

who must acquire a knowledge of the technique and problems of X-ray analysis. Probably the words 'text-book' and 'introduction' should be interchanged; the standard appears very suitable for an honours-degree course. (In a department of physics the lecturer would wish to supplement it with a fuller treatment of the interaction of X-rays and electrons.) The research worker will make use of the bibliography appropriate to his field of specialization.

At the level which the authors have set for themselves there is little to criticize. An explanation of the greater resolution of the  $\alpha$ -doublets of cold-worked steel with decreasing wave-length is accepted without comment (p. 58), though probably wrong and certainly questioned. The powder method is capable of greater accuracy than a few parts in ten thousand (p. 51); a few parts in one hundred thousand is routine in metallurgical applications, and a few parts in a million is claimed by some workers.

The book is printed on a heavily loaded glossy paper that gives very good reproduction of the many X-ray photographs illustrated. It is, however, rather brittle, and the folding diagram of the thirty-two crystal classes will probably not last long with hard usage. The translation reads smoothly, though "extinct reflections" may raise a smile. One sentence (p. 34), in which "reflection" and "reflecting plane" both appeared, seemed a complete muddle until it was realized that the former referred to a diffraction maximum and the latter to a mirror plane. The few misprints noted are unlikely to cause any confusion.

A. J. C. WILSON

## THE MAGNETIC AMPLIFIER

### The Magnetic Amplifier

By J. H. Reyner. Pp. 119+8 plates. (London: Stuart and Richards, 1950.) 15s. net.

THE magnetic amplifier, or transducer, is rapidly marking out for itself a field of application within which its characteristics provide definite advantages over the equivalent thermionic amplifier. Mr. J. H. Reyner's book sets out to present the fundamental properties of transducers in simple terms and to provide an introduction to the more advanced literature of the subject. Four of the six chapters constituting the book deal with the basic principles of the transducer, with the characteristics of the practical instrument and with elementary design considerations.

Taken as a whole, the analysis builds up a satisfactory picture of transducer operation, closely related to practical behaviour. The author has, however, set himself the very difficult task of making a detailed analysis of the mechanism of a somewhat complex electromagnetic cycle from a starting point which presupposes relatively little knowledge of electromagnetism. There are, in consequence, a good many gaps which have not been really satisfactorily bridged. It is, for example, doubtful whether the explanation given on p. 30 relating the "inductance" of the transducer to an "effective" slope of the magnetization curve constitutes a convincing argument. A chapter on magnetic materials and a final chapter on some practical applications of transducers complete the book. The former gives a useful practical comparison of the core materials suitable for transducers, and the latter, after summarizing in a clear and straightforward fashion the main advantages and limitations of magnetic amplifiers, gives a brief

description of a number of typical transducer applications.

Even allowing for the difficulties arising from the excessively wide range of material covered, the impression remains that the author has taken insufficient pains to minimize ambiguities and loose statements. Notwithstanding these criticisms, however, the book provides a very readable and interesting account of transducer principles and contains much useful practical information.

JAMES GREIG

## HANDBOOK OF DISEASES OF NORTH AMERICAN PLANTS

### Plant Disease Handbook

By Cynthia Westcott. Pp. xii+746. (New York: D. Van Nostrand Co., Inc.; London: Macmillan and Co., Ltd., 1950.) 56s. net.

FOR many years books dealing with plant diseases were few and far between, but since the Second World War quite a number have been published on this branch of scientific study. Most of these modern books have been short and have dealt with the subject in a general way. None of them is suitable as a reference book, and even for people whose livelihood depends on the growing of plants they arouse little more than a fleeting interest in the subject.

The present book is a large one in which a vast amount of information on diseases of plants of North America has been collected. Moreover, Dr. Cynthia Westcott claims that it provides an easy and efficient system by which all kinds of plant diseases can be identified and the appropriate remedial measures ascertained.

There are five chapters; the first three are short and require altogether only forty-odd pages, while the last two between them occupy some 550 pages. There is a glossary of terms, a selected but somewhat limited bibliography, and a good index. Photographs and illustrations are frequent throughout the book and are very good indeed.

The first chapter is the usual review of the subject and is mainly historical. The second, although condensed into twenty pages, is of absorbing interest for it contains most up-to-date information on the chemicals used in modern fungicides and on their formulation into various sprays and dusts which are proving valuable in the control of plant diseases. Chapter 3 is a classification of plant pathogens, bacteria according to Bergey, fungi in the main following that given by Ainsworth and Bisby in their "Dictionary of the Fungi", and viruses according to the scheme recently suggested by F. O. Holmes. The last may be controversial at present, but is considered to be the best system for quick reference in diagnostic work, which is the object of this book.

Chapter 4 groups diseases alphabetically under headings coined from names of common plant troubles—for example, blights, leaf spots and cankers—and under each heading a list of fungi and bacteria causing that kind of trouble. The full Latin name of the pathogen is followed by the name of its host plant or plants, with details of any special symptoms and of necessary control measures. Chapter 5, of about the same size, contains as headings the names in alphabetical order of nearly one thousand host plants, each followed by a list of its known diseases—that is, first the common name of the disease as in Chapter 4,