

the student is in a position to comprehend the subjects treated and to use the theory developed in the formulation and solution of problems for himself.

The book contains five chapters: Vectors; Statics; Dynamics of a particle; Work and energy; Mechanics of rigid bodies. Center of mass is treated in Chapter II, and moments of inertia in Chapter V. There are fifteen sets of problems under the different subjects treated. These sets contain in all two or three hundred carefully selected and well graded problems.

I have been greatly aided by this book during the past two years in teaching the calculus to engineering students.

DAVID C. GILLESPIE.

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#### NOTES.

THE closing (October) number of volume 13 of the *Transactions of the American Mathematical Society* contains the following papers: "On the pseudo-resolvent to the kernel of an integral equation," by W. A. HURWITZ; "Infinite systems of indivisible groups," by G. A. MILLER; "Improper multiple integrals over iterable fields," by J. K. LAMOND; "On a theorem of Fejér and an analogon to Gibbs' phenomenon," by T. H. GRONWALL; "The southerly and easterly deviations of falling bodies for an unsymmetrical gravitational field of force," by W. H. ROEVER; "On approximation by trigonometric sums and polynomials," by DUNHAM JACKSON. Also notes and errata, volumes 7 and 13.

THE annual meeting of the American association for the advancement of science will be held in Cleveland during the week beginning December 30 under the presidency of Professor E. C. PICKERING, of Harvard University; Professor E. B. VAN VLECK, of the University of Wisconsin, is chairman of Section A. It is expected that a large number of societies will affiliate with the association for this meeting.

THE annual meeting of the French association for the advancement of science was held at Nîmes, August 1-7, under the presidency of Professor CH. GARIEL. The section in mathematics and allied subjects was presided over by Pro-

fessor E. LEBON. In addition to several papers of non-mathematical content, the following were presented: M. LITRE, "Theory of the Foucault pendulum"; A. AUBRY, three papers on "The errors of mathematicians," and "The principles of the theory of complex numbers"; A. GÉRARDIN, "On methods of solution employed in the theory of numbers," and "On a new algebraic machine"; G. TARRY, "Tables of triple entry of divisors of numbers from 1 to  $N$ "; A. PELLET, "On partial differential equations," and "On asymptotic lines"; C. A. LAISANT, "On the tables of divisors"; L. AUBRY, "Direct demonstration that every prime number of the form  $4n + 1$  is the sum of two squares," "Method of solving  $x^2 - ay^2 = 1$ ," and "A method for the decomposition of numbers"; L. FAVRE, "On the errors of mathematicians"; L. TRIPIER, "An application of successive approximation to the solution of numerical equations"; E. N. BARISIEN, "On certain summations and series"; A. CHRÉTIEN, "Tables of polynomials of Legendre"; WELSCH, "Diametral lines of algebraic curves," "The circles of Joachimsthal," "On the theorem of Fuss," and "Steiner polygons inscribed in a quartic, and their relation to those of Poncelet"; F. BOULAD, "On the equations in 4 variables of nomographic order 4."

The next meeting of the association will be held in Tunis, March 22-27, 1913. Professor A. GAUTHIER was elected vice-president of the association and M. MAINGROT, of Tunis, president of the mathematical section.

THE Italian society for the advancement of science held its annual meeting at Genoa during the week October 17-24. The programme included the following papers of mathematical nature:

General lectures: "A new theory of universal attraction," by M. ABRAHAM; "Is the history of sciences a science," by G. LORIA; "The third law of thermodynamics," by L. ROLLA. Section I (mathematics, physics, mineralogy): "A new type of integro-differential equations," by L. AMOROSO; "A theorem of reciprocity for some functions analogous to Green's function in the theory of elasticity," by T. BOGGIO; "On improper definite integrals," by E. BORTOLOTTI; "Plane quintics invariant under a group of collineations," by E. CIANI; "Recent researches in hydrodynamics," by U. CISOTTI. Section XV (history of the sciences): "Correspondence of

Paolo Ruffini," by E. BORTOLOTTI; "An unpublished translation of the writings of Archimedes among the Galilean manuscripts in the national library of Florence," by A. FAVARO; "On semiregular polyhedra," by G. LORIA; "Synthetic theory of real numbers in a text of G. A. Borelli (17th century)," by F. PODESTI; "Archimedes in China," by G. VACCA.

The two sections unanimously adopted resolutions proposed by Professors Loria and Volterra, urging that in the complete edition of Euler's works, now in publication, there should be included the comments of Lorenzo Mascheroni on the integral calculus, as has been done with Lagrange's additions to the work on algebra, and that the Italian government be requested to grant a subvention, if necessary, to meet the cost of this enlargement of the original plan of publication.

Meetings of other scientific societies were also held in Genoa at the same time, among them the Italian mathematical society "Mathesis," at whose meeting the following lectures were delivered: "The school in its connection with life and modern science," presidential address by G. CASTELNUOVO; "Eccentricities and mysteries of numbers," by G. LORIA; "Mathematical precision and approximation," by V. REINA; "The classical authors of mathematics," by G. VACCA.

Reports of the Italian subcommittee of the International commission on the teaching of mathematics were also presented and discussed: Primary school, by A. CONTI; classical teaching, by A. FAZZARI and U. SCARPIS; technical teaching, by G. SCORZA; commercial and trade schools, by G. LAZZERI; preparation of teachers, by S. PINCHERLE.

The society recorded its views on various desirable reforms in the teaching of mathematics in Italy. A joint meeting was held with the Italian association of electrical engineers and the Italian physical society for discussion of the organization of mathematical instruction for engineering students. A committee was appointed to prepare concrete recommendations. A joint meeting with the Italian philosophical society was devoted to a discussion of the concept of infinity.

THE following university courses in mathematics are announced:

CAMBRIDGE UNIVERSITY.—By Professor E. W. HOBSON: Spherical harmonics and allied functions; Integral equations;

The history of the problem of the "squaring of the circle" and of related questions.—By Professor G. H. DARWIN: Gravitation with astronomical applications; Lunar theory.—By Professor R. S. BALL: Celestial mechanics; Spherical astronomy.—By Professor J. LARMOR: Electricity and magnetism; Electrodynamics and optical theory.—By Professor J. J. THOMSON: Electricity and matter; Electricity and magnetism; Discharge of electricity through gases.—By Professor B. HOPKINSON: Applied mechanics.—By Professor H. F. NEWALL: Solar research.—By Dr. H. F. BAKER: Introduction to the theory of functions; Geometry of birational transformation; Theory of functions.—By Mr. R. A. HERMAN: Hydrodynamics; Differential geometry; Hydromechanics (*A*).—By Mr. R. W. RICHMOND: Algebraic geometry; Higher solid geometry; Synthetic geometry.—By Dr. T. J. P. A. BROMWICH: Electric waves and electro-optics; Dynamics (*A*); Optics with experimental illustrations; Geometrical and physical optics (*A*); Potential theory and problems.—By Mr. J. H. GRACE: Theory of numbers; Theory of invariants; Elements of Fourier analysis and calculus of variations (*A*).—By Dr. E. W. BARNES: Linear differential equations (*B*).—By Mr. A. J. WALLIS: Spherical trigonometry and astronomy (*A*).—By Mr. A. BERRY: Theory of ordinary differential equations (*B*); Elliptic functions and elementary harmonic analysis (*A*); Elliptic functions (*B*); Theory of transformation of elliptic functions.—By Mr. G. T. BENNETT: Line geometry.—By Mr. A. MUNRO: Hydrodynamics and sound (*A*).—By Mr. B. RUSSELL: The fundamental concepts of mathematics; Principles of mathematics.—By Mr. G. T. LEATHAM: Electron theory.—By Mr. G. H. HARDY: General theory of Dirichlet's series; Asymptotic relations in the theory of functions; Double limit problems.—By Mr. G. BIRTWISTLE: Hydrodynamics (*A*); Hydrodynamics (*B*); Thermodynamics (*B*).—By Mr. F. J. M. STRATTON: Orbits from observations; Stellar physics.—By Mr. J. W. NICHOLSON: Physical optics; Electric waves and theory of diffraction.

OXFORD UNIVERSITY.—By Professor W. ESSON: Analytic geometry of plane curves; Synthetic geometry of plane curves.—By Professor E. B. ELLIOTT: Theory of numbers; Sequences and series.—By Professor A. E. H. LOVE: Electricity and magnetism.—By Professor H. H. TURNER: Elementary

mathematical astronomy.—By Mr. T. W. CHAUDRY: Solid geometry.—By Mr. A. L. DIXON: Calculus of finite differences; Calculus of variations.—By Mr. J. E. CAMPBELL: Differential equations.—By Mr. A. E. JOLLIFFE: Doubly periodic functions.—By Mr. F. B. PIDDUCK: Analytic statics and attraction.—By Mr. C. H. THOMPSON: Dynamics of particles and rigid bodies.—By Mr. H. T. GERRANS: Hydrodynamics.—By Mr. A. L. PEDDER: Problems in pure mathematics.—By Mr. C. E. HASELFOOT: Theory of equations.—By Mr. C. H. SAMPSON: Plane analytic geometry.—By Mr. J. W. RUSSELL: Differential calculus.—By Mr. E. H. HAYES: Statics and hydrostatics.

THE city of Nancy, in the province of Lorraine, will erect a monument to the memory of J. V. PONCELET, CH. HERMITE, and J. H. POINCARÉ, all of whom were born in this province.

THE Paris academy of sciences has awarded its Binoux prize (for the history of science) to Professor J. L. HEIBERG, of the University of Copenhagen, for his works on the history of ancient mathematics and in particular for those on the Method of Archimedes.

“THE general ideas of the science of geometry” is the title of a non-technical course of lectures being delivered by Dr. A. N. WHITEHEAD during the first and second terms of the present academic year at University College, University of London.

PROFESSOR H. A. LORENTZ, of the University of Leyden, has been chosen an honorary member of the Vienna academy of sciences.

PROFESSOR CARL RUNGE, of the University of Göttingen, has received the distinction of Geheimerregierungsrat.

DR. R. PFEIFFER, of the University of Halle, has been promoted to an associate professorship of mathematics.

PROFESSOR G. HUMBERT, of the Ecole polytechnique, has been made head professor of mathematics in the College of France.

IN the faculty of sciences of the University of Paris the following changes have been announced: Professor E. CARTAN,

formerly in charge of conferences, has been made professor of differential and integral calculus (Ecole normale); Professor E. VESSIOT has been placed in charge of conferences; Professor CL. GUICHARD is in charge of the courses of Professor P. PAINLEVÉ.

THE Italian society of sciences (the forty) has awarded to Professor E. E. LEVI, of the University of Genoa, its gold medal for the most important papers by an Italian mathematician during the period 1907–1911. Professor Levi has also been promoted to a full professorship of the calculus.

PROFESSOR T. BOGGIO, of the University of Turin, has been promoted to a full professorship of theoretical mechanics.

PROFESSOR C. SOMIGLIANA, of the University of Turin, has been elected a member of the Italian society of sciences (the forty).

DR. J. W. NICHOLSON, mathematical lecturer in Girton College, Cambridge University, has been appointed professor of mathematics in King's College, University of London.

MR. H. HILTON has been promoted to a professorship of mathematics in the Bedford College for Women, University of London.

PROFESSOR G. H. ALBRIGHT, professor of mathematics at Colorado College, will be an exchange professor to Harvard University during a portion of the present academic year.

AT the University of Minnesota, Mr. H. B. ROE has been promoted to an assistant professorship of mathematics.

DR. J. E. HODGSON, of the Baltimore Polytechnic Institute, has been appointed associate professor of mathematics in West Virginia University.

AT the University of California Mr. J. E. MADDRILL has been appointed instructor in mathematics.

AT Princeton University Messrs. J. A. ALEXANDER, R. E. GILMAN, and E. S. SMITH have been appointed instructors in mathematics.

MR. H. M. DOUGLASS, of Cornell University, has been appointed instructor in mathematics and mechanical drawing in the New York State Teachers College at Albany.

MR. K. P. WILLIAMS has been appointed instructor in mathematics in Indiana University.

PROFESSOR JAMES MACMAHON, of Cornell University, will be absent on leave during the second half of the present academic year.

THE Rev. Dr. W. W. SKEAT, professor of Anglo-Saxon in Cambridge University, died October 7, at the age of 76 years. Before taking up his studies in philology, Professor Skeat was for some years lecturer in mathematics in Christ's College, Cambridge University.

THE death is announced of Professor P. TREUTLEIN, of the Goetheschule of Karlsruhe, at the age of 67 years.

DR. GASTON COMBEBIAC died at Limoges July 12 at the age of 50 years.

DR. J. M. VAN VLECK, professor of mathematics in Wesleyan University from 1853 to his retirement as emeritus professor in 1904, died on November 4, aged 79 years. Professor Van Vleck had been a member of the American Mathematical Society since 1891 and was Vice-President of the Society in 1903-1904.

CATALOGUES of mathematical books: Galloway and Porter, 30 Sidney Street, Cambridge, England, catalogue 58, about 450 titles, ancient and modern.—Bowes and Bowes, 1 Trinity Street, Cambridge, England, catalogue 362, 1791 titles, mostly before 1800.—G. Fock, Schlossgasse 7, Leipzig, catalogue 429, about 4700 titles.—B. Liebisch, Kurprinzstrasse 6, Leipzig, catalogue 588, about 2000 titles.