

served while still allowing room for an astonishingly large amount of illustrative work. Indeed, more than half the text is devoted to applications to differential equations, ordinary and partial, to electric circuit theory, difference equations, integral equations and other topics.

The chapter headings are as follows: (1) general introduction; (2) the Fourier integral as basis of the operational calculus; (3) elementary operational images; (4) elementary rules; (5) the delta or impulse function; (6) questions concerning the convergence of the definition integral; (7) asymptotic relations and operational transposition of series; (8) linear differential equations with constant coefficients; (9) simultaneous linear differential equations with constant coefficients; electric-circuit theory; (10) linear differential equations with variable coefficients; (11) operational rules of more complicated character; (12) step functions and other discontinuous functions; (13) difference equations; (14) integral equations; (15) partial differential equations in the operational calculus of one variable; (16) simultaneous operational calculus; (17) 'grammar'; (18) 'dictionary'.

The first edition was published in 1950. Into the second edition the following new paragraphs have been introduced: rules for the treatment of correlation functions; a note on the theory of distributions; a note on the Wiener-Hopf technique.

The book is written with exceptional lucidity and can be recommended alike to the mathematician and the engineer.

L. M. MILNE-THOMSON

INTERPRETER OF SCIENCE

Science makes Sense

By Ritchie Calder. Pp. 192. (London: George Allen and Unwin, Ltd., 1955.) 12s. 6d. net.

MR. RITCHIE CALDER'S latest book can be commended to the participants in the current discussion on scientific language. It is more than a competent and readable piece of journalism; it is a demonstration that the nature and implications of scientific advance can be explained in non-technical language which the ordinary person can readily comprehend, and that this can be done by one who does not himself claim to be a scientist. Moreover, the conditions that must be observed for this to be done successfully are made clear: the scientist must take the trouble to explain to the non-scientist what he is doing and in terms not too specialized; the expositor, for his part, must be willing to listen and must have sufficient background to ask the significant questions. Where this is not done, the attempt breaks down, as may perhaps be seen in the present volume when Mr. Calder is tempted to quote chemical nomenclature. His inaccuracies will irritate the chemist, but they are not serious. They do, however, display a failure on the part of the chemist to convey accurately to Mr. Calder the significance of his jargon and on Mr. Calder's part a failure to consult which is tantamount to neglect of the maxim: "Always verify your references".

Such minor blemishes apart, the book is a real contribution to the popular understanding not only of the great scientific advances of the past half-century but also of the way in which they were achieved. It is an admirable exposition of the nature of scientific thought and method. Moreover, while

Mr. Calder's style is lively and picturesque, he holds his imagination in check: in gaining his reader's attention he does not lose a sense of proportion or perspective. The balance and emphasis are almost invariably correct, in spite of the wide field over which he ranges—from the Lunar Society of the mid-eighteenth century to the impact of science and technology on industry and society and the home life of to-day. Five chapters on great discoveries show how they were made, and do so in a way that refutes decisively the idea of magic with which popular thought often clothes the scientist and science.

For that alone the book is worth while. There are minor blemishes: here and there a quantity is false, a wrong note is struck, a word or a phrase jars, or (more rarely) a proposition or interpretation could be challenged; these things are not the result of Mr. Calder's flair for the picturesque or of any failure in interpretation, though they may sometimes be due to a sense of values on which opinions may differ. The book should interest the scientist, through the competence of its technique of exposition and scientific and technical accuracy, as much as the story it tells will fascinate the non-scientist.

R. BRIGHTMAN

HISTORY OF ASTRONOMICAL INSTRUMENTS

The History of the Telescope

By Dr. Henry C. King. Pp. xvi+456. (London: Charles Griffin and Company, Ltd.; Cambridge, Mass.: U.S.A. Sky Publishing Corporation, 1955.) 50s.

THE 456 pages of this excellent book are evidently the result of a truly tremendous amount of research by Dr. H. C. King. The fact that more than sixteen hundred page references are given in nearly as many individual publications further shows the thoroughness and completeness of the factual data.

He starts, in a most satisfying manner, with the earliest device known for the positional observation of the Sun—the sundial—and from there carefully examines each facet of each stage of the optical and instrumental development which culminated in the large present-day telescopes. His style throughout is easy and, in spite of having to be concise, never gives the impression of jerkiness. The book is quite definitely a history of telescopes rather than a history of astronomy, although the two are obviously closely related. As the author points out in the preface, ". . . instrumental improvements receive more attention than the discoveries made through them. The description of Sir William Herschel's 20-foot reflector, for example, occupies more space than his theory of stellar distribution, and far greater importance is attached to the introduction of silvering processes than to the discovery of, say, the planet Neptune".

It would be supremely easy in a book of this sort to dwell at undue length on certain aspects of the subject about which the author is particularly interested or is particularly knowledgeable. Alternatively, it would be simple to become tainted by insularity and make it a book of British achievements in telescopic design, with one or two chapters to cover the efforts of other countries. The author has done none of these things. His review of the subject appears to be very well balanced, the efforts of the