38 [**7, 9, 10**].—N. J. A. SLOANE, *A Handbook of Integer Sequences,* Academic Press, New York, 1973, xiii + 206 pp., 24 cm. Price $10.—.

This unique book contains a listing of 2372 numbered integer sequences (some interrelated) of special interest to researchers in combinatorial theory (including graph theory) and number theory. It represents the culmination of the author's efforts in accumulating such information over a period of seven years, beginning in 1965.

The main tabulation of sequences is prefaced by three explanatory chapters entitled, respectively, Description of the Book, How to Handle a Strange Sequence, and Illustrated Description of Some Important Sequences.

The four criteria used by the author in selecting a sequence for inclusion in the main table are: the sequence must consist of nonnegative integers; it must be infinite; the first two terms must be, respectively, 1 and n, where n is between 2 and 999, inclusive; enough terms must be known to separate the sequence from its tabulated neighbors; and the sequence should have appeared in the scientific literature and be considered well-defined and interesting. The author concedes that his somewhat arbitrary selection of sequences has been necessarily subjective, and in recognition of the limitations of the present list he states that he plans to issue supplements from time to time that will include any necessary corrections, new sequences, and extensions to the original sequences. In the opinion of this reviewer, certain artificial sequences such as the mixed decimal digits of π and e might be appropriately omitted in future editions.

It should be mentioned that some sequences composed of the absolute value of selected alternating sequences have been included. Also, to meet the second criterion some sequences have been subjected to Procrustean manipulation so that an initial integer 1 has been inserted before the first term if this exceeds 1, and extra 1's and 0's have been suppressed. Whenever possible, enough terms of a sequence are given to fill two lines.

The great majority of the tabulated sequences have been taken from sources (including this journal) in the fields of combinatorial theory and number theory. Included are sequences relating to combinations and permutations, graphs and trees, geometries, dissections, polyominoes, Boolean functions, partitions and other number-theoretic problems. A brief discussion of such sequences constitutes Chapter 3.

A few of the entries in the main table consist of about the first 60 digits in the decimal expansions of certain well-known mathematical constants such as the square roots of 2, 3, and 5; the cube roots of 2 and 3; the natural logarithms of 2, 3, and 10; π, γ, ϕ (the golden ratio) and their natural logarithms; e and its common logarithm; Khintchine's constant; π^2 and $\pi^{1/2}$. Sequences relating to the continued-fraction expansions of some of these constants are also included, as well as sequences consisting of the first 12 or more powers of the integers 2 through 19 (excluding 10 as trivial).

A bibliography of 319 entries lists the sources of the sequences in the main table. This is followed by a convenient index, which gives the listed numbers of sequences relating to a specific topic, the principal sequence of its type being identified therein by an asterisk.

This unusual book may be considered as a companion to the report of Robinson and Potter [1], which deals with the identification of noninteger numbers having a prescribed decimal expansion. Because of its wealth of material and extensive bibliography, the book should be of considerable educational value to many readers.

J. W. W.

1. H. P. ROBINSON & ELINOR POTTER, *Mathematical Constants,* Report UCRL-20418, Lawrence Radiation Laboratory, University of California, Berkeley, California, March 1971. (See *Math. Comp.*, v. 26, 1972, pp. 300-301, RMT 12.)

39 [7, 13.15].—PETER BECKMANN, *Orthogonal Polynomials for Engineers and Physicists,* The Golem Press, Boulder, Colorado, 1973, viii + 280 pp., 24 cm. Price \$15.—.

The preface gives several reasons for writing the book and states that, as the title implies, it is for the "application minded reader, and I have tried to be convincing without splitting hairs. The reader looking for local limit lemmas and epsilonics has the wrong book." There is little I find to recommend in this volume. The author's style and apparent sense of humor seem out of place to the reviewer. One of the reasons given for writing the book is that, though orthogonal polynomials were once a "bewildering and confusing collection of many systems...", they "can now be derived from a general weighting function...." The author's statement is not clear. Further, he means the classical orthogonal polynomials, but he does not say so. On this point, one of the appendices is a collection of integrals and other relations involving the classical orthogonal polynomials lifted from [1]. The economy noted by the author does not seem to apply here for he is apparently unaware of the fact that many properties for the Laguerre and Hermite polynomials (the latter is a special case of the former) follow from those of Jacobi by invoking a certain confluent limit process; see [2, Vol. 1., Chapter 8].

Epsilons and deltas aside, to be convincing one should expect complete and correct statements. The author states in the preface, "I have endeavored to give applications to some of the problems where today's action is—numerical analysis, random processes, wave scattering and the like. I did include a brief chapter on partial differential equations, but I suspect that today's engineers will be more appreciative of things like the telescoping trick for orthogonal expansions, which is given here in somewhat more general form than..." in a recent book which shall pass unnamed. The author is referring to the scheme for evaluating a sum involving orthogonal polynomials by