

## NOTES.

THE sixteenth annual meeting of the AMERICAN MATHEMATICAL SOCIETY will be held at Boston in convocation week, in affiliation with the sixty-second meeting of the American Association for the advancement of science. Titles and abstracts of papers to be presented at this meeting should be in the hands of the Secretary by December 15. Abstracts intended to be printed in the announcement of the meeting must be submitted by December 8.

THE closing (October) number of volume 10 of the *Transactions of the American Mathematical Society* contains the following papers: "The summability of the developments in Bessel functions, with applications," by C. N. MOORE; "Singular points of ordinary linear differential equations," by G. D. BIRKHOFF; "Automorphisms of order two," by G. A. MILLER; "Resolution into involutory substitutions of the transformations of a non-singular bilinear form into itself," by DUNHAM JACKSON; "On singular points in the approximate development of the perturbative function," by F. W. REED. Also "Notes and errata," volumes 8 and 10; Table of contents, volume 10; and Indices by authors and subject matter of volumes 1-10.

THE opening (October) number of volume 11 of the *Annals of Mathematics* contains: "Theory of floating tubes," by FRANK GILMAN; "Generalized geometric means and algebraic equations," by OTTO DUNKEL; "The geometry of chains on a complex line," by J. W. YOUNG.

THE publishing house of Ginn and Company, New York, announces that the following books are in preparation: "Theoretical mechanics," by P. F. SMITH and W. R. LONGLEY; "Projective geometry," by O. VEBLEN and J. W. YOUNG. The treatise on differential geometry by L. P. EISENHART has recently been published.

IN the press of B. G. Teubner are the following books on mathematics: Encyklopädie, parts of II 2, III 1, IV 1, IV 2, V 2, V 3, VI 1, and VI 2; Encyclopédie, parts of I 1-4, II 2-5, III 1, IV 2, IV 4; "Verzeichnis der Schriften Leonhard Eulers," by G. ENESTRÖM (*Jahresbericht*, *Ergänzungsband III*); "Didaktik des mathematischen Unterrichts," by A. HÖFLER; "Niedere Zahlentheorie, Teil II," by P. BACH-

MANN; "Elemente der Geometrie," by H. THIEME; "Lehre von den geometrischen Verwandtschaften, Band IV," by R. STURM; "Synthetische Theorie der Cliffordschen Parallelen und der linearen Linienörter des elliptischen Raumes," by W. VOGT; "Analytische Geometrie der Punktpaare, Kegelschnitte und Flächen zweiter Ordnung," by O. STAUDE; "Funktions tafeln mit Formeln und Kurven," by E. JAHNKE; "Vektoranalysis und ihre Anwendung in der theoretischen Physik," by W. V. IGNATOWSKY.

THE annual list of American doctorates published in SCIENCE for the academic year 1908-1909 contains 378 names, of which 189 are credited to the sciences. The following 15 successful candidates offered mathematics as major subject (the titles of the theses are appended): H. E. BUCHANAN, Chicago, "Periodic oscillations of three finite masses about the Lagrangian circular solutions"; T. BUCK, Chicago, "Oscillating satellites near the Lagrangian equatorial triangle points"; H. T. BURGESS, Yale, "Point-circle correlations"; J. R. CONNER, Johns Hopkins, "Basic systems of rational norm-curves"; L. S. DEDERICK, Harvard, "Certain singularities of transformations of two real variables"; A. DRESDEN, Chicago, "The second derivatives of the extremal integral"; G. F. GUNDELFINGER, Yale, "On the geometry of line elements in the plane with reference to osculating vertical parabolas and circles"; G. W. HARTWELL, Columbia, "Plane fields of force invariant under projective transformations"; D. D. LEIB, Johns Hopkins, "On a complete system of invariants of two triangles"; J. V. MCKELVEY, Cornell, "The groups of birational transformations of algebraic curves of genus 5"; W. D. MACMILLAN, Chicago, "Periodic orbits about an oblate spheroid"; E. H. TAYLOR, Harvard, "On some problems in conformal mapping"; H. I. THOMSEN, Johns Hopkins, "Some facts in regard to plane rational curves"; M. O. TRIPP, Columbia, "Groups of order  $p^3q^2$ "; Miss M. S. WALKER, Yale, "A generalized definition of an improper multiple integral."

The number of American doctorates in mathematics for each of the last eleven years is 13, 11, 18, 8, 7, 14, 21, 11, 13, 22, 15.

ANOTHER professorship of mathematics has just been created at the University of Paris, with the designation of chair of the theory of functions. Professor E. BOREL has accepted the

new position. There are now twelve full professorships of mathematics at the Sorbonne, the present occupants being Professors Andoyer, Appell, Borel, Boussinesq, Darboux, Goursat, Koenigs, Painlevé, Picard, Poincaré, Raffy, Tannery. There are also two associate professors, Hadamard and Puiseux, and one chargé de conférences, Dr. Blutel.

THE following advanced courses in mathematics are announced for the academic year 1909–1910 :

CAMBRIDGE UNIVERSITY. (Michaelmas term begins October 14, Lent term January 17, and Easter term April 25.) — By Professor A. R. FORSYTH: Differential equations, three hours (M); Differential geometry, three hours (M); Functions of two or more complex variables, three hours (L). — By Professor Sir G. H. DARWIN: Lunar theory, three hours (M); Figure of the earth, three hours (L). — By Professor Sir R. S. BALL: Mathematical astronomy, three hours (M); Applications of geometry to dynamics, three hours (L). — By Dr. E. W. HOBSON: Harmonic analyses, three hours (M); Higher dynamics, three hours (L); Lebesgue integrals, three hours (E). — By Dr. H. F. BAKER: Theory of functions, three hours (M, L); Curves, three hours (M, E). — By Mr. B. A. HERMAN: Hydromechanics, three hours (M, L). — By Mr. H. W. RICHMOND: Algebraic and synthetic geometry, three hours (M, L, E). — By Dr. A. N. WHITEHEAD: Synthetic geometry, three hours (M); Philosophy of mathematics, three hours (L, E). — By Dr. T. J. P'A BROMWICH: Theory of potential and applications, three hours (M, L). — By Mr. A. BERRY: Elliptic functions three hours (L, E). — By Dr. E. W. BARNES: Linear differential equations, three hours (L). — By Mr. C. T. BENNETT: Line geometry, three hours (L). — By Mr. A. MUNRO: Hydrodynamics and sound, three hours (M). — By Mr. G. J. LEATHEM: Elementary electron-theory, three hours (M). — By Mr. J. H. GRACE: Theory of numbers and invariants, three hours (M, L). — By Mr. G. H. HARDY: Integral equations, three hours (E).

AT the session of the Paris academy of sciences held on July 19, 1909, the following prizes were awarded: Binoux prize (fr. 2000) to Professor P. DUHEM for his contributions to the history of science; Pierron-Perrin prize (fr. 5000) to Professor E. MERCADIER, of the Ecole polytechnique, for his work on

acoustics, elasticity and telegraphy; Montyon prize (fr. 700) to M. DE SPARRE, for his work on rational mechanics; Boileau prize (fr. 1300) to Professor BOULANGER, of the University of Lille, for his treatise on general hydraulics; Lalande prize (fr. 540) to M. BORELLY, of the observatory of Marseilles, for his discoveries of small planets and comets; Vals prize (fr. 460) to M. de la BAUME-PLUVINEL for his contributions to astronomy; Pontécoulant prize (fr. 700) to Professor E. W. BROWN, of Yale University, for his researches relative to the theory of the moon.

AMONG the recent contributions to the Euler fund, we mention the subscription for forty sets of the complete works by the academies of science of Berlin and of St. Petersburg, and a cash subsidy of five thousand francs by the latter; a gift of eight thousand francs by the city of Zürich, and the appropriation of five thousand francs by the American Mathematical Society. At the beginning of September the number of sets subscribed for was 275. In view of these facts, the Swiss scientific society, at its ninety-second annual meeting at Lausanne, September 5-8, 1909, unanimously voted to proceed with the publication of the complete works of Leonhard Euler. The preparation of the different volumes will be assigned to one or more specialists in the respective fields; about twenty have already signified their willingness to serve. A general committee of three will direct the whole undertaking.

THE French association for the advancement of science held its thirty-eighth annual meeting at Lille, August 2-7, under the presidency of Professor Landouzy, dean of the faculty of medicine of the University of Paris, with Professor E. LEBON, chairman of the section of mathematics and astronomy. The following papers were read: "Biography of Poincaré," by E. LEBON; "Modular geometry," by G. TARRY; "Fredholm's equations," by H. POINCARÉ; "Instruction in mathematics," by C. A. LAISANT; "Geometric representation," by N. CHAPELON; "Fermat's theorem," by A. GÉRARDIN; "Plane representation of paraboloids," by F. MICHEL; "Hyperelliptic surfaces," by E. TRAYNART; "Theory of integrals of algebraic functions of several variables," by L. AMOROSO; "The method of indeterminants and the solution of functional equations," by M. CARLIER; "On the theory of curves," by A. PELLET; and twenty papers on astronomy. The next meet-

ing of the association will be held at Toulouse during the summer of 1910, under the presidency of Professor C. M. GABRIEL, of the University of Paris, the chairman of the section of mathematics being M. BÉLOT.

THE third annual meeting of the Italian association for the advancement of science was held at Padua, September 20 to 25, under the presidency of Professor V. VOLTERRA. A notable feature of the meeting was the prominence given to general papers read before joint sections, among which was the address given by Professor F. SEVERI, on "Hypotheses and reality in geometric science." The following papers were read before the section of pure and applied mathematics. By A. ALESSIO, "On the reduction of observations for the determination of relative gravity to a rigid bearing of the pendulum"; by U. CISOTTI, "Maxwell's stresses and elastic media"; by A. CROCCO, "Aërial navigation"; by G. GALLUCCI, "On irregular configurations  $N_3$ "; by T. LEVI-CIVITA, M. ABRAHAM and M. O. CORBINO, "On the constitution of electric radiation"; by E. PASCAL, "Mechanical integration of differential equations"; by G. RICCI, "On the determination of three-dimensional varieties having prescribed intrinsic properties."

THE Italian mathematical society *Mathesis*, recently reorganized to consider both scientific and pedagogic questions, held its second annual meeting at Padua, September 20-23, under the presidency of Professor F. SEVERI. The opening address was given by Professor G. LORIA on the existing crisis in the secondary schools. After a symposium on proposed reforms and on more systematic preparation of teachers in which a large number participated, Professor BERZOLARI and BONOLA proposed the organization and publication of an encyclopedia of elementary mathematics in Italian. Professor CASTELNUOVO reported on the work of the international commission on mathematical instruction. The society's prize of 900 francs for the best essay on some elementary subject was awarded to M. PADOA for his essay on the theory of fractions.

PROFESSOR J. PETERSEN, of the University of Copenhagen, has retired from active teaching. Professor N. NIELSEN has been promoted to a full professorship and to be head of the department of mathematics.

DR. H. HAHN, of the University of Vienna, has been appointed associate professor of mathematics at the University of Czernowitz.

PROFESSOR E. NAETSCH, of the technical school at Dresden, has been promoted to a full professorship of mathematics.

THE gold medal of the French association for the advancement of science, for the present year, has been awarded to Professor H. POINCARÉ, of the University of Paris.

DR. J. O. MÜLLER has been appointed docent in mathematics at the University of Bonn.

AT the University of Cambridge Dr. T. J. P. A. BROMWICH has been appointed university lecturer in mathematics.

PROFESSOR G. A. GIBSON, of the Glasgow and West of Scotland Technical College, has accepted the professorship of mathematics at the University of Glasgow.

PROFESSOR G. A. MAGGI, of the University of Pisa, has been elected corresponding member of the mathematical society of Charkow.

AT the University of Chicago, Professor O. BOLZA has returned from a year's leave of absence and will resume his duties commencing with the autumn quarter; Professor L. E. DICKSON has been granted leave of absence, and will spend the present year in Europe.

IN connection with the celebration of the twentieth anniversary of the founding of Clark University the honorary degree of doctor of laws was conferred upon Professor W. F. OSGOOD, of Harvard University, Professor J. PIERPONT, of Yale University, and Professor E. B. VAN VLECK, of the University of Wisconsin; the degree of doctor of mathematics was conferred upon Professor E. H. MOORE, of the University of Chicago.

AT Northwestern University Professor D. R. CURTISS has been promoted to a full professorship of mathematics. Mr. R. E. WILSON and Dr. J. C. MOREHEAD have been promoted to assistant professorships of mathematics.

PROFESSOR G. W. HARTWELL, of the University of Kansas, has accepted the professorship of mathematics at Hamline University, St. Paul, Minnesota.

PROFESSOR E. L. HANCOCK, of Purdue University, has been appointed professor of applied mechanics at the Worcester Polytechnic Institute.

PROFESSOR CHARLES HASEMAN, of the University of Indiana, has accepted an associate professorship of mathematics at the University of Nevada, Reno, Nevada.

PROFESSOR C. GUNDERSEN, of the Michigan Agricultural College, has accepted the professorship of mathematics at the Agricultural College of Oklahoma, Stillwater Oklahoma.

PROFESSOR O. T. GECKLER, of the Georgia School of Technology, has been appointed professor of mathematics at Whitman College, Walla Walla, Washington.

PROFESSOR A. B. FRIZELL, of Midland College, and Miss W. BAUER have been appointed instructors in mathematics at the University of Kansas.

DR. H. F. BURGESS has been appointed instructor in mathematics at the University of Wisconsin.

MR. E. F. A. CAREY has been appointed instructor in mathematics at the University of Montana.

MR. J. C. RAYWORTH has been appointed instructor in mathematics at Washington University, St. Louis.

DR. G. F. GUNDELFINGER has been appointed instructor in mathematics at the Sheffield scientific school of Yale University.

DR. L. S. DEDERICK has been appointed instructor in mathematics at Princeton University.

AT the University of Illinois, Dr. R. L. BÖRGER has been promoted to the position of associate in mathematics. Mr. G. H. SCOTT has been appointed assistant in mathematics.

MR. J. H. KINDLE and Mr. J. R. TRIMBLE have been appointed instructors in mathematics at the University of Cincinnati.

MR. G. H. PALMER has been appointed instructor in mathematics and graphics at Rutgers College.

MR. F. C. EATON has been appointed instructor in mathematics at the University of Iowa.

MR. R. K. WILLIAMS has been appointed instructor in mathematics at Indiana University.

AT the University of Maine Mr. S. D. CHAMBERS and Mr. T. L. HAMLIN have been appointed instructors in mathematics.

AT the Western Reserve University, Cleveland, Ohio, Professor C. J. SMITH has been granted leave of absence for the current year. Mr. A. H. FORD has been appointed instructor in mathematics.

PROFESSOR C. REUSCHLE, of the technical school at Stuttgart, died August 17, at the age of 62 years.

PROFESSOR IRVING STRINGHAM, dean of the University of California since 1886, professor of mathematics since 1882, and acting president during the current year, died on October 5, 1909, at the age of 52 years. He was graduated at Harvard in 1877, and took the degree of doctor of philosophy at Johns Hopkins in 1880. Professor Stringham became a member of the American Mathematical Society in 1891, and was a member of the Council in 1902–1905 and Vice-President of the Society in 1906.

CATALOGUES of second-hand books: Bowes and Bowes, 1 Trinity St., Cambridge, England, catalogue No. 326, containing 2576 titles in pure and applied mathematics. — W. Heffer and Sons, Cambridge, catalogue No. 53, containing titles 287–1111 on mathematics and physics. — Meier and Ehrat, Untere Bahnhofstrasse 94, Zurich, Switzerland, catalogue No. 300, about 650 titles in mathematics. — Martin Breslauer, Unter den Linden 16, Berlin W. 64, Germany, catalogue No. 1, alte Rechenbücher, etc., 29 titles.