REVIEWS AND DESCRIPTIONS OF TABLES AND BOOKS

With this issue, we introduce a decimal system of subject indexing for our reviews. We plan to use the following coarse subject listing in the January, April and July issues and to define and use a more detailed subject listing for the annual index to appear in October:

1. Biography and Bibliography (History)
2. Selected Topics in Numerical Analysis
   - 2.05 Approximation Theory
   - 2.10 Numerical Integration
   - 2.15 Numerical Differentiation
   - 2.20 Roots of Equations
   - 2.25 Evaluation of Series
   - 2.30 Continued Fractions
   - 2.35 Iteration Methods, Acceleration Techniques
   - 2.40 Differences, Divided Differences
   - 2.45 Algorithms, General Theory
   - 2.50 Inequalities
   - 2.55 Stability of Computation, Significance Arithmetic
3. Linear Algebra
4. Ordinary Differential Equations
5. Partial Differential Equations
6. Other Functional Equations
7. Special Functions
8. Probability and Statistics
9. Number Theory
10. Algebra and Combinatorial Theory
11. Geometry
12. Computers and Other Aids to Computation
13. Applications
    - 13.05 Physical and Chemical Sciences
    - 13.10 Astronomy, Astrophysics
    - 13.15 Engineering Sciences
    - 13.20 Earth Sciences, Atmospheric Sciences
    - 13.25 Biology and the Behavioral Sciences
    - 13.30 Economics and the Social Sciences
    - 13.35 Information Theory, Automata, Control Theory, Cybernetics
    - 13.40 Management Problems, Data Analysis and Processing
    - 13.45 Actuarial Science
    - 13.50 Humanities

1 [2.05].—R. S. Guter, L. D. Kudryavtsef & B. M. Levitan, *Elements of the Theory of Functions*, translated by H. F. Cleaves, edited by I. N. Sneddon, Pergamon Press, Oxford, 1966, xii + 219 pp., 23 cm. Price $8.50.

This book, a translation of the original Russian *Elementiy Teorii Funktsii* published in 1963 by Fizmatgiz in Moscow, should prove useful to people working in approximation theory.

The material comprises definitions, theorems and discussions. There are no proofs. The book has the strength and the weaknesses of the survey format.

Chapter I (pp. 1–85) was written by R. S. Guter and is entitled "Functions of a Real Variable." It is pretty much what you get in Natanson's book on that topic.

Chapter II (pp. 86–169), "Interpolation and Approximation," was written by L. D. Kudryavtsev and has the flavor of Natanson's book on Constructive Function Theory. However, mention is made of numerous recent results (particularly those concerned with the degree of approximation) by such authors as Favard, Stechkin, Akhiezer, Kreĭn, Timan, Dzyadyk, Nikolsky, and Kolmogorov. The theory of entropy is touched on, but nothing much is done with it.

Chapter III (pp. 170–205), written by B. M. Levitan, is on almost periodic functions.

The referencing is meager. One really wants a better job in a book of this kind. The translation is good. Names, of course, continue to give trouble. No great damage is done when H. Rademacher goes into two black translational boxes and comes back out as G. Radmacher, but what can the uninformed do when our own John Mairhuber goes in and comes back out as Mèrkh′yuber?

The numerical analysis or computational aspects of approximation theory are not treated.

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2 [2.05, 2.35, 3, 4, 5, 6].—LOTHAR COLLATZ, *Functional Analysis and Numerical Mathematics*, translated by Hansjörg Oser, Academic Press, New York, 1966, xx + 473 pp., 24 cm. Price $18.50.

The purpose of this book is to indicate the role and utility of the concepts of functional analysis in numerical mathematics. The first major section (200 pages) is primarily devoted to developing the necessary functional analysis background. The treatment covers the usual elementary topics as well as partially ordered spaces, pseudo-metric spaces (the metric takes its values in a partially ordered linear space), and thirty pages on vector and matrix norms. A generous portion of examples, many from numerical analysis, are interwoven. The remainder of the book deals almost exclusively with the solution of linear and nonlinear operator equations with primary application to differential and integral equations (and associated eigenvalue problems), and secondary application to approximation problems. Topics given the most prominence are: constructive fixed-point theorems, the Gauss-Seidel and Jacobi iterations for linear and nonlinear systems of equations, Newton's method and the secant method for nonlinear operator equations and, especially, the setting of partially ordered spaces with discussion of monotone convergence of the Newton iterates, monotone operators and problems of monotone