

Herefordshire and Worcestershire

WHITMANS HILL GEODIVERSITY DISCOVERY VENTURE

– A New Award from English Nature and the Aggregates Levy Sustainability Fund

A VERY DIFFERENT PROJECT IS UNDERWAY in the parishes of Storridge and Cradley. Whitmans Hill quarry was the site of limestone extraction before 1990 when in excess of 300,000 cubic metres of crushed rock were removed. The quarry now offers excellent sections through 430 million year old rocks and illustrates re-colonisation by alkaline loving vegetation.

The £123,000 project will secure the long term use of the site for educational and research purposes and establish a programme of events and activities for local people, families and schools.

The site lends itself to these ideas as it is reasonably safe, has good viewing areas both of the quarry and the surrounding landscape, provides vast amounts of fossiliferous quarry waste, provides good evidence of the link between geology and biology and is

close to the villages affected by the quarrying operation which may now wish to be involved in this geodiversity discovery venture.

The innovative element of this project is the production of a film logging the progress of the project and portraying the quarrying history and associated experiences of the local community.

For more information contact Abigail Brown.

Below: Enthusiastic 'geologists' at Whitmans Hill Quarry.



Rock & Fossil Roadshow.

Earth Science Fun Days in 2006

THE TRUST is planning an ambitious event as part of the Heritage Lottery Fund supported "Earth Heritage For All" project. It is to be a whole day of Earth science activities for schools. University of Worcester will host one event on 6th July 2006 with a similar event planned for schools in Hereford in the Autumn of 2006.

At each event up to 400 primary schoolchildren will be able to take part in a wide variety of fun and educational activities based on geology and Earth sciences. Established favourites will be joined by new activities, some specially designed for the event. These will include a chance to measure with a seismometer Earth tremors generated by the children. Geologists will be on hand to show children the wonders of rocks, fossils and minerals with the help of microscopes and digital cameras.

The Trust will need a great deal of help for these events. Anyone interested in spending a challenging but rewarding day with youngsters please contact Julie Bundred (details on the back page).

Biodiversity & Archaeology Leaflets

SOME OF THE 'Explore' series trails contain a free biodiversity and archaeology leaflet. These contain information on aspects of history or wildlife that can be found on the trail. Many of the leaflets contain charming illustrations drawn by Rollo Gillespie. The leaflets produced so far are;

- Goodrich Castle – Country Seasons and Tree Guide
- General – Old Red Sandstone Country
- General – Limestone Country
- Wigmore Glacial Lake – Country Seasons
- Hereford City Centre – Migratory Fish and Brick Making
- Symonds Yat – Country Seasons
- Wye Gorge – History and Wildlife
- Wyche and Purlieu – Country Seasons
- Bewdley – History Guide



ABBERLEY VILLAGE CHURCHES BUILDING STONES TRAIL

THIS SHORT WALKING TRAIL, soon to be available as another publication in the 'Explore'series, investigates the building stones used in and around St Michael's Church and St Mary's Church, in Abberley village.

St Michael's is a 12th century Norman church, built upon the foundations of a Saxon church. The church fell into disrepair and St Mary's was built, half a mile away, as a replacement shortly after 1850.

Both churches were primarily built with local buff coloured sandstone from the Halesowen Formation (formerly known as the Highley Beds) of the upper Carboniferous Warwickshire Group. Visible in many of the

sandstone blocks are rings of secondary iron mineralization, overprinting the original sandstone lamination. Additionally, rip-up clasts, around which goethite has accumulated, can easily be seen.

Red micaceous sandstone, probably from the overlying Carboniferous Alveley Member, has been used at both churches, to great effect around the windows at St Michael's.

Wyre Forest Mining

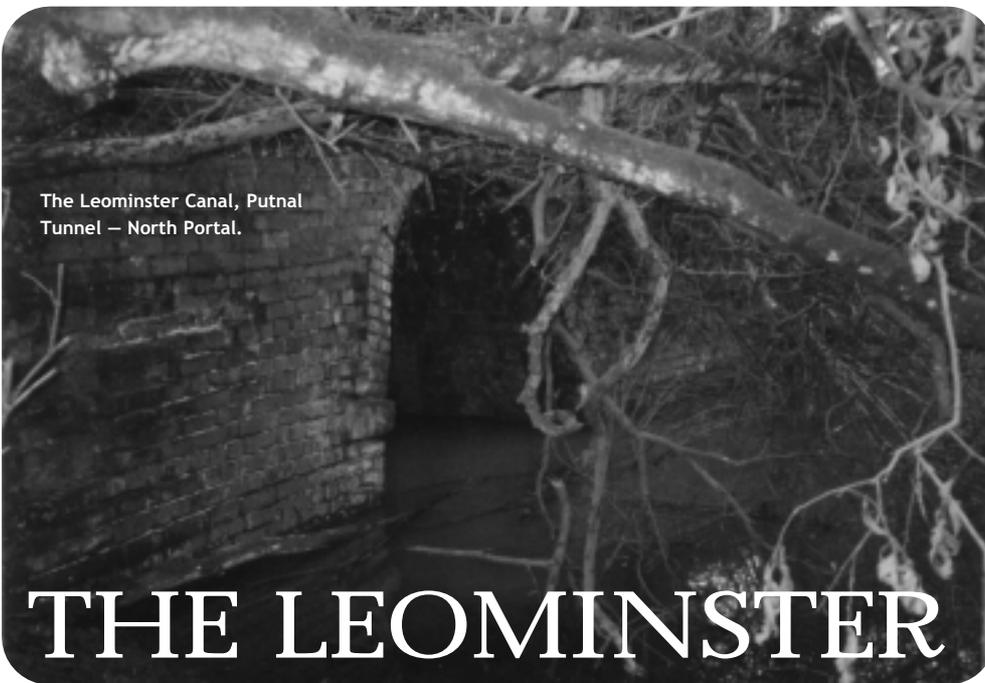
DURING THE RECENT International Geopark event a visit was made to the site of the old Highley Colliery in the Severn Valley Country Park and close to the Severn Valley Railway. A large winding pulley marks the colliery site, yet this is now the centre of green open space with maturing woodland growing upon reclaimed spoil heaps.

Thus after a quarter of a century all evidence of mining has gone. Well almost. Closer inspection of the ground reveals a mixture of coal fragments set in typical sticky Carboniferous Coal Measures clay.

So are we in danger of losing our awareness of this unique piece of history within the Wyre Forest Coalfield?

Fortunately 'The Wyre Forest Coalfield' by David Poyner and Robert Evans, describing the history of the Wyre Forest Coalfield, provides future generations with a graphic record of past centuries of mining activity. However much work on the recording of geological sites remains to be completed, and the Trust has undertaken this task.

There is certainly sufficient geological material to ensure that the essential detail can be recorded. Some accessible areas are of such classic interest that it is possible that trails may also be developed to enable more people to get acquainted with the fascinating history under this very English landscape.



The Leominster Canal, Putnal Tunnel – North Portal.

THE LEOMINSTER

CANAL – Some Aspects of its Engineering Geology. (Gerry Calderbank starts a series of short accounts of this intriguing Canal)

THE ROUTING OF TRANSPORT SYSTEMS normally limits them to superficial geology, except when they are obliged to tunnel. With canals, this usually occurs on the summit levels where tunnels are required for hydrological reasons since the higher the ascent (using locks) then the scarcer is the availability of feed-water.

The Leominster Canal was originally surveyed so as to cross three watersheds – at Putnal, Southnett and Pensax respectively – each with its summit level and attendant tunnel. In practice, only the Putnal Tunnel was completed, with work on the Southnett and Pensax

tunnels abandoned because of financial constraints – although an additional short tunnel, not shown on the engineer’s 1789 survey, was also inserted between Oxnalls Farm and Cainey. The latter replaces a deep cutting, awkwardly situated on a steep slope consisting of glacial head deposits, it being assumed that the cutting was probably started, whereupon the ground proved unstable; presumably ‘cut-and-cover’ then substituted the intended excavations.

Putnal Tunnel penetrated the (terminal) Orleton Moraine of the Wye Glacier, deposits that proved to be highly unstable and problematical for the tunnellers, whereas the strata of the Southnett and Pensax tunnels was uncomplicated, but failures occurred because the tunnel profiles were poorly designed.

Teme Valley LGAP

THE TEME VALLEY now has a Local Geodiversity Action Plan (LGAP). A LGAP is a process looking at the identification, conservation and enhancement of our rocks and landscape. The purpose of the LGAP was to identify the geology within the area using literature and maps and then to identify existing geological sites to represent this geology. In doing so it would be possible in the future to recognise gaps in the geological sequence where rock types/formations are not represented and also to formulate preliminary conservation suggestions.



Bayton Village from Church Hill.

A CHALLENGE TO SCHOOLS IN HEREFORDSHIRE AND WORCESTERSHIRE

GEOFFREY BROWN WRITES: It was a great pleasure for me to attend the launch of the most recent in a series of geological trails within the Abberley and Malvern Hills Geopark as part of the International Geopark Week at the beginning of June 2005.

Through their series of beautifully documented trail guides, rock and fossil roadshows, guided tours and lectures Geopark scientists and volunteers have encouraged large numbers of visitors, especially young families, to visit the Geopark and to discover the wondrous story of the geological history which lies beneath this unique landscape. Children young and old are inspired to go away from their Geopark experience highly motivated and intent upon learning more about the story of the Earth.

But what then? Save for their own enthusiasm to return for further enjoyment in this new found knowledge, there is little to support or follow up their experiences in their formal curriculum – this being especially so in primary school science. Geology (that most British of all sciences) has only ever been taught in a handful of secondary schools and geological concepts receive only scant attention in primary school science. This cannot be acceptable in today's media world in which children are exposed to natural disasters and made increasingly aware of the environment, conservation, global warming, melting ice-sheets, tsunamis, earthquakes and all other geologically related phenomena of the unstable Earth on which we live.

Herein lies a challenge for Education Authorities and schools to take a new and exciting initiative by bringing together teachers and Geopark and Earth Heritage Trust specialists in order to create and implement a geological curriculum which would acknowledge the unique resources of the Geopark and bring into focus a body of scientific knowledge specifically designed for teaching in the schools of the two counties.

The appropriateness of such an initiative in the contemporary development of school science within this particular area is self evident and a successful implementation would, I hope, serve as a blueprint for a new Earth science programme worthy of national recognition.

In the meantime, I can have no doubt that the Geopark will continue to play its part in raising the awareness of all its visitors and consequently increase their knowledge and understanding of the nature of the dynamic processes of the Earth on which they live. This is a contribution of the greatest possible significance.

Editor's note: Geoffrey Brown started his career teaching Geology at Yardley Grammar School in Birmingham. A few years ago he retired from his post as Director of the International School at Aberystwyth University and now he is Chairman of the Tomlinson Brown Trust

The Tomlinson-Brown Trust

This newly formed organisation aims to promote and encourage the appreciation, education and public awareness of Earth Science issues and localities in any part of the Abberley and Malvern Hills Geopark. A regular award will be made by the Trust to any young person (under 18 years of age), school or youth organisation in recognition of a contribution to the understanding, conservation, public awareness or education of Earth heritage in the Geopark.

The first award will be made in the summer term of 2006. If you would like more details of how to enter the competition please contact the Secretary of The Tomlinson-Brown Trust c/o the Earth Heritage Trust.



Geoffrey Brown (immediately to the left of the hanging basket) enjoying the Severn Valley Railway geology trail at Highley Station during the International Geopark Week.



A Guided Walk Around St Michael's Church, Abberley.

GEOPARK TALKS & WALKS

The interest in the Geopark continues to increase with requests to give presentations arriving regularly. Recent talks have been at venues and organisations such as Cradley Heritage Group, Herefordshire Nature Trust Weobley branch, Kidderminster Soroptimists and the Tomlinson-Brown Trust. Bookings now extend into 2006.

The Geopark is also being promoted by means of guided walks. Family groups were taken around Severn Valley Country Park and the Malvern Walking Festival featured the Wyche and Purlieu trail, and field trips by the Woolhope Geology Section and Down to Earth took place over the summer.

Let us know if you would like us to arrange a talk or walk for your organisation.

A Geopark Discovery Guide is Published

The Abberley Hills Geology and Landscape Discovery Guide, researched and written by the Trust, has recently been published and has received much praise in its ability to cover the geology and landscape of this beautiful area in terms of its villages, history and culture.

The main goals for such a publication were to promote 'geotourism' in the less well-known area of the Abberley and Malvern Hills Geopark and to increase awareness of the Geopark as a whole by developing the Geopark's identity through its design. It is hoped that the guide will help to

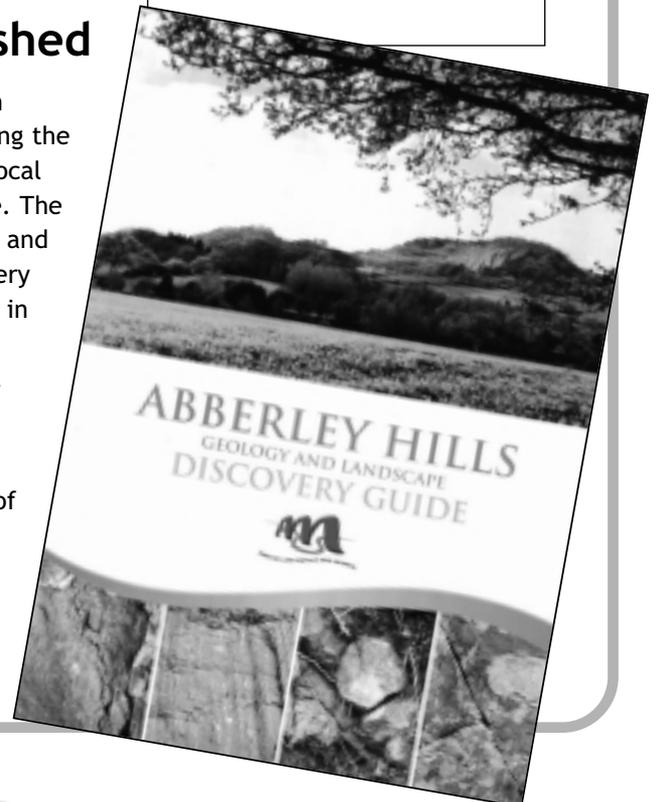
generate a public interest in geology, in part by illustrating the links between geology and local history, industry and culture. The enthusiasm of local parishes and residents was evident and very much appreciated, resulting in many contributions of information and images that have made the guide successful.

The Guide is available free of charge from the Geological Records Centre at the University of Worcester and from selected Tourist Information Centres.

Abberley & Malvern Hills Geopark

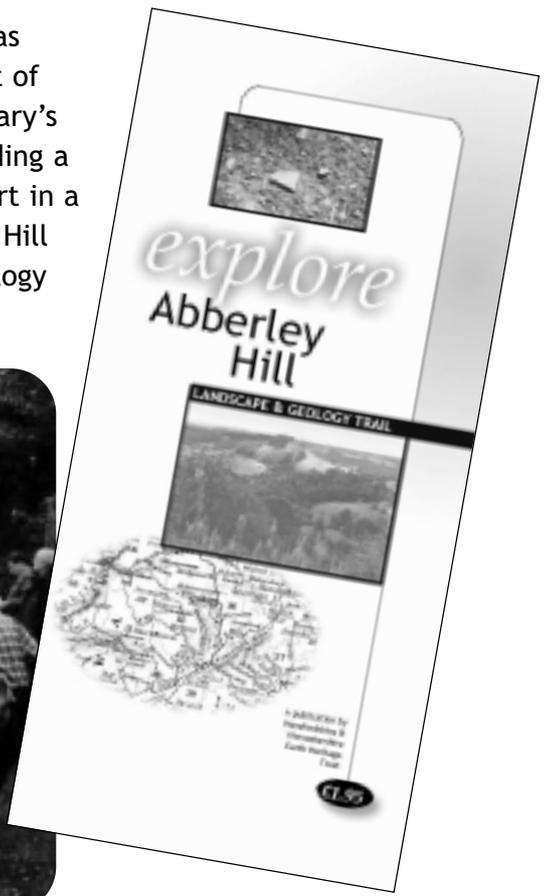


Abberley and Malvern Hills Geopark



LAUNCH OF THE ABBERLEY HILL LANDSCAPE & GEOLOGY TRAIL

ON THURSDAY 2nd June 2005 the new Abberley Hill trail was officially launched by Professor Aubrey Manning as part of International Geopark Week. The event started in St Mary's Church in Abberley village where over 70 people attended including a large number from the local community. Over 30 people took part in a special afternoon conducted tour of the new trail over Abberley Hill when everyone was introduced to the Silurian and Devonian geology and landscape which are described in the trail guide.



Launch of the Abberley Hill Trail.



New Rock & Fossil Roadshow Activities

SOME NEW ACTIVITIES are undergoing development for implementation at the Earth Science Fun Days and at Rock & Fossil Roadshow Events. Some of these are top secret but one is a fossil sieving and picking activity.

Several boxes of Early Eocene fossiliferous material collected from Abbey Wood, in SE London, have kindly been loaned to the Trust by Dr Jerry Hooker, Head of Vertebrates and Anthropology Division at The Department of Palaeontology, The Natural History Museum, London.

The brackish marine Blackheath Beds, deposited 54.5 Ma, contain shark teeth, abundant molluscs, stingray teeth, fish vertebrae and ear bones (otoliths) and rare reptile, bird and mammal remains, for which the site is

particularly famous. Abbey Wood has been designated a SSSI on the basis of these tiny mammal teeth, but shark teeth are by far the most common fossils. Dr Hooker has agreed to allow the Trust to use the material in a sieving and picking activity, in exchange for the safe return of any particularly unusual fossils, namely reptile, bird and mammal remains.

Visitors to the Earth Science Fun Days and Rock & Fossil Roadshows will be

given the opportunity to sieve some of the material, and then sort through it, using a microscope to identify the fossils they find. Finally, visitors will mount and label up any shark teeth or molluscs they would like to take home. This collaborative venture between the NHM and the Trust provides an excellent opportunity for visitors to our events to contribute to valuable scientific research, and the possibility exists that one of our participants will have a new species named after them.



Reconstruction of Hyopsodus. Many teeth of this rat-sized mammal have been found in the Abbey Wood material.



New panel at Shavers End Quarry.

INTERPRETATION PANELS ALONG THE WORCESTERSHIRE WAY

WALKS ALONG THE WORCESTERSHIRE WAY have been given a new dimension by the erection of five interpretation panels describing the underlying rocks and landscape of this picturesque part of the countryside.

Each of the panels describes the wonderful views to be seen from the Abberley and Suckley Hills. These hills and the Malvern Hills to the south were formed by earth movements along a line of weakness in the earth's crust. The panels explain the environments of deposition of the local rocks, such as: Silurian limestones formed in warm clear seas; Devonian river deposits laid down on a hot arid land surface; Carboniferous coal seams developed from vegetation which accumulated in tropical swamps; and Permian breccia formed from the scree of high mountains. The panels also tell the story of the quarrying which used to take place in the area.



Newly erected panel on Walsgrove Hill.

Idle Chatter from the Chair...

ONE OF THE HARMLESS pleasures of Senior Citizenship is the discovery of old wine being served up in new bottles. This is my latest example from Earth Science.

As a student, I was privileged to attend a course of lectures given by the eminent geologist Professor S.W.Wooldridge. In line with the established geological thinking of that time he advocated the 'shrinking apple' view of global tectonics and dismissed all notions of continental drift. Less in line with the geological establishment, he was a fierce proponent of the existence of marine and sub-aerial erosion surfaces in the landscape. Many of my generation will recall the masterly text 'Structure, Surface and Drainage in South East England' which he co-authored with Professor D.L.Linton.

As usual, Earth Science moved on and fashions changed. In geomorphology, erosion surfaces were OUT, while in geology, the arrival of plate tectonics consigned the 'shrinking apple' concept to the dustbin of science history.

How ironic it is, then, to observe the return of familiar topics in the Quaternary literature of the past few years. The heights of Pleistocene deposits in the landscape, the depths of stream incision, tectonic uplift, isostasy – all these are back on the agenda, but this time linked strongly with the concepts of crustal and mantle rheology. Perhaps the ideas never truly went away but were always, in reality, lurking in the scientific mind awaiting the touchstone of plate tectonic theory to sanction their return?

Anyway, as we oldies say, "What goes around comes around". Maybe some reincarnation of E.H.Brown's 'Relief and Drainage of Wales' is in the offing??

LICKEY HILLS LANDSCAPE & GEOLOGY TRAIL GUIDE

A new trail at last at this popular location. The Lickey Hills Country Park is situated 11 miles to the south west of Birmingham, and receives over 500,000 visitors per year. On this walking trail, four different sedimentary rock types are seen.

The oldest, forming a complex anticline, is the Lickey Quartzite Formation, which is Ordovician, approximately 488Ma (million years old) in age. The next oldest lithology is the weathered red mudstone of the Carboniferous Alveley Member (formerly known as the Keele Clay, approximately 306Ma). Above this lies the Permian Clent Formation (299Ma), a weathered breccia, containing volcanic clasts. The youngest rock type on the trail is the basal conglomerate of the

Triassic Kidderminster Formation (formerly known as the Bunter Pebble Beds, 251Ma), represented by extensive areas of large rounded pebbles. This conglomerate was deposited in the channels of a major river system called the "Budleighensis River" which flowed north from Devon through to the Midlands. At the time England and France were joined (as part of the great supercontinent, Pangaea) and pebbles from as far south as Brittany were carried here by this powerful river.

Toposcope on Beacon Hill.



Geology Section of The Woolhope Naturalists' Field Club – Programme

2005

Sunday September 25th: Field excursion to Stanner Rocks and Hanter Hill. Joint trip with the Open University Geological Society.
Leader: Dr Jana Horak (National Museum of Wales, Cardiff).

Saturday October 8th: Field excursion – Quaternary Landscape in Herefordshire.
Leader: Dr Andy Richards.

Friday October 21st: Members' Evening. Bring a rock, some photographs / slides etc.

November 5th: Field excursion – Geology and resources of the Upper Swansea Valley. We will examine the Carboniferous Limestone, Millstone Grit and Coal Measures of the northern part of the South Wales Coalfield.
Leader: Geraint Owen (University of Wales, Swansea).

Friday December 9th: Lecture 'Gabbros – where and when.'
Speaker: Dr Sue Hay (Date to be confirmed)

2006

Friday January 21st: AGM and post-AGM dinner

Friday February 17th: The 3rd Murchison Lecture – 'Soft bodied sensations from the Silurian of the Welsh Borderland.'
Speaker: Dr Derek Siveter (Oxford University).

Lectures and the AGM are held at the Woolhope Room, Hereford Library, Broad Street commencing at 6pm unless otherwise stated. Further information for all events unless otherwise stated from: Sue Hay on 01432-357138 (evenings), or e-mail: susan.hay@hhtr.nhs.uk

Woolhope members discussing the Whitcliff at Ludlow.



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