

*The Journal of*

**THE HELICOPTER  
ASSOCIATION OF  
GREAT BRITAIN**

CONTENTS include

On the Wind Tunnel Testing of Helicopter Models

by M S Hooper

Some ways of obtaining an Integrated Aircraft

by D Kuchemann

LONDON  
4, THE SANCTUARY,  
WESTMINSTER, S W 1

Vol 12 No 3 JUNE 1958

## **SEPARATION**

Decca's high accuracy and coverage at all altitudes allows close lateral track separation of all aircraft. The new large scale charts permit safe separation of helicopters in the confined airspace frequently allocated to this type of aircraft.

## **COVERAGE**

With solid cover at low altitudes Decca suits the helicopter down to the ground. Unaffected by altitude, terrain, weather or the limitations of line of sight systems, the Decca Navigator System can be used to navigate with the greatest accuracy from city centre to city centre. Over some million square miles in Europe the system is sufficiently accurate to be used as an approach aid.



## **FLEXIBILITY**

This area coverage system allows any predetermined track to be maintained precisely. The flight log gives a precise and continuous display of the aircraft's position at all times, thus allowing complete flexibility of routing.

## **INTEGRATION**

Decca, the only system available to every type of aircraft, both rotary and fixed wing, irrespective of altitude, ensures the maximum utilisation of available air space by providing solid cover at all altitudes. Light and compact enough to be fitted in the smallest aircraft and with the pictorial presentation of the flight log, Decca allows existing air traffic control procedures to be carried out with great accuracy and ease.

**THE WORLD'S  
MOST ACCURATE  
NAVIGATION SYSTEM**

**THE DECCA  
NAVIGATOR**

THE DECCA NAVIGATOR COMPANY LTD LONDON ENGLAND



## On the 'FAIREY ROTODYNE'

On this novel aircraft, the world's first vertical take-off airliner, many Timken tapered-roller bearings are used in these important situations. The rotor head (where Timken bearings carry the entire weight during vertical take-off and a considerable share during forward flight), the rotor-blade feathering hinges and pitch control mechanism. The blade roots of the Rotol propellers also have Timken bearings, so have the main and nose wheels.

**TIMKEN** Regd  
Trade  
Mark  
TIMKEN

*tapered-roller bearings*

**MADE IN ENGLAND BY  
BRITISH TIMKEN LTD**

DUSTON NORTHAMPTON (Head Office) DAVENTRY AND BIRMINGHAM  
Telephone Northampton 4921 8 & 3452 3 Telex No 31 620  
Telegrams Britimken Northampton Telex

SUBSIDIARY COMPANIES FISCHER BEARINGS COMPANY LTD WOLVERHAMPTON  
TIMKEN FISCHER STOCKISTS LTD BIRMINGHAM

---

**FAIREY**



**flies  
the first  
vertical  
take-off  
Airliner**

Adding achievement to achievement, Fairey Aviation have now built—and flown—potentially the most important transport aeroplane in the world, the Fairey Rotodyne

Carrying 48 passengers or 4½ tons of freight it takes off vertically as a helicopter and having gained height flies forward as a normal twin-engined airliner

It is the most adaptable rotary-wing aircraft in the world and the first to offer operating economy directly comparable to that of fixed wing aircraft over ranges up to 400 miles

The arrangement within the Rotodyne's capacious fuselage can readily be adapted to suit civil or military applications

Powered by two Napier Lland propeller-turbines with Fairey Pressure-Jets at the rotor-tips for take-off and landing

**48 passengers**

**185 m p h cruising speed**

**400 miles maximum range**

**FAIREY**

*Rotodyne*

THE FAIREY AVIATION COMPANY LIMITED HAYES MIDDLESEX  
ENGLAND AUSTRALIA CANADA

*The Journal of*  
**THE HELICOPTER ASSOCIATION**  
**OF GREAT BRITAIN**

*President*  
 The Rt Hon LORD BRABAZON OF TARA ( B I M C P C Hon F R Ae S

*Past Presidents*  
 J G Weir C M G C B L F R Ae S  
 L Mensforth C B I M A M I Mech E F R Ae S M I P E  
 Marshal of the R A F Lord Douglas of Kirtleside G C B M C D F C

*Vice Presidents*  
 R A C Brie A F R Ae S A F I Ae S  
 G S Hislop Ph D B Sc (Eng) A R T C M I Mech E F R Ae S

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

**VOL 12 No 3**

**JUNE 1958**

**PRICE 10/6**

*IHF COUNCIL*

*Chairman*

J W Richardson A F R Ae S

B H Arkell A F R Ae S

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

A E Bristow A R Ae S

J A Cameron

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

W R Gellatly A F C

M H C Gordon

R Hafner F R Ae S

J L Harper A F C

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

A McClements A R T C  
 M I Mech I

H Roberts Ph D B Sc D I C  
 A F R Ae S A M I Mech I

J S Shapiro Dipl Ing  
 A F R Ae S

D L Hollis Williams B Sc  
 F R Ae S

*Hon Secretary*

H Roberts Ph D B Sc D I C,  
 A F R Ae S A M I Mech E

*Hon Treasurer*

W G Leslie A C I S

*Asst Secretary*

Miss P Chute

*Journal Hon Editor*

B H Arkell A F R Ae S

*Technical Editors*

D M Davies M A A F R Ae S

H Roberts Ph D B Sc D I C  
 A F R Ae S A M I Mech E

J S Shapiro Dipl Ing  
 A F R Ae S

R H Whitby D I C A R C Sc  
 B Sc 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**

	<i>Page</i>
<b>ON THE WIND TUNNEL TESTING OF HELICOPTER MODELS</b>	
By M S HOOPER	91
<b>DISCUSSION</b>	111
<b>SOME WAYS OF OBTAINING AN INTEGRATED AIRCRAFT</b>	
By D KUCHEMANN	121
<b>DISCUSSION</b>	134

**NOTICES**

**OBJECTS OF THE ASSOCIATION**

The objects of the Association are to collect complete 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*

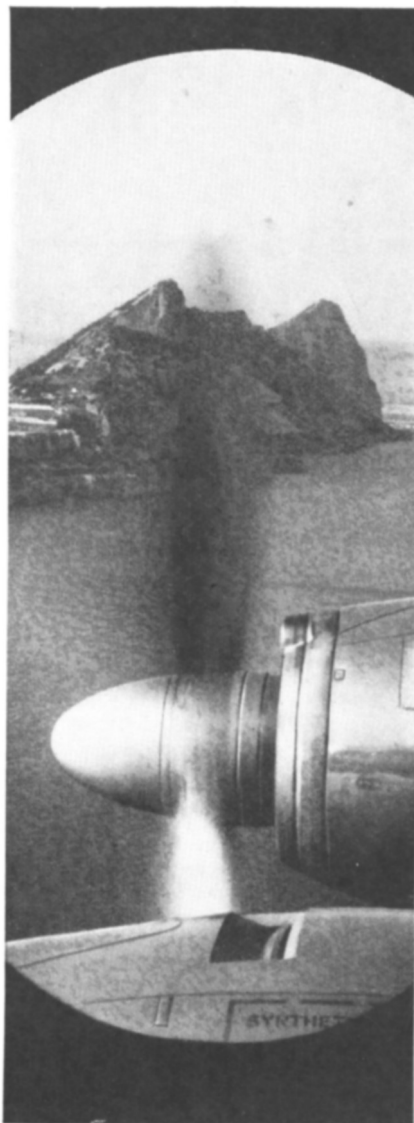
S H Pilton Effingham House Arundel Street London WC 2

# 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