

INDEX TO VOLUME 199 (A)

- Absorption and dispersion of ultrasonic waves in acetic acid (Lamb & Pinkerton), 114.
- Ambrose, E. J., Elliott, A. & Temple, R. B. The use of polarized infra-red radiation in the study of doubly oriented long-chain polymers, 183.
- Analytic behaviour of Heisenberg's S matrix (Eden), 256.
- Angular distribution of γ -radiation from light nuclei. I. Experimental (Devons & Hine), 56.
- Angular distribution of γ -radiation from light nuclei. II. Theoretical (Devons & Hine), 73.
- Bakerian Lecture. A region of biosynthesis (Raistrick), 141.
- Batchelor, G. K. & Townsend, A. A. The nature of turbulent motion at large wave-numbers, 238.
- Binnie, A. M. & Davidson, J. F. The flow under gravity of a swirling liquid through an orifice-plate, 443.
- Bowden, K. F. & Proudman, J. Observations on the turbulent fluctuations of a tidal current, 311.
- Bubble rafts producing optical diffraction patterns (Dyson), 130.
- Bullard, E. C. Electromagnetic induction in a rotating sphere, 413.
- Burden, F. A. & Burgoyne, J. H. The ignition and flame reactions of ethylene oxide, 328.
- Burgoyne, J. H. *See* Burden & Burgoyne.
- Cochrane, W. & Hester, A. G. The transformation of the nitrogen isotope of mass 15 into carbon and helium by bombardment with protons, 458.
- Conjugated hydrocarbons, structure (Moffitt), 487.
- Cottrell, A. H. & Jaswon, M. A. Distribution of solute atoms round a slow dislocation, 104.
- Davidson, J. F. *See* Binnie & Davidson.
- Davies, T. V. Unsteady compressible flow in two dimensions, 468.
- Devons, S. & Hine, M. G. N. The angular distribution of γ -radiation from light nuclei. I. Experimental, 56.
- Devons, S. & Hine, M. G. N. The angular distribution of γ -radiation from light nuclei. II. Theoretical, 73.
- Distribution of solute atoms round a slow dislocation (Cottrell & Jaswon), 104.
- Domb, C. Order-disorder statistics. II. A two-dimensional model, 199.
- Dyson, J. Optical diffraction patterns produced by bubble rafts, 130.
- Eden, R. J. The analytic behaviour of Heisenberg's S matrix, 256.
- Elastic theory of dislocations (Mann), 376.
- Electromagnetic induction in a rotating sphere (Bullard), 413.
- Electron pairing theory of the structure of conjugated hydrocarbons (Moffitt), 487.
- Elliott, A. *See* Ambrose, Elliott & Temple.
- Ethylene oxide, ignition and flame reactions (Burden & Burgoyne), 328.
- Flow under gravity of a swirling liquid through an orifice-plate (Binnie & Davidson), 443.
- Gaydon, A. G. & Wolfhard, H. G. Spectroscopic studies of low-pressure flames. II. Effective translational and rotational temperatures from CH bands, 89.
- Grassie, N. & Melville, H. W. The thermal degradation of polyvinyl compounds. I. A new type of molecular still, 1.

- Grassie, N. & Melville, H. W. The thermal degradation of polyvinyl compounds. II. The degradation of benzoyl peroxide catalyzed polymethyl methacrylates, 14.
- Grassie, N. & Melville, H. W. The thermal degradation of polyvinyl compounds. III. The effect of inhibitors and end groups on the degradation of polymethyl methacrylate, 24.
- Grassie, N. & Melville, H. W. The thermal degradation of polyvinyl compounds. IV. The thermal degradation of the methyl methacrylate copolymers with glycol dimethacrylate and acrylonitrile, 39.
- Hatton, J. & Rollin, B. V. Nuclear magnetic resonance at low temperatures, 222.
- Heisenberg's *S* matrix, analytic behaviour of (Eden), 256.
- Helium, transition of liquid (Temperley), 361.
- Hester, A. G. *See* Cochrane & Hester.
- Hillson, P. J. & Rideal, E. K. On overpotential and the photovoltaic process at polarized electrodes, 295.
- Hine, M. G. N. *See* Devons & Hine.
- Ignition and flame reactions of ethylene oxide (Burden & Burgoyne), 328.
- Illingworth, C. R. Steady flow in the laminar boundary layer of a gas, 533.
- Jaswon, M. A. *See* Cottrell & Jaswon.
- Kilmister, C. W. The use of quaternions in wave-tensor calculus, 517.
- Kinetics of the polymerization of sarcosine carbonic anhydride (Waley & Watson), 499.
- Lamb, J. & Pinkerton, J. M. M. The absorption and dispersion of ultrasonic waves in acetic acid, 114.
- Long-chain polymers, study of doubly oriented (Ambrose, Elliott & Temple), 183.
- Mann, E. H. An elastic theory of dislocations, 376.
- Marston, H. R. The organization and work of the Division of Biochemistry and General Nutrition of C.S.I.R., 273.
- Melville, H. W. *See* Grassie & Melville.
- Moffitt, W. The electron pairing theory of the structure of conjugated hydrocarbons, 487.
- Nature of turbulent motion at large wave-numbers (Batchelor & Townsend), 238.
- Nuclear magnetic resonance at low temperatures (Hatton & Rollin), 222.
- Observations on the turbulent fluctuations of a tidal current (Bowden & Proudman), 311.
- Optical diffraction patterns produced by bubble rafts (Dyson), 130.
- Order-disorder statistics. II. A two-dimensional model (Domb), 199.
- Organization and work of the Division of Biochemistry and General Nutrition of C.S.I.R. (Marston), 273.
- Overpotential and the photovoltaic process at polarized electrodes (Hillson & Rideal), 295.
- Pinkerton, J. M. M. *See* Lamb & Pinkerton.
- Polyvinyl compounds, thermal degradation (Grassie & Melville), 1, 14, 24, 39.
- Production of mesons by electrons (Sneddon & Touschek), 352.
- Proudman, J. *See* Bowden & Proudman.
- Pyrolysis of methane, ethane and *n*-butane on a platinum filament (Robertson), 394.

- Raistrick, H. A region of biosynthesis (Bakerian Lecture), 141.
Region of biosynthesis (Bakerian Lecture) (Raistrick), 141.
Rideal, E. K. *See* Hillson & Rideal.
Robertson, A. J. B. The pyrolysis of methane, ethane and *n*-butane on a platinum filament, 394.
Rollin, B. V. *See* Hatton & Rollin.
Rotating sphere, electromagnetic induction (Bullard), 413.
- Sarcosine carbonic anhydride, polymerization (Waley & Watson), 499.
Simpson, D. M. & Sutherland, G. B. B. M. Vibration spectra of hydrocarbon molecules. II. Skeletal frequencies in certain branched paraffins, 169.
Sneddon, I. N. & Tousek, B. F. The production of mesons by electrons, 352.
Spectroscopic studies of low-pressure flames. II. Effective translational and rotational temperatures from CH bands (Gaydon & Wolfhard), 89.
Statistical mechanics and the partition of numbers. I. The transition of liquid helium (Temperley), 361.
Steady flow in the laminar boundary layer of a gas (Illingworth), 533.
Sutherland, G. B. B. M. *See* Simpson & Sutherland.
- Temperley, H. N. V. Statistical mechanics and the partition of numbers. I. The transition of liquid helium, 361.
Temple, R. B. *See* Ambrose, Elliott & Temple.
Thermal degradation of polyvinyl compounds. I. A new type of molecular still (Grassie & Melville), 1.
Thermal degradation of polyvinyl compounds. II. The degradation of benzoyl peroxide catalyzed polymethyl methacrylates (Grassie & Melville), 14.
Thermal degradation of polyvinyl compounds. III. The effect of inhibitors and end groups on the degradation of polymethyl methacrylate (Grassie & Melville), 24.
Thermal degradation of polyvinyl compounds. IV. The thermal degradation of the methyl methacrylate copolymers with glycol dimethacrylate and acrylonitrile (Grassie & Melville), 39.
Tidal current, turbulent fluctuations of a (Bowden & Proudman), 311.
Tousek, B. F. *See* Sneddon & Tousek.
Townsend, A. A. *See* Batchelor & Townsend.
Transformation of the nitrogen isotope of mass 15 into carbon and helium by bombardment with protons (Cochrane & Hester), 458.
Turbulent motion at large wave-numbers (Batchelor & Townsend), 238.
- Ultrasonic waves in acetic acid (Lamb & Pinkerton), 114.
Unsteady compressible flow in two dimensions (Davies), 468.
Use of polarized infra-red radiation in the study of doubly oriented long-chain polymers (Ambrose, Elliott & Temple), 183.
Use of quaternions in wave-tensor calculus (Kilmister), 517.
- Vibration spectra of hydrocarbon molecules. II. Skeletal frequencies in certain branched paraffins (Simpson & Sutherland), 169.
- Waley, S. G. & Watson, J. The kinetics of the polymerization of sarcosine carbonic anhydride, 499.
Watson, J. *See* Waley & Watson.
Wolfhard, H. G. *See* Gaydon & Wolfhard.

PROCEEDINGS
OF THE
ROYAL SOCIETY OF LONDON

SERIES A. MATHEMATICAL AND PHYSICAL SCIENCES

VOL 199

Published by the Royal Society
Burlington House
Piccadilly
London, W.1

FIRST PRINTED IN GREAT BRITAIN FOR THE ROYAL SOCIETY AT THE
UNIVERSITY PRESS, CAMBRIDGE

REPRINTED IN GREAT BRITAIN BY OFFSET-LITHO BY BUTLER & TANNER LTD.,
FROME AND LONDON (1960)

CONTENTS

SERIES A VOLUME 199

No. A 1056. 7 October 1949

	PAGE
The thermal degradation of polyvinyl compounds. I. A new type of molecular still. By N. Grassie and H. W. Melville, F.R.S.	1
The thermal degradation of polyvinyl compounds. II. The degradation of benzoyl peroxide catalyzed polymethyl methacrylates. By N. Grassie and H. W. Melville, F.R.S.	14
The thermal degradation of polyvinyl compounds. III. The effect of inhibitors and end groups on the degradation of polymethyl methacrylate. By N. Grassie and H. W. Melville, F.R.S.	24
The thermal degradation of polyvinyl compounds. IV. The thermal degradation of the methyl methacrylate copolymers with glycol dimethacrylate and acrylonitrile. By N. Grassie and H. W. Melville, F.R.S.	39
The angular distribution of γ -radiation from light nuclei. I. Experimental. By S. Devons and M. G. N. Hine	56
The angular distribution of γ -radiation from light nuclei. II. Theoretical. By S. Devons and M. G. N. Hine	73
Spectroscopic studies of low-pressure flames. II. Effective translational and rotational temperatures from CH bands. By A. G. Gaydon and H. G. Wolfhard. (Plate 1)	89
Distribution of solute atoms round a slow dislocation. By A. H. Cottrell and M. A. Jaswon	104
The absorption and dispersion of ultrasonic waves in acetic acid. By J. Lamb and J. M. M. Pinkerton	114
Optical diffraction patterns produced by bubble rafts. By J. Dyson. (Plates 2 to 7)	130

No. A 1057. 25 October 1949

Bakerian Lecture. A region of biosynthesis. By H. Raistrick, F.R.S. (Plates 8 to 11)	141
Vibration spectra of hydrocarbon molecules. II. Skeletal frequencies in certain branched paraffins. By Delia M. Simpson and G. B. B. M. Sutherland, F.R.S.	169
The use of polarized infra-red radiation in the study of doubly oriented long-chain polymers. By E. J. Ambrose, A. Elliott and R. B. Temple	183
Order-disorder statistics. II. A two-dimensional model. By C. Domb	199
Nuclear magnetic resonance at low temperatures. By J. Hatton and B. V. Rollin	222
The nature of turbulent motion at large wave-numbers. By G. K. Batchelor and A. A. Townsend	238
The analytic behaviour of Heisenberg's S matrix. By R. J. Eden	256

No. A 1058. 7 November 1949

	PAGE
The organization and work of the Division of Biochemistry and General Nutrition of C.S.I.R. By H. R. Marston. (Plates 12 to 18)	273
On overpotential and the photovoltaic process at polarized electrodes. By P. J. Hillson and E. K. Rideal, F.R.S.	295
Observations on the turbulent fluctuations of a tidal current. By K. F. Bowden and J. Proudman, F.R.S.	311
The ignition and flame reactions of ethylene oxide. By F. A. Burden and J. H. Burgoyne	328
The production of mesons by electrons. By I. N. Sneddon and B. F. Touschek .	352
Statistical mechanics and the partition of numbers. I. The transition of liquid helium. By H. N. V. Temperley	361
An elastic theory of dislocations. By Elizabeth H. Mann	376
The pyrolysis of methane, ethane and <i>n</i> -butane on a platinum filament. By A. J. B. Robertson	394

No. A 1059. 7 December 1949

Electromagnetic induction in a rotating sphere. By E. C. Bullard, F.R.S. . . .	413
The flow under gravity of a swirling liquid through an orifice-plate. By A. M. Binnie and J. F. Davidson. (Plate 19)	443
The transformation of the nitrogen isotope of mass 15 into carbon and helium by bombardment with protons. By W. Cochrane and A. G. Hester	458
Unsteady compressible flow in two dimensions. By T. V. Davies	468
The electron pairing theory of the structure of conjugated hydrocarbons. By W. Moffitt	487
The kinetics of the polymerization of sarcosine carbonic anhydride. By S. G. Waley and J. Watson	499
The use of quaternions in wave-tensor calculus. By C. W. Kilmister	517
Steady flow in the laminar boundary layer of a gas. By C. R. Illingworth . . .	533
Index	559