

of *Ajax* is made up in W. Virginia of an earlier appearing *Walshii* and a later *Telamonides*; the subsequent broods as in New York. That in the high north there is a single brood—the spring form *Lucia* alone. That in California (until we have further knowledge) the early spring brood is absent and the summer broods are made up of *Pseudargiolus* with occasional smaller (*neglecta*) and occasional more heavily marked (*Piasus*) individuals. On this hypothesis, *Lucia* is a boreal and colline form of *violacea*, and the summer broods of the species are absent in the extreme north, or, further south, consist of larger (*Pseudargiolus*) and smaller (*neglecta*) individuals, according to conditions more or less favorable to growth.

Of course this hypothesis is based principally upon my personal knowledge of the sequence of forms in New England, and may prove altogether wrong. I believe, however, that it is worth considering. If it appear complicated, it need only be said that there is complication somewhere. And furthermore, while Mr. Edwards in W. Virginia raised *violacea* in the spring from progeny of *Pseudargiolus* which went into chrysalis the autumn previous, Mr. Abbot in Georgia years ago raised *Pseudargiolus* (or what he called *Argiolus*) in March from caterpillars which went into chrysalis the last of April of the preceding year. The spring brood, therefore, is probably made up, in the south at least, of butterflies which existed as caterpillars at various times during the whole of the previous year. This is precisely what Edwards has admirably proved of *Ajax*; and if it be a constant phenomenon in *Cyaniris*, then it is likely to be equally true at the north, and the probable occurrence of dimorphism in the first brood at the north (*Lucia-violacea*) would be similar to the same phenomenon in *Ajax* at the south (*Walshii-Telamonides*) and the two features may yet be proved to have a logical connection.

It may also be added that it is extremely uncommon for two such closely allied species as *neglecta* and *Lucia*, living in the same district, to differ as much as it has been supposed they do, in the number of their broods, *Lucia* appearing in New England but once, *neglecta* twice a year*; indeed only one instance among New England butterflies occurs to me, and that is somewhat doubtful. I refer to *Limochores Taumas* and *L. Manataaquia*, the former of which is double brooded, and the latter, as far as I know, single brooded; the data, in the latter case, however, are

* The second brood appears to be invariably less abundant than the first.