The present volume, like those which preceded it, gives every indication of representing an actual course, skillfully taught. The series of volumes afford a most satisfactory introductory course in theoretical and applied mechanics.

F. L. GRIFFIN.

NOTES.

THE closing (June) number of volume 16 of the *Annals of Mathematics* contains the following papers: "Projective classification of cubic surfaces modulo 2," by L. E. DICKSON; "Normal forms for one- and two-sided surfaces," by J. W. ALEXANDER, II; "Minima of double integrals with respect to one-sided variations," by C. A. FISCHER; "A new proof of Sylow's theorem," by G. A. MILLER; "Non-linear integral equations of the Volterra type," by H. GALAJIKIAN; "On some general theorems concerning ordinary closed curves," by ARNOLD EMCH.

PROFESSOR ARTHUR RANUM, of Cornell University, has been appointed an associate editor of the *Transactions of the American Mathematical Society*.

AT the meeting of the London mathematical society held on April 22 the following papers were read: "Note on Dirichlet's division problem," by G. H. HARDY; "Note on a new form of closed linkage," by R. L. HIPPISLEY; "Division of the lemniscate into seven equal parts," by G. B. MATTHEWS; "The influence of the oceanic waters on the law of variation of latitude," by J. LARMOR.

AT the meeting of the Edinburgh mathematical society on May 14, the following papers were read: "On the roots of a derivative of a rational function," by L. R. FORD; "Study of the life and writings of Colin Maclaurin," by C. TWEEDIE; "Recurrence formulas for the functions which represent solutions of the differential equation $d^2u/dx^2 - a^2u = p(p + 1)u/x^2$," by H. T. FLINT; "Two simple nomograms," by E. T. WHITTAKER.

THE eighty-fifth annual meeting of the British association for the advancement of science will be held at Manchester, September 7–11, under the presidency of Professor A. SCHUSTER; Sir F. D. DYSON is chairman of section A, mathematical and physical sciences.

THE following courses in mathematics are announced for the present summer semester:

UNIVERSITY OF BERLIN.—By Professor H. A. SCHWARZ: Integral calculus, with exercises, six hours; Applications of elliptic functions, four hours; Elementary geometric treatment of certain problems in maxima and minima, one hour; Colloquium, two hours; Seminar, two hours.—By Professor G. FROBENIUS: Analytic geometry, four hours; Seminar, two hours.—By Professor F. SCHOTTKY: Theory of ellliptic functions, four hours; Plane differential geometry, two hours; Seminar, two hours.—By Professor J. KNOBLAUCH: Partial differential equations, four hours; Theory and application of determinants, four hours; Selected chapters from the theory of surfaces, one hour.—By Dr. A. BYK: Non-euclidean geometry and mechanics, one hour.—By Dr. B. GEHRCKE: Elements of higher mathematics, two hours.—By Dr. C. KNOPP: Ordinary differential equations, four hours; Theory of functions, four hours.—By Dr. D. ROTHE: Differential calculus, with exercises, five hours.

UNIVERSITY OF BONN.—By Professor E. STUDY: Differential geometry, four hours; Seminar, two hours.—By Professor F. LONDON: Elements of differential and integral calculus, four hours; Axonometry and perspective, two hours.—By Professor I. SCHUR: Algebraic equations, four hours; Theory of sets, two hours; Seminar, two hours.—By Dr. J. O. MÜLLER: Selected chapters of integral calculus, one hour; Introduction to differential equations, three hours; Seminar, two hours.

UNIVERSITY OF FRANKFORT.—By Professor A. SCHOENFLIES: Differential calculus, with exercises, five hours.—By Professor L. BIEBERBACH: Algebra, four hours; Algebraic curves, two hqurs; Seminar, two hours.—By Professor E. HELLINGER: Theory of functions, five hours; Seminar, two hours.—By Dr. O. SZÁSZ: Analytic geometry, with exercises, five hours.—By Professor E. BRENDEL: Spherical astronomy, two hours; Mathematics of insurance, with exercises, four hours.

UNIVERSITY OF GÖTTINGEN.—By Professor D. HILBERT: Calculus of variations, four hours; Selected chapters on the structure of the plane, two hours; Seminar, two hours.—By Professor E. LANDAU: Applications of the calculus and the

theory of functions to the geometry of numbers, six hours; Seminar, two hours.—By Professor C. CARATHÉODORY: Theory of functions, four hours; Partial differential equations of the first order, two hours; Seminar, two hours.—By Professor C. RUNGE: Calculus, with exercises, six hours; Seminar, two hours.—By Professor L. PRANDTL: Elementary mechanics, four hours; Seminar, two hours.—By Dr. H. v. SANDEN: Numerical calculations, with exercises, six hours.—By Dr. E. HECKE: Analytic geometry, with exercises, five hours.— By Dr. L. COURANT: Partial differential equations of mathematical physics, four hours; Selected chapters of the theory of functions, two hours.—By Dr. F. BERNSTEIN: Analytic foundation of the theory of probability, two hours; Mathematics of insurance, two hours; Seminar, two hours.

UNIVERSITY OF LEIPZIG.—By Professor O. HÖLDER: Higher algebra, four hours; Applications of the theory of elliptic functions, three hours; Seminar, two hours.—By Professor K. ROHN: Plane analytic geometry, with exercises, five hours; Descriptive geometry, with exercises, four hours; Determinants, two hours.—By Professor G. HERGLOTZ: Theory of numbers, four hours; Definite integrals and Fourier series, two hours; Seminar, two hours.—By Dr. K. BLASCHKE: Ordinary differential equations, with exercises, six hours; Algebraic analysis, two hours.

UNIVERSITY OF MUNICH.—By Professor F. LINDEMANN: Analytic geometry of space, five hours; Theory of elliptic functions, five hours; Seminar, two hours.—By Professor A. VOSS: Analytic mechanics, four hours; Introduction to hydrodynamics, three hours; Seminar, two hours.—By Professor A. PRINGSHEIM: Higher algebra, II, four hours.—By Professor H. BRUNN: Elements of higher mathematics, three hours.— By Professor G. HARTOGS: Synthetic geometry, four hours.— By Dr. F. BÖHM: Theory of probabilities, four hours; Seminar, two hours.—By Dr. H. DINGLER: Elementary mathematics, four hours; Mathematical treatment of observational data, two hours.—By Dr. A. ROSENTHAL: Differential calculus, with exercises, five hours.

PROFESSORS L. PRANDTL and E. LANDAU, of the University of Göttingen, have been elected to membership in the Göttingen academy of sciences.

THE Helmholtz medal of the Berlin academy of sciences has been awarded to Professor M. PLANCK.

To the list of anniversaries of German professors of mathematics chronicled in the May BULLETIN should be added the celebration by Professor F. MERTENS, of Vienna, of his golden doctor jubilee on November 7, 1914, and his seventy-fifth birthday on March 20, 1915, and by Professor GEORG CANTOR, of the University of Halle, of his seventieth birthday on March 3, 1915.

THE College entrance examination board has now six examiners and twenty-five readers in mathematics, representing twenty-two different schools, colleges, and universities. Professor J. W. YOUNG is chief examiner, and Professor VIRGIL SNYDER chief reader in geometry; Professor F. S. WOODS chief examiner, and Professor C. R. MACINNES chief reader in algebra. Harvard, Princeton, and Yale Universities will discontinue their own entrance examinations after the present year, and will rely entirely on the board examinations.

PROFESSOR A. D. PITCHER, of Dartmouth College, has been appointed professor and head of the department of mathematics in Adelbert College of Western Reserve University. Dr. J. M. STETSON, of the University of Alberta, has been appointed instructor in mathematics at Adelbert College.

PROFESSOR W. M. SMITH, of the University of Oregon, has been appointed associate professor of mathematics at Lafayette College, as successor to the late Professor J. J. HARDY.

PROFESSOR N. F. DAVIS, of Brown University, retires at the close of the present academic year, after more than forty years' active service.

AT the University of Kansas Professor C. A. ASHTON has been promoted from an associate to a full professorship of mathematics, and Professor U. G. MITCHELL from an assistant to an associate professorship of mathematics. Messrs. K. J. HOLZINGER, A. W. LARSEN, and L. L. STEIMLEY have been appointed instructors in mathematics. Mr. H. H. CONWELL has resigned his instructorship to accept an assistant professorship of mathematics in the University of Idaho.

AT Wellesley College Professor HELEN A. MERRILL, at present on leave of absence, has been promoted to a full professorship of mathematics.

DR. H. W. REDDICK, of Columbia University, has been appointed professor and head of the department of mathematics in the Cooper Union, New York City.

PROFESSOR R. D. CARMICHAEL, of Indiana University, has been appointed assistant professor of mathematics in the University of Illinois.

BY mutual arrangement between the departments concerned, Mr. C. H. YEATON, recently appointed instructor in mathematics at Dartmouth College, has resigned to accept a similar appointment at Northwestern University, and Mr. C. R. DINES, at present instructor at Northwestern University, has accepted an instructorship in mathematics at Dartmouth College for the coming academic year.

AT Cornell University Drs. C. F. CRAIG and F. W. OWENS have been promoted to assistant professorships of mathematics.

AT the Massachusetts institute of technology Dr. B. B. LIBBY and Mr. GEORGE RUTLEDGE have been appointed instructors in mathematics.

DR. G. M. CONWELL, of Yale University, has been appointed instructor in mathematics in the New York state college for teachers.

NEW PUBLICATIONS.

I. HIGHER MATHEMATICS.

AMOROSO (F.). Complementi di analisi algebrica elementare, con appendice sulle sezioni coniche. 2a edizione, riveduta e migliorata. Napoli, Pirro, 1912. 16mo. 34+229 pp.

BRENKEN (E.). Die Erzeugung der Kurven konstanten Gauss'schen Krümmungsmasses auf Flächen zweiten Grades durch elliptische Zylinder. Papenburg, 1914. 17 pp. M. 1.50

COUTURAT (L.). L'algèbre de la logique. 2e édition. (Collection Scientia.) Paris, Gauthier-Villars, 1914. 8vo. 100 pp. Fr. 2.00

DAVISON (C.). Subjects for mathematical essays. London, Macmillan, 1914. 8vo. 3s. 6d.

D'ENNO (J. G. A.). Ein ganz elementares Verfahren zur Lösung des grossen Fermat'schen Satzes wie auch zur vollständigen Erweiterung und Verallgemeinerung des berühmten Theorems mit Uebungen und Anwendungen auf die Geometrie für die höheren Klassen der Mittelschulen. Trient, G. B. Monauni, 1912. Gr. 8vo. 23 pp.

——. Ein neues Verfahren zur Lösung des grossen Fermat'schen Satzes. Trient, G. B. Monauni, 1912. Gr. 8vo. 15 pp.