

fuscated apically, not banded. Pronotum marked with brownish fuscous on the prozona behind the eyes and sometimes across the posterior margin of the prozonal disk, the front margin of which is a little elevated especially above and in the male, the disk of whole prozona tolerably smooth and nearly plane, the median carina very slight, the hind margin strongly obtusangulate or broadly rounded, the lateral lobes inferiorly truncate not extending below the level of the free pleural lobe. Tegmina rather slender, subequal, pale testaceous, feebly embrowned mesially in proximal half, flecked conspicuously with well distributed brownish fuscous spots; wings glistening hyaline, a few of the veins at extreme apex narrowly and inconspicuously infuscated, at least in the female. Hind femora long and slender,

pale testaceous, occasionally and especially at base hoary, bifasciate above with brownish fuscous.

Length of body, ♂, 10.25 mm., ♀, 18 mm.; antennae, ♂, 3.5 mm., ♀, 5 mm.; tegmina, ♂, 9.5 mm., ♀, 16.5 mm.; hind femora, ♂, 7 mm., ♀, 11 mm. One male is of unusual size, the tegmina measuring 14 mm. in length, but otherwise there is little variation in the specimens from the above figures.

13 ♂ 13 ♀. Palm Springs, Cal., July 9, 12, A. P. Morse.

The species is peculiar for its small size, short antennae, slender hind femora, brief lateral lobes and broadly angulate metazonal process.

INSECT-NEURATION.

The work of Comstock and Needham* upon the wings of insects is decidedly an important contribution to the subject, for a firm step has been taken towards a satisfactory theory of venation. This advance has been attained by an extended study of the tracheae which precede and, in a broad way, determine the positions of the veins. Selecting immature stages of generalized representatives of each order, the authors arrive at a type of tracheation which may fairly be taken to represent a primitive condition,—an origin for more complicated types of tracheation and venation. The lines along which specialization appears to have occurred in the larger orders are carefully traced and the processes fully and clearly figured. Specialization occurs either by the reduction (atrophy or coalescence) or else by the addi-

tion of veins from a multiplication of the branches of the principal veins. Fortunately the familiar terms adopted by Redtenbacher are retained.

Committing ourselves to the authors' conclusions, perhaps too unreservedly, we were mildly shocked to find that the method fails of application among Trichoptera, most Diptera and the Hymenoptera, at least, because the correlation between tracheae and veins is almost lost. As the method seems to have justified itself, however, a critic can scarcely do more at present than to emphasize the necessity of caution in the employment of the method.

Especially instructive are the discussions upon the wings of Odonata, Ephemera and Orthoptera. The elytra of Coleoptera are definitely homologized with wings.

The palaeontological evidence is rather summarily dismissed with the negative conclusion that it does not contradict the authors' results. Precisely on account of the "imperfection of the record" does the close resemblance of the Devonian *Xenoneura* to the hypothetical type of the authors acquire a value that makes the above conclusion unnecessarily cautious.

* Comstock, J. H. and Needham, J. G. The Wings of Insects. A series of articles on the structure and development of the wings of insects, with special reference to the taxonomic value of the characters presented by the wings. 124 pp., 90 figs. Reprinted from The American Naturalist. Ithaca, N. Y. The Comstock Publishing Co.

Now that the study of wing development promises to dispel the uncertainty which has characterized our theories of venation, the palaeontological evidence will gather new interest in proportion as the data from recent insects become more definite. In fact, no theory of venation can escape the

criticism of incompleteness which does not have sufficient regard for the evidence derived from fossil forms.

The substantial progress which Comstock and Needham have inaugurated ought to stimulate many others to continue the same line of study.

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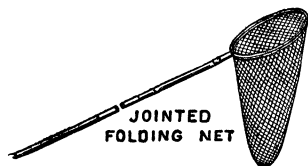
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