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THE VARIATION OF INSECTS.

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Nearly thirty years ago English entomologists began to take a new interest in the variation of Lepidoptera, and in the interval since that time, principally owing to the activities of J. W. Tutt, a very large amount of detailed information has accumulated. Tutt's "British Noctuae and Their Varieties," in four volumes (1891-1892), deserves to rank as a classic, although at the time of its publication it was received by many with something less than enthusiasm. More recently, the great monograph of the British Lepidoptera, left unfinished owing to Tutt's untimely death, covered the subject of variation in an exhaustive manner, including all phases of the species treated, whether British or foreign. In its exhaustive character, this work runs parallel with Taylor's Monograph of the Land and Fresh-water Mollusca of the British Islands, still in course of publication. The variation of Lepidoptera also receives very full treatment in "The Macrolepidoptera of the World," edited by Dr. Adalbert Seitz, and published in English, French and German. This series of volumes, although planned and published in Germany, is thoroughly international in its character, a large part being written by English entomologists. The volume on the Palearctic Noctuidae, for example, is the work of W. Warren. During the war publication has ceased, and I do not know whether it will be continued.

To those who had been concerned primarily with the study of genera and species, all this minute attention to variation seemed rather like counting pebbles on the beach. Let us assume, they said, that all species are variable, and state the facts in general terms. It may be well enough to record varieties, but why give them names? Will not the whole subject be buried in a complex nomenclature? It is, of course, quite true that when one is dealing with a large and little known fauna, the species problem is sufficient to tax one's energies; and, as a rule, the material at hand is not adequate for a study of variation. It is only when the species are fairly well known, and large series of specimens have accumulated, that such methods as these of Tutt become possible or advisable. When, however, the time has come for intensive study, it must be insisted that the records should be exact, and that all looseness of expression should be avoided as far as possible. It is found, in practice, that the only way to avoid ambiguity is to name and define the principal forms, which then become standards for comparison. The literature is full of statements concerning "melanic" or "albinic" or otherwise modified forms, which are so ambiguously referred to that it is impossible to be sure what was intended. Moreover, the adequate taxonomic treatment of the subject gives us a summary of what is known, properly arranged and made intelligible.

While the descriptive side of the study of variation has occupied the attention of many workers, others have taken up the subject for the experimental