

OUTCROP

The Newsletter of the Avon RIGS Group

Issue No. 16 Spring 2003

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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A geological oddity for the south of England –a small patch of limestone pavement, formed by weakly acid rainwater etching into Carboniferous Limestone. It is easily visited on the Blaise Castle estate, Henbury, Bristol at ST55927835.

Recent landscape work on the estate has made its complex geology more accessible and a geological trail is planned.

Outcrop is now available on-line, with larger pictures at:

www.brerc.org.uk

The North Somerset RIGS Review

From Andrew Mathieson

The Avon RIGS Group successfully approached North Somerset Council about funding a full review of all its designated RIGS, having completed a partial review for one of the other local authorities a couple of years ago.

North Somerset had over 70 RIGS listed and the council was keen for us to complete the review in time for inclusion in its new Local Plan. This involved visits by members of the Group to check the condition of sites and to make assessments of their criteria for RIGS designation. These were then considered by our Designation Group and ratified by members of the full RIGS Group.



Burrington Combe

One crucial element of the survey for the council was the establishment of accurate site boundaries, and we were provided with very detailed up-to-date maps generated by the MapInfo geographical information system to check and revise as necessary. We have made many changes to the previous boundaries since they were based on 1:10,000 maps, which were inevitably dated and often lacked sufficient detail. There were also some decisions to make, including what area on the map should represent an underground RIGS. After discussion with council officers, this was agreed to be the geographical extent of the mine or cave system involved, instead of

just the site entrance, since surface development could affect the underground environment and since this appears to be the practice elsewhere. Another important requirement was to provide a brief description of each site, which includes the reasons for its designation, for use by non-geologists / geomorphologists. This is available with the Mapinfo site information, and will be printed in the Local Plan.

This project revealed a number of problems with RIGS which had been designated for ten years or more. Some sites were not known to present members of the Group and had to be looked at in detail from scratch. In a very few cases sites had to be written off since they had been totally lost through infilling, but we were able to find replacements for most of these. We also extended and even combined other RIGS in order to make them more appropriate for the sites involved. The most extreme example of this is Goblin Combe, where a large new geomorphological site will swallow up ten smaller geological RIGS. In the end, we proposed that 45 existing RIGS should be re-designated.

A few new RIGS have been proposed since the review provided us with the opportunity to take stock and identify gaps in the provision. These included several old quarries on Dundry Hill which had been famous for their fossil-rich Inferior Oolite. In addition, the DETR-funded project last year had led to the proposal for 17 other new RIGS in the area. The total number of RIGS proposed for North Somerset is therefore 68.

The RIGS provision includes rocks of all ages found in the area, as well as a variety of active and static geomorphological sites. There are sites selected for their special cave and karst features, rock types, minerals and fossils, as well as tectonic structures and cross-cutting relationships - such as unconformities. A few have other interests, such as sources of particular building stones or historic extraction sites for ore minerals.

At the same time, all have had to meet one or more of the English Nature RIGS criteria of education, research, history or aesthetics value.

Local Plans have to be revised at intervals and these clearly provide a good opportunity to undertake a full review of RIGS provision. However given that we found problems with several sites which had not been visited for ten years or more, it could certainly be argued that this should be done more frequently - say every 5 years (which is in line with many ecological surveys and reviews).

A full review is a major commitment, which stretched our modest resources, but we have found that it has been very worthwhile. We now have much more accurate site boundaries recorded in the GIS system used by the council to check planning applications, up-to-date descriptions for all the sites will be published in the Local Plan, and of course we now have planning protection for more of the best local geological and geomorphological sites in North Somerset.

The full list of RIGS in North Somerset can be seen on the Council's web site, as part of Appendix 10 to the Local Plan.

See www.n-somerset.gov.uk

Focus on Radstock

Radstock is a small town that owes much to its geology. It is situated where the Romans were forced to put zigzags into their otherwise straight Fosse Way to cross a small river that occupies a deep valley. The strong relief derives from this being the point where the north-south Jurassic escarpment becomes confused by the underlying east-west trend of the Mendips. The town's development beyond just being a crossing point is largely due to the underground wealth of the Somerset Coalfield and the numerous collieries that sprang up to exploit it. Spoil tips still punctuate the skyline, despite the last mine

having closed in 1973. Activity along the line of the Mendips in the Early Jurassic led to there being an archipelago of islands led to some unusual shoreline rock types in the area and a condensed sequence of strata.



The Lias beds here are rich in fossil ammonites and brachiopod shells, including the beautiful *Spiriferina*.

Radstock was formerly surrounded by small quarries, in which the unusual lithologies of the Lower Jurassic beds were exposed. Collecting from these quarries provided the basis for J.W. Tutcher and A.E. Trueman's classic 1925 paper in the Quarterly Journal of the Geological Society. A few of them remain as SSSI and RIGS.

Kilmersdon Road Quarry



Kilmersdon Road Quarry (ST 689542) is a SSSI and was cleaned up by English Nature a few years ago. Exposed here is the whole Lower Lias succession, but interrupted by six major non-sequences. An interpretation board was provided to explain the significance of the site. The

rock that was removed from the faces was piled up in the centre of the quarry. Fossils may be collected from the heap, although vegetation has been fast in taking it over.

Lower Writhlington Colliery tip

This was one of the last of the Radstock collieries that was operating until 1973. The tip (at ST703552) was worked over for coal and then landscaped in 1986. At this time the abundance of fossils in the Coal Measures mudstones came to light and a section of the tip was put aside to be a rock store where collecting could continue.



This is now known as the Writhlington Geological Reserve. The very fine-grained mudstone has preserved traces of the life of the coal forests in great detail. Many species of plants have been recorded, ranging from the great club-moss trees to giant horsetails and ferns.



Amongst the leaf litter are remains of cockroach-like insects, primitive spiders and an enormous millipede – a whole ecology. The most famous insect that has been found in the rocks around here is a

huge dragonfly that became the emblem of Writhlington School.

Kilmersdon Colliery Tip (ST682536) is a RIGS, the spoil tip of the last Somerset coal mine.

Huish Quarry (ST695542) SSSI - another condensed Lower Jurassic sequence.

The Stones of Radstock

Radstock's older buildings are almost entirely built of White and Blue Lias limestones that were quarried within a very short distance.



The collieries had a great appetite for bricks for shafts and tunnels and some developed their own brickyards. The Lower Lias provided the clay and, of course, there was plenty of coal for firing them. By the late 19th century bricks were replacing stone in buildings. There was a large brickpit nearby at **Bowldish Quarry** (ST668558 – an SSSI), using clay from the upper part of the Lower Lias, carried to the works in Midsomer Norton by an aerial ropeway.

Where to see more

Fossils from the quarries and collieries around Radstock can be seen in the displays of Radstock Museum and of Bristol City Museum & Art Gallery.

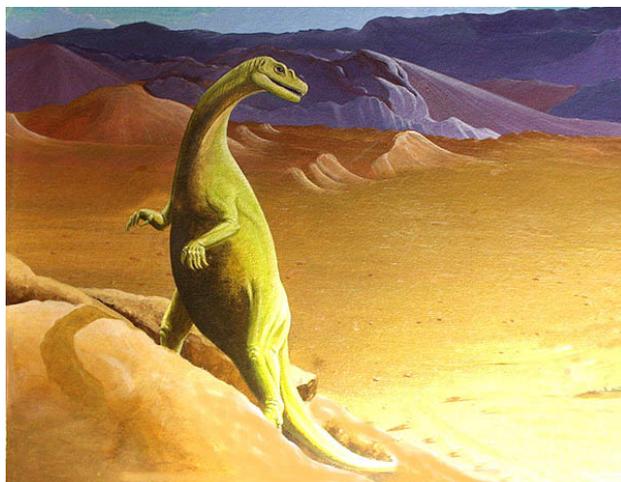
Combe Down stone quarries

There has been a lot of fuss over the last few years about the problems of subsidence at Combe Down on the hilltop on the southeast side of Bath. In the early 1730s quarriers pursuing the valuable Bath Stone soon exhausted their surface workings and followed the beds underground. Byfield, Firs, Entry Hill (Springfield) and Grey Gables quarries extend under a large area which has now been built upon. Parts of the old workings are now considered to be unstable and a great deal of time has been expended in deciding what to do about them. The plan is to fill Byfield and parts of Firs Quarries with foam concrete. The eastern part of Firs Quarry is to be filled with loose limestone aggregate (presumably Carboniferous, from the Mendips) to allow movement of ground water.

Provision is being made in places for steel supports to allow access for bats. If planning permission is gained later this year, work will begin early in 2004 and is expected to go on, working 24 hours per day, until 2008. All this will cost around £30 million. While provision has been made for bats and archaeological evaluation has been carried out (see a brief report by Oxford Archaeology-www.oxfordarch.co.uk), the Avon RIGS Group is concerned that no geological or geomorphological survey has been done. The Group has lodged an objection to the granting of planning permission. It would be a great pity that, when 90% of the quarries has been permanently lost, there should be no record of such important historic sites in what is the type area of the Bathonian Stage. Several cored boreholes were sunk in the course of surveying the extent of the quarries and it is hoped that one will be donated to Bristol City Museum & Art Gallery so that there will be a record of the stratigraphy at one point at least.

The Bristol Dinosaur Project

Back in 1834 quarrymen working on Durdham Down in Bristol found some fossilised bones and brought them to the attention of a local medic. Henry Riley had a good knowledge of comparative anatomy and had given lectures about the anatomy of reptiles. He recognised the bones as reptilian and with Samuel Stutchbury, the Curator of the Bristol Institution, set about collecting more of them. Together in 1836 they described them and published the name *Thecodontosaurus*. This was the fourth dinosaur to be discovered and the first from the Triassic Period.



Many of the bones were incomplete and jumbled together because they had been washed into fissures in Carboniferous Limestone. The conditions towards the end of the Triassic were arid and likely to have been subject to occasional devastating flash floods. No more bones of *Thecodontosaurus* were found until 1975, when some turned up in Triassic fissures at Grovesend Quarry, Tytherington, to the north of Bristol. Bristol University acquired five tonnes of this material, but it was a quarter of a century later before work began on it. The Bristol Dinosaur Project is carefully preparing the bones out of the blocks. They will add greatly to our knowledge of this early herbivorous dinosaur and is already enabling an accurate reconstruction to be made of its skeleton.



A full description of the University's project can be found on the web at palaeo.gly.bris.ac.uk/bristoldinosaur, where you can check on the new discoveries each week. Many of the bones from the 1830s discovery are in Bristol Museum & Art Gallery, although some were destroyed by bombing during the Second World War. Some other *Thecodontosaurus* bones, including part of the skull were given to the museum of Yale University in the USA.

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
email: andrew@mathiesons.org.uk

Simon Carpenter- tel: 07732116671,
email: simonccarpenter@yahoo.com

Museums with geology displays in former Avon

Bristol City Museum & Art Gallery

Local and global rocks, fossils and minerals
Queen's Road, Bristol BS8 1RL
tel: 0117 922 3571
www.bristol-city.gov.uk/museums
open: daily 10am-5pm

Kingswood Heritage Museum

Coal mining and brass production
Tower Lane, Warmley, Gloucestershire
tel: 0117 956 4896 or 967 5711
open: Tues, 2nd Sun 2-4pm (and 4th Sun, April-October)

North Somerset Museum

Mendip minerals and some fossils.
Burlington Street, Weston-super-Mare
BS23 1PR; tel: 01934 621028, email:
museum.service@n-somerset.gov.uk
website: 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
tel: 01761 437722, email:
radstockmuseum@ukonline.co.uk
website www.radstockmuseum.co.uk
open: Tue-Fri & Sun 2-5pm, Sun & Bank Holiday Mon 11am-5pm

Coming talks and field trips

5 June

The dating game: one man's search for the age of the Earth. Dr Cherry Lewis (Bristol)
Bath GS

15 June

Manor Farm Quarry, Aust field trip. Led by Simon Carpenter. **Bath GS and BNS.**

22 June

Dartmoor field trip. Led by Richard Scrivener of BGS. **WEGA**

3 July

Meteorites in Western Australia. Dr Joe Mcall. **Bath GS**

12 July

Quaternary geology of the Cotswolds. Led by Nick Chidlaw. **WEGA**

12 July

Tour of ECOS stones, Frome. Led by Dr Eric Robinson **Bath GS**

7 August

The European Community of Stones. Peter Chapman, Foster Yeoman Company.
Bath GS

25 August (Bank Holiday Monday)

Rock It! –annual geology event on the Bath & Bristol Railway Path. **Bath GS and BNS**

5 September

Club Evening. **Bath GS**

13-20 September

North-east Scotland field trip, based at Forres. Led by George Downie, Aberdeen University. **WEGA**

19-21 September

Hastings weekend field trip. **Bath GS**

2 October

Europa: a frozen waterworld. Victoria Griffiths, Imperial College, London.
Bath GS

18 October

Somerset Coal Canal field trip. Led by David Workman. **Bath GS and BNS**

8 November

Geologists' Association Annual Reunion trip to London. **Bath GS and BNS**

6 November

Dinosaur footprints in the Purbeck Beds- and where they have led. Paul Ensom, Natural History Museum. **Bath GS**

4 December

Origami tectonics: some simple models of folding and faulting. Professor Richard Lisle, University of Wales, Cardiff. **Bath GS**

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,
tel: 0117 922 3593, email:
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, Ashton Court Estate Long Ashton, BS41 9JN, tel: 0117 953 2140, fax: 0117 953 2143, email: brerc@btconnect.com

Contacts for further information

Bath Geological Society (Bath GS)

Secretary: Elizabeth Devon, Heleigh House, Middle Hill, Box, Wiltshire SN13 8QB tel/fax: 01225 742752, email: bathgeolsoc@bath.ac.uk
Meetings are held at 7.15 pm, Bath RLSI, 16-18 Queen Square, Bath.
Website: www.bath.ac.uk/bathgeolsoc

Bath Royal Literary & Scientific Institution (BRLSI)

16-18 Queen Square, Bath; tel: 01225 312084, fax: 01225 429452
email: exxbrlsi@bath.ac.uk
Website: www.bath.ac.uk/brlsi

Bristol City Museum & Art Gallery

Queen's Road, Bristol BS8 1RL.
Reception: 0117 922 3571; e-mail: general_museum@bristol-city.gov.uk

Bristol Lapidary Society

Jim Edmundson, 60 Lays Road, Keynsham, Somerset

Bristol Naturalists' Society Geological Section (BNS)

Field Secretary: Simon Carpenter
tel: 0773 2116671, email: simonccarpenter@yahoo.com
Programme Secretary: Paul Stevenson
Meetings: 7.00, University of Bristol Earth Sciences Department lecture theatre (G25).
Website: www.bristolnats.org

Open University Geology Society (OUGS)

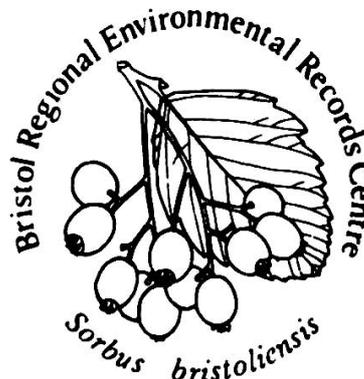
Jan Ashton-Jones, tel: 01432 870827, email: Jashtonjon@aol.com
Website: www.btinternet.com/~mtne/OUGS/

University of Bristol (UB)

Department of Continuing Education
8-10 Berkeley Square, Bristol BS8 1HH, tel. 0117 928 7153
Website: www.bris.ac.uk/

West of England Geologists' Association (WEGA)

Deborah White, 66 West Town Lane, Brislington, BS4 5DB
Website: www.churchard.pwp.blueyonder.co.uk/WEGA



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

BRERC

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email: brerc@btconnect.com
website: www.brerc.org.uk
