GEOLOGICAL SOCIETY SPECIAL PUBLICATION NO 21

North Atlantic Palaeoceanography

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1986

Published for The Geological Society by
Blackwell Scientific Publications

OXFORD LONDON EDINBURGH

BOSTON PALO ALTO MELBOURNE

Published by

Blackwell Scientific Publications
Osney Mead, Oxford, OX2 0EL
8 John Street, London, WC1N 2ES
23 Ainslie Place, Edinburgh, EH3 6AJ
52 Beacon Street, Boston,
Massachusetts 02108, USA
667 Lytton Avenue, Palo Alto,
California 94301, USA
107 Barry Street, Carlton,
Victoria 3053, Australia

First published 1986

Printed in Great Britain at
The Alden Press, Oxford

DISTRIBUTORS

USA and Canada
Blackwell Scientific Publications Inc
PO Box 50009, Palo Alto
California 94303

Australia
Blackwell Scientific Publications
(Australia) Pty Ltd
107 Barry Street,
Carlton, Victoria 3053

British Library Cataloguing in Publication Data

North Atlantic palaeoceanography.
1. Geology—North Atlantic Ocean
I. Summerhayes, C.P.
II. Shackleton, N.J.
III. Geological Society of London
551.46'08'0931 QE350.22.N65

ISBN 0-632-01516-0

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Preface

Through the activities of the Deep Sea Drilling Project (DSDP) since 1969, palaeoceanography—the study of the effects of oceanic and atmospheric circulation on oceanic sedimentation—has recently become an active quasi-independent area of the earth sciences. DSDP having drawn to a close at the end of 1983 with a series of sampling cruises around the North Atlantic, we thought the time ripe for a review of North Atlantic Palaeoceanography. This review, on behalf of the Geological Society's Marine Studies Group, duly took place at a two-day meeting at the Society's premises in November 1984. Most of the significant papers presented at that meeting are contained in this book.

Organising the meeting was very satisfying, because we encountered such a strong interest in taking part. Marine geologists, biostratigraphers, sedimentologists, and geochemists all offered manuscripts, and it is their contributions that dictate the division of the volume into its three discrete sections; one on circulation, unconformities, and sedimentation; one on Neogene deep and surface water palaeoceanography; and one on Mesozoic palaeoceanography and black shales.

We were delighted at the range of nations represented by the contributors at the meeting (10 countries in all). But perhaps even more important was the range of institutions represented: university geology departments, oceanographic institutions, and industrial groups were all actively interested. As the UK does not include any academic oceanographic institution of the type that is found in the USA, we were very pleased to see the wide degree of interest, largely based on past participation in deep sea drilling cruises from geology or earth science departments in British Universities. This broad participation highlighted the fact that although palaeoceanography is currently a focus for the attention of scientists from many different geological disciplines, it is ultimately a part of geology, and contributes a great deal to the solution of geological problems relating to the Mesozoic rocks that are commonly examined by the occupants of land-locked geology departments. We believe that this volume will be of interest not only to those for whom a drilling ship is a routine sampling tool, but also to those who have no intention of sampling with anything except a hammer.

Despite the absence of contributors from the petroleum industry (excluding those from the Institut Française du Petrole), industry's strong interest in the results of deep ocean drilling was obvious from the attendance of many petroleum geologists at the meeting. Several of the contributions in this volume, especially those in Mesozoic black shales, the potential source rocks for petroleum, will be of direct interest to petroleum geologists assessing deepwater hydrocarbon potential around the UK and elsewhere in the North Atlantic.

There is no doubt that deep ocean drilling has been a cheap and beneficial source of useful information for petroleum exploration offshore UK and elsewhere. The DSDP has made a major and lasting contribution to petroleum geology by providing, for instance, major revisions in biostratigraphy, improvements in the geological time scale, documenting the nature and extent of potential petroleum source rocks in deep water, evaluating the hydrocarbon potential of parts of the continental margin unsampled by industry, providing data for calibrating industry's long seismic lines, and improving our understanding of the evolution of continental margin basins. In effect, DSDP holes are like free COST wells for industry. Industry has shown its interest in the DSDP by regularly providing shipboard geochemists, biostratigraphers, and sedimentologists, and by doing shorebased laboratory work for publication in DSDP reports. This public interest is the thin end of the wedge: most of industry's extensive use of DSDP data is confidential.

This brings us back to the central theme of the meeting. All but a few of the findings reported did depend on the drilling ship *Glomar Challenger* having been available as a sampling tool. The International Phase of Ocean Drilling of the DSDP, during which these results were obtained, was a marvellous example of the value that derives from a well-planned international project. It opened new avenues world-wide in the pursuit of knowledge. The follow-up project that has just begun, using a new and significantly better drilling ship, promises another decade of exciting geology, full of implications for the academic and industrial communities. As proofs were being corrected it was announced that Britain has decided to participate in the new project, the Ocean Drilling Programme. This will give British scientists the chance to take part in some of the most exciting research that is taking place in the earth sciences today.

C.P. SUMMERHAYES, Sunbury-on-Thames
N.J. SHACKLETON, Cambridge
July 1985

Acknowledgements

First, our thanks go to the Secretary, staff, and housekeepers of the Geological Society, whose help in organising and running the Conference in November 1984 made the meeting on which this book is based a great success. No less important were our financial backers, for, without their support in providing aid for air fares for overseas contributors, that meeting and this book would not have had the truly international flavour that both required. For their generosity we thank (in alphabetical order) ARCO, BP, BRITOIL, CHEVRON, ELF, LASMO, and SHELL, as well as the Geological Society and the Royal Society. Our speakers and poster presenters excelled themselves at the meeting, and the contents of this volume are a fair reflection of the high standards of November's presentations. Not everyone was able to contribute a paper to this proceedings volume; some who were willing were unable to keep to the tight schedules that we imposed deliberately to ensure publication as soon as possible after the meeting. While we regret the lack of complete representation of the presentations from the meeting, the papers contained herein are a good cross section of the topics and themes discussed. Our reviewers deserve considerable praise—not only Professor Brian Funnell who, for consistency, bravely reviewed every paper, but also a large anonymous team of capable volunteers and draftee experts who reviewed one or two papers each. Finally, we must thank our authors, for sticking at it unflinchingly, while the editors cracked the whip from the sidelines, and for providing us with such a tasty mixture of ingredients.