

# The Aeronautical Quarterly

*A Journal devoted to  
Aeronautics and the Allied Sciences*

## EDITORIAL BOARD

PROFESSOR W A MAIR (*Chairman*)

CBE, MA, FRAeS

SIR ARNOLD HALL

MA, FRS, HonFRAeS, HonFAIAA

DR J H HORLOCK

MA, PhD, FRS, FRAeS

LORD KINGS NORTON

DSc, DIC, PhD, HonFRAeS, FAIAA

SIR ALFRED PUGSLEY

OBE, DSc, FRS, HonFRAeS

PROFESSOR S C REDSHAW

DSc, PhD, FRAeS, FICE, FIStructE

SIR OWEN SAUNDERS

FRS, FRAeS

PROFESSOR W H WITTRICK

ScD, PhD, FRAeS

## EDITOR

PROFESSOR L F CRABTREE

## VOLUME XXX

FEBRUARY 1979 – NOVEMBER 1979

*Printed by Technical Editing and Reproduction Ltd, Harford House, 7–9 Charlotte St, London, W1P 1HD  
and Published by*

*The Royal Aeronautical Society, 4 Hamilton Place, London, W1V 0BQ*

# AUTHOR INDEX

(Volume XXX)

- ANDO, S and ICHIKAWA, A  
Derivation by a Transform Method of Integral Equations of Unsteady Lifting Surface Theory in Subsonic and Supersonic Flow, p 529 (November).
- BARAKAT, Richard *see* VENTRES, C Samuel
- BURESTI, G and LANCIOTTI, A  
Vortex Shedding from Smooth and Roughened Cylinders in Cross-Flow Near a Plane Surface, p 305 (February).
- CHEW, Y T  
Shock Wave and Boundary Layer Interaction in the Presence of an Expansion Corner, p 506 (August).
- COLLYER, M R and LOCK, R C  
Prediction of Viscous Effects in Steady Transonic Flow Past an Aerofoil, p 485 (August).
- EAST, R A *see* KHALID, M
- ICHIKAWA, A *see* ANDO, S
- KATZ, J and WEIHS, D  
The Effect of Chordwise Flexibility on the Lift of a Rapidly Accelerated Aerofoil, p 360 (February).
- KENNEDY, J L and MARSDEN, D J  
The Development of High Lift, Single-Component Aerofoil Sections, p 343 (February).
- LANCIOTTI, A *see* BURESTI, G
- KHALID, M and EAST, R A  
Stability Derivatives of Blunt Slender Cones at High Mach Numbers, p 559 (November).
- LEE, K C  
Aerodynamic Interaction Between Two Spheres at Reynolds Numbers Around  $10^4$ , p 371 (February).
- LOCK, R C *see* COLLYER, M R
- MABEY, D G  
Influence of the Wake Component on Turbulent Skin Friction at Subsonic and Supersonic Speeds p 590 (November).
- MANSFIELD, E H  
The Fibre-Composite Helicopter Blade  
Part I: Stiffness Properties, p 413 (May).
- MARSDEN, D J *see* KENNEDY, J L
- MIDDLETON, D  
The Generalization of a Double Integral Method with Applications to Jets in Unbounded Co-Flows p 322 (February).
- MOREL, Thomas  
Effect of Base Cavities on the Aerodynamic Drag of an Axisymmetric Cylinder, p 400 (May).
- MORIKAWA, Y *see* TSUJI, Y
- MURRAY, J C  
Incompressible Flow Past a Wing-Body Combination Using General Curvilinear Coordinates, p 451 (August).
- POLL, D I A  
Transition in the Infinite Swept Attachment Line Boundary Layer, p 607 (November).
- SOBEY, A J  
The Fibre-Composite Helicopter Blade  
Part II: Prospects for Aeroelastic Tailoring, p 432 (May).
- TSUJI, Y and MORIKAWA, Y  
Linear Stability of a Radial Wall Jet, p 544 (November).
- VENTRES, C Samuel and BARAKAT, Richard  
Aerodynamics of Aerofoils with Porous Trailing Edges, p 387 (May).
- WEIHS, D *see* KATZ, J
- YOUNG, A D *see* ZAMIR, M
- ZAMIR, M and YOUNG, A D  
Pressure Gradient and Leading Edge Effects on the Corner Boundary Layer, p 471 (August).  
Corrigendum, p 606 (November).

## SUBJECT INDEX TO VOLUME XXX – 1979

### AERODYNAMIC INTERACTION

*See* Two-phase Flow

### AEROELASTICITY

The Effect of Chordwise Flexibility on the Lift of a Rapidly Accelerated Aerofoil, J Katz and D Weihs, p 360 (February).

### AEROFOILS

The Development of High Lift, Single-Component Aerofoil Sections, J L Kennedy and D J Marsden, p 343 (February).  
Aerodynamics of Aerofoils with Porous Trailing Edges, C S Ventres and R Barakat, p 387 (May).  
Prediction of Viscous Effects in Steady Transonic Flow Past an Aerofoil, M R Collyer and R C Lock, p 485 (August).  
*See also* Aeroelasticity

### BASE DRAG

Effect of Base Cavities on the Aerodynamic Drag of an Axisymmetric Cylinder, T Morel, p 400 (May).

### BOUNDARY LAYER

Pressure Gradient and Leading Edge Effects on the Corner Boundary Layer, M Zamir and A D Young, p 471 (August).

### BOUNDARY LAYER CONTROL

*See* Aerofoils

### FIBRE COMPOSITES

*See* Helicopter blades

### HELICOPTER BLADES

The Fibre-Composite Helicopter Blade  
Part I: Stiffness Properties, E H Mansfield, p 413 (May).  
Part II: Prospects for Aeroelastic Tailoring, A J Sobey, p 432 (May).

### HYPERSONIC FLOW

Stability Derivatives of Blunt Slender Cones at High Mach numbers, M Khalid and R A East, p 559 (November).

### LIFTING SURFACE THEORY

Derivation by a Transform Method of Integral Equations of Unsteady Lifting Surface Theory in Subsonic and Supersonic Flow, S Ando and A Ichikawa, p 529 (November).

### SHOCK WAVE – BOUNDARY LAYER

#### INTERACTION

Shock Wave and Boundary Layer Interaction in the Presence of an Expansion Corner, Y T Chew, p 506 (August).

### STABILITY DERIVATIVES

*See* Hypersonic Flow

### TRANSITION

Transition in the Infinite Swept Attachment Line Boundary Layer, D I A Poll, p 607 (November).

### TRANSONIC FLOW

*See* Aerofoils

### TURBULENT JETS

The Generalization of a Double Integral Method with Applications to Jets in Unbounded Co-Flows, D Middleton, p 322 (February).  
*See also* Wall jets

### TURBULENT SKIN FRICTION

Influence of the Wake Component on Turbulent Skin Friction at Subsonic and Supersonic Speeds, D G Mabey, p 590 (November).

### TWO-PHASE FLOW

Aerodynamic Interaction Between Two Spheres at Reynolds Numbers Around  $10^4$ , K C Lee, p 371 (February).

### UNSTEADY FLOW

*See* Lifting Surface Theory

### VISCOUS EFFECTS

*See* Aerofoils

### VORTEX SHEDDING

Vortex Shedding from Smooth and Roughened Cylinders in Cross-Flow Near a Plane Surface, G Buresti and A Lanciotti, p 305 (February).

### WALL JETS

Linear Stability of a Radial Wall Jet, Y Tsuji and Y Morikawa, p 544 (November).

### WING-BODY COMBINATIONS

Incompressible Flow Past a Wing-Body Combination Using General Curvilinear Coordinates, J C Murray, p 451 (August).

## NOTICE TO CONTRIBUTORS

Papers for consideration should be addressed to the editor (see inside front cover).

Papers must be as short as possible, twenty foolscap pages being considered a maximum. Those written as internal reports, i.e. with full descriptions and complete results of work, must be re-written concisely.

Manuscripts should be read critically, for example by a colleague, before submission, in order to avoid small errors, *which might otherwise prolong the refereeing process.*

### PRESENTATION

Papers submitted should comply with the following points:

1. They must be typewritten with double spacing. The provision of two copies is advisable.
2. The title must be short.
3. A summary of not more than 250-300 words is essential.
4. Routine mathematics should be omitted or given in an Appendix; the main text should contain only necessary equations.
5. **SI Units must be used.**
6. *All* symbols used in the text and figures, whether standard or not, must be listed in a Notation and the following points observed:
  - (a) Greek letters should be clearly written in ink and should also be indicated by name where they first appear.
  - (b) 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.
  - (c) Suffixes and indices must be clearly indicated and complicated suffixes avoided.
7. References should be given in the form:

L C Squire. Experimental results for waveriders in certain off-design conditions. *Aeronautical Quarterly*, Vol. XXII, p 225, August 1971.
8. Illustrations should be reduced to a minimum. When the paper is first submitted they can be clear prints of graphs, sketches or photographs. If the paper is accepted, authors will be expected to provide black and white line drawings or graphs, in a form suggested by the editorial staff, and clear glossy photographs.
9. Tables should not duplicate information given in graphs.

### CONDITIONS OF PUBLICATION

1. An author must obtain consent, where necessary, to use any material in his paper which is copyright or the property of any other person or his employers.
2. The copyright of every paper printed in *The Aeronautical Quarterly* is the property of The Royal Aeronautical Society. Permission to reprint or to use any paper will not be refused unreasonably.

### REPRINTS

1. Authors will be entitled to 15 complimentary offprints of their papers, taken direct from the printed version.
2. Authors can order any number of additional *reprints*, re-imposed and with a title page. Order forms are sent to authors when proofs are submitted for correction.

---

The *Aeronautical Quarterly* is published at the Offices of The Royal Aeronautical Society, 4 Hamilton Place, London, W1V 0BQ, at £5.00 net for a single number to non-members and £1.50 net for a single number to members of The Royal Aeronautical Society. None of the papers must be taken as expressing the opinion of the Council of the Royal Aeronautical Society unless such is definitely stated to be the case.

Telephone: 01-499 3515/9. Cables: Didaskalos, London, W1V 0BQ

# THE AERONAUTICAL QUARTERLY

---

It is the aim of *The Aeronautical Quarterly* to attract not only original papers contributing to aeronautical science and engineering, and papers developing new or improved methods of analysis and experimental techniques, but also papers on allied sciences which have a bearing on aeronautical problems. *The Aeronautical Quarterly* is open to authors of any nationality and is not restricted to members of the Society.

The Editor makes efforts to reduce, as far as possible, the time lag between receipt and publication of a paper. Papers which do not require major revision after refereeing can usually be published within six months, especially if they are short ones.

## CONTRIBUTIONS

The attention of authors is drawn to the "Notice to Contributors" inside this cover. In addition, a leaflet on the preparation of papers published by the Royal Aeronautical Society is available on request from the Editor.

## PRICE

The Council of the Society has decided that in future *The Aeronautical Quarterly* must be self-supporting. This decision, together with increased printing costs and much increased postal charges, has made an increase in the subscription rate inevitable. The new prices are given below.

*The Aeronautical Quarterly* is published in February, May, August and November and the prices for Volume XXX, which include postage and packing, will be as follows:

	<i>To Members of the Society</i>	<i>To Non-Members</i>
Per Part	£1.50	£5.00
Subscription (4 parts)	£6.00	£19.00

*Printed by Technical Editing and Reproduction Ltd, Harford House, 7-9 Charlotte St, London, W1P 1HD,  
from copy supplied by the Royal Aeronautical Society.*

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