



JANUARY 1976

THE
aeronautical
JOURNAL



THE ROYAL AERONAUTICAL SOCIETY



WESTLAND HELICOPTERS

**SEA KING
NAVY LYNX
LYNX
COMMANDO
GAZELLE
WESTLAND 606
PUMA**

Have you checked the helicopter scene lately?
Applied aerodynamics, dynamics, structural design, advanced
stress analysis, design of gearing and rotating machinery,
aircraft systems, avionics systems, weight prediction, market
research, operations analysis; it's all happening at

Westland—worth working for

Puma, Lynx and Gazelle are produced in cooperation with Aerospatiale France.

Westland[®]

WESTLAND HELICOPTERS YEOVIL ENGLAND

7 times winner of the Queen's Award to Industry

VOLUME 80
NUMBER 781
JANUARY 1976

THE
aeronautical
JOURNAL
*Incorporating The Institution of Aeronautical Engineers and
The Helicopter Association of Great Britain*
Published Monthly

contents

Editor: G. R. Wrixon, AMRAeS.
Assistant Editors:
Jay Wolff, David Scallion.

Secretary of the Society:
E. M. J. Schaffter, MA, CEng,
MRAeS.
4 Hamilton Place, London
W1V 0BQ. 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:
John G. Newman,
Wheelwrights, Dormansland,
Lingfield, Surrey RH7 6PS.
Tel: Lingfield (STD 0342)
832603.

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

Subscriptions: £27.50 per annum,
post free.

Single copies, including back
numbers: £2.50

Published by
The Royal Aeronautical Society,
4 Hamilton Place,
London W1V 0BQ, England.

D. L. Martlew, J. M. Hawkins, R. L. Brooking and A. S. Kennedy

THE DESIGN, CONSTRUCTION AND OPERATION OF THE NOISE
TEST FACILITY AT THE NATIONAL GAS TURBINE ESTABLISHMENT 1

P. S. Langford

THE PRINCIPLES AND PRACTICE OF AIRWORTHINESS CONTROL 20

W. H. McKinlay

INERTIAL NAVIGATION AND ITS IMPACT ON FUTURE AVIONICS
SYSTEMS 29

I. R. Yates

JAGUAR—A COLLABORATIVE MILITARY AIRCRAFT PROGRAMME 35

Library, Reviews, Additions and Reports 44

Cover picture:

Jaguars have now entered service with the RAF in substantial numbers. It is the first combat aircraft to do so as the result of a collaborative programme, shared in this instance between Britain and France, on both the airframe and the engine. In this issue Mr. Ivan Yates, Director of Projects, BAC Preston, traces the history of this successful project from its inception to the production and in-service phase.

The Royal Aeronautical Society

FOUNDED 1866

INCORPORATED BY ROYAL CHARTER 1949

Patron: HER MAJESTY THE QUEEN

COUNCIL

President: AIR MARSHAL SIR CHARLES PRINGLE, KBE, MA, CEng, FRAeS

President-Elect: C. ABELL, OBE, FSLAET, CEng, FRAeS

Vice-Presidents:

H. DAVIES, CB, MSc, CEng, FRAeS
PROF. L. F. CRABTREE, BSc, DIC, PhD, CEng, AFAIAA, FRAeS
M. J. BRENNAN, BSc, CEng, FIMechE, FRAeS

Past Presidents:

K. G. WILKINSON, HonDSc, BSc, DIC, FCGI, CEng, FCIT, FRAeS
DR. G. S. HISLOP, PhD, BSc, ARCST, CEng, FRAeS
B. P. LAIGHT, OBE, MSc, CEng, MIMechE, FRAeS

Members:

A. J. ADCOCK, BSc(Eng), AMRAeS
AIR CDRE F. R. BANKS, CB, OBE, HonCGIA, CEng, HonFAIAA, HonFRAeS,
RAF (Ret'd)
F. R. J. BRITTEN, CBE, CEng, MRAeS
CAPTAIN E. M. BROWN, CBE, DSC, AFC, FRAeS, RN (Ret'd) (*Chairman, Rotorcraft Section*)
N. FALCONER, MRAeS
PROF. M. G. FARLEY, CEng, FIMechE, MBIM, FRAeS
D. J. FARRAR, OBE, MA, CEng, FRAeS
D. GILL, MRAeS (*President, Southern Africa Division*)
DR. W. F. HILTON, PhD, DSc, CEng, AFAIAA, FRAeS
F. J. LOW, MRAeS
E. W. R. MARTIN, MNDTS, LIM, AMRAeS
AIR CDRE J. R. MORGAN, OBE, BSc(Eng), CEng, FIMechE, FRAeS, RAF (Ret'd)
G. M. MOSS, MSc, CEng, MRAeS
DR. E. S. MOULT, CBE, BSc, CEng, FIMechE, FRAeS
CAPTAIN M. O'DONOVAN, MRAeS (*President, Rhodesia Division*)
AIR CDRE F. C. PADFIELD, BSc, CEng, MRAeS (*Chairman, Astronautics and Guided Flight Section*)
G. K. C. PARDOE, BSc(Eng), DLC, CEng, FBIS, FRAeS
T. R. PIKE, MRAeS (*President, New Zealand Division*)
R. P. PROBERT, CB, MA, CEng, FRAeS
V. A. B. ROGERS, MSc, CEng, FIMechE, FRAeS
J. T. STAMPER, MA, CEng, FRAeS
G. T. WANSBROUGH-WHITE, AMRAeS
J. M. WARNER, FRAeS (*President, Australian Division*)
G. E. WELLER, BTEch, AMRAeS (*Chairman, Graduates' and Students' Section*)
H. ZEFFERT, CEng, FIEE, FRAeS

Officers:

Hon. Treasurer: C. F. HUGHESDON, AFC, FRAeS
Solicitor: L. A. WINGFIELD, MC, DFC (*Hon. Companion*)
Secretary: E. M. J. SCHAFFTER, MA, CEng, MRAeS