



The
Black
Country
Geological
Society

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F.R.Met.S.

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Newsletter No. 200

April 2010

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**Copy date for the next Newsletter is
Monday 7th June 2010**

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.

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.**

Those wishing to attend field meetings please contact our Field Secretary, Andy Harrison, mobile: 07973 330706 or email: andrew_harrison@urscorp.com

Saturday 24th April (Field meeting) Visit to the Cotswolds to view the Jurassic. Led by Dave Owen of the Gloucestershire Geological Trust. Meet at 10:30am at Car Park Quarry, Cleeve Hill (SO 989 271). Walk over common to see: Aston Lst. Fmn. (Lwr Inf Oolite) & deeply incised post Ice Age valleys; walk along foot of Cleeve Cloud to see the Cleeve Cloud Member (Birdlip Lst. Fmn) and junction between Inf. Oolite/Lias. Views across Severn Vale to the Malverns. Directions: from the Cheltenham to Winchcombe road (B4632), at the highest point turn right (if coming from Cheltenham), follow sign for the golf club. Go to end of lane, over cattle grid and turn left into a quarry, now a car park. Bring packed lunch. Can be exposed as this is the highest point of the Cotswolds.

Monday 26th April (Indoor meeting) Lapworth Museum: West Midlands Fossil and Mineral Collections. Speaker: Jon Clatworthy. Jon will speak about the contribution of these collections to the developing science of geology in the 18th, 19th and early 20th century.

Saturday 8th May (Field meeting) Building Stones of Birmingham. Led by Eric Robinson. Meet at the foot of the ramp outside the Pallasades shopping centre, next to the HSBC Bank at 10.15am. Pub or cafe lunch. Please call Andy Harrison to confirm details.

Saturday 19th June (Field meeting) Buxton Area Volcanics. Led by Chris Arkwright. Meet at approx 10:15am in Miller's Dale Station pay & display car park (SK137 733) for 10:30am start. Walk 4 miles in total mainly on good level footpaths with some steps, to see Lower Carboniferous volcanics. 1. Miller's Dale Station Quarry, lava/limestone contact. 2. Park nr. Litton Mill to see different lava/limestone contact, eat lunch. 3. Tideswell Dale Quarry (pay & display), dolerite intrusion. 4. Drive to Calton Hill, park at farm lane entrance (SK112 710) to visit quarry to see 3 main types of igneous rock. Bring a packed lunch. Finish approx 4.30 pm.

Saturday 24th July (Joint field meeting with the Woolhope Club) Martley area led by Dr. Paul Olver. Meet at Martley Village Hall (SO 753 599) at 10.30am. Martley is on the B4197 about 4 km north of the A44 (Worcester to Leominster road). If approaching Martley from the south on the B4197, the Village Hall is on the right about 50m after sign at the start of the village. Pub lunch. We will see: the Precambrian/Cambrian basement in Martley Pit, complex folding and faulting of the Silurian successions, and quarries in Martley village where Triassic Sandstones were extracted for building.

Andy Harrison, Gordon Hensman

Other Societies

BCGS members are normally welcome to attend meetings of other societies, but should always check first with the relevant representative. Summarised information for the next two months is given in our Newsletter. Further information can be found on individual Society web sites.

Woolhope Naturalists' Field Club - Geology Section

Sunday 23rd May: Lumps Bumps, Hollows and Humps. Led by Duncan Hawley. The late-glacial features and environment of Cwm Cerrig Gleisiad, Brecon Beacons.

Saturday 19th June Triassic of Aust Cliff and Manor Farm. Led by Simon Carpenter.

Guests are welcome, but must take day membership of the Club: £1.00. For further information: contact Sue Hay on 01432 357138 or email svh.gabbros@btinternet.com

Shropshire Geological Society

Saturday 24 April: Darwin in Llanymynech, to be led by Gordon Hillier and Jeanette Bolton (Tel. 01743 850 773 or mobile 07986 558 683 to reserve a place)

Saturday 15 May 10.00: Ludlow Building Stones and their Silurian setting, to be led by Michael Rosenbaum. A whole day walking around Ludlow (2 miles); café lunch available by the river or bring a packed lunch (booking to reserve a place and obtain joining instructions from Frank Hay, preferably by email: frankhay@waitrose.com; telephone: 01694 724 723)

Monday 17 May Rockhop meeting, commencing 18.30: Gold Panning, to be led by David C Smith. Walking (one mile); some rough ground; bring your own refreshment, if required. Booking to reserve a place and obtain joining instructions from Keith Hotchkiss by email: kah22@btinternet.com; telephone: 01694 723 130)

Anyone wishing to attend should telephone the co-ordinator for the meeting you wish to attend at least 48 hours in advance of the activity. A nominal charge is levied for non-members. Please note: the Rockhops are primarily intended for beginners. Arrive 15 minutes before the start of field trips for admin. Further information at: www.shropshiregeology.org.uk/

North Staffordshire Group of the Geologists' Association

Saturday & Sunday 15-16th May: Field Weekend: North Wales. Leader: Richard Waller. This weekend excursion will explore the impact of past glacial activity on the landscapes of N. Wales.

Further information at: www.esci.keele.ac.uk/nsgga/

Mid Wales Geology Club

21st April: Bill Bagley - "The Wonderful World of Minerals"

25th April: Field trip to Cwm Cerrig Gleisiad in the Brecon Beacons, led by Duncan Hawley

19th May: Prof. Bill Fitches, just back from Patagonia, will talk on 'Andes and Oil in Patagonia'

23rd May: Field trip to mines in Cwm Rheidol, with Peter Lord

Meetings are held at Plas Dolerw, Milford Road, Newtown, Montgomeryshire, SY16 2EH. 7.15 for 7.30pm. Further details: Ed. newsletter & Hon Sec: Tony Thorp: Tel. 01686 624820 and 622517 jathorp@uku.co.uk

Warwickshire Geological Conservation Group

Wednesday 19th May 6.30: Burton Dassett Hills and Avonhill quarry. Leaders Jon Radley and Ian Fenwick. Exposures of interesting sedimentary features in the Marlstone Rock Formation at Burton Dassett; faulting at Avonhill results in exposures of the Dyrham, Marlstone Rock and Whitby Mudstone Formations being revealed - with excellent fossil collecting opportunities! Meet SP 3948 5213.

Saturday 12th & Sunday 13th June: Hamps & Manifold Valleys, Staffs. led by Dr Patrick Cossey, Staffordshire University.

See: <http://srigs.staffs-ecology.org.uk/Sites/SSSI/HampsManifold/index.html>

If you wish to attend contact Ian Fenwick swift@ianfenwick.f2s.com or 01926-512531. The WGCG mobile phone (0752 7204184) available on the day from 11.00. There is a charge of £2.00 for non-members. For further information visit: <http://www.wgcg.co.uk/>

Stamford and District Geological Society

Saturday 12th June: "Lake Harrison". Led by Dr Martyn Bradley. A look at the post glacial effects on the Midlands' landscape. Meet at 10.00am at Smith's Concrete, Waverly Wood Plant, off the A445, 1km south of Bubbenhall village, SP 357 717.

Contact Bill Learoyd: billlearoyd@aol.com Further information at: www.stamfordgeolsoc.org.uk/

Editorial

It is something of an honour that Newsletter No. 200 should occur during my Editorship, and I therefore make no apology for producing a bulging edition to mark this auspicious event. I wonder if this marks the peak of the Schroderian? (*See Graham Hickman's item 'BCGS Newsletter Chronostratigraphy' for elucidation!*) It is a great pleasure for me that we have had so many excellent contributions for this edition, and I'd like to thank all our contributors, and apologise to those whose items have had to be held in abeyance until the next edition. But please remember, the Newsletter is the mouthpiece for all members, and I'm looking forward to receiving items from some of our newer members - questions, photos; comments on meetings, field trips or on the Newsletter; any other items of geological interest, by post or email please.

This year also marks the 35th anniversary of the BCGS, and for this special edition of the Newsletter Graham Hickman has made some interesting and entertaining observations based upon his work on the Newsletter archives. Graham also drew my attention to Newsletter No. 100 (August 1993) in which all past editors made a contribution. These editors included our new Meetings' Secretary, Graham Worton who made some strangely apposite predictions in his item entitled 'The Black Country Geological Society in the 21st Century'. This opens with the sentence: "What will the Black Country Geological Society be like by the time we issue the bi-centennial newsletter? (which incidentally will be in April 2010)." Spot on with the date, and as a true geologist, Graham then suggests: "Perhaps the best way to look into the future is to look back at the past". He lists some of the activities of the BCGS: popularising geology through the Newsletter, holding indoor meetings, running field trips, waving the banner at conferences, exhibitions and road shows, and helping to save exposures.

Graham predicts "that in the year 2010 we will be doing much the same, with some different faces and some technological advances to separate us from the present". It is as true now in 2010 as it was in 1993 that "the BCGS continues to collect, conserve, learn and visit places of interest because we enjoy doing these things and they enrich our understanding of the world around us".

I'm looking forward to the technological advances which will enable us to undertake the field trip to the moon (or is it Mars?) which Graham predicts by Newsletter No. 300 (December 2026). I presume the geo-astronaut waving the flag is Graham himself, leading with his inimitable drive and enthusiasm! As Graham suggests "the possibilities for the future are mind boggling and if we really let our imaginations go, just what might come to pass?"



BCGS FIELD TRIP BY NEWSLETTER NO 300
Graham Worton, reproduced from Newsletter 100

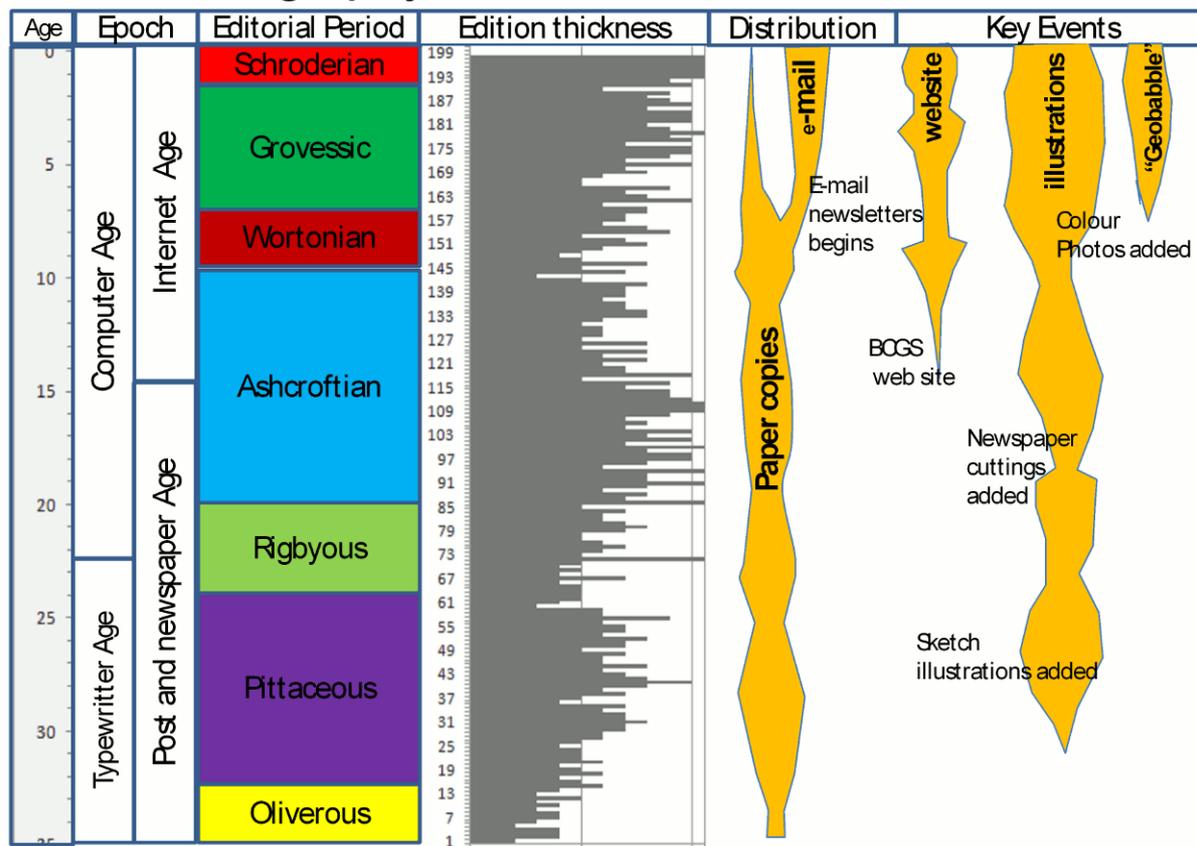
When you've read and digested these pages, take a little time to trawl through the amazing archive of our history in the Newsletters section of the web site. This has been painstakingly created and indexed by our web master, Graham Hickman and is now almost complete, providing a treasure trove of information and perhaps some inspiration to help forge the future direction of the BCGS. ■

Julie Schroder

BCGS Newsletter Chronostratigraphy.

The iconic BCGS newsletters have reached edition 200! Over the past 35 years they hold a deposit which captures many of the features of our changing society. While scanning past copies of the BCGS newsletter for uploading to our website, it struck me that there are many parallels to geological chronostratigraphy. Chronostratigraphy is a division of stratigraphy that attempts to define rock units that formed during a specific interval of geological time. As part of the task, I collated all the newsletters I could find, counted the pages and took note of editorial changes in styles. An analysis of the past newsletters by editorial period follows;

Chronostratigraphy of the BCGS Newsletter 1975-2010



Past editors have included: Peter Oliver (1-15), Sheila Pitts (16-64), Andrew Rigby (65-87), Kate Ashcroft (88-147), Sarah & Graham Worton (148-162), Bill Groves (163-192) and our current editor Julie Schroder (193-200+). Their dedication to produce 6 editions per year has been outstanding and a key communication tool to keep the BCGS members well connected since 1975.

The BCGS newsletter deposit clearly shows the evolution from typewriter to computers and mass postage to email. Sketch illustrations first appeared in edition 23, followed by newspaper cuttings and more recently, colour photos and more recently, colour photos. Going through my collection of old newsletters, I rediscovered some real gems such as the mention of BCGS Christmas cards, BBQs, BCGS logo clothing and of course, the Black Country Geologist volume 1. Some of the newsletters, particularly those of the late 1980's vintage now have their pages glued together by early Xerox ink! On a personal note I also discovered some long lost letters from my mother, who had used the blank sides of some early editions to write her own letters to me before forwarding them on. ►



Photo above: Gently deformed strata of the BCGS newsletter mega sequence.

It is interesting to note the correlation between edition thickness and editorial period. Newsletters grow in thickness as a new editor takes up the pen, reach a climax and then wane, with a distinctly condensed edition prior to a new editor taking over. This bears a striking resemblance to sequence stratigraphy where sea level changes can drive depositional thicknesses.

The longer term goal is to provide an index so past articles can be quickly found and referenced. If you are interested in reading past editions and learning more, the current and past newsletters can be found at: www.bcgs.info/newsletter.html ■

Graham Hickman

Prehistoric Impressions

Opening of an Art Exhibition at Dudley Museum and Art Gallery Saturday 6th February

This was the preview and official opening of Maren Lilley's first solo exhibition, where images of the Wren's Nest Nature Reserve were on public display. Graham Worton made the introductory speech for the official part of the day and he was followed by Madam Mayor.

Madam Mayor opened the exhibition with a few words about the artist. She said that this was a momentous occasion for Maren and praised her work, much of which has been completed in her spare time since 2008. Members of Maren's family had made the trip from Germany to join in the celebrations.

Maren, who with her twin sister sparkled in matching silver jackets and trilobite jewellery, thanked all the guests for supporting her today and commented "I'm so trilobited!" She said that the exhibition is a celebration of the Dudley bug and the local geology. One of her guests was her former 'A' level teacher, whom she noted had taught her the art of shading. She outlined the history of preparing for the exhibition, including taking the family to Wren's Nest on fossil hunts. There were many people to thank, including the Museum staff, BCGS members, family, friends and her husband.



Dear Madam Mayor and Consort, Super Museum Crew and all invited Guests,

Just let me tell you, I am sooo trilobited -
Ahm, actually I meant I am soooo excited
As I can share with you my drawings from just a little spot

But the Wren's Nest is not LITTLE - certainly NOT!
It has a great history of ancient times and long gone
But it is alive in silent witnesses embedded in Much Wenlock Stone.

Those witnesses are as precious as gold, important for future generations

So take my exhibition as a little celebration
To the arts, Dudley Bug and all fossils great and small
To geology and nature in Dudley, an exceptional place for us all.

Maren Lilley

The formalities completed, a splendid buffet was enjoyed by all. We were particularly impressed with the golden plates decorated with pictures of fossils and Maren's home made trilobite biscuits and cakes.

On behalf of the BCGS Mike Williams did a good job of organising the buffet and drinks – if you need a party organiser you know who to contact! ■

Sue Fairclough

Annual General Meeting

This was held on 29th March 2010 and was followed by a fascinating presentation by Graham Worton on the Wren's Nest Caverns, focussing on the scientific data collection undertaken prior to the infilling of the caverns last year, and the ongoing research. There will be more on this from Chris and Ali in the next edition of the 'Dudley Bug'. We are especially grateful to Graham, not only for up-dating us on this exciting work, but for standing in at very short notice for Jacqui Malpass who was sadly indisposed.

Summary of the Chairman's Report for 2009-2010

The picture presented by our Chairman, Gordon Hensman is of a thriving, successful Society which has ridden out the inevitable storms which face all similar voluntary societies. Our members are keen, dedicated and well informed, and we very much welcome the recent influx of younger members who have brought with them a new look to the Society.

The Chairman thanked all the committee members for their various endeavours, plus co-opted members John and Julie Schroder for jointly editing the Newsletter, and Chris Broughton and Ali Roberts for their erudite and amusing 'Dudley Bug' pages of the Newsletter.

The appointment of a new Meetings' Secretary, Paul Trower, proved to be unsuccessful, as he resigned after a couple of months. This put the Society in a difficult position as we needed to arrange the programme for the forthcoming year. The Chairman stepped in to arrange our lecture programme to date, and was pleased to report that Graham Worton has now been appointed as our new Meetings' Secretary. (*See p.1 for the current committee. Ed.*)

Once again Martin Normanton audited our accounts and he was thanked for his services.

The Chairman reported that over the last year we held 6 Lecture meetings, 5 Field meetings and our ever popular Members' Evening. In addition there was a unique event attended by local dignitaries including the Mayor of Dudley when we sponsored an art exhibition in Dudley Museum & Art Gallery. This was produced by one of our members, Maren Lilley, whose work was inspired by the geology of the Wren's Nest.

The Chairman listed 10 other societies and lecture groups in the Midlands with whom we enjoy links and shared activities, and concluded by thanking all members of the society for their loyalty and support.

Gordon Hensman, Julie Schroder

Treasurer's Report 2009

Although membership subscriptions and investment income declined, the Society has been able to declare an increased profit for the year thanks to consulting income obtained through RIGS and Natural England. Fortunately, the Dudley Rock & Fossil Festival proved a welcome source of new members so that the decline in the Society's numbers may have been contained. However, not all members have yet renewed for 2010.

Costs remain under close scrutiny and cash flow and reserves remain at very healthy levels. With this in mind the Committee has authorised expenditure which it is hoped will increase the profile of the Society with a view to further expanding the membership.

Finally, thanks to our Auditor, Martin Normanton and to all members who have again promptly forwarded their subscriptions. It would be greatly appreciated if outstanding renewals could be forwarded as soon as possible.

Should any member require a copy of the Society Balance Sheet for 2009 please contact me:

1D The Bungalow, Parkdale West, Wolverhampton, WV1 4TE.

email: bungalowmike@blueyonder.co.uk ■

Mike Williams, Hon. Treasurer.

The Dudley Bug

Welcome

Hello

This month we bring the secrets of the land of fire and ice, Iceland and the Iceland Hotspot. This is very relevant at the moment because as you probably know, Iceland is experiencing an eruption at the present. But why is Iceland such a different place in geological terms to any other hotspots such as Hawaii? Well we hope to explain here!

Chris and Alison

Secrets of the Iceland Hotspot

Iceland is located on the Mid-Atlantic Ridge which is a constructive plate margin, below the Atlantic Ocean. Here the North American Plate and the Eurasian Plate are diverging (moving away from one another) at a rate of approximately 10km every million years. This began approximately 60 million years ago and has been creating new oceanic crust ever since. It is due to this boundary and the



The Rift Valley at Pingvellir.

possibility of a mantle plume below Iceland, which has formed the popular tourist destination. The Mid-Atlantic Ridge runs right through the centre of Iceland and is visible at the surface through the presence of the rift valley Pingvellir. This is proof that the Mid-Atlantic Ridge is a diverging margin.

The hot spot which is present below Iceland is 100km wide and 200km deep and is believed to be a few million years old. This has created Iceland which is classed as being formed of oceanic crust, although

it is thicker (20-40km) than typical oceanic crust which is 5-10km. This particular mantle plume has got strong evidence supporting its existence, in particular the 1783 Laki Fissure eruption and the geysers, as well as having present day active volcanism.

The magma chamber below Iceland has caused doming below the oceanic crust which has led to sedimentation and erosion in other parts of the Atlantic Ocean and North Sea. This process is known as magmatic underplating. Magmatic underplating is a process which involves rising magma becoming trapped by the overlying lithosphere. Because it is unable to rise any further it spreads out below the oceanic plate causing uplift. This then cools and becomes part of the overlying lithosphere. This then in turn increases the density of the lithosphere as well as the thickness. Below Iceland the magmatic underplating occurs in pulses, which has caused v-shaped valleys to form on the ocean floor, particularly to the south of Iceland. These pulses are irregular and occur between every 5 and 10 million years. ►

So why does the Iceland hot spot cause erosion? Because the mantle plume has a lower density than the overlying lithosphere it pushes the lithosphere upwards. This is known as isostasy, which is the 'condition of equilibrium whereby the Earth's crust is buoyantly supported by the plastic material of the mantle' (MacDonald *et al.* 2003). The amount of uplift varies and when there is a period without a pulse of magmatic material uplift lessens. The magmatic pulses lead to large amounts of sediment, in particular clastic sediment, being deposited within the surrounding basins/margins. These deposits are important because they often yield major gas and oil reservoirs. The beaches around the coast of Iceland are typically black in colour due to the weathering and erosion of the basalt which is the dominant rock type making up Iceland.

Although Iceland seems far away from us here in the UK, the process of magmatic underplating does affect us. It is believed that when the Iceland plume was active for the first time, parts of the North Sea and the Faeroe-Shetland basin were affected by uplift and erosion. This caused thermal subsidence in places which in turn caused rifting. Some of the sediment has flowed up to 1,200km away from Iceland.



Lava flow from the 1783 Laki Fissure eruption

Iceland is the ideal place for the study of an oceanic ridge due to its unique location. The geological history of the country has made it a popular tourist destination where you can see the evidence of the volcanic activity and the erosion of the volcanic landscapes, and is definitely worth a visit. ■

Reference

MacDonald. J. G., Burton. C. J., Winstanley. I. and Lapidus. D. F. 2003. Collins Dictionary of Geology. HarperCollins Publishers. Great Britain. 234, 260, 316.

Next Time....

Fossils of the Wrens Nest

If you have any further questions, comments, suggestions etc., please feel free to contact us on our e-mail, which is... thedudleybug@hotmail.co.uk

Please send material for the next Newsletter to:

julieschroder@blueyonder.co.uk

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

Conservation work at the Wren's Nest

The Wren's Nest wardens are seeking volunteers to help with maintenance work from August – October. If interested, please contact Andy Harrison and state likely availability (weekdays and/or weekends), mob: 0797 333 0706 or email: andrew_harrison@urscorp.com

Field Meeting Report

Saturday 30th January: Revisit to the Lapworth Museum, University of Birmingham. Led by Jon Clatworthy (Curator, Lapworth Museum)

Members of BCGS and NSGGA met at around 11:00 in the museum for tea, coffee and biscuits. Jon then introduced the day and split us into two groups to take it in turns to look inside one of the ground floor laboratories and various museum storerooms.

Numerous collections donated to the Museum were laid out in the ground floor laboratory, including Carboniferous plants and coal balls from Coseley, collected by Sir Charles Holcroft; trace fossil tetrapod footprints and 3D fish preserved in red sandstone from Alveley, Shropshire, donated by Dr. Frank Raw (formerly of the University of Birmingham Geology Department); a collection of specimens from geologist and Arctic explorer Raymond Priestly (1886-1974), who had served alongside both Ernest Shackleton and Captain Scott. There were numerous thin sections and corals collected by Samuel Allport (1816-1897), who was the first librarian at Mason College (the forerunner of the University of Birmingham) and the first curator of the Geology Museum. A Daily Mail article dated Saturday 10th May 1902, announced the eruption of Mt. Pelée that destroyed the town of St. Pierre, Martinique. Also on display were numerous examples of fossil lobsters (hoploparia), burrow casts, shark's teeth, and swordfish. Our tour continued into a small museum store room to see examples of ammonites, ostra (oysters), a mammoth tooth, garnet, galena, granites and much more.

Both groups met back in the main museum for lunch and a chance to chat and continue looking round the cases of fossil fish, reptiles, rock specimens in geochronological order, and displays on local geology and local historical geologists such as Sir Charles Holcroft and Charles Lapworth.

At the back of the museum the main store room holds a treasure trove of rock, mineral and fossil specimens, some recently acquired by the Lapworth Museum from the Birmingham Museum and Art Gallery, after many years of negotiations. With the setting up of the Science Museum's 'Thinktank' at Millennium Point, many of the Birmingham Museum and Art Gallery's collections had to be packed away to avoid any conflict with the Thinktank. In the past the Lapworth Museum has tended to concentrate on palaeontological collections. However, the Birmingham Museum and Art Gallery collections have introduced many more rocks and minerals to the Museum. The neat labelling and storage of the newer collections was quite a contrast to the older Museum specimens that tended to be loose and roughly labelled, for example, a 'nice box of trilobites'. Jon told us of plans to refurbish the Museum with increased display space, and development of its educational and outreach facilities. Within the storeroom were wonderful examples of fossil fish, cephalopods, trilobites, corals, animal bones, polished wood cross-sections, orthocones and minerals like amethyst and other geodes. The new collections we saw included one of opals, malachite, azurite and calcites collected by the family of Dr E.W. Percy. There was a collection of various coloured minerals from Derbyshire, and specimens of resin and glass that belonged to Matthew Boulton, a leading pioneer of the Industrial Revolution.

Matthew Boulton (1728-1809) was born off Colmore Square, Birmingham and named Matthew after his father who manufactured fashionable metal objects, including 'toys', which had made Birmingham famous. Boulton joined his father's business in the early 1740's and by 1761 had married twice, taken over his father's business and acquired land at Handsworth, where he built his Soho Manufactory. He introduced modern production methods and a pioneering workers' insurance scheme, which provided assistance for his workers ►



The Soho Manufactory c. 1860.

in times of sickness, and was a model for later schemes. The Soho Manufactory continued to pour out and globally export jewellery, 'toys', Sheffield plate, sterling silver tableware, ormolu (gilded ornamental wares), coins, medals and tokens, and itself became a visitor attraction.

Boulton had a broad largely self-taught scientific knowledge and counted a number of well known scientific names amongst his friends. He knew about making alloys and different coloured metals from copper and zinc, such as yellowy gold brass (70% copper and 30% zinc) and mock gold, which used a highly toxic process of 'fire-gilding'. In 1766 Boulton, Erasmus Darwin and Josiah Wedgwood founded the Lunar Society and would meet on the full moon of each month to share sometimes ground-breaking scientific ideas. Many Lunar Society members, including Boulton, had interests in geology and were early plutonists. Boulton saw mineralogy as a ripe field for the Society and a useful source of knowledge for metallurgy, pottery and the chemistry of gases. Boulton discussed, with Wedgwood, designing vases from metal or metal-clay mixtures, but after finding ceramic too fragile he turned instead to stone, such as Blue John and marble. Two blue John vases are on display at the Soho House museum today. During the 1780's Boulton went on mineral and fossil collecting fieldtrips, to Cornwall, Cumberland and Cheshire, with Wedgwood and young Erasmus Darwin.

The increasing demand for minerals, such as coal, copper and tin in the early 1700's meant mining at greater depth, which brought with it risks from flooding. In 1775 Boulton went into partnership with James Watt who had improved the design of the Newcomen steam engine, which since 1715 had been used for dewatering mines. Together they developed a steam engine, which eventually became the driving force of the emerging Industrial Revolution. With Josiah Wedgwood, Boulton also became a major investor in the construction of a canal network linking the Rivers Severn, Trent and Mersey to improve transport links and making Birmingham the most land locked port in Britain.

Boulton's geological interests are not as well known as the legacy he left behind. He is also known for establishing the Birmingham Assay Office on New Street and the Soho mint, producing British copper coinage, setting up the Cornish Metal Company to support Cornish miners during times of poor copper production and sitting on the committee for the development of the Birmingham Dispensary and General Hospital. Although the Manufactory was all but demolished in the 1860's, parts of the Soho Foundry still survive in Smethwick. Soho house is now a museum and Birmingham's 'Thinktank' holds the world's oldest working Boulton and Watt steam engine. A golden statue of Matthew Boulton with James Watt and William Murdoch stands on Broad Street in the centre of Birmingham. More information on Matthew Boulton can be found in 'The Lunar Men', by Jenny Uglow.

I would like to thank Jon for an extremely enjoyable day at the Lapworth Museum, which produced many gasps of breath and ooohs! from those attending. (See p.15 for more on this visit. Ed.) ■

Andy Harrison

Warwickshire County Museum

"Our Museum is a little treasure"

Ian Fenwick (WGCG Chairman) sent notification of the re-opening of the County Museum in the Market Place, Warwick, on Saturday 27th March after many months of closure for refurbishment and expansion. The ground floor gallery space has been substantially expanded and the existing Geology Gallery has been refreshed with new materials on display that have not been seen by the public before. Jon Radley is the Keeper of Geology.

For more information see:
www.warwickshire.gov.uk/museum

Abberley and Malvern Hills Geopark

GeoFest 2010

Saturday 29th May to Monday 30th August

Activities and events highlighting and celebrating the geology, landscape and associated heritage of the Abberley and Malvern Hills Geopark. Guided walks, rock and fossil roadshows, displays and exhibitions, talks and demonstrations over the summer months across the Geopark from Bridgnorth to Gloucester. Hosted and promoted by the Abberley and Malvern Hills Geopark Partnership.

For a full programme and further details please visit: <http://www.geopark.org.uk> .

Living Fossils

Dawn Redwood, *Metasequoia glyptostroboides*, Family: Taxodiaceae.

There are another five species in this family: Japanese Umbrella Pine, Swamp Cypress, Coast Redwood (*Sequoia sempervirens*), Wellingtonia (*Sequoiadendron giganteum*), Japanese Red Cedar.

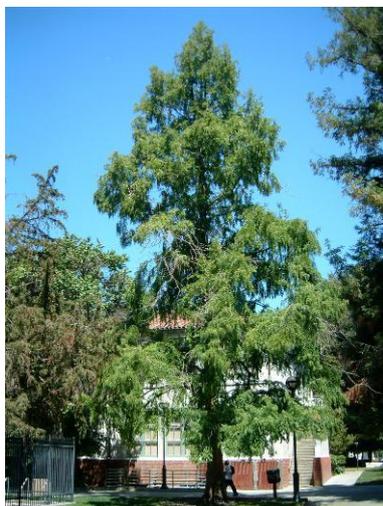


Photo: John Pozniak

This tree was only known through fossils and was thought to be extinct, until two Chinese botanists discovered specimens in Szechwan Province in China in 1941. The Chinese botanist T. Kan thought that he had discovered a new species of tree but it was subsequently found to correspond to the descriptions of the hitherto "fossil" genus *Metasequoia*. In 1948 seeds were collected from a planted and natural stand of about 1,000 trees in the Shui-sha valley in Hupei Province, and sent to botanical gardens and arboreta gardens all over the world.

Specimens in Great Britain had reached 19m by 1972, and the tree can reach 35-50m high with a pyramidal to rounded head. It is now widely planted in the British Isles.

It is a deciduous water loving tree that the Chinese called "water fir". The bark is pale orange-brown peeling off in brown plates or fibres. The trees come into leaf in early May. Leading shoots have dark green narrow leaves (needles), set spirally around the shoot. Side

shoots (around 8cm long), develop from buds along these shoots, bearing soft flat narrow leaves in pairs opposite each other, which are shed together with the branchlets in the winter. The leaves are straight or sickle-shaped, about 10-35mm long, bluish green above, ashy green beneath and turn red in autumn. The cones are about 18-25mm long with decussate scales, under each of which are five to eight double-winged seeds.

The taxodiaceae developed from the conifers which in turn evolved some 250 million years ago, and became widespread throughout the Triassic and Jurassic. By the Cretaceous, sequoias, pines, spruces and yews, amongst other modern families of conifers, were widespread. The earliest fossil conifers known, were found in Dudley dating from some 300-310 million years ago.

Maidenhair Tree, *Ginkgo biloba*, Family: Ginkgoaceae

The Ginkgo is the last in a long evolutionary line whose beginnings date perhaps from as early as the Devonian, at the latest from the Permian. The family flourished in the Triassic and Jurassic, which marked the peak of its development. It then went into decline and today *Ginkgo biloba* is the only surviving species. It is one of the oldest "living fossils", having survived unchanged for some 200 million years. In the Tertiary, ginkgoes were distributed throughout the Northern Hemisphere, as far north as Greenland. Nowadays, "wild" Ginkgos are to be found only in south-east China. Ginkgos have long been venerated and cultivated in the Far East, where they have been planted near settlements and monasteries. Some trees may live to the age of 2,000 years. The first ginkgos were brought to Europe around 1730, to England around 1758, and to the U.S.A. in 1784. Ever since, they have been grown in private gardens, especially in the south. The Ginkgo is a botanical curiosity of great aesthetic value for the unusual shape of the leaves.



Photo: Penny Mayes

Ginkgos have flat, distinctive fan-shaped deciduous leaves with veins fanning out from the narrow base. Male and female parts are carried on separate trees. Female trees are very rare. The brownish male catkins are around 7cm long. The female flower has a long thin stalk and two ovules, only one of which generally matures. The globular fruits are about 3cm across. ►

Wollemi Pine, *Wollemi nobilis*, Family: Araucariaceae

The Wollemi Pine was thought to be extinct and was only known from Jurassic fossils some 200 million years ago. On 10th September 1994, David Noble, a park ranger in the Blue Mountains west of Sydney, was exploring the gorges in the park when he stumbled upon a small grove of trees which he had never seen before. He did not recognise the species, and they were quite different from any other tree he had seen. The leaves were shaped like a Stegosaur's tail, and the bark was like bubbling chocolate.

Experts from the Royal Botanic Gardens, Sydney declared it to be an Araucaria, the same family as the ubiquitous Monkey Puzzle from Chile, beloved of Victorian gardeners in Great Britain. The Norfolk Island Palm, of which Victorians were also fond, is a member of the same family.



Photo: Fritz Geller-Grimm

It is thought that the Australian climate became increasingly dessicated as the continent slowly moved northwards, until the range of the Wollemi Pine shrank, confining the entire population to a single gorge system in the Wollemi National Park, in the Eastern Highlands. No more have been found since the initial discovery of fewer than 100 specimens. Seeds and seedlings of the Wollemi Pine were collected by the Royal Botanic Gardens to establish a population outside the gorge, and the site is now a closely guarded secret to protect this unique species from vandals and collectors.

Although the Wollemi Pine is one of the most threatened plants on earth, it is highly versatile and easy to grow. It tolerates heat and cold, full sun and also shade, which suggests that it was more than climate change which brought it to near extinction. It is the ultimate survivor, having outlived the herbivorous dinosaurs who dined upon it. It is the focus of a unique global conservation effort to give everyone the chance to grow their own tree and protect the future of this rare and endangered plant.

Kernock Park Plants, Cornwall, has the responsibility for this conservation effort in the U.K. However, so successful has this effort been, that specimens for sale are now appearing in many plant nurseries. I am very happy to relate to you that not only do I possess a Norfolk Island Palm, but I am also the proud possessor of a specimen of each of these plants, and so far they appear to be thriving. I now await the discovery of another "living fossil". ■

Gordon Hensman

Geobabble

Most of the items I have seen concerning Charles Darwin have been serious appreciations and commentaries. However, I recently came across two lighter items; one is a cartoon, and the other is from our poet laureate, *Carol Ann Duffy*. I was reading a small anthology of her poetry entitled *The World's Wife*, in which she views the lives of some of the famous men of history and legend, from the viewpoint of their wives. It is a very funny read and the characters range from Mrs Quasimodo to the Kray Sisters. Mrs Darwin also appears in a short three line poem. The cartoon is by Mike Williams and appeared in *Private Eye*. It involves Darwin walking his dog and the similarity between the phrases "Origin of Species" and "origin of faeces".

I cannot reproduce these items here because of copyright law. One of the strengths of these Newsletters is that they are a permanent record of the Society and are available to all on our website. Copyright is a problem that I have come across before in geology; you can take photographs, write commentaries, worksheets or study guides for educational purposes, and then later find that your material has appeared in someone else's work without your knowledge. It has been stolen. A geologist friend of mine came across an extreme case where a complete book had been translated from English to an east European language, a few minor changes made and published under a new author's name.

The publishers of my two little items have been very helpful in trying to get round the restrictions, waiving fees etc., but understandably could not agree to them being part of a *permanent* record on the internet. ■

Bill Groves

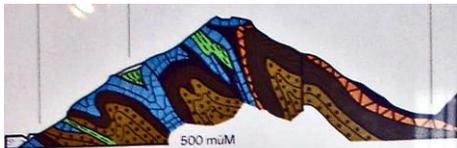
Schynige Platte



Eiger, Monch and Jungfrau (Photo 1)

Schynige Platte is a limestone ridge in the Jungfrau region of Switzerland. Although standing at just under 2,000m it is dwarfed by the Eiger, Monch and Jungfrau mountains (Photo 1), the latter two at over 4,000m. It can be reached the comfortable way by cog railway from Wilderswil (nr. Interlaken) or for the really energetic by a 1,500m climb. One of the attractions at the top, apart from what must be one of the best views in Europe, is an alpine garden, in which a large variety of alpine plants are collected together in their natural environment. I have visited this location many times over the last 20 years as it was a special attraction for my wife Margaret, who was a botanist.

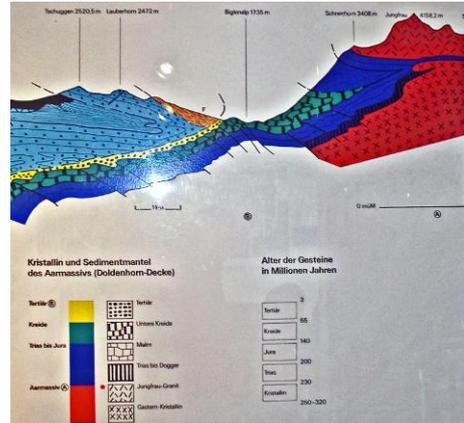
I visited it again last year to find it has been significantly improved and one of the new features is a small museum of the natural history of the area, including the geology of the region and its relationship with the flora. There are several very clear descriptive wall charts



Schynige Platte section (Photo 3)

The Jungfrau region remains my favourite holiday venue and for anyone visiting the area a trip to Schynige Platte is highly recommended. It is possible in about 6 hours to walk the length of the ridge past the location shown in photo 4 and descend by gondola from First to Grindelwald. Not only does this give the most magnificent views in all directions but the geology can be studied close up. Unfortunately you cannot spend too much time en-route or you will miss the last gondola to Grindelwald and it is a very long walk back! ■

There are several very clear descriptive wall charts (in German!) showing the very complex folded structures typical of the Alps and show cases contain actual samples of the various rocks. One of the displays (Photo 2) shows a section through the Jungfrau and the neighbouring Lauberhorn, famous for the Wengen downhill ski race held every January as part of the World Cup series. The Jungfrau is part of the granitic "Aarmassiv", whilst most of the locality is composed of folded sedimentary rocks ranging from Jurassic to Tertiary. It is interesting to note that the Germans still use the term Dogger to indicate the middle of the Jurassic period.



Jungfrau & Lauberhorn section (Photo 2)

The second section (Photo 3) is through Schynige Platte itself, illustrating the folding in the Jurassic and Cretaceous strata of the region and this is beautifully illustrated by the view along the ridge (Photo 4).



Schynige Platte ridge (Photo 4)

Peter Twigg

Have a look at our new website at: www.bcgs.info

Members' Forum

Letters/emails



We have had a request from Warwickshire Geological Conservation Group:

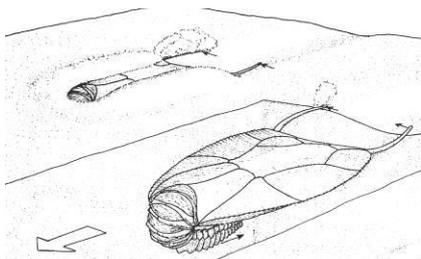
'Hugh Jones - our WGCG building stones "king" - has asked me to circulate the attached photograph of a building which he is anxious to identify. It may, or may not be, in Warwickshire! Can you help?' If so, please contact Ian Fenwick: swift@ianfenwick.f2s.com or 01926-512531. ■

An armour plated “Tadpole” from the Wren’s Nest.

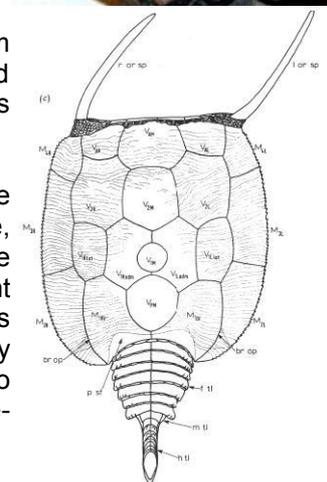
During the February trip to the Lapworth Museum, whilst browsing through the vast collection of local Silurian fossils, we stumbled upon a drawer labelled ‘miscellaneous’ and indeed it did contain many, as yet, unidentified fossils. However a number of fossils were labelled as **Placocystites forbesianus**. I must confess to never having recalled seeing this strange fossil before. As the photo below shows, it has the appearance of a crinoid, but with two prolonged ‘appendages’ and a short tapering tail. It lacks the five-fold symmetry typical of crinoids and echinoderms. It has a flattened body or theca and a nearly bilateral symmetry.



A little research revealed that this fossil is featured in the book “British Palaeozoic Fossils” book under the Order Carpoidea. Carpoidea were apparently mobile, bottom-living or shallow-burrowing creatures. They were detritus or suspension feeders, sifting out small food particles from the top layer of soft sediment or from the surrounding seawater. Detailed observations of gill slots have also been made and the plated tail was believed to have been used for locomotion as illustrated below.



They were at one time believed to be proto-vertebrate, a primitive chordate, with a calcite echinoderm-type skeleton. However current researchers seem to group them as an extinct type of echinoderm. I really liked one description which referred to this creature as an over-sized, calcite-plated tunicate tadpole.



The Lapworth museum had a draw full of these specimens, I wonder how many there are in the Dudley museum collection? ■

Graham Hickman

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