

Before proceeding to a detailed discussion of the ground a few words on some of the structural features and their value are desirable.

(1) The Antennae.

With few exceptions which need not be discussed at the present moment, the male antennae are bipectinate for about three-quarters of their length, the apical fourth or fifth, however, being simple; the pectinations are generally of considerable length. Hulst has already noted with regard to the Geometridae in general that the pectinations may arise either proximally or distally on each antennal segment but has made no further use of this feature in his classification. In the group under discussion this variation in the point of origin of the antennal pectination is very marked, several further modifications being also included. A rather simple form is that exhibited in *umbrosaria* Hbn., in which each pectination broadens out at its base and occupies a good portion of the segment, being only slightly closer to the distal end of the segment than to the proximal except towards the apex of the antenna where it is much more distinctly distal. In a certain number of species the pectinations arise proximally (*porcellaria* Gn., *californaria* Pack., etc.), but in the far greater majority they are very evidently inserted at the distal end of the segment. In two instances (*sublimaria* Gn., *manitoba* Grossb.) we have the very interesting occurrence of a normally long distal pectination and a further short proximal one on each segment, a feature which is also found in the European *cinerea* and to which further reference will be made. In the above-mentioned forms each pectination is ribbon-like, finely ciliate (generally with a double row of cilia) and terminated by a single fairly stout bristle; in the apical section of the antenna there is a small bristle between the bases of each pair of pectinations. In a further well-defined group of species the pectinations are shorter and thicker (according to Hulst's terminology, claviform), their insertions on to the main stalk are broad and there is no distinct terminal bristle; at times the pectinations are very short (*spododia* Hbst.), but as a rule this type is well exemplified by *Melicisca graca* Hbst.

(2) The Tidal Hair-Pencil.

A pencil of long hairs arising from the base of the hind-tibia in the males and generally concealed in a groove situated on the inner side of same has been used by Hulst, to a greater extent than is warranted, as a means of classification. In certain groups the hair-pencil appears to be a well-defined character; in others, notably some of the more primitive forms it possesses little classificatory value. Out of ten males of *umbrosaria* examined nine showed no trace of either hair-pencil or groove; the tenth specimen from Lakeland, Fla. there was a small but distinct black pencil of short hair present combined with a faint groove. The *lallata* group possesses a hair-pencil but in *livaria* Grt., which is undoubtedly properly included here, the hair-pencil is only very occasionally to be found.

(3) The Fovea.

Hulst, following Meyrick, makes the presence or absence of a fovea of generic value; unfortunately he seems to have taken it for granted that a fovea existed in many species where a careful examination of a series of specimens has failed to reveal any trace of it to me. By fovea I understand a distinct circular or semicircular depression situated on the under-side of the primaries of the male on the costal side of vein 1; it is generally thinly sealed and can be readily seen as a small hyaline patch by holding the specimen to the light; it is sometimes very highly developed (*porcellaria* Gn., *opacaria* Hbst.) and causes then a slight distortion of the vein. I have not found it in any position other than as stated above although Meyrick asserts that it is situated in various sections of the basal portion of the wing. Care should be taken not to mistake the enlarged basal portion of either vein 1 or the cubitus for the fovea; in two specimens when the sealing covering these veins is rubbed off the appearance of a fovea is often simulated—this is probably the cause of Hulst's numerous errors in this connection.