

The JOURNAL of NAVIGATION

VOL. 36, NO. 3

SEPTEMBER

1983

The Present Status of Navstar	341
G. E. COOK	
GPS for Aviation	350
S. RATCLIFFE	
GPS for Marine Navigation	355
R. MAYBOURN	
Integrated Navigation Systems for Aircraft	359
R. F. STOKES AND S. G. SMITH	
New Display Systems for the Next Generation of Civil Aircraft	379
MAURICE BERNARD	
Sources of Latitude Error in English Sixteenth Century Navigation	388
GERALD FORTY	
Collision Threat Parameters for a New Radar Display and Plot Technique	404
ANDRZEJ S. LENART	
Collision Avoidance from the Shore	411
THOMAS DEGRÉ AND XAVIER LEFÈVRE	
Quantitative Measurements of Navigational Safety	418
E. M. GOODWIN, W. G. P. LAMB AND J. F. KEMP	
Marine Traffic Behaviour in Restricted Waters	430
T. G. COLDWELL	
Traffic Control in Separation Schemes	445
WŁODZIMIERZ FILIPOWICZ	
Defining the Close-Quarters Situation at Sea	454
HELMUT HILGERT	
The Effectiveness of Ship Routing off North West Europe	462
A. N. COCKROFT	
Nautical Chart Standardization	468
D. W. NEWSON	
Ship-based Weather Routing Using Dynamical Meteorology	480
R. MOTTE	

FORUM

In a Flat Spin	496
J. E. D. WILLIAMS	
What Course Should You Steer?	500
LANGLEY R. MUIR	
Reviews	502
Record	505

THE ROYAL INSTITUTE OF NAVIGATION
CAMBRIDGE UNIVERSITY PRESS

THE ROYAL INSTITUTE OF NAVIGATION

Patron

HRH THE PRINCE PHILIP DUKE OF EDINBURGH, KG, KT, OM

OFFICERS AND COUNCIL 1982-3

President

Captain B. J. Calvert

Vice Presidents

Rear-Admiral D. W. Haslam, CB, OBE
D. M. Page

Treasurer

G. E. Beck

Chairman of the Technical Committee

Dr J. F. Kemp

Chairman of the Membership & Fellowship Committee

M. G. Pearson

Other Members of Council

J. H. Beattie	Lieutenant Commander H. D. Howse, MBE, DSC, RN
Wing Commander D. W. Broughton, MBE, RAF	Commander J. Paton, RN (ret)
Captain R. A. Cahill	Commander P. Le Pla, RN
Wing Commander E. E. Eatwell, RAF	Commander M. R. H. Llewellyn, RD, RNR (ret)
Commander A. E. Fanning, MBE, DSC, RN (ret)	Captain L. W. Fifield

Director Rear Admiral R. M. Burgoyne, CB

THE JOURNAL OF NAVIGATION

The *Journal* is published three times a year by Cambridge University Press and is edited by M. W. Richey. It contains original papers contributing to the science of navigation, including those presented at the meetings of the Institute together with the ensuing discussion. In addition the *Journal* includes a record of current navigational work, reviews of important books, and other matters of concern to those interested in navigation. The views expressed in the *Journal* are not necessarily those of the Institute, or of any organization or department to which the authors may belong. Crown Copyright may be reserved.

The *Journal* (ISSN 0020-3009) is issued free to all Members of the Institute. The subscription price to non-members for Volume 36, 1983, is £35 (USA and Canada us \$89.00) post free; single parts are available at £14 (USA and Canada us \$35) plus postage. Orders, which must be accompanied by payment, may be sent to any bookseller or subscription agent or direct to the publishers, Cambridge University Press, The Edinburgh Building, Shaftesbury Road, Cambridge CB2 2RU, or in the USA and Canada to Cambridge University Press, 32 East 57th Street, New York, N.Y. 10022. Back volumes are also available from the Publishers at £27 each.

Enquiries for advertising space should be addressed to Cambridge University Press at the address given above.

The postal address of the Institute is The Royal Institute of Navigation, at The Royal Geographical Society, 1 Kensington Gore, London SW7 2AT (Telephone: 01-589 5021).

© 1983 The Royal Institute of Navigation