Northumbrian rocks and landscape — a field guide

Edited by Colin Scrutton

Second Edition

Yorkshire Geological Society

The objectives of the Yorkshire Geological Society are to extend the knowledge of the science of geology and to promote and record the results of geological research, with particular emphasis on the North of England.

The Society publishes a journal, the Proceedings of the Yorkshire Geological Society, devoted to original work on geology and geomorphology with the emphasis on northern England. A Circular is distributed about six times a year to publicise the winter programme of lectures, the summer field meetings and various other matters of interest to members.

No qualifications are required for membership and there is no entry fee. For further information on the Society and a Membership Application Form visit our web site on:

https://www.yorksgeolsoc.org.uk/

Also in this series: Lakeland Rocks and Landscape Yorkshire Rocks and Landscape

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Preface

This field guide, the second to be sponsored by the Yorkshire Geological Society, is mostly written and edited by its members. The Society has a long and distinguished history, having been founded in 1837. From small beginnings among amateurs with an interest in Yorkshire geology, it has grown to have influence well beyond the boundaries of the county and a membership of over 1 000 from all over the world. It brings together professional geologists of all descriptions, from universities, surveys and companies, together with amateur geologists who still form a significant proportion of our membership. The Society publishes a prestigious journal, the *Proceedings,* which has a major part of its original papers based on Yorkshire geology. The original aims of the Society are still observed in the lecture meetings held approximately monthly from October to March, and particularly in the programme of field excursions in the spring and summer months. The lectures are a mixture of original work, mainly on the geology of Yorkshire and Northern England, and general reviews often of much wider scope. Field excursions range all over the county and its near neighbours and offer an opportunity to demonstrate new observations and interpretations of the geology and geomorphology.

Many of you using this guide may already be members of the Yorkshire Geological Society. If you are not, and would like to know more about this fascinating subject, why don't you join us? We would be pleased to welcome you.

Cohn Scrutton, President, Yorkshire Geological Society, 1995

Preface to the Second Edition

The success of the *Northumbrian Rocks and Landscape,* published in 1995, prompted the Yorkshire Geological Society, in 2004, to publish a Second Edition of the Guide with minor corrections. The Society wished to mark the occasion by dedicating the Guide to Professor Sir Kingsley Dunham FRS (1910–2001) and his son Professor Ansel Dunham (1938–1998), both past Presidents of the YGS, who contributed so much to the Society and to the geology of northern Britain.

Sir Kingsley, one of the most distinguished figures in British geology in the last century, was awarded a PhD from the University of Durham in 1932. Following a two-year period pursuing further research on mineralisation in the USA, he returned to Britain in 1934, joining the Geological Survey of Great Britain (now the British Geological Survey). In 1950, Sir Kingsley returned to Durham University to take up the Chair of Geology, and later he was appointed Director of the Survey in 1967; in both posts he oversaw great expansion, which he drove with enthusiasm, but always keeping in touch with his beloved science. His studies included the mineral resources of the northern Pennines, and scientific investigation that proved the presence of concealed granite beneath the Alston Block, an area covered, in part, by this Guide. Kingsley received a knighthood in 1972 and, following retirement in 1975, he pursued his academic career including co-authoring Volume 2 of *The Geology of the Northern Pennine Orefield.* Professor Ansel Dunham (MA, Cantab.; D.Phil Oxon.), another major figure in British geology, rose to become Professor of Industrial Mineralogy at the University of Hull, and later at Leicester where, as Head of Department, his research focused on mineralogy of brick clays and aggregates.

Sir Kingsley and Ansel Dunham's love of fieldwork and the companionship of fellow geologists, be they students, professionals or amateurs, is reflected in the aims of the Society. We hope that their enthusiasm for the subject, especially fieldwork, will be passed on to users of this Guide.

The Yorkshire Geological Society wishes to thank the following for their financial support for printing the Second Edition: Helen Dunham; English Nature; Northumberland County Council; and Professor John W. Neale. We should also like to thank Colin Scrutton, Editor of the Guide, for his help with minor corrections and John Powell for supervising the Second Edition.

Peter Rawson, President, Yorkshire Geological Society

Introduction

For the purposes of this book, Northumbria is defined as Northumberland, Durham, Tyne & Wear, and Cleveland north of the River Tees. The excursions described provide a broad coverage of this area and its borders, both geographically and geologically, although in a publication of this size a selection inevitably has to be made from among the wealth of excellent sites available. Wherever you live, or are staying in the area, we hope there will be something to interest you.

An introductory chapter outlines the geological history of Northumbria, providing a framework for the details of the local geology. Each excursion begins with notes on access, duration, useful Ordnance Survey (O.S.) and British Geological Survey (B.G.S.) maps, and background information on the geology and geomorphology. In many cases; observations on historical, archaeological and other related matters are included. A section towards the end of the book lists museums in Northumbria that have geological displays or collections.

All excursions have certain basic requirements for both safety and enjoyment. These include stout shoes or walking boots, sensible clothes including waterproofs in case of rain, and appropriate maps for location in the field. On higher ground, it may be much colder and more windy than in the valleys, and low cloud may not just spoil appreciation of geological and geomorphological views of the landscape, but may present a danger if you become lost. On foreshores,

wellington boots may be a suitable alternative, but whatever your footwear, wet rocks can be very slippery, particularly those with veneers of green algae.

For more specific dangers, notes are given in the introductory material to appropriate excursions. However, it is worth repeating some general points. In locations near quarry or cliff faces, a safety helmet should be worn. Always look at the state of steep faces and if in doubt about their safety, do not approach them. When using a hammer, it is advisable to wear safety goggles and to make sure that fragments chipped off will not hit other people. In any coastal situation, the state of the tide may be crucial, not only to your view of the geology but to your safety as the tide comes in. Always check on the time of low tide and do not start an excursion on a rising tide where access to and from the foreshore is limited. Tide tables for the mouth of the Tyne are available from The Port of Tyne Authority, Bewick Street, Newcastle upon Tyne, NE1 5HS (tel. 455 2671), and tide times are published in local newspapers. Finally, if visiting remote locations alone, tell someone where you are going.

Some excursions include visits to Sites of Special Scientific Interest. These are designated not only to conserve our geological heritage but to protect other features, such as the flora. Please observe any particular requests not to hammer rocks or to collect fossils.

As far as possible, excursion routes follow public rights of way and keep to open land or the foreshore. However, where localities are on private land, permission for access should be sought beforehand. We have given as much information as possible to facilitate this. In general, observe the Countryside Code and avoid damage to walls, gates or property. The Geologists Association have published a Code for Geological Field Work, which outlines good practice in the field and can be obtained from the Librarian, The Geologists Association, Department of Geological Sciences, University College, Gower Street, London WC i E 6BT.

Anyone with a general interest in geology and geomorphology should be able to follow the excursions in this guide. However, the complexity of the geology and level of technical description varies from place to place. As an aid, selected technical terms are highlighted in bold on first usage in each section and are briefly defined in a Glossary at the end of the book. For more information on any term, or for terms not covered, reference should be made to a geological dictionary (see Bibliography). Bibliographic entries are placed towards the end of the book and are mainly general works. A few more specific references are included where these have value for a particular excursion.

Finally, I would like to thank all those who have helped me in the compilation of this guide, particularly my colleague Brian Turner, and the authors for their contributions.

Colin Scrutton, University of Durham

Note

The details of routes given in this guide do not imply a right of way. Users of this guide are responsible for seeking permission where necessary to use footpaths and for access to any private land.

Every effort has been made to ensure that the contents of this book are accurate and up-to-date. However, information on any changes to footpaths or exposures, or threats to any S.S.S.I., would be welcomed by the Society.

Notes on safety have been included but it is the responsibility of the user to take all necessary precautions for their own safety and that of third parties. The publishers and the Society take no responsibility for any accident or injury sustained on any of these excursions.

Rear cover text

About this guide: Northumberland and County Durham contain within their boundaries some of the most interesting geology and scenery in England.

This book is a stimulating field guide to seventeen locations selected to give comprehensive coverage of the minerals, rocks, fossils and landforms of the area. Excursions vary from easy half-day walks to longer outings. Some are in moorland areas such as the Roman Wall country; others on the coastline, famous for its beauty and rich history.

Aimed both at beginners and more experienced geologists, the book includes a general introduction to the area's geological history, a full glossary of terms, and details of local museums.

Northumbrian Rocks and Landscape will be used and enjoyed by all those interested in the natural heritage of this large and diverse region.

About the authors: The contributors to this book are academics, professional geologists and dedicated amateurs, many of them members of the Yorkshire Geological Society. Together in this book they provide the most up-to-date and authoritative guide to the geology of Northumberland and County Durham currently available.

The Yorkshire Geological Society is an internationally renowned scientific society with an interest in all aspects of geology in Yorkshire and surrounding areas.

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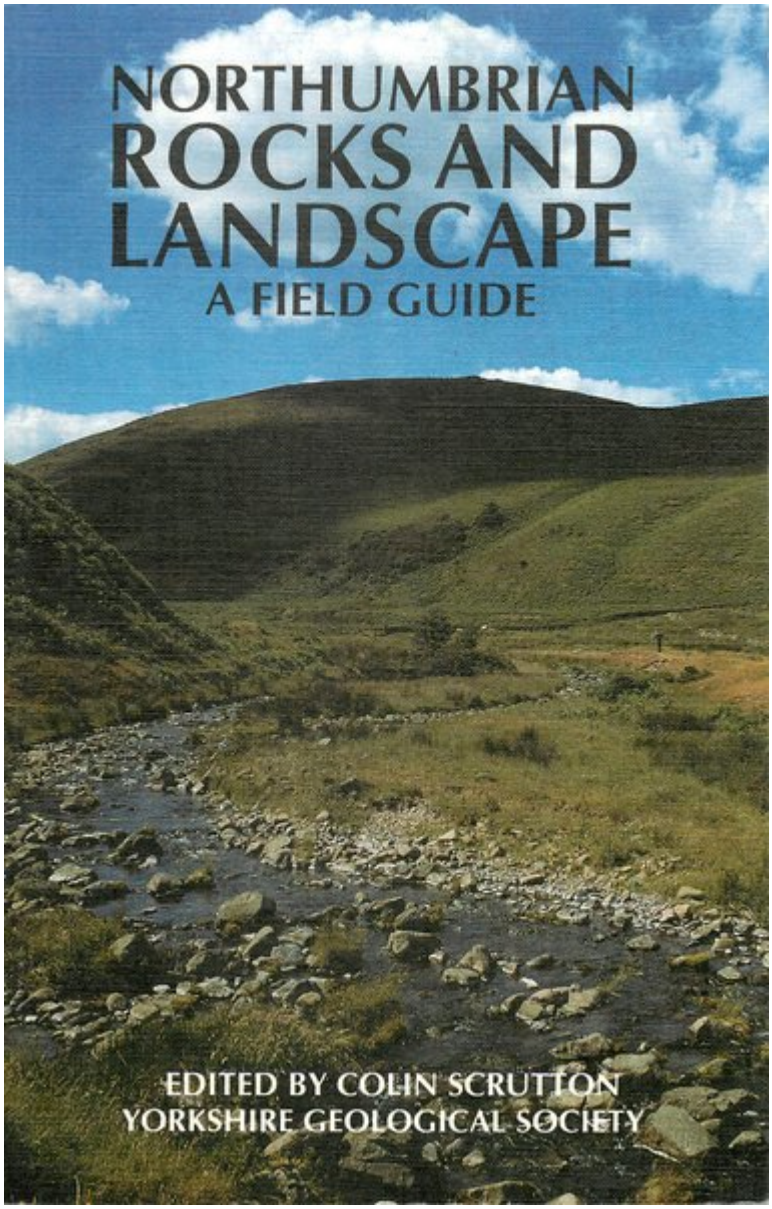
(Cover photograph)

(Rear cover)

Cover photograph: Harthope Burn in the Cheviots by James Walker FRPS


NORTHUMBRIAN
ROCKS AND
LANDSCAPE
A FIELD GUIDE
EDITED BY COLIN SCRUTTON
YORKSHIRE GEOLOGICAL SOCIETY

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Harthope Burn in the Cheviots
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