

NOTES

The opening number of volume 46 (1924) of the AMERICAN JOURNAL OF MATHEMATICS contains the following papers: *On the theory of numbers and generalized quaternions*, by L. E. Dickson; *A study of the rational involutorial transformations in space which leave a web of sextic surfaces invariant*, by J. O. Osborn; *On the reduction of differential parameters in terms of finite sets, with remarks concerning differential invariants of analytic transformations*, by O. E. Glenn; *On the isodynamic septic equations*, by J. C. Glashan.

The concluding number of volume 24, series 2, of the ANNALS OF MATHEMATICS contains: *An introduction to the theory of elliptic functions*, by G. Mittag-Leffler; *Cyclotomic quinquisection for all primes of the form $10n + 1$ between 1900 and 2100*, by P. O. Upadhyaya; *Geodesic lines in Riemann space*, by R. Henderson; *A functional equation from the theory of the Riemann $\zeta(s)$ -function*, by A. Arwin; *The geometry of paths and general relativity*, by L. P. Eisenhart.

THE PUBLICATIONS OF THE UNIVERSITY OF JERUSALEM (SCRIPTA UNIVERSITATIS ATQUE BIBLIOTHECAE HIEROSOLYMITANARUM) will consist of four series, of which two, *Mathematica et Physica*, curavit A. Einstein, and *Orientalia et Judaica*, curavit Collegium Eruditorum, began publication in 1923. Articles will be printed in English, French, German or Italian, and will be accompanied by complete translations into Hebrew. Volume 1 (1923) of the mathematical-physical series contains papers by E. Landau, H. Bohr, G. Loria, J. Hadamard, A. Loewy, A. Fraenkel, A. Einstein and J. Grommer, L. S. Ornstein, T. Levi-Civita, T. v. Karman, S. Brodetsky, J. Popper-Lynkeus. Martinus Nijhoff, the Hague, is the publisher.

The Report of the National Committee on Mathematical Requirements has been reprinted, and may be obtained at the cost of the postage by addressing The Dartmouth Press, Hanover, N. H.

The following university courses are announced:

COLUMBIA UNIVERSITY.—By Professor T. S. Fiske: Theory of functions.—By Professor F. N. Cole: Algebra.—By Professor D. E. Smith: History of mathematics; Practicum in the history of mathematics; Seminar in the history of mathematics.—By Professor C. J. Keyser: Introduction to mathematical philosophy; Logical foundations of mathematics.—By Professor Edward Kasner: Seminar in differential geometry.—By Professor W. B. Fite: Differential equations.—By Professor J. F. Ritt: Theory of numbers.—By Professor G. A. Pfeiffer: The theory of sets of points.—By Dr. J. Douglas: Differential geometry.

CORNELL UNIVERSITY.—By Professor J. I. Hutchinson: Calculus of residues.—By Professor Virgil Snyder: Advanced analytic geometry;

Algebraic geometry.—By Professor F. R. Sharpe: Fourier series and potential functions.—By Professor A. Ranum: Differential geometry.—By Professor W. B. Carver: Projective geometry; Metric geometry in the plane.—By Professor W. A. Hurwitz: Theory of groups; Vector analysis.—By Professor C. F. Craig: Theory of ordinary differential equations.—By Professor F. W. Owens: Theory of probabilities.—By Professor H. C. M. Morse: Elementary differential equations; Calculus of variations.—By Professor W. L. G. Williams: Linear algebras; Galois fields.—By Mr. H. S. Vandiver: Theory of equations.—By Dr. D. S. Morse: Advanced calculus; Infinite series.

HARVARD UNIVERSITY.—By Professor W. F. Osgood: Advanced calculus (second semester); Theory of functions.—By Professor J. L. Coolidge: Elementary theory of equations; Probability; Geometry of the circle.—By Professor O. D. Kellogg: Advanced calculus (first semester); Theory of potential functions; Dynamics (second course).—By Professor G. D. Birkhoff: Analytical theory of heat; Elastic vibrations; Linear differential equations of the second order, real variables.—By Professor W. C. Graustein: Introduction to modern geometry; Differential geometry of curves and surfaces.—By Professor J. L. Walsh: Functions of real variables, part II; Integral equations.—By Mr. H. W. Brinkmann: Galois theory of equations.—By Mr. J. L. Holley: Functions of real variables, part I.—Professor Osgood and Mr. Brinkmann will conduct a fortnightly seminar in analysis. Courses of research are also offered by Professor Osgood in analysis, by Professor Coolidge in geometry, by Professor Kellogg in potential theory, by Professor Birkhoff in the theory of differential equations, by Professor Graustein in geometry, and by Professor Walsh in analysis.

UNIVERSITY OF ILLINOIS.—By Professor E. J. Townsend: Real variables; Differential equations and advanced calculus.—By Professor G. A. Miller: Theory of groups (introductory course); Theory of equations.—By Professor J. B. Shaw: Linear algebra.—By Professor A. B. Coble: Cremona transformations.—By Professor R. D. Carmichael: Linear differential equations.—By Professor Arnold Emch: Geometric transformations.—By Professor A. R. Crathorne: Theory of statistics.—By Professor G. E. Wahlin: Modern algebra.—By Professor A. J. Kempner: Theory of numbers.—By Professor H. Blumberg: Introduction to modern mathematics.—By Professor E. B. Lytle: History of mathematics.

The Société Mathématique de France celebrated its fiftieth anniversary May 22, 1924.

The Académie Royale de Belgique has received from an anonymous donor the sum of 3000 francs to found a prize for a contribution to the theory of the diurnal nutation and a confirmation of its existence.

Professor A. Einstein has been awarded by the assembly of the University of Amsterdam the gold medal of the Holland Society for the Progress of Natural Science.

Cambridge University has awarded Smith's prizes to T. M. Cherry, of Trinity College, for an essay *On the differential equations of dynamics*, and to W. J. Webber, of Trinity College, for an essay on *Some applications of the theory of integration*.

Professor A. S. Eddington has been awarded the Bruce gold medal of the Astronomical Society of the Pacific. The award was for his work in relativity and on the internal physical constitution of the stars.

The Leopoldinisch-Carolinische Akademie of Halle has elected the following members: Professors L. Bieberbach, O. Blumenthal, L. E. J. Brouwer, G. Castelnuovo, F. Enriques, T. Hayashi, R. von Mises, E. Neumann, F. Severi, and H. Weyl. The election of Professor W. F. Osgood to membership in this Academy was announced in the May-June issues of this BULLETIN.

Professor M. Pasch, of Giessen, has received honorary doctorates from the Universities of Frankfurt a. M. and Freiburg i. Br.

Professor E. Landau has been elected corresponding member of the Prussian Academy of Sciences.

M. G. Bigourdan has been elected president of the Paris Academy of Sciences. M. Maurice de Broglie has been elected académicien libre, in succession to the late M. Charles de Freycinet.

The University of Paris has decided to confer an honorary doctorate on Professor H. A. Lorentz, of the University of Leiden.

Professor Emile Borel delivered a series of lectures at the University of Copenhagen in March, 1924, on the Rask-Oersted foundation. On this occasion the University conferred on him the degree of doctor *honoris causa*.

Professor Max Planck has been elected an honorary member of the Physical Society of London.

Professor T. A. Brown, of University College, Exeter, and Mr. E. T. Copson and Professor C. G. Darwin, of Edinburgh, have been elected fellows of the Royal Society of Edinburgh.

Professor L. J. Mordell, of the University of Manchester, has been elected fellow of the Royal Society of London.

Professor G. H. Hardy, of Oxford, has been elected president of the British National Union of Scientific Workers.

Dr. W. D. Lambert, of the United States Coast and Geodetic Survey, has been elected recording secretary of the Washington Academy of Sciences.

Dr. F. Böhm has been appointed associate professor of mathematics at the University of Munich.

Professor H. L. Hamburger, of the University of Berlin, has been appointed professor of mathematics at the University of Cologne.

Dr. E. Kruppa, of the Vienna Technical School, has been promoted to a full professorship of mathematics.

Dr. F. Levi, of the University of Leipzig, has been promoted to an associate professorship of mathematics.

Dr. M. Winkelmann, of the University of Jena, has been appointed full professor of applied mathematics.

The following German professors of mathematics have recently retired from active teaching: F. von Lindemann, A. Schleiermacher, F. Schur, and P. Volkmann.

Professor E. Bompiani, of the Milan Technical School, has been transferred to the chair of projective and descriptive geometry at the University of Bologna, and Professor M. Picone, of the University of Catania, to the chair of higher analysis at the University of Pisa.

The following 25 doctorates with mathematics as major subject were conferred by American universities in the calendar year 1923; the university, month in which degree was conferred, minor subject if any outside of mathematics, and the title of the dissertation are given with each name.

E. F. Allen, Missouri, April, Physics, *A revision of certain topics of the Lie theory.*

Constance R. Ballantine, Chicago, June, *Modular invariants of a binary group with composite modulus.*

J. P. Ballantine, Chicago, June, *A postulational introduction to the four-color problem.*

A. D. Campbell, Cornell, June, Philosophy, *The classification of linear systems of conics in various domains.*

W. E. Clelland, Princeton, October, *Permutable transformations F and transformations W .*

M. M. Feldstein, Chicago, March, *Invariants of the linear group, modulo p .*

C. A. Garabedian, Harvard, June, *A method of series in elasticity, with applications (1) to circular plates of constant or variable thickness, and (2) to rods of constant or variable circular cross-section.*

R. E. Gleason, Princeton, October, *On a calculus of average-value functions.*

B. Z. Linfield, Harvard, June, *On the theory of discrete variates.*

N. B. MacLean, Chicago, August, *On certain surfaces related covariantly to a given ruled surface.*

D. S. Morse, Cornell, June, Physics, *Relative inclusiveness of certain definitions of summability.*

F. H. Murray, Harvard, June, *The real solutions of certain systems of differential equations.*

H. L. Olson, Chicago, August, *Congruences with constant absolute invariants.*

J. O. Osborn, Cornell, June, Education, *A study of the rational involutorial transformations in space which leave a web of sextic surfaces invariant.*

G. E. Raynor, Princeton, June, *Dirichlet's problem.*

Emeterio Roa, Michigan, June, *A number of new generating functions, with applications to statistics.*

G. E. F. Sherwood, Chicago, August, *Equivalence of triples of bilinear forms.*

J. M. Thomas, Pennsylvania, June, *Congruences of circles studied with reference to the surface of centers.*

T. Y. Thomas, Princeton, June, *Geometries of paths admitting first integrals.*

C. E. Van Horn, Chicago, March, *A system of relative existential propositions connected with the relation of class-membership.*

F. M. Weida, Iowa, July, Physics, *The valuation of life annuities with refund of an arbitrarily assigned part of the purchase price.*

Louis Weisner, Columbia, February, *Groups whose maximum cyclic subgroups are independent.*

R. L. Wilder, Texas, June, *Concerning continuous curves.*

R. E. Wilson, Chicago, March, *Representations of certain functions of two variables by Stieltjes integrals.*

B. F. Yanney, Chicago, March, Astronomy, *Modular invariants of the binary quartic.*

Professor G. D. Birkhoff, of Harvard University will be exchange professor at Pomona College, Colorado College, and Grinnell College during the first half of the academic year 1924-25. During his residence at Pomona College, he will deliver a series of eight lectures on *Relativity* at the Southern Branch of the University of California.

Professor C. de la Vallée-Poussin, who was president of the International Mathematical Union at the International Congress in Toronto, will remain in this country this Fall and will lecture under the auspices of the Educational Foundation established by the Commission for the Relief of Belgium at several universities, on the two topics:

- (1) *Les fonctions d'ensemble et les fonctionnelles,*
- (2) *L'approximation des fonctions de variables réelles et les fonctions quasi-analytiques.*

A partial list of the institutions at which he will lecture, approximately in the order of time, follows: (August) The University of Chicago; (September) The University of California at Berkeley, The Southern Branch of the University of California at Los Angeles, California

Institute of Technology; (October) The University of Wisconsin, The University of Minnesota; The University of Michigan; Cornell University; Columbia University; (November) Massachusetts Institute of Technology, Brown University, Yale University; (December) Princeton University, Johns Hopkins University.

At Harvard University, Mr. H. W. Brinkmann and Mr. J. L. Holley have been appointed Benjamin Peirce instructors, and Mr. P. D. Edwards and Mr. Malcolm MacLaren, Jr. instructors, for the year 1924-25. Dr. J. L. Walsh has been promoted to an assistant professorship of mathematics.

Professor L. L. Silverman, who has just returned from a year's leave of absence in Germany and Russia, has been promoted to a full professorship at Dartmouth College.

Professor E. R. Hedrick, of the University of Missouri, has been appointed professor of mathematics at the University of California, and will be assigned to the department of mathematics at the Southern Branch at Los Angeles.

The following appointments and promotions in the department of mathematics at Hunter College of the City of New York have been announced: to succeed Professor Emma M. Requa, retired, as head of the department, Professor Tomlinson Fort, of the University of Alabama; to be an associate professor, Miss Lao G. Simons, who has been acting head of the department for the year 1923-24; to be an instructor, Miss Helen Kunte.

Professor A. N. Whitehead, of the Imperial College of Science and Technology, London, has been appointed professor of philosophy at Harvard University.

Associate Professor Clara E. Smith has been promoted to a full professorship of mathematics at Wellesley College.

Dr. G. A. Pfeiffer, of Columbia University, has been promoted to an assistant professorship of mathematics.

Professor H. Frischauf, of the University of Graz, died January 7, 1924, at the age of eighty-six years.

The death is announced of Professor G. Helm, of the Dresden Technical School, at the age of seventy-two years.

Professor J. Majcen, of the University of Zagreb (Agram) died February 1, 1924, at the age of forty-nine years.

Professor H. Rothe, of the Vienna Technical School, died December 18, 1923.

Dr. R. E. Froude, C. B., F. R. S., known for his work in naval architecture, died March 19, 1924.

Dr. William Jack, formerly professor of mathematics at the University of Glasgow, died March 20, 1924.