

The Journal of

**THE HELICOPTER
ASSOCIATION OF
GREAT BRITAIN**

CONTENTS include

HELICOPTER NOISE SUPPRESSION

by H B Irving

**REPORTS ON THE ANNUAL AND
EXTRAORDINARY GENERAL MEETINGS**

LONDON
4, THE SANCTUARY,
WESTMINSTER, S W 1

Vol 13 No 4 AUGUST 1959



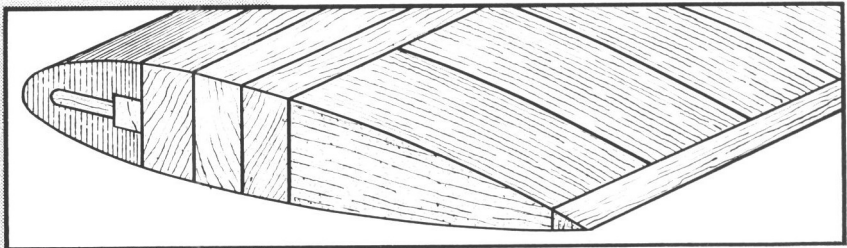
BLADES of POWER

Lamination was the secret of the strength and resilience of the famous Damascus blades. By skilfully welding together pieces of iron of different qualities the ancient Oriental swordsmiths made blades of a steel whose quality was unsurpassed until Bessemer. Now lamination skill and technique reaches its zenith in modern blades of power by

HORDERN-RICHMOND LTD.

Makers of Helicopter Airscrew and Wind Tunnel Fan blades

BELL helicopters Hordern Richmond Ltd are sole selling agents in this country for Bell and Agusta Bell Helicopters



HORDERN-RICHMOND LTD.

BRISTOL ROAD GLOUCESTER TEL GLOUCESTER 24941





Wherever helicopters fly on regular services whether from city centres or airfields in difficult terrain, the need for an all-altitude navigation system of high accuracy is vital. Only Decca provides such precise information continuously with pictorial presentation in the cockpit.



Being a low frequency hyperbolic navigation system Decca gives high-accuracy coverage down to ground level unaffected by weather or intervening obstacles. The system is so precise that it can be also used as an approach aid over more than a million square miles of Europe.

Because of Decca's high accuracy at all altitudes it is the only system that provides both close lateral separation in flight and flexibility in routing.

**THE DECCA
NAVIGATOR**

*the world's most accurate
navigation system*

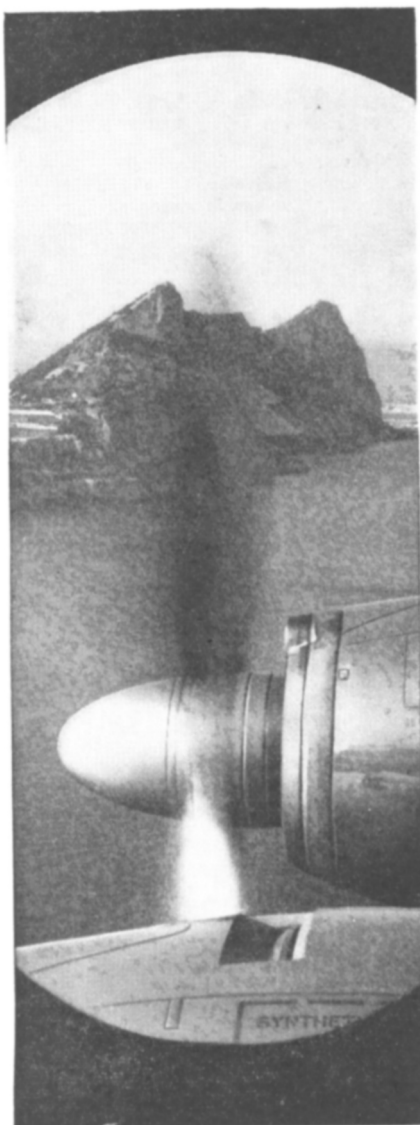
THE DECCA NAVIGATOR COMPANY LTD LONDON

Up in the air...

all over the world

the majority of modern aircraft
depend on Rotax Units

Rotax have been specialists in
the design and manufacture of
electrical and starting systems for
aircraft for more than 40 years
Today, all Rotax facilities for
research, development, manufacture
and a comprehensive advisory
service are at the service of the
aircraft industries of the world



ROTAX

Complete Electrical and Starting Systems for Aircraft

Rotax Limited Willesden Junction London N W 10
Lucas Rotax (Australia) Pty Ltd Melbourne and Sydney Australia
Lucas Rotax Ltd Toronto Montreal and Vancouver Canada

Power for the Widgeon

The Alvis Leonides which powers the Westland Widgeon has already proved itself in many thousand hours of helicopter operation and is in extensive use with the Royal Navy, the Army, the Royal Air Force and many civilian operators.



ALVIS LEONIDES AERO ENGINES
ALVIS LIMITED COVENTRY ENGLAND

HELICOPTER DYNAMICS AND AERODYNAMICS

By **P R PAYNE** This is the first really comprehensive treatment of helicopter theory by a practising designer of rotary wing aircraft. Correlating theory and practical results throughout, the author has constantly kept in mind the requirements of the industry. The book which is more up to date than anything yet published on the subject contains the first accounts in book form of cantilever stiff hinged, high flapping pin offset and other advanced forms of rotor, and also the rotor blade flutter. No prior knowledge of helicopter theory is required of the reader who is taken up to the most advanced theories and methods used in the modern design office.

From booksellers, 84/- net

PITMAN Parker Street, Kingsway, London, W C 2



PROTECT

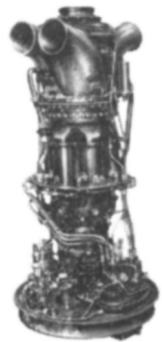
YOUR JOURNALS

The Binders illustrated, in which the Association Journals can be readily clipped for preservation and easy reference, are available from the Association's Offices. The price is 15/- (Overseas postage extra), and this includes the Title in gold lettering on the spine.


4 The Sanctuary, Westminster, S W 1

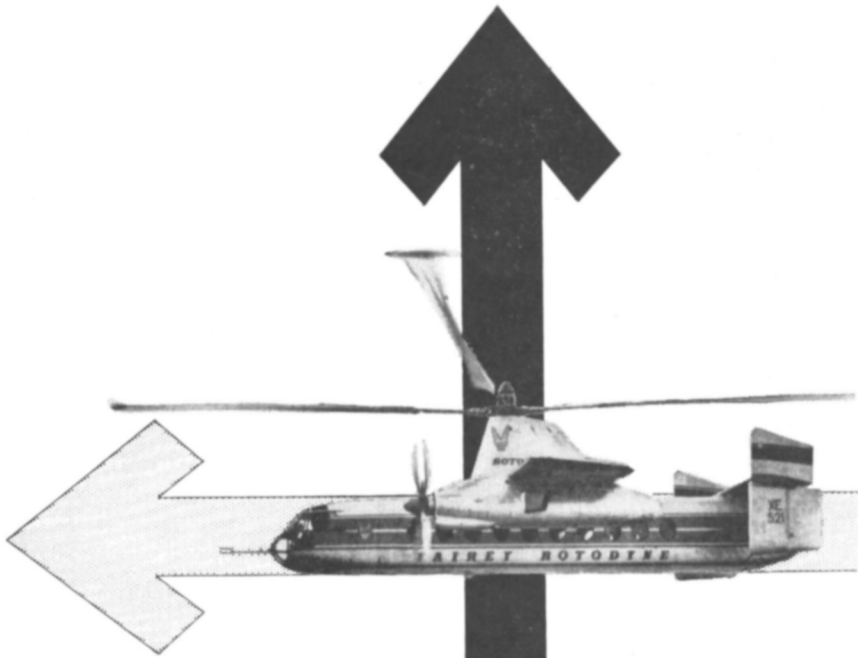


Whether it's at one end, as in the quietly efficient Westland Wessex whether it's at both ends, as in the outstanding Bristol 192 whether it's upright, horizontal or in any position in between, the Napier Gazelle free turbine engine will always satisfy the exacting demands of helicopter operation. Designed specifically for use in helicopters, the Napier Gazelle, with its "any angle" installation, relieves the designer of many accepted limitations and gives him more opportunity to make proper use of fuselage space.



NAPIER GAZELLE FREE TURBINE ENGINE

D NAPIER & SON LIMITED LONDON W3 A member of the English Electric Aviation Group 



LOOK FORWARD TO

ROTODYNE TRAVEL

◀ CITY CENTRE TO CITY CENTRE ▶

The
first
vertical
take-off
airliner

FAIREY AVIATION LIMITED HAYES MIDDLESEX

(A subsidiary of The Fairey Company Limited)

The Journal of
THE HELICOPTER ASSOCIATION
OF GREAT BRITAIN

President
 N E ROWE CBE DIC BSc MI Mech E ACGI M Inst T FCCI,
 FR Ae S F I Ae S Whit Ex

Past Presidents
 E Mensforth CBE MA MI Mech E FR Ae S MI PE
 J G Weir CMG CBE FR Ae S
 Marshal of the RAF Lord Douglas of Kirtleside CCB MC DFC
 The Rt Hon Lord Brabazon of Tara GBE MC PC Hon FR Ae S

Vice Presidents
 G S Hislop Ph D B Sc (Eng) A RC ST MI Mech E FR Ae S
 Lt Col J W Richardson A FR Ae S

Offices 4, The Sanctuary, Westminster, S W 1 Tel Abbey 5160

VOL 13 No 4

AUGUST 1959

PRICE 10/6

THE COUNCIL

Chairman

J A J Bennett D Sc Ph D
 FR Ae S

B H Arkell A FR Ae S
 R A C Brie, A FR Ae S,
 A F I Ae S

J A Cameron
 D M Davies, M A (Cantab)
 A FR Ae S

L G Frise B Sc FR Ae S
 A F I Ae S

M H C Gordon
 R Hafner FR Ae S
 N J G Hill A MI Mech E
 A R Ae S M C A I

C T D Hosegood
 A McClements A RC ST
 MI Mech E

J W Richardson A FR Ae S
 W H Sear

J S Shapiro Dipl Ing
 A FR Ae S

D L Hollis Williams, B Sc
 FR Ae S

Hon Secretary

R H Whitby DIC A RC Sc,
 B Sc, FR Ae S

Hon Treasurer

W G Leslie A C I S

Asst Secretary

Miss S Rigby

Journal Hon Editor

B H Arkell A FR Ae S

Technical Editors

D M Davies MA A FR Ae S
 A McClements, A RC ST
 MI Mech E

J S Shapiro Dipl Ing
 A FR Ae S

R H Whitby, DIC, A RC Sc
 B Sc FR Ae S

Librarian

R W L. Cure

Auditors

W B Keen & Co

The opinions expressed in papers read before the Association and in the discussions also recorded in this Journal are not necessarily those of the Executive Council or of the Association as a whole

CONTENTS

	<i>Page</i>
HELICOPTER NOISE SUPPRESSION By H B IRVING	187
DISCUSSION	207
THE FOURTEENTH ANNUAL GENERAL MEETING OF THE ASSOCIATION	215
REPORT ON THE EXTRAORDINARY GENERAL MEETING	217
HELICOPTER RALLY AND GARDEN PARTY 6TH JUNE, 1959	219
THE ALAN MARSH MEMORIAL AWARD	220
NOTICES	220

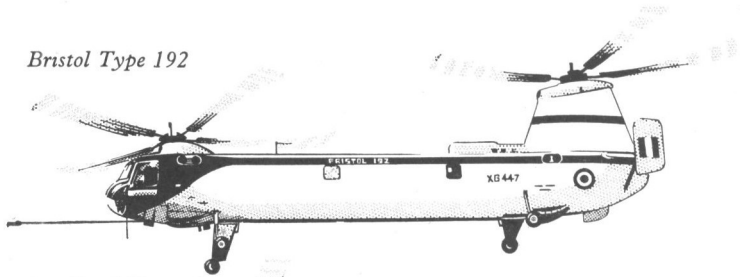
OBJECTS OF THE ASSOCIATION

The objects of the Association are to collect compile and disseminate information of a technical and semi technical nature pertaining to Helicopters and all other types of Rotating Wing Aircraft The Association aims to work in close co operation with existing Aeronautical Bodies on matters affecting its objects and it may act as an Advisory Body in the promotion of legislation calculated to be of benefit to the development of Rotating Wing Aircraft

Publications Manager

S H Pilton Effingham House, Arundel Street London WC 2

Bristol Type 192



Saunders-Roe 'Skeeter'



Gears for Rotor Drives

The ENV exhibit includes precision spiral bevel gears of the type used in all British shaft-driven helicopters and also Continental helicopters in current production. These include the Saunders-Roe Skeeter and P.531, Westland Widgeon, Wessex, Whirlwind and Westminster, Bristol Sycamore and 192, Sud Aviation Alouette II, Alouette III and Frelon.



S E 3200 (Frelon)



Westland Westminster

STAND 263 S.B.A.C. Exhibition

ENV	FOR GEARS
------------	-----------



ENV ENGINEERING COMPANY LIMITED, HYTHE ROAD, WILLESDEN, LONDON, N W 10
Telephone LADbroke 3622 AP109