abandoned by its principal authors at the Como conference on cosmic rays in 1949. The second concerns the distinction drawn between supposedly different sorts of π-mesons: the "pi-meson" (defined on p. 58 as the "meson producing a pi–mu decay"), and the "π-meson" (defined on p. 58 as the "meson of mass about 280 m_e discovered by Powell"). A similar distinction is made between the "mu-meson" and the "μ-meson".

The first four chapters of Marshak's book are devoted to a discussion of the behaviour of charged and neutral π-mesons at non-relativistic velocities, the special contributions made by experiments on the artificially-produced π-mesons being especially well brought out. The next two chapters deal with the capture and absorption of slow, light mesons and the peculiar properties of the μ-meson in relation to the π-meson. A link is made here between the results from the large accelerators and cosmic rays. There follows a clear presentation of the evidence relating to the nuclear interaction of fast π-mesons and the production of π-mesons. The old topic of plural versus multiple production is then gone into in some detail. Finally, Marshak surveys recent work on the new types of charged and neutral heavy mesons (now termed K-mesons), and V-particles with masses greater than the proton mass (now termed hyperons). This chapter is surprisingly good considering the state of knowledge of these particles when the book was written.

Thorndike's book opens with a discussion of the evidence for the existence of mesons and their properties, followed by good descriptions of the artificial production of mesons and the decay of the various forms of light meson. The book concludes with such topics as the positive excess, the energy spectrum, geomagnetic effects, and cosmic rays at sea-level and high altitudes. Each chapter has a detailed list of references.

The printing and production of both books are well up to the high standard of other books in the same series.

G. D. Rochester

SCIENCE AND THE POTATO

The Potato in Health and Disease

By Dr. Tatham Whitehead, Dr. Thomas P. McIntosh and William M. Findlay. Third edition, revised and enlarged. Pp. xv+744+40 plates. (Edinburgh and London: Oliver and Boyd, Ltd., 1953.) 60*s*. net.

IT is not without significance that more books have been written anent the potato than all the other table vegetables put together. Indeed, I know of no single book in Britain devoted to any other specific staple of our vegetable dietary, always excluding the cereals, other than Oldham's well-known volume on the family of the Brassicae and allied cruciferous crops.

I do not propose to discuss at length the causes which underlie this curious monopoly of interest excited by the potato; but, whatever they be, the three authors of this book have reacted to them with ever-increasing enthusiasm and in almost overpowering volume. I doubt whether they do justice to their own perspicacity when they assess the cause of the potato's universal appeal as being the generosity of its yield, even under the least promising conditions. On such a gross material basis, a parsnip or a turnip could stake a competitive claim. The ascendancy of the potato rests, like that of bread, on the fact that it satisfies as a food and never cloys as a diet.

The volume under review is no newcomer. It first appeared under the sole authorship of Dr. T. P. McIntosh in 1927 and contained 264 pages. Later, Dr. McIntosh was joined by Dr. T. Whitehead and Mr. W. M. Findlay, and together they published in 1945 their well-known book, "The Potato in Health and Disease", which had by then grown to 400 pages. The same trio of authors have now compiled a partly rewritten and greatly enlarged new edition extending to 744 pages.

Among the new features are chapters on breeding and animal pests, machinery as applied to potato cultivation, and a long dissertation on the relation of viruses to the plants they infect.

As I traversed this rather formidable work, the thought occurred to me more than once—Am I reviewing a collection of treatises or an encyclopædia? Whatever be the correct answer as conceived by the authors, of one thing I am quite sure: it is no mere text-book which it has been my task to evaluate. Conflicting thoughts, such as these, of necessity evoke a challenge in the mind of the reader: "To whom have the authors addressed their book?".

An architect who sets out to build a homely villa, and ends up by erecting an edifice which from one angle suggests a palace and from another a highly efficient chain-store, must not be surprised if his efforts evoke a welcome less warm than its individual parts would appear to deserve.

Of one thing I am confident: this work is no student's text-book, and I am no less assured that it is not likely to prove a vade-mecum to the farmer, though it may serve the interests of the intelligent specialist cultivator. It will find, however, without question a place, and a dignified one, in my library, and doubtless in that of most senior workers, whether engaged in research or advisory work. Its home will be among the reference books, the section of my library which, with advancing years, I most frequent.

I have intimated that this work suggests a collection of treatises. Let us consider one outstanding example, the description of varieties. Besides innumerable references in the text, the subject is dealt with in an appendix of fifty-three pages. Now it so happens that I wrote a book on potato varieties in 1926. It has long been out of date; but the individual descriptions are at least as informing, better set out and, what is of real importance, accompanied by a short history of origin, and a list of synonyms in each case. How pleased I should have been had the authors of the recent work re-edited and improved it, for the student would then have a handy volume which he could take with him in the field, needing neither a trailer nor a kindly colleague to carry and manipulate it.

The writers, naturally alive to the importance of eelworm, have devoted thirty-six pages to its exposition. The chapter is a painstaking piece of work planned on encyclopædic lines, and as such it is not difficult to point to a few errors of commission and omission. Thus, Ellenby's valuable work has not always been correctly reported; for example, his hatching inhibitor is not located in the larvæ but in the cyst. His studies on the effect of mustard on hatching were made with mixtures of mustard–potato, turnip–potato, etc., and compared with hatchings in potato excretion alone. Prof. A. R.

Todd's hatching factor is eclepic, not ecleptic acid. Of omissions I will refer only to the 1950 publication of the Dutch worker, M. Ootenbrink, which would seem to show that, under strict supervision in regard to both increase and decrease of cysts in the soil, a controlled potato culture can be maintained in infected land. Another 'treatise-like' section is that devoted to virus disease. In the main the data on the relation of virus to plant, and the nature of the virus particle, are derived from F. C. Bawden's book on "Plant Viruses and Virus Diseases", and duly acknowledged. Would it not have been wiser to refer readers to Bawden's well-written book and leave it at that?

The value of the work is greatly enhanced by its good index, and its full bibliography in which there are remarkably few important lapses. It is unfortunate that one of them should be a special favourite of mine, namely, my discovery in 1909 of blight resistance. In conclusion, it can be said that this work gives the reader a just and comprehensive account of the importance of the potato as a subject of scientific inquiry, in which respect it probably has no rival.

R. N. SALAMAN

VALVES AND TELEVISION RECEIVER DESIGN

Data and Circuits of Television Receiver Valves

(Philips' Technical Library; Electronic Valves Series: Book III*C*). By J. Jager. Pp. xi+216.

Television Receiver Design

Monograph 1: I.F. Stages (Book VIII*A*). By A. G. W. Uitjens. Pp. x+177.

Television Receiver Design

Monograph 2: Flywheel Synchronization of Saw-Tooth Generators (Book VIII*B*). By P. A. Neeteson. Pp. x+156.

(Eindhoven: N. V. Philips' Gloeilampenfabrieken; London: Cleaver-Hume Press, Ltd.; New York: Elsevier Press, Inc., 1953.) 21*s*. each volume.

THESE three volumes form part of a series on "Electronic Valves" in the Philips' Technical Library. They may also be regarded as companion volumes to the book on "Television" in the same Library (see *Nature*, 172, 471; 1953). Although in the experimental stages of television development conventional radio and amplifying valves were used, the mass-production of television receivers has created a demand for valves specially designed to meet the requirements of the various stages of such receivers.

The first volume gives complete details, with characteristic curves, of the series of television receiving valves developed by the Philips organization during the past two or three years. Considerable technical information is given of the function of each type of valve and of the circuit arrangements in which it can be used. Similar information is given for three types of cathode-ray tubes, or "direct-viewing picture tubes" as they are termed, made for use in television receivers. In later portions of the book, more detailed technical descriptions are given of some special circuit arrangements; and the book concludes with a complete design of a television receiver developed for the reception of vision and sound programmes according to the 625-line standard of the International Radio Consultative Committee (C.C.I.R.) now in use in various European countries.

The second volume deals with the intermediate-frequency stages of a television receiver, bearing in mind that such stages may operate at any frequency between 10 and 100 Mc./s. The book is largely analytical in nature and describes the special problems of design encountered in obtaining response and amplification over a wide band of frequencies, while at the same time the noise-level is kept down to the minimum attainable.

In television reception, the picture is built up by making the electron beam scan the fluorescent screen of the cathode-ray tube. The method of scanning now generally adopted consists of rapid horizontal movements of the beam across the picture, with flyback between the lines at a much higher speed; and then superimposed on these is a much slower vertical movement for the field or picture scan, with again a more rapid fly-back at the end of each field. These scanning movements are controlled by the voltages produced by a saw-toothed generator, the oscillations of which have to be synchronized with the appropriate signals sent out by the transmitter for the purpose. The third volume under notice describes in considerable detail the principles and circuit arrangements of these saw-toothed generators and the application of the so-called 'flywheel synchronization' technique in television receivers. While some portions of the book are of an analytical nature, the mathematics involved is very straightforward and will be easily followed by the prospective designer.

The production of all three volumes is of a high standard, and the engineer and scientist engaged in the design and development of television receiving technique will find them most useful in connexion with their work.

R. L. SMITH-ROSE

LECTURES ON GENERAL PATHOLOGY

Lectures on General Pathology delivered at the Sir William Dunn School of Pathology, University of Oxford

Edited by Sir Howard Florey. Pp. xiii+733. (London: Lloyd-Luke (Medical Books), Ltd., 1954.) 63*s*. net.

THE subject-matter of this volume has been contributed by no less than ten authors, and like all books written under such conditions it lacks a logical sequence. For example, the chapter on healing occurs some 340 pages after those on inflammation. The work is well written, easy to read for those with some previous knowledge of pathology, and the illustrations are excellent and well chosen. To each chapter is appended a carefully selected bibliography.

The book is a real scientific work and, as such, is a contribution to the subject worthy of the Sir William Dunn School of Pathology, Oxford, from which it has originated. The patient and his diseases, however, have rather been neglected. It sheds light on many controversial problems in general pathology, as each of the authors has freely expressed his opinion as a result of his own experimental work in the field in which he is an expert. Unfortunately, as Sir