

PROCEEDINGS
OF THE
ROYAL SOCIETY OF LONDON

SERIES A. MATHEMATICAL AND PHYSICAL SCIENCES

VOL 187

LONDON

Printed and published for the Royal Society
By the Cambridge University Press
Bentley House, N.W.1

13 December 1946

*Printed in Great Britain at the University Press, Cambridge
(Brooke Crutchley, University Printer)
and published by the Cambridge University Press
Cambridge, and Bentley House, London
Agents for Canada and India: Macmillan*

CONTENTS

SERIES A VOL 187

No. A 1008. 8 October 1946

| | PAGE |
|---|------|
| Motion of waves in shallow water. Interaction between waves and sand bottoms. By R. A. Bagnold, F.R.S. (Plates 1-4) | 1 |
| (With a note on R. A. Bagnold's empirical formula for the critical water motion corresponding with the first disturbance of grains on a flat surface. By Sir Geoffrey Taylor, F.R.S.) | 16 |
| The photochemical polymerization of methyl vinyl ketone vapour. By T. T. Jones and H. W. Melville, F.R.S. | 19 |
| The free radical polymerization of the vapours of certain vinyl derivatives. By T. T. Jones and H. W. Melville, F.R.S. | 37 |
| The adsorption of vapours on mercury. I. Non-polar substances. By C. Kemball and E. K. Rideal, F.R.S. | 53 |
| The adsorption of vapours on mercury. II. The entropy and heat of adsorption of non-polar substances. By C. Kemball | 73 |
| Two-dimensional boundary-value problems of elasticity. By Bibhutibhusan Sen | 87 |
| The mechanism of ionospheric ionization. By R. v. d. R. Woolley | 102 |
| Stability of viscous flow between rotating cylinders. I. By D. Meksyn | 115 |

SERIES A VOL 187

No. A 1009. 22 October 1946

| | |
|--|-----|
| The kinetics of the reactions of the steam-carbon system. By J. Gadsby, C. N. Hinshelwood, F.R.S. and K. W. Sykes | 129 |
| On lattice points in n -dimensional star bodies. I. Existence theorems. By K. Mahler | 151 |
| The Raman spectrum of rock-salt. By R. S. Krishnan. (Plate 5) | 188 |
| On Dirac's theory of quantum electrodynamics: the interaction of an electron and a radiation field. By C. Jayaratnam Eliezer | 197 |
| The application of quantum electrodynamics to multiple processes. By C. Jayaratnam Eliezer | 210 |
| Krypton vacuum wave-length measurements. By T. A. Littlefield | 220 |
| The distribution of stress in the neighbourhood of a crack in an elastic solid. By I. N. Sneddon | 229 |

No. A1010. 5 November 1946

| | PAGE |
|---|------|
| The basic reactions in the upper atmosphere. I. By D. R. Bates and H. S. W. Massey, F.R.S. | 261 |
| The effect of an electric field on the viscosity of liquids. By E. N. da C. Andrade, F.R.S. and C. Dodd | 296 |
| The thermochemistry of carbon: valence states, heats of sublimation and energies of linkage. By L. H. Long and R. G. W. Norrish, F.R.S. | 337 |
| The experimental study of the blast from bombs and bare charges. By G. Grime and H. Sheard | 357 |
| Elastic constants of diamond. By S. Bhagavantam and J. Bhimasenachar | 381 |
| Algebra related to elementary particles of spin $\frac{3}{2}$. By B. S. Madhavarao, V. R. Thiruvengkatachar and K. Venkatachaliengar | 385 |
| Some thermodynamical properties of gaseous sulphur dichloride. By C. A. McDowell and E. A. Moelwyn-Hughes | 398 |

No. A1011. 13 December 1946

| | |
|---|-----|
| The mechanism of ionospheric ionization. II. By R. v. d. R. Woolley | 403 |
| The statistical aspect of fatigue of materials. By A. M. Freudenthal | 416 |
| Kinetic friction in or near the boundary region. I. Apparatus and experimental methods. By B. Chalmers, P. G. Forrester and E. F. Phelps. (Plate 6) | 430 |
| Kinetic friction in or near the boundary region. II. The influence of sliding velocity and other variables on kinetic friction in or near the boundary region. By P. G. Forrester | 439 |
| A cloud-chamber investigation of penetrating showers. By G. D. Rochester. (Plates 7-9) | 464 |
| Stability of viscous flow between rotating cylinders. II. Cylinders rotating in opposite directions. By D. Meksyn | 480 |
| Stability of viscous flow between rotating cylinders. III. Integration of a sixth order linear equation. By D. Meksyn | 492 |
| Index | 505 |