

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>The symmetric derivative and its application to the theory of trigonometric series.</i> By S. VERBLUNSKY, Ph.D., Magdalene College | 163 |
| <i>On summable trigonometric integrals.</i> By S. VERBLUNSKY, Ph.D., Magdalene College | 174 |
| <i>Some series and integrals involving associated Legendre functions.</i> By Mr W. N. BAILEY, Trinity College | 184 |
| <i>Some properties of line congruences.</i> By Mr L. ROTH, Clare College | 190 |
| <i>The densities of the regular polytopes.</i> By H. S. M. COXETER, B.A., Trinity College. (Communicated by Professor H. F. BAKER) | 201 |
| <i>The groups of symmetries of the regular polytopes.</i> By J. A. TODD, B.A., Trinity College. (Communicated by Professor H. F. BAKER) | 212 |
| <i>On the combinatory scheme of analysis.</i> By L. C. YOUNG, B.A., Trinity College | 232 |
| <i>Note on the interpretation of the density matrix in the many-electron problem.</i> By P. A. M. DIRAC, Ph.D., St John's College | 240 |
| <i>Note on the operability of a synchronous motor at the end of a transmission line.</i> By W. H. INGRAM, Trinity College. (Communicated by Dr J. D. COCKROFT) | 244 |
| <i>On the desorption of gases from the walls of a closed system in which the pressure is independently changing.</i> By G. E. PRINGLE, Emmanuel College, and G. VAN PRAAGH, Emmanuel College. (Communicated by Prof. E. K. RIDEAL.) (With Three Text-figures) | 250 |
| <i>On the influence of radiative forces on the scattering of electrons.</i> By Mr N. F. MOTT, Fellow of Gonville and Caius College. (With One Text-figure) | 255 |
| <i>A theoretical discussion of the electrical properties of the soil.</i> By F. W. G. WHITE, St John's College, Strathcona Research Student. (Communicated by Mr J. A. RATCLIFFE.) (With Nine Text-figures) | 268 |
| <i>The weak lines in the natural β-ray spectrum of radium C.</i> By C. D. ELLIS, Ph.D., Trinity College, and H. H. ELLIOTT, Trinity College | 277 |
| <i>A note on ferromagnetism.</i> By Mr R. H. FOWLER, F.R.S., Trinity College, and F. C. POWELL, B.A., Gonville and Caius College. (With Two Text-figures) | 280 |