

Transactions of the Cambridge Philosophical Society

RECENT PAPERS

Vol. XXII.

No. XXVI. **The Escape of Molecules from an Atmosphere, with special reference to the Boundary of a Gaseous Star.** By E. A. MILNE, M.A., Trinity College, Cambridge. Pp. 35. Price 5/-.

„ XXVII. **Some Problems of Diophantine Approximation: The Analytical Properties of Certain Dirichlet's Series Associated with the Distribution of Numbers to Modulus Unity.** By G. H. HARDY, M.A., Savilian Professor, University of Oxford, and J. E. LITTLEWOOD, M.A., Trinity College, Cambridge. Pp. 16. Price 3/6.

„ XXVIII. **Free Paths in a Non-uniform Rarefied Gas with an Application to the Escape of Molecules from Isothermal Atmospheres.** By J. E. JONES, 1851 Exhibition Senior Research Student, Trinity College, Cambridge. Pp. 22. With Title-page and Index to Vol. XXII. Price 5/6.

Vol. XXIII.

No. I. **On Approximate Continuity.** By M. H. A. NEWMAN, B.A., St John's College, Cambridge. Pp. 18. Price 3/6.

„ II. **A Mathematical Theory of Natural and Artificial Selection.** By J. B. S. HALDANE, M.A., Trinity College, Cambridge. Pp. 23. Price 4/-.

„ III. **On the Form of the Solution of the Equations of Dynamics.** By T. M. CHERRY, B.A., Trinity College, Isaac Newton Student. Pp. 28. Price 4/-.

„ IV. **On the Motion of Spheres, Circular and Elliptic Cylinders through Viscous Liquid.** By W. J. HARRISON, M.A., Clare College, Cambridge. Pp. 18. Price 3/-.

„ V. **Researches in the Theory of Determinants.** By Major P. A. MACMAHON, R.A., F.R.S. Pp. 47. 7/-.

„ VI. **The Optical Constants of Matter.** By C. G. DARWIN, M.A., F.R.S., Christ's College, Tait Professor of Natural Philosophy in the University of Edinburgh. Pp. 31. Price 5/-.

„ VII. **Some Examples of Trajectories Defined by Differential Equations of a Generalised Dynamical Type.** By T. M. CHERRY, Ph.D., Fellow of Trinity College, Cambridge. Pp. 32. Price 5/-.

„ VIII. **Some Formulae for Scrolls and Line Systems in Ordinary Space.** By C. G. F. JAMES, Trinity College, Cambridge. Pp. 34. Price 6/-.

„ IX. **The Aberrations of a Symmetrical Optical System.** By G. C. STEWARD, M.A., Fellow of Emmanuel College, Cambridge. Pp. 29. Price 5/-.

„ X. **The Linear Invariants of Ten Quaternary Quadrics.** By H. W. TURNBULL, M.A., Trinity College, Professor of Mathematics in the University of St Andrews, and ALFRED YOUNG, Sc.D., sometime Fellow of Clare College. Pp. 39. Price 6/-.

„ XI. **Mathieu Functions.** By S. GOLDSTEIN, B.A., St John's College. Pp. 34. Price 6/-.

„ XII. **The Mathematical Theory of the Statistical Methods employed in the Study of Correlation in the case of Three Variables.** By A. A. TSCHUPROW. Translated by L. ISSERLIS, M.A., Christ's College. Pp. 46. Price 7/-.

CONTENTS

	PAGE
<i>Explicit formulae connecting Hölder's, Cesàro's and another mean value.</i> By A. KIENAST. (Communicated by Professor G. H. HARDY)	1
<i>Some enumerative results for curves.</i> By W. G. WELCHMAN, B.A., Sidney Sussex College	18
<i>The application of quadratic forms in an infinity of variables to boundary problems in partial differential equations.</i> By Mr S. W. P. STEEN, Christ's College	23
<i>Note on the instability of a surface of discontinuity.</i> By L. ROSENHEAD, Ph.D., St John's College. (With One Text-figure)	35
<i>The tangent planes to a degenerate surface.</i> By Mr L. ROTH, Clare College	45
<i>The general surfaces in four dimensions with one or two apparent triple points.</i> By J. W. ARCHBOLD, B.A., St John's College	51
<i>A note on inverse probability.</i> By Mr J. B. S. HALDANE, Trinity College	55
<i>Note in regard to surfaces in space of four dimensions, in particular rational surfaces.</i> By Professor H. F. BAKER	62
<i>The 'relaxation' term in Debye and Hückel's theory of ionic mobility.</i> By Mr H. H. PAINE, Trinity College	83
<i>A condensation diagram.</i> By Mr P. I. DEE, Pembroke College. (With One Text-figure)	93
<i>The collision of electrons with rotating dipoles.</i> By H. S. W. MASSEY, Trinity College. (Communicated by Mr N. F. MOTT.) (With Two Text-figures)	99
<i>Note on a new power-angle diagram for alternators.</i> By W. H. INGRAM, Trinity College. (Communicated by Dr J. D. COCKCROFT.) (With One Text-figure)	106
<i>On the determination of the horizontal component of the earth's magnetic field by a coupled oscillations method.</i> By L. G. VEDY, B.A., Downing College, Lecturer in Physics in the University of Reading. (With Two Text-figures)	109
<i>The upper limit of energy in the β-ray spectrum of thorium C''.</i> By F. R. TERROUX, former 1851 Exhibition Scholar and External Research Student of Emmanuel College, and N. S. ALEXANDER, Trinity College. (Communicated by Dr J. CHADWICK.) (With One Text-figure)	115
<i>Note on a high-tension supply for Geiger counters operated from a.c. mains.</i> By H. C. WEBSTER, Clare College. (Communicated by Dr J. CHADWICK.) (With One Text-figure)	121
<i>An attempt to detect the spontaneous transformation of helium into penetrating radiation.</i> By G. T. P. TARRANT, B.A., Pembroke College, and L. H. GRAY, Ph.D., Trinity College	124
<i>The interval between the departure of the disintegration particle and the emission of the gamma radiation.</i> By P. WRIGHT, Trinity College. (Communicated by Dr J. CHADWICK.) (With One Text-figure)	128
<i>A quantum mechanical theory of energy exchanges between inert gas atoms and a solid surface.</i> By J. M. JACKSON, Trinity College. (Communicated by Mr R. H. FOWLER.) (With Four Text-figures)	136