

The first chapter treats of the elementary theory of the elliptic integrals, their transformation and reduction to normal forms. The second chapter considers the elliptic Riemann surface and the rational functions on it, while their integrals are discussed in the third chapter. The elliptic functions are studied in the next, and their analytic expressions in the fifth chapter. The sixth is devoted to such applications as the rectification of curves, parametric study of cubic curves, elliptic coordinates, the spherical pendulum, and the rotation of a body about its center of gravity. The seventh chapter is a brief resumé of the elements of group theory and the Galois theory of equations; the eighth treats of the division and transformation of the elliptic functions, and the ninth and last chapter deals with the modular functions. The important formulas are collected together at the end for convenience of reference, and a brief index closes the work.

We believe that Professor Maurer's book will prove to be one of the most useful that has been written on this subject. It embraces in a moderate compass a remarkably well considered and comprehensive view of a large and many-sided field.

J. I. HUTCHINSON.

Introduction to Infinitesimal Analysis. Functions of one Real Variable. By OSWALD VEBLEN and N. J. LENNES. New York, Wiley and Sons, 1907.

JUST fifteen years ago the first treatise in the English language on the theory of functions was published. Until then, this theory, which had been cultivated with great assiduity and success for half a century on the continent, was all but ignored by the English-speaking race, and in this country perhaps not half a dozen universities gave instruction in it. What a change has taken place in the few short years which have meanwhile elapsed! To-day all our better universities regularly give courses in this subject and, strange to relate, the most extended and scholarly treatise on the theory of functions of a complex variable is the work of an American.

During these years, a sister theory has come into prominence; we have now not only a theory of functions of complex variables, but also one for real variables. The work under review treats of this younger theory. Its two hundred and twenty odd pages contain a comprehensive and scholarly presentation of the foundation of the calculus, which on all sides is marked by

originality of treatment and entire mastery of this intricate and difficult subject. The aim of the authors has been to write a book of moderate size which may be used as the basis of a short course or as a reference book in connection with a lecture course on this subject. The book has many praiseworthy features. Besides being very compact, the reasoning is entirely rigorous and correct, a point which, in view of the lax methods in vogue, cannot be too highly commended. The Borel-Lebesgue theorem on point sets included within intervals or rectangles is employed to establish uniform continuity and similar properties. We note as worthy of mention also the following features: the simple manner of introducing irrational numbers with the corresponding geometrical theory of points on the right line; the methodical use of the upper and lower bounds of a function for simplifying proofs, an extended comparison of functions with regard to magnitude (order, rank) with application to indeterminate forms and very general criteria for the convergence of improper integrals, finally the excellent treatment of integration which develops a surprising amount of the theory in a very small compass.

One who has carefully read this little volume will have acquired not only a goodly supply of facts, but, what is of far greater importance, familiarity with the exact and rigorous reasoning which is a *sine qua non* of further work in higher analysis.

JAMES PIERPONT.

An Algebra for Secondary Schools. By E. R. HEDRICK.
American Book Company, 1908. x + 421 pp.

It is with pleasure that we welcome this little volume into the already large family of elementary algebras. In these days of rapid changes, when so much that is time honored must make way for the new, there is always room for one more algebra, provided it is written like Professor Hedrick's in a thoroughly modern spirit which seeks to readjust both the material chosen and the manner of its presentation so as to satisfy more nearly the needs of the present day.

The book has many features well calculated to win support among progressive teachers. The style is clear and attractive. The genial personality of the author cannot be swallowed up even in a high school algebra. It pervades the whole book and makes it bright and fresh. Without departing too far