In this issue a thematic set of 20 papers on THE ICELAND PLUME AND ITS INFLUENCE ON THE EVOLUTION OF THE NE ATLANTIC

also

- REE mobility during sandstone diagenesis
- Ordovician extinctions and sea-levels
- Tectonic evolution of the Ural Orogen
- Late-orogenic extensional tectonics, Scotland
- Nd protolith ages in the Mozambique belt
- Mass mortalities on an Irish Silurian seafloor
- Dyke domains, Troodos ophiolite, Cyprus
THE GEOLOGICAL SOCIETY

OFFICERS AND COUNCIL

Elected 6 June 1995

Professor R. S. J. Sparks (President)
Dr S. J. Culver (Secretary)
Dr A. C. Higgins (Secretary)
Professor R. J. Howarth (Secretary)
Professor R. C. Selley (Foreign Secretary)
Professor B. E. Leake (Treasurer)
Dr C. H. Bland

Dr M. J. Carter
Professor J. A. Catt
Mr C. J. Dixon
Mr K. L. Duff
Dr J. W. Gaskarth
Dr J. P. B. Lovell
Professor D. G. Murchison
Professor R. W. Nesbitt

Mr D. R. Norbury
Mr M. Price
Mr H. M. Prichard
Mr G. M. Reeves
Mr J. K. Shanklin
Dr C. P. Summerhayes
Professor D. H. Tarling
Dr N. H. Woodcock

EDITORIAL BOARD

Chief Editor: Dr M. J. Le Bas

Editors

Dr K. H. Brodie
Dr J. A. Evans
Dr I. J. Fairchild
Dr S. Kelley
Dr J. D. Bell
Dr R. E. Bevins
Prof. M. Brooks
Prof. D. L. Bruton
Prof. F. W. Cambray
Dr L. R. M. Cocks

Dr A. J. Maltman
Dr S. G. Molyneux
Dr D. Pirrie
Dr M. A. Cooper
Dr J. C. W. Cope
Prof. I. W. D. Dalziel
Dr M. H. Dodson
Prof. R. O. Greiging
Dr P. L. Hancock

Dr A. M. Roberts
Dr N. W. Rogers
Dr H. R. Rollinson
Dr N. B. W. Harris
Dr R. T. Haworth
Prof. J. D. Hudson
Prof. V. Köppel
Dr R. J. Pankhurst

Dr G. B. Shimmield
Dr D. B. Snyder
Dr W. E. G. Taylor
Prof. J. Rose
Prof. N. J. Soper
Prof. D. H. Tarling
Prof. P. Van den haute
Dr P. A. Ziegler

Advisory Editors

Dr C. H. Bland
Prof. B. E. Leake
Dr M. H. Dodson
Dr R. J. Pankhurst

Mr C. J. Dixon
Mr G. M. Reeves
Mr J. K. Shanklin
Dr C. P. Summerhayes

Mr M. Price
Mr H. M. Prichard
Mr G. M. Reeves
Mr J. K. Shanklin
Dr C. P. Summerhayes


Subscriptions: All correspondence relating to trade subscriptions should be addressed to the Journal Subscriptions Department, Geological Society Publishing House, Unit 7, Brassmill Enterprise Centre, Brassmill Lane, Bath, UK, BA1 3JN (tel 01225 445046; fax 01225 442836). The subscription price for 1995 to institutions and non-Fellows is £96.00 (UK), £73.20 (overseas), $124.80 (North America and Japan). Outside Europe, the Journal is dispatched by various forms of airspeeded delivery; second class postage paid at Rahway, NJ. Postmaster, send address corrections to The Journal of the Geological Society, c/o Mercury Airfreight International Ltd, Inc., 2323 Randolph Avenue, Avenel, New Jersey 07001. Back numbers are normally dispatched by surface mail. Single issue price £16.60 (UK), £19.90 (overseas), $31.80 (North America and Japan).

Editorial correspondence and material submitted for publication should be addressed to Ms A. Hills, Geological Society Publishing House, Unit 7, Brassmill Enterprise Centre, Brassmill Lane, Bath, United Kingdom BA1 3JN (tel 01225 445046; fax 01225 442836).

The Geological Society

The Society was founded in 1807 as the Geological Society of London and is the oldest geological society in the world. It received its Royal Charter in 1825 for the purpose of ‘investigating the mineral structure of the Earth’. The Society is Britain’s national learned society for geology with a Fellowship in the region of 7000. It has countrywide coverage and approximately 1000 members reside overseas. The Society is responsible for all aspects of the geological sciences including professional matters. The Society’s publishing house is the European distributor for publications of the American Association of Petroleum Geologists, SEPM and the Geological Society of America.

Fellowship is open to those holding a recognized honours degree in geology or cognate subject and who have at least two years relevant postgraduate experience, or have not less than six years relevant experience in geology or a cognate subject. A Fellow who has not less than five years relevant postgraduate experience in the practice of geology may apply for validation and subject to approval will be able to use the designatory letters C Geol (Chartered Geologist).

Fellowship dues per annum: Fellow (UK) £74: Fellow (overseas) £54; Fellow and spouse £84: Fellow (retired) £26.50: Fellow (student research) £32: Associate £32: Junior Associate £18: Chartered Geologist (UK) £84: Chartered Geologist (overseas) £64: Chartered Geologist (retired) £36.50. The annual subscription includes free copies of one of the Society’s journals. Members may obtain copies of another Society journal on the payment of an additional £29 per annum. Further information about the Society is available from the Membership Manager, Geological Society, Burlington House, London, United Kingdom W1V 0JU. The Society is a Registered Charity No. 210161.

Apart from any fair dealing for the purposes of research or private study, or criticism or review, as permitted under the Copyright, Designs and Patents Act 1988, this publication may not be reproduced, stored or transmitted, in any form or by any means, except with prior permission in writing of the publishers, or in the case of reprographic reproduction, in accordance with the terms of licences or permissions issued by the Copyright Licensing Agency, 90 Tottenham Court Road, London W1P 9HE. Enquiries concerning reproduction outside those terms should be sent to the publishers at the editorial address above. Users registered with Copyright Clearance Center, 27 Congress Street, Salem, MA01970, USA: the item-fee code for this journal is 0016-7649/95 $7.00.

© Geological Society 1995

The Geological Society Publishing House, Unit 7, Brassmill Enterprise Centre, Brassmill Lane, Bath, United Kingdom BA1 3JN (tel 01225 445046; fax 01225 442836).

Copyright © Geological Society 1995

Typeset and Printed by The Universities Press (Belfast) Ltd, Alanbrooke Road, Belfast BT6 9HF, Northern Ireland, UK
Specials
BOUCH, J. E., HOLE, M. J., TREWIN, N. H. & MORTON, A. C. Low-temperature mobility of the rare-earc elements during sandstone diagenesis 895
WYATT, A. R. Late Ordovician extinctions and sea-level change 899
OTTO, S. C. & BAILEY, R. J. Tectonic evolution of the northern Ural Orogen 903
POTTS, G. J., HUNTER, R. H., HARRIS, A. L. & FRASER, F. M. Late-orogenic extensional tectonics at the NW margin of the Caledonides in Scotland 907

Papers
MABOKO, M. A. H. Neodymium isotopic constraints on the protolith ages of rocks involved in Pan-African tectonism in the Mozambique Belt of Tanzania 911
HARPER, D. A. T., SCRUTTON, C. T. & WILLIAMS, D. M. Mass mortalities on an Irish Silurian seafloor 917
VAN EVERDINGEN, D. A. & CAWOOD, P. A. Dyke domains in the Mitsero graben, Troodos ophiolite, Cyprus: an off-axis model for graben formation at a spreading centre 923

Thematic set: The Iceland Plume and its Influence on the Evolution of the NE Atlantic
WHITE, R. S. & MORTON, A. C. Introduction: The Iceland plume and its influence on the evolution of the NE Atlantic 933
CLIFT, P. D., TURNER, J. & THE ODP LEG 152 SCIENTIFIC PARTY. Dynamic support by the Iceland plume and its effect on the subsidence of the northern Atlantic margins 935
DEMANT, A., CAMBRAY, H., VAN DAMME, D. & LEG 152 SHIPBOARD SCIENTIFIC PARTY. Lithostratigraphy of the volcanic sequences at Hole 917A, Leg 152, SE Greenland margin 943
MORTON, A. C., HITCHEN, K., RITCHIE, J. D., HINE, N. M., WHITEHOUSE, M. & CARTER, S. G. Late Cretaceous basalts from Rosemary Bank, Northern Rockall Trough 947
UPTON, B. G. J., EMELEUS, C. H., REX, D. C. & THIRLWALL, M. F. Early Tertiary magmatism in NE Greenland 959
CHALMERS, J. A., LARSEN, L. M. & PEDERSEN, A. K. Widespread Palaeocene volcanism around the northern North Atlantic and Labrador Sea: evidence for a large, hot, early plume head 965
BARTON, A. J. & WHITE, R. S. The Edoras Bank margin; continental break-up in the presence of a mantle plume 971
KERR, A. C. The melting processes and composition of the North Atlantic (Iceland) plume: geochemical evidence from the Early Tertiary basalts 975
KENT, R. W. Magnesian basalts form the Hebrides, Scotland: chemical composition and relationship to the Iceland plume 979
THIRLWALL, M. F. Generation of the Pb isotopic characteristics of the Iceland plume 991
FURMAN, T., FREY, F. & PARK, K.-H. The scale of source heterogeneity beneath the Eastern neovolcanic zone, Iceland 997

(Continued on inside back cover)
HARDS, V. L., KEMPTON, P. D. & THOMPSON, R. N. The heterogeneous Iceland plume: new insights from the alkaline basalts of Snaefell volcanic centre

GUIDMUNDSSON, A. Ocean-ridge discontinuities in Iceland

JACOBY, W. R. & HIGGS, B. Stress generation at ridge axes by plate divergence and magma rise

SMALLWOOD, J. R., WHITE, R. S. & MINSHULL, T. A. Sea-floor spreading in the presence of the Iceland plume: the structure of the Reykjanes Ridge at 61°40′N

TAYLOR, R. N., MURTON, B. J. & THIRWALL, M. F. Petrographic and geochemical variation along the Reykjanes Ridge 57°N-59°N

WHITE, R. S., BOWN, J. W. & SMALLWOOD, J. R. The temperature of the Iceland plume and origin of outward-propagating V-shaped ridges

COFFIN, M. F. & GAHAGAN, L. M. Ontong Java and Kerguelen plateaux: Cretaceous Icelands?

Discussions