

Journal of THE ROYAL AERONAUTICAL SOCIETY

INCORPORATING THE INSTITUTION OF AERONAUTICAL ENGINEERS AND THE HELICOPTER ASSOCIATION OF GREAT BRITAIN

PUBLISHED MONTHLY AT

4 HAMILTON PLACE, LONDON, W.1

Telephone: Grosvenor 3515-9

Telegrams: Didaskalos, London, W.1.

SUBSCRIPTIONS: £7 10s. 0d. PER ANNUM, PLUS 9s. POSTAGE AND PACKING
SINGLE COPIES: 12s. 6d. PLUS 9d. POSTAGE AND PACKING

VOLUME 66

SEPTEMBER 1962

NUMBER 621

CONTENTS

	PAGE
Notices	XLI
Main Society Lecture, Boscombe Down 2nd October 1962—Man Powered Aircraft Cartoons—Acknowledgments—Analogue Computing in the U.K.—Fellows—R.Ae.S. Scholarships—Agricultural Aviation in Russia: Change of Lecture date —The Air Law Group—Diary—Conference on Welding Tubes to Tube Plates—Dynamic Problems in Stress Analysis—Optical Masers—Conference on X-ray Diffractometry—Oil Hydraulics Education—Extremal Problems in Aerodynamics—Institute of the Aerospace Sciences—Honour Awarded to a Member—Elections—R.A.E. Author's Prize—News of Members—Lecture Summaries.	
High Performance Turbine Engines	R. H. WEIR 541
The Role of the United States Government and U.S. International Air Carriers in Commercial Air Transport over the North Atlantic	V. S. EMERY 558
Radioactive Contamination of Commercial Aircraft	D. DORAN 565
Bloodhound Missile Evaluation	A. G. BIGGS and A. R. CAWTHORNE 571
Technical Notes	588
A New Empirical Relationship Between the Form-Parameters H_{32} and H_{12} in the Boundary Layer Theory—HANS FERNHOLTZ. A Refined Estimate for the Damping Coefficient—A Correction—G. M. L. GLADWELL. Rates of Change of Eigenvalues, with Reference to Buckling and Vibration Problems—W. H. WITTRICK. The Five-Point Loading Shear Stiffness Test—H. B. HOWARD. On the Equivalence of the Galerkin and Rayleigh-Ritz Methods—J. SINGER.	
The Branches	593
Graduates' and Students' Section	594
The Library	595
REVIEWS: High-Speed Problems of Aircraft and Experimental Methods. Vol. VIII: High-Speed Aerodynamics and Jet Propulsion—Rocket Engines—Trenchard, Man of Vision—Annals of British and Commonwealth Air Transport 1919-1960—Design Guide to Orbital Flight—Design Data for Aeronautics and Astronautics: A Compilation of Existing Data—En Ballon.	
ADDITIONS TO THE LIBRARY.	REPORTS.

All communications for publication in the JOURNAL should be addressed to the Editor, JOAN BRADBROOKE, A.R.Ae.S.; all communications on general matters affecting the Society should be addressed to the Secretary, A. M. BALLANTYNE, T.D., B.Sc., Ph.D., F.R.Ae.S., Hon.F.C.A.I., F.I.A.S.

None of the papers or paragraphs must be taken as expressing the opinion of the Council of the Royal Aeronautical Society unless otherwise stated.

ADVERTISEMENT OFFICE: Oxford House, 15 Crosswall, London E.C.3. Royal 7768.

PRINTED BY THE LEWES PRESS WIGHTMAN & CO. LTD., LEWES, SUSSEX, ENGLAND, AND PUBLISHED BY THE ROYAL AERONAUTICAL SOCIETY, 4 HAMILTON PLACE, LONDON, W.1, ENGLAND



The Royal Aeronautical Society

(Founded 1866)

Patron: Her Majesty The Queen

COUNCIL 1962—1963

President

B. S. SHENSTONE, M.A.Sc., F.R.Ae.S., F.I.A.S., F.C.A.I.

President-Elect

PROFESSOR A. R. COLLAR, M.A., D.Sc., F.R.Ae.S., F.I.A.S., F.C.A.I.

Past-Presidents

PETER G. MASEFIELD, M.A., F.R.Ae.S., Hon.F.I.A.S., M.Inst.T.
DR. E. S. MOULT, C.B.E., Ph.D., B.Sc., F.R.Ae.S., M.I.Mech.E.
AIR MARSHAL SIR OWEN JONES, K.B.E., C.B., A.F.C., B.A., D.I.C.,
F.R.Ae.S., M.I.Mech.E., R.A.F.(retd.)

Vice-Presidents

H. H. GARDNER, B.Sc., F.R.Ae.S.
SIR GEORGE GARDNER, K.B.E., C.B., D.Sc., Hon.F.R.Ae.S., M.I.Mech.E.
A. D. BAXTER, M.Eng., F.R.Ae.S., M.I.Mech.E.

Ordinary Members

PROFESSOR J. A. J. BENNETT, D.Sc., Ph.D., D.I.C.,
F.R.Ae.S. (Also Chairman, Rotorcraft Section)
MAJOR G. P. BULMAN, C.B.E., B.Sc., F.R.Ae.S.
SIR SYDNEY CAMM, C.B.E., Hon.F.R.Ae.S.
DR. W. CAWOOD, C.B., C.B.E., Ph.D., B.Sc., F.R.Ae.S.
SIR ROBERT COCKBURN, K.B.E., C.B., M.Sc., Ph.D.,
F.R.Ae.S., M.I.E.E.
E. B. DOVE, A.F.R.Ae.S.
SIR WILLIAM S. FARREN, Kt., C.B., M.B.E., M.A.,
D.Sc., F.R.S., Hon.F.R.Ae.S., Hon.F.I.A.S.,
M.I.Mech.E.
L. G. FRISE, B.Sc., F.R.Ae.S., A.F.I.A.S.
SIR ARNOLD HALL, Kt., M.A., F.R.S., F.R.Ae.S.
DR. W. F. HILTON, Ph.D., D.Sc., A.R.C.S., D.I.C.,
F.R.Ae.S. (Chairman, Astronautics and Guided
Flight Section)
DR. G. S. HISLOP, Ph.D., B.Sc., A.R.C.S.T., F.R.Ae.S.,
M.I.Mech.E.
D. KEITH-LUCAS, M.A., F.R.Ae.S., M.I.Mech.E.

J. B. MILLS, A.F.R.Ae.S., A.M.I.E.(Aust.)
(President, Australian Division)
M. B. MORGAN, C.B., M.A., F.R.Ae.S.
N. E. ROWE, C.B.E., B.Sc., D.I.C., Hon.F.R.Ae.S.,
F.I.A.S., M.I.Mech.E., F.C.G.I., M.Inst.T.
A. A. RUBBRA, C.B.E., B.Sc., F.R.Ae.S., M.I.Mech.E.
A. J. SMAILL, A.F.R.Ae.S.
(President, New Zealand Division)
PROFESSOR S. SMOLENIEC, Ph.D., M.Sc., D.I.C.,
A.F.R.Ae.S., A.M.I.Mech.E.
(President, Southern Africa Division)
AIR MARSHAL SIR HERBERT D. SPRECKLEY, K.B.E.,
C.B., F.R.Ae.S., M.I.Mech.E.
W. H. STEPHENS, C.B., M.Sc., F.R.Ae.S., M.Inst.P.
DR. E. W. STILL, Ph.D., B.Sc., A.C.G.I., F.R.Ae.S.,
A.M.I.Mech.E.
W. G. WILSON, Grad.R.Ae.S.
(Chairman, Graduates' and Students' Section)
T. A. WOLSTENHOLME, A.R.Ae.S.

Officers

Hon. Treasurer: MAJOR G. P. BULMAN, C.B.E., B.Sc., F.R.Ae.S.

Solicitor: L. A. WINGFIELD, M.C., D.F.C., A.R.Ae.S.

Secretary: DR. A. M. BALLANTYNE, T.D., Ph.D., B.Sc., F.R.Ae.S.,
F.I.A.S., Hon.F.C.A.I.

Note: Under the revised By-Laws, allowed on 11th January 1960, the President of each Division and the Chairman of each Section of the Society is a Member of Council by reason of his office.