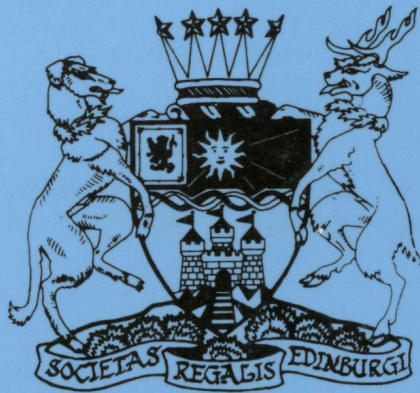


TRANSACTIONS  
OF  
THE ROYAL SOCIETY  
OF  
EDINBURGH



EARTH SCIENCES

Volume 85 Part 3

PUBLISHED BY THE ROYAL SOCIETY OF EDINBURGH

22 GEORGE STREET · EDINBURGH · EH2 2PQ

1995 (for 1994)

## Editorial Board

J. B. DAWSON

University of Edinburgh  
(Chairman)

G. S. BOULTON

University of Edinburgh

C. H. DONALDSON

University of St Andrews  
(Executive Editor)

D. J. FETTES

British Geological Survey, Edinburgh

R. MACDONALD

University of Lancaster

J. MCMANUS

University of St Andrews  
(Executive Editor)

A. L. PANCHEN

University of Newcastle upon Tyne  
(Executive Editor)

J. D. PEACOCK

Heriot-Watt University

N. B. PRICE

University of Edinburgh

M. J. WILSON

Macaulay Land Use Research Institute

F. WILLETT

(Curator)  
University of Glasgow

## Consulting Editors

SHOHEI BANNO

Kyoto University

W. L. BROWN

Centre de Recherches Pétrographiques et Géochimiques,  
Vandoeuvre-les-Nancy

R. L. CARROLL

McGill University, Montreal

B. W. CHAPPELL

Australian National University, Canberra

J. M. COLEMAN

Louisiana State University, Baton Rouge

J. F. DEWEY

University of Oxford

S. J. GOULD

University of Harvard

R. W. HUTCHINSON

Colorado School of Mines

J. KONTA

Charles University, Prague

D. B. MCINTYRE

Kinfauns, Perth

K. J. MÜLLER

Rhein. Friedrich-Wilhelms-Universität Bonn

D. F. STRONG

University of Victoria, B.C.

V. C. THAKUR

Wadia Institute of Himalayan Geology

S. UYEDA

University of Tokyo

R. WOODALL

Western Mining Co., Adelaide

*Publications Manager*, Royal Society of Edinburgh: T. Dart

**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. Specific permission will not be required for photocopying multiple copies of copyright material, to be used for *bona fide* educational purposes, provided this is done by a member of the staff of the university, school or other comparable institution, for distribution without profit to student members of that institution and provided the copies are made from the original journal. Requests for the copying or reprinting of any article for any other purpose should be sent to the Royal Society of Edinburgh.

*Transactions of the Royal Society of Edinburgh: Earth Sciences* publishes one volume per year usually in three or four parts. Volume 85 will be published in 1994 in four parts. An annual subscription costs £82. Orders should be placed with CAB International (to whom cheques should be made payable), Wallingford, Oxon OX10 8DE, UK. (Tel 0491 832111; Fax 0491 826090.)

*Transactions* is indexed in the following: Current Contents/Physical, Chemical & Earth Sciences, SciSearch, CABS Database, Mineralogical Abstracts, Biosciences Information Service, Geoabstracts and GEOBASE.

© 1995 The Royal Society of Edinburgh and the authors of individual papers