
Igneous rocks of south-west England

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

Countryside Council for Wales,

Plas Penrhos,

Ffordd Penrhos,

Bangor,

Gwynedd LL57 2LQ.

Preface

This volume illustrates some of the significant aspects of magmatic activity from Devonian (408 million years ago) to early Permian (270 million years ago) times in SW England. This period covers the progressive development of the Variscan mountain-building episode, from initial basin formation to final deformation and the subsequent development of a fold mountain belt – the Variscan Orogen. Both extrusive (volcanic) and intrusive (plutonic) rocks are found in the orogen, and chart the various stages of its magmatic development.

The sites described in this volume are key localities selected for conservation because they are representative of the magmatic history of the orogen from initiation to stabilization. Some of the earliest volcanic activity in the Devonian is

represented by submarine basaltic and rhyolitic lavas developed in subsiding basins, caused by the attenuation of the existing continental crust. In some cases, extensive rifting and attendant magmatism produced narrow zones of true oceanic crust, whereas elsewhere basaltic volcanism is related to fractures in the continental crust at the margins of the basins. After the filling of the sedimentary basins, and their deformation caused by crustal shortening (late Carboniferous Period), further activity is manifested by the emplacement of the Cornubian granites and later minor basaltic volcanism in the early Permian.

Accounts of the constituent parts of this history have enriched geological literature from the nineteenth century onwards, and have contributed to the advancement and understanding of magmatic and tectonic processes. South-west England contains examples of the composition and emplacement of ancient ocean crust (ophiolites), the diversity and formation of submarine lavas, the emplacement of multiple granite intrusions and their effects on the surrounding rocks, and of the nature of economically important post-magmatic alteration processes and mineralization.

P.A. Floyd, C.S. Exley and M.T. Styles

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