

I incline to agree with Meyrick that one of the primitive characteristics of this group is the lack of a fovea, that it later became developed, and that in still more recent forms it was again lost; along with other features it seems to possess a considerable amount of value in our classification.

1. Venation.

It has been generally recognized that the venation in this group is unstable in so far as the venation of the primaries are concerned; this is not at all surprising when the comparatively long distance beyond their point of origin is considered. In the individual species, however, the variation is, at least in the most common forms, confined (with the exception of occasional freak specimens) within well defined and easily defined limits. One of the main reasons, it seems to me, why European taxonomists have been unable to evolve a satisfactory system of classification for this group is because they have attempted to force into one or two genera a number of species of general superficial similarity which actually, if their slight variations in venation be regarded in conjunction with antennal and genital characters, have diverged from each other at a rather remote period.

In North America we have (omitting *Micromela* and its allies for the present) two very marked groups: the first and much the larger, presumably also the more recent, exhibits an entire loss of vein 11 (R₁) on the primaries; the other small group retains this vein. The first group shows little variation in venation: vein 10 arises from the cell and is connected with 8+9 by a branch joining the latter vein normally just beyond the inception of vein 7, thus forming a long narrow areole; this cross vein, however, is lacking at times. The group has few representatives in Europe and has apparently developed from some of the older forms with the full number of veins.

The second group which retains vein 11 is, as already noted, comparatively small; it shows, however, the same variability with regard to the origin and anastomosis of vein 11 that has perplexed our European systematists. To me it would appear that we have in this group the remaining representatives of a circumpolar fauna, forced southward during the glacial period; in the most primitive forms veins 10 and 11 probably arose free from the cell but owing to crowded conditions in the coastal region, vein 11 gradually became connate with 10, then stalked and finally entirely coincident. In Europe this evolution in most instances has not proceeded beyond the stalked stage, the more ancestral forms still predominating there; to some of these older European forms certain of our North American species of the 12-veined group show remarkable similarity not only in venation but also in genitalic and antennal characters: for instance *californiana* Pack. is close to *repandata* L., *sublunaria* Gr. agrees with *cinetaria* Schiff., and *umbrosaria* Hbn. is undoubtedly allied to *punctualis* Scop. (*consortaria* Fabr.), thus affording further proof of an original common origin for the whole group. The fact that among the remaining North American species of this 12-veined group we find several species which, while differing only slightly from one another in the position of vein 11, show a wide divergence in genitalic structure, would seem to indicate that these species are isolated remnants of a largely extinct fauna and that they represent various stages in the evolution of 11-veined forms from 12-veined ancestors, the intermediate steps being lost.

In species where veins 10 and 11 are stalked vein 11 shows further a tendency to either touch or anastomose with vein 12 for a short distance or else to become connected with the same by a short oblique cross-bar; as in the 10-veined groups the long narrow areole may be present but in most species this is not nearly as stable a feature as in the more recent forms; in general the range of venational variation in the North American 12-veined species corresponds closely with that given by Meyrick for the various European species (Trans. Ent. Soc. Lond., 1892, pp. 128-129).