

BOOK NOTICES.

THE CRANE-FLIES OF NEW YORK. Part I. Distribution and Taxonomy of the Adult Flies. By Charles Paul Alexander. Memoir 25, Cornell University Agricultural Experiment Station. Ithaca, N. Y., 1919. Pp. 769-993; with 6 plates and 11 text figures.

It has been heretofore practically impossible for anyone in Eastern North America, except the specialist, to determine for himself specimens of crane-flies taken within that area. The present work has removed this obstacle and, therefore, fills an important gap in entomological literature. It will be widely welcomed by all who ever have occasion to deal with the taxonomy of these flies.

Mr. Alexander's work on this somewhat neglected group is so well known that it is scarcely necessary to comment on the thoroughness with which both the text and the illustrations have been prepared. The work is based on the study of a large number of collections, both public and private, and its geographical scope is much greater than is indicated in the title, all the species from Eastern North America being included.

Besides the portions concerned with classification and distribution, there are useful sections dealing with the immature stages, the haunts and habits of both larvae and adults. The larval habits are very varied, some species being aquatic, some inhabiting mud, others fungi, wood and bark, while a few feed upon leaves like caterpillars. Methods are described for rearing these various types of larvae.

The external anatomy of the adult flies is treated from the taxonomic point of view, structures affording good taxonomic characters, such as the antennae and wing venation, receiving a relatively large space. In connection with the description of abdominal structures it may be mentioned here, although not in criticism of Mr. Alexander's work, that the term "pleurite" as applied to the structures attached to the caudal margin of the ninth abdominal sternite, is morphologically incorrect, these parts being undoubtedly *coxites*, and having nothing to do with the pleural region of the segment.

The analytical keys appear to be excellent in every respect, so far as can be judged by one who is not a specialist in this group. The details of distribution for each species in New York State are not given in the descriptive part, but in the special section on distribution. An important feature of this section is the discussion of the distribution of the Tipulidae and related families by life-zones. Following the definitions of the various zones, lists of characteristic plants and crane-flies are given. Between the Canadian and Transition Zones another zone, or sub-zone, the Canadian-Transition, is recognized, a distinction which undoubtedly has its advantages, although it is largely a matter of convenience as to how many zones should be recognized within the territory discussed, where in reality the changes depending on latitude, except where modified by local conditions, are entirely gradual. Some of the plants listed for the Transition Zone are, in the reviewer's opinion, typical of the Upper Austral, such as *Chamaecyparis thycides*, *Juglans nigra* and *Sassafras variifolium*.

"The number of species of Crane-flies that should occur in New York State is probably not less than three hundred and this figure seems similarly appli-