# AERONAUTICAL JOURNAL VOL.—LXX

## 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 W1

Telephone: Grosvenor 3515-9

Telegrams: Didaskalos, London, W1

Subscriptions: £10 10s. 0d. per annum, post free

Single Copies: 17s. 6d.

Advertisements only: J. W. Williams, DFC, Magazine Advertising Ltd, 36-38 Whitefriars St., London, EC4.

Fleet Street 7539

VOLUME 70

JUNE 1966

NUMBER 666

#### CONTENTS

Page Notices XLI

President-Elect and Vice-Presidents—New Fellows—Honour Awarded to a Member—Elliott Memorial Prize—Acknowledgments—Design Research Society—Annual General Meeting, 5th May 1966—RAeS Centenary Congress and 5th Congress of ICAS—British Acoustical Society—Science Research Council Postgraduate Awards—Gold Medal to Advance Filtration Knowledge—Elections—News of Members—The Engineers' Guild Appointments Service—Other Meetings.

Graduates' and Students' Section XLVI The Branches **XLVIII** Some Aspects of International Collaboration—Between Bristol Siddeley and SNECMA G. T. Smith 615 The Centenary Luncheon 618 Correspondence 621 Britain's Future in Space Viscount Caldecote 623 Non-Destructive Testing in Aircraft Servicing M. Murden 632 The Management of Cost Reduction—Method or Myth? H. Davies 639 The Training of Test Pilots R. A. Watts 649 A Century of British Aeronautics Post First World War L. F. R. Fell 657 Dr. A. A. Griffith, CBE, FRS D. Eyre 658 Box Wing Theory J. L. Taylor 660 661 Technical Notes

An Improved Displaced Frequency Method for Estimating of Dynamical Characteristics of Mechanical Systems—A. Simpson. A Wind Tunnel Investigation of a Thin Aerofoil with a Sharp Leading Edge and Blowing Applied at the Mid-chord at Two Angles Relative to the Surface—I. Wygnanski. Effects of an Initial Gap on the Flow in a Turbulent Wall Jet—K. Sridhar and P. K. C. Tu. On the Length of Two-Dimensional Contractions—W. T. F. Lau. On the Effective "Length" of Two-Dimensional Contracting Ducts—J. C. Gibbings. Some Effects of Design Load Distribution on the Off-Design Behaviour of Slender Wings—Corrections to August 1965 Journal.

The Library 677

Reviews: Mastery of the Air. An Account of the Science of Mechanical Flight—Patent Protection: The Inventor and His Patent—Linear Elastic Theory of Thin Shells—Elements of Hypersonic Aerodynamics—Manned Satellites. Their Achievements and Potentialities—Creep and Stress Relaxation in Metals—The Aircraft of the World—Planets for Man—Theory of Machines.

Additions to the Library

Reports

All communications for publication in the JOURNAL should be addressed to the Editor, JOAN BRADBROOKE, ARAES; all communications on general matters affecting the Society should be addressed to the Secretary, A. M. BALLANTYNE, TD, BSc, PhD, FRAES, HonFCASI, FAIAA—at 4 HAMILTON PLACE, LONDON, W1.

Reproduction in whole or in part of any of the papers and contributions published in this Journal is not permitted without the written consent of the Royal Aeronautical Society.

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

### The Royal Aeronautical Society

FOUNDED 1866

INCORPORATED BY ROYAL CHARTER 1949

Patron: HER MAJESTY THE QUEEN

#### COUNCIL

Honorary President 1966: H.R.H. THE PRINCE PHILIP, DUKE OF EDINBURGH, KG (Hon Fellow)

President: A. D. BAXTER, MEng, CEng, FRAeS

President-Elect: M. B. MORGAN, CB, MA, CEng, FRAeS

#### Vice-Presidents:

PROFESSOR D. KEITH-LUCAS, MA, CEng, FRAeS
AIR COMMODORE F. R. BANKS, CB, OBE, CEng, CGIA, HonFAIAA, FRAeS, RAF (retd)
PROFESSOR J. A. J. BENNETT, DSc, PhD, CEng, FAIAA, FRAeS
(Also Chairman, Rotorcraft Section)

#### Past-Presidents:

PROFESSOR A. R. COLLAR, CBE, MA, DSc, CEng, FRS, FAIAA, FCASI, FRAeS H. H. GARDNER, BSc, CEng, FRAeS SIR GEORGE GARDNER, KBE, CB, HonDSc, CEng, HonFRAeS

#### Members.

MAJOR G. P. BULMAN, CBE, BSC, CEng, FRAeS
R. H. BURRIN, GradRAeS (Chairman, Graduates' and Students' Section)
H. CAPLAN, DCAe, CEng, AFRAeS
SIR WALTER CAWOOD, KBE, CB, BSC, PhD, FRAeS
A. V. CLEAVER, OBE, CEng, AFAIAA, FRAeS
SIR ROBERT COCKBURN, KBE, CB, MSC, PhD, CEng, FRAeS
S. D. DAVIES, BSC (Eng), CEng, FRAeS
DR. W. F. HILTON, DSC, DIC, CEng, AFAIAA, FRAES
DR. G. S. HISLOP, BSC, ARCST, CEng, FRAES
D. B. HUDSON, BSC, BE, CEng, FRAES
A. A. LOMBARD, CEng, FRAES
P. G. MASEFIELD, MA, CEng, HonFAIAA, FRAES
AIR COMMODORE J. R. MORGAN, OBE, BSC (Eng), CEng, FRAES, RAF (retd)
DR. E. S. MOULT, CBE, BSC, CEng, FRAES
W. N. NEAT, CEng, FRAES (Chairman, Astronautics and Guided Flight Section)
CAPTAIN J. ORBELL, MBE, AFRAES (President of the Rhodesia Division)
F. W. PAGE, CBE, MA, CEng, FRAES
PROFESSOR E. J. RICHARDS, OBE, MA, DSC, CEng, FRAES
C. G. VAN NIEKERK, DSC (Eng), CEng, AFRAES
(President of the Southern Africa Division)
G. T. WANSBROUGH-WHITE, ARAES
K. G. WILKINSON, BSC, DIC, ACGI, CEng, FRAES
J. E. D. WILLIAMS, BSC, FRAES
GROUP CAPTAIN W. G. WOODWARD, OBE, BE, CEng, FRAES, RNZAF
(President of the New Zealand Division)

#### Officers:

Hon. Treasurer: MAJOR G. P. BULMAN, CBE, BSc, CEng, FRAeS Solicitor: L. A. WINGFIELD, MC, DFC (Hon Companion)
Secretary: DR. A. M. BALLANTYNE, TD, BSc, CEng, FAIAA, HonFCASI, FRAeS

Note: The President of each Division and the Chairman of each Section of the Society is a Member of Council by reason of his office.