I got from Mr. Bruce a pair of the Colorado form, taken by him last summer, and mailed them to Mr. Butler, British Museum, asking which species they were. The reply came two weeks ago, short, sharp and decisive: "Your species is *Freya*; it can by no means be confounded with *Chariclea* * * * It has nothing to do with *Chariclea*."

The Colorado species is *Freya*. The examples taken by Mr. Mead in Colorado, 1871, and of which Mr. Scudder speaks, all passed through my hands, as did the whole catch. I received the butterflies, week by week, through the mails in papers; and, on Mr. Mead's return, we divided the entire lot equally between us. There were many *Freya* (and some of them I have now), but no *Chariclea*; nor has *Chariclea* ever been taken within the limits of the United States, so far as I know. It flies as far to the south as the Canadian Pacific Railway in the Rockies; and I not only have examples taken at Laggan by Mr. Bean, but I have twice had eggs and larvæ from him.*

II. On p. 1863, in the synonymy of *Pamphila* (*Limochores*) *Palatka* it is said that *Pamphila* *Dion* Edw., CAN. ENT., XI., 238, is the same thing.

*Mr. Scudder says, page 1807, under *Freya*, by which he means *Chariclea*: "To judge from the captures north of Lake Superior, it is a late species, flying late in August and early in September, or at the very close of the season, at that place. Evidently winter must be passed, by the caterpillar just from the egg." I have not learned from Mr. Bean the date of first appearance of *Chariclea* imago, but I received eggs sent by him 4th of August, 1866, and another lot 6th August, same year. Part of each lot hibernated direct from the egg, but part went past third moult and then hibernated. I lost these during the winter. But these last larvæ, had they lived, would have reached imago three or four weeks earlier than the larvæ that hibernated from the egg. This would give the appearance of two broods of the butterfly, and account for some flying in July and others in September.

Under *Chariclea*, p. 1809, by which Mr. Scudder means *Freya*, we read: "Nothing is known of its seasons or history, except that it appears in Colorado early in the season, in May, or early in June, so that winter can certainly not be passed as a caterpillar just from the egg." I have not had eggs of *Freya* from Colorado, but received some from Laggan, sent 6th June, 1886; and again, sent 4th June, 1889. I lost the survivors of the first lot after they had passed the second moult; but those of the last lot (6) reached eight-tenths of an inch in length, and had passed three moults before 2nd July. I thought from their actions they would pupate, but after several alternations of quiet and activity, they finally dropped asleep, and I sent them to Clifton Springs, N. Y., 16th of July, to go in the refrigerating house.

The species *A. Helena* is the representative of *Chariclea* in Colorado, and as that behaves so *Chariclea* might be supposed to behave, if it dwelt in Colorado. Eggs of *Helena*, sent from that State 24th July, 1886, gave larvæ, all of which passed the third moult and then went into hibernation. I lost them during the winter.

I may as well here speak of one other of this group, *A. Triclaris*, found in Colorado and north. I received eggs sent from Laggan, 2nd August, 1889. The larvæ passed second moult and hibernated, and were sent to Clifton Springs 19th September.

The larvæ of all four species are closely like that of *Bellona*. In the first stage, the alternate segments are green and brown, as in *Bellona*, and also *Myrina*. The spines of *Triclaris* are somewhat different from the rest after the first stage, but these others are same as in *Bellona*, so far as I carried the larvæ. Mr. Scudder has tried hard to find characters in the preparatory stages by which to separate the genus *Brenthis* Scudder (not the coitus *Brenthis* of Hubner, by a good deal), but wholly without success; and the same is true of the imago. The small species are merely a group of the genus *Argynnis*. As to two other genera, so called, chipped off from *Argynnis*, viz., *Semno-psyche* and *Speyeria*, there is not a feature in any stage to justify either of them.

Had Mr. Scudder read the two descriptions ever so carelessly he ought not to have made a mistake like this. Also Prof. French pointed out to him the error, and I did the same indirectly through Mr. French. But, nevertheless, he was bound to have his own way. The species *Palatka* was named from a single ♂, 1867, taken at St. Augustine, Fla. In several years this example was an unique. I have it before me now as I write. But in later years *Palatka* has been taken abundantly at Indian River, mostly by Dr. Wittfeld, and is known to all collectors. In the description the expanse is given at 1.7 inch. Omitting all mention of upper side, we come to under side of secondaries, which differs widely from *Dion* in colour and absence of markings, "Under side of secondaries uniform brown, immaculate." *P. Dion* was described in 1879, from the southern shore of Lake Michigan, from Hamilton, Ont., and from Nebraska. It is compared with *Arpa* B. & L. Expands 1.2 inch (that is to *Palatka* as 12 is to 17). "Under side of secondaries ferruginous, of uniform tint, *except that there are two pale rays from base*, one of which passes through cell, the other occupies submedian interspace to margin." These pale rays are a conspicuous feature of this species. *Palatka* is a coffee-brown, solid colour. *Dion* is a red-brown, with two pale bands. On p. 1931, among "Additions and Corrections," are these words: "1715, line 9, the species here referred to as *L. Palatka* is not the *Palatka* of Edwards, but his *Pallas*." I never described a species under the name of *Pallas*. The author has got things in a tangle.

III. On p. 1595, in the excursus "Butterflies as Botanists," we read: "The narrow choice of certain species is, perhaps, indicated in our own fauna of the food plant of *Phyciodes Tharos*. So far as we know it feeds only upon a single species of *Aster*; 'and if your butterfly selects only that,' said the late Dr. Gray, when I told him of this, 'it is a better botanist than most of us.' Only one other plant has been alleged as its food, and that probably by mistake. This special aster the female selected out of many furnished it by Mr. Mead whereon to lay her eggs, and no one has yet reared it upon anything but aster *Novæ Angliæ*. * * * Such restriction of choice, if really true, certainly indicates some keen perception on the part of the butterfly." It certainly would.

Mr. Mead, CAN. ENT., VII., 161, 1875, says: "I prepared a box by partly filling it with earth, and transplanting into this small specimens of all the common *Compositæ* I could lay my hands upon, * * * and

about a dozen ♀ ♀, *P. Marcia* and *Tharos*, were introduced. In a few days I examined the leaves and found six patches of eggs upon one of the plants, etc. The plant proved to be a species of aster, * * * from the leaves I think it will prove to be aster *Novæ-Angliæ*. No eggs were found on any of the other plants." He also says that he afterwards found a brood of young caterpillars upon a plant of this aster in a meadow.

In CAN. ENT. IX. 1, 1877, I related that I was in the Catskills with Mr. Mead when he made the above mentioned discovery, and that I afterwards got eggs for myself by tying the female butterfly over the stems of *A. Novæ-Angliæ*, and brought the larvæ while young to Coalburgh. "On the journey, stopping at several points, I had to give them leaves of such species of aster as I could find, and they ate any and all readily—even German Asters from the garden." Then I related how I repeatedly got eggs of *Tharos* in same way at Coalburgh, W. Va., (where *A. N.-Angliæ* does not grow). I do not know that *Tharos* will feed on any other plants than asters, but they will eat any sort of aster surely.

IV. On p. 1926: "Mr. Edwards tells me that Mrs. Peart observed one case (of *G. Interrogationis*) in which the final egg of a chain had eleven ribs, when all the others had nine. Could a second female have *possibly* placed an egg upon a chain laid by another!?" I did not know what the author meant to imply by the italicised word and the note of surprise. The observation as to this chain of eggs is mentioned in Part VIII., Vol. 3, Butt. N. A., in the paper on *Interrogationis*, as follows: "I had supposed the number of ribs in all eggs laid by one female was the same, but Mrs. Peart found that, in a string I sent her, the topmost egg had eleven ribs, while all the rest had but nine, as shown on the plate, fig. a⁴." The eggs were laid by a single female in confinement, and were put in alcohol and so sent Mrs. Peart. It occurred to me to ask Dr. C. S. Minot, an authority in biology, if he could explain how this could have been, and he replied: "The eggs of insects descend from the ovarian tubes into the so-called uterus, where they lie for some time, and have the shell formed by the secretions of the uterine walls. These walls are thrown into folds, which are characteristic of the genera and species, and the egg shell, so far as its outer pattern is concerned, is a cast, so to speak, of the folds in question. It seems to be quite possible that the number of folds (and therefore the number of ribs on the shell) should vary in different

parts of the uterus. But I doubt if there are any observations on that point at present." That seems a reasonable explanation.

V. *Argynnis Atlantis*, p. 578. It is said: "The early history of this species is almost wholly unknown, the different stages of the caterpillar and the chrysalis never having been adequately described." I had this species from the egg, and described every stage, egg, larva and chrysalis, in CAN. ENT., XX., p. 1., 1888, in the manner usual with me; and as Mr. Scudder has copied my descriptions of other species by wholesale, I am at a loss to see what there is "inadequate" in this of *Atlantis*, or why it is dismissed so curtly.

VI. *Colias Eurytheme*, p. 1126. Under the division of *Eurytheme-Eriphyle* comes the species *Harfordii* H. Edw., and its var. or co-form *Barbara*, and reference is made to the description and life history of same, with plate, in Butt. N. A., V., 3. I showed in the paper cited that the male *Harfordii* comes near *C. Interior* Scudder, a species which the discoverer regards as genuine; and that the var. (or co-form) *Barbara* approaches the *Eurytheme* group, i. e. *Eurytheme* and *Philodice*, and I said, "So that the species in certain points resembles species belonging to two distinct sub-groups." Dr. Hagen, Trans. Bost. Soc. N. H., 22, 165, 1883, judged *Harfordii* to be neither more nor less than *Interior*. Mr. Scudder might have compared the genitalia, as he believes in those organs as tests of species, and told us wherein *Harfordii* resembles *Eurytheme*.

VII. *Limenitis Disippus*, called *Basilarchia Archippus*. There is so much in this life history that is at variance with what I myself have observed in West Virginia, that one would seem to be dealing with a distinct species, and that the New England form could not be the same as the Virginian.

Page 261. The protection of the egg from "ants, mites and spiders * * *" is undoubtedly in the fewness of their number on one plant. The spider that finds two eggs of a *Basilarchia* in one day must be an excellent hunter." In this region there is no limit to the number of eggs that may be laid on one tree. The seedling plants of aspen are often full of eggs or larvæ. On one occasion I found four larvæ on four leaves of one little stem; on another I found eleven eggs and young larvæ on a plant not over eighteen inches high, nearly one to every leaf; on another I found nine eggs on a small tree. I once discovered a female oviposit-

ing on a willow of some ten feet high. She laid in my sight at least six on different parts of the tree, and I brought away two of them, the rest I was unable to reach.

I asked Prof. Rowley, at Curryville, Mo., what was his experience in this matter, he says: "I watched a female *Disippus* last August laying eggs on aspen. She flitted here and there, and in the course of about fifteen minutes had laid a dozen eggs, and was busy when I inadvertently frightened her away. Once or twice she returned to the same twig. In searching for cases of this species on New Year's day (1889), I examined but two plants of willow; the first, scarcely four feet high, yielded twelve cases; the other, less than ten feet high, gave me forty-five. In one case, two were found on one twig, not twelve inches apart, on another three. I have seen five larvæ on one small sprout of aspen; seven eggs on another. Once found two young larvæ on one leaf, both on perches, one at the end, the other at the side."

Page 273. "On hatching * * * it eats the apical leaves, and then those next in order, omitting none in its passage down the stem, so that, as Lintner says, its position may be 'at once revealed by the twig upon which it had fed * * * being entirely defoliated from its tip about eighteen inches downward, leaving only the footstalks remaining.'" The fact is that the larva makes its case of the leaf it was hatched on, though, for cause, it will move to another in order to make the case. As to stripping a stem, even the mature larva does not do that to any such extent as is intimated above that the young larva does. It is at all stages a light feeder.

Page 277. "It is a curious thing that we find in the caterpillars of the first brood, no tendency whatever to construct hibernacula; here we have an instinct inherited by alternate generations." On page 1416, speaking of the same caterpillar: (it is) "the caterpillar of the latest brood which constructs a hibernaculum * * *; yet, with this common butterfly, no instance has been given where a caterpillar of an earlier brood showed the remotest tendency towards such action." Now, Mr. Scudder may be right for New England, where *Disippus* is said to be two-brooded only, but in West Virginia the caterpillars of the brood before the last (there being three annual broods) often make hibernacula, and some of the same lot will do this, while others go on to pupa and imago. If this fact has never been recorded before, I put it on record now. Some

of a lot of larvæ also will make their cases after second moult, others after third and in the following spring. Some, but not all, of those which hibernated after second moult, will pass three more moults. There would seem no reason why some larvæ of the first of the three Virginia broods should not make cases, as some of the second (in mid-summer) do. And certainly we could not say positively that they do not; nor do I see how one could say positively that some of the first New England brood do not make cases. The evidence against it is negative only. I have found that caterpillars and butterflies are apt to do just what we would think they could not. I never knew of a larva hibernating after first moult, as it is stated that they "not at all infrequently" do, on page 275; nor do I think the small larvæ, after that moult, would have the physical ability to cut out and weave together a case.

A RAINY DAY ON THE MOUNTAINS.

BY DAVID BRUCE, BROCKPORT, N. Y.

There is a tradition extant in Denver that the sun shines in Colorado nearly every day. This last summer was a woeful exception, however, for, from the middle of April until the end of June, the weather would have been thought respectable only in Labrador, but the unusual wet and cold spring, although it retarded the insects, gave such an impetus to the growth of flowers and herbage on the mountain sides and tops, that, when the hot weather set in, all species of diurnals appeared to be unusually abundant, and every kind seemed to be flying at one time. I had collected for some time with indifferent success during this wet season in the foothills and lower canons, and I made up my mind, despite the weather, to try the higher ranges. So I climbed above timber line one showery afternoon the beginning of June, and spent the night in the same shanty I had occupied on my visit in 1887; the proprietors, two honest miners, welcomed me heartily. The next morning was gloomy, cold mists rolled up from the valley and white clouds collected round the peaks, but I donned a pair of miner's overalls and went out determined to do something. In a drizzle that seemed as much snow as rain, I climbed the sloping sides of Mount Bullion, which was covered more thickly with