

*Proceedings of the*  
**CAMBRIDGE PHILOSOPHICAL  
SOCIETY**

**LONDON**  
Cambridge University Press

**NEW YORK • TORONTO**  
**BOMBAY • CALCUTTA • MADRAS**  
**Macmillan**

**TOKYO**  
**Maruzen Company Ltd**

*All rights reserved*

**U. S. Air Force**

*Proceedings of the*  
**CAMBRIDGE PHILOSOPHICAL  
SOCIETY**

**VOLUME 33**

**CAMBRIDGE**  
**AT THE UNIVERSITY PRESS**  
**1937**

**PRINTED IN GREAT BRITAIN**

## CONTENTS

	PAGE
<b>Babbage, D. W.</b> A symmetrical configuration of $n+1$ rational normal curves in $[2n]$	293
<b>Baber, T. D.</b> and <b>Hassé, H. R.</b> A comparison of wave functions for the normal helium atom . . . . .	253
<b>Baker, H. F.</b> The envelope of the subspaces of the polyhedra of an involution on a rational curve . . . . .	183
<b>Band, W.</b> A critical examination of Benedicks' homogeneous electrothermal effect . . . . .	385
<b>Bartlett, M. S.</b> Note on the derivation of fluctuation formulae for statistical assemblies . . . . .	390
<b>Binnie, A. M.</b> and <b>Poole, E. G. C.</b> The theory of the single-pass cross-flow heat interchanger . . . . .	403
<b>Blackman, M.</b> Some properties of the vibrational spectrum of a lattice . . . . .	94
— The effect of temperature on the reflexion of X-rays . . . . .	380
<b>Bosworth, R. C. L.</b> A study of the properties of hydrogen films on tungsten by the method of contact potentials . . . . .	394
<b>Bower, J. C.</b> and <b>Petrie, D. P. R.</b> The radioactivity produced by the bombardment of lithium with deuterons . . . . .	534
<b>Broch, E. K.</b> The spectrum of the normal frequencies of a polar linear lattice . . . . .	485
<b>Burnett, D.</b> The numerical calculation of $\int_0^\infty x^m e^{-x} f(x) dx$ . . . . .	359
— The determination of intermolecular forces in gases from their viscosity . . . . .	363
<b>Chang, T. S.</b> Specific heats of solids due to molecular rotations . . . . .	524
<b>Coulson, C. A.</b> The evaluation of certain integrals occurring in studies of molecular structure . . . . .	104
— A note on the criterion of maximum overlapping of wave functions . . . . .	111
<b>Coxeter, H. S. M.</b> Abstract definitions for the symmetry groups of the regular polytopes, in terms of two generators. Part II: the rotation groups . . . . .	315
<b>Davies, W. T.</b> and <b>O'Ceallaigh, C.</b> The application of the electron lens to cloud chamber photography . . . . .	540
<b>Daymond, S. D.</b> and <b>Rosenhead, L.</b> The lateral force on a keel and rudder . . . . .	62
<b>Devons, S.</b> and <b>Neary, G. J.</b> The $\beta$ - and $\gamma$ -radiation of RaC'' . . . . .	154
<b>Devonshire, A. F.</b> A note on molecular orbitals . . . . .	250

	PAGE
<b>Easthope, C. E.</b> The dependence on composition of the critical ordering temperature in alloys . . . . .	502
<b>Erdős, P.</b> On the easier Waring problem for powers of primes. I. . . . .	6
<b>Frame, J. W.</b> On the excitation of a lithium atom by collision with a slow $\alpha$ -particle . . . . .	115
<b>Gillis, J.</b> Note on a theorem of Myrberg . . . . .	419
<b>Goldstein, S.</b> The stability of viscous fluid flow between rotating cylinders . . . . .	41
<b>Green, A. E.</b> The elastic stability of a corrugated plate under a shearing force . . . . .	459
<b>Hardy, G. H.</b> On a theorem of Paley and Wiener . . . . .	1
<b>Hartree, D. R.</b> On an equation occurring in Falkner and Skan's approximate treatment of the equations of the boundary layer . . . . .	223
— and <b>Swirles, B.</b> The effect of configuration interaction on the low terms of the spectra of oxygen . . . . .	240
<b>Hassé, H. R.</b> and <b>Baber, T. D.</b> A comparison of wave functions for the normal helium atom . . . . .	253
<b>Heilbronn, H. A.</b> On an inequality in the elementary theory of numbers . . . . .	207
<b>Hirschlaff, E.</b> The optical reflectivity of metals in the supraconducting state . . . . .	140
<b>Hoyle, F.</b> The generalised Fermi interaction . . . . .	277
<b>Infeld, L.</b> A new group of action functions in the unitary field theory. II. . . . .	70
<b>Jeffreys, H.</b> The comparison of series of measures . . . . .	35
— On the smoothing of observed data . . . . .	444
<b>Kaufmann, B.</b> On the extension of the Pflastersatz (Part II) . . . . .	13
<b>Lacher, J. R.</b> The statistics of the hydrogen-palladium system . . . . .	518
<b>Larmor, J.</b> On temperature in relation to quantal phenomena . . . . .	340
<b>Leggett, D. M. A.</b> The effect of two isolated forces on the elastic stability of a flat rectangular plate . . . . .	325
<b>Lewis, W. B.</b> A "scale-of-two" high-speed counter using hard vacuum triodes . . . . .	549
<b>Li, K. T.</b> The structure of a $\beta$ -ray line by semicircular magnetic focusing . . . . .	164
<b>Maxwell, E. A.</b> On the theorem of Riemann-Roch . . . . .	26
— On certain surfaces which have unpostulated singularities . . . . .	199
— Regular canonical surfaces of genus three and four . . . . .	306
— and <b>Todd, J. A.</b> Note on the invariants of the canonical system of an algebraic variety . . . . .	438
<b>Milner, C. J.</b> On the magneto-resistance effect in single crystals of cadmium . . . . .	145

## Contents

vii

	PAGE
<b>Misener, A. D.</b> The "overshoot phenomenon" in superconductivity . . . . .	583
<b>Morris, R. M.</b> Two-dimensional potential problems . . . . .	474
<b>Neary, G. J.</b> and <b>Devons, S.</b> The $\beta$ - and $\gamma$ -radiation of RaC'' . . . . .	154
<b>O'Ceallaigh, C.</b> and <b>Davies, W. T.</b> The application of the electron lens to cloud chamber photography . . . . .	540
<b>Pedoe, D.</b> On the canonical systems of certain algebraic surfaces . . . . .	311
<b>Petrie, D. P. R.</b> and <b>Bower, J. C.</b> The radioactivity produced by the bombardment of lithium with deuterons . . . . .	534
<b>Pitman, E. J. G.</b> The "closest" estimates of statistical parameters . . . . .	212
<b>Plancherel, M.</b> Quelques remarques à propos d'une note de G. H. Hardy: the resultant of two Fourier kernels . . . . .	413
<b>Poole, E. G. C.</b> and <b>Binnie, A. M.</b> The theory of the single-pass cross-flow heat interchanger . . . . .	403
<b>Rao, N. A.</b> On certain Cremona transformations in circle-space connected with the Miquel-Clifford configuration . . . . .	21
<b>Rosenhead, L.</b> and <b>Daymond, S. D.</b> The lateral force on a keel and rudder . .	62
<b>Roth, L.</b> Projective characters and invariants of algebraic varieties . . . . .	188
— The postulation of a multiple surface . . . . .	301
<b>Rowland, E. N.</b> The theory of the shot effect. II. . . . .	344
<b>Shoenberg, D.</b> Superconducting cylinders . . . . .	260
— Superconductors in alternating magnetic fields . . . . .	559
— An A.C. method of measuring resistance . . . . .	577
<b>Swirles, B.</b> and <b>Hartree, D. R.</b> The effect of configuration interaction on the low terms of the spectra of oxygen . . . . .	240
<b>Todd, J. A.</b> Intersections of loci on an algebraic $V_4$ . . . . .	425
— and <b>Maxwell, E. A.</b> Note on the invariants of the canonical system of an algebraic variety . . . . .	438
<b>Varma, R. S.</b> An infinite integral involving Bessel functions and parabolic cylinder functions . . . . .	210
<b>Weiss, P.</b> Born's electrodynamics in complex form . . . . .	79
<b>Westcott, C. H.</b> Some calculations on the diffusion of slow neutrons in hydrogenous media . . . . .	122
— A note on the absorbability in cadmium of neutrons slowed down in water and boric acid solutions . . . . .	137
<b>Whittaker, J. M.</b> The shot effect for showers . . . . .	451

	PAGE
Williams, E. J. Primary ionization in helium and hydrogen . . . . .	179
Wilson, A. H. The second order electrical effects in metals . . . . .	371
PROCEEDINGS . . . . .	586
HOPKINS PRIZE, AWARD, 1930–1933 . . . . .	592
BALANCE SHEET . . . . .	595

### PLATES

Plate I. To illustrate Messrs Bower and Petrie's paper . . . . .	<i>facing</i>	536
Plate II. To illustrate Messrs Davies and O'Ceallaigh's paper . . . . .	,,	546