Topics treated include the usual items in any standard work on ordinary differential equations plus a chapter on complex variables, a chapter on Bessel functions, a chapter on orthogonal polynomials, one on Fourier series including the double series, a chapter on Laplace transforms and one each on partial differential equations and nonlinear differential equations. Numerous problems and references are given. In connection with the latter, however, one might suggest in future treatments that some of the very large tables of special functions and Laplace transforms be mentioned; Jahnke and Emde is a much overworked reference to Bessel functions and hardly a foremost source of such data nowadays!

For its intended purposes the book is doubtless quite satisfactory although some small improvements in style (such as printing theorems in italics) might be incorporated in a later edition. Printing is generally good. One misprint in the displayed expression at the top of page 102 was found.

R. L. Sternberg

Differential Equations of Applied Mathematics, by G.F.D. Duff and D. Naylor. J. Wiley, New York, 1966. xi + 423 pages. $11.65.

Chapter 1 begins with a discussion of vector spaces, providing a unifying concept for the book. The reader is led very early into the ideas of orthogonal expansions, linear transformations, the calculus of variations as applied to mechanical systems, distributions and Green's functions for ordinary differential equations.

The wave equation, diffusion equation and Laplace's equation are dealt with in the following three chapters. An interesting feature in each chapter is the discussion of numerical solutions by finite difference methods. Further, associated topics are introduced at an appropriate point in each chapter: a formal theory of distributions and Fourier series in chapter 2, Fourier integral transforms in chapter 3, complex variables and Laplace transforms in chapter 4.

Numerous physical applications are considered in chapter 5, including vibrations, fluid motion, electromagnetic theory and quantum mechanics. Chapter 6 deals with eigenvalues and eigen functions of differential operators and generalized Fourier series. Green's function techniques are applied to differential and integral equations in chapter 7, and chapters 8 and 9 deal with Bessel and Legendre functions including contour integral representations, asymptotic behaviour, generating functions and applications to specific physical problems. The concluding chapter discusses the three-dimensional wave equation and problems of reflection and refraction by corners.

The range of topics and excellent exercises make it ideally suited as a text at the advanced undergraduate level. The important ideas occur in theorems or lemmas. Vector methods are used whenever applicable. Unfortunately some notation and terminology is introduced without sufficient explanation. For example $D(= {}^{d}/dt)$ is used on page 42 without formal definition, and Theorem 1.6.2 refers to a matrix of "simple Structure" without defining "simple". The symbol $0(z^{-n})$ is used without explanation. Further, the proof of Picards Theorem for $dx/dt = f(x, t)$ is incomplete in that it fails to show that the sequence of approximations lies within the region of boundedness and differentiability for $f(x, t)$. Problem 1, page 25, implies that $dy/dx = y^{1/2}$, $y(0) = 0$ has two solutions ($y = x^2/4$ and $y = 0$) when in fact it has an infinity of solutions ($y = 0$, $0 \leq x \leq a$; $y = (x-a)^2/4$ $x \geq a$).

This book, nevertheless, is well-conceived, very readable, and has an underlying continuity which make it an excellent text in applied mathematics.

P. J. Ponzo, University of Waterloo

Probability Theory, by Klaus Krickeberg. Addison-Wesley Publishing Co., Reading, Mass., 1965. x + 230 pages. $8.95.

Except for a few corrections and modifications, this is essentially unchanged from the original German edition (Teubner 1963). The book is a mathematically rigorous account of the "central, and partly already 'classic', area of the theory on which further developments are based". No prior knowledge of measure theory is assumed; the required concepts are introduced in suitable probabilistic dress. The first chapter covers the fundamental notions of events, probability, and random variables. The next three deal with expectations and distributions, sequences of independent random variables, conditional expectations. The final chapter gives a detailed account of Brownian motion and the Poisson process. Besides their importance in applications, these processes also serve to illustrate many typical features of the theory of processes with continuous time parameters. A useful Appendix gives a brief survey of developments in the foundations of probability theory, and certain topics not treated in the book. A minor irritation is the omission of publishers' names in referring to books or monographs.

Anyone planning a senior or graduate level course should seriously consider adopting this book as a text.

H. Kaufman, McGill University