# The Journal of

# THE HELICOPTER ASSOCIATION OF GREAT BRITAIN

CONTENTS include

#### The President's Message

THE APPLICATION OF THE JET FLAP TO HELICOPTER ROTOR CONTROL

By R Dorand

AERODYNAMIC ASPECTS OF THE FAIREY ROTODYNE

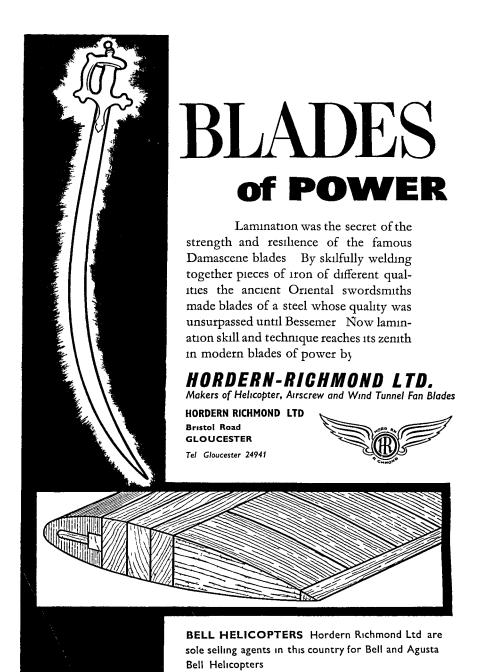
By K T McKenzie

ANNUAL REVIEW OF HELICOPTER ACTIVITIES

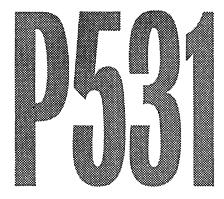
LIST OF MEMBERS OF THE HELICOPTER ASSOCIATION OF GREAT BRITAIN

LONDON
4, THE SANCTUARY,
WESTMINSTER, S W 1

Vol 13 No 6 DECEMBER 1959







## HELICOPTER

The P 531 is designed to meet the demand for a compact, turbine powered general purpose helicopter Good performance and carrying capacity versatility and ease of servicing are features of this functional aircraft The P 531 is on order for the Ministry of Ayiation for the Royal Navy



The P 531 is being developed for use in the following roles

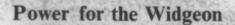
ANTI-SUBMARINE SEARCH & STRIKE
AIRBORNE SUPPLY LIAISON
TRAINING AIR/SEA RESCUE
CASUALTY EVACUATION
LIGHT FREIGHTER RECONNAISSANCE

It is designed to accept a choice of engines in the 1 000 h p range derated to 650 h p thus giving it a performance largely unaffected by climatic conditions and altitude

#### SAUNDERS-ROE

CFH/SR9/22 HELICOPTER DIVISION SOUTHAMPTON AIRPORT EASTLEIGH HANTS ENGLAND

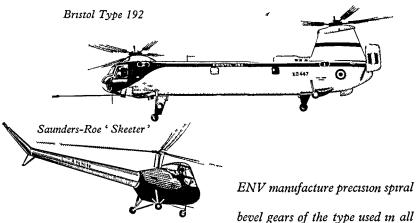
Saunders-Roe wish success to the Helicopter Association in their future work under the aegis of The Royal Aeronautical Society



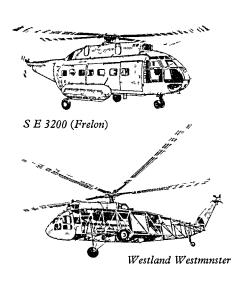
The Alvis Leonides which powers the Westland Widgeon has already proved itself in many thousand hours of helicopter operation and is in extensive use with the Royal Navy, the Army, the Royal Air Force and many civilian operators.



ALVIS LEONIDES AERO ENGINES



# Gears for Rotor Drives



bevel gears of the type used in all
British shaft-driven helicopters
and 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

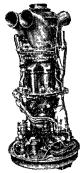


FOR GEARS





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 CAZELLE FREE TURBINE ENGINE

# $Union_{ ext{ of fixed-wing and rotary}}$

wing augurs success in organisations as in aircraft. Fairey Aviation look forward to the further achievements of the Helicopter.

Association in its new role as the Rotorcraft. Section of the Royal Aeronautical Society.

#### **FAIREY AVIATION LTD.**

(A subsidiary of The Fairey Company Limited)

HAYES MIDDLESEX

#### The Journal of

## THE HELICOPTER ASSOCIATION OF GREAT BRITAIN

I resident
N Г ROWI СВЕ DIC BSc MIMech Г ACGI MInst T FCGI FR Ac S ГІАс S Whit Ex

Past Presidents

T Mensforth CBT MA MIMOCHE FRAES MIPI
J C Weir CMC CBE FRAES

Marshal of the RAF Lord Douglas of Kirtleside GCB MC DFC
The Rt Hon I ord Brabazon of Tara GBE MC PC Hon FRAES

Vice Presidents

C S Hislop Ph D B Sc (Eng.) A R C S T M I Mech Γ F R Ae S

Lt Col. J. W. Richardson. A Γ R Ae S

Offices 4, The Sanctuary, Westminister, SW1

Tel Abbey 5160

VOL 13 No 6

December, 1959

PRICE 10/6

#### THE COUNCIL

C	har	¥ 112.	2.11

J A J Bennett D Sc Ph D F R Ae S

B H Arkell AFRAeS R A C Brie AFRAeS AFIAeS

J A Cameron
D M Davies M A (Cantab)
A F R Ae S
L G Frise BSc F R Ae S
A F I Ae S

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

A R Ae S WCAI
C T D Hosegood
A McClements A R C S T
M I Mech E

I W Richardson AFRAeS W H Sear I S Shapiro Dipl Ing AFRAeS

D L Hollis Williams B Sc F R Ae S Hon Secretary

R H Whitby DIC ARCSc BSc FRAeS

W G Leshe ACIS

Asst Secretary Miss S Rigby

Journal Hon Editor B H Arkell A F R 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

	Page	
The President's Message		
EDITORIAL Correspondence	322	
Notices	322	
THE APPLICATION OF THE JET FLAP TO HELICOPTER ROTOR CONTROL		
By R DORAND	323	
Discussion	363	
AERODYNAMIC ASPECTS OF THE FAIREY ROTODYNE		
By K T McKenzie	368	
DISCUSSION		
Annual Review of Helicopter Activities		
LIST OF MEMBERS OF THE HELICOPTER		
Association of Great Britain	399	

#### 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 is 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 I ffingham House Arundel Street I ondon W C 2











WESTLAND

### WIDGEON

one of a wide range of proven Helicopters manufactured by

WESTLAND AIRCRAFT LIMITED YEOVIL

ENGLAND

incorporating SAUNDERS ROE LTD. The Helicopter Division of BRISTOL AIRCRAFT LTD FAIREY AVIATION LTD

EUROPE'S LARGEST AND MOST EXPERIENCED HELICOPTER PRODUCERS