

The conic (7) depends solely on  $k$ ; that is, on  $\tau/\tau_1$ ; that is, on the relative orientation of the two curves; but  $\tau$ , and therefore the actual orientation of the first curve, disappeared in finding the conic. Hence if we now let the two curves rotate about their centres with equal angular velocities, the envelope of their common tangents is the entire system of conics.

HAVERFORD, PA.

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### NOTES.

THE Annual Meeting of the AMERICAN MATHEMATICAL SOCIETY was held in New York on Friday afternoon, December 27, at three o'clock, the President, Dr. HILL, in the chair. There were twenty-five members present. On the recommendation of the Council, the following persons, nominated at the preceding meeting, were elected to membership: Mr. JULIUS L. NEUFELD, Central High School, Philadelphia, Pa.; Mr. WENDELL MELVILLE STRONG, Yale University, New Haven, Conn. Reports were presented by the Secretary and Treasurer. The Secretary stated that the membership of the Society was 267. The average attendance at the ordinary meetings during the year had been 15, the attendance at the last annual meeting 17, and that at the summer meeting 26. The number of members who had attended at least one meeting during the year was 61. Professor Cole, Dr. Chittenden, and Professor Ladue were appointed an auditing committee to examine the Treasurer's accounts.

The chair appointed Mr. Legras and Mr. Lambert tellers for the annual election. Upon examining the ballots cast in person and by mail, they announced that the following ticket had been elected:

*President*: Dr. GEORGE W. HILL.  
*Vice-President*: Professor HUBERT A. NEWTON.  
*Secretary*: Professor FRANK N. COLE.  
*Treasurer*: Professor R. S. WOODWARD.  
*Librarian*: Professor POMEROY LADUE.

*Committee of Publication*:  
 Professor THOMAS S. FISKE.  
 Professor ALEXANDER ZIWET.  
 Professor FRANK MORLEY.

*Three Members of the Council to serve until December, 1898*:  
 Professor E. W. HYDE.  
 Professor W. WOOLSEY JOHNSON.  
 Professor B. O. PEIRCE.

After the election, Dr. HILL delivered the presidential address. It was entitled:

“Remarks on the progress of celestial mechanics since the middle of the century.”

The following paper was read also:

Professor JAMES McMAHON: “Note on the separation of the velocity potential (expressed by functions of Laplace and Bessel) into two parts, representing an outward and an inward moving wave.”

THE annual meeting of the London Mathematical Society was held on November 14. The following officers were elected: President, Major P. A. Macmahon; Vice-Presidents, Professor M. J. M. Hill, Mr. M. Jenkins, Mr. A. B. Kempe; Treasurer, Dr. J. Larmor; Secretaries, Mr. R. Tucker, Mr. A. E. H. Love; Other members of the Council, Mr. H. F. Baker, Mr. G. H. Bryan, Lieut.-Col. A. J. Cunningham, Professor E. B. Elliott, Dr. J. W. L. Glaisher, Professor A. G. Greenhill, Dr. E. W. Hobson, Professor W. H. Hudson, Mr. F. S. Macaulay. According to *Nature*, Mr. Jenkins, who retires on grounds of health from the office of Secretary, has served the Society in that capacity for thirty years, he and the late Professor de Morgan having been elected joint Secretaries at the annual meeting held January 15, 1866.

THE following courses in higher mathematics will be delivered in Cambridge (Eng.) during the Lent term, 1896. In pure mathematics: Professor Forsyth, Abel's theorem and Abelian functions, Calculus of variations; Dr. Glaisher, Elliptic functions; Mr. Baker, Theory of functions (automorphic functions); Mr. Bennett, Ruled surfaces, congruences and complexes; Mr. Pendlebury, Theory of numbers. In applied mathematics: Professor Stokes, Physical optics; Professor J. J. Thomson, Electricity and magnetism; Professor Sir R. S. Ball, Planetary theory; Dr. Hobson, Higher dynamics; Mr. Larmor, Electro-dynamics and electro-optics; Mr. Herman, Hydrodynamics; Mr. Glazebrook, Sound.

AT the Anniversary Meeting of the Royal Society of London, held Saturday, November 30, 1895, the Copley medal was conferred on Professor Karl Weierstrass in recognition of his epoch-making contributions to mathematics.

IT appears from the “Compte rendu du bureau local du COMITÉ LOBACHEFSKY, 1893–1895” (comp. BULLETIN OF THE NEW YORK MATHEMATICAL SOCIETY, vol. 2, p. 193, and vol. 3, p. 201), that the total sum collected by the Lobachevsky Committee of the University of Kazan, up to the 13th of

May, 1895, amounts to about 24,500 frcs., of which 85% was contributed by Russia (32% by Kazàn) and 2% by the United States. The main portion of this sum has been used to establish an international mathematical prize of 500 rubles (about \$270), to be awarded every three years by the Physico-Mathematical Society of Kazàn. The first award will take place November 3, 1897. No special problems will be set, the prize being given for the most valuable work on geometry, especially non-Euclidean, published in the course of the six preceding years, and sent to the Society at least one year before the date set for awarding the prize.

A smaller portion of the sum collected will be used to contribute to the erection of two busts of Lobachevsky, one in the precincts of the University, the other in a public square of the city of Kazàn. The unveiling of the latter statue will take place in September 1896. The Committee invites all scientific men interested in Lobachevsky's work to attend the unveiling; all persons accepting this invitation will be considered the guests of the city and university of Kazàn.

It is also intended to use a small part of the Lobachevsky fund to issue a new edition of his works, which will soon become necessary.

Finally, the Physico-Mathematical Society of Kazàn has decided to form a *Bibliotheca Lobatchevskiana*, and requests all workers in non-Euclidean geometry to send copies of their works or papers to this collection. A list of the volumes now on hand (about 80) is appended to the "Compte rendu."

BESIDES the prize problem (for 1897) reported in the BULLETIN OF THE AMERICAN MATHEMATICAL SOCIETY, Vol. I (1894), p. 22, the PRINCE JABLONOWSKI SOCIETY of Leipsic offers another prize of 1000 marks, to be awarded in 1899, for the treatment of the following subject:

"Considering that the theory of Newtonian forces as developed by Poisson, Green, Gauss, Dirichlet, and others, forms one of the most important branches of mathematical physics, that, however, there are various objections to the assumption that Newton's law must hold in all cases (especially for very small and very large distances), it appears desirable that the theory of actions at a distance should be developed with greater generality, other laws of action at a distance than Newton's being taken into consideration.

"An attempt of this kind was made by Green, as early as in 1832, in his 'Mathematical investigations concerning the laws of equilibrium of fluids analogous to the electric fluid' (*Transactions of the Cambridge Philosophical Society*, 1833, reprinted in G. GREEN, *Mathematical Papers*, pp. 117-183). Forces acting according to the general law  $1/r^n$ , instead of

Newton's law  $1/r^2$ , are here taken into consideration. This important and acute investigation suggests, however, various questions that still remain unsettled or obscure; to some of these Green himself calls attention. Moreover, certain problems, for instance, the problem of electrical distribution on an ellipsoid or on a circular plate, are only briefly touched upon by Green. The Society desires, therefore, that *the problems merely indicated by Green in this paper should be actually solved, and any omissions and obscurities occurring in the paper should be supplied and cleared up.*"

The manuscripts should be in the hands of the Secretary, Professor F. Zirkel (Leipsic, Thalstrasse 33), by the 30th of November, 1898.

ERRATA. On page 3, line 25, of this volume of the BULLETIN (October No.) the formula

$$y = 2rs(p^2 + q^2) \pm 2rs^2(p^2 - q^2)$$

should be written thus:

$$y = 2rs(p^2 + q^2) \pm 2s^2(p^2 - q^2).$$

On page 9, line 9 from the bottom, for the word *five* the word *four* should be substituted.

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## NEW PUBLICATIONS.

### HIGHER MATHEMATICS.

ABHANDLUNGEN ZUR GESCHICHTE DER MATHEMATIK. Heft VII: J. L. HEIBERG, Ptolemæus de analemmate; M. CURTZE, Ein Beitrag zur Geschichte der Algebra in Deutschland im fünfzehnten Jahrhundert; M. CURTZE, Die Handschrift Nr. 14836 der Königl. Hof- und Staatsbibliothek zu München; F. RUDIO, Eine Autobiographie von Gotthold Eisenstein, mit ergänzenden biographischen Notizen; A. HURWITZ und F. RUDIO, Briefe von G. Eisenstein an M. A. Stern; A. WASSILJEFF, Nikolaj Iwanowitsch Lobatschewskij, Rede, gehalten bei der feierlichen Versammlung der Kaiserlichen Universität Kasan am 22. Oktober 1893, aus dem Russischen übersetzt von F. Engel. (Supplement zum 40sten Jahrgang der *Zeitschrift für Mathematik und Physik.*) Leipzig, Teubner, 1895. 8vo. 244 pp. 1 plate.

Mk. 7.60

BALL (W. W. R.). A primer of the history of mathematics. London and New York, Macmillan, 1895. 12mo. 162 pp. Cloth. \$0.65

BOLYAI (J.). La science absolue de l'espace, indépendante de la vérité ou de la fausseté de l'axiome XI d'Euclide (que l'on ne pourra jamais établir *a priori*); suivi de la quadrature géométrique du cercle dans le cas de la fausseté de l'axiome XI. Traduit de l'allemand par J. Hoüel. Nouvelle édition. Paris, Hermann, 1896. 8vo. Fr. 4.00