Introduction to Fourier Analysis and Generalised Functions, by M.J. Lighthill. Cambridge University Press, 1958. 79 pages. Canadian List Price (The Macmillan Company of Canada Limited) $3.

This delightfully simply written book makes use of Laurent Schwartz's distributions to present an introduction to Fourier Analysis which is both sufficiently general and intelligible for an undergraduate student in his last year.

Hans Zassenhaus, McGill University

Circles, by D. Pedoe. Pergamon Press, New York-London-Paris, 1957. x + 78 pages.

This book grew out of lectures to first and second year students and develops a number of interesting properties of circles e.g. the nine-point circle, Feuerbach's theorem, Apollonius problem, compass geometry, the Poincaré model of non Euclidean geometry, Steiner's proof of the isoperimetric property of the circle. The presentation is elegant and concise.

Hans Zassenhaus, McGill University

An Introduction to Differential Algebra, by Irving Kaplansky. Actualités scientifiques et industrielles 1251, Hermann, Paris, 1957. 62 pages.

This is an introduction to the work of Ritt and Kolchin which is self contained and purely algebraic in character.

Hans Zassenhaus, McGill University

Eigenfunction Expansions Associated with Second Order Differential Equations Part II, by E.C. Titchmarsh. Oxford University Press, London, 1958. 400 pages. 70 s.

This book extends the results and methods of Part I to the partial differential equation $\Delta u + (\lambda - q)u = 0$ and to related equations which are slightly more general. Most of the work is done in two dimensions but extensions to more dimensions are discussed and the author indicates how one surmounts the difficulties which arise (largely due to $(\Delta - \lambda)^{-1}$ not being an operator of Carleman type when the number of dimensions increases).

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As in Part I Professor Titchmarsh uses the methods of classical analysis, constructing $\Phi(x, \lambda ;f)$ such that $\Delta\Phi + (\lambda - q)\Phi = f$ and integrating Φ around a large contour in the λ- plane to obtain the expansion theorem. This is first done for a rectangular region and then the limit is taken as the rectangle expands to the whole plane. There is a chapter discussing the variation of the eigenvalues as q or the region changes, and these results are used to solve the problem of a bounded region with a boundary satisfying a piecewise Lipschitz condition. Chapters on separable equations, convergence and summability theorems, perturbation theory (2 chapters, one for the case where the perturbed problem has continuous spectrum), and the case where q is periodic complete the body of the book. There is a final chapter on miscellaneous theorems of analysis which are used.

The exposition is clear and precise, and the reader is left with the feeling of having completed a very careful and thorough study of the subject. However much I would like to have seen such a book include more of the linear operator approach to the subject this would have been impossible without lengthening the book considerably. While the latter methods do enable one to obtain expansion theorems for more general equations they do not seem to yield the detailed results of the later chapters. Also, one might hope that the methods used here may generalize to certain non-self-adjoint problems, as they do for ordinary differential equations.

Thus I feel that this book should serve as a very valuable reference work for those interested in the field. It should also be valuable to mathematical physicists as the discussion centres on the equations which seem to arise most frequently in that field.

R. R. D. Kemp, Queen's University

Functions of Real Variables and Functions of a Complex Variable, by W.F. Osgood. Chelsea Publishing Company, New York, xii + 407 and viii + 262 pages. Bound in one volume. \$4.95.

This is a reprint of two books which Osgood has published in China (University Press, National University of Peking, 1936). The first, "Functions of Real Variables", gives an introduction into higher analysis on a moderately rigorous but acceptable basis, for a reader of a not clearly defined status who, however, must have had some experience in calculus. After introductory chapters on Convergence, the Number System, and Point Sets, there follow the basic notions of calculus, uniform convergence, elementary functions, the algebra of infinite series, Fourier