

JOURNAL of the AUSTRALIAN MATHEMATICAL SOCIETY

Series B — Applied Mathematics

Volume 34 Part 3
JANUARY 1993

The likely antecedents of improbable events: optimal search strategies	
A. M. Fink and L. Bass	257
Variational principles, duality, Legendre transformations and mine shaft ventilation	
A. M. Watts	274
Global stability of the endemic equilibrium and uniform persistence in epidemic models with subpopulations	
Xiaodong Lin and Joseph W.-H. So	282
Joined dissimilar orthotropic elastic cylindrical membranes under internal pressure and longitudinal tension	
V. G. Hart and Jingyu Shi	296
On a nonlinear reaction-diffusion boundary-value problem: application of a Lie-Bäcklund symmetry	
Philip Broadbridge and Colin Rogers	318
Radial flow through deformable porous shells	
S. I. Barry and G. K. Aldis	333
Linearised evaporation about a shallow half-plane pond	
G. J. Weir	355
Free-surface flow due to a source submerged in a fluid of infinite depth with two stagnant regions	
Hocine Mekias and Jean-Marc Vanden-Broeck	368
Flow induced by a line sink in a quiescent fluid with surface-tension effects	
Lawrence K. Forbes and Graeme C. Hocking	377

Set by the American Mathematical Society
Printed by Cushing-Malloy, Inc., Ann Arbor, Michigan, U.S.A.

The Journal of the Australian Mathematical Society began publication in 1959, and from 1975 appears in two series, Series A (Pure Mathematics and Statistics) and Series B (Applied Mathematics). Series B is published in volumes comprising four quarterly parts. Information about Series A and other publications of the Society may be found on the inside back cover.

It is the editorial policy of Series B to accept papers in any field of applied mathematics and related mathematical sciences. Novel applications of mathematics in real situations are especially welcomed. All papers should include some indication of applicability, and an introduction that can be understood by non-specialist readers from the whole applied mathematical community.

Editor of the Journal, Series B

E. O. TUCK, Applied Mathematics Department, University of Adelaide, G.P.O. Box 498, Adelaide, S.A. 5001, Australia.

Associate Editors

B. D. CRAVEN
Department of Mathematics
University of Melbourne
Parkville Vic. 3052

R. H. J. GRIMSHAW
Department of Mathematics
Monash University
Clayton Vic. 3168

J. F. HARPER
Department of Mathematics
Victoria University
of Wellington
P.O. Box 600
Wellington, New Zealand

J. M. HILL
Department of Mathematics
University of Wollongong
P.O. Box 1144
Wollongong N.S.W. 2500

C. A. HURST
Department of Physics and
Mathematical Physics
University of Adelaide
G.P.O. Box 498
Adelaide S.A. 5001

P. KLOEDEN
Department of Computing
and Mathematics
Deakin University
Geelong Vic. 3217

M. R. OSBORNE
Department of Statistics
Institute of Advanced Studies
A.N.U., P.O. Box 4
Canberra A.C.T. 2600

C. E. M. PEARCE
Applied Mathematics Department
University of Adelaide
G.P.O. Box 498
Adelaide S.A. 5001

I. H. SLOAN
School of Mathematics
University of N.S.W.
Kensington N.S.W. 2033

W. W. WOOD
Department of Mathematics
University of Melbourne
Parkville Vic. 3052

Assistant Editors

E. A. COUSINS, J. VAN DER HOEK, Applied Mathematics Department, University of Adelaide, G.P.O. Box 498, Adelaide, S.A. 5001, Australia.

Manuscripts (three copies) for publication should be sent to the editor or to an appropriate associate editor at the address given above. Such action is a representation by the author that the manuscript has not been copyrighted or published, and that it is not being considered for publication elsewhere.

Authors are asked to read the section "Preparation of Manuscripts" on the outside cover.

Irrespective of the number of authors, 100 free offprints of each paper are provided; additional offprints may be ordered at the expense of the authors.

Excessive costs incurred by the Society through corrections to or withdrawal of articles may be charged to the authors concerned.

Journal of the Australian Mathematical Society, Series B—Applied Mathematics (ISSN 0334-2700) is published quarterly for A\$150 (Members A\$21) per annum by the Australian Mathematical Society, Department of Mathematics, University of Queensland, Qld. 4072, Australia. Second class postage is paid at Ann Arbor, Michigan 48106. Postmaster: Send address change notices to Dr B. D. Jones, Journal of the Australian Mathematical Society, Department of Mathematics, University of Queensland, Qld. 4072, Australia.