There are some errors and omissions. On page 2, it is stated that every system of m first-order differential equations is equivalent to one mth order equation, which is not true. In the discussion of Runge-Kutta methods, only scalar equations are treated in detail and the impression is given that the results can always be extended to systems, although Butcher has given an example where this is not the case. The coverage of the theoretical aspects of stability is a little too superficial, and the definition of A-stability is not quite right. There seems to be no mention in the text of the work of Butcher proving that there is no explicit n-step Runge-Kutta method of order n if $n \geqq 5$. Finally, there is no mention of the following topics: statistical estimates for round-off error; rigorous error bounds using interval arithmetic; methods using Chebyshev series; methods using splines; methods using Lie series; and methods for differential equations with right-hand sides which have singularities or discontinuities. However, these are minor complaints about an otherwise excellent book.

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23[5,6].—V. S. VLADIMIROV, *Equations of Mathematical Physics*, Marcel Dekker, Inc., New York, 1971, vi + 418 pp., 24 cm. Price $19.75.

This book is a translation into English of a textbook which first appeared in Russian in 1967 and which is being used at Moscow University. It contains a comprehensive treatment of the standard boundary value problems for second order partial differential equations. Its most distinguishing feature is its consistent use of distribution theory. The presentation is elegant, thorough and yet easily accessible. The author has succeeded in integrating the distribution theory into the analysis of the boundary value problems of mathematical physics in a natural and coherent way.

The book consists of six chapters. The first chapter introduces the necessary background material from analysis, including a brief presentation, partly without proofs, of the basic facts of Lebesgue integration and of operator theory in the Hilbert space L_2. It then describes the physical interpretation of the common second order partial differential equations and discusses their classification. The second chapter presents distribution theory, including Fourier transformation of tempered distributions. A number of specific concrete distributions which are needed in the remainder of the text are analyzed here in detail. The third chapter treats the concept of a fundamental solution in distribution terminology, with special application to the initial value problem for hyperbolic and parabolic equations. The fourth chapter develops the theory of integral equations, in particular, the Fredholm theorems and the Hilbert-Schmidt theory. The fifth chapter, which is the longest, deals with elliptic equations. Among the topics covered are eigenvalue problems and expansion theorems, the Sturm-Liouville problem and its reduction via Green's function to an integral equation, harmonic functions with the mean value property and the maximum principle, and special functions occurring in connection with special domains. The final chapter on mixed problems for hyperbolic and parabolic equations covers the method of separation of variables and uniqueness and stability results by means of energy and maximum norm a priori estimates.

Although over the last few years a number of treatments of partial differential equations have appeared, I have found it hard to find any particular book which is an ideal beginning graduate level text. Particularly in the subject under consideration, it is very hard to find the right balance between too much and too little, both in sophistication and in quantity of material. I think this book is what I have been waiting for. The translation is not perfect.

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24[7].—HENRY E. FETTIS & JAMES C. CASLIN, *Ten Place Tables of the Jacobian Elliptic Functions: Part* III, Report ARL 71-0081, Aerospace Research Laboratories, Air Force Systems Command, United States Air Force, Wright-Patterson Air Force Base, Ohio, May 1971, iv + 449 pp., 28 cm. Copies obtainable from the National Technical Information Service, Operations Division, Springfield, Virginia 22151. Price $3.00.

This report has been designed to supplement Part I [1] of these tables in the vicinity of $k^2 = 1$. Specifically, herein are tabulated 10D values of the Jacobian elliptic functions $am(u, k)$, $sn(u, k)$, $cn(u, k)$, and $dn(u, k)$, as well as the elliptic integral $E(am(u), k)$, for $k^2 = 0.950(0.001)0.999$ and $u = 0(0.01)K(k)$. Also, the headings of the tables include corresponding 10D values of $K(k)$ and $E(k)/K(k)$, where $K(k)$ and $E(k)$ conventionally represent the complete elliptic integrals of the first and second kinds, respectively.

As in the preparation of [1], the underlying calculations of these extensive tables were performed on an IBM 7094 system.

J. W. W.

1. HENRY E. FETTIS & JAMES C. CASLIN, *Ten Place Tables of the Jacobian Elliptic Functions, Part* 1, Report ARL 65-180, Aerospace Research Laboratories, Office of Aerospace Research, United States Air Force, Wright-Patterson Air Force Base, Ohio, September 1965. (See *Math. Comp.*, v. 21, 1967, pp. 264–265, RMT **25.**)

25[7].—SWARNALATA PRABHU, *Tables of the Incomplete Beta Function for Small Values of the Parameters*, Indian Institute of Science, Bangalore, India, v + 250 pp., 27 cm. (paperbound). Copy deposited in the UMT file.

These tables consist of 6S values of the incomplete Beta function $B_x(p, q)$ for $x = 0.01(0.01)0.50$ and $p, q = 0.02(0.02)0.50$, together with 6 or 7S values of $B(p, q)$ for the same range of p and q.

The underlying calculations were performed to 8S on a National Elliott 803 electronic computer, and the results corresponding to $p = 0.5$ and $q = 0.5$ were