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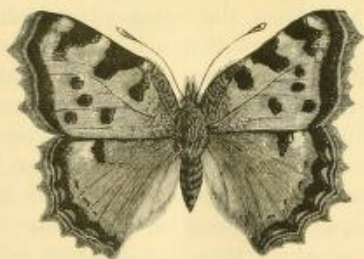
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## IS *VANESSA POLYCHLOROS* THE PROTOTYPE OF *V. URTICÆ*?

A QUERY SUGGESTED BY THE ABERRANT FORM OF A SPECIMEN OF  
*V. Urticæ* OF *Polychloros* TYPE.\*

BY WILLIAM WHITE.



V. URTICÆ OF POLYCHLOROS TYPE.

THE caterpillar of the *Vanessa* exhibited was taken at Highgate Hill in 1879, included in the larval "web" of a community of *Urticæ*, and was reared throughout its existence with the rest of the brood entirely upon nettle (*Urtica*). During the larval stage there was nothing noticeable in its appearance to distinguish it in any way from its companions. In the chrysalis form it bore the specific characters of *Urticæ* as regards its angular projections and general contour, but the colours were somewhat richer in tone than is usual, sufficiently so to attract special notice. The imago is rather below the

\* Extracted from the 'Transactions of the Epping Forest and County of Essex Naturalists' Field Club.'

average measure of *Polychloros* in expanse of wings, being about the usual size of *Urticæ* (two inches). The insect is the only individual of the brood known to have varied, even in the slightest degree. Although I did not see every member of the brood, I can vouch for at least forty or fifty specimens, which I examined carefully, and found not a trace of variation in any single case. No larvæ of any other species of *Vanessidæ* were reared contemporaneously with the brood.

I have examined the antennæ of this specimen under the microscope, and find that they present the special characters found in *Polychloros*.

From these facts I make four deductions, all of which turn upon points of interest. It is from such instances of divergence as the present that we are enabled to gain some clue respecting the affinity of species known to be closely related, and for this reason I offer the following observations:—

1. As *Polychloros* lives upon elm and other trees, and *Urticæ* upon nettle and low plants, the instance is valuable as affording further evidence of the fact that neither a particular food nor a change in diet affects in any way the colouring and markings of the perfect insect, so as to offer *per se* a means of originating "varieties." This conclusion is valid whether the specimen under consideration be really a *Polychloros* or *Urticæ*. Many experiments upon different species of insects agree, I believe without exception, in so deciding this question.

2. On the supposition that the specimen is the product of *Polychloros* parents, it is easy to infer either that the ovum was dropped whilst the female was on the wing, or else that the young caterpillar fell from a neighbouring tree soon after emergence from the egg; in either case the accident must have occurred immediately over the *Urticæ* web. As the broods of the two species rarely appear synchronously, the conjecture is scarcely to be entertained, even if the accident were probable. On such a supposition, however, it is to be deduced that (if *Polychloros*) the society of an allied species does not affect the development of the individual, but such individuals are treated as friends. It is to be remembered, at the same time, that the larva of *Urticæ* bears a much closer resemblance to *Pyrameis Cardui* than to *Polychloros* :specimens of larvæ (preserved) were exhibited for the sake of comparison.]

3. If it happen to be a hybrid\* between the two species, it offers an instance of the fact which has been proved by Darwin and others, that in the case of hybrids between closely-allied forms the progeny, instead of assuming direct intermediate characters, inherits the characters of one or other of its parents; and that in numerical proportions varying with the circumstances. As my specimen is the only known individual of the swarm the theory is rather a lame one.

4. Lastly, on the understanding that the specimen is the development of an *Urticæ* larva, we must conclude that it is a case of recurrence to a previous form, and, if so, that form was *Polychloros*; that, while *Polychloros* has not changed, the change of habitat and environment has brought about the marked variety which now constitutes a separate species in *Urticæ*. In favour of this supposition I may instance the well-known fact that *V. Urticæ*, † like *V. C-Album* and *P. Cardui*, varies occasionally in colour, markings, and size, whilst *Polychloros* is much more persistent—indeed almost invariable—in type, though irregular in point of size. The latter variability, however, is common to all classes of animals at any given period.

This persistency of type argues an antiquity beyond that of its allies, and makes it appear highly probable that *V. Polychloros* is the ancestral prototype of *V. Urticæ*.

[In connection with Mr. White's paper, it may be interesting to quote the following record of a similar experience given in the 'Entomologist,' vi. 88:—"In the spring of last year I took the larvæ of what I considered to be *V. Urticæ* feeding on nettles, and from time to time added other larvæ of *Urticæ* in the same breeding-cage kept for nettle-feeders only; to my surprise a number of the imagos resembled *Polychloros* in colour and markings, keeping the size of *Urticæ*. I submit them to you for your remarks. There was no apparent difference in the larvæ that I observed while feeding.—JAMES A. TAWELL; Earl's Colne, March 11th, 1872." The late Mr. Newman headed this note "*Polychloros* Larvæ feeding on Nettle," and described the butter-

\* [The Rev. G. H. Raynor records ('Entomologist,' vi. 221) finding a specimen of *V. Urticæ* in coitu with *V. Polychloros*.—ED. TRANS.]

† Newman, in his 'British Butterflies,' gives woodcuts of four aberrations of *Urticæ*, but not one of *Polychloros*; nor does he instance any variation in the latter species.

flies as follows:—"These specimens have a wonderful similarity to *Urticæ*, which they do not at all exceed in size; still the colour is nearer to that of *Polychloros* than that of *Urticæ*; and the black spot at the anal angle of the fore wing is present, as in *Polychloros*; the white spot on the costa of *Urticæ* is absent, also as in *Polychloros*." Some of these specimens were presented to Mr. Newman, and, as we are informed by Mr. B. T. Lowne, are now in the collection of the Entomological Club.—ED.]

During the discussion which followed the paper the President, Mr. Raphael Meldola, stated that Mr. White's query was, in his opinion, very suggestive, but he was disposed to think that it was hardly based upon a sufficiently broad view of the true state of affairs with respect to the genus under consideration.

The facts are that our native "Tortoiseshells" are representatives of a genus comprising about two dozen or more species ranging throughout Europe, Asia, and North and South America; or, in other words, throughout the greater portion of the Palæartic, Nearctic, Neotropical, and Oriental zoological regions. Now *V. Polychloros* and *V. Urticæ* are two of a group of species more or less resembling them in colour and marking, this group being linked by a large number of intermediate forms with our *C-album* or "Comma" butterfly. He had thought the matter of sufficient interest to draw up the following list of species, showing the transition in question:—

<i>V. C-album</i> .....	Europe, N. and W. Asia.
<i>V. I-album</i> .....	Asia Minor, S. Europe.
<i>V. V-album</i> .....	Asia Minor, S. Europe.
<i>V. Californica</i> .....	California.
<i>V. Polychloros</i> .....	Europe, Asia.
<i>V. Xanthomelas</i> .....	E. Europe, N. India.
<i>V. Cashmirensis</i> .....	N. India.
<i>V. Urticæ</i> .....	Europe, W. Asia.
<i>V. Milberti</i> .....	S. America.

These were only a few of the more striking transitional forms selected for the purpose of illustrating the argument.

In the language of evolution we should therefore say that the genus *Vanessa* was in a very complete state of phyletic preservation, *i. e.*, all the species having diverged from a common ancestor, the various steps in the process of divergence, instead of having become extinct and leaving large gaps between the species, as so



frequently happens, have been more or less preserved down to the present time. *Polychloros*, *Xanthomelas*, *Urticæ*, &c., are thus true blood-relations, and, in accordance with the laws of heredity, it is not therefore surprising, although extremely interesting, that we should find one of these species occasionally giving rise to a variety resembling an allied form. If, therefore, Mr. White means to ask whether *Polychloros* is the progenitor of *Urticæ* on the strength of his having obtained a variety of the latter resembling the former, he (the President) would be inclined to answer that the two species under consideration, with their congeneric forms, had all descended from a common ancestor, and that the variety in question was a case of reversion to this ancestral type.

In illustration of the foregoing remarks the President exhibited specimens of *Urticæ* and *Polychloros*, with the intermediate North Indian *V. Cashmirensis*, and, as a parallel case, *Pyrameis Atalanta* and *Cardui*, with the intermediate *P. Callirhoë*, likewise from N. India.

Mr. A. G. Butler, F.L.S., F.Z.S., of the Zoological Department, British Museum, has kindly furnished the Editor of the Transactions with the following valuable observations on the above:—

“I have read Mr. White’s paper carefully through, and I must say that I perfectly agree with Mr. Meldola.

“The fact that the larva of *V. Polychloros* feeds upon elm, whereas that of *V. Urticæ* feeds upon nettle, would naturally lead me to look for a mutual progenitor of these and the numerous allied species whose larvæ should feed indiscriminately upon either the tree or the weed; this we find in *V. C.-Album*; therefore it is more probable that the group to which the latter species belongs is the parent of both *V. Polychloros* and *V. Urticæ* than that the latter should be derived from the former.

“The different races, or perhaps seasonal forms, of *V. C.-Album* show considerable modifications in the outline of the wing; and an examination of foreign species shows that these modifications may readily become permanent.

“I do not admit Mr. White’s statement that food does not produce variation. I have very little doubt, if he will try the same experiment that I have done, his conviction will be seriously shaken. Some years since my friend, Mr. Herbert Gosse, reared a number of singularly dark varieties of *Odonestis potatoaria*, and

the only explanation for this burst of melanism which he could suggest was, that he had been reckless as to the species of grass upon which he fed the larvæ. He subsequently sent me some larvæ, which I fed upon different grass every day, with the result that I did not rear a single typical example, all being melanic and much dwarfed. When I gave up collecting our British moths some years since I got rid of my specimens with the exception of a single pair, which are now in the general collection at the British Museum.

“Mr. White says that his *V. Urticæ* is of the usual size, but with the characters of *Polychloros*; this description would answer very well for *V. Californica*, and, considering the great general resemblance between all the species of the group, the case is not a very remarkable instance of reversion.

“In a brood of about fifty *V. Urticæ*, reared by me, there was a single very dark and small specimen which, although not like *V. Polychloros*, may have been a case of reversion to something more nearly allied to *V. C-album*; and some of the species allied to the latter are very dark indeed.

“Lastly, as about half the species in the genus have the wings far more deeply dentated and subcaudate than the other half, whilst many gradations between the extremes of these two types exist, it seems most natural to look for the progenitor in a species which exhibits variation of form in accordance with the season, so that one may account for the prevalence of one type in one climate and of the other in another; and to regard two species of the same type as descended one from the other, especially when these two co-exist throughout Europe (or nearly so), seems to me to be a supposition in the highest degree improbable.”

## INTRODUCTORY PAPERS ON LEPIDOPTERA.

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No. XVII. NYMPHALIDÆ—NYMPHALINÆ (*continued*).

THERE are several genera allied to *Hypolimnas*, all Indian or African, which are chiefly remarkable for their resemblance to species of *Danaus* or *Acraea*. The former are Indian; and two species will serve to illustrate them. One is *Hestina assimilis*, a