NOTES.

At the meeting of the Cambridge Philosophical Society held on October 31, 1898, papers were presented by Mr. H. F. Baker, "On Mittag-Leffler's theorem;" by Mr. A. Berry, "On the evaluation of a certain determinant which occurs in the theories of statistics and of elliptic space;" by Mr. J. H. Grace, "On metrical relations between linear complexes;" by Mr. A. E. Western, "On certain systems of quadratic complex numbers."

The Mathematical Society of Edinburgh held its annual meeting on November 11, 1898, and elected the following officers for the current session: President, Dr. Alexander Morgan; Vice-president, Mr. R. F. Muirhead; Honorary secretary, Mr. J. W. Butters; Honorary treasurer, Mr. F. Spence; Editors, Mr. John Dougall, Mr. Charles Tweedie, Dr. C. G. Knott; Committee, Messrs. J. D. H. Dickson, George Duthie, A. Lindsay. At this meeting papers on "Systems of circles analogous to Tucker's circles," by Mr. J. A. Third, and on "The geometrical theory of the hyperbolic functions," by Mr. W. L. Thomson, were read. On the motion of Professor G. A. Gibson, a committee was appointed to consider the treatment of proportion in elementary mathematics.

The Trustees of the British Museum have recently issued a fac-simile, consisting of twenty-one plates, of the celebrated Rhind mathematical papyrus, prefaced by an introduction by Dr. E. A. Wallis Budge, keeper of the Egyptian and Assyrian antiquities. This papyrus has been the object of considerable discussion on the part of mathematicians and Egyptologists ever since the late Dr. Samuel Birch published an account of its contents in the *Zeitschrift für Ægyptische Sprache* in 1868, and a large body of students in each field will be grateful for the possession of the actual text. The text is written throughout in hieratic, but its actual date is not quite certain. Dr. Budge assigns it to a period not earlier than the beginning of the eighteenth dynasty, about 1700 B. C., but adds that the text goes back to a more remote period. It was probably a copy of a papyrus written in the Hyksos period, about 2000 B. C., by a scribe Aāh-mes, who stated that he himself copied an original work of the time of Amen-em-hāt III., a king of the twelfth dynasty, about 2300 B. C. The number of *Nature* for November 24, 1898, contains a sketch of the contents of the papyrus.

THE press of B. G. Teubner announces that a work entitled "Kurzgefasste Vorlesungen über verschiedene Gebiete der höheren Mathematik" is in preparation by Dr. ROBERT FRICKE. The work is to consist of two parts, devoted to algebra and geometry, and analysis and theory of functions, respectively, and will be issued in octavo form bound. It is to assume on the part of the reader familiarity with the elements of descriptive geometry, analytical geometry, and the infinitesimal calculus; its object is pedagogic and it will attach chief importance to the applications of the science. Designed primarily for students of physics, astronomy, and engineering, and for those students of pure mathematics who have no desire to specialize, the work is to be constructed on lines similar to those followed in Merriman and Woodward's "Higher mathematics, a text-book for classical and engineering colleges."

ONE of the earliest works to bear the imprint of 1899 is Professor E. CESÁRO's "Elementi di calcolo infinitesimale, con numerose applicazioni geometriche," from the press of Lorenzo Alvano, Naples. This volume is a fitting sequel to the author's "Corso di analise algebrica" and a suitable review of it will appear in the BULLETIN.

THE last catalogue, Number 17, December, 1898, of the Fratelli Bocca, of Rome, contains over fifteen hundred numbers of works in mathematics, physics and astronomy. A. Hermann, of Paris, has recently issued a new catalogue of his own publications and also Catalogue Number 60 of memoirs and treatises in mathematics and astronomy. The contents of the latter catalogue are drawn largely from the library of the late Professor SOUILLART and comprise more than three thousand numbers in mathematics, over a thousand numbers in astronomy, and about one hundred and fifty portraits of savants. Macmillan and Bowes, of Cambridge, announce a number of standard English mathematical books at greatly reduced prices in a recent circular. Catalogue Number 89, dated 1899, of Oscar Schack, of Leipsic, offers over a thousand numbers in the exact sciences.

CAMBRIDGE UNIVERSITY. The following lectures on mathematical subjects will be delivered during the academic year 1898–99: *Michaelmas term*:—By Professor G. G. STOKES: Hydrodynamics.—By Professor A. R. FORSYTH: Theory of differential equations; Fourier's and other expansion theorems. By Professor G. H. DARWIN: Orbits and perturbations of planets.—By Dr. E. W.

HOBSON: Sound and vibrations.—By Mr. J. LARMOR: Electrostatics and magnetism.—By Mr. A. E. H. LOVE: General theory of wave motion and optical theories.—By Mr. H. F. BAKER: Theory of functions.—By Mr. A. BERRY: Elliptic functions.—By Mr. H. W. RICHMOND: Plane analytical geometry.—By Mr. G. T. WALKER: The electromagnetic field. *Lent term*: — By Professor G. G. STOKES: Physical optics.—By Professor A. R. FORSYTH: Differential equations (continued).—By Professor R. S. BALL: Planetary theory.—By Professor J. J. THOMSON: Electricity and magnetism, electromagnetic waves.—By Dr. E. W. HOBSON: Conduction of heat.—By Mr. J. LARMOR: Electrodynamics and electro-optics.—By Mr. A. E. H. LOVE: Elasticity.—By Mr. H. F. BAKER: Theory of functions (continued).—By Dr. J. W. L. GLAISHER: Elliptic functions.—By Mr. R. A. HERMAN: Hydrodynamics.—By Mr. A. N. WHITEHEAD: Non-Euclidean geometry.—By Mr. G. T. WALKER: Physical optics.—By Mr. G. T. BENNETT: Linear and quadratic complexes. *Easter term*: — By Professor R. S. BALL: Movements of comets.—By Professor J. J. THOMSON: Electricity and magnetism.—By Mr. H. F. BAKER: Solid geometry.—By Dr. J. W. L. GLAISHER: Elliptic functions (continued). *Long vacation*:—By Professor G. H. DARWIN: Potential and attractions; Figure of the earth and precession.

The Examiners for Part II. of the Mathematical Tripos in 1899 are Dr. E. W. HOBSON, Mr. A. N. WHITEHEAD, Mr. W. BURNSIDE, and Mr. G. T. WALKER.

PROFESSOR G. G. STOKES will have completed the fiftieth year of his tenure of the Lucasian Professorship of Mathematics at Cambridge University next summer. A plan is on foot to celebrate the event in a suitable manner on the 1st and 2d of June, 1899. Professor Stokes is the thirteenth mathematician to hold this professorship founded by Henry Lucas in 1663. Isaac Barrow was the first incumbent in 1664, Isaac Newton assumed the chair in 1669, W. Whiston in 1702, N. Sanderson in 1711, J. Colson in 1739, E. Waring in 1760, Isaac Milner in 1798, R. Woodhouse in 1820, R. Turton in 1822, G. B. Airy in 1826, Charles Babbage in 1828, Joshua King in 1839, and G. G. Stokes in 1849. It is interesting to remark further that, excepting Charles Babbage, who held the professorship for eleven years but delivered no lectures, all occupants of the chair elected since 1747–48, the session in which the mathematical triposes were instituted, have been senior wranglers; and

all, with the same exception, elected since 1769, the date of the founding of Dr. Smith's Mathematical Prizes, have been first Smith's prizemen: Waring in 1757, Milner in 1774, Woodhouse in 1795, Turton in 1805 (ranked equal with Christie, second wrangler, as Smith's prizeman), King in 1819, Airy in 1823, STOKES in 1841.

PROFESSORS WILLIAM BEEBE and JAMES PIERPONT have been promoted from assistant to full professorships in mathematics at Yale University.

PROFESSOR F. H. LOUD, of the mathematical department of Colorado College, has been granted leave of absence for one year.

MR. WILLIAM FOX has been appointed assistant professor of applied mathematics in the City College of New York.

MR. R. C. MACLAURIN has been elected to a fellowship in mathematics at St. John's College, Cambridge University.

M. A. MICHEL LÉVY, of Paris, has been elected a corresponding member of the Berlin Academy of Sciences.

THE Munich Academy of Sciences has elected the following mathematicians to membership: Professor L. FUCHS, of Berlin, Professor SOPHUS LIE, of Christiania, and Professor A. PRINGSHEIM, of Munich.

THE Sylvester Memorial Committee (see BULLETIN, 2d Series, vol. 4, p. 239) met recently in London and closed its accounts, the entire amount collected being about eight hundred and seventy-five pounds sterling. It was decided to establish a medal in bronze, to be given every three years together with the interest on the fund for that period, for distinguished work in mathematics.

PROFESSOR CHARLES-MICHEL BRISSE died at Paris, October 13th, 1898, at the age of fifty-five years. The November number of the *Journal de Physique*, with which he was actively connected from the date of its foundation in 1872, contains an appreciative account of his services to science. He was the author of memoirs on the theory of surfaces and on the displacement of figures, of a number of classic papers on actuarial subjects, and of French translations of English and German works on higher mathematics. He published two editions of a course in mathematical physics, the first in collaboration with M. C. ANDRÉ, and the second with M. REVIÈRE. For twenty-four years he was professor of mathematics at the Lycée Condorcet, and also held the posts of répétiteur at the École Polytechnique, supplementary pro-

fessor at the Conservatoire des Arts et Métiers, professor at the École Centrale, and professor at the École des Beaux-Arts.

THE deaths are announced of Sir GEORGE BADEN-POWELL, at the age of fifty-one years, a patron of astronomical science, son of the Rev. Prof. Baden-Powell, the Oxford geometrician and geologist; of Sir JOHN FOWLER, at the age of eighty-one, the celebrated English engineer, designer of the Firth of Forth bridge; and of M. J. N. RAFFARD, at the age of seventy-four, one of the editors of the *Revue de Mécanique*, and distinguished for his contributions to applied mathematics.

NEW PUBLICATIONS.

I. HIGHER MATHEMATICS.

ABHANDLUNGEN zur Geschichte der Mathematik. Heft VIII. Leipzig, Teubner, 1898. 8vo. M. 8.00

BOEGEHOLD (H.). Historisch-kritische Darstellung der Konstruktionen der Fläche zweiter Ordnung aus 9 Punkten. [Diss.] Jena, 1898 8vo. 52 pp.

BIANCHI (L.). Vorlesungen über Differentialgeometrie. Uebersetzt von M. Lukat. (In drei Lieferungen.) Zweite Lieferung. Leipzig, Teubner, 1898. 8vo. pp. 337 to 528. M. 6.60

BOCHOW (K.). Die Formeln für die Summe der natürlichen Zahlen und ihrer ersten Potenzen, abgeleitet an Figuren. Magdeburg, 1898. 8vo. 45 pp. M. 1.00

BOHLMANN (G.). See GENOCCHI (A.).

BUDISAVLJEVIC (E. v.) und MIKUTA (A.). Leitfaden für den Unterricht in der höheren Mathematik. Band II. Grundzüge der Differential- und Integralrechnung. Vienna, 1898. 8vo. 8 and 607 pp. Cloth. M. 10.00

COMSTOCK (E. H.). See SLICHTER (C. S.).

DIEM (G.). Ueber Ellipsen auf einem Ellipsoid, deren Axen gegebenen einfachen Bedingungen genügen, insbesondere über kongruente Ellipsen. [Diss.] München, 1898. 8vo. 42 pp.

FRENZEL (R). Flächen zweiter Ordnung, die durch die Rotation eines ebenen Gebildes um einen im Raume befindlichen Strahl entstehen. [Progr.] Jägerndorf, 1898. 8vo. 16 pp.

FÜRLE (H.). Ueber die Verwendung des Faberschen Rechenstabes zur Lösung quadratischer, kubischer und biquadratischer Gleichungen. Theil I. Berlin, 1898. 4to. 7 pp. M. 1.00

GEER (P. v.). Leerbock der analytische Meetkunde. Deel I.: Meetkunde van het platte vlak en van de vlakken en rechte lijnen in de ruimte. Leyden, 1898. 8vo. 12 and 266 pp. M. 5.80