11[X].—ROBERT G. BUSACKER & THOMAS L. SAATY, *Finite Graphs and Networks, An Introduction with Applications*, McGraw-Hill Book Co., New York, 1965, xiv + 294 pp., 24 cm. Price $11.50.

In contrast to most other authors of recent books in graph theory, these writers have done little original research in the field, and this may have affected their generally excellent choice of material for an introductory book. The work is in two parts: basic theory and applications. The first deals with most of the standard topics and ideas (an exception being the four pages devoted to hypo-hamiltonian graphs). The second part has two chapters, one of which is on network flows. The other, entitled "A Variety of Interesting Applications," is over one hundred pages in length and includes sections on applications to economics and operations research, puzzles and games, engineering, and the physical and human sciences. This collection is unique, and many of the sections were written with the assistance of appropriate specialists.

The material is generally well referenced, but there are exceptions. The proof of Kuratowski's theorem characterizing nonplanar graphs is called "a refinement due to Berge." This error is partly the fault of Berge, who uses an uncorrected proof by Dirac and Shuster, and that proof is also given here. Another example of poor referencing is that for the result on the nonbiplanar character of the complete 9-point graph. There are at least two proofs in English and in more accessible journals than the article in French cited.

Graph theory is notorious for its proliferation of terminology, and this book has a selection which could (excepting such terms as *inarticulate* graphs) be adopted for general usage. There is a good selection of exercises of varying difficulty, and answers and hints are provided. Summarizing, the book is a very good one for anyone interested in learning some basic graph theory.

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12[X].—G. N. POLOZHII, *The Method of Summary Representation for Numerical Solution of Problems of Mathematical Physics*, translated from the Russian by G. J. Tee, Pergamon Press, New York, 1965, xx + 283 pp., 23 cm. Price $10.00.

In this book a method is given for the numerical solution of a class of boundary and initial value problems for second and fourth order linear partial differential equations. The method rests on the transformation of the finite difference approximation to the differential equation into a vector difference equation in one variable, and the explicit solution of the latter. This explicit solution contains open constants determined by the initial or boundary conditions.

Let the finite difference approximation be

$$R\bar{u}(x) + T\bar{u}(x) = f(x), \tag{1}$$

where (a) $\bar{u}(x) = (u_1(x), \cdots, u_n(x))$, $u_k(x) = u(x, y + kh_1)$, $k = 0, 1, \cdots$, and $h_1 > 0$; (b) $R\bar{u}(x) = \sum_{i=1}^{m} a_i[\bar{u}(x + ih) + \bar{u}(x - ih)]$, with m some (small) positive integer, a_i particular constants, and $h > 0$; (c) T is a tridiagonal matrix of the form $T = PLP$, with L diagonal and $P^2 = I$, for I the identity matrix; (d)