

SHORTER NOTICES.

Ebene und räumliche Geometrie des Masses von DR. L. HUEBNER, Professor am Gymnasium zu Schweidnitz. Zweite Ausgabe. Leipzig, B. G. Teubner, 1895. 8vo. 16 and 340 pp.

This is an introduction to Circular and Hyperbolic Functions, with applications to Mensuration, of an unconventional kind. For instance, physical applications are sought out, such as pendulum motion and the paths of comets. The mensuration problems are extended to the finding of the volume of an ellipsoidal cap and analogous volumes, by aid of Cavalieri's principle. And the chapter on spherical Trigonometry is followed by one on spherical "Geometrie der Lage," which touches on the sphero-conic. The reason for speaking of spherical ellipses and hyperbolas does not appear.

Again, as to method, the book is in striking contrast to the stereotyped elementary trigonometry in refusing to attach the signs + and - to opposite lengths. It is supposed that the learner, familiar with these signs in their arithmetical use, will be confused by this new geometrical use. It would seem better to give all necessary preliminary explanation rather than to ban this excellent illustration of negative quantity, which seems to us to find its proper place in actual teaching at the outset of Algebra.

We note that the symbol θ is used for $1/0$ in contradistinction to $\infty = 1/\varepsilon$. Thus we have $\tan 90^\circ = \theta$. This has an anarchistic look, but the point of view is not explained.

A theorem referred to as Feuerbach's, in connection with the triangle, is not the celebrated one, but a quite trivial thing which might have occurred to anyone.

And, to make a last, but important exception, the power-series for the sine and cosine, if at this stage they are proved at all, should be proved with some rigor.

At the same time, this independent book might well give suggestions to one wishing to reform his teaching of elementary Trigonometry; and the references show that several German teachers are in a state of dissatisfaction with the teaching of this subject by others.

F. MORLEY.

The Scientific Papers of John Couch Adams. Vol. I. Edited by W. G. ADAMS, Sc. D., F. R. S. With a memoir by J. W. L. GLAISHER, Sc. D., F. R. S. Cambridge University Press, 1896. 4to. liv+502 pp.

Amongst the "collected works" of noted mathematicians