proximate) expression for a function, given its values at a discrete set of points"), and includes an account of the Chebyshev theory.

Chapter Two deals with the Newton Series, first for equally spaced nodes, then for more general cases. The chapter concludes with applications of interpolation-theoretic methods to number-theoretic problems, in particular, to a proof of the theorem that α and $\beta = e^{\alpha}$ cannot both be algebraic, except for $\alpha = 0$.

The early part of Chapter Five is concerned with conventional material, including, for example, Ostrowski's proof of Hölder's result that $\Gamma(z)$ does not satisfy an algebraic differential equation; the latter part is concerned with work of the author (1951) on linear differential equations of infinite order, with constant coefficients.

Chapter Three is concerned with earlier (1937) research of the author on the construction of (entire) functions given their values at a series of points a_n, $a_n \rightarrow \infty$, and with related problems, e.g., the uniqueness of such functions.

Chapter Four contains standard material on the Summation Problem and the theory of Bernoulli numbers and polynomials; it includes, e.g., a proper account of the Euler-MacLaurin Summation Formula.

The book is clearly and precisely written. It can be recommended as an excellent source for many of the basic theorems in numerical analysis, and is a very suitable complement to such books as Natanson [1], which is largely concerned with the real domain.

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1. I. P. NATANSON, *Konstrucktive Funktionentheorie*, Akad. Verlag, Berlin, 1955 [*MTAC* Review 9, v. 13, 1959, p. 64–67.]

39[I, X].—J. KUNTZMANN, *Méthodes Numériques*, Dunod, Paris, 1959, xvi + 252 p., 25 cm. Price NF 36.00.

The author (who is a professor of applied mathematics of the Faculty of Sciences at Grenoble) admits his concern over the lack of a suitable textbook in numerical mathematics written in French. Rather than translate a foreign (to him) work, he decides to write a new book.

For various reasons he decides to limit his book almost exclusively to interpolation. The usual interpolation formulas (Newton-Gregory, Stirling, Gauss, Bessel, Everett, and Lagrange) are included for equally-spaced abscissas and also for divided differences as appropriate.

For the most part, approximation by the standard sets of polynomials (Legendre, Chebyshev, etc.) is avoided, but Bernoulli polynomials and Bernoulli numbers are discussed.

More general formulas for which the given data might be either values of the function or values of certain derivatives are discussed. Numerical integration is avoided, but interpolation for functions of two or more variables as well as of a complex variable is included. The last two chapters deal with the theory of interpolation for linear sums of special functions (exponentials, trigonometric sums, etc.)

Since the book was written to fulfill a need in France, and since there is no co.

responding need in the United States, the reviewer feels that the book will have limited appeal to American numerical analysts.

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40[K].—W. S. CONNOR & MARVIN ZELEN, "Fractional factorial experiment designs for factors at three levels," *Nat. Bur. Standards Appl. Math. Ser.*, No. 54, May 1959, v + 37 p., 26 cm. For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. Price $.30.

This is a sequel to NBS Applied Mathematics Series, No. 48 [1] which contains plans for fractional factorial designs for factors at two levels. The present compilation lists fractional factorial designs for factors at three levels as follows: for 1/3 replications, 2 for 4 factors and 3 each for 5, 6, and 7 factors; for 1/9 replications, 3 each for 6, 7, and 8 factors; for 1/27 replications, 3 each for 7, 8, and 9 factors; for 1/81 replications, 3 each for 8 and 9 factors; and for 1/243 replications, 3 each for 9 and 10 factors. For the same replication and number of factors the designs differ by the size of the blocks into which the treatment combinations are arranged. No main effects are confounded with other main effects or with two-factor interactions. Measurable two-factor interactions when the design is used as completely randomized or when treatments are grouped into blocks are listed. In addition, interactions confounded with blocks are given. Text material discusses the plan of the designs, loss of information, and the analysis of this type of designs.

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1. NBS APPLIED MATHEMATICS SERIES, No. 48, *Fractional Factorial Experiment Designs for Factors at Two Levels*, U. S. Gov. Printing Office, Washington, D. C., 1957 (*MTAC* Review 7, v. 12, 1958, p. 66).

41[K].—EDWIN L. CROW & ROBERT S. GARDNER, "Confidence limits for the expectation of a Poisson variable," *Biometrika*, v. 46, 1959, p. 441–453.

For any m, the inequalities $\sum_{i=c_1}^{c_2} p_i(m) \geqq 1 - \epsilon$, $\sum_{i=c_1+1}^{c_2+1} p_i(m) < 1 - \epsilon$, $\sum_{i=a+1}^{a+c_2-c_1} p_i(m) < 1 - \epsilon$ for all a, where $p_i(m) = e^{-m}m^i/i!$, define $c_1(m)$ and $c_2(m)$ uniquely. Define $m_L(c)$ to be the smallest m for which $c_2(m) = c$, and $m_U(c)$ to be the greatest m for which $c_1(m) = c$.

Table 1, p. 448–453, gives m_L and m_U to 2D for $\epsilon = .2, .1, .05, .01, .001$, and $c = 0(1)300$. The table was computed to 3D on an unspecified electronic computer; when the computed third place was a 5, the 5 was retained in the printed table.

Table 2, p. 444, compares the present confidence limits with the system δ_1 of Pearson & Hartley [1] and the system δ_3 of Sterne [2]; table 3, p. 445, compares them with the approximate formulas of Hald [3]; table 4, p. 446, compares them with the mean randomized confidence intervals of Stevens [4].

Reprints may be purchased from the Biometrika Office, University College, London, W.C. 1, under the title "Tables of confidence limits for the expectation of a