

in some institutions is required, of students for the master's degree. In conclusion let us hope that Föppl's lectures will continue and grow in popularity not only in their home but abroad; their merits are of the highest; their use can but inure to the benefit of the user. Once more we wish we had this work or such a work in English.

E. B. WILSON.

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CORRECTION.

ON pages 454, 455 of Professor Glenn's paper in the June BULLETIN, in formulas (6), (7), (8), for  $-$  read  $+$ .

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NOTES.

THE July number (volume 12, number 3) of the *Transactions of the American Mathematical Society* contains the following papers: "On properties of a domain for which any derived set is closed," by E. R. HEDRICK; "Important covariant curves and a complete system of invariants of a rational quartic curve," by J. E. ROWE; "An application of Moore's cross ratio group to the solution of the sextic equation," by A. B. COBLE; "On the use of the co-sets of a group," by G. A. MILLER; "The southerly deviation of falling bodies," by W. H. ROEVER; "An application of a (1-2) quaternary correspondence to the Kummer and Weddle surfaces," by VIRGIL SNYDER; "On semi-discriminants of ternary forms" by O. E. GLENN.

THE July number (volume 33, number 3) of the *American Journal of Mathematics* contains the following papers: "The rational plane quartic as derived from the norm-curve in four dimensions by projection and section," by J. R. CONNER; "On the analytical basis of non-euclidean geometry," by W. H. YOUNG; "Curves in non-metrical analysis situs with an application in the calculus of variations," by N. J. LENNES.

AT the meeting of the London mathematical society held on June 8 the following papers were read: By G. H. HARDY, "On the multiplication of Dirichlet's series"; by G. H. HARDY and J. E. LITTLEWOOD, "On the range of Borel's method for the summation of series"; by W. H. YOUNG, "On the con-

vergence of Fourier series and of the allied series"; by W. M. PAGE, "Two dimensional problems in electrostatics and hydrodynamics."

THE Verein zur Förderung des mathematischen und naturwissenschaftlichen Unterrichts will hold its twentieth general meeting at Münster, June 5 to 8, 1911, under the presidency of Professor A. THAER, of Hamburg.

THE fifty-first reunion of deutsche Philologen und Schulmänner will be held at Posen, October 3 to 6, 1911. Papers and addresses in the mathematical section will be in charge of Drs. SPIES and THIEME.

THE fifth international congress of mathematicians will be held at Cambridge, England, August 22 to 28, 1912. It will be organized by the Cambridge philosophical society and the London mathematical society.

THE second congress of Scandinavian mathematicians will be held at Copenhagen, August 28 to 31, 1911.

THE committee appointed by the St. Petersburg academy of sciences to arrange the manuscripts of Euler for the use of the Euler commission has now completed its investigation, and reports that valuable collections of letters and a number of unpublished notes and memoirs, together making 209 titles, have been found and forwarded to the editors in Zürich. The material fills seven large chests. The Euler letters and manuscripts in the possession of the Royal society have all been carefully copied, and the copies placed at the disposition of the commission. In order to make the publication as complete as possible, the chairman of the commission expresses the wish that all letters of Euler that may be in the possession of other societies or of individuals may be made accessible to the commission.

UNDER the general title of "Fortschritte der mathematischen Wissenschaften in Monographien," by O. BLUMENTHAL, the firm of B. G. Teubner, of Leipzig and Berlin announces three tracts that are to appear soon. The titles are "Grundlagen der Theorie der ganzen Funktionen unendlicher Ordnung," by O. BLUMENTHAL; "Untersuchungen über den sogenannten Picardschen Satz," by C. CARATHÉODORY; "Grundzüge einer allgemeinen Theorie der linearen Integralgleichungen," by D. HILBERT.

THE publishing house of Longmans, Green, and Company announces the early appearance of a volume of Monographs on topics of modern mathematics relevant to the elementary field, edited by J. W. A. YOUNG. Titles and authors are as follows: The foundations of geometry, by OSWALD VEBLEN; Modern pure geometry, by T. F. HOLGATE; Non-euclidean geometry, by F. S. WOODS; The fundamental propositions of algebra, by E. V. HUNTINGTON; The algebraic equation, by G. A. MILLER; The function concept and the fundamental notions of the calculus, by G. A. BLISS; The theory of numbers, by J. W. A. YOUNG; Constructions with ruler and compasses, regular polygons, by L. E. DICKSON; The history and transcendence of  $\pi$ , by D. E. SMITH.

THE mathematical society and the society of applied physics of the University of Göttingen have given 100,000 marks toward founding an institute of mathematics at the University. Two manufacturing firms have given 50,000 marks for the same purpose.

ON October 27, 1910, the mathematical collection of the library of the University of Toulouse was destroyed by fire. In so far as books and manuscripts are concerned that can be replaced, the work of restoring the library has already begun. However, as the loss is much greater than can be covered by its available income, the University makes the general appeal to other universities, learned societies, libraries, publishers, and authors to send to it such duplicate copies as can be spared. In consideration of the valuable services to science rendered by the *Annales de la Faculté des Sciences de Toulouse* it is hoped that the appeal may meet with a generous response.

The following courses are announced for the academic year 1911-1912: CLARK UNIVERSITY. — By Professor W. E. STORY: Analytic geometry of higher plane curves, higher surfaces, and twisted curves, three hours; Hyperspace and non-euclidean geometry, two hours; History of mathematics, two hours, first half-year; Algebraic invariants, two hours, second half-year; Seminary. — By Professor H. TABER: Differential equations and calculus of variations, five hours; Transformation groups, two hours, first half-year; Picard-Vessiot theory of linear differential equations, two hours, second half-year; Seminary. — By Professor A. G. WEBSTER: The partial dif-

ferential equations of mathematical physics.—By Mr. J. DE PEROTT : Theory of numbers, two hours, first half-year ; Algebraic substitutions, two hours, second half-year.—By Dr. F. B. WILLIAMS : Conic sections and quadric surfaces, two hours.

UNIVERSITY OF PENNSYLVANIA.—By Professor E. S. CRAWLEY : Solid analytic geometry, two hours ; Higher plane curves, three hours.—By Professor G. E. FISHER : Differential equations, two hours ; Theory of functions, three hours.—By Professor I. J. SCHWATT : Theory of functions of a real variable, three hours ; Advanced calculus, three hours.—By Professor G. H. HALLETT : Introduction to modern higher algebra, three hours, first half-year ; Galois theory of equations, three hours, second half-year ; Finite groups, three hours.—By Professor F. H. SAFFORD : Mathematical theory of precision of measurements, three hours, first half-year ; Curvilinear coordinates, three hours, second half-year.—By Professor O. E. GLENN : Theory of invariants, three hours.—By Dr. A. M. HILTEBEITEL : Theoretical mechanics, three hours.—By Dr. H. H. MITCHELL, Theory of linear groups, three hours.

PROFESSOR E. PICARD, of the University of Paris, has been elected a foreign member of Belgian academy of sciences.

PROFESSOR F. D'ARCAIS, of the University of Padua, has been elected a member of the royal institute of Venice.

DR. L. TONELLI has been appointed docent in the calculus at the University of Bologna.

DR. W. BLASCHKE, of the University of Bonn, has been appointed docent in mathematics at the University of Greifswald.

DR. F. BERNSTEIN, of the University of Göttingen, has been promoted to an associate professorship of mathematics.

DR. G. DU PASQUIER has been appointed professor of mathematics at the University of Neuchâtel.

AT Cornell University, Dr. D. C. GILLESPIE has been promoted to assistant professorship of mathematics. Mr. F. M. MORGAN has been appointed assistant in mathematics.

Dr. L. I. NEIKIRK, of the University of Illinois, has been appointed instructor in mathematics in the University of Washington.

MR. F. W. BEAL, of Brown University, has been appointed instructor in mathematics in the University of Pennsylvania.

MR. R. D. FULLERTON has been appointed lecturer in mathematics at McGill University.

PROFESSOR E. V. HUNTINGTON, of Harvard University, has been granted a year's leave of absence; he will spend the first half-year abroad.

AT the University of California, Professor C. A. NOBLE has been granted leave of absence for the first term of the academic year 1911-1912; Professor D. N. LEHMER has been granted leave of absence for the second term.

PROFESSOR T. W. D. WORTHEN, of Dartmouth College, has resigned to enter the government service.

CATALOGUES of second-hand books: Gustav Fock, Leipzig, Schlossgasse 7-9, Antiquariats Katalog 391, about 4000 titles in pure and applied mathematics.—A. Hermann, 6 rue de la Sorbonne, Paris V, catalogue 107, about 1600 titles in pure and applied mathematics.—W. Heffer and Sons, Cambridge, England, catalogue 75, about 900 titles in pure and applied mathematics.