

# OUTCROP

The Newsletter of the Avon RIGS Group

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## RIGS are Regionally Important Geological and Geomorphological Sites

The Group's aim is to identify, survey, protect and promote geological and geomorphological sites in the area of the former County of Avon – the modern Unitary Authorities of Bath & North East Somerset, Bristol, North Somerset and South Gloucestershire. RIGS are selected for their educational, research, historical and aesthetic value.

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Editions of *Outcrop* are now available on-line, with colour pictures, downloadable as PDF files from our website at:

[www.brerc.org.uk/groups/rigs/rigs\\_home.htm](http://www.brerc.org.uk/groups/rigs/rigs_home.htm)

### Underground RIGS

Caves are a particularly vulnerable part of our geological heritage, especially the small pockets of sediments they may contain. The fossilised bones of animals, spores of plants and the build up of stalactite layers can provide a record of climate change that stretches back over thousands of years.

The former Avon area is particularly rich in caves. Most have developed in the Carboniferous Limestone of the Mendips and the outcrops in Bristol and up into South Gloucestershire. Most are primarily associated with the recent Pleistocene Period ice age. Examples are at Uphill in Weston-super-Mare, Bleadon, Hutton and Loxton.

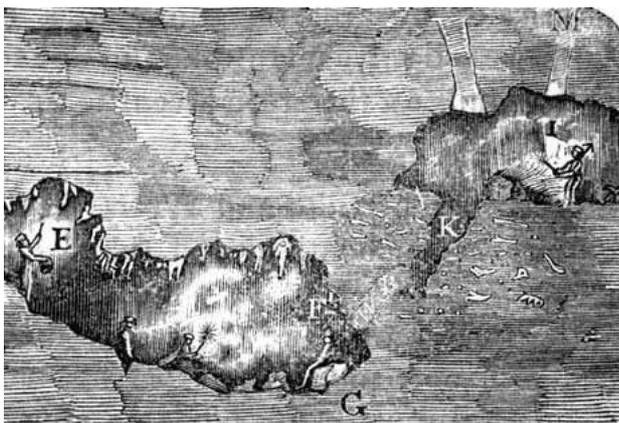
The Middle Jurassic limestones around Bath are home to openings in the ground in the form of "gulls". These are fractures rather than the result

of underground erosion. They came about from cambering - slippage of the limestone beds along scarp slopes. However, the largest subterranean structures around here are man-made, where quarriers have pursued Bath Stone (Combe Down) or sand (Redcliff, Bristol) underground.

## Banwell Caves

The caves at Banwell were explored in the 1820s by what might seem at first sight to have been an unlikely threesome. The prime explorer was local farmer William Beard. In the background there was the Rector of Banwell, the Rev Francis Randolph, usually an absentee priest who was a Prebend of Bristol Cathedral. The third was the Bishop of Bath and Wells, George Henry Law, who was Lord of the Manor. The two clerics were in fact well versed in scientific matters. Randolph, whose father had published a book on the waters of the Bristol Hotwells in the 18<sup>th</sup> century, was a Fellow of the Geological Society and Law was a Fellow of the Royal Society and of the Society of Antiquaries.

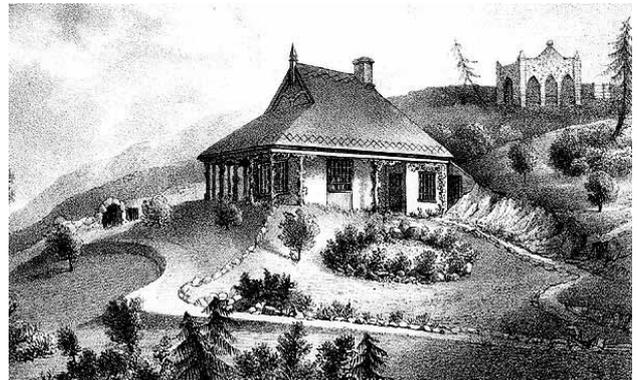
Beard employed some men to drive a short tunnel into a chamber in which there were prodigious numbers of animal bones. He excavated large amounts of bone, but many are still in there.



Section of the caves by John Rutter in 1829. The Bone Cave is on the right, the Stalactite Cave on the left.

The caves quickly became famous as a tourist attraction and as a "romantick" curiosity. They came to play a part in the developing science of geology and the Enlightenment's struggle with

explaining the mysteries of fossils, the age of the Earth and the Biblical Flood.

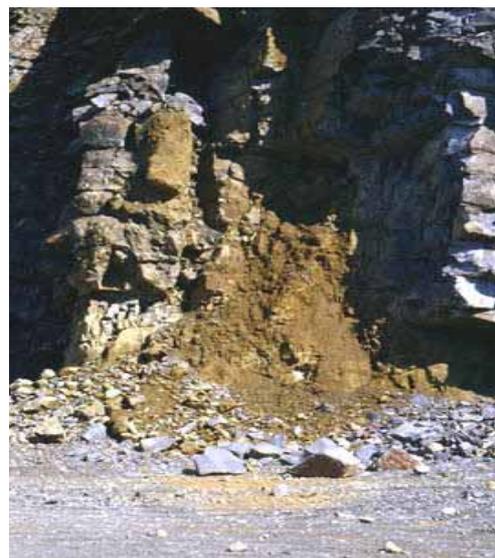


Randolph and Law had a cottage built to accommodate visitors to the caves. The higher building was called the Osteoikon –bone house in Greek.

The Banwell Caves are SSSIs. The Bone Cave is occasionally open for groups and for public visiting.

## Triassic caves too

The ice age caves with their mammal remains are familiar, but there was another episode of cave formation. During the Permian and Triassic Periods the Carboniferous Limestone came under chemical and mechanical attack in desert conditions. Triassic fissures and caves are a feature of many quarries and of natural exposures such as the Avon Gorge. The fissures are usually filled with reddish sediment and with minerals, especially ochre.



Triassic cave fill at Tytherington, Gloucestershire

It was from caves like these that the remains of the dinosaur *Thecodontosaurus* were excavated in a quarry on Durdham Down, Bristol in the 1830s. More recently, in the 1970s, at Tytherington many more bones have been found and these form the basis of the Bristol Dinosaur Project at the University of Bristol - see its website at [www.palaeo.gly.bris.ac.uk/bristoldinosaur/](http://www.palaeo.gly.bris.ac.uk/bristoldinosaur/) It is probable that many of the Pleistocene caves started life in the Triassic. This is likely to have been the case with Pen Park Hole in Brentry, Bristol and the Ochre Caves at Banwell.

## Bristol Festival of Nature

The Avon RIGS Group had a part in the Bristol Festival of Nature this October. The Group had a stall at the Launch Day fair in Bristol's Council House, College Green on Saturday 9<sup>th</sup> October. Simon Carpenter brought in some of the impressive local ammonites from his collection to intrigue visitors. The new RIGS leaflet was available for the first time and plenty of interest was expressed.

On the next Saturday Eileen Stonebridge led a walk around the centre of Bristol following the route of the Group's "*Bristol Heritage in Stone*" booklet. On the next day Eileen was in action again, guiding a walk with the enigmatic title of "Exploring the riddle of the rocks". This took place in Leigh Woods and examined some aspects of the geology and geomorphology of the Avon Gorge area.

## The River Avon Trail

Gradually the former Avon area is being criss-crossed with trails and fairly soon now we can expect to find a label on every part of the landscape.

The latest trail stretches 23 miles along the River Avon from Pill, near the mouth in the west, to Bath's Pulteney Bridge, in the east.

It is aimed at walkers for the whole length, cyclists for much of it and horse riders through the

Hanham Gorge. Along the route, they will encounter fifteen interpretation boards that explain various aspects of the places they pass.

The best starting point has to be the trail's website [www.riveravontrail.org.uk](http://www.riveravontrail.org.uk), from where you can download a copy of the 32-page colour guidebook. One of its sections is on Geology and Wildlife, with explanations of the geology at Pill, the Avon Gorge, Bristol, Hanham and Bath. The site stresses the geological basis of the landscape and of biological and human activity.

The Avon RIGS Group is mentioned and two of its members are acknowledged.

The trail was put together by the Forest of Avon on behalf of the Avon Valley Partnership and was funded by the Heritage Lottery Fund.

## Reading

Two books about our local geological hero, the Father of English Geology, have been so successful that they have gone to a new edition.

One is John L. Morton's biography "*Strata – the remarkable life story of William Smith*". We noted his latest book, about Sir Roderick Murchison in the last Outcrop. His book was rather over-shadowed by the shallower "*Map that changed the world*" by Simon Winchester, which came out at the same time.

Secondly, the Bath Royal Literary and Scientific Institution issued a limited edition reprint of the 1844 "*Memoirs of William Smith, LLD*" by his nephew, the geologist John Phillips, to which was added an introduction by Hugh Torrens. It soon sold out, but is now available again at £18+£3 p&p from the BRLSI (see contact information, below).

We were pleased to note that reference was made to the Avon RIGS Group's booklet "*Bristol Heritage in Stone*" in the new Pevsner Architectural Guide, "*Bristol*" by Andrew Foyle (Yale University Press, £9.99). This is an updated version of the Bristol

part of the old Penguin Buildings of England "*North Somerset & Bristol*" volume. It is packed with information about buildings, with frequent references to the stones used in their construction. There is a page of colour photographs of building materials in the introduction.

Curiously, it only covers certain parts of Bristol with the strange result that the western side of Whiteladies Road is included, but the eastern side, in Cotham and Redland is not. Having missed chunks of central Bristol, it then goes off on an excursion to faraway Tyntesfield House.

It is remarkably good value and fits in a pocket when wandering around the city looking at the great diversity in the use of buildings stones.

Just before the Bristol book came out a volume for its sister city was published. The Pevsner Architectural Guide "*Bath*" was written by Michael Forsyth of Bath University.

Being a more compact place, it was possible to cover it all in quite a lot of detail in what Pevsner used to refer to as perambulations. We believe that the detail includes the author's own home! Bath's use of stone is a rather more restricted in terms of diversity than Bristol, of course, so there is less reference to building materials. Again, the book is great value and makes a wonderful companion to walks around the city.

## Recent RIGS Group work

It has been considered that to allow enough time for the South Gloucestershire Review, it should be tackled in the year 2005-6. We will be looking at reviewing 72 RIGS sites (including new Palaeozoic sites around Tortworth and some new Carboniferous sites).

We also hope to be providing geological interpretation at seven RIGS. The Avon RIGS Group would have the support of the South Gloucestershire Council's design team – for

example helping to source designers and artists - so we would not be doing this on our own!

The bid for Aggregates Levy funds will include the purchase of a good digital camera to use during site visits. Digital images are very convenient for BRERC to use with their other computer systems.

South Gloucestershire are currently bidding for funds for a cultural and natural heritage scheme called "Wild Roots". The RIGS Group is expecting to have an input.

In Bath, Local Heritage Initiative funds are being sought for interpretation of the geology and landscape of the World Heritage City.

The Group is linking up with the Avon Industrial Buildings Trust, which is involved in conserving part of the former Brandy Bottom colliery site. We are hoping to be able to log and sample the Coal Measures red beds at the nearby Shortwood Brick Pit before it is lost to landfill.

The Group has also commented on the North Somerset Biodiversity Plan and upon proposals to develop the tip heap of Tynning Colliery in Radstock, a RIG Site.

## Radstock spiders

One of the outcomes of the preservation of a portion of the tip heap of Lower Writhlington Colliery in Radstock is that a collections of fossils can still be made that advance science.

The very fine grain size of the mudstones that were laid down at the time of the formation of the Coal Measures (late Carboniferous Period) has preserved fragile remains of plants and animals that lived in the tropical rain forest of that time, 300 million years ago.

One group of animals was that of the primitive spiders called Phalangiotarbid. Writhlington tip has produced what may well be the largest number of these in the world, now in Bristol City Museum.

A study of the Radstock spider specimens has recently been published in the *Transactions of the Royal Society of Edinburgh*. It provisionally assigns them to *Bornatarbus mayasii* and attempts to resolve the relationship of the Phalangiotarbida to the other groups of arachnids.

## Listings

### Museums with geology displays in former Avon

#### Bath at Work Museum

Bath Stone quarrying and other industries.  
Julian Road, Bath BA1 2RH, T: 01225 318348  
[www.bath-at-work.org.uk](http://www.bath-at-work.org.uk)  
open: 10.30-4pm April-October (every day),  
November-March (Sat & Sun only)

#### Bristol City Museum & Art Gallery

Local and global rocks, fossils and minerals. A new Dinosaurs Gallery should be completed soon.  
Queen's Road, Bristol BS8 1RL, T: 0117 9223571  
[www.bristol-city.gov.uk/museums](http://www.bristol-city.gov.uk/museums)  
open: every day 10am-5pm

#### Kingswood Heritage Museum

Coal mining and brass production  
Tower Lane, Warmley, Gloucestershire  
T: 0117 9564896 or 9675711  
open: Tues, 2<sup>nd</sup> Sun 2-4pm (and 4<sup>th</sup> Sun, April-October)

#### North Somerset Museum

Mendip minerals and some fossils.  
Burlington Street, Weston-super-Mare BS23 1PR,  
T: 01934 621028, E: [museum.service@n-somerset.gov.uk](mailto:museum.service@n-somerset.gov.uk) [www.n-somerset.gov.uk](http://www.n-somerset.gov.uk)  
open: Mon-Sat 10am-4.30pm

#### Radstock Museum

Coal mining, minerals, Jurassic and Carboniferous fossils.  
Waterloo Road, Radstock BA3 3ER  
T: 01761 437722,  
E: [radstockmuseum@ukonline.co.uk](mailto:radstockmuseum@ukonline.co.uk)  
[www.radstockmuseum.co.uk](http://www.radstockmuseum.co.uk)  
open: Tue-Fri & Sun 2-5pm, Sun & Bank Holiday  
Mon 11am-5pm

#### Thornbury & District Museum

Occasional geology-related exhibitions.  
4 Chapel Street, Thornbury BS35 2AR

T: 01454 857774

[www.thornburymuseum.org.uk](http://www.thornburymuseum.org.uk)

open: Tues-Fri 1-4pm, Sat 10am-4pm; closed Bank Holidays and two weeks either side of Christmas

## Coming talks, events and field trips

### Saturday 11 December 2004

Site clearance: Saltford cutting, Bristol-Bath Railway Path, Contact: Simon Carpenter, T: 01373 474086  
Bristol Naturalists' Society

### 6 January 2005

Talk: Antarctic palaeoclimate under the microscope  
Dr Jennifer Pike, Cardiff University  
Bath Geological Society

### Saturday 8 January 2005

Site clearance: Saltford cutting, Bristol-Bath Railway Path, Contact: Simon Carpenter, T: 01373 474086  
Bristol Naturalists' Society

### 18 January 2005

Three students and their current research: WEGA

### 5 February 2005

Site clearance: Brown's Folly, Bathford  
Bath Geological Society

### 6 February 2005

Annual General Meeting: Bath Geological Society

### 8 February 2005

Talk: Late Quaternary environmental change of the Gordano valley  
Dr Christopher Spencer: WEGA

### 17 February 2005

Rocky Road Show  
Bristol City Museum & Art Gallery

### 3 March 2005

Talk: Restoration of the fisheries on the rivers Wye and Usk  
Dr Stephen Marsh-Smith: Bath Geological Society

### 8 March 2005

Talk: The Earth –an intimate history  
Prof. Richard Fortey: WEGA

### 20 March 2005

Field trip: More Somerset Coal Canal  
Andrew Mathieson, Avon RIGS Group  
Bath Geological Society

### **7 April 2005**

Talk: Geodelights of the Cotswold Water Park  
Dr Neville Hollingworth, NERC  
Bath Geological Society

### **23 April 2005**

Field trip: Geology of Eastern Wiltshire  
Isobel Geddes, Wiltshire RIGS Group  
Bath Geological Society

## **Contacts for further information**

### **Bath Geological Society**

Secretary: Vicki Griffiths 01225 858123, E:  
[secretary@bathgeolsoc.org.uk](mailto:secretary@bathgeolsoc.org.uk)  
Meetings are held at 7.15 pm, Bath RLSI, 16-18  
Queen Square, Bath. [www.bathgeolsoc.org.uk](http://www.bathgeolsoc.org.uk)  
Note new contact name

### **Bath Royal Literary & Scientific Institution (BRLSI)**

16-18 Queen Square, Bath; T: 01225 312084, F:  
01225 429452 E: [enquiries@brlsi.org](mailto:enquiries@brlsi.org)  
[www.brlsi.org](http://www.brlsi.org)  
Note new web addresses

### **Bristol City & Art Gallery**

Queen's Road, Bristol BS8 1RL. T: 0117 922 3571  
E: [general\\_museum@bristol-city.gov.uk](mailto:general_museum@bristol-city.gov.uk)  
[www.bristol-city.gov.uk/museums](http://www.bristol-city.gov.uk/museums)

### **Bristol Lapidary Society**

Jim Edmundson, 60 Lays Drive, Keynsham, BS31  
2LA; T/F: 0117 986 5937

### **Bristol Naturalists' Society Geological Section**

Field Secretary: Simon Carpenter T: 0773 2116671,  
E: [simonccarpenter@yahoo.com](mailto:simonccarpenter@yahoo.com)  
Meetings: 7.00, University of Bristol Earth Sciences  
Department lecture theatre (G25).  
[www.bristolnats.org.uk](http://www.bristolnats.org.uk)

### **Open University Geology Society (OUGS)**

Jan Ashton-Jones, T: 01432 870827,  
E: [Jashtonjon@aol.com](mailto:Jashtonjon@aol.com) [www.ougs.org](http://www.ougs.org)

### **Rockwatch**

The national club for young geologists  
[www.rockwatch.org.uk](http://www.rockwatch.org.uk)

### **University of Bristol**

Department of Continuing Education  
8-10 Berkeley Square, Bristol BS8 1HH, T: 0117  
9287153 [www.bristol.ac.uk/](http://www.bristol.ac.uk/)

### **West of England Geologists' Association (WEGA)**

Graeme Churchard, E: [secretary@wega.org.uk](mailto:secretary@wega.org.uk)  
Recently redesigned website: [www.wega.org.uk](http://www.wega.org.uk)

## **How you can support the work of the Avon RIGS Group**

Surveying and interpreting geological and geological sites in the former County of Avon can be very interesting and rewarding work. The Avon RIGS Group is always looking for fresh volunteers, so if you are interested and able to commit a small amount of time to this work, please contact one of the following Avon RIGS members:

Andrew Mathieson  
Eversleigh, Newlands Hill, Portishead, BS20 9AZ  
E: [mathieson@waitrose.com](mailto:mathieson@waitrose.com)

Simon Carpenter - T: 07732116671  
E: [simonccarpenter@yahoo.com](mailto:simonccarpenter@yahoo.com)

## **Contributions to *Outcrop***

Short articles and photographs of geological and geomorphological interest are always welcome. Please contact Roger Clark- City Museum & Art Gallery, Queen's Road, Bristol BS8 1RL, T: 0117 922 3593, E: [roger\\_clark@bristol-city.gov.uk](mailto:roger_clark@bristol-city.gov.uk)

## **Getting yourself on to the *Outcrop* mailing list**

To receive your FREE copy of the Avon RIGS Newsletter, please contact BRERC, Ashton Court Visitor Centre, Long Ashton, BS41 9JN, T: 0117 9532140, F: 0117 9532143, E: [info@brerc.org.uk](mailto:info@brerc.org.uk)

The Avon RIGS Group is co-ordinated by Bristol Regional Environmental Records Centre (BRERC).