anyone interested in the material covered. Hence the reviewer's job is simplified. It is sufficient to indicate what material is covered. The title as it appears on the cover is "Matrizen-numerik" which is a bit misleading, but the proper title, given above, is sufficiently explicit. Only real symmetric matrices are considered.

There are five chapters. The first is elementary, introducing linear vector spaces, and norms and condition numbers, then passing to conditions for definiteness, and finally developing the method of Cholesky. The next chapter is on "relaxation methods" including, of course, the conjugate gradient method. Next comes the least-squares problem with the Schmidt orthogonalization. The eigenvalue problem, Chapter 4, takes up the most space, 90 pages, and the book concludes with something over forty pages on boundary value problems. There is a bibliography of 80 items, and a five-page index. Several ALGOL programs are included, and a number of numerical illustrations, but familiarity with ALGOL is no prerequisite. On the whole, this is a clear, careful, and authoritative exposition requiring very little for background.

A. S. H.

9[3].—DONALD D. SPENCER, *Game Playing with Computers*, Spartan Books, New York, 1968, 441 pp., 24 cm. Price $12.95.

Game Playing with Computers is written by an amateur games player who is a novice at computing and an even greater amateur at book writing. By extending the notion of a "game" to include any sort of recreational aspect of computing, the author has assembled a strange mishmash of information. The book will delight freshman students of computing, since it includes complete programs (some in Fortran, some in Basic) for playing Blackjack, the 15 Puzzle, constructing magic squares, and sifting small primes. Flowcharts are given for playing Tic-Tac-Toe, Roulette, and the construction of knight's tours. In almost all cases, the packaged solutions represent bad computing in the sense of using brute force rather than intelligence.

Many games are described without relating them in any way to the book's title. In one case (Checkers and Kings), a flowchart and program are given for which the point seems to be the logic of counting the elements in an array. In several instances, the author throws in photographs of the punched cards he used (very badly reproduced by the publisher).

It is difficult to deduce the point of this book, or its possible audience, or just where a computer enters the game. It might be that it will reduce the number of student programs to play Tic-Tac-Toe (or then it might increase the number), but it will hardly foster any good computing. Perhaps the greatest value of the book is in its descriptions of many games of chance, most of which are presented with no suggestion of how to apply a computer to their analysis.

Brief appendices provide a reference list of books and articles on game playing and descriptions of the Fortran and Basic languages.

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