tion of these algorithms demonstrates the tremendous progress which has been made during the last fifteen years. For example, no multiple precision is needed anywhere in this booklet. The extent of the details which had to be mastered by the authors is indicated by the fact that nearly 100 pages are required to describe the programs.

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30[3, 13, 15].—LOUIS A. PIPES & SHAHEN A. HOVANESSIAN, *Matrix Computer Methods in Engineering*, John Wiley & Sons, Inc., New York, 1969, xi + 333 pp., 24 cm. Price $12.95.

This book is written at the junior-senior level; it includes a number of numerical examples and exercises, as well as a number of programs in FORTRAN and in BASIC; about half a dozen references are listed in each chapter. The first four chapters, about 140 pages, are concerned with general theory and general numerical techniques; the remaining five chapters, about 180 pages, take up a variety of applications: electricity, time-frequency domain, vibrations (conservative and nonconservative systems), and structures. There is a five-page index.

The objectives of a course that would use this as a text are hard to imagine. Perhaps it could give the students some feeling for the range of applicability of matrices. But according to the title, the book has to do with methods, and, as already mentioned, there are a fair number of actual programs. But the theory is minimal, and the basic computational techniques described are largely obsolete (barring the inevitable Gaussian elimination) except for very small matrices, say, of order four or five.

The power method is described and illustrated in Chapter 3. Justification is presented in Chapter 7. The power method for roots of smallest modulus is given also in Chapter 3, using the explicit inverse. The Danilevski method for obtaining the characteristic polynomial is given, and so is a version of the method of Le Verrier, attributed to Bocher. Nothing is said about rounding errors, and the name of Wilkinson nowhere occurs. Nothing is said about the Hessenberg or the tridiagonal form. And naturally nothing is said about the use of the inverse power method to refine an approximate root. Among the references, the most recent one is the very poor English translation of the first edition of Faddeev and Faddeeva, the translation having the date 1963, whereas the original appeared in 1960. And yet, in seeing the various programs, the student could easily get the idea that this is the last word.

A. S. H.

31[4, 5, 6, 13.05, 13.15].—S. G. MIKHILIN & K. L. SMOLITSKIY, *Approximate Methods for Solution of Differential and Integral Equations*, American Elsevier Publishing Co., New York, 1967, vii + 308 pp., 24 cm. Price $14.00.

This is a translation from the Russian of a reference book published in 1965 by Nauka Press, Moscow, in its series "Spravočnaja Matematičeskaja Biblioteka." The work gives an excellent exposition, on an advanced level, of the most important approximate methods for solving boundary-value problems for differential equations, both ordinary and partial. It also considers the numerical solution of Fredholm and