



The
Black
Country
Geological
Society

Newsletter No. 196

August 2009

The Society provides limited personal accident cover for members attending meetings or field trips. Details can be obtained from the Secretary. Non-members attending society field trips are advised to take out your own personal accident insurance to the level you feel appropriate. Schools and other bodies should arrange their own insurance as a matter of course.

Leaders provide their services on a purely voluntary basis and may not be professionally qualified in this capacity.

The Society does not provide hard hats for use of members or visitors at field meetings. It is your responsibility to provide your own hard hat and other safety equipment (such as safety boots and goggles/glasses) and to use it when you feel it is necessary or when a site owner makes it a condition of entry.

Hammering is seldom necessary. It is the responsibility of the hammerer to ensure that other people are at a safe distance before doing so.

Committee

Chairman

Gordon Hensman B.Sc.,
F.R.Met.S.

Vice-Chairman

Alan Cutler B.Sc.,
M.C.A.M.,
Dip.M., M.CIM.

Hon Treasurer

Mike Williams B.Sc.

Hon Secretary

Barbara Russell

Field Secretary

Andrew Harrison B.Sc.,
M.Sc., F.G.S.

Other Members

Bob Bucki

Les Riley Ph.D., B.Sc.,
F.G.S., C.Geol., C.Sci.,
C.Petrol.Geol., EuroGeol.

Graham Worton M.Sc.,
C.Geol., F.G.S.

Copy date for the next Newsletter is

Monday 5th October 2009

Contents:

Future Programme	2
Other Societies	3
The Dudley Ikon	3
The 'Dudley Bug'	4
Editorial – The Geopark Way	6
Field Report - Abberley Hill	8
Lapworth Strikes Gold	10
Geologist Explorers	11
Geobabble	11
Members' Forum	12

Future Programme

Lecture meetings are held at Dudley Museum & Art Gallery,
St James's Road, Dudley, DY1 1HU. Tel. 01384 815575.
7.30 for 8 o'clock start unless stated otherwise.

Monday 28th September 2009 (Indoor meeting) Lecture by Graham Worton: Why a Black Country Geopark?- Incredible and Unique Geology of Course!

Monday 26th October (Indoor meeting) To be arranged

Monday 30th November (Indoor meeting) Members' Evening

Gordon Hensman

Dudley Rock and Fossil Festival 09

Saturday 19 Sept 10am - 5pm • Sunday 20 Sept 10am - 4pm

www.discoverdudley.org.uk/rockandfossil • tel. 01384 815575

At Dudley Concert Hall

Stalls selling jewellery, gems, crystals and fossils

Dudley Zoo's small animals

Birds of prey including owls

Full size T-Rex skull from Lapworth Museum, Birmingham

Fossil identification

Lectures and talks from geological experts

Face painting and balloon modelling

Gem cutting and gold panning

Admission £1 per person

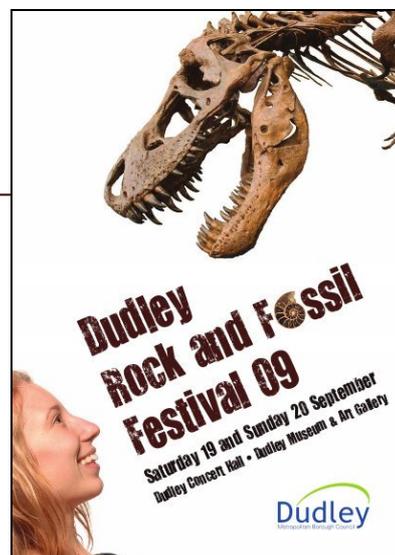
At Dudley Museum & Art Gallery

Re-enactors, storytelling, drama and poetry

Craft activities with JAM (juniors at museums) club including bird box making

Special exhibitions including Darwin and Invaders & Settlers (Saxons & Vikings)

Admission free



The BCGS stand needs volunteers!

We need 3 volunteers at a time. Dividing each day into morning and afternoon sessions makes a total of 12 volunteers. If you can offer your services for one or more of these sessions, please contact Barbara Russell tel: 01902 650168, email: barbara-russell@blueyonder.co.uk

Why not visit our website at: www.bcgs.info

Other Societies

North Staffordshire Group of the Geologists' Association

Saturday 26th September: Churnet Valley Geotrail (South), leader: Dr Richard Waller. Meet at 10.00am at the Car Park (SK 062432) adjacent to the Ramblers Retreat. For good exposures of the local Triassic sandstones, and the opportunity to visit Toot Hill with its spectacular views of the lower, deeply-incised section of the Churnet valley.

Thursday 8th October at 7.30pm, speaker: Dr. Cathy Hollis (University of Manchester) Minerals, hydrocarbon and porosity changes: a short history of fluid flow in Carboniferous limestone.

For further information contact NSGGA Field Secretary **Gerald Ford**, Tel. 01630-673409 or email: g.ford@ukonline.co.uk A field fee of £2.00 is made (for members and non members).

Warwickshire Geological Conservation Group

Wednesday August 19th: Temple Grafton RIGS with Jon Radley - the site of recent clearing in the Blue Lias Formation which shows Holocene Tufa, perhaps the only exposure in Warwickshire. Meet at 7pm at SP'122 541(This is Sun Cottage, New Road, Temple Grafton)

You're always welcome, but it might be good to contact us first in case of change. Email Christine Hodgson cvhodgson@hotmail.com or Nigel Harris harris@harris5mercia.plus.com You could try 01926 853699 or 01926 5511097. For evening field trips: the WGCG mobile phone will be answered from 11am on the day of the trip. The number to ring is 07527204184

Geological Society, West Midlands Regional Group

Tuesday 13th October: Lecture - tba. Birmingham University, Dome Lecture Theatre, Geology Department, 6.30pm

For further details contact the Secretary: Adrian Jones, tel: 0121 746 5724 e-mail: adrian.a.jones@uk.mwhglobal.com



The Dudley Ikon

If Dudley has a symbol which could represent the town to the outside world, it must be the elaborate fountain which stands in the centre of Market Place, now a pedestrianised open space. The work of James Forsyth, something of a fountain expert, in 1867, it shares some of the exuberance of the great Perseus Fountain at Witley Court which was also his work. There, prancing horses rise some 26' above the water level. Here in Dudley, horses rise from the top canopy of a double triumphal arch. The water supply comes in two distinct ways. Water for thirsty horses cascaded into wide troughs on the north and south sides from robust dolphins.

Water for passers-by spouted into more delicate bowls from lions' heads. Granite and Carrara Marble are the materials. The fountain was one of the many donations to local welfare by the same Earl of Dudley who provided the theatrical effects for the Murchison visit. His other purpose was Temperance - clean palatable water rather than gin or porter consumed by his local workforce. Heritage Lottery funding has seen it cleaned and restored. ■

Eric Robinson

See also Eric's letter in the Member's Forum below. Ed.

The Dudley Bug

Welcome

Welcome to the August issue of the Dudley Bug. We were glad to hear that many of you liked our last piece entitled 'What Is a Geologist?' Since then we have both graduated from the University of Birmingham with our degrees in Geology and began helping out at Dudley Museum & Art Gallery with the samples collected from the Step Shaft (Graham spoke about this during his talk). In this month's Dudley Bug we bring you the demise and distribution of the Palaeozoic Coal Swamps plus a swamp themed Wordsearch.

Alison and Chris

Palaeozoic Coal Swamps

In the West Midlands, much of our industrial heritage is based around the abundant coal measures left by our tropical rainforest, 250 million years ago (Ma). In this month's issue we investigate the location of these past coal swamps and how they disappeared.

The swamps are referred to as Palaeozoic coal swamps. The term Palaeozoic is an era ranging from 360Ma to 250Ma. This includes the Carboniferous and Permian periods. It is important to note that the Carboniferous is now split into the internationally recognised Mississippian (Early Carboniferous) and Pennsylvanian (Late Carboniferous). (<http://www.stratigraphy.org/>)



These wetland forests were much like the flooded forests of the Amazon today, where they were flooded regularly by the rising tides of the nearby sea forming swamps amongst the twisted roots. Over geological time the large amount of organic matter was buried by subsidence or tectonic activity. As pressure built up with depth the carbon content also increased and a reduction in moisture and volatiles occurred. This process is known as **coalification**. This means that the organic matter was transformed from peat to brown coal and bituminous coal until it reached the highest carbon rich

grade of anthracite coal in certain situations. The result of the coalification process is a carbon rich organoclastic rock formed mainly by the lithified plant remains.

The distribution of the Palaeozoic coal swamps was in the hot and humid lowland, tropical setting of around 20° – 30° latitudes. During this period there was a much higher level of atmospheric oxygen in the atmosphere than the present, up to 35%. This amount of oxygen allowed giant insects to thrive such as Meganeura, a dragonfly with a 1 metre wingspan along with a 6 foot long centipede called Arthropleura. The climate at this time was icehouse, meaning there is ice at the caps, cooler temperatures than present dominate with 100,000 year glacial oscillations in the upland regions and poles on the continent of Gondwana. The Earth eventually moved into greenhouse conditions warming much of the globe to desert conditions by the end Permian. ►

Ferns and lycopsid trees that were highly productive in peat formation dominated during the Mississippian forests until the Late Permian in tropical regions of the Earth. The three paleogeographic divisions were the Tropical or Euramerican, the north temperate or Angaran Province, and the south-temperate or Gondwanan Province, found in Europe, North America and Asia respectively. Peat forming tree ferns were the dominant coal sources, except in China where the Lycopsid trees were the main vegetation in the wetland swamps containing 3211 kg of carbon each, of which only 25% was released into the atmosphere.

The divisions disappeared at different periods in 3 gradational stages from west to east. There are many theories for the demise of the forests, for example: northward tectonic drift, climate change and vegetation change, all of which would have led to an unsuitable environment for the wetlands of the coal swamps. One of the leading theories for the demise of the ancient forests is the northern movement of the tectonic plates as they moved together to form the super continent of Pangea. This would have essentially dried the forests out. This theory is supported by the appearance of the desert red beds of "New Red Sandstone" in the Permian. The strongest theory is the onset of the Variscan Orogeny in the late Mississippian, early Pennsylvanian eras, also known as the Hercynian Orogeny throughout Europe and eastern North America. Further tectonic movements as the super continent of Pangea was forming created massive continental crustal collisions leading to the creation of Himalayan scale mountains.

These large geographical features may have altered the balance of the climate circulation at the end of the Pennsylvanian. They would have acted as a "barrier" to the seasonally wet air masses, which brought monsoons to the forested regions. This resulted in a lack of wetlands and the destruction of the vegetation that grew within them. There is one argument put forward by Otto-Bliesner (1993) which suggests that instead of preventing the onset of the monsoons, the monsoons were encouraged by the new circulation patterns although little evidence for this is present. The uplift of the coastal and continental shelf (Variscan Foreland) regions caused the existing lowland areas to become higher in altitude therefore decreasing the average temperatures at those locations, and this may not have been suitable for the wetland vegetation. These conditions led to its final demise along with groundwater factors as the water table would have become unstable with altered drainage patterns, causing the wetland to become drier.

At the present, coal has a high economic importance especially in the Far East where it is the most widely used fuel for the industrial regions of China and India in Eastern Asia as well as Eastern Europe. There is still around a 200 year supply of coal in the UK, but is not fully utilised due to greener energies and cheaper foreign imports. ■

Coal Swamp Wordsearch

V	A	R	I	S	C	A	N
B	Y	A	P	O	M	N	Y
T	N	C	E	T	R	A	F
L	Y	C	O	P	S	I	D
A	P	O	R	M	E	M	C
B	Y	A	G	A	D	R	O
V	A	R	U	W	A	E	A
V	K	O	I	S	E	P	L

Can you find the following 5 words within this Wordsearch?

- Coal
- Lycopsid
- Permian
- Swamp
- Variscan

Answers next time

Next Time... A quick guide to the Isle of Skye

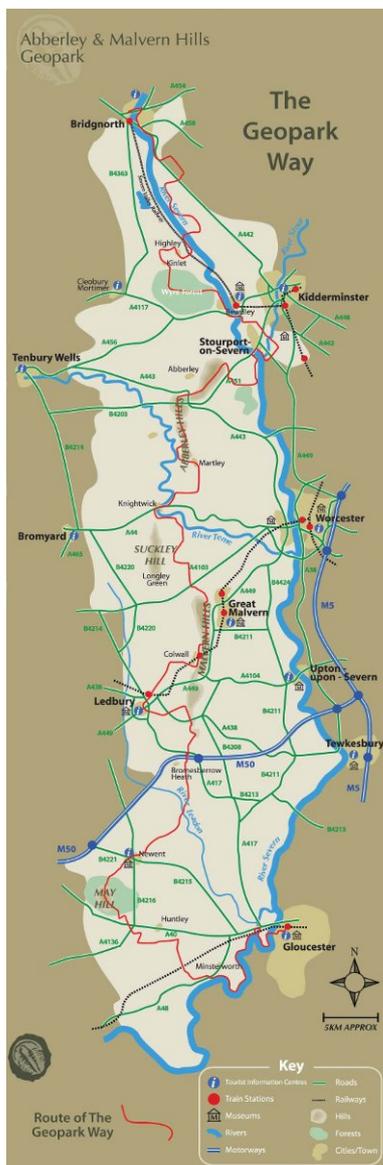
Editorial

The Geopark Way

Stretching from Bridgnorth to Gloucester, through the counties of Shropshire, Worcestershire, Herefordshire and Gloucestershire, the Abberley and Malvern Hills Geopark (A&MHG) covers an area of 1250 sq. km. and boasts a rich mixture outstanding geology, beautiful scenery, and fine examples of archaeological, industrial and cultural heritage. It was the brainchild of the Herefordshire and Worcestershire Earth Heritage Trust (H&W EHT) and was established in collaboration with several founding partners including the Shropshire Geological Society and the Gloucestershire Geology Trust. But what exactly is a Geopark?

In the 1990's the world-wide geological community gradually woke up to the fact that there was little public awareness about geology, and therefore little political will to support and protect important geological sites. Thus the term 'geoconservation' was coined, followed by 'geotourism', and geological heritage took its place on conference agendas for serious consideration. The next step was for those involved in this work to establish links for the exchange of ideas and the development of a common framework, with clearly defined aims and objectives. Thus in 1999 the 'Geopark' designation was created by UNESCO and in 2000 the

European Geoparks Network was established with 4 founding Geoparks located in France, Greece, Germany and Spain, each later taking its place in the embryonic Global Geopark network.



The Geopark concept stems from the need to conserve and, where appropriate, enhance geological sites. It focusses upon the promotion of geotourism in areas of outstanding geological importance, including those not blessed with eye-catching tourist potential like the Giant's Causeway. Central also to the Geopark concept is the need to provide appropriate educational material to promote geological knowledge and foster positive attitudes to conservation of our geological heritage. This should also embrace the geological links with ecology, archaeology and industrial heritage. Perhaps most important of all for the ongoing success of a Geopark, the pathway to these objectives should involve local communities in a context of sustainable economic development, mainly through geotourism.

The Abberley and Malvern Hills Geopark was established in 2003. The designated area encompasses geological sites from the Jurassic and back in time through all the geological periods to the 700 million year old Precambrian rocks of the Malvern Hills, plus a wealth of Quaternary deposits and geomorphology visible throughout the area. There are currently 13 SSSI's and 62 Local Geological Sites (LGS, formerly RIGS) within the Geopark. The H&W EHT was already in the business of identifying, conserving and publicising the rich geology of its two counties well before the existence of Geoparks, (see their web site, address below, for publications). However, the creation of the Geopark brought the H&W EHT into closer partnership with the neighbouring Gloucestershire Geology Trust and Shropshire Geological Society, each doing similar work in their own counties, and raised the profile of the region both nationally and internationally as an area of outstanding geological importance. ►

The administrative headquarters of the A&MHG (and the H&W EHT) was, and still is, at the Geological Records Centre in Worcester, but there was no obvious public focal point for the Geopark. Other UK Geoparks such as North Pennines AONB Geopark, or the more recently established Fforest Fawr Geopark benefitted from existing tourist infrastructures easily able to add Geopark outreach to their other activities. Although there are a few tourist 'honey pots' in the A&MHG such as the Malvern Hills and the Severn Valley Railway, for the most part tourism is either low key or non-existent. There was certainly no cohesive infrastructure to promote the Geopark internally, but lurking underground there is a cohesive force in the geological sub-structure which gave rise to a brilliant idea. The extensive fault system in the region (particularly the East Malvern Fault), trends largely in a north-south direction, giving rise to the region's distinctly north-south trending topography and a rich variety of geological formations along this line. This in turn dictated the linear structure of the Geopark, and as walkers amongst you will quickly realise, linear features, such as the Pennines, lend themselves perfectly to long distance walking trails. Thus the Geopark Way project was born.

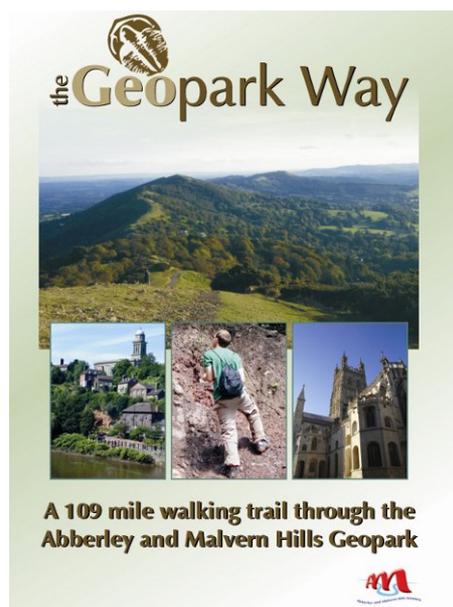
The Geopark Way Project

The project has been managed throughout by the H&W EHT. Funding was secured through the DEFRA Rural Enterprise Scheme for a two year project to research and deliver the Geopark Way in the form of a trail guide similar in style to those for the Worcestershire Way or the Severn Way. Natalie Watkins was appointed as project manager, and work started on this monumental task in June 2006.

The main aim was to create a trail from Bridgnorth to Gloucester with interpretation of the geology and landscape, but beyond this it would also show the many ways in which geology has influenced the history of the area, in terms of archaeology, mining and quarrying, farming practices and building stones. The 'here and now' would not be overlooked, with references to biodiversity, local industries and attractions passed en route, plus an accommodation and amenity guide.

Natalie organised a number of public meetings along the embryonic route to muster support and volunteers for the many different aspects of the project. At this point I became involved along with numerous others who were fired with enthusiasm for this project for all sorts of different reasons. My particular interest was in trail testing, and I walked many enjoyable miles, mostly between Abberley and Malvern, testing sections which were sometimes later abandoned, but that was all part of the process of devising a successful route.

Natalie spent hours talking to local people to discover more about their local history and folklore, and immeasurably more time wandering the hills and by-ways combining her geological expertise with her map reading skills to devise the route from Bridgnorth to Ledbury. In the meantime her colleagues from the Gloucestershire Geology Trust were engaged in similar work, taking responsibility for the route from Ledbury to Gloucester. By the summer of 2007 the route was shaping up well, and the task of compiling the data had begun. Then came the disastrous floods of July 2007, washing away proposed sections of the route, and bringing field work in some areas to a halt for a considerable length of time. The project was given a 3 month extension, but still needed more time to complete. The editing of the guide book was undertaken by Andrew Jenkinson of 'Scenesetters, Countryside Interpreters and Publishers' and Projects Officer with Shropshire Geological Society, and the Geopark Way Guide was finally published in February this year, with a formal launch at the H&W EHT's 'Geopark Day' on 6th June. ►



The Geopark Way – Present and Future

The result is a fantastic 109 mile trail which highlights and strengthens the importance of the Geopark in a number of different ways. Firstly, the route provides a connecting thread as it weaves its way sinuously along the entire length of the Geopark. Secondly, unlike site specific trails, the Geopark Way trail guide tells the whole geological story of the Geopark. Thirdly, the route fulfils the Geopark aim to attract visitors to less well known places and geological sites, and fourthly, it adds a new category of tourist to the Geopark - the dedicated walker. Perhaps most important of all, it has involved local people and raised geological awareness throughout the length and breadth of the Geopark.

The successful completion of this project is a triumph for all concerned. The trail guide introduction gives an excellent overview of the geology along the route, with more detailed geological, historical and local information contained within the 17 sections, each with a route map and clear directions. Way-mark discs displaying the Geopark Way's Dalmanites logo are in place from Bridgnorth to Malvern, and Natalie can still sometimes be spotted with a hammer and a box of nails attaching them to posts! There will be no way-marking on the Malvern Hills due to restrictions imposed by the Malvern Hills Conservators, and way-marking the southern part of the route from Colwall is awaiting further funding.



This is the first long distance geological trail and it has already attracted enormous interest. Four local walking groups have included it in their 2009 programmes, and it was completed in 9 consecutive days during the Malvern Walking Festival in June with considerable media interest. This was the first organised group to complete it. For the less energetic, there are 4 short circular 'Walking for Health' geotrails based on the Geopark Way, and there are long term plans for a companion guide about the history of the aggregate sites along the route. When the dust has settled after the initial flurry of interest, the route will not be neglected: there are plans for each section to be monitored by volunteers in 'Trail Watch' groups, so that it can be kept in good shape.

So – if you have no holiday plans yet, get a copy of the guide (£9.95 from H&W EHT) and visit the Geopark! Get your boots on and follow those little Dalmanites trilobites along the trail! Whether as individuals, small groups, or Geological Society holiday parties, there is something for everyone on this trail. You'll learn a lot and have a wonderful walk in beautiful rural England. I feel proud to have had a small part in the creation of the Geopark Way, and am looking forward to doing the whole trail, in order, when time permits. ■



Illustrations: copyright H&W EHT, reproduced with permission.

Herefordshire and Worcestershire Earth Heritage Trust: <http://www.earthheritagetrust.org/>

Abberley and Malvern Hills Geopark: <http://www.geopark.org.uk/>

Gloucestershire Geology Trust: <http://www.glosgeotrust.org.uk/>

Shropshire Geological Society: <http://www.shropshiregeology.org.uk/intro.html>

Julie Schroder

Field Meeting Report

Saturday 25th April 2009: Field trip to **Abberley Hill & Shavers End quarry**. Led by Peter Oliver & Eve Miles, Herefordshire and Worcestershire Earth Heritage Trust (H&W EHT).

The day started with a small group of society members meeting Peter and Eve at the entrance to Shavers End Quarry, on the north eastern side of Abberley Hill. Inside the Quarry, Peter gave an introduction and outlined the plans for the day. These included a look round the Quarry followed by a drive to Abberley Village to look at building stones, lunch in the Manor Arms Inn, so named from the Manor mine located behind it, and an afternoon walk up Abberley Hill to the summit of Flagpole Hill. Abberley Hill forms a crescent of high ground rising to 283m, several kilometres southwest of Stourport-on-Severn. Abberley Village is situated to the north, within the crescent of Abberley Hill and to the south is Walsgrove Hill, Woodbury Hill and Great Witley. ►

The rocks of Abberley Hill and Shavers End Quarry generally comprise Lower Ludlow Shale, Aymestry Limestone Formation and Upper Ludlow Shale, which belong to the Ludlow Series and are Middle to Upper Silurian in age. During Devonian times closure of the Iapetus Ocean resulted in thrusting from the east, leading to uplift and overfolding of the Silurian strata into a major overfold. The present day ground surface of Abberley Hill represents the western limb of this overfold and the rocks seen in Shavers End Quarry reportedly dip by as much as 65° to the east. The thrusting also resulted in uplift of Devonian Old Red Sandstone rocks to the west of Abberley Hill. Further information is included in the H&W EHT Landscape and Geology Trail Guide for Abberley Hill. The western headwall of Shavers End Quarry is formed of Upper Ludlow Shale whilst the floor comprises Aymestry Limestone and Lower Ludlow Shale. The boundaries between these three units are clearly visible in the Quarry, especially the faulted boundary separating the Aymestry Limestone and the underlying Lower Ludlow Shale.



Looking NE from Abberley Hill

The landscape north and east of Shavers End Quarry and Abberley Hill initially falls away towards the A451, where faulted blocks of Wenlock Limestone and Raglan Mudstone, (part of the Downton Group and Upper Silurian (Pridoli) in age), give the soils a greyish and red brown colour. The Raglan Mudstone represents terrestrial sediment, and can be seen elsewhere around Abberley Hill. Beyond the A451 the landscape gently rises towards the Lickey Hills, Clent Hills, Rowley Hills and the Black Country. This landscape is underlain by rocks of Upper Carboniferous, Permian and Triassic age with the Wyre Forest Coalfield dominating the landscape north of Abberley.

Abberley Hill, Walsgrove Hill, Woodbury Hill and the Malvern Hills form a north-south trending line known as the Malvern Axis, separating Mesozoic rocks to the east from Palaeozoic rocks to the west. Parallel to the eastern edge of the Malvern Axis is the Eastern Boundary Fault, which delineates the edge of the downthrown Worcestershire Rift Valley and Severn Vale. Between Late Carboniferous and Triassic times, as the Worcester Rift Valley subsided, it filled with successions of sandstones forming the Warwickshire Group, the desert and river systems of the Sherwood Sandstone Group and the shallow deltaic mudstones of the Mercia Mudstone Group.

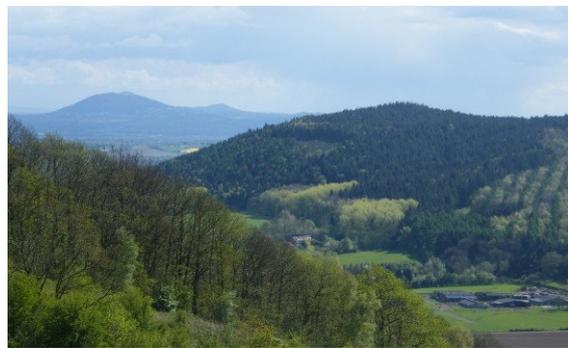
Looking at the Aymestry Limestone in detail Peter pointed out nodules of carbonate mud similar to those in the Wenlock Series Nodular Member at Wren's Nest. Such nodules are apparently common in muddy Silurian limestone strata and probably result from clay, or muddy sediment being compressed around a central core of organic or faunal origin with simultaneous calcium carbonate precipitation to produce a concentrically layered nodule. Other theories for nodule formation include bacterial origins and stretching of more competent beds to form boudins. Unlike the underlying Wenlock Limestone, the Aymestry Limestone is less massive and fossiliferous, containing fewer reef faunas or bioherms. This unit is also a lot muddier and probably represents a shell bank. Fossils encountered at Shavers End Quarry include brachiopods, corals, trilobites, gastropods, nautiloids and animal burrows, which indicate shallow tropical marine conditions with occasional subaerial exposure, evident as desiccation cracks and ripples seen at nearby Woodbury Quarry. The brachiopods tend to be small and stunted, which along with the animal burrows support the idea of muddier conditions. Bands of bentonite have also been found within the Aymestry Limestone at Shavers End Quarry and tension cracks, calcite veining and upturned Rugose corals provide evidence for the deformation and overturning of these strata.

Travelling west from Shavers End Quarry and the steep slopes of Abberley Hill to Abberley Village, we left behind the Silurian strata for rocks of Upper Carboniferous age. The solid geology underlying Abberley Village belongs to the Halesowen Formation, part of the Warwickshire Group, which forms part of the southern end of the Wyre Forest Coalfield. Before lunch, Peter showed us St Michael's Church, built during the 12th Century on the remains of an earlier Saxon church. After later extensions and alterations it was replaced in the mid 19th Century by St Mary's Church nearby. St Michael's features in the H&W EHT Buildings Stones ►

Guide to Abberley Churches. Like the building stones of Abberley Village and the surrounding area the Church typically comprises Halesowen Formation strata which was likely sourced locally. The Halesowen Formation is typically buff or yellow brown in colour and was deposited as thin layers in tropical lake deltas and rivers, which became buried and turned into sandstone. Unfortunately it weathers badly and layers peel off and crumble allowing water to percolate into the building blocks. During burial, oxygen rich groundwater percolated through the sandstone allowing iron oxide precipitation within pore spaces and fractures. The main form of iron oxide seen is the mineral Goethite, which typically patterns the rock with concentric banding, known as Liesegang. This along with Goethite concretions and Haematite crystals lining the walls of former fractures could be seen in the walls of the church. Replacement of one church window with red sandstone belonging to the Permian, Alverley Member, is testament to how badly affected by weathering the Halesowen Formation is.

Over lunch in the Manor Arms Inn Peter and Eve told us about the new Malvern and Abberley Hills Geotrail, which runs for 109 miles from Bridgnorth to Gloucester. (*This is the Geopark Way, see editorial on p.6. Shavers End Quarry and Abberley Hill are on the route. Ed.*) After lunch we walked up steep wooded slopes of Abberley Hill to the summit of Flagpole Hill. Along the way we saw the soil colour change from grey to red as we crossed from underlying Silurian Aymestry Limestone to Permian Clent Formation, which caps both hills.

The view north was the same as that seen from Shavers End Quarry. The view south is however very different. Along with Walsgrove and Woodbury Hill we could see the northern end of the Malvern Hills and the line of the Malvern Axis with the Worcester rift valley and Severn Vale to the east. West of the Malvern axis is a ridge and furrow landscape typical of alternating Silurian Limestone and Mudstone strata. At the foot of Walsgrove Hill sitting on the Silurian strata stands Abberley Hall and Clock Tower, built from Highley Sandstone. Further west the Carboniferous rocks of the Wyre Forest Coalfield reappear and head off northwards towards Bridgnorth. Beyond the Hall and Clock Tower the Teme valley weaves its way having carved through the Raglan Mudstone Formation. South and westwards beyond the Teme Valley to the far horizon is the Mortimer Forest, which sits on Wenlock Limestone, and Radnor Forest, with finally the Devonian age Hay Bluff and the Brecon Beacons on the far horizon.



Looking south from Abberley Hill

From the summit cairn on Flagstone Hill we left the views behind and followed a path back down to Abberley Village and the Manor Arms Inn car park. I would like to thank Peter and Eve for a very enjoyable day and look forward to more promised trips to Herefordshire and Worcestershire in future. ■

Andrew Harrison

Lapworth strikes Gold in the Black Country

Evidence has come to light of a visit to the Cotwall End Valley in July of 1898 by Professors W. W. Watts and Charles Lapworth. In particular it appears that Professor Lapworth had studied the Gornal Grit in the Ellowes Park area and noted that this strata occurs at, or within a few yards of the Coal Measures. He further predicted the existence of a seam of coal extending down the valley at a depth of 50 yards. Lapworth was known to be meticulous in acquiring local knowledge and it is recorded that on several occasions he visited Baggeridge Colliery and conversed with the manager John Newey who could be considered the finest "thick coal" mining engineer of his day.

The significance of such discussions can be appreciated by the fact that mining of the famous 30ft "thick coal" seam was taking place at Baggeridge from a depth of 600 yards, yet less than a mile away at Ellowes Park coal was only worked from the "flying reed" seam which occurs ►

70 yards above the “thick coal”. In fact it was not until some 6 years after Lapworth’s death that this “thick coal” seam would be exploited in the Ellowes Park area under the guidance of none other than John Newey. It is not unreasonable to assume that Lapworth had discussed with Newey his findings on the geological sequence to the East of the Western Boundary Fault and the prediction that the “thick coal” would be found below the “flying reed” seam, a fact subsequently proved by the extraction of this coal from 1931-1952.

Lapworth’s accurate assessment of the geology enabled exploitation of the “thick coal” during the years of the Great Depression and austerity of World War II, bringing much needed employment into the area. It therefore seems appropriate to use the Black Country expression “As good as Gold” denoting excellent behaviour, a good deed, or as an assessment of quality regarding Lapworth’s work. He did indeed strike Gold in the Black Country. ■

Mike Williams



J.V. Harrison

Geologist explorers

I have been describing in the Newsletter the lives of some geologists who also became well known as explorers, and very serious explorers. They believed that geology, love of the environment and exploration were one and the same thing. But many might argue that being a geologist must involve searching for resources, necessarily in areas that are remote and unknown, so every field geologist is essentially an explorer. I was reminded of this recently when reading a short article about *J.V. Harrison* in the *Geoscientist*. You probably will not have heard of Harrison. He served in the First World War, investigating water supply problems in Mesopotamia, and then for the next twenty years he was a field geologist for the Anglo-Persian Oil Company, later to become BP.

He spent much of his time in the Zagros Mountains in Iran, surveying areas that were thought to be inaccessible. The terrain had to be mapped from scratch, using plane tables and travelling on foot or on horseback, with mules to carry supplies and equipment. Sleeping under canvas or under the stars, each exploration tour was a tough experience; exploration in every sense of the word. Harrison and his colleagues mapped some 60,000 square miles during the eight years he was looking for promising structures for petroleum, and he became a renowned structural geologist and carried out pioneering work on salt dome emplacement. He found exploration “exciting” and regarded anything else as a soft option. He also explored remote areas of the West Indies, Borneo, Mexico, Honduras, Peru and Venezuela. In 1937 he became a Lecturer at Oxford University where he spent the rest of his career.

This golden age of exploration is now passed, and can never really return. In the first half of the last century, communications were very difficult and geologists were often isolated, and far away from their base. They did not have the advantages of satellite imagery and sophisticated electronic communication that we take for granted today. We can easily forget the difficulties that had to be faced at this time when so many geologists were explorers. ■

Geoscientist Vol 19, No6, page 6.

E.A. Vincent: *Geology and Mineralogy at Oxford 1860-1986*.

Bill Groves

Geobabble Rocks

There used to be a game, (or was it a psychological test?), called word association. You would say a word and your partner in the game would have to say whatever word came into their head, without thinking. This was supposed to reveal some inner thought pattern of the individual; absolute nonsense of course; it was just an exercise in quick witted reactions. What about the fundamental word of geology: ROCK. What would be your first reaction? Granite? ►

Sandstone? Limestone? - or if you wanted to show off; Gabbronorite! I thought I would try this out on some of my family and the first two answers I got were 'Blackpool' and 'Led Zeppelin'!

The word 'rock' has only been used in its geological sense since the science took off in the late eighteenth century, but it is a very old word. Originally meaning 'hard', 'ragged' or 'rough' it was incorporated and adapted to all sorts of meanings and situations. Some seem to contradict each other. 'On the rocks' is a nautical term and means that you are in a hopeless position, and yet we call a person who supplies a sure foundation or is secure as a 'rock'. It is often used in a religious sense hence the hymn 'Rock of Ages'. In the dictionary, the terms with rock incorporated are endless: rock-eel, rock-goat, rock-cake, are just a few along with rock-candy - back to Blackpool again. Slang usage is also extensive. One ancient alternative use of rock as a verb is to mean a gently swaying motion, particularly when applied to rocking a baby, and when styles of dancing became more informal in the last century, the swaying motions became rocking and rolling and so we are back with Led Zeppelin. But the word 'rocks' can also mean a cool, popular activity to be enjoyed; GEOLOGY ROCKS! ■

Bill Groves

Members' Forum

Letters/emails

I have always enjoyed hearing about the activities of the Black Country Geological Society and have even been involved at times in street walks. I go back almost to pre-Worton years, although not pre-Cutler! Dudley was always a good place for street geology, even as shops closed or were taken over. There will always be the wonderful Fountain, and Duncan Edwards.

In part I tried to transfer thoughts and activities into the pages of *Geology Today*, if only to shame other areas into trying what Dudley did with success. The GA circular was also fun to use. Sadly, I have lost my roles in both publications. Wiley's (*Wiley-Blackwell, publisher of 'Geology Today' Ed.*) want a more scientific journal in place of our magazine. The GA and likewise Elsevier want it to be up-market. Both are disaster policies for amateur geologists - so - strength to your NEWSLETTER - which keeps the Faith. Best wishes to Graham (Biddulph Grange waits for us) and to Alan. CHERISH YOUR IKON! ■

Eric Robinson, Watchet, Somerset

What a privilege to attend the lecture at Ludlow, which was very entertaining, it is always special to hear somebody so eminent. All thanks to Mike Williams for connecting us with the lecture. (*Lecture entitled: 'What happens when we re-run the Tape of Life?' by Prof. Simon Conway Morris. Ed.*)

We also must compliment Alison & Chris on their brilliant 'what is a geologist' article in the last newsletter (195). Very funny... and so true. We have an 'indoor rockery', and... an outdoor rock art installation! ■

Bob & Sue Fairclough

Please send material for the next Newsletter to:

julieschroder@blueyonder.co.uk

42 Billesley Lane, Moseley, Birmingham, B13 9QS.