

---

# Yorkshire rocks and landscape — a field guide

Third Edition

Yorkshire Geological Society

Edited by Colin Scrutton and John Powell

(Front cover)

(Rear cover)

Founded In 1837 A Registered Charity 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: [www.yorksgeolsoc.org.uk](http://www.yorksgeolsoc.org.uk)

Also in this series: *Northumbrian Rocks and Landscape*

Published by the Yorkshire Geological Society

First published 1994 Second Edition 1996 Third Edition with minor corrections 2006

All rights reserved

Copyright The Yorkshire Geological Society 1994, 2006 Illustrations by Tony Green, Green Design Group

Typeset in Linotron Baskerville by Deltatype Ltd, Ellesmere Port, Cheshire

Printed and bound by St Edmundsbury Press Ltd, Bury St Edmunds, Suffolk

British Library Cataloguing in Publication Data A catalogue record for this book is available from the British Library

ISBN 0-9501656-6-2

\*Anthony Cooper and John Powell publish with permission of the Executive Director, British Geological Survey (NERC).

## Contents

Preface to the Third Edition

Introduction

**Geological history of Yorkshire** Colin Salmon

**Field excursions**

## **Lower Palaeozoic, Carboniferous and Quaternary**

### **West and north**

- 1 Lower Palaeozoic rocks of the Craven Inliers Eric Johnson
- 2 The Craven Fault Zone — Malham to Settle David Mundy and Russell Arthurton
- 3 Quaternary geology and geomorphology of the area around Kisdon, upper Swaledale James Rose
- 4 The North Swaledale Mineral Belt around Gunnerside Dick Meson and Brian Young
- 5 The Carboniferous rocks of upper Nidderdale Albert Wilson
- 6 Dinantian and Namurian rocks of Bolton Abbey and Trollers Gill W. John Varker
- 7 The Millstone Grit of Almscliff Crag and Harlow Car, near Harrogate Ian Chisholm

### **South**

- 8 The Carboniferous (Namurian and Westphalian) of the Cliviger Valley, Todmorden Paul Wignall and Paul Kabrna
- 9 The Upper Carboniferous of the Halifax area Brian Turner
- 10 Middle and Upper Carboniferous rocks (Millstone Grit and Coal Measures) of the Sheffield region Mike Romano and Martin Whyte

## **Post-Carboniferous and Quaternary**

### **Inland**

- 11 The Jurassic, Tertiary and Quaternary around Great Ayton and Roseberry Topping, Cleveland Hills John Senior and James Rose
- 12 The Quaternary features of Scugdale, northwest Cleveland Hills Donald Frost
- 13 The Permian and Carboniferous rocks of Knaresborough Anthony Cooper\*
- 14 The Permian rocks of south-central Yorkshire Denys Smith
- 15 Jurassic and Cretaceous rocks of the Market Weighton area Felix Whitham

### **Coast**

- 16 The Lower Jurassic rocks between Staithes and Port Mulgrave Colin Scrutton
- 17 Lower–Middle Jurassic sequences between Whitby and Saltwick Martin Whyte and Mike Romano
- 18 Lower and Middle Jurassic rocks between Robin Hood's Bay and Hawsker Bottoms John Senior
- 19 The Middle–Upper Jurassic sequence between Layton Bay and Yons Nab Martin Whyte and Mike Romano
- 20 Jurassic, Cretaceous and Quaternary rocks of Filey Bay and Speeton John Neale and John Catt
- 21 The Chalk of Flamborough Head Richard Myerscough

## **Geology in Yorkshire's museums** Paul Ensom

## Glossary

## Bibliography

## Preface to the Third Edition

This field guide is mostly written and edited by members of the Yorkshire Geological Society. Publication of the Third Edition, which has been out of print for many years, was prompted by the successful publication of the Second Edition of the sister volume, *Northumbrian Rocks and Landscape* in 2004. The Third Edition includes minor revisions to the text, including logistical details since a number of the access routes and contact details have changed over the last decade. An appreciation of the British landscape and its underlying geology is becoming increasingly popular with walkers, naturalists and the general public, in addition to geologists who have always appreciated the link. We hope the new edition will encourage you to get out and explore the countryside with even greater enthusiasm.

The Yorkshire Geological Society wishes to thank the following for their financial support towards printing the Third Edition of the Guide: English Nature, especially Dr Jonathan Larwood; Dr C. T Scrutton; the late Dr. J. G. Capewell; and M. E. Broad of Cleveland Meat Co. Ltd. I should also like to thank Colin Scrutton, Editor of the original guide, for his help with the revisions to this edition. Thanks also go to the authors for their revisions to the text of the latest edition.

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 800 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 the geology of Yorkshire and northern England. 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 region and offer an opportunity to demonstrate new observations and interpretations of the geology and geomorphology to beginners and professionals alike.

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.

John Powell, President, Yorkshire Geological Society

## Introduction

In the choice of excursions, an attempt has been made to provide a broad coverage of Yorkshire both geographically and geologically. Whichever part of the county you are in, we hope there will be something to interest you. However, Yorkshire is a large place (defined here on its pre-1976 boundary), and to keep this book to a comfortable size a selection has had to be made from among its many sites of geological interest.

An introductory chapter outlines the geological history of the Yorkshire area, providing a framework for the details of the local geology. Each excursion begins with general information on the geology and/or geomorphology covered in the itinerary. Brief notes cover access, parking and walking distances, together with lists of useful Ordnance Survey (O.S.) and British Geological Survey (B.G.S.) maps. In many excursions the background information or itinerary includes notes on the historical exploitation of geological resources, and on other related matters. A section towards the end of the book lists museums in Yorkshire 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 and appropriate maps. 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.

For more specific dangers, notes are given in the introductions to the relevant 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 you chip off do 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. 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.

Some excursions include visits to Sites of Special Scientific Interest.

These are designated not only to conserve our geological heritage but also to protect other features such as the flora. Please observe any specific requests not to hammer rocks or collect fossils.

As far as possible, excursion routes follow public rights of way and keep to open land or the foreshore. 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 Executive Secretary, The Geologists Association, Burlington House, Piccadilly, London W1J 0DU.

We hope that anyone with an interest in geology and geomorphology will be able to follow the excursions in this guide. However the technical level does vary from one to another, depending on the character of the rocks and the complexity of the area. As an aid, a limited number of technical terms are highlighted in bold where first used 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 in the Glossary, 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 very few more specific references are included where these have value for a particular excursion.

Finally, we would like to thank all those who have helped us in the compilation of this guide, our colleagues on the Council of the Society for their advice, and the authors for their contributions.

Colin Scrutton, past President, Yorkshire Geological Society and John Powell, British Geological Survey.

## **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 information in this book is accurate and up-to-date. However, information on any changes to footpaths or exposures, or on 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 Society takes no responsibility for any accident or injury sustained on any of these excursions.

## **Rear cover**

**ABOUT THIS GUIDE:** Yorkshire, famed for its scenic beauty and its rich industrial heritage, is also an area of outstanding geological interest.

This book is a stimulating field guide to twenty-one geological 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; some on the wild coastline; and others near city centres.

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

For all lovers of the region's natural heritage, *Yorkshire Rocks and Landscape* is an indispensable companion.

About the authors: All the contributors to this book — academics, professional geologists and dedicated amateurs — are members of the Yorkshire Geological Society. Together, they provide the most up-to-date and authoritative guide to Yorkshire's geology currently available.

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

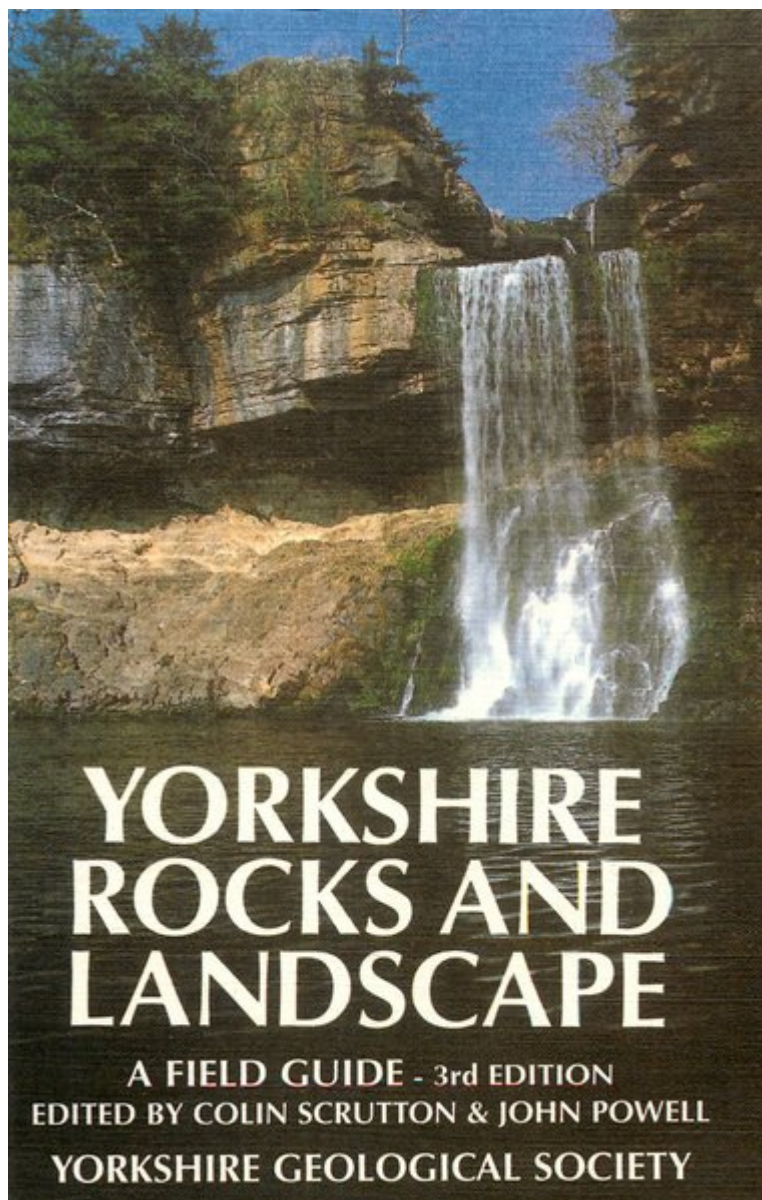
English Nature

£9.99

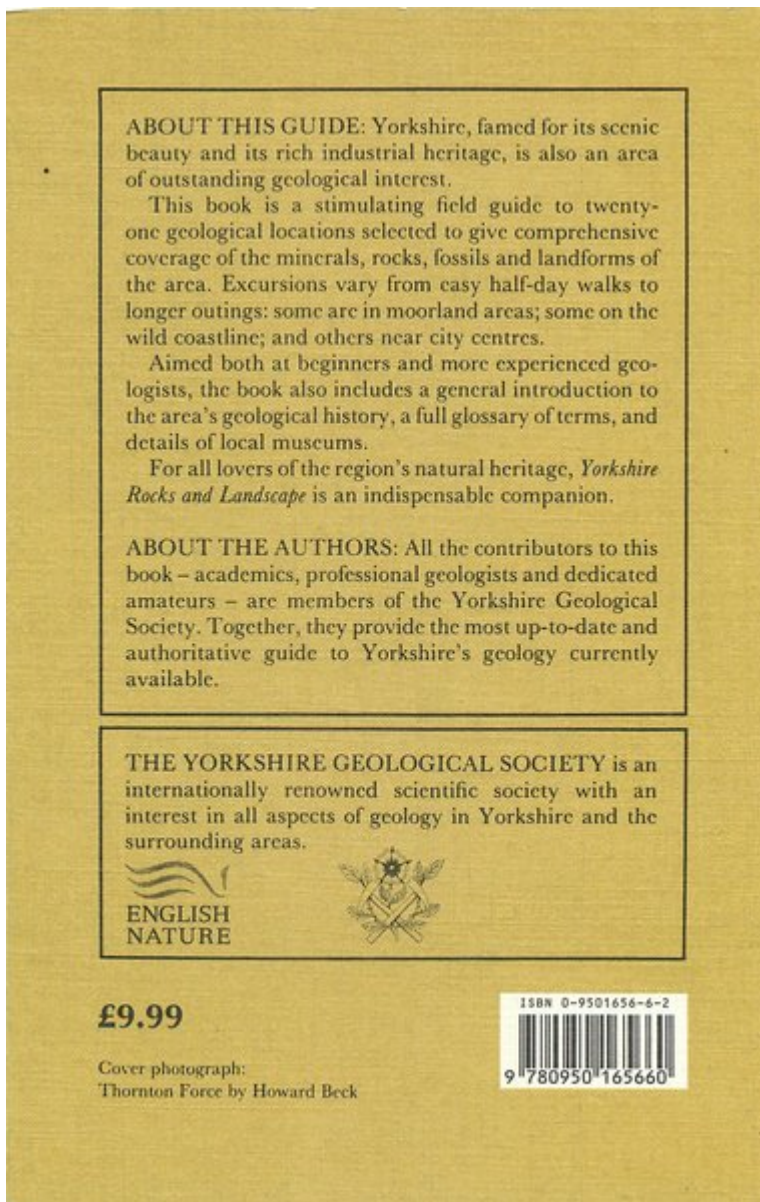
Cover photograph:

Thornton Force by Howard Bock

SBN 0-9501656-6-



(Front cover)



(Rear cover)