

*Infinitesimal Calculus.* By F. S. CAREY. Longmans, Green and Company, 1917. Section 1, 144 pp.; Section 2, 207 pp.

THIS text is bound in two separate sections, the first containing sufficient material for a good elementary course, while the two sections together cover the topics usually presented in a longer elementary course. Chapter one reminds one of function theory, for the author treats of such topics as sequence of numbers, the arithmetical continuum, closed and open ranges, etc. The reviewer doubts if a beginner can grasp such concepts. Chapter two, on "Limits," contains many interesting examples to illustrate what a limit is, but nowhere is there to be found a concise definition of the word. The question of left hand and right hand limit, the question of the limit of a sum, product and quotient of two functions, is very thoroughly discussed. In the third chapter the rules for the derivative of a sum, a product and quotient of two functions are derived, but the last two derivations are very blind. The next chapter "The sign of the differential coefficient" treats of maxima and minima, and many fine examples are to be found among the exercises. This is followed by a chapter on algebraic functions. The remaining topics treated in the short elementary course are: "The inverse of a function," "Function of a function," "Tangent and normal," "Parametric equations," "Point of inflexion," "Circle of curvature," "Order of magnitude," "Inverse differentiation," "Logarithmic functions," "Areas," "Volume," "Parabolic approximation," "Simpson's rule," "Moments" and "Center of gravity." No definite integrals are used, in fact the symbol  $f$  is not introduced.

Section two starts with an excellent chapter on exponential and hyperbolic functions. The results of several integration formulas are expressed in terms of these functions. This is followed by a discussion of the motion of a particle along an axis. The definite integral is now introduced and many of the elementary properties which we usually assume in an elementary course are proved in full detail. This is followed by a chapter on polar coordinates in which pedal curves and intrinsic equations are discussed together with the usual material to be found in such a chapter. Work on partial differentiation, double integration, triple integration, expansion in power series, curve tracing, singular points, Newton's method of ascertaining the form of a curve at the origin and