

The second major difficulty of irrigation, namely, siltation and the problem of designing canals which neither silt nor scour, has received a somewhat superficial treatment, the author contenting himself with quoting a number of design formulae and graphs without probing the matter more deeply. The reasons for the different formulae used in Egypt and India are not stated and no guidance is given as to the particular form to be adopted in other areas. The most recent formula for the velocity-depth relation for non-silting canals has quite a different form from that previously adopted, although a thorough analysis is precluded by lack of data concerning the size and amount of solids carried by the canal.

The layout of the book is excellent and the text, which is both lucid and fluid, is illustrated by a large number of diagrams and plates. However, design offices will regret the frequent changes of units.

G. H. LEAN

DISEASES OF CEREAL CROPS

Cereal Diseases in Ireland

By Prof. Robert McKay. Pp. x+161+54 plates. (Dublin: At the Sign of the Three Candles, 1957.) 21s.

THIS is the sixth in the series of handbooks dealing with crop diseases in Ireland written by Prof. R. McKay, illustrated with splendid photographs by G. H. McLean and published by the Three Candles Press. Of similar format to its predecessors, this volume deals with the diseases of cereal crops; it has an excellent frontispiece in colour with occasional colour plates scattered through the text. The foreword is by the Earl of Iveagh. The book is divided into six sections with an appendix. The sections deal respectively with the rusts, smuts, other parasitic diseases, parasitic diseases occasionally seen, miscellaneous diseases of non-parasitic origin and eelworm attack, while the appendix gives some account of the barberry and buckthorn, alternate hosts of some of the most important cereal rusts, with special reference to their distribution in Ireland. It could be suggested that the material dealt with in the appendix would have been better placed with the section dealing with the rusts.

Some passages, such as appear, for example, in the section dealing with loose smut of oats, read a little more like a text-book of plant pathology than a semi-popular treatise, but this merely illustrates the great difficulty the author of such a work as this has in consistently envisaging the needs of the readers for whom the book is intended. It is no easy matter to prepare a glossary of terms for a work such as this and, although a useful one is provided, the omission of some such as ascocarp, stroma, mesocotyl, etc., is noticeable. The illustrations of disease symptoms are profuse and excellent, but when so much mention is made in the text of the various spore forms of the rust fungi, for example, it seems a pity that some attempt was not made to illustrate these and their methods of germination. The choice of references would have been improved by being more inclusive.

The book is written in a simple straightforward style and is very readable. Part of the reason for its appearance is as a guide to agricultural advisers to help them to be able to identify, more readily, cereal diseases in the field. It is also intended to be of service to young farmers attending winter classes in

agriculture or engaged in club work. The book is excellently produced and maintains the high standard of the Three Candles Press. There are very few errors, printing or otherwise, and only two were detected. The illustrations are particularly valuable and up to the high standard one might expect. Priced at one guinea, the publication is worth the money as a book, although it may seem a little expensive for many for whom it is intended. The whole tenor and tone of the work, like that of the earlier volumes, denote the enthusiasm of the author and mark him out as one of the keenest plantmen that Ireland has produced.

A. E. MUSKETT

GUIDES TO ORGANIC CHEMISTRY

Organic Synthesis

By Dr. Vartkes Migrdichian. Vol. 1: Open-Chain Saturated Compounds. Pp. xxviii+834. Vol. 2: Open-Chain Unsaturated Compounds; Alicyclic Compounds; Aromatic Compounds. Pp. xiv+835-1822. (New York: Reinhold Publishing Corporation; London: Chapman and Hall, Ltd., 1957.) £14 the set of two volumes.

SINCE the inception of the fundamental theory of organic molecular structure a century ago (1858), with the addition seven years later of that "crowning achievement of the doctrine of the linking of carbon atoms", the idea of the benzene ring, organic chemistry has advanced in a kind of geometrical progression. A concrete expression of its vast scope at the present day is embodied in the current edition of "Beilsteins Handbuch", which includes to date some ninety massive volumes, although (except for the latest volume) these cover the literature only to 1929. It is understandable, therefore, that the specialist in organic chemistry is nowadays largely dependent upon various types of more concise and up-to-date guides to this great efflorescence of organic chemical information. Such guidance is afforded by a multiplicity of monographs on special fields and by various periodicals exemplified by the American publication, "Chemical Reviews", and the British "Annual Reports", *Quarterly Reviews* and *Current Chemical Papers*.

A fundamental problem lies in the effective presentation of the large number of chemical reactions now available for preparative and research work, in both pure and applied organic chemistry. Very helpful in this way are the American publications, "Organic Syntheses", an annual collection of reliable preparative methods for individual compounds, and "Organic Reactions": each of the nine volumes of the latter, issued since 1942, deals in detail with a number of reactions of synthetical importance.

Dr. Vartkes Migrdichian's work, although bearing upon the same ultimate problem as these two publications, differs from them in two important respects. First, it is not a periodical but a complete work; secondly, his review of reactions is comprehensive and systematic, instead of being limited to an arbitrary selection and arrangement. The first volume covers the open-chain saturated compounds; the second takes in the much wider field of open-chain unsaturated compounds, alicyclic compounds, and aromatic compounds. A third volume dealing with heterocyclic compounds is contemplated.