

trajectories, radii and lines of curvature, asymptotic and geodesic lines, and imaginary variables. The last will be of assistance to any instructor, consisting as it does, of various well chosen examples in integration round a circuit. In the portions containing kinematics and mechanics we find problems similar to those given by, for example, Routh in his various books. The fourth section contains numerical problems in spherical astronomy.

The admirable clearness of explanation and care of details are to be highly commended.

ERNEST W. BROWN.

*Keplers Traum vom Mond.* Von LUDWIG GÜNTHER. Leipzig, B. G. Teubner, 1898. xxii + 185 pp.

WE should consider Herr Günther's edition of Kepler's "Dream" rather incommensurate with the importance of his text if it had not evidently been a labor of love on his part. The German translation (the Latin of Kepler is not given) occupies 19 pages, that of Kepler's notes perhaps another 50 pages, the editor being responsible for the rest. The work, or rather scientific romance, is little known and it cannot be said to be of importance except in so far as it shows what stage Kepler had reached in astronomical ideas. Its interest is, in fact, less historical than antiquarian. As a romance it would hardly find many readers at the present day, being chiefly details of the appearance of the sky as seen from the moon. The editor is scarcely fair in comparing it with the well-known tale of "Julius" (!) Verne—the first inspiration of many a schoolboy—which he dismisses with a contemptuous remark. The fullness of the notes on astronomical and other matters will satisfy the most exacting of critics.

ERNEST W. BROWN.

*A Short Table of Integrals.* By B. O. PEIRCE. Boston, Ginn and Co., 1899. 8vo, 134 pp.

THIS is a revised and much enlarged edition of the author's well-known table of integrals, forming a very useful handbook of formulæ which in many cases are too long and complicated to remember. It constitutes a labor saving volume of considerable value. There are 897 formulæ in all. These include the indefinite integrals of many rational and irrational algebraic and transcendental functions, formulæ of reduction, and the more important definite integrals. There are also numerous auxiliary formulæ, for

example, those arising in trigonometry, the principal relations between the elliptic integrals (Jacobian notation), and series for frequently occurring functions. In the last the author has been careful to state the limits within which the expansions are valid. At the end of the book are several numerical tables which include, beside the usual logarithmic and trigonometric ones, some four place tables of the elliptic integrals and of the gamma functions. In future editions a table of contents might be added.

ERNEST W. BROWN.

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#### NOTES.

ATTENTION is called to the change in the hours of meeting of the AMERICAN MATHEMATICAL SOCIETY. Hereafter the morning session will open at 11 o'clock and the afternoon session at 2 o'clock. The Council will meet at 10:15 a. m.

A NEW list of members of the Society will be issued in January. Forms for furnishing necessary information have been sent to each member, and a prompt response will be of great assistance to the Secretary.

A meeting of the National academy of sciences was held at Columbia University, November 14–16, pure and applied mathematics being represented by Professors Cleveland Abbe, C. S. Hastings, E. S. Holden, A. E. Michelson, Simon Newcomb, Mr. C. S. Peirce, and Professor R. S. Woodward. The following mathematical papers were presented at the meeting: Professor R. S. WOODWARD: "The statical properties of the atmosphere," "A direct proof of the effect on the eulerian cycle of an inequality in the equatorial moments of inertia of the earth;" Mr. C. S. PEIRCE: "The definition of continuity," "Topical geometry in general," "The map-coloring problem."

THE preliminary programme for the November meeting of the London mathematical society announced the following mathematical papers: "Note on Clebsch's second method for the integration of a Pfaffian equation," by MR. J. BRILL; "On the forms of lines of force near a point of equilibrium"; "The reduction of conics and quadrics to their principal axes by the Weierstrassian method of reducing quadratic forms;" and "On the reduction of a linear substitution to a canonical form, with applications to linear differ-