

of classical and quantum mechanics and the old quantum theory. The various types (and their inter-relationship) of spectra from elements throughout the Periodic Table are discussed, ranging from the simple hydrogen atoms to the lanthanide and actinide series. X-ray spectra and calculation of electron structures are treated briefly, while hyperfine structure and isotope shifts are thoroughly discussed. The book ends with a chapter on the width and shape of spectral lines. Tables of intensity ratios in multiplets and information concerning the ground state and ionization of elements and nuclear moments of natural isotopes are included.

The book steers a middle course between the formal treatment given in Condon and Shortley's book and the more experimental approach of White's *Introduction to Atomic Spectra*. In so doing, it gains by the omission of the early historical material which is considered in the latter book and which can often be confusing to the undergraduate reader. It is well produced with clear type and very few misprints which in any event do not give rise to confusion, for example, the misplaced minus sign in the expression  $dk^{-2} s^2$  on page 318. More diagrams would probably encourage the undergraduate.

One reader, at least, is left with the impression both of how many advances have been made in the understanding of spectra and how much more remains to be done on the experimental and theoretical side, particularly in the complex spectra from the lanthanide and actinide elements and which accordingly are only briefly discussed in the book. With the advances in such equipment as high-quality gratings and computers and the powerful techniques based on group theory, one can hope that the graduate reader of this book will have the sound basis to tackle the many unsolved problems in the field. At the undergraduate-level, it gives a good summary of the academic side of the subject.

L. BOVEY

## MALAYAN ORCHID HYBRIDS

### Malayan Orchid Hybrids

First Supplement. By G. H. Addison. Pp. viii + 93. (Singapore: Government Printer, 1961.) 21 Malayan dollars.

WITH the steady increase in the production of new orchid hybrids and the continual introduction of fresh species into general breeding it is inevitable that any book providing a comprehensive account of the hybrids cultivated in any given area will soon be out of date. This was recognized by the authors of *Malayan Orchid Hybrids* when they published the book in 1956, and the present work is a first supplement to their previous account, designed to bring our knowledge in this field up to date so far as is possible. This supplement includes illustrations and descriptions of about 90 hybrids additional to the 160 dealt with in the original work. Each hybrid is illustrated by two half-tone photographs showing respectively the general appearance of the inflorescence and a single flower, these being accompanied by a short description and details of the hybrid's origin. Some of the hybrids are illustrated in colour. On the whole the photographs reach a satisfactory, though in my own opinion not such a high, standard as in the original work.

The hybrids figured mostly fall into two groups, the genus *Dendrobium* on one hand, and hybrids

produced from various genera belonging to the monopodial *Vandinae*, such as *Vanda*, *Arachnis* and *Euanthe*, on the other. The *Dendrobium* hybrids once again are mostly combinations of species belonging to the two sections *Ceratobium* and *Phalaenanthe*, but with the introduction into the breeding system of further species of both sections a wider range of forms is being produced. Nevertheless, there still seems to be much scope for the improvement of the individual flowers so as to give greater body to the inflorescences without impairing their gracefulness. It would also be interesting to see if some at least of the striking species belonging to such other sections as *Laourea* could be utilized for breeding. Among the monopodial hybrids those in which *Phalaenopsis denevei* is one parent are of special interest botanically, though their short inflorescences are, of course, a disadvantage for cut-flower purposes. Another interesting feature in these monopodial hybrids is the persistent dominance or strong influence of certain floral characters wherever they occur in combinations, such as the flower shapes and colorations in the genera *Arachnis* and *Euanthe*.

Mr. Addison, who is responsible for the preparation of this first supplement, is to be congratulated on such a useful continuation to the original book. Those concerned with orchids everywhere will look forward with interest to the appearance of further supplements in due course. V. S. SUMMERHAYES

## THE CONTROL OF INSECT VECTORS

### Insect Control in Public Health

By C. B. Symes, R. C. Muirhead Thompson and J. R. Busvine. Pp. vii + 227. (Amsterdam: Elsevier Publishing Company, 1962.) 60s.

BEFORE the discovery of the synthetic insecticides, of which DDT was the first, it was only practicable to control insect vectors of disease very locally, mostly in urban areas. The high toxicity of the new compounds, their relative cheapness, and the long period over which some of them may remain effective as thin residual films has allowed their use in situations in which control was previously impossible. A large number of striking successes has been obtained.

The volume under review is a compendium of the latest information on the chemical methods of controlling all the more important insect vectors of human diseases. The information is detailed and practical and deals with such topics as the constitution and properties of the chief insecticides, the different formulations in which they can be used, the methods of applying them, the dangers to persons using them, and the organization of a campaign for the control of insect vectors. Eleven chapters deal with special features of the principal types of insect-transmitted disease, such as malaria, plague, yellow fever and sleeping sickness. The text is extremely clear and well written so that it will be suitable for all those concerned in controlling insects, even workers with very little specialized training. There are nineteen illustrations, mostly based on excellent photographs. At the end is a short list of selected references, arranged according to the various topics which have been discussed in the text.

The book is very well produced, and the authors state that it is intended to replace a small hand-book