PRESIDENTIAL LETTER TO 1954 MEETING OF PACIFIC SLOPE SECTION OF THE LEPIDOPTERISTS' SOCIETY*

Ladies and Gentlemen, my dear colleague Lepidopterists!

Although I am separated from you by thousands of miles of land and ocean, I now have the great privilege and pleasure to convey to you my personal greetings and to wish you all an agreeable and successful meeting. For, to use my favourite citation of an American lepidopterist, BRACKENRIDGE CLEMENS: ". . . Science is not limited by the boundaries of countries . . . nor restricted in its range of sympathies by distance".

Although I have not been able so far to attend meetings of our Society personally, it was with warm interest that I closely followed them, since rather soon after its foundation, its quick growth and prolific development, and I now wish to congratulate its founders with their idea of an international society of lepidopterists that proved to be so welcome and so fertile.

On the border of two Continents, Asia and Australia, lies a region that since WALLACE'S time is the El Dorado of the naturalist. Here meet two extremely different faunas, in conditions that are optimal for vegetable and animal life. The highly complicated geological history of this region, and its present state of an archipelago, all contribute to the forming of one of the richest faunas of the Tropics. The largest island of this region, New Guinea, is the most promising for exploration, and it is no wonder that for a long time it had a strong attraction for naturalists. Recently special attention is being paid to this country. The knowledge of its fauna in general and of its lepidopterous fauna in particular is being quickly enriched. Several Dutch expeditions and American expeditions led by RICHARD ARCHBOLD brought home extremely rich material, that presents fascinating problems of taxonomy, zoogeography, and ecology. I wish to discuss with you briefly one of these problems, viz., the mysterious tendency to white and black colouring.

This tendency is manifest by a frequent occurrence in New Guinea of Macroheterocera and Microlepidoptera with a white ground colour and black markings of a similar pattern. This feature has already been noticed by MEYRICK. In a paper on Papuan Microlepidoptera (1938) he observes:

"As an interesting special characteristic of this Papuan mountain fauna, I remark the strong and unusual tendency to white and black colouring distinctly contrasted, and evidently in this case serving a protective purpose, being, as I think, imitative of bird excrement, and indicating the influence of a large insect-eating element in the fauna, such for instance as the Birds of Paradise. I have not overlooked the possible effect of such insects being easily noticeable to a human collector, but this would be equally the case in any fauna, and this particular fauna is in my opinion more remarkable for the prevalence of this colouring than any other in the world." (p. 503).

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*Editor's note: Dr. Diakonoff's letter was temporarily misplaced and was not found in time to be published with the minutes of this meeting. — C. L. R.

In the material that I was able to study, the phenomenon of white and black colouring is also present but occurs not as frequently as one would expect from the above citation; it is highly peculiar nevertheless.

A silvery or snow-white ground colour of the fore wing with a series of black blotches or a black streak along the posterior part of the costa, mostly combined with a series of narrow interconnected dentations along the endings of the terminal veins, preceded by a pale yellow suffusion, is the characteristic pattern of the extensive Tortricid genus *Chionothremma.* Some 20 species are in possession of this pattern which may vary to some extent: the black terminal markings are often reduced, or there is a continuous marginal line, or only the apex of the fore wing bears a black dot. The closely allied monotypic *Diphtheropyga* is similarly coloured. This colouring in itself is very peculiar in the rather uniform ochreous, fuscous, or brownish leaf rollers. Perhaps it may have developed in correlation with the diurnal life habits of *Chionothremma.*

Still more striking is the occurrence of very similar colouring and markings in certain species of other Tortricidæ and also in quite distant families of Microlepidoptera.

The closest likeness with the *Chionothremma* pattern can be found in certain species of the Tortricid genus *Chresmarcha.* This genus belongs to another tribe of the Tortricidæ (Cacœciini) and is, in fact, remote from *Chionothremma* (tribe Zacoriscini). Two species are known which very closely imitate the primary white and black pattern: the same costal markings, terminal streaks and even the pale yellow suffusion are present; moreover *Chresmarcha sybillina* possesses an additional transverse series of black blotches, absent in *C. delphica.* The colouring of these species of *Chresmarcha* is so deceiving that for a long time they have been erroneously classified.

The extraordinary imitating ability of *Chrasmarcha* is still more clearly demonstrated by the third species (*C. enæmargyrea*) which is a close mimic of a quite different pattern of colouring, characteristic of certain genera of the Callidulidæ (*e.g.,* of many species of *Damias*), viz., the white basal and the deep wine-red apical half of wing, the halves divided by a black streak. The fact that *Chresmarcha* imitates two such different patterns strengthens me in my surmise that we have to do with a phenomenon of mimicry, the pattern of *Chresmarcha sybillina* and *C. delphica* being a secondary imitation of the primary "example" pattern of *Chionothremma* and *Damias,* respectively. Another, not less striking, example of white and black colouring of a similar pattern represents *Meridarchis pseudomantis,* a single species out of 22 species of this genus known to occur in the Papuan region, resembling the above mentioned Tortricidæ — except for the narrower wings, characteristic for the entire family Carposinidæ, to which this species belongs — and entirely different from all other *Meridarchis* species known.

Unfortunately the large recently made collections of Macroheterocera of New Guinea are not studied yet, and I am not able to provide the names of several other examples of white and black colouring, occurring in that group; I shall mention two of them.

A small Arctiid of a quite deceiving Tortricoid facies is another mysterious double of *Chionothremma.* When arranging the genera and species preliminary to study I promptly put the unique specimen of this species in the *Chionothremma* lot, until closer observation revealed its true nature.

A Lithosiid of quite similar white and black markings was somewhat less puzzling, on account of its typical facies characteristic of that family.

Undoubtedly many other examples could be found among small Heterocera from New Guinea or will be discovered in future.

The intriguing problem which I am unable to solve is: what character must be ascribed to this phenomenon? Three possibilities may be indicated.

1. The phenomenon is a case of mimicry, viz., imitation of colour and markings of common forms (*e.g.,* different species of *Chionothremma*) by single representatives of distant families and genera which in this way become entirely dissimilar to their congeners, which might have some connection with their biology.

2. The phenomenon may be due to a common influence or "creative agent" typical of New Guinea, through which white and black markings originate polyphyletically in different families and genera, independent of the biology of the insects in question. Apparently this is what MEYRICK thought.

3. The white and black pattern might be some consequence of the change of former nocturnal life habits of small New Guinean Heterocera to diurnal habits, with which we intend to say that also in this case a common cause may be at play but that this cause would be of an entirely different nature than the "agent" alluded to in paragraph 2.

Our generation might be less disposed to teleological statements than was that of MEYRICK. His elegant explanation of the phenomenon in question, cited above, will probably appear too simplified for present tastes. Extensive study of ecology might help us some time to solve this fascinating problem, one of so many in the Nature of this wonderful island, New Guinea.

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