PROCEEDINGS

OF

THE LONDON MATHEMATICAL SOCIETY.

THIRTY-FOURTH SESSION, 1897–98

(since the Formation of the Society, January 16th, 1865).

November 11th, 1897.

THE FOURTH ANNUAL GENERAL MEETING OF THE LONDON MATHE-
MATICAL SOCIETY, as incorporated under the Companies Act,
1867, on October 23rd, 1894, held at 22 Albemarle Street, W.

Prof. E. B. ELLIOTT, M.A., F.R.S., President, in the Chair.

Present eighteen members.

Mr. J. B. Dale and Mr. G. B. Mathews were admitted, into the
Society.

The President briefly referred to the recent decease of Lt.-Col. J. R.
Campbell, who had rendered signal service to the Society by his
liberal gift of £500 to its funds. The deceased gentleman served on
the Council in the Sessions 1893–94, 1894–95.

The Treasurer gave an abstract of his report. In the course of his
remarks he pointed out that the publications of the Society had of
recent years grown to such an extent as to tax its utmost resources ;
and that, were it not for the help of the funds munificently estab-
lished many years ago by Lord Rayleigh, and more recently by the
late Lt.-Col. Campbell, the Society would be compelled to materially
restrict its sphere of activity. Its reception was moved by Mr. A. B.
Kempe, and seconded by Mr. J. E. Campbell. With the motion was

coupled another nominating the Rev. T. R. Terry as Auditor, should he be able to serve. The reception of the report and the motion for nomination of the Auditor were carried unanimously.

The senior Secretary stated that the present number of members was 229, of whom 116 were life compounders. The Society's losses by death had been: Professor Sylvester, elected June 19th, 1865; Rev. A. Freeman, elected December 14th, 1871; and Lt.-Col. J. R. Campbell, elected December 9th, 1875. He also mentioned that only one additional exchange of *Proceedings* had been made during the Session, viz., with the American Philosophical Society, Philadelphia.

The following communications had been made or received:—

Combinatory Analysis: A Review of the Present State of Knowledge (Presidential Address).

On the Geometrical Calculus (two papers): Herr E. Lasker.

The Calculus of Equivalent Statements (Fifth and Sixth Papers) : Mr. H. MacColl.

On a General Integral with some Physical Applications : Mr. G. J. Hurst.

On Ratio : Prof. M. J. M. Hill.

On the Geometrical Construction of Models of Cubic Surfaces : Mr. W. H. Blythe.

The Fluted Vibrations of a Circular Vortex Ring with a Hollow Core : Mr. H. S. Carslaw.

The Differentiation of Spherical Harmonics : Mr. E. G. Gallop.

On the application of Jacobi's Dynamical Method to the General Problem of Three Bodies : Professor E. W. Brown.

On certain Properties of the Mean Motions and the Secular Accelerations of the Principal Arguments used in the Lunar Theory: Professor E. W. Brown.

Note on the Symmetric Group: Professor W. Burnside.

Note on the Electric Capacity of a Conductor in the Form of Two Intersecting Spheres : Mr. W. D. Niven.

Note on the Foregoing Paper by Mr. H. M. Macdonald.

Note on a Discovery in the Theory of Denumeration : Professor Sylvester.

On the Stationary Motion of a System of Equal Elastic Spheres of Finite Diameter : Mr. S. H. Burbury.

On the Influence of Viscosity on Waves and Currents : Mr. S. S. Hough.

Description of a Multiplying Apparatus : Mr. Macfarlane Gray.

On the Connexion of Quadratic Forms: Lt.-Col. Cunningham.

Concerning the Abstract Groups of Order $k!$ and $\frac{1}{2}k!$ Holohedrically Isomorphic with the Symmetric and the Alternating Substitution-Groups on k Letters : Professor E. H. Moore.

On a Series of Cotrinodal Quartics : Mr. H. M. Taylor.

On Finite Variations : Mr. E. P. Culverwell.

On the Partition of an Even Number into Two Primes: Professor Sylvester.

Supplementary Note on Matrices : Mr. J. Brill.

Note on some Properties of Bessel's Functions : Dr. E. W. Hobson.

On a Theorem in Non-Euclidean Geometry : Mr. F. S. Macaulay.

Note on High Primes : Lt.-Col. Cunningham.

On a Law of Combination of Operators bearing on the Theory of Continuous Transformation Groups : Mr. J. E. Campbell.

Some Notes on Symmetric Functions : Mr. W. H. Metzler.

Note on a System of Circles associated with a Triangle : Professor Steggall.

Über verzweigte Potentiale im Raum : Dr. A. Sommerfeld.

Certain Concomitant Determinants : Mr. J. W. Russell.

On the Potentials of Rings : Mr. A. L. Dixon.

On the Deformation of a Plane Closed Polygon, so that a certain Function remains Constant : Mr. F. S. Macaulay.

An Extension of the Theorem

$$\frac{\Pi\,(\gamma-\alpha-\beta-1)\,.\,\Pi\,(\gamma-1)}{\Pi\,(\gamma-\alpha-1)\,.\,\Pi\,(\gamma-\beta-1)} = F\,(\alpha,\,\beta,\,\gamma):$$

Rev. F. H. Jackson.

A Continuation of Gauss's "Dioptrische Untersuchungen" : Professor Sampson.

On Cubic Curves as connected with certain Triangles in Perspective : Mr. S. Roberts.

Determination of certain Primes : Mr. F. W. Lawrence.

An Analogue of Anharmonic Ratio : Mr. J. Brill.

On the Partition of Numbers : Mr. G. B. Mathews.

Notes on Synthetic Geometry : Professor W. Esson.

On the Primitive Substitution-Groups of Degree Fifteen : Dr. G. A. Miller.

A Generalized Form of the Binomial Theorem : Rev. F. H. Jackson.

On the Degeneration of a Cubic Curve : Mr. H. M. Taylor.

In addition to the foregoing papers which were communicated at the monthly meetings the Society had published the "Outline of Lectures on the Partition of Numbers," which were read, by the late Professor Sylvester, at King's College, London, in 1859.

The same journals had been subscribed for, and the same exchanges of *Proceedings*, in addition to the one named above, made, as in the preceding Session.

One present had been made to the Society's Album.

Mr. G. Heppel and Mr. A. E. Western having been appointed Scrutineers, the ballot was taken, with the result that the following gentlemen, nominated by the Council, were elected to serve as the Council for the ensuing Session :—Professor Elliott, F.R.S., President; Dr. Hobson, F.R.S., and Major MacMahon, R.A., F.R.S., Vice-Presidents; Dr. J. Larmor, F.R.S., Treasurer; Mr. R. Tucker and Mr. A. E. H. Love, F.R.S., Hon. Secretaries. Other members of the Council :—Lt.-Col. Cunningham, R.E., Dr. Glaisher, F.R.S., Professor M. J. M. Hill, F.R.S., Professor W. H. H. Hudson, Mr. M. Jenkins, Mr. A. B. Kempe, F.R.S., Mr. F. S. Macaulay, Mr. D. B. Mair, Mr. G. B. Mathews, F.R.S., and Mr. W. D. Niven, C.B., F.R.S.

Mr. Campbell read a paper " On an Extension of the Exponential Theorem."

Mr. Hargreaves gave an abstract of his paper, entitled " The Integral $\int P_n^2 dx$, and Allied Forms in Legendre's Functions, between Arbitrary Limits."

Mr. Mathews communicated a Note by Professor F. Morley, " On the Poncelet Polygons of a Limaçon."

The following papers were communicated from the chair :—

> The Calculus of Equivalent Statements (Paper 7) : Mr. H. MacColl.
>
> The Character of the General Integral of Partial Differential Equations : Professor Forsyth.
>
> Note on Bessel Functions : Mr. H. M. Macdonald.

The following presents were made to the Library :—

"Proceedings of the Royal Society," Vol. LXII., No. 380.

" Beiblätter zu den Annalen der Physik und Chemie," Bd. XXI., St. 10; Leipzig, 1897.

" Journal of the Institute of Actuaries," Vol. XXXIII., Pt. 4, No. 186 ; London, July, 1897.

"Monatshefte für Mathematik und Physik," VIII. Jahrgang, 1897 ; Wien, 1897.

Lemoine, E.—" Questions relatives à la Géométrie du Triangle, à la Géométrografie et à la Transformation continue," pamphlet, 8vo ; Paris, 1896. " Mélanges sur la Géométrie du Triangle," pamphlet, 8vo ; Paris, 1895. " Note sur une Construction approchée du Développement de la Circonférence, et Remarques diverses," pamphlet, 8vo ; Paris.

"Bulletin de la Société Mathématique de France," Tome XXV., Nos. 6, 7; Paris, 1897.

" Bulletin of the American Mathematical Society," Vol. IV., No. 1 ; October, 1897, New York.

"Atti della Reale Accademia dei Lincei—Rendiconti," Sem. 2, Vol. VI., Fasc. 7, 8 ; Roma.

"Journal für die reine und angewandte Mathematik," Bd. CXVIII., Heft 4; Berlin, 1897.

" Educational Times," November, 1897.

" Annali di Matematica," Tomo XXVI., Fasc. 2, 3 ; Milano, 1897.

"Indian Engineering," Vol. XXII., Nos. 13–16 ; Sept. 25–Oct. 16, 1897.

" Transactions of the Royal Irish Academy," Vol. XXXI., Pt. 4 ; October, 1897.