NOTES.

The Thirteenth Summer Meeting and Fifth Colloquium of the AMERICAN MATHEMATICAL SOCIETY will be held at Yale University during the entire week, September 3–8, 1906. The first two days will be devoted to the regular sessions for the presentation of papers. The Colloquium, which will open on Wednesday morning, will include the following courses of lectures : Professor E. H. MOORE, " On the theory of bilinear functional operators "; Professor MAX MASON, " Selected topics in the theory of boundary value problems of differential equations "; Professor E. J. WILCZYNSKI, " Projective differential geometry."

THE nineteenth regular meeting of the Chicago Section of the AMERICAN MATHEMATICAL SOCIETY will be held at the Northwestern University, Evanston, Ill., on Saturday, April 14, 1906, the first session opening at 10 A. M.

AT the meeting of the London mathematical society held on February 8, the following papers were read : By Major P. A. MACMAHON, " Partitions of numbers in space of two dimensions "; by DR. H. F. BAKER, " The Eisenstein-Sylvester extension of Fermat's theorem."

THE National academy of sciences will hold its annual meeting at Washington, D. C., April 16–18.

THE American association for the advancement of science will hold a summer session at Ithaca, New York, during the week June 26 to July 2. Dr. EDWARD KASNER is vice-president and Professor L. G. WELD secretary of Section A.

THE foreign universities named below offer advanced courses in mathematics during the summer semester of 1906 as follows :

UNIVERSITY OF HALLE.—By Professor G. CANTOR : Theory of numbers, four hours ; Seminar, two hours. — By Professor A. WANGERIN : Differential geometry, five hours ; Definite integrals and differential equations, four hours ; Selected chapters of potential theory, one hour ; Seminar, two hours. — By Professor A. GUTZMER : Differential calculus with exercises, five hours ; Theory of functions, four hours ; Selected chapters of analytic mechanics, one hour ; Seminar, two hours. — By Professor V. EBERHARD : Algebra, I, four hours ; Analytic

geometry of conics, two hours. — By Professor F. BERNSTEIN : Historical review of the principal fields of pure mathematics, two hours ; Mathematics of insurance, two hours.

UNIVERSITY OF JENA. — By Professor R. HAUSSNER : Differential and integral calculus with exercises, five hours ; Plane analytic geometry, four hours ; Division and quadrature of the circle, two hours ; Seminar, one hour. — By Professor J. THOMAE : Elliptic functions, four hours ; Mathematical geography, four hours. — By Professor G. FREGE : Analytic mechanics II., four hours.

UNIVERSITY OF LEIPZIG. — By Professor C. NEUMANN : Applications of the calculus, four hours ; Seminar, one hour. — By Professsor A. MAYER : Analytic dynamics, five hours ; with exercises, one hour. — By Professor O. HÖLDER : Applications of elliptic functions, three hours ; Selected chapters of elliptic modular functions, two hours ; Seminar, one hour. — By Professor K. ROHN : Curves of order three and four, four hours ; Determinants, two hours ; Seminar, one hour. — By Professor F. HAUSDORFF : Ordinary differential equations, four hours ; with exercises, one hour. — By Professor H. LIEB-MANN : Plane analytic geometry, four hours ; Introduction to algebraic analysis, four hours ; with exercises, one hour.

UNIVERSITY OF MUNICH. — By Professor F. LINDEMANN : Integral calculus, five hours ; Substitutions and higher algebraic equations, four hours ; Mechanics of non-rigid bodies, two hours ; Seminar in mechanics, one and one half hours. — By Professor A. VOSS : Introduction to the theory of differential equations, four hours ; Analytic geometry of space, five hours ; Seminar, two hours. — By Professor A. PRINGSHEIM : Definite integrals, four hours ; Applications of elliptic functions, two hours. — By Professor K. DOEHLEMANN : Descriptive geometry (axonometry, perspective), three hours ; with exercises, two hours ; Synthetic geometry, II, four hours ; Imaginary elements in geometry, one hour. — By Professor E. v. WEBER : Determinants, four hours ; Differential calculus, four hours ; with exercises, two hours. — By Professor H. BRUNN : Elements of higher mathematics, four hours. — By Dr. F. HARTOGS : Selected chapters of the theory of functions, four hours.

UNIVERSITY OF ROSTOCK. — By Professor O. STAUDE: Analytic geometry of space, four hours ; Analytic mechanics, four hours ; Seminar, two hours.

UNIVERSITY OF WÜRZBURG. — By Professor F. PRYM : Integral calculus, six hours ; Proseminar, two hours ; Seminar, two hours. — By Professor E. SELLING : Analytic mechanics, four hours ; Spherical astronomy, two hours. — By Professor G. ROST : Analytic and synthetic geometry of conics, four hours ; Applications of the calculus to plane curves, four hours ; Twisted curves and surfaces, four hours ; Noneuclidean geometry, two hours ; Seminar in pure mathematics, two hours ; Seminar in mechanics, two hours.

UNIVERSITY OF BERN. — By Professor J. H. GRAF : Spherical harmonics, three hours ; Bessel functions, three hours ; Definite integrals, three hours ; Differential and integral calculus, two hours ; Theory of investments, two hours ; Seminar, two hours. — By Professor E. OTT : Differential calculus, two hours ; Analytic mechanics, I, two hours. — By Professor G. HUBER : Elliptic integrals with applications, two hours. — By Dr. C. MOSER : Insurance, two hours. — By Dr. J. V. PEX-IDER : Theory of numbers, three hours ; Elements of the theory of aggregates, one hour ; Analytic theory of numbers, two hours ; Prime numbers, one hour. — By Dr. L. CRELIER : Synthetic geometry of space, two hours ; Geometry of the triangle, with exercises, four hours.

UNIVERSITY OF ZÜRICH. — By Professor H. BURKHARDT : Algebraic analysis, four hours ; Mathematical theory of dissipative phenomena, four hours ; Seminar, two hours. — By Professor A. WEILER : Analytic geometry, II, four hours ; Descriptive geometry, II, four hours ; Synthetic geometry, two hours. — By Dr. E. GABLER : Principal theorems of differential and integral calculus, two hours ; Political arithmetic, two hours ; Content and method of instruction in geometry in preparatory schools, one hour.

DURING the fortnight beginning April 19 a vacation course for gymnasium teachers will be held at the University of Göttingen. Professors Klein and Behrendsen will explain in detail the schedules for mathematics and physics proposed by the commission of the society of German scientists and physicians (see the review of these reports by Professor J. W. A.

Young in the BULLETIN, pages 347–352). Regular courses of lectures will be given by Professors Behrendsen, Prandtl, Runge, Simon, Voigt and Wagner.

BEGINNING on Friday, March 23, Professor H. A. LORENTZ, of the University of Leiden, will give at Columbia University a course of eight lectures on "The theory of electrons and its applications to the phenomena of light and radiant heat." These lectures will be given on Fridays from 4 to 6 p. m. and on Saturdays from 10 to 12 a. m., March 23 to April 7, and from 4 to 6 p. m. on Wednesday, April 11, and Thursday, April 12.

THREE senior wranglers in mathematics sit in the British court of appeal — Fletcher Moulton, just elevated to the bench, Lord Justice Ronier and Lord Justice Sterling. Mathematicians are also strongly represented at present among the high court judges; the Lord Chief Justice Buckley and Justices Channell, Joyce and Bray were all wranglers, and Justice Sutton was a senior optime.

THE Smith's prizes for the present year have been awarded to C. F. RUSSELL, of Pembroke College, for his essay "The geometric interpretation of apolar binary forms," and to F. J. M. STRATTON, of Gonville and Caius college, for his essay "A problem in tidal evolution suggested by the motion of Saturn's ninth satellite."

THE exposition of arts and industries held in Brussels in the fall of 1905 awarded its gold medal to the periodical *l'Enseignement mathématique* for its services to mathematical pedagogy.

PLANS are being perfected for preparing a suitable memorial and monument to the late Professor GUIDO HAUCK in the rooms of the technical school at Berlin, at which he was professor for twenty-seven years and thrice rector. A general invitation for contributions has been issued, signed by representatives of most of the academies, universities and technical schools of Germany. Remittances may be sent to Herr Kiesel, Sekretär der Technischen Hochschule, Berlin-Charlottenburg.

THE mathematical society of Berlin announces that the hindrances which prevented the erection of a suitable monument over the grave of WEIERSTRASS no longer exist and that the

stone will be placed in position this spring. Friends and students of Weierstrass who wish to contribute for this purpose may send their contributions to Professor Dr. J. Knoblauch, Berlin W, Karlsbad 12.

DR. E. ZERMELO, of the University of Göttingen, has been promoted to an assistant professorship of mathematics.

DR. F. HARTOGS has been appointed docent in mathematics at the University of Munich.

PROFESSOR G. HETTNER, of the technical school at Berlin, has been awarded the order of the crown of the third class by the German emperor.

DR. L. BOULANGER has been appointed professor of mechanics at the University of Lille.

DR. M. F. W. DYSON, of the observatory at Greenwich, has been appointed professor of astronomy at the University of Edinburgh.

DR. R. FUCHS has been appointed docent in mathematics, and Dr. REISSNER has been promoted to an associate professorship of mechanics at the technical school of Berlin.

MR. E. T. WHITTAKER, of Cambridge, has been appointed Andrews professor of astronomy at the University of Dublin, and astronomer royal of Ireland.

PROFESSORS T. J. I'A. BROMWICH, of Queen's College, Galway, and J. H. JEANS, of Princeton University, have been elected fellows of the Royal society of London.

PROFESSOR W. SCHEIBNER, of the University of Leipzig, celebrated his eightieth birthday, January 8.

COLONEL I. H. WING, of Batfield, Wisconsin, an alumnus of Bowdoin College, has given the college $50,000 to endow the chair of mathematics.

THE Royal astronomical society has awarded its gold medal to Professor W. N. CAMPBELL, of the Lick Observatory, for his researches on the motion of stars in the direction of the line of sight.

DR. E. B. WILSON has been promoted to an assistant professorship of mathematics at Yale University.

PROFESSOR W. J. HUSSEY, of Lick Observatory, has been appointed professor of astronomy at the University of Michigan.