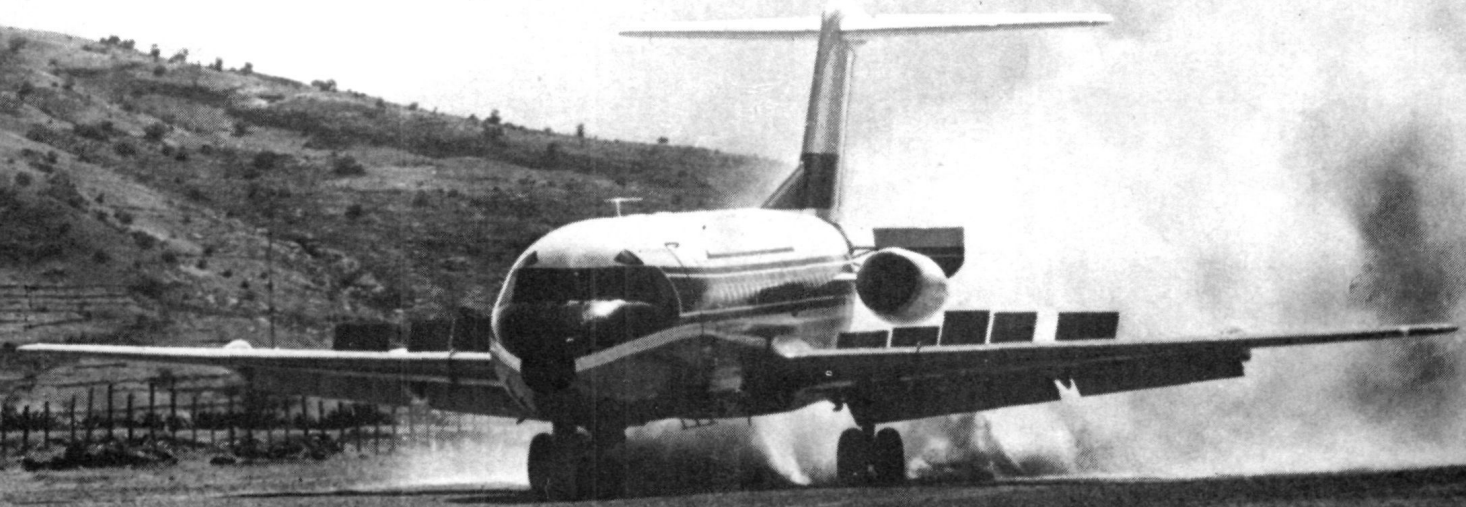




MAY 1977

THE AERONAUTICAL JOURNAL



THE ROYAL AERONAUTICAL SOCIETY



LYNX

Westland Lynx, Britain's new world-beating advanced technology helicopter. Fast, agile, all-weather, twin-engined, with comprehensive armaments and multi-role capability.

Lynx, a NATO project, is now in full-scale production to meet extensive orders from armed forces throughout the world.

Westland[®]

WESTLAND HELICOPTERS YEOVIL ENGLAND

The Queen's Award to Industry has been won 7 times by Companies in the Westland Group. Winners of the MacRobert Award for innovation in engineering.



VOLUME 81
NUMBER 797
MAY 1977

THE **aeronautical**

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

JOURNAL

Published Monthly

contents

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

*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:
J. G. Heller,
Cheiron Press Ltd,
8/10 Parkway,
London NW1 7AD.
Tel: 01-267 1285*

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

*Subscriptions: £36.00 per annum,
post free.*

*Single copies, including back
numbers: £3.00.*

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

ISSN: 0001-9240

K. G. Wilkinson THE ROLE OF ADVANCING TECHNOLOGY IN THE FUTURE OF AIR TRANSPORT	185
Alan R. Buley A COMPLEX MARKET SECTOR	193
Air Law Group Symposium AVIATION SAFETY VERSUS EMPLOYMENT PROTECTION; A CONFLICT?	199
J. E. A. Harrison AEROSPACE COST PREDICTION—THE WAY AHEAD	213
TECHNICAL NOTE R. V. Barrett Spray from aircraft undercarriages at high speed—a model investigation	220
Library, Reports	226

Cover picture:

The design and construction of a short haul jet airliner for the third level market is particularly demanding, as it must be capable of flying up to ten sectors a day, as well as having exceptionally good handling qualities on the approach and the ability to operate from a wide variety of airfields including unpaved strips. The suitability of the jet for this complex market sector is examined by Alan R. Buley in this issue. The F28 Fellowship is seen undergoing landing trials on a gravel runway in Peru.

DIVISIONS AND BRANCHES OF

THE ROYAL AERONAUTICAL SOCIETY

Australia Branches at: Canberra, Sydney, Melbourne and Adelaide.
President: J. M. WARNER, FRAeS. *Hon. Secretary:* B. A. J. SCOLES, MRAeS, 191 Royal Parade, Parkville, Victoria 3052.

Rhodesia Branches at: Bulawayo, Gwelo and Salisbury.
Hon. President: Sir HUMPHREY GIBBS, KCMG. *President:* M. MADDERS, FRAeS. *Hon. Secretary:* Mrs. MARGARET HEAP, Assoc RAeS, P.O. Box 3759, Salisbury.

New Zealand Branches at: Auckland, Wellington, Palmerston North, Christchurch, Hamilton and Blenheim.
President: F. W. FAHY, FRAeS. *Hon. Secretary:* R. L. WILLIAMS, New Zealand National Airways Corpn, P.O. Box 96, Wellington.

Southern Africa Branches at: Johannesburg, Pretoria, Cape Western and Durban.
President: Dr. B. W. SKEWS, MRAeS. *Hon. Secretary:* N. A. H. BARRAUD, CEng, MRAeS, P.O. Box 27335, Sunnyside 0132, RSA.

Bedford
President: Air Cdre. B. BROWNLOW, CBE, AFC, RAF.
Chairman: Wg. Cdr. E. J. HAMMOND, MRAeS.
Hon. Secretary: K. PALLISTER, MRAeS, 16 Lilac Walk, Kempston, Bedford MK42 7PE. Tel: Bedford 851284.

Belfast
President: P. F. FOREMAN, CBE, FRAeS.
Chairman: C. D. HATTON, FRAeS.
Hon. Secretary: T. E. MORRISON, MRAeS, Dept. of Mech. Eng., College of Technology, College Square East, Belfast BT1 6DJ. Tel: Work—Belfast 27244. Home—Dundonald 3403.

Birmingham and Wolverhampton
President: J. H. GOODIER, MRAeS.
Chairman: P. N. DENT, MRAeS.
Hon. Secretary: E. V. G. ALBRECHT, MRAeS, 2 Stonehouse Avenue, The Dingle, Willenhall, West Midlands, WV13 1AP. Tel: 0902 67755.

Boscombe Down
President: Air Cdre. H. A. MERRIMAN, CBE, AFC, MRAeS, RAF.
Chairman: C. REDMAYNE, CEng, MRAeS.
Hon. Secretary: T. J. HOWARD, MBE, CEng, MRAeS, A & AEE, Boscombe Down, Amesbury, Salisbury, Wilts. Tel: 098 02 3331. Ex. 2483.

Bristol
President: Dr. W. J. STRANG, CBE, CEng, FRAeS.
Chairman: B. RAYBOULD, MRAeS.
Hon. Secretary: Dr. R. K. NANGIA, MRAeS, Dept of Aero Engng, University of Bristol, Queens Bldg, Bristol BS8 1TL. Tel: 0272 24161. Ex. 459.

Brough
President: R. D. BOOT, FRAeS.
Chairman: R. J. CHANDLER, AMRAeS.
Hon. Secretary: R. MELLING, CEng, MRAeS, c/o Hawker Siddeley Aviation Ltd, Brough, HU15 1EQ. Tel: 0482 667121. Ex. 311.

Cambridge
President: Professor W. A. MAIR, CBE, FRAeS.
Chairman: N. A. J. HARRY, FRAeS.
Hon. Secretary: G. T. ATKINS, MRAeS, Marshall of Cambridge (Engineering) Ltd, Newmarket Road, Cambridge. Tel: 0223 61133.

Chester
President: J. GARSTON, FRAeS.
Chairman: V. W. CLARKSON, MRAeS.
Hon. Secretary: J. R. YOUNG, AMRAeS, Hawker Siddeley Aviation Ltd, Broughton, Chester. Tel: 0244 24646.

Christchurch
President: P. S. MACGREGOR, MBE, FRAeS.
Chairman: D. E. CAILES, MRAeS.
Hon. Secretary: R. WELLS, AMRAeS, BAC Ltd, Bournemouth (Hurn) Airport, Christchurch, Dorset. Tel: 020-16 3201.

Coventry
President: C. BAYLY, FRAeS.
Chairman: A. J. WEBBER, MRAeS.
Hon. Secretary: A. J. EAGLES, 30 Lupton Ave, Coventry, CV3 5BQ. Tel: Work—0203 452152, Ex. 3688. Home—0203 415412.

Cranwell
President: Air Vice Marshal W. E. COLAHAN, CBE, DFC, RAF.
Chairman: Air Cdre. H. F. GLOVER, CEng, MRAeS.
Hon. Secretary: Flt. Lt. T. M. HOLLOWAY, RAF, RAF College, Cranwell, Sleaford, Lincs. Tel: 0400 61201. Ex. Trenchard 274.

Derby
President: D. A. HEAD, MRAeS.
Chairman: A. D. JACKSON, FRAeS.
Hon. Secretary: C. HORNBLLOWER, AMRAeS, Rolls-Royce (1971) Ltd, Derby, DE2 8BJ. Tel: 0332 42424. Ex. 1476.

Dublin
President: Capt. J. C. KELLY-ROGERS, OBE, FRAeS.
Chairman: M. C. MCGOVERN, CEng, MRAeS.
Hon. Secretary: BRIAN KEOGH, AMRAeS, 15 Orchard Green, Blanchardstown, Co. Dublin.

Glasgow
President: Dr. A. W. BABISTER, MRAeS.
Chairman: F. FRENCH, MRAeS.
Hon. Secretary: T. K. BLACK, 43 Partickhill Road, Glasgow, G11 5BY. Tel: 041 221 9600. Ex. 2410; 041 334 7193 (Home).

Gloucester and Cheltenham
President: R. F. HUNT, FRAeS.
Chairman: K. BEST, MRAeS.
Hon. Secretary: R. W. WHITE, MRAeS, c/o Smiths Industries Ltd, Bishops Cleeve, Cheltenham, Glos. Tel: 024-267 3333.

Halton
President: Air Cdre. M. P. STANTON, CBE.
Chairman: Gp. Capt. E. E. LAKE, MRAeS.
Hon. Secretary: Sqn. Ldr. P. M. EWING, MRAeS, Basic Studies Wing, No. 1 School of Technical Training, RAF Halton, Bucks HP22 5PG. Tel: 0296 623535. Ex. 369.

Hatfield
President: Sir HARRY BROADHURST.
Chairman: D. R. NEWMAN, FRAeS.
Hon. Secretary: G. B. EVANS, FRAeS, Drawing Office, Hawker Siddeley Aviation Ltd, Hatfield, Herts. Tel: 30 62345.

Isle of Wight
President: Sir CHRISTOPHER HARTLEY, KCB, GBE, DFC, AFC.
Chairman: R. L. WHEELER, MRAeS.
Hon. Secretary: D. S. B. FLIPPANCE, Design Office, British Hovercraft Corporation Ltd, East Cowes, Isle of Wight. Tel: 098-382 4121.

London Airport
President: E. R. MAJOR, FRAeS.
Chairman: H. G. ROSSITER, FRAeS.
Hon. Secretary: D. S. FORSYTH, AMRAeS, 3 Mole Abbey Gdns, West Molesey, Surrey. Tel: Office 759 3131, Ex. 4755. Home 979 7588.

Loughborough
President: Professor D. J. JOHNS, FRAeS.
Chairman: F. G. MACCABEE, MRAeS.
Hon. Secretary: L. E. WOODFIELD, AMRAeS, Transport Technology Dept, Loughborough University of Technology, Loughborough, Leics LE11 3TU. Tel: Loughborough 63171, Ex. 470.

Luton and Stevenage
President: G. D. PEACOCK, FRAeS.
Chairman: C. H. MARTIN, CEng, FRAeS.
Hon. Secretary: D. A. GIBBS, AMRAeS, McAlpine Aviation, Luton Airport, Beds. Tel: 0582 24182.

Manchester
President: C. E. FIELDING, OBE, FRAeS.
Chairman: J. B. SCOTT-WILSON, MRAeS.
Hon. Secretary: M. J. TAYLOR, CEng, MRAeS, Flight Development Dept, Hawker Siddeley Aviation Ltd, Woodford, Stockport, Cheshire. Tel: 061-439-5050. Ex. 558.

Medway
Chairman: P. A. HEARNE, FRAeS.
Hon. Secretary: M. MOULTON, MRAeS, c/o Marconi Elliott Avionic Systems Ltd, Airport Works, Rochester, Kent. Tel: 0634 44400.

Preston
President: F. E. ROE, FRAeS.
Chairman: H. C. CHANNON, MRAeS.
Hon. Secretary: D. K. KEMPSTON, MRAeS, British Aircraft Corpn Ltd, Warton Aerodrome, Preston. Tel: Preston 633333. Ex. 183.

Prestwick
President: R. MCINTYRE, FRAeS.
Chairman: T. C. OVEREND, DFM, AMRAeS.
Hon. Secretary: P. BERRY, MRAeS, 9 Carclue Crescent, Ayr. Tel: 0292 42747.

Southampton
President: N. E. ROWE, CBE, HonFRAeS.
Chairman: Prof. I. C. CHEESEMAN, FRAeS.
Hon. Secretary: Dr. R. A. EAST, MRAeS, Dept of Aeronautics and Astronautics, The University, Southampton SO9 5NH. Tel: 0703 559122, Ex. 2318.

Southend
President: J. R. BATT, MRAeS.
Chairman: A. J. BROOKE-WALDER, MRAeS.
Hon. Secretary: P. R. GROUT, AMRAeS, 36 Alexandra Road, Rochford, Essex. Tel: 0702 546160.

Swindon
President: W. GILLESPIE, MRAeS.
Chairman: F. G. T. QUINNEY, MRAeS.
Hon. Secretary: W. H. BUNTING, MRAeS, Vickers Ltd, Design and Procurement Div, PO Box 44, Swindon. Tel: Stratton St. Margaret 3241.

Thames Valley
President: E. N. MOBBS.
Chairman: J. L. FAREHAM, MRAeS.
Hon. Secretary: A. G. FOSKETT, MRAeS, M.L. Aviation Co Ltd, White Waltham Aerodrome, Berks. Tel: 062-882 3361.

Weybridge
President: F. W. PAGE, CBE, FRAeS.
Chairman: N. W. BOORER, FRAeS.
Hon. Secretary: A. M. DOBSON, MRAeS, BAC Ltd, Commercial Aircraft Division, Weybridge, Surrey. Tel: 97 45522, Ex. 6945.

Yeovil
President: B. D. BLACKWELL, FRAeS.
Chairman: Dr. J. P. JONES, FRAeS.
Hon. Secretary: F. N. R. BALLAM, MRAeS, Westland Helicopters Ltd, Yeovil, Somerset. Tel: 0935 5222.