

pük makes a fundamental error in proceeding synthetically instead of analytically, and in this matter of terms for relationship we have an example of that fundamental mistake.

 NOTES.

A REGULAR meeting of the NEW YORK MATHEMATICAL SOCIETY was held Saturday afternoon, April 2, at half-past three o'clock, the president in the chair. The following persons having been duly nominated, and being recommended by the council, were elected to membership: Mr. B. S. Annis, Johns Hopkins University; Professor Samuel Marx Barton, Emory and Henry College; Dr. Maxime Bôcher, Harvard University; Mr. William H. Butts, Pontiac, Michigan; Dr. T. Proctor Hall, Clark University; Professor S. W. Hunton, Mount Allison University; Mr. W. F. King, Ottawa, Canada; Mr. B. M. Roszel, Johns Hopkins University; Dr. Arthur Schultze, New York. The proposed amendment to the Constitution (*Bulletin*, No. 6, p. 142.) was unanimously adopted, and the By-Laws were amended by striking out section 2 of by-law IX., and altering the number of the following section. The following original papers were read: "The cubic-projection and rotation of a tesseract," by Dr. T. Proctor Hall; "On final formulas for the algebraic solution of quartic equations," by Professor Mansfield Merriman.

A *tesseract* is a geometrical figure generated by the motion of a cube in the direction of the common perpendicular to its edges and faces, bearing exactly the same relation to a cube that a cube bears to a square. It is bounded by eight cubes, and has twenty-four faces, thirty-two edges, and sixteen vertices. Dr. Hall presented the Society with a wire model representing the projection of a tesseract into space of three dimensions.

THE Cambridge University Press has in preparation "A treatise on the mathematical theory of elasticity," by A. E. H. Love, fellow of St. John's College, Cambridge. The first volume of the work, which is to be in two volumes, is in press.

MACMILLAN & Co. have nearly ready a work on the "Theory of functions," by Professor Morley of Haverford College, Pa., and Professor Harkness of Bryn Mawr College, Pa.

At the meeting of the *Académie des Sciences* at Paris on

March 7, committees were appointed to award the mathematical prizes of the current year. For the *Grand prix des sciences mathématiques*, The determination of the number of primes inferior to a given limit, the committee is composed of MM. Jordan, Poincaré, Hermite, Darboux, Picard. For the *Prix Bordin*, The application of the general theory of abelian functions to geometry, the committee consists of MM. Hermite, Poincaré, Darboux, Jordan, Picard. For the Prix Bordin of 1890, To study the surfaces whose linear element can be reduced to the form

$$ds^2 = [f(u) - \varphi(v)] (du^2 + dv^2),$$

the time of competition for which was extended until 1892, the committee is MM. Poincaré, Darboux, Picard, Hermite, Jordan.

THE memoir of M. Painlevé, which won for its author the *Grand prix* of 1890, To perfect in an important respect the theory of the differential equation of the first order and first degree, has just been published in full in the *Annales de l'École Normale*, while that of his competitor, M. Autonne, which was awarded an honorable mention, is in course of publication in the *Journal de l'École Polytechnique*.

WE learn from *Naturae Novitates* that Professor H. A. Schwartz, of Göttingen, has been called to Berlin as the successor of the late Professor Kronecker, and that Professor Rudolph Sturm has been invited to the professorship of mathematics at the University of Breslau.

THE second number of the current volume of the *American Journal of Mathematics* was delayed through the occurrence of a fire in the printing office. In future the new volumes will begin in January instead of in October. T. S. F.

AT Johns Hopkins University during the academic year 1892-93, the following graduate courses in mathematics will be given: by Professor Craig, (1) Theory of functions of one and two variables, (2) Mathematical seminary, (3) Partial differential equations, (4) Linear differential equations, (5) Elliptic and abelian functions; by Dr. Franklin, (6) A general course for graduate students on the elements of modern mathematics, (7) Theory of invariants, (8) Metrical theory of surfaces; by Dr. Chapman, (9) Mechanics and hydrodynamics, (10) Projective geometry, (11) History of mathematics.

T. C.

DURING the coming year at Clark University, Professor Story will lecture on the following subjects: (1) History of algebra during the Renaissance, (2) Advanced course on the geometry of surfaces and twisted curves, (3) Applications of quaternions, (4) Hyperspace and non-euclidean geometry, (5) Introductory courses on calculus of finite differences, probability, and theory of errors. Dr. Webster will lecture on Theory of functions according to Cauchy, Riemann, and Weierstrass, with applications to functions defined by certain differential equations. Besides, introductory courses will be given in: Theory of numbers, Modern higher algebra, Higher plane curves, General theory of surfaces and twisted curves, Quaternions, and Modern synthetic geometry. O. B.

 NEW PUBLICATIONS.

COMPILED BY B. WESTERMANN & CO., NEW YORK.

- AIR-TEMPERATURE. Harmonic analysis of hourly observations of Air Temperature and Pressure at British Observatories. London 1892. fol. 12s
- CAUCHY (A.). Oeuvres complètes. Publiées sous la direction scientifique de l'Académie des Sciences. (29 volumes en 2 séries.) Série 1. Tome VII: Notes et articles extraits des Comptes-rendus hebdomadaires des séances de l'Académie des Sciences, suite. Paris 1892. gr. in-4. 446 pg. Prix de souscription, 20f
- DETER (C. G. J.). Repertorium der Differential- und Integralrechnung. 2. Auflage. Berlin 1892. 8. 118 pg. m. Figuren. M. 1.50
- FARADAY.—Jerrold (W.). Michael Faraday, the man of science. New York 1892. 8. 160 pg. cloth. \$0.75
- FLAMMARION (C.). La Pluralité des Mondes habités. Étude où l'on expose les conditions d'habitabilité des terres célestes, discutées au point de vue de l'Astronomie, de la Physiologie et de la Philosophie naturelle. 84. mille. Paris 1892. 8. 6 et 483 pg. av. planches coloriées et noires.
- GEE (W. H.). Four-Place Logarithms and Tangent Tables. Manchester 1892. 8. cloth. 9d
- GREENWICH. Astronomical, Magnetical and Meteorological Observations made at the Royal Observatory, Greenwich, in the year 1890, under the direction of W. H. M. Christie. London 1892. Imp. 4. cloth. 20s
- LANGE (G.). Ueber die linearen homogenen Differentialgleichungen, denen die Periodicitätsmodule Abelscher Integrale genügen für den Fall, dass die Irrationalität 3. Grades ist. Halle 1892. 8. 45 pg. M. 1.20