matically mature professional, who will find therein a vast amount of information.

A. S. H.

89[H, K, M, P, Q, S, T, V, W, X, Z].—BEN NOBLE, *Applications of Undergraduate Mathematics in Engineering*, The Mathematical Association of America, The Macmillan Co., New York, 1967, xvii + 364 pp., 24 cm., Price $9.00.

This delightful book goes a long way towards making it clear that "Part of the art of engineering mathematics is to balance the complexity of the engineering problem and the sophistication of the mathematics used against the degree of accuracy and certainty required in the final conclusion." The author, who is an eminent artist in this medium, began with some examples culled by the Advisory Editorial Committee consisting of Rutherford Aris, R. Creighton Buck, Preston R. Clement, E. T. Kornhauser, and H. O. Pollak. He states in his Preface:

". . . This book is based on examples of applications of undergraduate mathematics in engineering, submitted for the most part by members of engineering and mathematics departments of universities, with some contributions from industrial companies. These were requested by the Commission on Engineering Education and the Committee on the Undergraduate Program in Mathematics.

"One of the principal aims has been to write a book for a reader who has no specialized knowledge of any branch of mathematics, the physical sciences, or engineering."

Actually, the author makes reference to college algebra, trigonometry, analytic geometry, calculus, elementary ordinary differential equations, elementary linear algebra, elements of probability theory (Poisson, binomial, and normal distributions), elementary knowledge of computers and flow charts. On the other hand, he "tried to describe physical and engineering situations from first principles, by which we mean basic physical laws such as Newton's laws of motion, the decomposition of forces, Hooke's law in elasticity (extension proportional to force), the basic laws governing electrical networks, and some simple ideas in connection with chemical reactions."

". . . There has been no attempt to provide systematic coverage of topics in either engineering or mathematics. I have merely taken the random sample of examples chosen by the selection committee and added a number of related examples suggested by other sources. It is purely accidental, for example, that the flow charts for computer programs given in the text involve only examples in probability, and that so much attention has been devoted to probability as opposed to statistics."

The author tries in most cases to give:

(1) "Explanation of the engineering motivation of the problem."

(2) "Abstraction, idealization and formulation" (of the mathematical problem).

(3) "Solution of the mathematical problem."

(4) "The relevance of the results to the original problem."

After an introductory chapter, the book is divided into five parts, each having several chapters:

Part I. Illustrative Applications of Elementary Mathematics

E. I.

90[H, P, S, X].—EUGENE L. WACHSPRESS, *Iterative Solution of Elliptic Systems and Applications to the Neutron Diffusion Equations of Reactor Physics*, Prentice-Hall, Inc., Englewood Cliffs, N. J., 1966, xiv + 299 pp., 24 cm. Price $12.95.

This book deals with many aspects of the theory and practice of numerical computations of solutions of the elliptic equations of reactor physics. It also gives some background material on physics, matrix theory, and partial differential equations in general. Following are some comments on the various chapters of the book.

1. *Mathematical Preliminaries* is a survey of elementary matrix theory, the Perron-Frobenius theory of positive matrices, and basic theory for the iterative and direct solution of systems of linear equations. According to the opinion of the reviewer, this chapter, as well as other parts of this book, should have been rewritten before publication. The author could either have worked out a fully self-contained chapter, or limited himself to give references to the well-known book by Varga or some other standard text.

2. *Formulation and Solution of Discrete Boundary Value Problems.* The author describes and discusses various techniques to discretize elliptic differential equations, giving an adequate background for the following chapters. The chapter also contains a short discussion of various types of partial differential equations and the boundary conditions which give rise to well-posed problems. There is also a very