The publication of the rest of this Repertorium has been delayed far beyond the time originally set. Its appearance will be awaited with interest by mathematicians who have learned the usefulness of the part already published.

C. H. SISAM.

Elements of the Differential and Integral Calculus. By Professor A. E. H. LOVE. Cambridge University Press, 1909. 207 pp.

STARTING with the thesis that " the principles of the differential and integral calculus ought to be counted as a part of the intellectual heritage of every educated man or woman in the twentieth century, no less than the Copernican system or the Darwinian theory," Professor Love has put together in the eleven chapters of this small volume, the fundamental notions of analytic geometry and of the calculus, as well as some of their applications. The whole has been presented in such a way as not to require even as much knowledge of algebra and trigonometry as might reasonably be expected of a sophomore in an American college. In fact, Chapter VII, on Trigonometric functions, begins with an exposition of radian measurement, followed by a definition of sine and cosine. A review of the laws of indices and the interpretation of negative and fractional exponents precedes the discussion of the derivatives of general powers. Needless to say that no attempt is made to give a proof of the existence of a limit of $(1 + 1/n)^n$ as n increases indefinitely. By computing the function for a series of rapidly increasing values of n, the existence of the limit is made plausible.

An appendix of 25 pages is devoted to the discussion of the graph of the linear function, limits, indices and logarithms, the exponential limit, the mensuration of the circle and radian measure, trigonometric limits, and mechanical units. In this way the more ambitious reader of the book is given an opportunity to get a more rigorous treatment of some of the subjects treated more superficially in the text. The method for the calculation of e given in the appendix seems unnecessarily long to the reviewer.

The style of the book is very clear and it would seem that anybody of medium intelligence ought to be able to understand the leading principles of the calculus by a perusal of this text. The illustrations and applications are rather

monotonous and of the stereotyped character, such as the falling body, oscillation in a resisting medium; a greater variety of illustrations would doubtless make the book more attractive to the non-mathematical reader for whom it is chiefly intended.

It is an interesting fact that the need for books of this type is becoming more and more clearly recognized; it seems to be a part of the movement for the popularization of the principal results of the sciences; how far this can be carried in the case of mathematics seems doubtful, because mathematics is and must remain, as soon as we pass beyond the elementary stages, a highly theoretical subject, which does not lend itself to popularization. Quite a different thing it is of course to present some topic in mathematics in such a way as to make it available to those who have had at least some preparation; such as for instance giving undergraduate students an idea of what lies beyond or below, as has been done in J. W. A. Young's Monographs on Modern Mathematics and in J. W. Young's Fundamental Concepts of Algebra and Geometry; or again, to give to students of physics and chemistry a knowledge of those parts of mathematics that are essential to a full understanding of their own subjects. It is as a contribution to those fields that Professor Love's book is perhaps most valuable, taking its place by the side of such books as Nernst und Schoenflies's Mathematische Behandlung der Naturwissenschaften.

ARNOLD DRESDEN.

NOTES.

THE March number (volume 14, number 3) of the *Annals of Mathematics* contains the following papers: "Groups which contain an abelian subgroup of prime index," by G. A. MILLER; "On infinite systems of linear integral equations," by L. BRAND; "The method of monodromie with applications to three-parameter quartic equations," by R. P. BAKER; "Note on the existence theorem of a minimum of $\int_{xy}^{x'y'} Pdx + Qdy$," by E. SWIFT; "Continuant expressions for $\sqrt{a^2+b^2}$ and $(\sqrt{a^2+b^2}+a)^n$," by L. H. RICE.