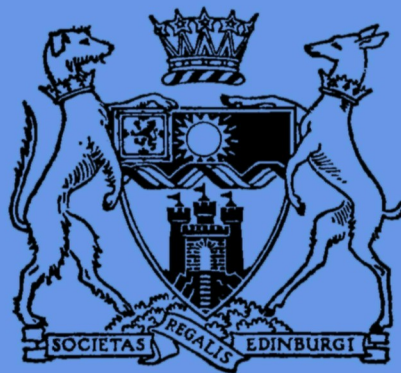


TRANSACTIONS
OF
THE ROYAL SOCIETY
OF
EDINBURGH



EARTH SCIENCES

Volume 71 Part 3

PUBLISHED BY THE ROYAL SOCIETY OF EDINBURGH

22 GEORGE STREET · EDINBURGH · EH2 2PQ

1980

Editorial Board

D. R. BOWES
University of Glasgow
(Executive Editor)

J. B. DAWSON
University of Sheffield

P. McL. D. DUFF
University of Strathclyde

R. A. EDEN
Institute of Geological Sciences, Edinburgh

E. H. FRANCIS
University of Leeds
(Executive Editor)

D. GRANT
Scottish Academic Press, Edinburgh

R. M. S. SMELLIE
General Secretary
Royal Society of Edinburgh

B. E. LEAKE
University of Glasgow

R. C. MACKENZIE
Macaulay Institute, Aberdeen

W. S. MACKENZIE
University of Manchester

D. G. MURCHISON
University of Newcastle upon Tyne

W. MYKURA
Institute of Geological Sciences, Edinburgh

E. K. WALTON
University of St Andrews

C. D. WATERSTON
Royal Scottish Museum, Edinburgh
(Executive Editor)

W. H. RUTHERFORD
Executive Secretary
Royal Society of Edinburgh

Consulting Editors

H. P. BANKS
Cornell University, Ithaca

R. G. C. BATHURST
University of Liverpool

J. M. BERTRAND
Université de Nancy

J. C. BRIDEN
University of Leeds

T. N. CLIFFORD
University of the Witwatersrand, Johannesburg

W. COMPSTON
Australian National University, Canberra

I. W. D. DALZIEL
Lamont-Doherty Geological Observatory of
Columbia University, Palisades

J. KONTA
Charles University, Prague

R. F. LEGGET
Ottawa

L. B. LEOPOLD
University of California, Berkeley

W. D. MOONEY
U. S. Geological Survey, Menlo Park

A. SEILACHER
Universität Tübingen

I. J. SELIKOFF
Mount Sinai School of Medicine, New York

J. B. SISSONS
University of Edinburgh

D. F. STRONG
Memorial University, St Johns

O. VAN BREEMEN
Scottish Universities Research and Reactor Centre,
East Kilbride

R. H. VERNON
Macquarie University, Sydney

D. E. WHITE
U.S. Geological Survey, Menlo Park

P. A. ZIEGLER
Shell Internationale Petroleum Maatschappij B.V.,
The Hague

Editorial Secretary, Royal Society of Edinburgh: C. A. Anderson

COPYRIGHT: It is the policy of the Royal Society of Edinburgh not to charge any royalty for the production of a single copy of any one article made for private study or research. Requests for the copying or reprinting of any article for any other purpose should be sent to the Royal Society of Edinburgh.

© 1980 The Royal Society of Edinburgh and the authors of individual papers.