Systems and deals with some of the practical difficulties that arise when large sets of equations are considered. It is now known that some further difficulties arise in practice, and Wilkinson’s two recent papers⁴ could well be consulted before numerical work is undertaken.

The next chapter, entitled Harmonic Analysis, deals with trigonometric interpolation, and describes a method of increasing the convergence of the partial sums which is valuable when it is necessary to differentiate a series. The numerical inversion of the Laplace transform is considered in some detail, and an explanation of the unsatisfactory nature of processes for fitting exponentials to tables is given. The search for hidden periodicities is also dealt with fully.

Chapter Five is about Data Analysis. It contains an indication of few common finite difference formulae, quite a lot about smoothing an smoothed differentiation, a short account of orthogonal functions and polynomials, and a résumé of Runge’s work on the convergence of equidistant polynomial interpolation.

The chapter on Quadrature Methods deals mainly with Gaussian and Eulerian type formulae, and some examples of their use to solve differential equations, and to obtain rational approximations to functions are given.

The last chapter deals with methods of obtaining rapidly convergent series representations of functions defined by their Taylor series or by differential equations.

There can be no doubt that this is a valuable contribution to the literature of numerical analysis, not only for students but for research workers, to whom it will be a source of delight and inspiration.

S. Michaelson


This Cambridge Tract on one of the most difficult fields of analytic research is remarkably well written, and this cannot have been an easy task for this author. He is, of course, one of the leading experts in the field, and we can expect from him a highly competent account, but we must be grateful to him for the great care he has taken to make his account readable and reliable even to the smallest technical detail in the proof. This is not to say that this Tract is an easy book. Its study presupposes mature competence in mathematical analysis, but the serious reader will be rewarded not only by the rather specialised but fascinating content but also by the general skilful techniques of method (areal principle, symmetrization) he can learn from it. The title “Multivalent Functions” really means “Mean p-valent Functions” that is, functions \( f(z) \) regular in \( |z| < 1 \), say, that take any value \( z \) at most \( p \) times, in some specified mean sense. They were first introduced by Spencer (1940), but their theory of distortion, order, and associated coefficient problems is a generalization of the earlier classical theory of

"schlicht" functions as developed by Koebe, Bieberbach, Löwner and their pupils about 25 years before. The tract covers all these theories in their essentials, with the exception of the more recent variational methods of Jenkins and Schiffer.

W. W. Rogosinski


This book is well described by a sentence in the Foreword which states that it is "a compressed introduction to the study of normed linear spaces and to that part of the theory of linear topological spaces without which the main discussion could not well proceed".

The discussion is indeed compressed—a vast amount of material is concentrated into 121 pages of text. The style is the rapid fire Definition—Theorem—Proof kind, with no space "wasted" by any asides. This method is appropriate for a Report while a more leisurely, relaxed treatment is needed for a textbook (e.g., Kolmogorov and Fomin, Functional Analysis, vol. 1, Metric and Normed Spaces). Day's book is an excellent Report on the status of normed linear spaces. A Reader's Guide refers to the literature for those subjects that the author mentions only briefly in the text or not at all. Over 120 contributors are listed in the Bibliography, many of whom have contributed several papers. The reviewer notes that no mention whatever is made of the work of N. Aronszajn, who obtained in 1935 (Comptes Rendus de l'Acad. Sci., Paris, vol. 201, pp. 811–813; pp. 873–875) a norm characterization of inner product spaces among normed linear spaces that the author calls, "the most memorable" of criteria due to E. R. Lorch—but then Lorch's paper of 1948 did not refer to Aronszajn either!

Leonard M. Blumenthal


This important book is the first of two volumes surveying the whole field of Combinatory Logic. The senior of the two authors, H. B. Curry, was the founder of the subject together with M. Schönfinkel. Combinatory logic, as the authors remark in their introduction, aspires to be an analysis of the ultimate foundations. It derives from an analysis of the process of substitution for variables.

The first part of the work discusses the general notion of a formal system, variables, substitution, and proof theory. This is followed by accounts of calculi of lambda conversion (Church calculus), and of an intuitive theory of combinators and its formalisation; the book concludes with a study of the theory of functionality. Two short sections, one on the definitional independence of combinators and the other on some aspects of the transition from non-logistic to logistic systems are the work of W Craig.

The book is noteworthy for the great care and attention to detail with which it is written and for its lucid exposition of difficult ideas.