33[39A05, 44A12, 65T10, 94A12]—*The DFT: An owner's manual for the discrete Fourier transform*, by William L. Briggs and Van Emden Henson, SIAM, Philadelphia, PA, 1995, xvi+434 pp., $25\frac{1}{2}$ cm, softcover, $37.50

This is an enormously useful handbook on the discrete Fourier transform (DFT) written for scientists, engineers, and applied mathematicians. It starts with a few pages of historical and practical introduction and moves on to cover the theory and the computational aspects of the DFT and a sample of DFT applications. The authors succeed admirably in their ambitious aim to present a comprehensive treatment of many facets of the DFT.

Chapter 2 on various paths to the definition of the DFT and Chapter 3 on the basic properties of the DFT form the core of the book. The remaining seven chapters can be read more or less independently. Chapters 4 and 5 are devoted to symmetric DFTs and multidimensional DFTs, respectively. Chapter 6 discusses in great detail the pointwise and mean-square errors in the DFT, with the Poisson summation formula playing a central role in the analysis. An interesting selection of applications is presented in Chapter 7: difference equations, digital signal processing, seismic exploration, and image reconstruction in tomography. Transforms related to the DFT, such as the Laplace transform, the z-transform, the Chebyshev transform, and the Hartley transform, are treated in Chapter 8. The fundamental connections between the DFT and quadrature rules are explored in Chapter 9. The final chapter presents an overview of the fast Fourier transform. There is also a table of DFTs in an appendix, a bibliography of 166 items, and a very detailed index.

The authors have taken great care to give a lively and well-motivated account of the subject. There is a lot of illustrative material in the form of case studies, examples from applications, and numerical data. Each chapter concludes with a list of problems that ask for detailed proofs of theoretical results or computational work and sometimes offer an outlook on new territory. A welcome feature are the historical and biographical notes and remarks interspersed throughout the text. There are only very few irritating misprints: "Noble Prize" instead of "Nobel Prize" in the footnote on p. 45, and a sign error in the definition of the DFT on the inside front and back covers. The book can be strongly recommended both as a reference work for practitioners and as an introductory textbook.

H.N.

34[65-00, 65-04]—*A numerical library in C for scientists and engineers*, by H. T. Lau, CRC Press, Boca Raton, FL, 1995, xviii+795 pp., 26 cm, $69.95

During 1974–78 Dutch numerical mathematicians cooperated in building the so-called NUMAL library (NUMerical procedures in ALgol 60), a systematically arranged collection of over 400 numerical modules. The project was coordinated by the Mathematical Centre, Amsterdam. The library contained older collections of numerical algebra procedures developed in the sixties and was completed with results of current research and implementations of algorithms that were publicly available. With the publication (by the Mathematical Centre) of the whole NUMAL manual in their book series in 1981, the project practically ended, as the world was