28 [7].—IRWIN ROMAN, *Tables of* $N^{3/2}$, ms. of 68 pp., $8\frac{1}{2}'' \times 11''$, deposited in the UMT file.

In *MTAC*, v. 1, 1945, p. 407, QR **14** Dr. Roman briefly described his manuscript tables of $N^{3/2}$. Subsequently he enlarged them, so that the copy deposited in the UMT file now consists of 10S values corresponding to $N = 0(1)9999$. He has included a single page of 9D values for $N = 1.0001(.0001)1.0099$, which appeared in his earlier version.

A successful comparison of this table has been made by this reviewer with the similar, less extensive 10D tables of Davis & Fisher [1].

J. W. W.

1. H. T. DAVIS & V.J. FISHER, *Tables of the Mathematical Functions*, Vol. III, The Principia Press of Trinity University, San Antonio, Tex., 1962, pp. 506–507. MR 26 #364. (See *Math. Comp.*, v. 17, 1963, pp. 459–461, RMT 68.)

29 [7].—E. ORAN BRIGHAM, *The Fast Fourier Transform*, Prentice-Hall, Inc., Englewood Cliffs, N.J., 1974, xiii + 252 pp., 24 cm. Price $19.95.

When the fast Fourier transform (FFT) algorithm was rediscovered and published by Cooley and Tukey, it came to the attention of a number of people who had an urgent need for it. Subsequently, a great many papers on applications and extensions of the basic idea were published. This fast algorithm led to increased applications of Fourier theory to digital processes. Consequently, the theory of the discrete Fourier transform (DFT) which had received relatively little attention in the literature, became a subject of great interest to applied mathematicians and engineers.

The present book gives a detailed description of the DFT and its relation to the Fourier theory of continuous functions in a form suitable for engineering students. It starts at a very elementary level, discussing basic Fourier transform theory and the DFT in great detail, with many graphs and diagrams, in a not too rigorous heuristic manner.

The essentials of the FFT algorithm can be given in a few pages. However, for pedagogical reasons, 49 pages are taken up with long algebraic derivations describing various forms of the algorithm along with system flowgraphs for each. This does achieve its purpose, i.e., completeness. However, it may take some perseverance to go through the algebraic manipulations. The elementary level of this treatment may be appealing to an engineer first encountering the subject. However, such a person is probably not ready to concern himself with the details of the FFT algorithm. On the other hand, the working scientist or engineer who has a need for the increased speeds available from the FFT algorithm, and who wants to make a detailed study of it, will find this too elementary. The part of the book dealing with the FFT algorithm takes only one-third of the book and is introduced by treating the 4-point form of the algorithm algebraically and with system flowgraphs. This simple treatment suffices to introduce the reader to flowcharts and programs and will be appreciated by the engineering student. Special algorithms for two real transforms via one complex transform and for one real transform are derived. Then the book gives derivations of the more general algorithms in several different forms and for the mixed-radix case.

Some essential parts of the explanation of the FFT algorithm are somewhat inadequate. For example, the explanation of the reasons for the economy of the method uses the case $N = 4$, showing that the FFT takes fewer operations. However, this is due to the fact that some powers of W_N are equal to one, which does not affect the