

of which belonged to the single genus *Melanoplus*, the author has in it reduced forty-seven supposed species to synonyms and has established eighteen new genera and described for the first time 115 species.

With a group whose members are so closely kin as those of the *Melanopli* it has heretofore been almost an impossibility for the specialist—let alone the tyro—to satisfy his conscience as to the status of a specimen which he might have in hand. The available literature was so scattered and the different authors had seized upon so many different characters as representing what appeared to them the most striking structural features, that the whole mess was worse than a Chinese puzzle. By seizing upon the variations of the abdominal appendages of the male as the most salient features showing specific rank, and by publishing actual drawings of two different views of the male abdomen of each of the 207 species, Mr. Scudder has done much to render possible the ready identification of each species—a task which otherwise would have been very difficult, owing to the size of the group and the close similarity of many of its members. Analytical keys to genera, and to species where the genus is not monotypic are also given, and add much to the value of the work; as does also the full list of localities from which each species has heretofore been taken.

Taking into consideration its size and importance, the defects of the "Revision" are very few. The one thing which the tyro will find most lacking is a glossary of the technical terms. In a work of the kind these are necessarily numerous, and though they may be plain to the author and to specialists, to the beginner they are often extremely confusing. Even a figure of a typical locust with all the parts named would have been a great aid. A tendency to multiply species can here and there be noted, as on p. 138, where *M. bivittatus* is separated from *M. femoratus* only by the color of the hind tibiae, which is an exceedingly variable character.

More might have been added along ecological lines, but this is a work for the future which the student of the group can now take up with renewed energy. For before one can write of a species he must have a name to handle it by; something which in the case of many of the members of this group has heretofore been lacking. Now, by using a little care and accustoming himself to the technical terms, the student can, by the aid of the "Revision," soon bring order out of chaos and label his *Melanopli* with correctness and despatch. In conclusion, it may be said that any one who will use the work will soon conclude that the aim of the author, "to enlarge and systematize our knowledge of this important group as a basis for future studies," has been well and successfully accomplished.

W. S. B.

A TEXT-BOOK OF ENTOMOLOGY, including the Anatomy, Physiology, Embryology and Metamorphoses of Insects, for use in agricultural and technical schools and colleges, as well as by the working entomologist. By Alpheus S. Packard, M.D., Ph.D. New York: The Macmillan Company, 66 Fifth avenue. 1898. (Price \$4.50.)

The book is primarily divided into three parts. Part I. being devoted to morphology and physiology, Part II. to embryology, and Part III. to metamorphoses. Under these divisions Dr. Packard treats his subject as follows: Position of insects in the animal kingdom. Relation of insects to other arthropoda. Insects (hexapoda). The head and its appendages. The thorax and its appendages. The abdomen and its appendages. The armature of insects. The colors of insects. Muscular system, Nervous system. Sensory organs. Digestive canal and its appendages. Glandular and excretory appendages of the digestive canal. Defensive or repugnatorial scent glands. Alluring or scent glands. Organs of circulation. Blood tissue. Respiratory organs. Organs of reproduction. Development of the egg, larva, pupa and imago. Hypermetamorphism. Summary of the facts and suggestions as to the causes of metamorphism.

The volume contains 729 pages, including a carefully prepared index, 654 figures and numerous valuable bibliographical lists. We certainly have nothing in the way of entomological literature, in this country, that will cover the field of development of insects as will this last work of Dr. Packard. Not only the teacher and student, but the educated men and women of the world at large who may desire to know more of the anatomy,

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