AUSTRALIAN JOURNAL OF PHYSICS

VOLUME 16

AUSTRALIAN JOURNAL OF PHYSICS

Published by the Commonwealth Scientific and Industrial Research Organization. Volumes 1 to 5 of the Australian Journal of Physics and the Australian Journal of Chemistry issued as the Australian Journal of Scientific Research, Series A: Physical Sciences. Issued quarterly, £2 per annum.

BOARD OF STANDARDS

The Board of Standards for this Journal is appointed by the Commonwealth Scientific and Industrial Research Organization and the Australian Academy of Science and consists of Professor W. P. Rogers (Chairman), Mr. A. E. Scott (Editor-in-Chief), Professor N. S. Bayliss, Professor Sir Macfarlane Burnet, and Professor J. S. Turner.

ADVISORY COMMITTEE

Acceptance of papers for this Journal is in the hands of an Advisory Committee appointed by the Board of Standards in consultation with the Australian Institute of Physics and consisting of Mr. A. E. Scott (Editor-in-Chief and Chairman), Dr. G. H. Briggs, Emeritus Professor L. G. H. Huxley, Professor C. B. O. Mohr, and Professor H. C. Webster.

All enquiries and manuscripts should be forwarded to:

The Editor-in-Chief, Australian Journal of Physics, Commonwealth Scientific and Industrial Research Organization, 372 Albert Street, East Melbourne, C.2, Victoria

MELBOURNE

CONTENTS

Number 1, March 1963

	PAGE
On the Existence of an Ionized Layer about the Galactic Plane. By F. Hoyle and G. R. A. Ellis	1
Solar Decimetre Radio Bursts. By R. F. Mullaly and T. Krishnan	8
Properties of the Lunar Surface as revealed by Thermal Radiation. By R. W. Muncey	24
The Directions of Auroral Rays. By K. D. Cole	32
The Change in Colour of a Silver-Gold Alloy on Plastic Deformation. By E. L. Yates	40
The Specific Heat of Metals between 1200°K and 2400°K. By G. C. Lowenthal	47
Equilibrium Models of Stars composed of Pure Helium. By R. Van der Borght and S. Meggitt	68
The Radio Emissions from Jupiter and the Density of Jovian Exosphere. By G. R. A. Ellis	74
The Calibration of Linear Scales by the Method of Hansen-Pérard. By E. G. Thwaite and R. T. Leslie	82
On Nucleon Magnetic Moments. By S. K. Kundu	108
The Drift Velocity of Electrons in Hydrogen and Nitrogen. By J. J. Lowke	115
A Sky Survey of Neutral Hydrogen at λ 21 cm. II. The Detailed Distribution of Low Velocity Gas. By R. X. McGee, J. D. Murray, and Janice A. Milton	136
Short Communications	
Anomalous VHF Trans-equatorial Ionospheric Propagation recorded at Townsville. By E. H. Carman, B. C. Gibson-Wilde, and R. J. Conway	171

Number 2, June 1963

											PAGE
On the A	ccuracy se-shifts	of the tas. By P.	$\begin{array}{c} { m an} \eta_l { m D} \\ { m Swan} \end{array}$	$ ext{istorted}$	Wave	App	roximat		Scatte	ering	177
The Ang	ular Di		of 1	79 M eV	Neu	trons	Scatter				185
The Ther	mal Ex					-	-	P. Lloyd	and		100
	wyer	••	• •	• • *			••		• •	• •	193
The Refle		oefficient ••		Night-ti				_	-	J. P. 	203
Remarks to a		Fransport ly Constr									216
The Silen	t and H	issing D.	C. Elect	ric Arc.	By I	R. H.	Eather	• •		• •	228
The Posit		d Moveme y A. A. V							-	ctral	240
An Analy Gon		reatment. By T.						f the T	hree-c	eircle	272
		· · · · · · · · · · · · · · · · · · ·	Sh	ort Com	munic	ations					
Moon Can	nera Va	lues of Δ'	T = ET	UT.	Ву Ј	D. B	alfe	. • •	• •		279
Correction Hill		Paper ". F. Bruce				~					282

CONTENTS

Number 3, September 1963

The Theory of Dispersal during Laminar Flow in Tubes. I. By J. R. Philip	287 287
The Theory of Dispersal during Laminar Flow in Tubes. II. By J. R. Philip	300
An Exactly Soluble Two-body Problem with Non-central Forces. By B. Davies and L. M. Delves	311
A Quantum Mechanical Correction to the Statistics of the Almost One- dimensional Chain. By P. Lloyd and J. J. O'Dwyer	314
A Theory of Helium II. By D. B. Macleod	323
The Design and Characteristics of Highly Ionized Hydrogenous Laboratory Plasma Sources. By M. H. Brennan, J. A. Lehane, D. D. Millar, and C. N. Watson-Munro	340
Damped Waves associated with Thermal Convection. By R. C. L. Bosworth, C. M. Groden, and O. S. Wecksler	353
Observations of Radio Emission from Normal Galaxies. By D. S. Mathewson and J. M. Rome	3 60
Analysis of Overlapping Resonances in Proton-Carbon Scattering. By D. Robson and W. Toutenhoofd	37 0
The Decametric Radio Emissions of Jupiter. By G. R. A. Ellis and P. M. McCulloch	380
Polarization Measurements of Jupiter Radio Bursts at 10·1 Mc/s. By R. L. Dowden	398
The F_2 Component of Cosmic Radio Noise Absorption. By G. R. A. Ellis	411
Massive Stars with Uniform Composition. By R. Van der Borght and S. Meggitt	415
Short Communications	
Eccentric Dipole Coordinates. By K. D. Cole	423
Electron Energy Loss at Collision in Current-maintained Plasmas. By J. M. Somerville	43 0
The Refractive Index of Methyl Chloride at 10 Gc/s. By C. H. Burton, W. B. Lasich, J. H. Noon, and R. W. Parsons	434
Microwave Interferometry for Plasma Studies. By L. C. Robinson and L. E. Sharp	439

Number 4, December 1963

	PAGE
The Drift Velocities of Free and Attached Electrons in Water Vapour. By J. J. Lowke and J. A. Rees	447
The Damping of a Fluctuating Concentration by Continuous Sampling through a Tube. By J. R. Philip	454
The Influence of a Charge on a Charged Particle Flux. By J. Telford	464
Wind-induced Stresses on Water Surfaces. A Wind-tunnel Study. By. L. M. Fitzgerald	475
Determination of Diffusion Coefficients from Observations on Grenade Glow Clouds. By E. R. Johnson and K. H. Lloyd	490
Ambipolar Diffusion in Meteor Trails. By J. L. A. Francey	500
General Characteristics of pc-type Pulsations. By R. W. E. McNicol and J. S. Mainstone	507
Distribution of Auroras in the Southern Hemisphere. III. Comparison with Northern Hemisphere. By F. R. Bond and F. Jacka	514
The Directions of Auroral Rays. II. Methods of Determination. By K. D. Cole	520
The Type IV Solar Radio Burst at Metre Wavelengths. By A. A. Weiss	526
Observations of Galactic Radiation at 4 · 7 Mc/s. By G. R. A. Ellis, R. J. Green, and P. A. Hamilton	545
A Low Resolution Hydrogen-line Survey of the Magellanic System. I. Observations and Digital Reduction Procedures. By J. V. Hindman, R. X. McGee, A. W. L. Carter, E. C. J. Holmes, and M. Beard	552
A Low Resolution Hydrogen-line Survey of the Magellanic System. II. Interpretation of Results. By J. V. Hindman, F. J. Kerr, and R. X. McGee	57 0
Short Communications	
Swept-frequency Radio Observations at the Time of the Nuclear Explosion over Johnston Island on July 9, 1962. By K. V. Sheridan and J. Joisce	584
The Number of Independent Variables for an n -particle Collision. By J. Cunningham	586
Effect of Magnetic Anomalies on Very Low Frequency Discrete Emissions. By R. L. Dowden	588
Index to Volume 16	593