

## PSYCHE.

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## REVIEW.

DR. HERMANN MÜLLER's *Alpenblumen* [PSYCHE, Rec., no. 2175] is the most recent contribution to our knowledge of the mutual relations between flowers and insects, by an author whose studies of the fertilization of flowers include the habits of the insects by which this is effected.

After the publication of his work on the pollination of flowers, in 1873, Dr. Müller turned his attention to the plants growing at a considerable elevation above the sea-level, a field which his earlier studies had shown him to be deserving of special attention. The book before us shows that he has been no less thorough in this than in his earlier work.

Following the descriptions of the floral contrivances—if we may use this word in the sense accorded it by modern teleology—of over 400 species of plants, are systematic lists of the insects found upon each, including the frequency and object of their visits, and, in the case of lepidoptera and hymenoptera, the length of their proboscides or tongues. About one fourth of the volume is devoted to a consideration of the more interesting topics suggested by the facts observed, the entomological bearings of the questions receiving their full share of attention. The relative frequency of insects belonging to the different orders is discussed at length while the writer is considering flowers with wholly accessible,

partly concealed, and deep-lying nectar, and the results are tabulated for convenient inspection. Flowers of the first sort have a mixed set of visitors, those with little-elongated mouth parts predominating; as the nectar becomes more and more inaccessible to these, the proportion of long-tongued species increases gradually, till, where it is deep-seated, bees and lepidoptera include by far the greater number of the insects which gather it, and large numbers of flowers of characteristic form and coloration are wholly or in great part dependent upon each of these orders for their pollination. The author finds that under favorable conditions the number of insect-visits to flowers which may be observed within a given time in alpine regions is even larger than at lower altitudes, this being dependent upon the consolidation of vegetation into dense masses of bloom, and the necessity for improving every favorable moment which the frequent mists and cold winds of high altitudes impose upon flower-frequenting insects. As the distance above the sea increases, the relative abundance of coleoptera and hymenoptera about flowers falls off, while the proportion of diptera and lepidoptera largely increases. A valuable feature of the work is a systematic list of the insects observed, the name of each species being followed by a list of the flowers which it frequents, and the degree of their adaptation from general to special insect groups.

Although it is to be considered as a contribution to botany rather than to entomology, Dr. Müller's "*Alpenblumen*" should make a welcome addition to the library of the entomologist who believes that biological studies have their value as well as those which are purely morphological.—*William Trelease.*

## RECORDS OF NECROLOGY.

Undoubtedly the names of many entomologists who died in the years 1879 and 1880 have still escaped record in our pages, as well as many notices of the persons whose names are given here. We will welcome gladly any contribution to the record from our friends or from friends of the deceased.

B: P. M.

