

observations if he had seen the plants the properties of which are here recorded. But he may also ask what Wulf would have thought of his species in the light of these observations. Here is a species that has been well studied. But what of the majority, where only one plant has been examined? It is true that in some cases we may still attempt to attach the chromosome number to a species; but already in as many other cases we have to identify the species by the chromosome number.

The systematic and nomenclatural straightjacket, into which Prof. Tischler and others attempt to squeeze our genetic understanding of species, in fact squeezes the life out of it. Scholastically the result looks neat and elegant; but, if it is required to work, we find that the thing inside is dead. Prof. Tischler's list is an invaluable compendium for future workers. His immense bibliography enables the reader to trace every reference; and his industry puts on record data for which all those concerned with the European flora should be grateful. But to the systematist it does not give an idea of how chromosome numbers are actually varying at the present moment, or of the way in which the nineteenth century notion of species, however bolstered up by bibliographical conventions, is now going to pieces under the impact of genetic and cytological analysis.

C. D. DARLINGTON

## WATER BEETLES OF GREAT BRITAIN

### British Water Beetles

By Frank Balfour-Browne. Vol. 2. (Ray Society Volume 134, for the Year 1948.) Pp. xx+394. (London: Bernard Quaritch, Ltd., 1950.) 27s. 6d.

THIS volume completes a work of considerable interest to students of British Coleoptera and of British aquatic fauna alike. It deals thoroughly with the Colymbetina, Dytiscina and Gyrinidæ both from a biological and systematic point of view.

Excellent determination tables are given to run down to species, and some good use is made of the more obscure characters. For the most part, Prof. F. Balfour-Browne has constructed them on different ground from that used in the work of the Rev. W. W. Fowler and that of Dr. N. H. Joy; he gives more detail than the latter, and is far more up to date than the former.

Each species is discussed at length with regard to structure, habitat, distribution, life-history and systematics. Much attention has been paid to the genital armature, which can be of great assistance in determination, especially in the genus *Gyrinus* where it is of use in eight species. These have been very well figured by both male ædeagus and female genital lobe. The structure of the insects is perhaps dealt with in more detail than the average reader will require, but is by no means out of place. Entomological biologists will be pleased to see the work on larvæ, and a useful table down to genera is given.

The work is very well illustrated with diagrams and camera lucida drawings clarifying a number of points which otherwise might remain obscure. A distribution map is provided for each species.

In his introduction (pp. xiii-xiv) the author has some pertinent remarks to make on the Code of Zoological Nomenclature, Article 25, to which he

does not rigidly adhere; but since he gives a very full synonymy in each case, no confusion need arise. On p. xviii he condemns the naming of varieties and aberrations with insufficient knowledge of the association between that variety or aberration, its typical form, its type of habitat and the climatic conditions, etc. Fig. A shows two good examples of variation, one towards the other, of typical forms, and named aberrations in the genus *Agabus*. These two points, I feel sure, will receive the support of many workers in this field, which will not necessarily be confined to those primarily concerned with biology.

A copious bibliography of nearly four hundred titles completes a work which commends itself to all interested in British water beetles. F. D. BUCK

## WAVE-MOTION AND SOUND FOR THE HONOURS STUDENT

### Wave Motion and Sound

By Dr. R. W. B. Stephens and Dr. A. E. Bate. Pp. viii+448. (London: Edward Arnold and Co., 1950.) 45s. net.

THERE is need for a text-book on sound that covers the many advances that have been made in recent years, and this book fills the requirement admirably. It deals with the subject at a level appropriate to a university degree course, and gives adequate references for the more detailed reading required in research.

The first part of the book is concerned with the fundamental properties of wave motion, starting with periodic motion in general, and continuing with transverse and longitudinal vibrations, reflexion, refraction, diffraction and resonance. The later part is concerned with applications of the earlier theory—physiology, music and architectural acoustics. All these sections are dealt with exhaustively, and, where mathematical analysis is possible, it is given fully, either in the text or in one of the appendixes (which number thirty and cover seventy-eight pages). Nearly one hundred examples of examination questions, with numerical answers, are also included.

It will therefore be appreciated that the authors have spared few pains to make the book a success, and there is little doubt that it will be of benefit to those in universities who deal with the subject of sound. It is therefore unfortunate that the authors have occasionally thought it necessary to introduce subjects at pre-university level; the first few pages of certain chapters might well discourage the more serious reader. For example, the chapter on periodic motion begins in a very elementary fashion, and a quasi-calculus proof is given (p. 15) of the expressions for the velocity and acceleration of a particle moving with simple harmonic motion. Yet, a few pages later (p. 37), second-order partial differential equations are introduced. This is perhaps the most glaring example of inconsistency in level of treatment, but other examples could also be quoted; for example, the subject of resonance is introduced by quite elementary considerations. The reviewer believes that a text-book should state quite clearly, as this book does, what standard of tuition is aimed at, and that there should then be no necessity for the authors to 'write down' to readers who have not attained this standard.

This, however, is a minor cavil in a book which is undoubtedly very welcome. H. LIPSON