

Textbook of Light.

By Dr. R. Wallace Stewart and Prof. John Satterly. Seventh edition, revised by Prof. C. T. Archer. Pp. vii+365. (London: University Tutorial Press, Ltd., 1941.) 7s. 6d.

IT is not an easy task to set about revising a well-known book, since the characteristic features must be preserved, and yet the contents must be brought into line with modern development. This task has, however, been successfully accomplished by Prof. Archer in the revised version of Stewart and Satterly's "Textbook of Light". The book contains a treatment of the elements of geometrical optics of a fairly wide scope, and the mathematics is easily within the compass of Intermediate Science students for whom the book is intended; the methods of the calculus, however, might surely have been used, especially in certain cases.

In connexion with a book of such merit as this, one hesitates to offer any criticism, however slight, but two topics may be mentioned. Thus the use of pins for experimental work on mirrors and lenses is still retained, although it is probably much more convincing for students to use narrow parallel pencils of light; such procedure also saves time in experimental work. Again, so painstaking is the author to drive home facts that there is a tendency for over-emphasis; for example, having established the relationship $\frac{1}{v} + \frac{1}{u} = \frac{1}{f}$ for mirrors, why trouble to express this result in words?

The book has been brought up to date (though one misses any reference to photo-electric methods in photometry), and it can certainly be recommended.

The Practical Application of Aluminium Bronze

By C. H. Meigh. Pp. xiii+112. (London and New York: McGraw-Hill Publishing Co., Ltd., 1941.) 17s. 6d.

THE alloys of copper with aluminium, with or without the addition of manganese, iron, or nickel, are commonly known as aluminium bronze. They have a high tensile strength and other good mechanical properties, and are highly resistant to corrosion. The handsome French franc and 2-franc pieces of this alloy, which had the appearance of gold and retained their colour permanently, will be remembered. Trouble owing to the entanglement of particles of alumina long retarded the general use of the alloys, but these difficulties have been overcome, and the advantages of the material can be fully utilized.

This book contains a number of practical notes on the composition and properties of the group of alloys, and detailed accounts of foundry and workshop practice, which will be found useful by all who have to make or work aluminium bronze. It is weaker on the scientific side, the accounts of crystal structure and of such phenomena as fatigue being marred by numerous errors. The tables at the end of the book include comparisons with steel and with brass and bronze, but the important high-tensile brasses are not included, although the comparison with them would have been fairer.

The term "de-aluminification" is not to be welcomed as an addition to the language, and is unnecessary.

There are some good illustrations of castings in aluminium bronze.

C. H. D.

Higher Chemical Calculations

By A. J. Mee. Pp. viii+184. (London: J. M. Dent and Sons, Ltd., 1940.) 5s.

THIS book provides about 600 numerical problems on the principles of physical chemistry (including analyses) up to the standard of the Intermediate B.Sc. examination. Some of the examples are taken from the Higher Certificate, First M.B., Intermediate B.Sc. and University Open Scholarship examinations, but the majority are either original or taken from the researches which have laid the foundations of physical chemistry. The answers to these problems are given at the end of the book, together with logarithm tables and a useful index.

The subject-matter is well arranged. Thus the principles underlying the calculations are classified into ten main groups each of which forms the basis of a complete chapter. Clear and concise details of the principles are provided, and these are illustrated by worked-out examples so that the student can become familiar with the application of the principle before attempting the problems. The worked-out examples are generally satisfactory, but it is unfortunate that the answers to some of them are given to a greater number of significant figures than the measurements. Obsolete and misleading problems on the degree of dissociation and ionization of strong electrolytes are also worked out or given for solution; for example, sodium nitrate is calculated to be "63.3 per cent ionised" from the freezing point of its aqueous solution (p. 122). Apart from these criticisms, the book can be recommended for the use of sixth-form pupils and first-year university students.

A. C. C.

British Water Beetles

By Frank Balfour-Browne. Vol. 1. (Ray Society Vol. 127 for 1939.) Pp. xx+376+5 plates. (London: Bernard Quaritch, Ltd., 1940.) 25s.

AQUATIC Coleoptera have long been favourite objects of study, especially by the biologist and the physiologist. Dytiscus, Gyrimus and Hydrophilus, for example, have alone attracted the attention of many investigators and a bibliography of their written contributions on these creatures would fill many printed pages. The present volume deals with members of the Haliplidæ, Hygrobiidæ and part of the Dytiscidæ. It is concerned more especially with the habits and distribution of their species and is not intended as a systematic treatise. It will be noted that keys, therefore, take the place of detailed descriptions as aids to the identification of the various species. Prof. Balfour-Browne has devoted many years to the study of water beetles and is probably better qualified than anyone else in England to describe their natural history and where to find them. Coleopterists will welcome the appearance of this well-produced volume and look forward to the completion of the work when circumstances permit.