

for further information he should be referred to the longer book by Doob (which is now available but was not when Professor Mann's book was published); there he will find these problems treated in their Hilbert space versions. The particular topics covered by the work under review are (i) the expansion of x_t as a Fourier series in t (with random coefficients) over a finite interval, the Paley-Wiener expansion for the f.r.p. being worked out as an example, and (ii) the mean ergodic theorem.

To summarize: this is a very useful little book and everyone concerned with the subject will want to possess it for the light which a study of it throws on the larger works by Lévy and Doob. But for all its brevity it does not make easy reading; the approach adopted is a difficult one to follow conscientiously; and the reader should be warned that many of the best things now known are not referred to.

DAVID G. KENDALL

Differential operators and differential equations of infinite order with constant coefficients. Researches in connection with integral functions of finite order. By P. C. Sikkema. Groningen, Noordhoff, 1953. 4+223 pp. 11.50 florins; cloth 13.50 florins.

This monograph is essentially the author's Groningen thesis and describes the results of his researches into the following three general problems. Let $F(D) = \sum_{n=0}^{\infty} a_n D^n$, $D \equiv d/dx$, designate a differential operator of infinite order with constant coefficients, and let $F(D) \rightarrow y(x)$ designate the result of applying $F(D)$ to y , i.e., $F(D) \rightarrow y(x) = \sum_{n=0}^{\infty} a_n y^{(n)}(x)$. (1) Under what conditions does the expression $F(D) \rightarrow y(x)$ possess more than formal meaning? (2) What are the properties of the function $h(x) = F(D) \rightarrow y(x)$? (3) What can be said about the solutions $y(x)$ of the differential equation of infinite order $F(D) \rightarrow y(x) = h(x)$? The functions y and h are restricted in this work to be entire and of finite order, and the theorems obtained relate the properties of F with the order and type properties of y and h . Some of the results yield generalizations of theorems of H. Muggli, I. M. Sheffer, and J. M. Whittaker. The exposition is detailed, and workers in the field will find useful the exactitude with which the author has worked out the statements of his theorems as well as the numerous summaries of previously known results.

PHILIP DAVIS

JOURNAL

The Michigan Mathematical Journal. Vol. 2, no. 1. University of Michigan Press, Ann Arbor, 1954. 94 pp. \$2.00 per volume to individuals ordering directly, \$4.00 to others.

Vol. 1 was reviewed in this Bulletin, vol. 59, p. 483. It is pleasant to report that, while the journal is still produced by photo-offset, its appearance is vastly better than that of Vol. 1. The 13 papers in this issue (which was received in July, 1954 and is cautiously dated 1953-54) bear dates from March to December, 1953; several of them emanate from far beyond the immediate vicinity of Ann Arbor.

R. P. BOAS, JR.

BRIEF MENTION

Introduction to elliptic functions with applications. By F. Bowman. New York, Wiley, 1953. 115 pp. \$2.50.

The purpose of this little book would perhaps be more clearly indicated if the title were *Applications of elliptic functions*. In fact, only about 44 of the 108 pages of text deal with the theory of the Jacobian elliptic functions (the Weierstrassian functions are not even mentioned). Hence the larger part of the book is devoted to applications of elliptic functions, principally to certain conformal mappings which are very important for electrical engineering, aerodynamics and so on. This part is sure to be useful to the physicist or engineer who encounters the corresponding problems.

As to the theoretical part of the book, there is some question whether such a short treatment of a mathematical theory can have any genuine use. In particular, I wonder whether the indications given in the text would suffice for the reduction to one of the three standard forms of an elliptic integral of a slightly malicious nature. Moreover, even if this reduction were to be carried out somehow, it would generally be of little use, since the book says nothing about the evaluation of elliptic integrals of the third kind. I realize that to have dealt also with ϑ -functions and so on would have involved a considerable increase in the size of the book; but, considering that Landen's transformation is briefly considered, it should have been possible to indicate at least its usefulness in the numerical calculation of integrals of the third kind.

F. G. TRICOMI

Colloque sur les fonctions de plusieurs variables. Tenu à Bruxelles du 11 au 14 mars 1953. Liège, Thone; Paris, Masson. 161 pp. 250 Belgian fr., 1800 French fr.

This volume contains lectures by F. Severi, P. Lelong, H. Cartan, J.-P. Serre, P. Roquette, H. Behnke, K. Stein, E. Martinelli, W. Saxer, and S. Bergman.