

It must be said, however, that within this space Mr. Ford has succeeded well in the task which he has set for himself.

ARNOLD EMCH.

*A Course in Interpolation and Numerical Integration for the Mathematical Laboratory.* By DAVID GIBB. (Edinburgh Mathematical Tracts, No. 2.) London, G. Bell and Sons, 1915. viii+90 pp.

*A Course in Fourier's Analysis and Periodogram Analysis for the Mathematical Laboratory.* By G. A. CARSE and G. SHEARER. (Edinburgh Mathematical Tracts, No. 4.) London, G. Bell and Sons, 1915. viii+66 pp.

THESE two little volumes of the series edited by Professor Whittaker treat some of the more essential parts of the subjects of interpolation and numerical approximation, the first being devoted chiefly to the non-periodic case of polynomial interpolation, the second mainly to trigonometric interpolation in the representation of periodic functions. In the first volume, after a very brief introductory chapter on finite differences, Chapter II is devoted to the various standard interpolatory formulas of Lagrange, Newton, Stirling, etc., and closes with a brief account of numerical differentiation. Chapter III, on the construction and use of mathematical tables, is in part devoted to explaining in detail the application of the foregoing principles to direct and inverse interpolation, and in part to special methods for computing tables of logarithms. Finally Chapter IV is concerned with numerical integration.

The second volume begins with a chapter which gives in barest outline and quite without proofs the main facts which the practical man must know about Fourier's series. This chapter closes with Bessel's elegant deduction of a finite trigonometric sum which gives the best approximate representation of a function in the sense of the method of least squares when the values of the function at equally spaced points are known. It is the evaluation of the coefficients of these finite sums (not of Fourier's series) which is considered in Chapter II by various methods, chief among which are the systematized methods of computation devised by Runge in the cases of 12 and 24 ordinates. Certain graphical methods are also explained, but the instruments which effect this interpolation mechanically are explicitly excluded. Chapter III, which is entitled Periodogram Analysis, is devoted to a discussion of