

Bulletin

Number 84

January 2008



Diary Dates:

Thursday 10 Jan - *Volcanoes of the Aeolian Islands and Italy*

Speaker: Alan Clewlow (former NSGGA member)

7.30pm start, School of Earth Sciences and Geography, Keele University

Alan Clewlow is a geologist who runs geology tours. He was also an NSGGA member when he was at school in Longton and now lives in Warwickshire. His illustrated talk focuses on the geology of some of the volcanoes he has visited in the last 10 years.

Thursday 7 Feb - *Cambrian soft body fossils of Chengjiang, China and the flowering of early animal life*

Speaker: Dr Derek Siveter (University of Oxford Museum of Natural History)

7.30pm start, School of Earth Sciences and Geography, Keele University

There is a buffet meal in the Department before the talk, please return the form to attend

Derek Siveter is a palaeobiologist in the University of Oxford Museum of Natural History and the Department of Earth Sciences. He works on fossil invertebrates, in particular arthropods. Current research is focused on the ancient faunas of the Herefordshire (Silurian) and the Chengjiang (Cambrian; Yunnan Province, China) exceptional preservation deposits (Konservat-Lagerstätten).

Thursday 6 Mar - *AGM and Chairman's Lecture*

Elizabeth Hallam with **Geology and mining in Western Australia**

7.30pm start, School of Earth Sciences and Geography, Keele University

Western Australia is the largest state in the country occupying one third of the landmass, yet its extraction industries and wheat production are responsible for 80% of the country's GDP. We are going to look at the geology and two of the mines that produce this wealth:

The Cornwall Pit at Greenbushes is owned by Sons of Gwalia Limited and they are one of the world's largest suppliers of key strategic minerals - tantalum concentrates and lithium minerals.

The Super Pit at Kalgoorlie is all about gold.

For further information contact NSGGA Secretary **Eileen Fraser** ☎ 01260 271505

NSGGA field program for 2008

Note: a field fee of £2.00 per head is made

Saturday 29 March:

Lapworth Museum of Geology, University of Birmingham, Edgbaston, (Joint with BCGS).

Meet at 10.30am at the museum (SP047834). The Curator, Jonathon Clatworthy will have available material from the collections of rocks, fossils, minerals, historical maps and documents that are not on general public view. Likely to extend into the afternoon. Directions by car; take the A38 (Bristol Road) out of Birmingham centre for 3 miles, at the end of the dual carriageway turn right into Edgbaston Park Road for the University, the South Car Park (free on Saturdays) is on the left. The Lapworth Museum is accessed from Ring Road South, due south of the Clock Tower. **If you have specific material that you wish to see from the collections or would like more detailed directions to the museum let the Field Secretary know.**

Saturday 26 and Sunday 27 April:***The Yorkshire Coast based at the Raven Hall Country Hotel, Ravenscar, near Scarborough.***

Leaders, Eileen Fraser and A. N. Other.

On Saturday it is planned to go to Staithe for the sedimentary sequences and fossils of the Lower Jurassic, the program for Sunday is under discussion. Further details and booking form are in the attached flyer.

Sunday 18 May:***North Stiperstones, Pontesbury to Poles Coppice.***

Leader: Andrew Jenkinson

A joint meeting with the Shropshire Geol. Soc. to the north end of the Stiperstones (based on a new geotrail produced by SGS). From Pontesbury to Poles Coppice with extensions to Snailbeach and/or Earls Hill. Further details in spring bulletin.

Sunday 15 June:***Malvern***

Leader: Professor John Winchester

A field trip to illustrate features of the Late Precambrian basement of Central England visiting a number of quarries and exposures along the Malvern Hills. From the Precambrian inlier, rocks of the Malvernian and Warren House Group and from the Lower Palaeozoic, rocks of the Cambrian and Silurian periods.

A minibus is planned (subject to numbers) leaving from the Earth Sciences Car Park at Keele at 8.30am. Booking details in spring bulletin.

Sunday 20 July:***Crummack Dale, Austwick, Yorkshire.***

Leader: Alan Diggles

A walk of about 9km into Crummack Dale from Austwick (situated to the SE of Ingleton) for rocks of the Silurian (Austwick Formation Sandstones), Carboniferous Limestones and Ordovician Siltstones. Features to include the Norber erratics, Nappa scars and Moughton Whetstone Hole. A minibus is planned (subject to numbers) leaving from the Earth Sciences Car Park at Keele at 7.30am. Booking details in spring bulletin.

Saturday 16 August

Leader: Dr Patrick Cossey

Provisional, either following a section of the Hamps/Manifold Trail or on the Roaches.

Saturday 27 September:***Calton Hill Quarry, nr. Buxton***

Leader: Dr Chris Arkwright

Meet at 10.00am at Miller's Dale Station Car Park, Grid Ref: SK137733 (parking fee payable). To investigate Carboniferous igneous intrusions and lavas and their associated limestones in the Buxton area. Overall length of walks about 5km, limestone succession and interbedded lavas in Miller's Dale Quarry then, driving into Tideswell for a dolerite quarry to examine lithology and thermal effect on surrounding country rocks. Packed lunch at picnic site in the quarry. After lunch drive to Calton Hill, park at SK112710 to examine the structure and lithology of a Visean volcanic complex and dolerite intrusion in the disused quarry.

For further information contact NSGGA Field Secretary **Gerald Ford**,

☎ 01630-673409 or e-mail: g.ford@ukonline.co.uk

SRIGS - British Cartographic Society Award for Cartographer

Rosie Duncan, Cartographer in the Geography Department at Staffordshire University, has won the British Cartographic Society 2007 "Stanfords Award for Printed Mapping" for her involvement in the Hamps and Manifold Geotrail Project. The project was awarded to Dr Patrick Cossey by Staffordshire RIGS and supported by colleagues in the SRIGS Group and at Keele University. Rosie designed and produced the finished leaflet.

Citation: Her entry, the Hamps and Manifold Geotrail, was commissioned by the Staffordshire Regionally Important Geological Sites. The mapping is well referenced to the additional information surrounding it, including geo-sections, photographs and the descriptive text. The colour schemes and design are really eye catching and well balanced across the whole product with a very attractive layout. The format is well suited to the user, as a tour guide as well as a keepsake.

Stanfords' Margaret Ross, supplier of map products imported from overseas, and Chris Emblem-English, responsible for all map graphics on our website, were among six judges from the maps and graphics industry who assessed more than 30 entries. Chris says of the winner, "This map fulfilled its intended purpose, as well as being nice and tidy, with good graphics, and it looks really attractive. It's great that it guides you through a walk and puts the landscape into context, pointing out features along the way. Just looking at it made me want to go to the area straight away."

See Press Releases, details and Acrobat versions of the map at:

<http://www.esci.keele.ac.uk/srigs/index.html>

<http://www.stanfords.co.uk/articles/news/best-map-of-the-year-awards.172.AR.html>

Northern Rocks - the North Pennines Festival of Geology and Landscape

Saturday 24th May - Sunday 8th June 2008 inclusive

The 2008 Festival will be the 5th Northern Rocks Festival - two weeks packed full of events, activities across the North Pennines AONB and UNESCO European & Global Geopark. From themed walks, exhibitions, and activities for kids to demonstrations, local heritage events and mine tours there'll be something for everyone! It celebrates the unique geology and landscape found within the AONB and is timed to coincide with European Geoparks Week - a pan-European festival celebrating the world-renowned geology found within the European Geoparks.

The North Pennines AONB Partnership holds a Gold Green Tourism Business Scheme (GTBS) Award for its corporate office and tourism activities.

For more information visit www.northpennines.org.uk or www.green-business.co.uk or contact:

Shane Harris, Sustainable Tourism & Communications Officer, North Pennines AONB Partnership, Weardale Business Centre, The Old Co-op Building, 1 Martin Street, Stanhope, Weardale' County Durham DL13 2UY ☎ 01388 528801 email: shane@northpenninesaonb.org.uk

John Myers' Award Appeal

The John Myers' Award has been in operation for 10 years since its introduction in 1997.

John Myers was the instigator of the North Staffs Group in 1948 which was to be formally approved by the Geologists' Association in 1950.



Since its inception both Keele University and Staffordshire University have submitted 3 final year projects which have been assessed by a panel of NSGGA members. The winner from each has received a cheque for £100 plus an engraved medal with the four runners up receiving a cheque for £20. John Myers' daughter, Mrs Ann Myatt has kindly paid the annual prizes each year and the NSGGA has provided the engraved medals.

The Geology Department at Staffordshire University was closed in 2006; this year the John Myers' Awards were made to Keele University final year undergraduates studying for:

- The 4 year MGeoscience course and
- The 3 year Single or Dual Honours course.

Your committee feels that the runner up prizes should be increased to £40 and proposes to pay the extra £80 per year from the group's John Myers fund, which currently stands at

£1141. The fund is totally reliant on donations that have been made by members over the years.

As Chairman of the John Myers' sub committee I would like to ask you to consider making a small donation when you pay your 2008 subscription.

Mike Fereday

How grey was my valley



This article was both inspired and informed by a geo-tour of the Apedale Valley on the 21 October 2007 led by Dr. Ian Stimpson and Dr. Peter Knight of Keele University. The walk was organised by the NSGGA in conjunction with a number of other organisations and formed part of local celebrations marking 150 year of the Geologists' Association and 200 years of the Geological Society of London.

The Apedale Valley forms the heart of the Apedale Community Country Park, almost 200 hectares of pleasant woodland and grassland, criss-crossed with well maintained footpaths and home to a variety of wild life. But it is only within the last few years that it has been so developed. For more than 200 years, it was the centre of prolonged and often intense coal, ironstone and clay mining, and pig-iron and coke manufacture.

The close relationship between the geology of the area and its industrial past has made it an apt location for one of the recent NSGGA events celebrating 150 years of Geologists' Association and 200 years of the Geological Society of London (Ref. 1).

Principal geological structures

The Western Anticline of the Potteries district can be traced for around 15km from Madeley in the south, across the top end of the Apedale Valley, and on to its most northerly reach – the Astbury Anticline. The structure thus trends north-north-east, adjacent to and approximately paralleling the Red Rock fault. The broad Potteries Syncline lies to the east. The anticline is both steep and asymmetric, with the eastern limb typically around 35 degrees, while the western side has an average dip of over 60 degrees, with some beds being actually overturned. It forms a prominent topographic feature cutting across the northern end of the valley, and is topped by the village of Wood Lane.

The Apedale Valley itself trends north west and its convergence on the Western Anticline causes a large number of important coal and ironstone seams are brought to the surface both along the floor of the valley and within its sides. The strata have an overall dip to the south east into the Potteries syncline and to walk up the valley on the largely near level ground is to follow the succession from the Etruria 'Marls' at the south end, through the Upper and then the Middle Coal Measures and up into Lower

Coal Measures. The latter forms an elongate inlier centred on Wood Lane.

Apedale Fault is a major fault running through North Staffordshire, and possibly beyond. It runs the length of the valley and here has a downthrow to the east of around 600m, bringing older strata on the western side of the valley against higher successions on the east. Several smaller faults complicate the structure somewhat.

The valley developed as a drainage channel for glacial melt water flowing into Lyme Brook from this western side of 'divide' with the Cheshire Plain. It formed with the familiar steep-sided / flat-bottomed profile of such a channel, caused by alterations between vigorous water erosion and silty deposition as the flow slackened.

The Apedale Volcano

In 1920/21, an exploratory borehole was sunk to 1294m into the high ground between Alsagers Bank and Wood Lane in a search for oil trapped within the Western Anticline. It represented one of the earliest such boreholes in Britain and was drilled under a programme that had been influenced by the work of Sir John Cadman. No oily strata were found beneath the Silesian cover but, surprisingly, a thickness of 847m of tuff was encountered before drilling was abandoned. The volcanics have since been shown to form a large broadly stratiform body centred on Apedale of Late Asbian / Brigantian age.

Coal, ironstone and clay

In the 1670s, Dr. Robert Plot visited the Apedale Valley while carrying out researches for his book 'The Natural History of Staffordshire' (published 1686) and was much taken by a footrail ("footerrill") then being employed near Grubbers Ash to win coal. This was on the Chesterton side of the shoulder of the ridge separating the Apedale Valley from the adjoining Silverdale Valley. By the 1700s, this area had become known as 'the waste'. A farm close by still bears the name Waste Farm. A recent land survey has shown that more than forty bell pits and footrails have, over time, operated in this small area alone. It was later to become known as Black Bank, possibly another fitting name. Dr. Plot had also noted that particularly fine white-firing tobacco-pipe clays could be had from Grubbers Ash.

The Apedale Canal was completed by 1778. The navigation involved no locks and was levelled close to the 135m contour. It ran from its northerly turning basin within the valley (still in existence today as 'Gresley Pool', just below Partridge Nest Farm) through to the northern edge of Newcastle town centre. The immediate success of this venture in supplying coal and pig iron to Newcastle signalled the start of deep mining in the Apedale Valley. In 1790, the Wood Pit shaft (in Miry Wood) was sunk to 178m (163 yards), with a dip road at the bottom of the shaft following the coal seam for 410m. A second mine was sunk in 1802-3 close to the canal turning basin at Sladderhill, with a 225m shaft and a dip road. By 1831, this dip road had reached 550m in length and led down to the deepest working seams then known in Britain. Other pits followed, with the Burley Pit a little further down the valley developing into a substantial complex. It operated until its closure in the 1920s.

It had long been recognised that the Apedale Valley was particularly rich in easily accessible iron ore. Clayband ironstones were of significant commercial value, but it was the blackband ironstones of the upper part of the Upper Coal Measures that came to be of far greater value to the region. Bloomeries had been in use in Apedale over several centuries, but serious pig-iron production didn't start until the first blast furnace was built here in 1785. Two more were soon added and in 1839, 600 workers are recorded as employed in the coal mines and in operating the three blast furnaces and several coking ovens within the valley. By 1848, a fourth blast furnace and other facilities had been added and pig-iron production had tripled. What a fearsome sight the area must have presented to a visitor.

The advent of the railway network meant that grading and washing of the coal and ironstone and its conversion to coke or pig-iron and steel would become progressively separated and rationalised in fewer well-sited centres within the greater region. Iron-making in Apedale ceased in 1930; the North Staffordshire coalfield was perhaps the last in Britain to see Coal Measures ironstone being exploited. It was not until the early 1990s that opencast workings in the valley finally ended.

The Etruria 'Marls' were valuable for the manufacture of facing and engineering bricks, tiles and coarse earthenware. The steep Apedale Road from Chesterton passes through the particularly valuable middle section of the formation and several clay pits, some with brick factory attached, have over time operated close to the road at the top, one on either side of the descent, and on the valley floor.

The enduring legacy

Miry Wood flanking either side of the valley just below Wood Lane is deeply pockmarked with past mining activities. The whole area is now heavily overgrown and is strongly reminiscent of a modern-day visit to one of the old shell- and landmine-blasted woodlands of some First World War battlefield. A number of open cast workings are evident as wide steep-sided and often water-filled hollows, and ramp-like depressions going down into the ground mark the entrances to what were once footrails. Lumps of coal and the occasional piece of dense ironstone can be found, no doubt scattered around during local mining operations. Some bedded sandstones and crumbly shales can be seen around the Miry Pools area, and there is a good exposure of the Banbury Sandstone beside the path leading out of the wood.

Within Watermills Wood, the magnificent base of the ventilation chimney for Watermills Colliery with its carved inscription "1840" still stands (now a grade II listed building). The colliery closed in 1912. At the top of the lane leading up to Springwood, the substantial Partridge Nest Blast Furnace can still be seen. This high location proved to be ill-chosen and the furnace operated only from around 1790 to 1805. Further along, a large block of ironstone with dimpled roots fossilised on its upper surface does an effective job in restricting vehicular access. Clinker and slag deposits abound hereabouts.

Within an embankment running along to the west of the Apedale Heritage Centre a rare and rather weathered exposure of a coal seam (the Cannel Row Coal) can be seen. The Heritage Centre itself houses a small museum and also occupies the site of a footrail that once exploited the Great Row to Bassey Mine coals. The footrail is open to the public and an excellent section through a coal seam can be viewed, with its very solid ironstone roof and soft clay seat earth. This sequence of a coal seam with an ironstone seam close to or, as here, forming the roof of the coal is a characteristic of the blackband ironstones in North

Staffordshire. The Great Row coal was much sought after by potters as it was of low ash and burned with a long flame, giving even temperature distribution within the kiln.

A 7 tonne pit-wheel has recently been erected some 200m up on a ridge overlooking the valley, dedicated to all the miners who worked in the Staffordshire coalfields.

Sources consulted :-

Dyble, D. A history of Apedale and Chesterton. Published by BM Dyble, 2002

Rees, JG, and Wilson, AA. Geology of the country around Stoke-on-Trent, 1998. British Geological Survey Memoir BGS Sheet 123, Stoke-on-Trent, Solid Edition 1994

Bob Fletcher

SRIGS - Launch of the Churnet Valley Geotrail

After the success of the Hamps and Manifold Geotrail Project, a second leaflet is being prepared for a geological trail between Froghall and Alton in the Churnet Valley. The launch will be on **Sunday 24 February**. Full details will be available nearer the date - see:

<http://www.esci.keele.ac.uk/srigs/index.html>

Black Country Geological Society Diary Dates 2008

Lecture meetings are held at Dudley Museum, St James's Road, Dudley. Phone (01384 815575)
7.30 for 8 o'clock start unless stated otherwise.

Monday 28 January (Indoor meeting) Joint meeting with the West Midlands Regional Group of the Geological Society - *Where was the Devensian Ice Margin in the West Midlands?*

February (Field meeting) - planning a field day to Kinver

Monday 25 February (Indoor meeting) - *Techniques and Practices in Geology* - an evening for members to brush up on their knowledge, or learn some of the basic techniques used in geology.

Saturday 29 March (Field meeting) Joint trip with the North Staffs Geological Association to the *Lapworth Museum, University of Birmingham*. Meet at the Museum at 10.30am. Date to be confirmed.

Monday 31 March (Indoor meeting) - *Annual General Meeting*

Saturday 19 April (Field meeting) Field excursion to *Hanter Hill*. Leaders: Sue Hay and Geoff Steel. Meet at 10.30am in the lay-by at Burlingjobb on the B4594 (SO251583). This will be a circular walk up, around and down Hanter Hill - about 4 miles total distance much over quite rough moor land. Bring a packed lunch and drink.

For further details contact BCGS Hon. Secretary: Sarah Worton, 158 Oakham Road, Oldbury B69 1QQ
Tel 01384 235946 or email: sarah.worton@atkinsglobal.com

East Midlands Geological Society Diary Dates

Saturday 12th January 2008 - 6.30 pm

Marie Stopes: Sex, lies and fossil plants

Speaker: Dr Howard Falcon-Lang (University of Bristol)

Saturday 16th February 2008 - 6.00 pm

The Foundation Lecture followed by the Annual Society Dinner.

Saturday 8th March 2008

Members Evening

Saturday 19th April 2008

Midlands Influences on William Smith

Speaker: Peter Banham

Indoor meetings take place in lecture theatre B3 of the Biology building at the University of Nottingham.

Secretary: Mrs Janet Slatter, 100 Main Street, Long Whatton, Loughborough, Leicestershire LE12 5DG

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BGS Memoirs - prices reduced

The British Geological Survey are repricing their Memoir series with effect from 7 January 2008. Usually, repricing is another word for a price increase, but instead, they are reducing the Memoir prices. Pre-1990 Memoir prices will be reduced by up to 50%, but all Memoirs have been individually re-priced to reflect the age, size and scope of each title. These new prices will apply from 7 January 2008. Any queries on this? Contact Elaine Johnston: elj@bgs.ac.uk

The new prices will be in the BGS Publications Catalogue 2008, which is going to print very soon and will also be available for download from the BGS website. If you would like a print copy of the catalogue, send your mailing address to Alan Clayton at: arc@bgs.ac.uk

The BGS Popular Geology and Education website is: www.bgs.ac.uk/education. You can subscribe to Earthwise magazine, or order back issues from: www.bgs.ac.uk/earthwise Other free downloads are available at: www.bgs.ac.uk/free/

Subscriptions 2008

Please find the subscription renewal form associated with this Bulletin and return for prompt payment to Mike Brown. It all helps to keep the Group alive and well.

NSGGA - Next Committee Meeting

- **Thursday, 17 January at 7.00pm**
in the School of Earth Sciences and Geography, Keele University

Staffordshire RIGS Group

For details about the Group and meetings, contact:

SRIGS Secretary: Sue Lawley

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Executive Committee (honorary):

Dr. Colin Exley; Terry Jones; David Thompson; Ted Watkin.

Executive Committee (elected):

Lloyd Boardman; Peter Floyd; David Osborn;

Janet Osborn; John Reynolds; John Winchester

Executive Committee (co-opted):

Ellie Hooper (Keele Geol. Soc), Nick Hulley

Why not visit the NSGGA web pages: www.esci.keele.ac.uk/nsgga