INCLUDING SUPPLEMENTARY PAPERS

OCTOBER 1973

aeronautical



THE ROYAL AERONAUTICAL SOCIETY

ASSISTANT SECRETARY

Due to a decision of a senior member of the Staff to emigrate at the end of the year, applications are invited by *The Royal Aeronautical Society* for the position of an Assistant Secretary.

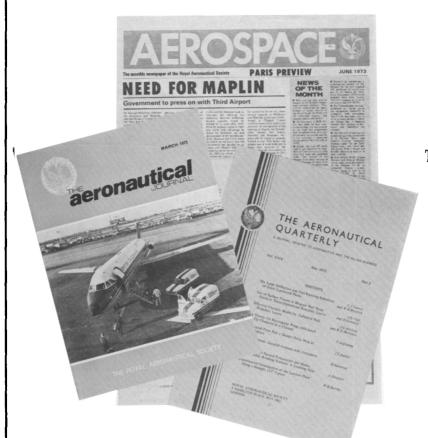
Candidates should preferably, although not necessarily, have the following qualifications:

- a have had experience in aviation
- b have had administrative experience
- c be aged between 30 and 40 years.

The salary offered will not be less than £3,000 per annum, depending on experience and qualifications.

The Society has a non-contributory pension scheme.

Applications should give details relevant to education, training and experience, and include the names of two referees familiar with the candidate's career and character, and should be sent to the Secretary, at 4 Hamilton Place, London, W.1.



Publications of

THE ROYAL AERONAUTICAL SOCIETY

available from

4 Hamilton Place

London W1V 0BQ

Tel: 01-499 3515-9

VOLUME 77 NUMBER 754 OCTOBER 1973

nautical

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

JOURNAL

506

512

520

529

Published Monthly

contents

Editor:	G. F	?. <i>V</i>		ARAeS,
			TE	ng(CEI).
				Editors:
Jay	Wo	IH,	David	Scallon.

Secretary of the Society: E. M. J. Schaffter, MA, CEng, AFRAeS AFRAeS 4 Hamilton Place, London, W1V OBQ. Tel: 01-499 3515. Telegrams: Didaskalos, London, W1

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.

Advertisements only: H. E. Southon, Magazine Advertising Ltd. 184 Fleet Street, London, EC4. Tel: 01-405 6279 & 01-405 3363.

Printed by Lewes Press Ltd.. Lewes, Sussex, England.

Published by The Royal Aeronautical Society, 4 Hamilton Place, London W1V OBQ, England.

Diary, Branch Meetings	
Correspondence	V
Professor D. Keith-Lucas DESIGN FOR SAFETY	483
Dr. R. R. Shaw International Airlines in a changing world	489
H. Upenieks MAN-POWERED FLIGHT: THE OSCILLATING WING MACHINE	502

TECHNICAL NOTES

B. R. A. Burns

The oscillatory method for the flight calibration of sideslip and incidence sensors	
V. Mura Hari A method to analyse the wall jet flow	

516 Library, Reviews, Additions and Reports

SUPPLEMENTARY PAPERS

P. H. Southwell

Council

The present	t and futu	ire technolog	/ of agr	icultural an	d forestry	
		ar reference to				521

Dr. W. Berchtold

Air transport and a sound economy

Cover picture:

A typical scene at London Heathrow with airliners from all parts of the world parked on the airside of the terminal. Dr. Shaw of IATA in his paper on "International airlines in a changing world" presented in Australia last year examines some of the pressures that scheduled carriers face, and in particular the effect of charter operators on the load factors of scheduled airlines.

H.D.A....modern

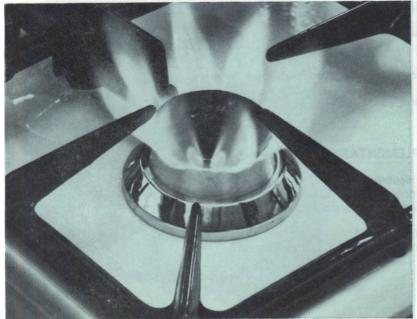
H.D.A. make modern metals remarkably versatile.

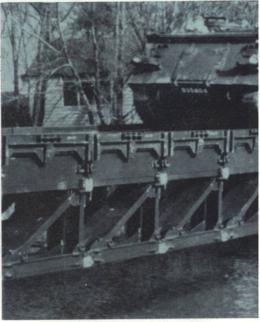
We forge, cast and extrude components for practically every industry, from the homely gas cooker to the sophisticated Concorde.

In most of the advanced developments where metal is used, you will find that the technical skills and metallurgical expertise of H.D.A. have been applied.



H,D,A, aluminium alloy gravity and pressure die castings are used in the engine of the Vauxhall Viva.





The burners on this new gas cooker are pressure die cast in an H.D.A. aluminium alloy.

metals for indu

All this experience can be working for you - advising on design, the correct metal and, above all, the most economical use of our processes for your particular application.

HAWKER SIDDELEY HIGH DUTY ALLOYS LTD

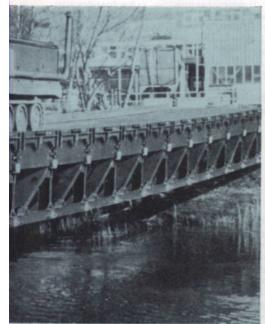
89 BUCKINGHAM AVENUE, SLOUGH, BUCKINGHAMSHIRE.

Hawker Siddeley Group supplies mechanical, electrical and aerospace equipment with world-wide sales and service.



The rotor of the M.S.E. high speed centrifuge is forged by H.D.A. in a titanium alloy.

H.D.A. forgings in aluminium alloy and stainless steel are used in the construction of the SR.N4 Hovercraft.



H.D.A. are major suppliers of aluminium alloy forgings and extrusions for the military Medium Girder Bridge



H.D.A. forgings in aluminium, titanium, steel and nickel base alloys and H.D.A. aluminium alloy extrusions are used extensively throughout Concorde.