

the law of variation in representative species in the Owlet Moths. This variation is first observed on the upper surface of the fore wings, then of hind wings, while the whole under surface preserves its similarity longest. The uniformity of the under surface in the Noctuidæ seems to be correlated with the habits of the insects themselves, to depend, in fact, upon the conditions of its exposure to the light. I am not here arguing that color in the wings is now dependent upon existing conditions of light. I merely point out that variation both in color and marking proceeds apparently more noticeably upon the more exposed surfaces of the insect in the Noctuidæ, from a comparison of related species inhabiting different parts of the world. In the history of the Lepidoptera former geological conditions have played a part in the evolution of species together with the whole environment. In this paper I merely show the probability that the first transverse markings were the effect of light, and that the more exposed surfaces show most variation in representative species. From my scattered writings I have in part brought these brief notices on this point here together, so that the student may be spared that trouble, and in the hope that the investigation may be carried further.

In the investigation of this subject we must keep the phenomena of color and pattern separate. The test of our theories must lie in the observation of existing variations. In this direction the observations of Mr. Edwards on the influence of cold in the pupa state upon the colors of the imago, are of the utmost value. The class of facts bearing upon the phylogeny of the species must be kept separate from those bearing upon individual variation. But it must be remembered that varieties are in the same sense evanescent species, that species are permanent varieties. The crucial test of our modern idea of species lies in the demonstration of the fact that, in the whole life history, the cycle of reproduction is *now* distinct. To the establishing of this fact repeated observations are often necessary. The whole conditions under which the form is produced must be understood. This is a great field of work, and single instances, however carefully recorded, of breeding from the larva, only partially illustrate the subject. The value of specific determinations from collections of perfect insects depends on the tact and experience of the naturalist and are to this extent tentative. Only where the full round of insect life is known can our determinations be absolutely reliable. The vista of entomological labor is widening as we proceed, so that it is trite to say that the subject