

CORRECTION.

In the report of the sectional meetings of the Fourth International Congress of Mathematicians, published in the October number of the BULLETIN, an error occurs in the abstract of Professor Dingeldey's paper (on page 20 of the report), the third and fourth lines of which should read ". . . to generate the circle, the equilateral hyperbola, and the parabola . . ."

NOTES.

THE annual meeting of the AMERICAN MATHEMATICAL SOCIETY will be held this year at Baltimore, on Wednesday and Thursday, December 30–31, in affiliation with the American association for the advancement of science. President H. S. WHITE's address, on "Bezout's theory of resultants and its influence on geometry," will be delivered at the opening of the afternoon session on Wednesday. The annual election will close on Thursday morning. Abstracts of papers intended for presentation at this meeting should be in the hands of the Secretary as early as December 12.

THE twenty-third regular meeting of the Chicago Section of the AMERICAN MATHEMATICAL SOCIETY will be held at the University of Chicago, on Friday and Saturday, January 1–2, 1909. Titles and abstracts of papers intended for presentation at this meeting should be in the hands of the Secretary of the Section, Professor H. E. SLAUGHT, University of Chicago, on or before December 10.

THE American federation of teachers of science and mathematics will hold its annual meeting at Baltimore on Monday and Tuesday, December 28–29. Further details may be had of Professor H. W. TYLER, chairman of the executive committee, Massachusetts Institute of Technology, or of Professor C. R. MANN, Secretary, University of Chicago.

THE opening (October) number of volume 10 of the *Annals of Mathematics* contains the following papers: "On the small forced vibrations of systems with one degree of freedom," by MAXIME BÔCHER; "Two principles of map-making," by J.

K. WHITTEMORE; "Application of Tchebychef's principle in the projection of maps," by G. W. HILL; "The foundations of trigonometry," by A. C. LUNN; "Sufficient conditions for imaginary roots of algebraic equations," by OTTO DUNKEL.

AT the annual meeting of the London mathematical society, held November 12, the following papers were read: By W. BURNSIDE, "On the theory of groups of finite order" (presidential address); by J. E. LITTLEWOOD, "On the Dirichlet series and asymptotic expansion of integral functions of zero order"; by F. MORLEY, "The norm curves on a given base"; by J. O'SULLIVAN, "Satellite curves on a plane cubic"; by W. BURNSIDE, "On the arithmetic nature of the coefficients in a group of linear substitutions"; by E. W. HOBSON, "On the second mean-value theorem of the integral calculus," and "On the representation of a function by means of a series of Legendre's functions"; by H. BATEMAN, "The conformal representation of space of four dimensions with application to geometric optics"; by D. M. G. SOMMERVILLE, "Periodic properties of partitions"; by A. C. DIXON, "The solution of integral equations"; by A. L. DIXON, "The eliminant of three quantics in two independent variables"; by G. H. HARDY, "A note on the continuity or discontinuity of a function defined by an infinite product"; by F. B. PIDDUCK, "The energy and momentum of an ellipsoid electron"; by F. H. JACKSON, "On q -integration," and "On q -transformations of power series"; by T. STUART, "The complete solution in integers of the eulerian equation $x^4 + y^4 = u^4 + v^4$."

THE second annual meeting of the Italian association for the advancement of science was held at Florence, October 18 to 23, under the presidency of Professor V. VOLTERRA. Twenty sections participated at the meeting. In section I, mathematics, the following papers were presented: By L. AMOROSO, "On the extension of Dirichlet's principle to functions of several complex variables"; by T. BOGGIO, "Solution of some problems connected with the potential of a non-homogeneous sphere"; by U. CRUDELI, "Recent researches on the theory of figures of equilibrium of a liquid mass under uniform rotation"; by A. FAVARO, "Galileo's determination of the weight of the atmosphere"; by G. GIANFRANCESCHI, "Recent progress in electro-dynamics of moving bodies"; by M. GREMIGNI, "Archimedes's

postulate in the theory of geometric equivalence"; by G. LORIA, "Geometrography and its transformations"; by P. PIZZETTI, "Mathematics of geodesy"; by F. SEVERI, "Double integrals of the first kind belonging to an algebraic variety"; by E. SOMIGLIANA, "On the mechanical representation of some fields of force"; by A. VENTURI, "On the theory of the balance of Eötrös"; by G. VIVANTI, "On the present state of the theory of integral functions."

The next meeting of the association will be held at Padua, in September, 1909.

A GENERAL invitation has been sent to scientific men throughout the world to attend the meeting of the Australasian association for the advancement of science to be held at Brisbane, Queensland, January 11-17, 1909. Papers to be read before the association should be in the hands of the Secretary before December 26, 1908.

THE firm of Martin Schilling in Halle announces the following new mathematical models: Planigraph, by Professor G. KOENIGS, of the University of Paris; Thread model of the discriminant surface of the quintic equation in the normal form $w^5 + 10xw^3 + 5yu + z = 0$, by Dr. MARY E. SINCLAIR, of Oberlin College, under the direction of Professor O. BOLZA, of the University of Chicago; The singularities of space curves, illustrated by nine models in pasteboard, by Miss HELGA LUND, under the direction of Professor H. G. ZEUTHEN, of the University of Copenhagen. The first model is an apparatus for describing a plane by means of linkages; the second is a developable which divides space into five regions, according to the reality of the roots. Points on the cuspidal edge correspond to three equal roots. The third model includes the tangents and osculating planes to all the branches in each of the eight forms of singularities of space curves.

THE following courses in mathematics are offered during the present winter semester. The courses in analytics, calculus, descriptive geometry and applied mathematics in the technical schools are obligatory.

UNIVERSITY OF PARIS.—By Professor G. DARBOUX: Triply orthogonal systems, two hours.—By Professor E. GOURSAT: Theory of analytic functions, two hours.—By Pro-

fessor P. PAINLEVÉ: Motion and equilibrium, two hours.—By Professor P. APPELL: General mathematics, two hours.—By Professor L. RAFFY: Theory of space curves (analytic), two hours.—By Professor H. POINCARÉ: Theory of the tides, two hours.—By Professor J. BOUSSINESQ: Thermodynamic properties of bodies, two hours.—By Professor E. BOREL: Theory of analytic continuation, two hours.

In the Ecole Normale.—By Professor J. TANNERY: Differential and integral calculus, two hours.—By Professor L. RAFFY: Applications of analysis to geometry, two hours.—By Professors E. BOREL and J. HADAMARD: General mathematics, two hours. Biweekly conferences of one hour each will be held by Professors RAFFY, HADAMARD, and P. PUISEUX and by Dr. E. BLUTEL.

BRAUNSCHWEIG.—By Professor R. DEDEKIND: Elements of the theory of numbers, three hours; Theory of probabilities, two hours.—By Professor R. FRICKE: Analytic geometry and algebra, five hours; Differential and integral calculus, five hours; Theory of functions, three hours.—By Professor W. LUDWIG: Descriptive geometry, five hours; Principles of higher mathematics, five hours.

CHARLOTTENBURG.—By Professors E. LAMPE, G. HETTNER and E. HAENTZSCHEL: Analytic geometry and the calculus, with exercises, six hours.—By Professors JOLLES, E. SALKOWSKI and G. SCHEFFERS: Descriptive geometry, eight hours.—By Professor E. STEINITZ: Algebra, four hours; Theory of potential, four hours; Calculus of variations, four hours (with Dr. C. CRANZ).—By Dr. R. FUCHS: Infinite series, two hours; Theory of functions, four hours.—By Professor O. KRIGAR-MENZEL: Theory of electricity, four hours; Theory of heat, four hours.—By Professor E. HAENTZSCHEL: Mechanics, four hours.

DARMSTADT.—By Professor F. DINGELDEY: Calculus, with exercises, six hours; Theory of Fourier series and integrals, three hours.—By Professor J. HORN: Calculus, with exercises, six hours.—By Professor H. WIENER: Descriptive geometry, with exercises, six hours.—By Professor R. MÜLLER: Descriptive geometry, with exercises, six hours; Analytic geometry, five hours.—By Professor L. HENNEBERG: Mechanics, six

hours (two sections).—By Professor F. GRAEFE: History of mathematics, five hours; Review of elementary mathematics, with exercises, six hours.

MUNICH. — By Professor S. FINSTERWALDER: Analytic mechanics, five hours; Seminar, two hours. — By Professor W. v. DYCK: Differential equations, five hours; Seminar, one hour. — By Professor H. BURKHARDT: Mathematics in natural science, three hours. — By Professor L. BURMESTER: Descriptive geometry, with exercises, six hours (two sections). Sections in analytic geometry and the calculus will be conducted by Professors Finsterwalder, v. Dyck and Burkhardt, six hours. — By Dr. W. KUTTA: Review of algebra, six hours; Trigonometry, five hours; Seminar, two hours.

STUTTGART. — By Professor R. MEHMKE: Descriptive geometry, with exercises, six hours; Vector analysis, three hours; Seminar, two hours. — By Professor C. REUSCHLE: Analytic geometry of space, three hours; Selected chapters of plane analytic geometry and theory of invariants, four hours; Differential and integral calculus, with exercises, six hours; Seminar, two hours. — By Professor E. WÖLFFING: Differential and integral calculus, with exercises, six hours; Higher algebra, four hours. — By Dr. W. BRETSCHNEIDER: Review of elementary mathematics, four hours. — By Dr. E. STÜBLER: Elementary algebra and solution of numerical equations, four hours. — By : Trigonometry, four hours.

PROFESSOR CYPARISSOS STÉPHANOS, of the University of Athens, has been appointed rector of the university for the coming year.

PROFESSOR E. STUDY, of the University of Bonn, and Professor H. BURKHARDT, of the technical school at Munich, have declined the professorship of mathematics at the University of Leipzig.

PROFESSOR R. FRICKE, of the technical school at Brunswick, and Professor H. WIENER, of the technical school at Darmstadt, have been given the honorary title of Hofrat; Professor K. HENSEL, of the University of Marburg, has received the title of Geheimer Regierungsrat.

PROFESSOR E. NEUMANN, of the University of Marburg, has been promoted to a full professorship of mathematics.

DR. C. CARATHÉODORY, of the University of Bonn, has been promoted to an associate professorship of mathematics.

DR. ESCLANGON, of the University of Bordeaux, has been promoted to an associate professorship of mathematics.

PROFESSOR R. C. MACLAURIN, of Columbia University, has accepted the presidency of the Massachusetts Institute of Technology.

PROFESSOR C. A. WALDO, of Purdue University, has accepted the professorship of mathematics at Washington University, St. Louis. Professor A. M. KENYON has been promoted to the head professorship of mathematics at Purdue.

PROFESSOR M. B. PORTER, of the University of Texas, is spending a year abroad on leave of absence.

PROFESSOR R. G. D. RICHARDSON, of Brown University, is spending a year's leave of absence in study at the University of Göttingen.

DR. L. A. HOWLAND has been appointed assistant professor of mathematics at Wesleyan University.

DR. R. C. ARCHIBALD has been appointed professor of mathematics at Brown University.

AT the University of Illinois Dr. A. R. CRATHORNE has been promoted to the position of associate in mathematics.

MR. G. R. CLEMENTS, of Williams College, has been appointed instructor in mathematics at Harvard University.

MR. S. A. SCHWARZ and Mr. W. A. WHYTE have been appointed tutors in mathematics at the College of the City of New York.

MR. A. R. JOHNSON has been appointed instructor in mathematics at Rutgers College.

PROFESSOR A. KORKIN, of the University of St. Petersburg, died April 1, 1908, at the age of 71 years.

RECENT catalogues of second-hand mathematical books: W. Junk, Berlin W. 15, Kurfürstendamm 201, bulletin no. 6, about 400 titles in mathematics. — Oswald Weigels Antiquarium, Leipzig, Königstrasse 1, catalogue no. 132, about 1500 titles in exact sciences.