

NOTES

The following university courses in mathematics are announced for the academic year 1923-1924:

UNIVERSITY OF CHICAGO.—Courses which continue for more than one quarter are indicated with Roman numerals, as I, II, III, IV. By Professor E. H. Moore: Hermitian matrices in General Analysis, I, II, III, IV; Vectors, matrices, and quaternions.—By Professor L. E. Dickson: Hypercomplex numbers, I, II; Theory of equations.—By Professor H. E. Slaught: Differential equations; Definite integrals; Elliptic integrals; Advanced calculus.—By Professor G. A. Bliss: Theory of functions of a real variable; Calculus of variations; Integral equations; Advanced calculus.—By Professor E. J. Wilczynski: Seminar on Geometry; Metric differential geometry; Solid analytic geometry.—By Professor F. R. Moulton: Modern theories of analytic differential equations, I, II; Advanced ballistics, I, II.—By Professor W. D. MacMillan: Analytic mechanics, I, II; Celestial mechanics; Dynamics of rigid bodies; Theory of the potential.—By Professor A. C. Lunn: Vector analysis; Applications of vector analysis in the theory of electromagnetism; Thermodynamics; Vector analysis in Riemann-Einstein space.—By Professor J. W. A. Young: Selected topics in mathematics.—By Dr. Mayme I. Logsdon: Theory of functions of a complex variable; Introduction to higher algebra. Courses in research are also offered by Professor Moore in Foundations of mathematics and in General Analysis, by Professor Bliss in Analysis, by Professor Dickson in Algebra and Theory of numbers, by Professor Wilczynski in Geometry, and by Professor Lunn in Applied mathematics.

COLUMBIA UNIVERSITY.—By Professor T. S. Fiske: Differential equations.—By Professor F. N. Cole: Theory of groups (first term).—By Professor D. E. Smith: History of mathematics; Practicum in the history of mathematics.—By Professor C. J. Keyser: Modern theories in geometry (first term); Introduction to mathematical philosophy (first term).—By Professor Edward Kasner: Einstein's theory of gravitation.—By Professor W. B. Fite: Infinite series (second term).—By Professor J. F. Ritt: Elliptic functions (first term); Analytic theory of numbers (second term).—By Dr. G. A. Pfeiffer: Topics in projective geometry (second term).—By Dr. Jesse Douglas: Topics in higher geometry (second term).

CORNELL UNIVERSITY.—By Professor J. H. Tanner: Mathematics of finance.—By Professor Virgil Snyder: Algebraic geometry.—By Professor F. R. Sharpe: Hydrodynamics and Elasticity.—By Professor Arthur Ranum: Line geometry.—By Professor W. B. Carver: Advanced calculus.—By Professor D. C. Gillespie: Theory of functions of a complex variable.—By Professor W. A. Hurwitz: Differential equations of mathematical physics.—By Professor C. F. Craig: Projective geometry.—By Professor F. W. Owens: Advanced analytic geometry.—By Professor H. M. Morse: Analysis situs (first term); The restricted problem of three bodies (second term); Elementary differential equations.—By Dr. G. M. Robison: Calculus of variations (first term); Infinite series (second term).—By Mr. D. S. Morse: Modern higher algebra.

HARVARD UNIVERSITY.—By Professor W. F. Osgood: Advanced calculus; Theory of functions (second course).—By Professor J. L. Coolidge: Line geometry (first half-year); Probability (second half-year); Subject matter of elementary mathematics (first half year); Kinematics (second half-year).—By Professor G. D. Birkhoff: Space, time, and relativity (first half-year); Advanced dynamics and quantum theory (second half-year).—By Professor E. V. Huntington: The fundamental concepts of mathematics (first half-year).—By Professor O. D. Kellogg: Dynamics (second course); Theory of potential functions (first half-year); Theory of point sets (second half-year).—By Professor W. C. Graustein: Modern geometry; Projective geometry (first half-year); Geometrical transformations (second half-year).—By Dr. J. L. Walsh: The partial differential equations of mathematical physics (second half-year).—By Dr. Philip Franklin: The analytical theory of heat and problems in elastic vibrations (second half-year); Relativity, advanced course (second half-year). There will also be a seminar in analysis conducted by Dr. Walsh and Dr. Franklin, and the following courses of research: Topics in the theory of functions, Professor Osgood; Topics in postulate-theory, Professor Huntington; Topics in geometry, Professor Coolidge; Topics in the theory of potential functions, Professor Kellogg; Topics in the theory of differential equations, Professor Birkhoff; Topics in geometry, Professor Graustein.

UNIVERSITY OF ILLINOIS.—By Professor E. J. Townsend: Functions of a complex variable; Differential equations and advanced calculus.—By Professor G. A. Miller: Theory of groups; Theory of equations and determinants (first semester).—By Professor J. B. Shaw: Vector methods.—By Professor A. B. Coble: Projective geometry.—By Professor R. D. Carmichael: Linear difference equations.—By Professor A. Emch: Algebraic surfaces; Constructive and projective geometry (second semester).—By Professor A. R. Crathorne: Statistics (first semester); Actuarial theory.—By Professor G. E. Wahlin: Calculus of variations (second semester).—By Professor A. J. Kempner: Theory of numbers.—By Professor H. Blumberg: Graphical and numerical methods (second semester); Introduction to modern mathematics.—By Professor E. B. Lytle: Teacher's course (first semester); Fundamental concepts of mathematics (second semester).

MASSACHUSETTS INSTITUTE OF TECHNOLOGY.—By Professor F. S. Woods: Advanced calculus and differential equations; Higher geometry.—By Professor C. L. E. Moore: Theoretical aeronautics; Rigid dynamics.—By Professor H. B. Phillips: Thermodynamics; Statistical mechanics; Quantum theory; Theory of the gyroscope.—By Professor Joseph Lipka: Analytical mechanics; Mathematical laboratory.—By Professor F. L. Hitchcock: Application of mathematics to Chemistry.—By Dr. George Rutledge: Modern algebra; Theory of functions.—By Dr. J. S. Taylor: Mathematics of investment.—By Dr. N. Wiener: Fourier's series and integral equations.—By Dr. S. D. Zeldin: Vector analysis.

UNIVERSITY OF PENNSYLVANIA:—By Professor E. S. Crawley: Higher plane curves.—By Professor G. H. Hallett: Infinite series and products (first term); The theory of functions of a complex variable (second term).

—By Professor O. E. Glenn: The theory of invariants.—By Professor F. H. Safford: The mathematical theory of elasticity.—By Professor G. G. Chambers: Synthetic projective geometry.—By Professor H. H. Mitchell: The analytic theory of numbers.—By Professor M. J. Babb: Introduction to the theory of numbers.—By Professor F. W. Beal: Linear differential equations of the second order (first term); Advanced calculus (second term).—By Professor J. R. Kline: Pointset theory (first term); Integral equations (second term).

PRINCETON UNIVERSITY:—By Professor J. H. M. Wedderburn: Complex variables.—By Professor L. P. Eisenhart: Differential geometry.—By Dr. C. E. Hille: Advanced course in analysis.—By Dr. C. C. MacDuffee: Algebraic invariants.—By Dr. B. Kerekjarto: Analysis situs.—By Professor O. Veblen: Seminar on mathematical physics.

At the request of the Committee on Endowment of this Society, Professor J. W. Young has consented to take charge of the general publicity for that committee.

During the first semester of the academic year 1923–24, Professor B. A. Bernstein of the University of California will be on leave of absence, and will reside in New Haven, Conn. During his absence from California, Professor D. N. Lehmer will act in his stead as secretary of the San Francisco Section of the Society.

The Polish Academy of Sciences and Letters of Cracow celebrated its fiftieth anniversary on June 16, 1923.

By a special arrangement recently made, members of the Deutsche Mathematiker-Vereinigung who contribute two dollars (\$2.00) yearly will receive the *JAHRBERICHT*, complete in both parts. Membership is open to mathematical departments as units, as well as to individuals. The usual membership with the regular dues, which are at present 600 marks per year, carries with it merely the subscription to the second part of the *JAHRBERICHT*, containing business notes, reports of meetings, reviews, problems and solutions, etc.; it is to be hoped that those joining on this basis will voluntarily add a small subscription to cover postage. Applications for membership should be sent to Professor L. Bieberbach, Berlin-Schmargendorf, Marienbaderstrasse 9.

Mr. L. J. Mordell, of Cambridge University, has been appointed a Fielden professor of pure mathematics at the University of Manchester. Professor Mordell (cf. this *BULLETIN*, April, 1923, p. 189) will give two courses this summer at the University of Chicago.

Dr. W. A. Hamilton will be on the staff of the University of Wisconsin for the coming year as Lecturer in Mathematics. For the past ten years he has been head of the department of Mathematics in Beloit College, and for the past five years Registrar.

Assistant Professor E. P. Lane, of the University of Wisconsin, has been appointed assistant professor of mathematics at the University of Chicago.

Assistant Professor W. L. Crum, of Yale University, has been appointed assistant professor of statistics in the department of economics at Harvard University.

Professor Charles Niven, of the University of Aberdeen, died May 11, 1923, at the age of seventy-eight years.