

Index of Mathematical Tables from All Branches of Sciences

Prepared by Dr. Karl Schütte. (*Index Mathematischer Tafelwerke und Tabellen aus allen Gebieten der Naturwissenschaften.*) Pp. 143. (München: R. Oldenbourg, 1955.) 14.50 D. marks.

BEFORE reviewing the contents of this book, it is of some interest to recall a few facts concerned with the relatively short history of such works. It was in 1873 that British mathematicians first conceived the idea of publishing a survey of available tables, and their efforts were responsible for the appearance in 1875 of the "Encyclopaedia of Mathematics" which listed some 750 tables in all. In the meantime, with the growth of technological research, involving as it does much detailed computation, the number of tables has steadily increased, and the comparatively recent "Index of Mathematical Tables", by Fletcher, Miller and Rosenhead, of 1944, gives a selection of more than two thousand.

The author of the book under review explains that his own work was begun before the Second World War and was temporarily halted for the duration thereof; on examining Fletcher's "Index" in 1946, he found that nearly four-fifths of his entries were not in fact shown in that work; he thus decided to complete it, there being in any event no German counterpart of recent date. He claims some twelve hundred entries, of use to "calculators" of various kinds, belonging to all the branches of applied science. He also claims, justifiably I feel, that its comprehensiveness and clear order enhance its value considerably, pointing out at the same time that out-of-date tables and all three-figure ones have been omitted.

The book is divided into sixteen chapters, with sub-sections where appropriate. The first four deal with general calculating (including harmonic analysis), logarithms, natural circular functions, and logarithms of these. Of the remaining twelve, those worthy of special mention deal with the theory of numbers (including primes), gamma functions, elliptic functions, Bessel functions and the many other varieties with which mathematicians and physicists are familiar. It would be unfair to omit mention of those referring to chemistry, astronomy, meteorology, geophysics and navigation. A very full (and almost formidable) list of authors whose publications are listed is provided, together with a similar list of institutes.

J. H. PEARCE

General Physics

By Prof. Oswald Blackwood and Prof. William Kelly. Second edition. Pp. x+704. (New York: John Wiley and Sons, Inc.; London: Chapman and Hall, Ltd., 1955.) 54s. net.

Introductory Applied Physics

By Norman C. Harris and Edwin M. Hemmerling. Pp. viii+729. (London: McGraw-Hill Publishing Company, Ltd., 1955.) 50s. 6d.

EACH of these beautifully produced books from the United States is written for a specific purpose which is somewhat different from that of the ordinary text-book. Profs. O. Blackwood and W. Kelly give an introductory course based on no more initial background than awareness of the obvious impacts of physics upon everyday life. Indeed, their hints on the solution of simple equations, arithmetical extraction of square roots, and the pronunciation of unfamiliar words, show that they assume a fairly low threshold for some students.

They are also quite determined that this shall be no excuse for being content with a superficial knowledge of the principles of physics. A thorough understanding of the simpler processes of physics, and a sensible appreciation of its applications, are brought within the grasp of any careful reader, and this is no mean achievement. As in most books of this kind from American universities, the treatment of elementary mechanics is particularly good. The price puts it beyond the reach of British schoolboys (and, *a fortiori*, of their teachers), and it is in any event difficult to see where it would fit into any ordinary scheme of instruction in Britain; but it can be recommended to the librarian with a surplus to expend.

N. C. Harris and E. M. Hemmerling, writing for students in junior technical colleges, also assume only an elementary knowledge of mathematics; but having a much fuller background of scientific knowledge to exploit, they work at a more exacting level. Here the emphasis is on industrial applications. Heat engines, refrigeration and air-conditioning are pursued in great detail, and there is a very thorough treatment of alternating current and electronics. The standard is not advanced in the academic sense, and the whole is within the capacity of the young technical student, who should find it an inspiring book. This also is priced at library level.

G. R. NOAKES

Chemistry for Our Times

By Elbert C. Weaver and Laurence S. Foster. Second edition. Pp. vi+666+8 plates. (London: McGraw-Hill Publishing Company, Ltd., 1954.) 30s.

ALTHOUGH written as a text for American high schools and university freshmen, the theme of the book is chemistry as it affects the citizen. In the preface to the first edition (1947) the authors maintained that the atomic age called for a new approach to the study of chemistry. In framing this, fundamental principles and industrial applications were treated in due proportion and always with the humanistic appeal. Thus, while the factual chemistry was not much more than that required for British O-level examinations, it was accompanied by many literary quotations, and an abundance of information on such topics as the cyclotron, cosmetics, dyes, nuclear energy, and accounts of economic applications of chemistry. Numerous striking and even sensational stories, and many good illustrations in half-tone, heightened the effect. The idea seemed to be to attract students to the study of chemistry by extolling its spectacular advances. The theoretical explanations, clear but nowhere deep, were clever in their simplicity.

In this, the second edition, the authors have deleted the more sensational stories and pictures, have shortened the literary quotations, recast the appendixes, removed the coloured frontispiece but inserted eight coloured plates, and added items to make their work more of the style of the conventional text-book. These changes in their aggregate reduce the number of pages from 737 to 666. Yet this remains a remarkable book. Many plates have been replaced by others depicting more recent procedures. Although expensive, and scarcely suited as a class-book for any British examination, it should appeal to the student of humanities desirous of having chemical achievement introduced and interpreted to him: it would also make a welcome addition to a school library.

G. FOWLES