Stay on footpaths and never closely approach a rockface

Obey the countryside code

damaged and destroyed by careless actions. So when

this ancient past.  Just like sites for wildlife these can be

Rock faces, whether in quarries, at the roadside,

fragile geological sites are protected and used wisely.

Please follow this geological code to ensure that our

For more information contact Dudley Museum & Art

www.sandwell.gov.uk

Tel 0121 553 0220/0121 588 6154

Sandwell’s Countryside Services, Sandwell Park Farm,

The programme includes field visits and interesting talks.

The Black Country Geological Society meets monthly.

3. Thinktank, The Birmingham Science Museum
10am - 5pm daily except 24-26 December

Tel 0121 414 7294

10am - 4pm daily except Sundays and Bank holidays

Edgbaston, Birmingham B15 2TT

Rag and which served as field boundaries. A hoard of Roman

walls in the early 19th century.

In the early 1800s, the now long lost Pearl Quarry aroused

much interest for the spectacular and beautiful form of the

hexagonal columns and jointing displayed there.

It is still a common street feature in most of the Black Country

but particularly in parts of Rowley, Langley and Oldbury. It also

From the depths of the Earth

Discovering the ancient past of the Rowley Hills

The Rowley Rag and its uses

However it fell into disfavour as a cobblestone owing to its

manufacture of a range of goods by melting the rock and

casting into moulds. The idea was conceived by Henry Adcock

in 1851 who entered into an arrangement with Chance

Brothers whereby a reverberatory furnace was put at his

disposal. A great variety of articles were produced including,

mantel-pieces, doorways, copings, columns and capitals as

well as items for internal decoration such as slabs for tables

of production, notably fuel to melt the dolerite, proved

uneconomic despite the durability of the products. In 1866

only a few examples of where products had been used, a

house in Handsworth, terraces in Aston Park and

remained.

It has been used for paving and dolerite chips were

road metal.

(2)

The Rowley Hills Landscape:

The Rowley Hills are an iconic Black Country landscape and

have an important scientific and social history. The hills form

near Sedgley, through Dudley and Rowley, to Frankley.

The ridge, which divides the Black Country into two parts with

distinctly differing topographic features, also coincides closely

with the current state of the exposures and carry out any

permissions where necessary, familiarise themselves

with the current state of the exposures and carry out any

risk assessment that is required by their organisation

For more information contact Dudley Museum & Art

Gallery 01384 815575

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Local groups

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line www.bcgso.org.uk

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Acknowledgements. Photographs by Alan Cutler, Graham Worth and

Paul Steadman. Project Curry - Lapworth Museum, University of

Birmingham. Text by Alan Cutler

Neither Sandwell Council, Dudley Council nor any of their employees

nor the Black Country Geological Society, nor the Wildlife Trust for

Birmingham & The Black Country accept any responsibility for any

harm or injury, however caused, to anyone visiting any of the sites

mentioned in this leaflet

More information

Sandwell’s Countryside Services, Sandwell Park Farm,

Slaters Lane, West Bromwich B71 4BG

Tel 0121 553 0220/0121 588 6154

www.sandwell.gov.uk

If you’ve enjoyed this leaflet and would like to find out more about rocks and fossils then visit these local museums. There’s something to appeal to children and adults.

1. Dudley Museum & Art Gallery

St James’s Road Dudley

Tel 01384 815575

10am - 4pm daily except Sundays and Bank holidays

2. Lapworth Museum, University of Birmingham

Edgbaston, Birmingham B15 2TT

Tel 0121 414 7294

Mon - Fri 9am - 5pm, Sat & Sun 2 - 5pm

www.lapworth.bham.ac.uk

3. Thinktank, The Birmingham Science Museum

Millennium Point, Curzon Street, Birmingham B4 7XG

10am - 5pm daily except 24-26 December

http://www.thinktank.ac

View of Blue Rock Quarry

The Geological Code

Rock faces, whether in quarries, at the roadside,

canalside or in other places, are where we can access

this ancient past. Just like sites for wildlife these can be

damaged and destroyed by careless actions. So when

visiting a special geological site:

• Obey the countryside code

• Stay on footpaths and never closely approach a rockface

• Leaders of visiting parties must plan their visits, seek

  permissions where necessary, familiarise themselves with

  the current state of the exposures and carry out any

  risk assessment that is required by their organisation

For more information contact Dudley Museum & Art

Gallery 01384 815575

Supported through Defra’s Aggregates Levy Sustainability Fund

THE ROWLEY HILLS

Turner’s Hill

visible from most parts of the Black Country and is an

unmissable landscape feature viewed from the motorway or

railways.

The Rowley Hills and surrounding areas were shaped by glacial

but it’s the underlying geology, the rocks forming the hills, that

make it such a distinctive landscape feature.

The geology of the Rowley Hills is a story of earthquakes and

volcanoes. The hills are made of dolerite (sometimes called

basalt) but locally known as the Rowley Rag which is a hard

dark grey igneous rock which welled up as magma (molten

aggregate (crushed rock) providing employment for

separately named quarries have been identified ranging in age

of the Rowley Hills

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The Rowley Intrusion

The Rowley Intrusion is a dolerite sill, an intrusive form of basalt, which is a hard dark-grey, medium grained, crystalline rock. It is composed of a suite of minerals including feldspar and fergusonamsize minerals. It weathers brown and has a tendency to form spheroids which peel in layers.

The dolerite at Rowley is the largest Carboniferous intrusive body in the West Midlands. It represents a solidified magma chamber and its structure is now classified as a lopolith (shaped rather like a saucer). It is about 100m thick in the centre of the hills but it appears to thin rapidly at the margins.

Horizontal sills and vertical dykes of dolerite spread out between the beds of the surrounding Etruria Marl and underlying Coal Measures where it has baked or altered the rocks to varying degrees. Although the Rowley Hills have been almost entirely undermined for coal, no feeder pipe has ever been discovered. This suggests that the Rowley mass was sited beneath a down-sinking rift valley, fed from silts at the margins.

No evidence of eruptive rocks or lavas has been found at Rowley but volcanic rocks were erupted at the surface near Barrow Hill in Dudley and it has been claimed that there was some evidence for similar eruptions at Pouk Hill, Walsall.

The Rowley Hills and the Rowley Rag have attracted much scientific interest with about fifty published papers, references, research papers and theses, from 1686 to the present day. The first detailed account was that of Samuel Alpine in 1869 & 1870. Samples have been subjected to microscopical analysis and have figured in standard texts.

The most unusual and pioneering work was that of Gregory Watt who in his 1834 paper detailed his experiments melting the dolerite and cooling it under controlled conditions replicating the different crystalline structures found in nature. These experiments, complementing the work of Sir James Hall, that finally confirmed the belief that basaltic (dolerite) were igneous in origin.

The dolerite is best exposed in the former Edwin Richards quarry (3) now being used for landfill so is not open for public access. Otherwise the next best is in the former Rough Hill quarry (4) now part of Dudley Golf Course but which can be viewed from the footpath. Although weathered, columnar jointing and spheroidal weathering structures are well developed.

The Hailstone

The Rowley Hailstone was an assemblage of dolerite blocks and boulders on the southwestern side of the hills which gained iconic status. It was first described, though not named, by Robert Plot in his Natural History of Staffordshire published in 1688.

It was described in rather romantic prose in William Ham’s Rambles about Dudley Castle (1845) from which the illustration here is taken. It also served as the subject for two postcards. Myth and legend is also closely tied to the image of the Hailstone and highlighted by weathering. The tops of the columns contraction feature formed as part of the magma cooling process and highlighted by weathering. The tops of the columns frequently finish as well developed hexagons as at the former Prospect Quarry (6) which always excited interest of early geologists and are to be seen today. They were similar, if of less extensive scale, to those seen at The Giant’s Causeway on the Antrim Coast or Fingal’s Cave and some of the Scottish Isles.

The dolerite is so hard that it has weathered and eroded much more slowly than the surrounding rocks of the Black Country Coalfield and it has formed left standing proud as the hills we see today.

The hills were shaped and eroded by ice during the ice-age probably the Anglian stage (about 300,000 years ago). Remnant patches of Till (boulder clay with rounded quartzite and sub-angular dolerite pebbles) from that glaciation, have been mapped around the upper slopes of the northern and eastern sides of the hills. It also forms a cap to the ridge between Dabty’s Hill and Turner’s Hill.

A ridge of weathered dolerite is well exposed in the former Blue Rock and Samson quarries (9) with good examples of columnar jointing and spheroidal weathering. Columnar jointing is a contraction feature formed as part of the magma cooling process and highlighted by weathering. The tops of the columns frequently finish as well developed hexagons as at the former Prospect Quarry (6) which always excited interest of early geologists and are to be seen today. They were similar, if of less extensive scale, to those seen at The Giant’s Causeway on the Antrim Coast or Fingal’s Cave and some of the Scottish Isles.

The contact between dolerite and the Etruria Marl was formerly to be seen at Allscop Hill (7), Darby’s Hill (8) and New Rowley Road (9) quarries but the only known site with public access today where the contact may be seen is at Barrow Hill, Pensnett near Russells Hall Hospital.

The dolerite is so hard that it has weathered and eroded much more slowly than the surrounding rocks of the Black Country Coalfield and it has formed left standing proud as the hills we see today.

Other deposits known as Head, representing seasonally thawed saturated deposits of clay with dolerite debris which have moved downslope over frozen ground, have been mapped around Rowley Regis village, at Springfield and Grace Mary estate.

The Hailstone was removed in 1878/79 as part of the advancing Roadley Rag village, at Springfield and Grace Mary estate.