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# Caledonian igneous rocks of Great Britain

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## **Access to the countryside**

This volume is not intended for use as a field guide. The description or mention of any site should not be taken as an indication that access to a site is open or that a right of way exists. Most sites described are in private ownership, and their inclusion herein is solely for the purpose of justifying their conservation. Their description or appearance on a map in this work should in no way be construed as an invitation to visit. Prior consent for visits should always be obtained from the landowner and/or occupier.

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English Nature, Northminster House, Peterborough PE1 1UA.

Scottish Natural Heritage, 12 Hope Terrace, Edinburgh EH9 2AS.

## Foreword

Britain is exceptional in the continuity of geological history and variety of geological phenomena that are preserved within a comparatively small area. Since the early days of the geological sciences, the area has continued to provide outstanding contributions, theoretical and practical, to the understanding of Earth processes. No section of this long and distinguished history of scientific investigation is more noteworthy than that arising from the outstanding variety and preservation of the Caledonian igneous rocks. This volume describes localities that are regarded as representative of the long and complex evolution of the Caledonian igneous activity. Many of the sites listed have played a key role in interpretations marking major advances in geological thinking. One needs only to recall Hutton's deductions on the origin of granite from observations made in Glen Tilt over two hundred years ago, or the modern realization of the tectonic significance of Caledonian ophiolites. There are many problems remaining and new interpretations to be made, and the descriptions of key localities in this volume will, as well as the basic objective of conservation, provide both a tool and a stimulus for further research.

With regard to further research, one of the features that emerges from a review of the Caledonian igneous rocks and which is brought out in the introduction to the volume, is the breadth of interest these rocks have for different branches of the Earth sciences, including the petrologist looking for plate-tectonic models in explanation of the variety and spatial distribution of the igneous rocks, the structural geologist looking to the igneous rocks for support of his thoughts on ancient plate movements and the isotope geochemist endeavouring to provide a time framework for both. To all those interested in the comprehensive review presented, this GCR volume is potentially of great value in providing, as it does, summary access to both the detail and the broader picture of Caledonian igneous activity.

Accurate description and recording of field data is a fundamental aim of the Geological Conservation Review. Interpretations of the observations may vary over time but the role of the field geologist in providing the key data is paramount. In this review of the Caledonian igneous rocks the importance of detailed field observations is particularly well illustrated by the elegant modern interpretations of volcanological phenomena described at GCR sites in the Lake District and Glen Coe. These are outstanding examples of major advances resulting essentially from 'map and observation geology' (hammers nowadays tend to be rather frowned on, particularly at conservation sites). Detailed laboratory examination without adequate field support is always likely to lose much of its value, or at the worst the interpretations will be incorrect. The GCR review of the Caledonian igneous rocks is a welcome re-affirmation of the fundamental importance of field work.

The rocks described occur in Scotland, England and Wales and the variety and importance of the sites covered inevitably have made this a lengthy compilation. Individual site descriptions from thirty one contributors are organized into nine chapters under seven compilers. In most cases the sites have been described by acknowledged 'experts', many of whom have known and worked on the sites for many years. Some have been described by persons with no previous knowledge of the site, but with a background in related igneous rocks, and almost all have been visited by their author. The few exceptions that have not been visited had recent authoritative descriptions that could be summarized. Dr D. Stephenson and his team of co-authors are to be congratulated on the clarity achieved and also in preserving the individuality of presentation of the site descriptions whilst ensuring conformity with the overall aims and standard format of the Geological Conservation Review. The resulting volume will be valuable to both the amateur and professional for many years to come.

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