

In the heading of this table, the increment in n is erroneously given as 0.02, although it is correctly stated in the abstract.

The prefatory text of three pages defines the iterated Bessel function under consideration and describes the method of computation employed in the construction of the tables. It is there stated that the entries in Table 2 were calculated to 17D prior to rounding to the tabular precision of 12D.

These data constitute another original contribution to the rapidly increasing number of new mathematical tables.

J. W. W.

82[P, S, X].—JOHN W. DETTMAN, *Mathematical Methods in Physics and Engineering*, McGraw-Hill Book Company, New York, 1962, xii + 323 p., 23 cm. Price \$9.75.

In the author's introduction to this very well written textbook he states that, whereas the traditional course in advanced mathematics for engineers and physicists is intended for students who wish to pick up additional techniques not covered in the elementary calculus, these topics are often presented in a very heuristic fashion because the students lack a solid background in analysis. Eventually, he claims, most graduate physics and engineering students will need a thorough understanding of applied mathematics.

The purpose of this book, then, is to fill the need for an introduction to mathematical physics for which a foundation has been prepared by a solid "mathematician's" advanced calculus course.

The author has done yeoman service to his announced aims. There is at least enough material here for a two-semester course, and it is characterized by a good continuity of development. Further, it is an order of sophistication beyond the aforementioned advanced engineering mathematics course.

The style is terse; perhaps this follows from his implied discontent with heuristic presentations. If so, it is not an unusual viewpoint but regrettable, nonetheless, because heuristic discourse can be quite rigorous and still serve to stimulate investigation. It merely implies a high redundancy level which is all too often disdained in textbooks.

Chapter 1 mainly prepares the algebraic foundations for later material, moving through linear algebra into infinite-dimensional vector spaces, orthonormal functions, Fourier series, quadratic forms, and vibrations problems. The second chapter covers variational methods, from maxima and minima of functions and functionals through Lagrange's equations and Hamilton's principle to boundary-value problems and eigenvalue problems.

Chapter 3 discusses separation of variables, Sturm-Liouville systems and the method of Frobenius, while chapter 4 concerns itself with Green's functions in boundary-value problems. Chapter 5 includes a lucid, but still very terse, treatment of integral equations. The final chapter treats of Fourier transforms and their applications, with mention of Laplace and other integral transforms.

Each chapter is divided into several sections, each of which is followed by a set of moderately difficult exercises. The book abounds with excellent examples of the applications of the techniques which have been developed.

While this textbook certainly will serve its intended purpose and is, in fact,

the fruit of just such a course taught at Case Institute of Technology, there may be preferable alternatives open to the physicist or engineer preparing himself for a career of research. Perhaps the following remarks would apply more to the theoretician than the experimentalist, but the principle still persists.

Limits on the size of a book and the teaching time available during a two-semester course severely curtail the amount of material which can be encompassed. The end result of survey courses too often appears to be that when the physicist or engineer returns home from his brief sojourn in the land of applied mathematics he makes two discoveries: (a) when he really needs a mathematical implement it happens to be one he didn't bring home with him, and (b) many of the ones he brought back could have been bought more cheaply at home in the first place.

The goal then should be the development of a mathematical maturity to temper and complement one's physical intuition, rather than the acquisition of a repertoire of a few mathematical *dei ex machinae*. It often becomes necessary to "roll your own" analysis, and the ability to do this can't be achieved by a crash program.

An alternative program might well include, beyond the bed-rock analysis, separate courses in complex function theory (statistical mechanics, plasma physics, field theory, fluid dynamics), real variables (for Lebesgue integration occurring in other contexts), linear spaces (field theory, quantum mechanics, elementary particle interactions), abstract algebra (transition probabilities, quantum mechanics, crystal lattices), and partial differential equations (all continuum mechanics).

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83[P, X].—R. D. STUART, *An Introduction to Fourier Analysis*, John Wiley & Sons, New York, 1962, 126 p., 19 cm. Price \$3.00.

This book is written from the viewpoint of a physicist or communications engineer and, typically, it deals almost entirely with applications. The first and third chapters are supposed to provide the basic material in the theory of Fourier series and Fourier integrals, but the "proofs" are almost everywhere fallacious, even for continuous functions. The second and fourth chapters contain descriptions of the "usual" functions and their transforms, as, for example, the square wave, sawtooth, unit impulse, and exponential decay. Chapters V and VI treat applications to circuit analysis and wave motion, including filters, the capacitance-resistance circuit, bandwidth, diffraction, amplitude modulation, and phase modulation (in which the presumably immature reader is suddenly expected to know some Bessel function theory).

The book cannot be recommended for serious students of waveform analysis, and it is hard to see where its value does lie.

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84[P, X].—P. P. TEODORESCU, *Probleme Plane in Teoria Elasticitatii*, Vol. I, Editura Academiei Republicii Populare Romine, Romania, 1960, 995 p., 23 cm. Price Lei 42,80.

This book of just under 1000 pages is in Romanian. It is concerned only with