

# The **AERONAUTICAL** Journal



## Contents

**R. K. Nangia**

Aerodynamic and hydrodynamic aspects of high-speed water surface craft

**C. O. O'Leary and W. Drew**

Flow visualisation on rolling models using minitufts

**W. J. G. Trebble**

Investigations of the aerodynamic performance and noise characteristics of a Dowty Rotol R212 propeller at full-scale in the 24 ft wind tunnel

**Library reviews, additions and reports**

Incorporating

**The Aeronautical Quarterly**

**Volume 91 Number 906 June/July 1987**

## NOTES ON THE PREPARATION OF PAPERS FOR PUBLICATION IN THE AERONAUTICAL JOURNAL

All papers submitted for publication are sent to two referees.

Three clear copies of the manuscript, each complete with illustrations, should be submitted. Papers should be typed in double spacing and not exceed 10 000 words. Handwritten manuscripts cannot be accepted.

A list of all symbols used, both in the illustrations and in the text, should be given in alphabetical order at the beginning of the paper whether or not they are standard. All unfamiliar terms must be explained.

Symbols and formulae should be typewritten if possible. The use of dots, bars and so on, over symbols, or the use of dots as multiplication signs and bars for brackets should be avoided. Suffixes and indices must be clearly indicated and complicated suffixes avoided.

References should be numbered in the text where they occur, and a complete list of references given at the end of the paper. (The *Aeronautical Journal* uses the BSI Numeric System for reference — eg, author(s), title of contribution, title of periodical, year of publication, volume number, page numbers.)

Illustrations should be kept to a minimum. When the paper is first submitted they can be clear prints or graphs, sketches or photographs. If the paper is accepted, authors are asked to provide the original drawings, if possible, and clear, glossy, black-and-white photographs. All diagrams should be produced to the same scale.

### Conditions of Publication

An author must obtain consent, where necessary, to use any material in a paper which is copyright or the property of any other person or his employers.

Security clearance, if appropriate, must be obtained by the author before the paper is submitted.

The copyright of papers printed in the *Aeronautical Journal* is the property of The Royal Aeronautical Society. Permission to reprint or to use any paper will not be refused unreasonably.

Authors are entitled to 50 complimentary reprints of their papers. Authors may order any number of additional reprints at the time of printing and quotations can be provided.

# The AERONAUTICAL Journal

Incorporating the Aeronautical Quarterly



Head of Publications:  
Robert Bryanton

Editor: Jay Wolff,  
Assoc. Member RAeS

Deputy Editor: Michèle Didyk

Associate Editor:  
Professor L. F. Crabtree,  
PhD, CEng, FRAeS

4 Hamilton Place, London W1V 0BQ  
Tel: 01-499 3515  
Telex: 262826 RAESOC  
Cables: Didaskalos,  
London W1

Advertisements:  
Kevin Shead,  
T. G. Scott & Son,  
30-32 Southampton Street,  
London WC2E 7HR.  
Tel: 01-240 2032  
Telex: 299181.

(Telecopier facilities available)

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.

Printed by  
Manor Park Press Ltd.  
Unit 7, Highfield Industrial Estate,  
Edison Road, Hampden Park,  
Eastbourne.

Subscriptions: £122 per annum,  
post free.

RAeS members: £11.00 per  
annum.

Single copies, including back  
numbers: £12.

All foreign currency rates on  
application.

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

ISSN: 0001-9240

**PUBLISHED MONTHLY  
EXCEPT JUNE AND  
AUGUST**

## Contents

**241**

**R. K. Nangia**

Aerodynamic and hydrodynamic  
aspects of high-speed water surface  
craft

**269**

**C. O. O'Leary and W. Drew**

Flow visualisation on rolling models  
using minitufts

**275**

**W. J. G. Trebble**

Investigations of the aerodynamic  
performance and noise  
characteristics of a Dowty Rotol R212  
propeller at full-scale in the 24 ft  
wind tunnel

**285**

**Library reviews, additions  
and reports**

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

# The Royal Aeronautical Society

FOUNDED 1866

INCORPORATED BY ROYAL CHARTER 1949

*Patron: HER MAJESTY THE QUEEN*

## COUNCIL

*President:* PROFESSOR J. L. STOLLERY, DSc(Eng), DIC, CEng, FCGI, AFAIAA, FRAeS

*President-Elect:* Dr. P. H. CALDER, OBE, PhD, BSc(Hons), DIC, ACGI, CEng, MIMechE, FRAeS

### *Vice-Presidents:*

G. C. HOWELL, MA, MSc, CEng, FRAeS  
H. METCALFE, OBE, BSc, ARCS, FEng, FRAeS

*Vice-President Emeritus:* G. M. McCOOMBE, CEng, MIMechE, FRAeS

### *Past Presidents:*

Dr. G. K. C. PARDOE, PhD, BSc(Eng), DLC, CEng, FBIS, FRAeS  
T. H. KERR, CB, BSc, CEng, FRAeS  
Dr. J. W. FOZARD, OBE, HonDSc, DCAe, BSc(Hons), FEng, FIMechE, FRS, FAIAA, FRAeS

### *Members:*

A. E. M. BARTON, DFC, CEng, MRAeS  
P. J. BENNINGTON, TEng, AMRAeS  
A. L. BLACKMAN, OBE, MA, FRAeS  
V. W. CLARKSON, CEng, FRAeS (*Chairman — Branches Committee*)  
AIR MARSHAL SIR ERIC DUNN, KBE, CB, BEM, CEng, FRAeS, RAF  
R. FORRESTER, TEng, AMRAeS  
D. S. FORSYTH, TEng, FRAeS  
Dr J. E. GREEN, MA, PhD, CEng, FRAeS  
P. A. HEARNE, MSc, DLC, FEng, FIMechE, FRAeS  
R. J. HUBBARD, BSc(Eng), Student RAeS (*Chairman — Graduates and Students Section*)  
W. JAMES, MSc, CEng, MRAeS  
CAPT R. L. JONES, FAIAA, FRAeS  
B. P. LAIGHT, OBE, MSc, FEng, FIMechE, FRAeS  
Dr. G. G. POPE, CB, MSc(Eng), PhD, DIC, FCGI, CEng, FRAeS  
AIR MARSHAL SIR CHARLES PRINGLE, KBE, MA, FEng, CBIM, FRAeS, RAF(Ret'd)  
P. RICHARDS, TEng, AMRAeS  
D. J. RICHER, MSc, CEng, MRAeS  
P. R. SAMPSON, TEng, AMRAeS  
Dr. J. T. STAMPER, HonDSc, MA(Cantab), FEng, CBIM, HonFRAeS  
D. STINTON, MBE, CEng, MRINA, MIMechE, FRAeS  
D. J. WILLIAMS, Eng Tech, Technician  
A. T. WORKER, BSc, AMRAeS  
I. R. YATES, CBE, BEng, FEng, FIMechE, FAIAA, CBIM, FRAeS

### *Overseas Division:*

D. R. REES, CEng, FRAeS (*President — Australia*)  
WING COMMANDER G. MURRAY, CEng, MRAeS (*President — New Zealand*)  
B. H. PRESCOTT, PrEng, BSc(Eng), CEng, MRAeS (*President — South Africa*)  
WING COMMANDER F. R. SIMMONDS, CEng, MRAeS (*President — Zimbabwe*)

### *Officers:*

Hon. Treasurer: PROFESSOR M. G. FARLEY, HonCGIA, CEng, FIMechE, FCBIM, FIProdE, FRAeS  
Secretary: G. C. MAY, CEng, MIProdE, MRAeS