GROUNDWATER IN ENGINEERING GEOLOGY

Proceedings of the 21st Annual Conference of the Engineering Group of the Geological Society held at The University of Sheffield 15th-19th September 1985

edited by

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1986
Published by
The Geological Society
London

THE GEOLOGICAL SOCIETY

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Published by

The Geological Society
Burlington House,
Piccadilly,
London W1V 0JU

First published 1986

Printed in The United Kingdom
by Acors Press, Billericay, Essex (England)

British Library Cataloguing in Publication Data

Geological Society of London. *Engineering Group. Conference (21st)*

Groundwater in engineering geology: proceedings of the 21st Annual Conference of the Engineering Group of the Geological Society. — (Engineering geology special publication, ISSN 0267-9914; no. 3)
1. Water, Under ground
I. Title II. Cripps, J.C. III. Bell, F.G.
IV. Culshaw, M.G. V. Series
627'.17 TC176

ISBN 0-903317-35-4
ISBN 0-903317-36-2 Pbk

Foreword

The inaugural meeting of the Engineering Group of the Geological Society was held on 24th June, 1964, and the first Regional meeting of the Group was held at Sheffield University in September, 1965.

This first Regional Meeting proceeded so well that the Group felt encouraged to organise further such meetings on a regular basis, with the result that regional meetings (now termed Annual Conferences) have been held every year since, each at a different locality within England, Ireland, Wales and Scotland.

An invitation from Sheffield to return there in 1985 for the 21st Conference was fortunate, well-timed and gratefully accepted by the Group. Thanks to Professor Dawson — Head of the Geology Department — and his staff, and particularly to Dr Cripps the local organiser, the Conference was excellently run and proceeded smoothly in every respect.

Over the 21 years which have passed since the first Sheffield Conference, the subject of which was Rock Mechanics, themes have been wide ranging. Titles of these themes have included Engineering Geology aspects of particular engineering operations such as tunnelling, or particular geological features such as soluble rocks or Quarternary deposits. Wider topics such as engineering geomorphology, land restoration, and redevelopment and the British Standard code of Practice on Site Investigation have also been chosen as Conference themes. Although groundwater is not specifically mentioned in any one of the listed past titles, the subject can hardly have escaped discussion at any single Conference. For 1985 the Group Committee therefore decided to give 'Groundwater in Engineering Geology' a platform in its own right in the 21st Conference year, and in retrospect this seems to have been fortunate since the response to the call for papers, the support from invited lead speakers, the attendance and the liveliness of the discussion were all very encouraging. Since then the Editors have put in much hard work on bringing all the contributions together in the form of these Proceedings.

The Group Committee is much aware of its indebtedness to all those organisers, delegates and participants (including trade exhibitors) who have supported this and past Conferences.

Having been so well launched into full adulthood in conference organising there can be no turning back, and so the Group aims to give its past supporters every incentive to return each year.

Newcomers also are essential to a healthy future, and the Office bearers, the Committee and the Group as a whole hope to see more and more of them as time goes by, not only as Conference delegates, but also as Fellows of the Society and as Engineering Group Members.

D.N. Holt
Chairman — Engineering Group
Freeman Fox & Partners
April, 1986

Preface

The twenty first Annual Conference of the Engineering Group of the Geological Society was held at Sheffield University between 16th and 19th September, 1985. The theme of the conference was 'Groundwater in Engineering Geology' being directed at the influence that groundwater has in construction operations.

The structure of this volume, and indeed that of the Conference, follows closely suggestions made by Dr M.H. de Freitas of Imperial College, London. By grouping topics by 'cause' in terms of groundwater rather than by their 'effect' on engineering structure, it has been possible to emphasise the importance of groundwater in ground engineering work without precluding reference to any particular type of structure or application. Although the application may be very relevant to the groundwater problems liable to arise, a further advantage of the approach adopted is that techniques hitherto regarded as appropriate in one type of engineering operation potentially become available in other fields of work.

Papers which originally formed a 615 page pre-print volume are presented here together with contributions submitted by lead speakers and discussion which took place at the meeting. In addition written discussion, enlargements to the verbal discussion and other contributions received after the meeting are included.

The Conference attracted a high attendance of delegates from industry, education and public service, both in the United Kingdom and overseas. It was gratifying to have among the delegates many people of International repute, among them Professor P.W. Rowe of Manchester University, Professor R.D.J. de Wiest of the State University of Florida, and Professor J.K. Mitchell of the University of California, Berkeley. The organisers are particularly indebted to Professor Mitchell for his contributions to the Conference.

F.G.Bell, J.C. Cripps, M.G. Culshaw
Sheffield, 1986

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Acknowledgements

The preparation of these Proceedings has required the co-operation and assistance of many people. Special appreciation is expressed to Professor J.B. Dawson for the provision of secretarial, printing and draughting facilities in the Department of Geology at the University of Sheffield.

The editors are particularly indebted to Miss A. Hills, Miss R.J. Abbott (Geological Society) and Miss P. Mellor (University of Sheffield) for their patient and conscientious work in preparing this volume for publication. Miss P. Mellor and Miss A. Rutherford are also thanked for their assistance with the compilation of the pre-prints.

The authors are thanked for their co-operation in preparing the papers to the specified format at short notice. The editors are also grateful to the session chairmen and lead lecturers for their contributions, and would also like to thank the delegates for their active participation, especially during the discussion periods.

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Published quarterly

This journal publishes original work on applied geology, civil engineering, mining practice and water resources, including rock and soil mechanics and geotechnics. Its scope also covers applied sedimentology, pedology, mineralogy, petrology, geohydrology and the engineering aspects of geophysics. It is an official journal of the Geological Society.

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ISBN 0-903317-35-4
ISBN 0-903317-36-2 Pbk