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Further notes on *Cheletomorpha lepidopterorum* (Acari, Cheyletidae), transported by Lepidoptera

by

G. L. VAN EYNHOVEN
Zoölogisch Museum, Amsterdam

In *Beaufortia* (1964) I discussed a number of observations relating the transport of the mite *Cheletomorpha lepidopterorum* (Shaw, 1794) by the intermediary of Lepidoptera.

Prior to my previous paper, only a few cases of this transport were recorded. Indeed it seemed quite incidental, and so (1964 : 57) I joined VITZTHUM (1941 : 574) in considering the phenomenon as "phoresy" and not as "symphorism". The interpretation of symphorism, as derived from DEEGENER's ideas by VITZTHUM (1941 : 573) reads as follows: "Symphorium. Eine Tierart siedelt sich, ohne Parasit zu werden, auf der Körperoberfläche einer anderen Tierart an, ohne dass ein mutualistisches (reziprokes) Verhältnis zwischen Träger und Getragenen zustande kommt."

The fact that — including my addendum (1964 : 59) — I could record six cases in all (from The Netherlands and from England) of transport by the moth *Charanyca* [now *Caradrina*] *clavipalpis* (Scop.), and that in the present paper I can mention four more cases found in England, has lead me to the conclusion that it is correct to consider these transports as symphorism. It is true that is no absolute condition *which* species of moth supplies the transport, but both *Caradrina clavipalpis* and *Cheletomorpha lepidopterorum* use to live in the same biotope and therefore, normally, it will be *Caradrina clavipalpis* which brings the mite from one suitable locality to another, where both will live on side by side. This is in accordance with the condition for a true symphorism, that both the transporting and the transported species occur in the same biotope.

Cheletomorpha lepidopterorum attaches itself to the scales of the moth by an adhesive substance. The scales of many Lepidoptera are suitable for this purpose and so it may occur that the mite incidentally makes use of another moth species at rest in its biotope. This is the case for most of the observed transports by other moths than *Caradrina clavipalpis*. These exceptions do not alter the normally exist-

ing interrelation between *Caradrina clavipalpis* and *Cheletomorpha*. It only means that in such cases the mites will not reach the right biotope.

That this may happen was proved recently by the capture, in the "Laboratorium voor Toegepaste Entomologie" in Amsterdam, of a specimen of *Malacosoma neustria* (L.) bearing some *Cheletomorpha*-mites. The moth had been reared in this laboratory and had escaped from the breeding cage. When it was found back, it bore the mites. It is clear that *Cheletomorpha* is living somewhere in the building and that some specimens climbed the moth for transport, although *Malacosoma neustria* does not occur in the biotope of the mite.

Evidently the mites can only avail themselves of the wing scales of Lepidoptera and this must be the reason why they have never been observed on other parts of a lepidopteron's corpse, nor on members of any other insect order.

Some time ago I examined the specimens of *Caradrina clavipalpis* from The Netherlands present in the "Rijksmuseum van Natuurlijke Historie" in Leiden. No mites were detected. However, the greater part of these moths came from Dutch amateur collectors who used to mount their specimens carefully. It is most probable that mites, whenever present, have been removed. The red colour of fresh specimens as well as their size make them very conspicuous and as they are attached to a few wing scales only, removal is quite easy.

More successful was a visit to the British Museum (Natural History) in London, where Dr. I. W. B. NYE kindly enabled me to examine a great number of specimens of *Caradrina clavipalpis*. The greater part of these moths originated from France and Algeria. I found no mites on them. Most probably they had been collected in the field.

However, the British material was quite interesting. Among some 110 specimens from various localities there is a series from Tring (Herts.), the site of ROTHSCHILD's Zoological Museum. It consists of 24 specimens collected between 1899 and 1911. Four of these have mites on the wings, as follows:

Tring, Herts., 28.VII. [19]05, A. T. GOODSON: 1 underside right hind wing

Tring, Herts., 18 July [19]06, A. T. GOODSON: 2 underside left hind wing

Tring, Herts., 30.VIII. [19]07, A. T. GOODSON: 1 underside right fore wing

Tring, Herts., 13.VIII. [19]08, A. T. GOODSON: 2 underside right hind wing

Of course, this series too is not reliable as to the actual number of mites involved. It is very well possible that several mites have gone astray in the course of the years or that they were removed by the person who mounted the moths of the collection.

The presence of these mites, however, on the wings of this moth-species from four different years, once again confirms the close biological relation which exists between *Caradrina clavipalpis* and *Cheletomorpha lepidopterorum*.

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