BOOK NOTICE

GUIDE TO THE STUDY OF THE WINGS OF INSECTS WITH SUGGESTIONS FOR THE INSTRUCTOR. By Professor J. C. Bradley. Daw, Illston & Co., 1931. 41 + 17 pages, 68 plates.

In recent years the venation of the wings of insects has come to play a large part in the classification of these invertebrates and in our understanding of their phylogeny. This use of the venation has been made possible largely by the application of a uniform terminology to the veins in the wings of all insects. A knowledge of the venation has consequently become an essential although troublesome part of the program of the entomological student. Professor Bradley's guide is designed to aid the student in his attempt to decipher the venation in the various orders and to understand the main lines of evolution along which the wings have advanced. The guide itself consists of a discussion of the general characteristics of the wings and the important features of the venation in the orders and certain representative families. The 68 plates, which are loose in an envelope, include drawings of 67 species belonging to 13 orders; the figures are printed faintly, so that the student can ink the veins as he studies the wings in the laboratory. The booklet of suggestions for the instructor consists mainly of an explanation of the more difficult and perplexing features of the wings illustrated.

The venational interpretation used in the guide is essentially that of Comstock and Needham, whose investigations over 30 years ago were responsible for the system of uniform terminology now in general use. Professor Bradley has modified the portions of that system which have been shown by subsequent research to be incorrect: the radial sector of the Odonata is interpreted in accordance with the conclusions of Lameere, Martynov, and Tillyard; the cubitus and anal veins in the Neuroptera, which Comstock and Needham confused, have been correctly determined; and the interpretation of several details in the venation of the

Diptera has been changed as a result of Alexander's investigations. Professor Bradley has not accepted, however, the identification of Cu₂ made by several recent workers (Tillyard, Martynov, Imms). The author maintains that Comstock and Needham originally designated as 1A the vein which these investigators call Cu₂ and that the original name (1A) should be retained. If it be true that the vein was independent of Cu₁ in the ancient insects, then the terminology of Comstock and Needham should of course be used. But if the vein arises from the stem of Cu₁ and is therefore a part of the cubital system, I believe it should be designated the *posterior cubitus* (CuP), as suggested by Martynov. Unfortunately, our knowledge of the convexity and concavity of the veins in the Paleozoic insects is very meagre, most of the insects of that horizon having been described before the significance of that aspect of the wing was realized; but I believe that what little evidence is at hand points definitely to the conclusion that 1A (of Comstock) originally arose from the stem of the cubitus.

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