### PROCEEDINGS

### OF THE

ROYAL SOCIETY OF EDINBURGH

.

https://doi.org/10.1017/S008045410000786X Published online by Cambridge University Press

## PROCEEDINGS

OF

# THE ROYAL SOCIETY OF EDINBURGH

Section A (Mathematical and Physical Sciences)

VOL. LXVI

1961-1964

PUBLISHED BY THE ROYAL SOCIETY OF EDINBURGH 22 GEORGE STREET EDINBURGH 2

1965

# CONTENTS

NO.		PAGE
	Focusing of Electron Beams in Crossed Static Electric and Magnetic Fields. By P. S. Farago, Department of Natural Philosophy, University of Edin- burgh. (With Four Text-figures.) Issued August 6, 1962,	I
*2.	Spontaneous Fission Rates and the Role of the "Excess" Neutrons in Heavy Nuclei. By N. Feather, Department of Natural Philosophy, University of Edinburgh. (With Five Text-figures.) Issued August 6, 1962,	20
*3.	Statistics of the Electron-Multiplication Process in Proportional Counters. By J. Byrne, Department of Natural Philosophy, University of Edinburgh. Communicated by Dr M. A. S. Ross. Issued October 16, 1962,	33
*4.	On the Radicals of Rings of Row-finite Matrices. By E. M. Patterson, King's College, Aberdeen. Issued October 16, 1962,	42
*5.	A Search for $n-\gamma$ Coincidences from a Po-Li Neutron Source. By R. B. Galloway, Department of Natural Philosophy, University of Edinburgh. Communicated by Professor N. Feather, F.R.S. (With Two Text-figures.) Issued October 16, 1962,	47
6.	Endomorphisms of Abstract Algebras. By Trevor Evans, Department of Mathematics, Emory University, Atlanta, Georgia, U.S.A. Communicated by Dr I. M. H. Etherington. Issued October 16, 1962,	53
*7.	The Effect of the Transport of Heat on the Rate of Evaporation of Small Droplets. I. Evaporation into a Large Excess of a Gas. By P. G. Wright, Department of Chemistry, Queen's College, Dundee. <i>Communicated by</i> Professor A. D. Walsh. Issued December 31, 1962,	65
*8.	Theoretical Expressions for Relaxation Effects in the Thermal Conductivity of Gases as Measured in the Modified Co-axial Cylinder Apparatus of Callear and Robb. By P. G. Wright, Department of Chemistry, Queen's College, Dundee. <i>Communicated by</i> Professor A. D. Walsh. Issued December 31, 1962,	81
*9.	Possible Applications of Coincidence Counter Techniques in Optical Intensity Correlation Studies. By R. M. Sillitto, Department of Natural Philosophy, University of Edinburgh. (With Three Text-figures and One Table). Issued July 1, 1963,	93
*10.	Remarks on Coincidence Experiments with Visible Light. By Z. Bay, National Bureau of Standards, Washington, D.C., and P. S. Farago, Department of Natural Philosophy, University of Edinburgh. Issued July 1, 1963,	111
11.	On the Construction of Metrisable Lie Algebras. By S-T. Tsou, Department of Mathematics, University of Hong Kong. Communicated by Professor A. G. Walker, F.R.S. Issued July 1, 1963,	116

### Contents

<ul> <li>No.</li> <li>*12. Paraboloidal Co-ordinates and Laplace's Equation. By F. M. Arscot Communicated by Professor I. N. Sneddon. Issued May 30, 1964, .</li> </ul>	PAGE t. . 129
*13. Layered Systems Subjected to Asymmetric Surface Shears. By R. A Westmann, Department of Mathematics, University of Glasgow. Com municated by Professor I. N. Sneddon. Issued June 10, 1964,	
*14. Dual Series Relations. I. Dual Relations Involving Fourier-Bessel Series By I. N. Sneddon and R. P. Srivastav. Issued June 10, 1964, .	s. . 150
*15. Dual Series Relations. II. Dual Relations Involving Dini Series. By R. I Srivastav, Department of Mathematics, Indian Institute of Technology Kanpur. Communicated by Professor I. N. Sneddon. Issued June 10 1964,	у,
*16. Dual Series Relations. III. Dual Relations Involving Trigonometric Serie By R. P. Srivastav, Department of Mathematics, Indian Institute of Tech nology, Kanpur. <i>Communicated by</i> Professor I. N. Sneddon. Issue June 10, 1964,	n-
*17. Dual Series Relations. IV. Dual Relations Involving Series of Jacobi Polynomials. By R. P. Srivastav, Department of Mathematics, Indian Institut of Technology, Kanpur. <i>Communicated by</i> Professor I. N. Sneddor Issued June 10, 1964, .	te
*18. The Emission of Long-Range Alpha Particles in Fission. By N. Feathe Department of Natural Philosophy, University of Edinburgh. Issued Jur 10, 1964,	
*19. The Cayley-Hamilton Theorem for Semi-rings. By D. E. Rutherford Issued December 31, 1964,	d. . 211
20. Differential Geometry on Hypersurfaces in a Cayley Space. By K. Yano an T. Sumitomo. <i>Communicated by</i> Professor A. G. Walker, F. R. Issued December 31, 1964,	
21. A New Approach to Statistical Thermodynamics of Liquids. By R. Fürt Issued December 31, 1964,	h. . 232
*22. The Ullmann Synthesis of 3-Bromofluorenone. By Neil Campbell ar Howard F. Andrew, Department of Chemistry, University of Edinburg Issued March 8, 1965,	
*23. Dual Series Relations. V. A Generalized Schlömilch Series and the Unique ness of the Solution of Dual Equations involving Trigonometric Series By R. P. Srivastav, Department of Mathematics, Indian Institute of Tech nology, Kanpur. <i>Communicated by</i> Professor I. N. Sneddon. Issue March 8, 1965,	es. h-

\* The thanks of the Society are due to the Carnegie Trust for the Universities of Scotland for grants towards the costs of these papers.

vi

### INSTRUCTIONS TO AUTHORS (continued)

The overall space available for figures and plates is  $9\frac{1}{2} \times 7\frac{1}{2}$  in Transactions and  $7\frac{1}{2}$  ×  $4\frac{3}{2}$  in *Proceedings*.

**Photographs** should be unmounted glossy black and white prints, marked on the back with the name of the author, number of the figure, and an indication of the top. Prints should not be trimmed or cut out. Authors should suggest the arrangement of the figures on each plate, either by a diagram or a paste-up of rough prints, with indication of any lettering to be inserted.

Lettering must be in black ink in neat and legible style, or lightly written in pencil.

Indicating Lines and Arrows required on wash drawings or photographs should have the point marked by a pin-hole, and must be drawn on the back or on a covering tissue and not on the photograph or drawing. On line drawings such lines should be drawn thin but firmly.

Graphs should be drawn on white Bristol board or on squared paper ruled in faint blue lines: no other colour ruling is suitable. Since blue lines do not appear in reproductions, any cross-lines required must be drawn. If a tracing of a graph constructed on an unsuitable grid is submitted, white tracing paper should be used.

**Numerical values.** In papers concerned with the biological sciences ALL numerical values must be accompanied by their decimal equivalents.

Tables. Tabular matter must be kept to a minimum. No paper should present both tables and corresponding graphs, except where good reason can be given.

When the author can conveniently do so, it is desirable that duplicates of Duplicates. illustrations should be supplied for the use of the referees.

**Proofs** of papers will be sent to authors or communicators to the addresses indicated in correspondence or on MSS. The cost of authors' corrections in excess of 5 per cent of the printer's charges for the setting of a particular paper will be charged to the authors. Proofs should, if possible, be returned within one week to The Secretary, Royal Society of Edinburgh, 22 George Street, Edinburgh, 2, and not to the printer. To prevent delay, authors who are abroad should, if possible, appoint someone in this country to correct proofs.

Offprints. As soon as a Transactions paper, or the sheet in which the last part of a Proceedings paper appears, is ready for press, copies of offprints, in covers bearing the title of the paper and the name of the author, are printed and placed on sale. The date of such separate publication is printed on each paper. Authors of papers will receive twenty-five offprints free, if they so desire. Additional offprints may be obtained at a fixed scale of prices given on a form attached to the first proof. To prevent disappointment, especially if a paper contains plates, authors should, as soon as possible, notify the Secretary of the number of additional copies required.

Indexes. To facilitate the compilation of indexes, and to secure due attention being given to the important points of a paper in Catalogues of Scientific Literature, authors are requested to supply to the Secretary, with the final proofs of papers, a brief index (on the model given below) of the points in a paper which are considered new or important. Indexes will be edited by the Secretary for publication in each volume of the Transactions and Proceedings.

#### **MODEL INDEX**

Houstoun, R. A.-A measurement of the velocity of light. Proc. Roy. Soc. Edin., A, 63, 1949-50, 95-104, Light, A measurement of the velocity of. R. A. Houstoun. Proc. Roy. Soc. Edin., A, 63, 1949-50, 95-104.

Velocity of Light, A measurement of the. R. A. Houstoun. Proc. Roy. Soc. Edin., A, 63, 1949-50, 95-104.

Authors are advised, before sending in papers, to consult Notes on the Preparation of Papers to be communicated to the Royal Society of London (1951), and especially the chapters dealing with symbols, signs, and abbreviations recommended for British Scientific Publications. A copy may be had on application to the Secretary.

Fellows of the Society purchasing publications for their own use will be allowed a special discount of 33<sup>1</sup>/<sub>3</sub> per cent on the stated prices (see Law XVI).