

Journal of THE ROYAL AERONAUTICAL SOCIETY

IN WHICH ARE INCORPORATED 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, Audley, London

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

SINGLE COPIES: 12s. 6d. PLUS 9d. POSTAGE AND PACKING

VOLUME 64

FEBRUARY 1960

NUMBER 590

CONTENTS

	PAGE
Notices	VII
The Burnham Committee—The New By-Laws—All-Day Symposium on Vehicle and Instrumentation Problems in Upper Atmosphere Research—New Year's Honours List—Foreign Honorary Fellows of the I.A.S.—National Council for Technological Awards—The British Rocket Programme—Thirteenth Louis Blériot Lecture—Ties—Dinner of the Past Presidents of the Society—An Apology—Diary—Elections—Supplement to Oxford English Dictionary—News of Members—Summaries of Lectures—Lecture Theatre Appeal—Man Powered Aircraft: Regulations for the Kremer Competition.	
Some Developments in Boundary Layer Research in the Past Thirty Years—The Third Lanchester Memorial Lecture	
PROFESSOR DR. H. SCHLICHTING	63
The Landing Gear of the SC. 1 Aircraft	H. G. CONWAY 81
<i>Agricultural Aviation Group</i>	
Agricultural Aviation	AIR COMMODORE A. H. WHEELER 87
Aerial Operations Planning in the United Kingdom	PETER J. W. KING 93
Technical Notes	102
Solar Probes—S. W. GREENWOOD. High Speed Flow Through Perforated Plates—P. G. MORGAN. The Buckling of a Circular Plate with a Concentric Circular Hot-Spot—K. I. MCKENZIE. Operational Problems of Take-Off and Landing: A Correction to p. 695, December 1959—A. P. W. CANE.	
Graduates' and Students' Section	107
Branches Page	108
The Library	109
REVIEWS: Aircraft and Missiles—Dictionary of Aeronautical Engineering—Fuels and Lubricants—Internal Stresses and Fatigue in Metals—Desert Squadron.	
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: One Arundel Street, Strand, London, W.C.2 Covent Garden 1612.

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

Overseas Divisions

AUSTRALIA

President: M. M. WAGHORN,
A.F.R.Ae.S.

Hon. Secretary: W. ISBISTER,
Science House, [A.F.R.Ae.S.]
Gloucester & Essex Streets,
Sydney, New South Wales.

Branches at:
Sydney, Melbourne, Adelaide.

NEW ZEALAND

President: D. A. PATTERSON, M.B.E.,
A.R.Ae.S.

Hon. Secretary: T. T. N. COLERIDGE,
The Shell Com- [A.F.R.Ae.S.]
pany of New Zealand Ltd.,
Box 2091, Wellington.

Branches at: Auckland, Wellington,
Palmerston North, Christchurch.

SOUTHERN AFRICA

President: COLONEL J. D. T. LOUW,
A.F.R.Ae.S.

Hon. Secretary: Mrs. D. D. HUGHES,
14 Keyes Court, Keyes Avenue,
Rosebank, Johannesburg.

Branches at:
Durban and Salisbury.

Overseas Branch

SINGAPORE *President:* Air Marshal THE EARL OF BANDON, K.B.E., C.B., C.V.O., D.S.O., R.A.F.

Chairman: E. A. CRABBE, A.F.R.Ae.S.

Hon. Secretary: T. C. CHIOLE, A.R.Ae.S., c/o Malayan Airways, Paya Lebar Airport, Singapore.

Branches in the United Kingdom

BELFAST

President: Rear-Admiral Sir MATTHEW
S. SLATTERY, C.B., F.R.Ae.S.

Chairman: H. G. PARKER, A.F.R.Ae.S.

Hon. Secretary: D. F. DYSON,
A.R.Ae.S., Short Brothers &
Harland Ltd., Belfast.

BIRMINGHAM AND WOLVERHAMPTON

President: L. S. GREENLAND, F.R.Ae.S.

Chairman: H. BOTTOMS.

Hon. Secretary: A. JAMES, A.F.R.Ae.S.,
Sir W. G. Armstrong Whitworth
Aircraft Ltd., Warwick Chambers,
14-20 Corporation Street, Birming-
ham 2.

B SCOMBE DOWN

President: Air Cdre. A. E. CLOUSTON,
C.B., D.S.O., D.F.C., A.F.C.

Chairman: Dr. D. CAMERON, F.R.Ae.S.

Hon. Secretary: G. F. LANGDON,
Grad.R.Ae.S., A. & A.E.E., Bos-
combe Down, Amesbury, Wilts.

BRISTOL

President: PROFESSOR A. R. COLLAR,
F.R.Ae.S.

Chairman: H. GIDDINGS, F.R.Ae.S.

Hon. Secretary: G. WANSBROUGH-
WHITE, A.R.Ae.S., Bristol Air-
craft Ltd., Filton, Bristol.

BROUGH

President: N. E. ROWE, C.B.E.,
F.R.Ae.S.

Chairman: B. P. LAIGHT, F.R.Ae.S.

Hon. Secretary: A. D. HOWARTH,
A.R.Ae.S., Blackburn Aircraft
Ltd., Brough.

CAMBRIDGE

President: Professor W. A. MAIR,
F.R.Ae.S.

Chairman: C. F. C. SNEESBY,
A.F.R.Ae.S.

Hon. Secretary: J. LUDFORD, A.R.Ae.S.,
Marshalls Flying School, New-
market Road, Cambridge.

CHESTER

President: C. B. V. NIELSON.

Chairman: G. J. SALISBURY, A.R.Ae.S.

Hon. Secretary: H. STRAWSON,
A.F.R.Ae.S., Thornton Research
Centre, P.O. Box 1, Chester.

CHRISTCHURCH

President: E. W. J. GRAY, F.R.Ae.S.

Chairman: H. E. VINCENT, A.F.R.Ae.S.

Hon. Secretary: N. J. KENT, A.R.Ae.S.,
c/o Vickers-Armstrongs (Aircraft)
Ltd., Hurn Airport, Christchurch.

COVENTRY

President: H. M. WOODHAMS, C.B.E.,
F.R.Ae.S.

Chairman: W. J. PETERS.

Hon. Secretary: C. T. SCULTHORPE,
A.F.R.Ae.S., Sir W. G. Armstrong
Whitworth Aircraft Ltd., Whitley,
Coventry.

DERBY

President: J. D. PEARSON, F.R.Ae.S.

Chairman: A. A. RUBBRA, F.R.Ae.S.

Hon. Secretary: J. H. STEPHENS,
A.F.R.Ae.S., c/o Rolls-Royce
Ltd., Nightingale Road, Derby.

GLASGOW

President: Professor W. J. DUNCAN,
C.B.E., F.R.Ae.S.

Chairman: Dr. A. W. BABISTER,
A.F.R.Ae.S.

Hon. Secretary: W. N. ALCOCK,
Shenstone, Dumbuck Crescent,
Dumbarton.

GLOUCESTER AND CHELTENHAM

President: L. G. FAIRHURST, F.R.Ae.S.,

Chairman: J. F. CUSS, A.F.R.Ae.S.

Hon. Secretary: C. E. HUTT, A.R.Ae.S.,
c/o S. Smith and Sons (England)
Ltd., Bishops Cleeve, nr. Chelten-
ham, Glos.

HALTON

President: Air Marshal H. D. SPRECK-
LEY, C.B., O.B.E., F.R.Ae.S.

Chairman: Air Commodore T. N.
COSLETT, O.B.E.

Hon. Secretary: Sqn. Ldr. J. W. G.
PARKER, E. & I. Squadron, R.A.F.,
Halton.

HATFIELD

President: Sir GEOFFREY DE
HAVILLAND, C.B.E., A.F.C., Hon.
F.R.Ae.S.

Chairman: C. G. LONG, A.F.R.Ae.S.

Hon. Secretary: J. A. KIRK,
A.F.R.Ae.S., de Havilland Propel-
lers Ltd., Hatfield, Herts.

HENLOW

President: R. HILLS, F.R.Ae.S.

Chairman: Wg. Cdr. I. D. H. GIBBINS,
M.B.E., A.F.R.Ae.S.

Hon. Secretary: Flt. Lt. A. H. CRAVEN,
A.F.R.Ae.S., Officer's Mess, R.A.F.
Technical College, Henlow, Beds.

ISLE OF WIGHT

President: Sir ARTHUR GOUGE, Hon.
F.R.Ae.S.

Chairman: W. BROWNING, F.R.Ae.S.

Hon. Secretary: R. L. WHEELER,
A.F.R.Ae.S., Design Office,
Saunders-Roe Ltd., Osborne, Isle
of Wight.

LEICESTER

Chairman: K. B. AYERS, A.F.R.Ae.S.

Hon. Secretary: M. G. RUSSELL,
A.R.Ae.S., c/o Design Office,
Auster Aircraft Ltd., Rearsby,
Leics.

LONDON AIRPORT

President: G. W. HALL, F.R.Ae.S.

Chairman: R. L. LICKLEY, F.R.Ae.S.

Hon. Secretary: N. BROWN, A.R.Ae.S.,
B.O.A.C. H.Q., London Airport,
Middlesex.

LUTON

President: F. H. POLLICUTT, F.R.Ae.S.

Chairman: H. J. BROOKS, A.F.R.Ae.S.

Hon. Secretary: L. A. WILLOTT,
A.F.R.Ae.S., Hunting Aircraft
Ltd., Luton Airport.

MANCHESTER

President: Sir ROY H. DOBSON, C.B.E.,
J.P., Hon.F.R.Ae.S.

Chairman: C. E. FIELDING, O.B.E.,
F.R.Ae.S.

Hon. Secretary: J. A. E. WATERFALL,
56 Manor Avenue, Ashton-on-
Mersey, Cheshire.

MERTHYR TYDFIL

President: C. S. GARDNER.

Chairman: J. INGRAM.

Hon. Secretary: Dr. G. O. FORESTER,
Chief of Research, Teddington
Aircraft Controls Ltd., Cefn Coed,
nr. Merthyr Tydfil, South Wales.

PRESTON

President: Sir GEORGE H. NELSON.

Chairman: E. LOVELESS, A.F.R.Ae.S.

Hon. Secretary: J. F. FOSS,
A.F.R.Ae.S., English Electric
Aviation Ltd., Warton Aerodrome,
nr. Preston.

READING

President: Sir FREDERICK HANDLEY
PAGE, C.B.E., Hon.F.R.Ae.S.

Chairman: R. J. FENNER, A.F.R.Ae.S.

Hon. Secretary: N. KITCHING,
A.R.Ae.S., Handley Page (Reading)
Ltd., The Aerodrome, Woodley,
Reading.

SOUTHAMPTON

Chairman: Professor E. J. RICHARDS,
O.B.E., F.R.Ae.S.

Hon. Secretary: F. C. KIRKPATRICK,
A.R.Ae.S., Folland Aircraft Ltd.,
Hamble, Southampton.

SOUTHEND

Chairman: T. R. C. BERRETT,
A.R.Ae.S.

Hon. Secretary: K. A. COLE, A.R.Ae.S.,
c/o Aviation Traders (Eng.) Ltd.,
Southend Airport, Essex.

SWINDON

Chairman: S. R. HUGHES, A.F.R.Ae.S.

Hon. Secretary: D. RIGG, A.R.Ae.S.,
Vickers-Armstrongs (Aircraft) Ltd.,
Supermarine Works, South Mars-
ton, Swindon.

WEYBRIDGE

President: Sir GEORGE EDWARDS,
C.B.E., F.R.Ae.S.

Chairman: H. H. GARDNER, F.R.Ae.S.

Hon. Secretary: E. G. BARBER,
A.F.R.Ae.S., Vickers-Armstrongs
(Aircraft) Ltd., Weybridge.

YEovil

President: E. C. WHEELDON.

Chairmen: D. L. HOLLIS-WILLIAMS,
F.R.Ae.S. and Dr. E. W. STILL,
F.R.Ae.S.

Hon. Secretary: L. A. LANSDOWN,
A.F.R.Ae.S., Westland Aircraft
Ltd., Yeovil.