REVIEWS AND DESCRIPTIONS OF TABLES AND BOOKS

The numbers in brackets are assigned according to the indexing system printed in Volume 28, Number 128, October 1974, pages 1191–1194.

6 [2, 3, 4].–HANS J. STETTER, *Numerik für Informatiker – Computergerechte numerische Verfahren. Eine Einführung,* R. Oldenbourg Verlag, München, Wien, 1976, 149 pp., 24 cm. Price DM 19.80.

This is an introductory text on numerical methods addressed to students in computer science whose main interests lie outside the area of numerical computation. The author, therefore, makes a deliberate attempt to bring into focus the interfaces that exist between computer science and numerical analysis. The result is most noticeable in the three introductory chapters dealing with computer arithmetic, various sources of errors and error propagation, as well as in the concluding chapter on principles of numerical software development. The exposition, throughout, is concise and clear. Proofs are given only if they enhance the understanding of the subject. One year of calculus and some familiarity with the elements of linear algebra ought to be sufficient background for a profitable study of this booklet.

The chapter headings are as follows: 1. Introduction, 2. Computer arithmetic, 3. Error propagation, 4. Evaluation of functions, 5. Solution of equations, 6. Linear systems of equations, 7. Specification of functions through data, 8. Numerical integration and differentiation, 9. Ordinary differential equations, 10. Numerical software. Each chapter is followed by exercises, some of which involve projects to be carried out on the computer. Unfortunately, there is no index of any kind.

W. G.

7 [3.00, 4.00].– MARTIN GUTKNECHT, PETER HENRICI, PETER LÄUCHLI & HANS-RUDOLF SCHWARZ, *Heinz Rutishauser: Vorlesungen über numerische Mathematik,* Vols. 1 and 2, Birkhauser Verlag, Basel, 1976, 164 pp. and 228 pp. Price Vol. 1 Fr./DM 40; Vol. 2 Fr./DM 48.

When Heinz Rutishauser, a pioneer of computational mathematics, died at the age of 52 in 1970, he left updated notes of his lectures on Numerical Mathematics which he had intended to convert into a text book. With the aid of P. Henrici, P. Läuchli, and H. R. Schwarz, M. Gutknecht has managed to edit this material into two volumes which are strikingly uniform in form and style.

Those who have taught introductory courses in Numerical Mathematics will be delighted at first sight: numerous instructive examples and illustrations enhance a clearly and suggestively written text. There is the fine balance between mathematical and computational reasoning which is so essential, and the limitations of both aspects are exposed.

The first volume covers linear equations and inequalities, with special attention to positive-definite systems, nonlinear equations, optimization, interpolation, quadrature and approximation. Although most of the material is standard, the approach and the argumentation are often original; also the level of an introduction is maintained through out without loss of understanding. Surprisingly, "condition" is not introduced as a concept although it is at the basis of many discussions.

The second volume is devoted to differential equations and eigenvalue problems. The treatment of ordinary initial value problems stresses the numerical mechanisms and even explains expontial fitting; that of ordinary boundary value problems includes