Chapter XVII, on the calculus of variations and Hamilton's principle, carries the first subject only as far as the derivation and solution of Euler's equation, i.e., the problem of finding extremals, with applications. Most of these applications are familiar enough, though the derivation of Laplace's equation in curvilinear coordinates is not so well known. Isoperimetric problems and variable end points are considered, also integrals in parametric form. The author's insistence on accurately stated definitions of variations is to be commended. Hamilton's Principle and the Principle of Least Action occupy the last fourteen pages. Their application to a number of relatively simple problems is a most valuable feature.

Chapter XVIII, on thermodynamics and entropy, will help clear up some fundamental notions in this field.

With Chapters XIX and XX we return to matters of a more formal sort. The first takes up definite integrals with parameters, improper integrals and tests for their convergence or divergence, the Gamma and Beta Functions, improper double integrals, and special methods for the evaluation of improper integrals. The last chapter gives a brief introduction to the elementary theory of functions of a complex variable.

There are some misprints, though not an undue number. As part or all may have been corrected in the plates since the first printing, a list of them would be useless here.

D. R. CURTISS

HEATH'S EUCLID

The Thirteen Books of Euclid's Elements translated from the text of Heiberg with introduction and commentary. By Sir Thomas L. Heath, K.C.B., K.C.V.O., F.R.S. Cambridge, University Press, 1926. 8 vo. 3 volumes, pp. xii+432; 436; iv+546. £3, 10 s.

It is about eighteen years ago that this writer published in this periodical (this BULLETIN, (2), vol. 15, pp. 386-391) a review of the first edition of this noteworthy example of English scholarship and power of exposition. The titlepage then gave the author as T. L. Heath, C. B., Sc. D.; it now records honors which this and other works upon the history of mathematics have brought to the author, and with the approval of the whole scientific world. As regards the general treatment of the subject, the significance of such a publication, and its influence upon modern education, little need be added to the review above mentioned. The only matter demanding special consideration at this time relates to the changes which characterize the new edition.

In general, the work is a reprint of the first impression, with such corrections and minor changes as are naturally desirable after such a lapse of years. It is a gratifying tribute to the scholarship of the author that the changes in the original text are so few, as also that the demand for the work has made this edition necessary. It should not be thought, however, that the text has not been thoroughly revised or that it fails to include the latest information relating to discoveries in the field considered. The care shown in the revision is seen in numerous changes in the foot-