

Studies in North American Cleorini.

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In the Barnes and McDunnough Check List (1917) the species belonging to this group were practically all included in the one genus, *Cleora* Curtis; some attempt was made to arrange the species according to similarity of maculation and a number of errors in the specific synonymy were corrected, but, as no careful study of the numerous species involved could be made at the time, it was considered better to lump them under one generic name than to follow the obviously erroneous arrangement proposed by Hulst in 1896 (Trans. Am. Ent. Soc. XXIII, based on Meyrick's Classification of European Geometrina (1892, Trans. Ent. Soc. Lond., pp. 53-140), and followed with minor alterations in Dyar's List of North American Lepidoptera (1902).

Recently, inspired by Fierce's figures of the genitalia of the British members of this group (Genitalia of British Geometridae, 1914), I have made a study of the male genital organs of practically all our North American species, with a view to ascertaining how far these organs could be used from the standpoint of classification. The result has been surprisingly satisfactory and has served as further confirmation of an opinion to which I more and more incline and which has been so ably expressed by Mr. G. T. Bethune-Baker (1914, Trans. Ent. Soc. Lond., p. 314), viz.: that in the male genitalia we have a structural feature which, while subject to innumerable small divergences in the individual species, remains in its salient characters remarkably constant throughout whole groups of closely related species and retains ancestral characters possibly longer than any other single organ. While much more extended studies than I have so far been able to make will be necessary before definitely stating such a postulate, still on the one hand a general similarity of genital structure should, I think, give rise in the mind of the investigator to the suspicion that a close relationship between the species involved is predicated; on the other hand a striking divergence in the genitalia of any two species (even when an apparent superficial resemblance exists) may be assumed to show either an entire lack of such relationship or a common origin only at some remote period.

Basing my groupings primarily on characters found in the genitalia I have extended my studies to other structural features, notably the pectinations of the antennae, the venation, the fovea at the base of primaries and the hair-pencil on the hind-tibia of the male. The present paper is the result of these studies. The greatest objection to the whole grouping is that it is frequently based on characters found in the male sex only; in the eyes of many taxonomists this is a grave disadvantage but in the Cleorid group, and in fact more or less throughout the whole of the Geometridae, where the female sex possesses, apart from venation, no structural characters common to the male sex which can be used as a basis of classification, it apparently cannot be avoided unless we are willing to lump the species into unwieldy genera, the members of which are obviously not closely associated when judged even by maculation alone.

To my mind the main aim of the taxonomist should be to study the structural characters of species with a view to the correct appreciation of their interrelationships and the gradual construction of a phylogenetic tree; if, therefore, characters from which such conclusions may be drawn occur only in a single sex I fail to see in this any adequate reason for disregarding them.