formulation is discussed in detail for a strain-hardening creep relationship and computed solutions are presented for a thermally loaded plate.

The last chapter by M. Geradin concerns modal analysis. The biorthogonal Lanczos algorithm is proposed as a very efficient tool to compute the upper eigenvalue spectrum of an arbitrary square matrix."

17[4.00, 5.00].–M. K. JAIN, *Numerical Solution of Differential Equations*, Wiley, New York, 1979, xiii + 443pp., 25cm. Price $16.95.

This book attempts the impossible: It is concerned with the numerical solution of ordinary as well as partial differential equations, with the associated initial value as well as boundary value problems (even eigenvalue problems are not omitted), and it assumes virtually no knowledge of the theory of differential equations or of numerical analysis. Consequently, it has to cover many pages with introductory material but cannot afford to do it in a rigorous or even seriously intuitive form for sake of brevity. There are a good number of farther reaching results; but they are often unmotivated or their context is not clear. A good deal of important material is missing and the present state of the art is not well represented. Computational aspects (e.g. step size control) are virtually unreflected.

Even as a gateway to the more specialized literature on the subject the volume is not suitable since the references are unsystematic and largely outdated. Under these circumstances, I cannot imagine for whom the book could be of any value.

H. J. S.

18[3.35].–F. J. PETERS, *Sparse Matrices and Substructures with a Novel Implementation of Finite Element Algorithms*, Mathematical Centre Tracts 119, Mathematisch Centrum, Amsterdam, 1980, ii + 98pp., 24cm. Price Dfl. 12,–.

This short book, a revision of the author's Ph.D. thesis, takes a fresh look at the problem of solving sparse linear systems. The main result is that the finite element technique of factoring a sparse matrix as it is generated, building up in the process larger and larger factored substructures, is applicable to any sparse matrix problem. Moreover, the resulting code needs only to manipulate dense submatrices (or submatrices with a dense profile).

Unfortunately, the book is sprinkled with the claim that this new viewpoint will make all previous work on sparse equation solvers obsolete, a thesis not proved by the contents. There is no serious attempt, either analytical or experimental, to gauge the efficiency or simplicity of the methods in comparison with standard software. Only a very sketchy outline of a program is provided.

The reader wanting a thorough treatment of sparse matrix methods should look elsewhere–to George and Liu's new book, for example.

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