## NOTES.

THE fourth summer meeting of the Mathematical Association of America, held at Ann Arbor in connection with the meetings of the American Mathematical Society and the American Astronomical Society, was attended by about ninety members. The meeting opened with a joint session of the three societies. The following day was devoted to discussion of the proposed mathematical dictionary and to a symposium on present day relations and tendencies between colleges and high schools as regards mathematics. The meeting closed with an exhibition of the mathematical and astronomical rarities in the library of the University of Michigan.

THE July number (volume 20, number 3) of the *Transactions of the American Mathematical Society* contains the following papers: "Certain types of involutorial space transformations," by F. R. SHARPE and VIRGIL SNYDER; "On a new treatment of theorems of finiteness," by O. E. GLENN; "On the theory of developments of an abstract class in relation to the calcul fonctionnel," by E. W. CHITTENDEN and A. D. PITCHER; "On the influence of keyways on the stress distribution in cylindrical shafts," by T. H. GRONWALL; "Some convergent developments associated with irregular boundary conditions," by J. W. HOPKINS; "Groups possessing a small number of sets of conjugate operators," by G. A. MILLER.

THE List of Members of the London mathematical society, dated November 1, 1919, includes 333 names, among them those of 16 honorary members. J. E. CAMPBELL is president and T. J. I'A. BROMWICH and G. H. HARDY are secretaries of the society.

THE following advanced courses in mathematics are offered at the Italian universities during the academic year 1919–1920:

UNIVERSITY OF BOLOGNA.—By Professor P. BURGATTI: Mechanics of continuous media with application to elastic bodies and to perfect and viscous fluids, three hours.—By Professor L. DONATI: Theory of heat (conduction, radiation,

thermodynamics, atomistics); principle of relativity and its recurrence in several questions of modern physics, three hours. —By Professor F. ENRIQUES: Abelian integrals, three hours. —By Professor S. PINCHERLE: Theory of sets of points; functions of a real variable and their integrals; theorems of existence for ordinary differential equations, three hours.

UNIVERSITY OF CATANIA.—By Professor M. CIPOLLA: Theory of elliptic functions with applications, four hours.— By Professor E. DANIELE: Mathematical theory of vibrations, four hours.—By Professor M. PICONE: Integral equations; potential; totally elliptic differential equations of mathematical physics, five hours.—By Professor G. SCORZA: Geometry on a curve from the algebraic-arithmetical standpoint of Dedekind and Weber, three hours.

UNIVERSITY OF GENOA.—By Professor G. LORIA: Geometry of hyperspaces, three hours.—By Professor C. SEVERINI: Calculus of variations, four hours.—By Professor O. TEDONE: Optical phenomena of higher order: absorption and dispersion of light, three hours.

UNIVERSITY OF MESSINA.—By Professor P. CALAPSO: Functions of a complex variable; elliptic functions, four hours.— by Professor G. GIAMBELLI: Differential theory of singularities of plane algebraic curves (following Enriques); projective geometry of hyperspaces; theory of moduli, three hours.—By Professor O. LAZZARINO: Electrostatics, four hours.

UNIVERSITY OF NAPLES.—By Professor F. AMODEO: History of mathematics in the middle ages (from 1200 to 1600 A.D.), three hours.—By Professor A. DEL RE: $n$-dimensional extensive analysis with applications to differential geometry and mechanics, four and one half hours.—By Professor R. MARCOLONGO: Relativity, three hours.—By Professor D. MONTESANO: Rational surfaces; birational correspondences between points of ordinary space, three hours.—By Professor E. PASCAL: Monogenic functions, three hours.—By Professor L. PINTO: Geometrical optics and the theory of optical instruments, three hours.

UNIVERSITY OF PADUA. By Professor U. AMALDI: Intro-

duction to the theory of integration of Sophus Lie, four hours.
—By Professor F. D'ARCAIS: Harmonic functions; functions
of a complex variable; Fourier's series, four hours.—By Pro-
fessor P. GAZZANIGA: Theory of numbers, three hours.—By
Professor G. RICCI: Absolute differential calculus; elasticity,
four hours.—By Professor F. SEVERI: Algebraic geometry,
especially of the rational surfaces, four hours.—By Professor
A. TONOLO: Theorems of existence for ordinary and partial
differential equations, four hours.

UNIVERSITY OF PALERMO.—By Professor G. BAGNERA:
Calculus of variations for the functions of one independent
variable; integral equations, three hours.—By Professor M.
DE FRANCHIS: Geometry on algebraic curves, three hours.—
By Professor M. GEBBIA: Electromagnetism with particular
regard to electric oscillations, four and one half hours.—By
Professor A. SIGNORINI: Hydrodynamics, three hours.

UNIVERSITY OF PAVIA.—By Professor L. BERZOLARI: Geom-
etry on an algebraic curve, three hours.—By Professor U.
CISOTTI: Elasticity: distortions, finite strain, three hours.—
By Professor F. GERBALDI: Functions of a complex variable
and elliptic functions, three hours.—By Professor G. VIVANTI:
Theory of algebraic equations, three hours.

UNIVERSITY OF PISA.—By Professor E. BERTINI: Cremona's
transformations in plane and space, three hours.—By Pro-
fessor L. BIANCHI: Differential geometry, three hours.—By
Professor G. A. MAGGI: Physical optics, both from the elastic
and the electromagnetic standpoint, four and one half hours.
—By Professor ————: Mechanics (advanced), three hours.

UNIVERSITY OF ROME.—By Professor G. BISCONCINI: Geom-
etrical applications of the calculus, three hours.—By Professor
E. BOMPIANI: Geometry of applicability for surfaces and
varieties, three hours.—By Professor F. CANTELLI: Calculus
of probabilities with applications, three hours.—By Professor
G. CASTELNUOVO: Non-euclidean geometry with physical
interpretations, three hours.—By Professor U. CRUDELI: In-
troduction to advanced theories of electricity and magnetism,
three hours.—By Professor T. LEVI-CIVITA: Curves defined
by differential equations; periodic solutions, three hours.—

By Professor A. PERNA: Elementary theories of mathematical analysis, three hours.—By Professor L. SILBERSTEIN: Principle of relativity, three hours.—By Professor L. SILLA: Differential equations of dynamics, three hours.—By Professor V. VOLTERRA: General relativity, three hours; equations of mathematical physics, three hours.

UNIVERSITY OF TURIN.—By Professor T. BOGGIO: Analytical dynamics, three hours.—By Professor C. SEGRE: Groups of finite order, three hours.—By Professor C. SOMIGLIANA: Theory of electricity and magnetism, three hours.—By Professor ————: Higher analysis, three hours.

PROFESSOR S. PINCHERLE, of the University of Bologna, has been elected corresponding member of the Royal institute of Venice.

PROFESSORS G. CASTELNUOVO and T. LEVI-CIVITA, of the University of Rome, have been elected corresponding members of the Royal academy of sciences of Bologna.

PROFESSOR E. LAURA, of the University of Pavia, has been promoted to a full professorship of rational mechanics.

PROFESSOR E. BORTOLOTTI, of the University of Modena, has been appointed professor of algebra and analytic geometry at the University of Bologna.

PROFESSOR W. H. YOUNG, of the University of Liverpool, has been appointed professor of mathematics at the University College of Wales.

DR. S. CHAPMAN, chief assistant at the Greenwich Observatory, has been appointed professor of mathematics at the University of Manchester.

IN October, Professor VITO VOLTERRA, of the University of Rome, lectured at the University of California on "Propagation of electricity in a magnetic field" and "Equations involving functional derivatives." Later he will deliver a course of three lectures at the Rice Institute on "Functions of composition."

THE Royal institute of Venice has awarded the Querini-Stampalia prize to Professor G. D. BIRKHOFF, of Harvard University, for his papers: "The restricted problem of three bodies," *Rendiconti del Circolo Matematico di Palermo*, volume 39 (1915), and "Dynamical systems with two degrees of freedom," *Transactions of the American Mathematical Society*, volume 18 (1917). The subject proposed was to realize some important advance in the theory of periodic solutions of differential equations.

DR. T. M. PUTNAM, professor of mathematics and dean of the undergraduate division of the University of California, has been appointed acting dean of the college of letters and science.

DR. E. V. HUNTINGTON, associate professor of mathematics in Harvard University, has been promoted to a full professorship in mechanics. His teaching activities will be divided as heretofore between the division of mathematics and the division of engineering.

PROFESSOR J. W. GLOVER, of the University of Michigan, served as acting president of the Teachers insurance and annuity association of America during September, in the absence of President Pritchett. Professor Glover is one of the trustees of the association.

DR. T. H. GRONWALL has been appointed mathematics and dynamics expert on the technical staff of the ordnance office, U. S. war department.

PROFESSORS P. BOUTROUX and J. H. M. WEDDERBURN both return from military service to Princeton University at the opening of the present academic year.

PROFESSOR H. C. WOLFF has been appointed head of the department of mathematics at the Drexel Institute.

AT the University of Illinois, assistant professor ARNOLD EMCH has been promoted to an associate professorship of mathematics. Dr. J. R. KLINE, of Yale University, and Dr. W. W. KÜSTERMANN, of the University of Michigan, have been appointed associates, and Mr. E. H. VANCE instructor in mathematics.

PROFESSOR IDA BARNEY, of Lake Erie College, Painesville, Ohio, has been appointed head of the department of mathematics at Meredith College, Raleigh, N. C.

PROFESSOR F. W. BEAL, of the University of Tennessee, has been appointed assistant professor of mathematics at the University of Pennsylvania.

DR. E. P. LANE, of the Rice Institute, has been appointed assistant professor of mathematics in the University of Wisconsin.

PROFESSOR W. V. N. GARRETSON, of the Pennsylvania Military College, has been appointed assistant professor of mathematics at Rutgers College.

DR. M. G. SMITH has been appointed professor of mathematics at Greenville College.

In the department of mathematics of Allegheny College, Mr. K. A. MILLER has been promoted to an assistant professorship and Mr. L. M. MONROE has been appointed instructor.

MR. H. R. PHALEN has been promoted to an assistant professorship of mathematics at the Armour Institute of Technology.

MR. A. C. MADDOX has been appointed assistant professor of mathematics at the Oklahoma Agricultural and Mechanical College.

DR. T. A. PIERCE has been appointed instructor in mathematics at the University of Nebraska.

DR. E. A. T. KIRCHER has resigned from the Sheffield Scientific School to enter business.

THE following instructors in mathematics have been appointed at Cornell University: Dr. F. W. REED, of the University of Illinois, Dr. G. M. ROBISON, and Mr. H. L. VANDIVER. Mr. A. D. CAMPBELL remains at Cornell, instead of going to Yale University as stated in the July BULLETIN.

DR. EUGENE TAYLOR has been appointed assistant professor of mathematics at the University of Wisconsin. Miss MARY A. COLPITTS has been appointed instructor in mathematics.

AT Lehigh University, Mr. M. S. KNEBELMAN has been promoted to an assistant professorship of mathematics.

DR. J. V. McKELVEY, of Cornell University, has been appointed assistant professor of mathematics in Iowa State College.

DR. FLORA E. LeSTOURGEON, of Mt. Holyoke College, has been appointed assistant professor of mathematics in Carleton College, Northfield, Minn.

AT the University of Pennsylvania, DR. S. P. SHUGERT has been promoted to an assistant professorship of mathematics.

DR. TOBIAS DANTZIG, of Columbia University, has been appointed instructor in mathematics in Johns Hopkins University.

DR. L. M. KELLS, of the University of Illinois, has been appointed instructor in mathematics in the U. S. Naval Academy.

DR. S. D. ZELDIN has been appointed instructor in mathematics at the Massachusetts Institute of Technology.

MR. H. L. SMITH, of Cornell University, has been appointed instructor in mathematics at Trinity College, Hartford.

MR. I. A. ROMAN has been appointed instructor in mathematics at Northwestern University.

PROFESSOR EDUARDO TORROJA, of the University of Madrid, died September 14, 1918, in his seventy-second year.

PROFESSOR F. E. CHAPMAN, of the Gulf Coast Military Academy, died October 1, 1919.