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 $\tan 90° = \theta$. 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

which are now being issued, those of J. C. Adams will hold an important and unusual position, inasmuch as the chief interest will attach to his unpublished work. The objection which he had against the publication of an investigation until he had put it into as complete a form as possible, is well known, and it is a matter for regret that much valuable work has, on this account, remained inaccessible for a long time. His published papers are comparatively few in number, the whole 62 of them appearing in the first volume; of these about half consist of the mere numerical results of long calculations, of addresses and astronomical observations. His brother, Professor Gryllis Adams, who edits the series, states that the manuscripts include numerous reseaches on Legendre's and Laplace's coefficients, terrestrial magnetism and astronomy. These, together with some of his lectures, will be issued in succeeding volumes.

A very readable biographical notice by Dr. Glaisher is appended, containing a straight-forward account of Adams' life and work. Dr. Glaisher has not fallen into the common error of giving a mass of irrelevant details, although the space devoted to the controversy concerning the discovery of Neptune is perhaps excessive, particularly as Adams took absolutely no part in it. The relative merits of Adams and Leverrier are now completely settled, and a full argument of Adams' claims is scarcely necessary. The account of the second great discussion—that on the secular acceleration of the Moon's mean motion—is also fully given. From the nature of the question, Adams was compelled to take some part in this, and the arguments on both sides are set forth in an interesting manner. It is curious that two of the fiercest scientific discussions of this century should have raged round the head of one of the most retiring and least pugilistic of men.

Of Adams as a lecturer, Dr. Glaisher has little to say, and yet his lectures, generally on some subject of mathematical astronomy, were often full of original matter. In a course on the lunar theory, which the writer attended some years ago, much of the matter given was entirely new, and previously published work was always cast into a new form. During the whole of the course, the blackboard was not used once. Long and complicated mathematical formulæ were entirely dictated and in such a way that his hearers had no difficulty in taking them down accurately. The results might almost be published as they stand, so finished are they in form.

The mathematical productions of the Pitt Press are too well known to need comment.. It is sufficient to say here that the present volume is similar in form to Cayley's Collected Works. A portrait of Adams, as he appeared later in life, forms the frontispiece.

ERNEST W. BROWN.

NOTES.

A REGULAR meeting of the AMERICAN MATHEMATICAL SOCIETY was held in New York on Saturday afternoon, February 27, at half past three o'clock, the Vice-President, Professor R. S. WOODWARD, in the chair. There were sixteen members present. On recommendation of the Council the following persons, nominated at the preceding meeting, were elected to membership: Mr. ARTHUR BERRY, King's College, Cambridge, England; Professor JOHN EIESLAND, Thiel College, Greenville, Pa.; Mr. PAUL RENNO HEYL, Clinton Liberal Institute, Fort Plain, N. Y.; Professor ANNIE LOUISE MACKINNON, Wells College, Aurora, N. Y.; Mr. MILTON BROCKETT PORTER, Harvard University, Cambridge, Mass.; Professor DAVID ANDREW ROTHROCK, University of Indiana, Bloomington, Ind.; Professor WILLIAM EDWARD STORY, Clark University, Worcester, Mass.; Professor AUGUST LUDWIG PAUL WERNICKE, State College of Kentucky, Lexington, Ky.; Mr. JAMES KELSEY WHITTEMORE, Harvard University, Cambridge, Mass. Two nominations for membership were received.

A communication was received from the Council recommending certain amendments to the Constitution and By-Laws of the Society. Printed copies of the proposed changes will be mailed by the Secretary to members of the Society.

The following papers were read:

(1) Professor E. B. VAN VLECK: "Polynomial solutions of differential equations."

(2) Professor MAXIME BÔCHER: "On certain methods of Sturm and their application to the roots of Bessel's functions."

(3) Dr. VIRGIL SNYDER: "Lines common to four linear complexes."

In the absence of Professor Bôcher and Dr. Snyder, their papers were read by Professor Thomas S. Fiske.

A REVISED list of the officers and members of the AMERICAN MATHEMATICAL SOCIETY, corrected to January 1, 1897,