



the
Messenger
of
Mathematic

CP4

THE
MESSENGER OF MATHEMATICS.

EDITED BY
J. W. L. GLAISHER, Sc.D., F.R.S.,
FELLOW OF TRINITY COLLEGE, CAMBRIDGE.

15.

VOL. XXIII.
[MAY 1893—APRIL 1894].



MACMILLAN AND CO.
London and Cambridge.
1894.

CAMBRIDGE:
PRINTED BY METCALFE AND CO. LIMITED TRINITY STREET.

CONTENTS.

ARITHMETIC AND ALGEBRA.

	PAGE
Number of proper ternary n -ics. By Lieut.-Col. CUNNINGHAM	1
Number of proper quaternary n -ics. By Lieut.-Col. CUNNINGHAM	8
Note on the transformation of a Heinean series. By Prof. L. J. ROGERS	28
Proof of a theorem in the theory of numbers. By H. W. SEGAR	31
Limits of the expression $\frac{x^p - y^q}{x^q - y^p}$. By H. W. SEGAR	47
Note on the theory of groups. By W. BURNSIDE	50
Two theorems on prime numbers. By N. M. FERRERS	56
Illustrations of Sylow's theorems on groups. By Prof. CAYLEY	59
Even magic squares. By W. W. ROUSE BALL	65
Cayley's cubic resolvent and the reducing cubic. By IRVING STRINGHAM	71
Note on Kirkman's problem. By A. C. DIXON	88
On the fact that seminvariants of a binary quantic are invariants of that quantic and its derivatives. By Prof. E. B. ELLIOTT	91
Note on the law of frequency of prime numbers. By J. W. L. GLAISHER	97
On a property of certain determinants By W. BURNSIDE	112
On an application of the theory of groups to Kirkman's problem. By W. BURNSIDE	137
On certain numerical products in which the exponents depend upon the numbers. By J. W. L. GLAISHER	145
On series involving inverse even powers of subeven and supereven numbers (continued). By J. W. L. GLAISHER	176

GEOMETRY.

	PAGE
On the nine-points circle of a plane triangle. By Prof. CAYLEY - - -	25
On the nine-points circle. By Prof. CAYLEY - - - - -	23
Counter pedals. By K. TSURUTA - - - - -	62
A geometrical theorem. By H. W. CURJEL. - - - - -	63
A rectangular hyperbola connected with a triangle. By W. W. TAYLOR -	69
On the surface of the order n which passes through a given cubic curve. By Prof. CAYLEY - - - - -	79
On the curve of intersection of two quadrics. By W. BURNSIDE - - -	89
On twisted cubics and the cubic transformation of elliptic functions. By A. C. DIXON - - - - -	94
On the flex-locus of a system of plane curves whose equation is a rational integral function of the coordinates and one arbitrary parameter. By M. J. M. HILL - - - - -	120
On the shortest path consisting of straight lines between two points on a ruled quadric. By J. E. CAMPBELL - - - - -	130

DIFFERENTIAL AND INTEGRAL CALCULUS.

The numerical value of $\Pi i = \Gamma(1+i)$. By Prof. CAYLEY - - -	36
Note on functions of a real variable. By W. BURNSIDE - - - - -	39
Note on an extension of the theory of functions of a complex variable. By J. BRILL - - - - -	108
On a theorem of differential calculus. By E. W. HOBSON - - -	115
Second note on an extension of the theory of functions of a complex variable. By J. BRILL - - - - -	185

THEORY OF ELLIPTIC FUNCTIONS.

On Richelot's integral of the differential equation $\frac{dx}{\sqrt{X}} + \frac{dy}{\sqrt{Y}} = 0$. By Prof. CAYLEY - - - - -	42
A map of the complex Z -function: a condenser problem. By J. H. MICHELL - - - - -	72

APPLIED MATHEMATICS.

On the finite displacement of a rigid body. By W. BURNSIDE - - -	19
Note on a rotating liquid ellipsoid. By J. P. JOHNSTON - - - - -	22
On the cardinal points of an optical instrument. By E. G. GALLOP -	81
On the motion of a body under no forces. By J. E. CAMPBELL - - -	144

