

wood louse', which could be misleading; it is questionable whether the bivalve *Petricola lapicida* (p. 191) should be known as the 'boring petricola', for this genus does not normally bore, but only 'nestles' in hollows in the rock.

The small selected bibliography will be helpful to both amateurs and specialists, while the eighteen pages of careful indexing will be a convenience to all readers. Special mention should be made of the fine quality of the four beautiful colour plates and the forty monochrome plates.

This book is well worth the price for any keen malacologist who wants reliable data on the Caribbean area.

R. D. PURCHON

DANCE FLIES

British Flies

Vol. 6: Empididae. By J. E. Collin. Part 1: Tachydrominae. Pp. viii+1-220. Part 2: Hybotinae and Empidinae (Part). Pp. iii+221-552. Part 3: Empidinae (*Hilara* only); Hemerodrominae; Index to Parts 1-3. Pp. iii+553-782. (Cambridge: At the University Press, 1961.) 30s. net; 6 dollars each part.

THE flies that belong to the family Empididae are famous for their mating habits; the males of some species pass their prey to the females as wedding presents immediately before copulation. In fact, this habit is restricted to a group of genera in the sub-family Empidinae, and behaviour in the other sub-families, and even within the Empidinae, is much more diverse. In the Tachydrominae, Hybotinae and Hemerodrominae both sexes may be predacious and mating is divorced from feeding. Some species feed on dead prey; in others only the females are predacious—in one case specifically on prey already captured on spiders' webs. In the Empidinae, again, only the females can capture prey, or the males may do this, or substitute airborne seeds, and present these to the females, either unwrapped or wrapped in a parcel of silk. Either or both sexes may swarm.

With such a wealth of differences in feeding and mating behaviour within one family, it is tempting to try to arrange the species so as to illustrate the evolution of complex behavioural patterns in these flies. Such an analysis has previously been greatly handicapped by the lack of any taxonomic work covering the European, and especially the British, species as a whole, which authoritatively reviews the morphology of the family and also makes possible the correct identification of the species.

We now have a work which must be one of the finest taxonomic revisions of a group of animals ever published, and follows the traditions of the two volumes published earlier under the title *British Flies* by the late G. H. Verrall. Keys are provided to the genera and species, each genus, species group and species is fully described, and the essential features of most of the 354 species recorded from Britain are figured. The many problems of nomenclature in the family have been most carefully investigated and the known distribution of each species in Britain is given also. The work is beautifully printed and it is a pleasure to use. One of the valuable details in publication is the numbering of genera and species and the printing of the same numbers at the top of the right-hand page for easy reference. There is also an index to generic and specific names, including

synonyms, but no bibliography as such. References to other works are included in the text.

This is the second major work on the Diptera that has appeared from the Cambridge University Press in two years. Both this work and the book on *Aedes aegypti* by Sir Rickard Christophers have been magnificently produced at a very reasonable price to the public. The present work may be obtained in three paper-backed parts or bound in one volume.

One hopes that this publication will stimulate research into the structure and behaviour of this fascinating group of flies, which are some of the commonest to be found in our countryside. The insect collector who is interested in rarity will find that many of the species recorded here are very poorly known indeed.

B. R. LAURENCE

SPACE MEASUREMENTS IN THE EXTREME ULTRA-VIOLET

Space Astrophysics

Edited by Prof. William Liller. (University of Michigan Institute of Science and Technology Series.) Pp. viii+272. (New York: McGraw-Hill Book Company, Inc.; London: McGraw-Hill Publishing Company, Ltd., 1961.) 77s. 6d.

DURING the academic year 1959-60 the Astronomy Department of the University of Michigan, under the chairmanship of Prof. W. Liller, invited a number of distinguished American scientists from other institutions to lecture on aspects of astronomy and astrophysics which can only be studied from outside the Earth's atmosphere. These lectures form the basis of this book.

The first half of the book is given to a description of the experimental work, up to June 1960, on solar and stellar radiation in the extreme ultra-violet and X-ray regions. The articles by R. Tousey and by W. Rense on the solar ultra-violet spectrum down to 500 Å. contain much material of great interest for the study of the photo-chemistry of the Earth's atmosphere. A detailed account of the investigations of the solar *Ly* α line is presented.

The extension of these techniques to ultra-violet stellar astronomy is described by H. Friedman and the available data summarized and discussed by A. B. Boggess. A full account is given of the results in the 1225-1350 Å. band. The bright nebula observed around α Virginis (which was not itself observed) but not occurring with a similar early *B* star, ϵ Persei, is fully treated, and is perhaps the first important astronomical discovery made with the new techniques. Discrepancies between these observations and the predictions of model atmospheres for early *B* stars raise some interesting theoretical problems.

The second section of the book contains brief summaries of theoretical ideas on the outer solar corona (S. Chapman), the solar wind (L. Bierman), together with some speculations on the nature of the lunar surface by T. Gold and an account of his views in 1959 on a general charge excess by H. Bondi.

Finally, there are two articles on the techniques of attitude control of rockets and satellites, and a very detailed account of the possible choice of grating mountings suitable for monochromators (T. Namioka).

This collection should be a useful reference work for any group engaged on the design of satellite experiments, and for astrophysicists engaged on model atmosphere studies. M. R. COULTER McDOWELL