INCLUDING SUPPLEMENTARY PAPERS



THE AERONAUTICAL JOURNAL

AUGUST 1969

NOTICES

BRANCHES

GRADUATES' AND STUDENTS' SECTION

R. Smelt LOOKING AHEAD IN AERONAUTICS-21: A US VIEW

- S. Dornier REVIEW OF POST-WAR RESEARCH AND DEVELOPMENT AT DORNIER
- M. Flemming and NOISE PROBLEMS OF VTOL WITH PARTICULAR REFERENCE TO THE R. Scholten DORNIER Do 31
 - R. G. West FAN LIFT IN VTOL DESIGN
 - P. Satre SUPERSONIC AIR TRAVEL-PRESENT AND FUTURE
 - TECHNICAL NOTES J. B. Carr The Torsional Vibration of Uniform Thin-Walled Beams of Open Section
- V. J. Modi and Coupled Librational Motion of an Axisymmetric Satellite in a Circular Orbit S. K. Shrivastava
- W. Carnegie, Z. Rief A Numerical Technique for the Solution of Some Non-Linear Systems and R. S. S. Wee
 - D. S. Whitehead A Symmetry Property of Transfer Matrices

THE LIBRARY Reviews.

Additions to the Library. Reports

SUPPLEMENTARY PAPERS

W. J. G. Pinsker THE THEORY AND PRACTICE OF INERTIA CROSS-COUPLING
 W. A. Crago MARINE SAFETY ASPECTS OF HELICOPTERS
 F. C. Phillips THE CANADAIR CL-84 TILT-WING V/STOL PROGRAMME

27s 6d

THE ROYAL AERONAUTICAL SOCIETY 4 HAMILTON PLACE LONDON W1

https://doi.org/10.1017/S0001924000051770 Published online by Cambridge University Press

"Charles...I want you to pick up Dr. Martinelli in Turin and fly him to Madrid... take his proposals to Lyons in the afternoon ...and be back here for the meeting tomorrow."



This is the kind of schedule that can leave a senior executive shattered rather than dynamic and confident.

Waiting around in airport lounges and hotels adds

And that is precisely why the Hawker Siddeley 125

The HS 125 flies at over 500 mph which, with its

up to a terrible waste of a company's most precious

range of more than 1700 miles puts any European

asset - the time of its top decision-makers.

is such a significant and vital management tool.

business centre within commuting distance.

By flying from smaller airfields closer to your departure and destination points it can cut overall travel time by an average of 50%. It flies when and where you want it to.

So, if you want to increase the effectiveness of your top executives, talk to the Sales Manager at Hatfield 62345.

"But Sir,...

Hawker Siddeley-the largest aerospace group in Europe

Richmond Road, Kingston upon Thames, Surrey, England, Tel: 01-546 7741. Cables: Hawsidair, Kingston upon Thames. Telex: 23726 Hawker Siddeley Group supplies mechanical, electrical and aerospace equipment with world-wide sales and service



THE ROYAL AERONAUTICAL SOCIETY

Incorporating The Institution of Aeronautical Engineers and The Helicopter Association of Great Britain

 Telephone: 01-499 3515
 Telegrams: Didaskalos, London, W1

 Published Monthly at 4 HAMILTON PLACE, LONDON W1V 0BQ

 Subscriptions: £15 15s. 0d. per annum, post free
 Single Copies: 27s. 6d.

	VOLUME 73	NUMBER 704	AUGUST 1969
CONTENTS	5		Page
	NOTICES		LXV
	BRANCHES		LXVII
	GRADUATES' AND STUDEN	LXVIII	
R. Smelt	LOOKING AHEAD IN AERONAUTICS-21: A US VIEW		
S. Dornier	REVIEW OF POST-WAR RESEARCH AND DEVELOPMENT AT DORNIER 6		
M. Flemming and R. Scholten	NOISE PROBLEMS OF N DORNIER Do 31	VTOL WITH PARTICULAR REFEREN	CE TO THE 647
R. G. West	FAN LIFT IN VTOL DESIGN		
P. Satre	SUPERSONIC AIR TRAVEL-PRESENT AND FUTURE		
J. B. Carr	TECHNICAL NOTES The Torsional Vibration of Uniform Thin-Walled Beams of Open Section		
V. J. Modi and S. K. Shrivastava	Coupled Librational Motion of an Axisymmetric Satellite in a Circular Orbit		
Carnegie, Z. Rief and R. S. S. Wee	A Numerical Technique	for the Solution of Some Non-Linear S	systems
D. S. Whitehead	A Symmetry Property of	f Transfer Matrices	
	THE LIBRARY		689
	Reviews. Additions	to the Library. Reports	
	SUPPLEMENTARY	PAPERS	
W. J. G. Pinsker	THE THEORY AND PRACTICE OF INERTIA CROSS-COUPLING		
W. A. Crago	MARINE SAFETY ASPECTS OF HELICOPTERS		
F. C. Phillips	THE CANADAIR CL-84 TILT	-WING V/STOL PROGRAMME	713

Secretary of the Society: A. M. BALLANTYNE, OBE, TD, BSc, PhD, CEng, HonFCASI, FAIAA, FRAeS. 4 HAMILTON PLACE, LONDON, W1V 0BQ. Tel: 01-499 3515. H. E. SOUTHON Magazine Advertising Ltd, 184 Fleet Street, London, EC4. Tel: 01-242 0434/5.

Reproduction of any of the papers published in this journal is not permitted without the written consent of the Editor.

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

PRINTED BY THE LEWES PRESS WIGHTMAN & CO. LTD., LEWES, SUSSEX, ENGLAND, AND PUBLISHED BY THE ROYAL AERONAUTICAL SOCIETY, 4 HAMILTON PLACE, LONDON, W1V OBQ, ENGLAND.

The Royal Aeronautical Society

FOUNDED 1866

INCORPORATED BY ROYAL CHARTER 1949

Patron: HER MAJESTY THE QUEEN

COUNCIL

President: AIR COMMODORE F. R. BANKS, CB, OBE, CEng, HonCGIA, HonFAIAA, HonFRAeS, RAF(retd)

President-Elect: PROFESSOR J. A. J. BENNETT, DSc, PhD, CEng, FAIAA, HonFRAeS

Vice-Presidents:

SIR ROBERT COCKBURN, KBE, CB, PhD, MSc, CEng, FRAeS G. S. HISLOP, PhD, BSc, ARCST, CEng, FRAeS S. D. DAVIES, CBE, BSc (Eng), CEng, FRAeS

Past Presidents:

A. D. BAXTER, MEng, CEng, FRAeS SIR MORIEN MORGAN, CB, MA, CEng, FRAeS PROFESSOR D. KEITH-LUCAS, HonDSc, MA, CEng, FRAeS

Members

- CAPTAIN E. C. BEARD, CBE, FRAeS, RN(retd)
 M. J. BRENNAN, BSC, CEng, FRAeS
 T. T. N. COLERIDGE, BE, CEng, FRAeS (President of the New Zealand Division)
 H. DAVIES, CB, MSC, CEng, FAIAA, FRAeS
 G. A. FORD, CEng, AFRAeS (President of the Rhodesia Division)
 H. H. GARDNER, HonDSC, BSC, CEng, FRAeS
 W. F. HILTON, DSC, PhD, DIC, CEng, AFAIAA, FRAeS
 E. HUTCHINSON, BSC, GradRAeS

 (Chairman, Graduates' and Students' Section)

 B. P. LAIGHT, MSC, CEng, FRAeS
 P. S. LANGFORD, BE, CEng, FRAeS (President of the Australian Division)
 PROFESSOR K. L. C. LEGG, BSC(Eng), BSC, CEng, FRAeS
 P. G. MASEFIELD, MA, CEng, HONFAIAA, FRAES
 AIR COMMODORE J. R. MORGAN, OBE, BSC(Eng), CEng, FRAeS, RAF(retd)
 E. S. MOULT, CBE, PhD, BSC, CEng, FRAeS
 W. N. NEAT, MA, CEng, FRAeS
 G. K. C. PARDOE, BSC, DLC, CEng, FRAeS
 G. K. C. PARDOE, BSC, DLC, CEng, FRAeS
 G. K. C. PARDOE, BSC, DIC, CEng, FRAeS
 G. K. C. PARDOE, BSC, DIC, CEng, FRAeS
 M. NORMAN, BSC, CEng, FRAeS
 M. ROBERTS, PhD, BSC, DIC, CEng, FRAeS (Chairman, Rotorcraft Section)
 A. O. M. VIALLS, BSC, CEng, FRAeS (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
 N. H. WOOD, DCAe, CEng, AFRAES

Officers:

Hon. Treasurer: C. F. HUGHESDON, AFC, ARAeS Solicitor: L. A. WINGFIELD, MC, DFC (Hon Companion) Secretary: A. M. BALLANTYNE, OBE, TD, PhD, BSC, CEng, HonFCASI, FAIAA, 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.