



The Black Country Geological Society

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Newsletter No. 230

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**Copy date for the
next Newsletter is
Tuesday 26 May**

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For enquiries about field and geoconservation meetings please contact the Field Secretary.
 To submit items for the Newsletter please contact the Newsletter Editor.
For all other business and enquiries please contact the Honorary Secretary.
 For further information see our website: www.bcgs.info

Future Programme

**Until further notice meetings will be held in the
 Abbey Room at the Dudley Archives, Tipton Road, Dudley, DY1 4SQ
 7.30 for 8.00 o'clock start unless stated otherwise**

**Please let Andy Harrison know in advance if you intend to go to any of the field or
 geoconservation meetings. If transport is a problem for you or if you intend to drive
 and are willing to offer lifts, please contact Andy with at least 48 hours notice.**

Monday 20 April (*Indoor meeting*): 'Dawn of the giants: how dinosaurs rose to dominate the Triassic world'. Speaker: Dr Richard Butler, University of Birmingham.

Saturday 25 April (*Field meeting*): Broadway Quarry, Worcestershire, led by Steve Birch, (BCGS). Meet at 10.30 at the quarry entrance (NGR: 411951, 236875). Off the A46, follow the A44 and the signs for 'Broadway Tower', visible in the distance. Follow the A44 up a steep zig-zag road, to the top of the hill. At the top, immediately on your right, there is a private road signed 'Fish Hill'. The quarry entrance is just up this road. Please bring stout boots, hi-vis jacket and hard hats if you have them, and a packed lunch.

Sunday 10 May (*Geoconservation day*): Rose Hill Quarry, Lickey Hills. Quarry clearance session with the Lickey Hills Geo-Champions, directed by Steve Hinton, Senior Ranger, Lickey Hills CP. Meet at 10.30 at the Lickey Hills Visitor Centre, B45 8ER. Bring hard hats if you have them, gloves and a packed lunch. (Some hard hats available at the VC for those without.) Wear old clothes and strong footwear. Tools will be provided. Finish at 2.00. For more information about the Lickey Hills and to see recent postings and photos of work-in-progress at this site go to: http://ehtchampions.org.uk/ch/?page_id=76

Saturday 23 May (*Field meeting*): The Geology of Droitwich, led by Andy Harrison. Meet at 10.30 adjacent to the main library, opposite the Raven Hotel, Victoria Square, Droitwich town centre (NGR: 389867 263226). We will look at the geological setting and building stones of Droitwich and how geology has played an important role in shaping the town. Pub lunch. Please call Andy Harrison (07973 330706) to express an interest in attending.

Saturday 13 June (*Field meeting*): Rock around The Wrekin, led by Andrew Jenkinson, (Shropshire Geological Society). Meet at 10.30, Forest Glen car park, (GR: SJ 638093), approx 1km south of M54 Junction 7. We will look at the Forest Glen Quarry, the Wrekin (views towards Snowdonia and the Cotswolds), the Cambrian unconformity of the Ercall (Ordovician Shineton Shales over the Lydebrook Sandstone), the Carboniferous Limestone (with Little Wenlock Basalt intrusion), and the opencast coal mines of the Coalbrookdale Coalfield. After a picnic lunch we'll visit the Ironbridge Gorge, Silurian Wenlock Limestone sites and others. Concluding with a brief discussion as to whether OS grid square SJ60 is in fact the most geologically varied 100 sq km in the whole world! Finish 4.30 (approx.) Wear suitable footwear for some slightly rough walking.



BCGS 40th Anniversary



Saturday 4 July, 10.30 - 3.30 at Dudley Museum and Art Gallery
St James's Road, Dudley, DY1 1HU

This is a joint event with the Museum and Art Gallery's bicentenary celebration of the publication of William Smith's geological map of England and Wales, featuring a rare copy of the 1815 map. There will be talks and displays to celebrate the Society's 40 year history, a buffet, and a chance to catch up with BCGS members past and present. BCGS members will receive full details in due course.

**NB: The Museum and Art Gallery will be open as usual, featuring the two anniversary displays.
The talks and buffet are for BCGS members and invited guests only.**

July and August (Field meetings): BCGS 40th Anniversary Field meetings. Details tbc.

Monday 21 September (Indoor meeting): Speaker: Ralf Gertisser. (Title tbc.)

**Monday 19 October (Indoor meeting): 'In search of ancient subduction sites in the UK'.
Speaker: Chris Darmon,** Geo Supplies and 'Down to Earth' magazine.

Monday 16 November (Indoor meeting): 'Insights into the glacial history of the British Isles: the newest methods and theories'. Speaker: John Groves.

Monday 7 December (Indoor meeting, 7.00 for 7.30 start): BCGS Members' Evening and Christmas Social.

Procedures for Field Meetings

Insurance

The Society provides public liability insurance for field meetings but personal accident cover is the responsibility of the participant. Details can be obtained from the Secretary. Schools and other bodies should arrange their own insurance as a matter of course.

Health and Safety

If you are unsure about the risks involved or your ability to participate safely, you should contact the Field Secretary. Please take note of any risk assessments or safety briefing, and make sure that you have any safety equipment specified. The Society does not provide hard hats for use of members or visitors. It is your responsibility to provide your own safety equipment (eg. hard hats, hi-viz jackets, safety boots and goggles/glasses) and to use these 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.

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

Other Societies and Events

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.

The Oxford Mineral Show

Sundays: 10 May, 12 July, 13 September & 29 November 10.30 - 4.00. Exeter Hall, Kidlington, North Oxford, OX5 1AB. Free Admission. Free parking on site. For further information see: www.oxfordshow.co.uk

Geological Society, West Midlands Regional Group

Tuesday 12 May 18:30: The CL:AIRE Illustrated Handbook: LNAPL transport and fate in the subsurface. Speaker: Dr Mike Rivett Senior Lecturer (University of Birmingham). Venue: University of Birmingham, Haworth Room 101. (**CL:AIRE** = Contaminated Land: Applications In Real Environments. **LNAPL** = Light non-aqueous phase liquid.)

For further details and to register your interest in attending, please contact the Group Secretary at: geolsoc_wmrg@live.co.uk

Manchester Geological Association

Saturday 30 May: 'Todmorden Moor'. Led by Dr John Knight, President Yorkshire Geological Society. Joint trip with GeoLancashire and Yorkshire Geological Society. Part of Yorkshire Geology Month.

Sunday 28 June: 'Wirral'. Led by Hilary Davies. Joint trip with GeoLancashire.

For further information about meetings go to: <http://www.mangeolassoc.org.uk/> or email Penny Heyworth at: outdoors@mangeolassoc.org.uk Visitors are always welcome.

Mid Wales Geology Club

Wednesday 15 April: 'The Geology of War'. Speaker: Roy McGurn.

Sunday 26 April: Field visit to Hendre Quarry, near Ysbyty Ystwyth. Led by Professor David James.

Wednesday 20 May: 'Historic Landscapes in Wales: The Work of Clwyd Powys Archaeological Trust'. Guest Speaker: Chris Martin, CPAT.

Sunday 31 May: Field visit to Hergest Croft gardens, nr. Kington (private geological collection & archives) and **Bradnor Hill**. Led by Robert Williams. (There is a charge if you also wish to tour the gardens.)

Further information: Tony Thorp (Ed. newsletter & Hon. Sec): Tel. 01686 624820 and 622517 jathorp@uku.co.uk Web site: <http://midwalesgeology.org.uk> Unless otherwise stated, meetings start at 7.15 (tea/coffee & biscuits) with talks at 7.30 at Plas Dolerw, Milford Road, Newtown.

Shropshire Geological Society

Friday to Sunday 24-26 April: Weekend field meeting in Bath in celebration of William Smith's Map of 1815. Led by David Pannett. Book to reserve a place and obtain joining instructions from David Pannett; email: jessicapannett@hotmail.co.uk; telephone: 01743 850773.

Saturday 16 May: Rock Around the Wrekin. All day meeting (walking) looking in the NW quarter of SJ60 at the relationships between rock and landscape. Led by Andrew Jenkinson. Book to reserve a place and obtain joining instructions from Andrew: email: andrew@scenesetters.co.uk; telephone: 01938 820764.

Saturday 6 June: Around Ludlow: All day meeting (walking) looking at the Silurian. Led by Mike Rosenbaum. Booking to reserve a place and obtain joining instructions from Eva Peringer; email: pertam@evaperinger.plus.com; telephone: 01746 764189.

Generally held at Shire Hall, Shrewsbury, commencing at 7.15 for 7.30. Note that the venue might have to be changed, depending on the possible sale of Shire Hall. A nominal charge is levied for attendance by non-members. Further info at: www.shropshiregeology.org.uk/

Woolhope Naturalists' Field Club - Geology Section

Sunday 26 April: 'Huntsham Hill geology and landscape'. Led by Moira Jenkins.

Sunday 14th June: 'Tortworth Inlier'. Led by Dave Green.

All indoor events are held in the Woolhope Room, Hereford Library starting at 5.30 unless otherwise specified. Guests are welcome, but must take day membership of the Club: £2.00. Further information: Sue Hay on 01432 357138, email svh.gabbros@btinternet.com or visit their web site: www.woolhopeclub.org.uk/Geology_Section/default.htm

Warwickshire Geological Conservation Group

Wednesday 15 April: 'The Geology and Blue Schist metamorphism of the Ile de Groix' (off the south coast of Brittany). Speakers: Mike Allen and Frank Wells.

Saturday 18 April: 'The Building Stones of the Rugby area'. Led by Hugh Jones. Meet: 2.00 at Southam Church (parking on-street or off the Coventry Road at CV47 1PP).

Wednesday 20 May: 'Geology & Landscape of Ebrington Hill'. Led by Brian Meredith. Meet 6.30 Hidcote gardens car park (GL55 6LR: GR SP 176430).

St Francis Church Hall, Warwick Road, Kenilworth CV8 1HL. Starting at 7.00 for coffee before a 7.30 start. For more details visit: <http://www.wgcg.co.uk/> or contact Ian Fenwick swift@ianfenwick.f2s.com or 01926 512531. There is a charge of £2.00 for non-members.

Teme Valley Geological Society

Monday 13 April: 'Snowball Earth.' Speaker: Professor Ian Fairchild

7.30 at the Martley Memorial Hall B4197 by Sports Ground. £3 non-members. For more details visit: <http://www.geo-village.eu/> or contact Janet Maxwell-Stewart, 01886 821061

East Midlands Geological Society

Saturday 18 April 2.30: 'Confessions of a Flint Knapper'. Lecture by Phil Harding.

Non Members are welcome. Meetings will take place in lecture theatre B3 of the Biology building at the University of Nottingham. Further info at: www.emgs.org.uk or email: secretary@emgs.org.uk

The Geology of the Marches - Murchison to the Modern Era

Friday 2 - Sunday 4 October: Symposium, open to all in the Assembly Rooms, Ludlow.

Self-guided Ludlow geology trails; Museum Resource Centre workshops; Three keynote lectures; Discussion groups; Displays; Museum tour; Symposium dinner; Choice of guided field trips.

Emeritus Professor Martin Rudwick (Cambridge): 'The King of Siluria - how the Marches became known to geologists everywhere'.

Dr Alex Liu (Bristol): 'Pits, Mounds & Animal Evolution, what we have learned from the Ediacaran Rocks of Shropshire'.

Emeritus Professor David Siveter (Leicester): 'Sensational soft-bodied fossils from 425Ma volcanic ash: The Herefordshire Lagerstätte'.

Further information, links to trail guides, booking forms, full programme and charges: www.geo-symposium.eu email Paul paulolver@hotmail.com or David 01886 888398

'Wild About Perton' - Spring Festival

Saturday 25 April in and around Perton Library. The Spring Festival is a community event organised in partnership with Perton Library and South Staffordshire Council. With a strong wildlife and environmental focus it aims to inform and engage a broad audience including young families and older teenagers and has linked events organised with local schools, community and local businesses to maximise outreach within the local community. The 2014 Festival was the most successful yet with some 2,000 people attending and 30 participating organisations. This year they hope to introduce some science based activities.

Photographic Competition 2015

The West Midlands Regional Group of the Geological Society, in joint partnership with BCGS and the North West and South Wales Regional Groups will launch their Photographic Competition 2015 in April. The competition is sponsored by Geotechnical Engineering Limited.

This year is the 200th anniversary of the publication of William Smith's famous geological map: 'A Delineation of the Strata of England and Wales'. Numerous events are planned throughout the year to celebrate Smith's seminal achievement, so this year's photographic competition will chime with this theme, and will focus on British geology, and British applied geology.

The competition will run until 1 December. Judging will be independent, with the BCGS and each Regional Group selecting a member of the Judging Panel - and once again there will be prizes! We will keep you posted as details are confirmed, but it's not too soon to start looking at our own home-grown geology with a photographer's eye.

Editorial - BCGS 40th Anniversary Year

We need your help!



The new web site is up and running, (see John Schroder's article on p.11) and the photo archive has already exceeded 100! Thanks to all those who have lent or donated photos to get this started, but we still need much more help! In the last issue I also asked for your BCGS reminiscences for us to publish in the Newsletter. For the 40th anniversary event in July we'd like to use these to create some sort of a 'story poster' on the lines of the 'Story Stones' at the Wren's Nest. So far no-one has responded to this plea. You may know others who were formerly members of the Society, or have had some association with it. Please spread the word that we want lots of contributors for this project - even just one sentence will do! So think about these things and please get in touch:

- How long have you been a BCGS member?
- Do you have any recollections (pleasant or painful!) of BCGS meetings or field trips?
- Do you have any photos or documents you can send to us? (They will be returned.)
- What does (or did) the Society mean to you?

If you have anything to contribute please contact the Newsletter Editor or Hon. Secretary (details on p.2)

Please note (p.3) the outline sketch for our 40th anniversary event. The committee is working on the programme, and all paid-up members of the Society will receive an invitation with full details. This will also be sent to our invited guests. There are quite a few of you who have not yet renewed your membership, so we would ask you to do this as soon as possible, either at the next indoor meeting or by sending your subscription to the Honorary Treasurer: Alan Clewlow, 19 Manor Court Road, Bromsgrove, Worcestershire, B60 3NW. email: treasurer@bcgs.info (Full details for renewal are in the December Newsletter, p.12.)

Finally, please note the early copy date for the next Newsletter: **Tuesday 26 May.** ■

Julie Schroder

Geoconservation: September 2014 to March 2015

It's that time of year once again when nature is busy waking up and putting geoconservation work on hold until the autumn returns. Over the 2014/15 season BCGS members have been busy working on sites old and new to continue with the on-going battle to keep important exposures clear.

Saturday 6 September 2014: Portway Hill Quarry, Rowley

This was a return visit for BCGS members under the guidance of Paul Stephenson from the Birmingham and Black Country Wildlife Trust. The day was rather cloudy, grey and breezy, when we met at the usual spot, off St Brades Close for 10:30. The summer's vegetation, especially the bramble, had rapidly regrown over the area we had cleared the previous February. Paul spoke of the on-going battle to keep the bramble clear. Not only does it obscure the geology, but it also prevents the growth of important plant and wild flower species that have come to colonise the site. The wealth of these seen at Portway Hill Quarry does not necessarily appear to correlate with the underlying geology. Instead, it probably results from the variety of materials (i.e. blast furnace slag and colliery spoil, that have been used to infill the quarry) and the topography left behind from human activities.

This visit was also our first opportunity to see the monument cairn and seat built of dolerite cobbles and boulders from across the site, which was completed in February 2014. Unfortunately the metal plaque on the top of the cairn had already fallen victim to the work of local vandals.

Sunday 5 October and Sunday 2 November 2014: Doulton's Clay Pit, Saltwells Local Nature Reserve

BCGS members have been here many times on field visits, but not necessarily to undertake any geoconservation work. Both days were cold and cloudy with variable amounts of precipitation when we met Head Warden, Alan Preece, in the Saltwells car park around 10:00. We were also joined by members of the local 'friends' group.

After years of neglect there is much to do at this site and Alan was pleased with our help. Saltwells is a three times geological SSSI, with many important exposures showing Carboniferous Coal Measures and Silurian Wenlock Series sequences. At Brewins Bridge cutting on the Dudley No. 2 Canal the contact between these two sequences is well exposed.



In Doulton's Clay Pit, so named after the Doulton Pottery Company who extracted fireclay from this location, we spent time clearing scrub, saplings and undergrowth from the northern and eastern slopes. The bottom of Doulton's Clay Pit contains a marshy, acidic habitat, which is important for many plant and insect species, such as orchids, dragonflies and butterflies. Clearing the vegetation not only exposes the clay beds, coal seams and sandstones of the Coal Measures strata, but also helps to manage this habitat too. There is still much work to be undertaken at this site including the felling of larger trees and clearance work at other locations, such as the incline and Brewin's Cutting. However, some of the work requires specialist contractors with the appropriate tools and training, which of course costs money. So whatever voluntary help Alan can get is much appreciated.

Saturday 6 December 2014 and Saturday 28 February 2015: Pinfold Lane Quarry, Barr Beacon

The December visit was the most successful, unlike the January meeting, which had to be moved to February due to bad weather. As the February visit was not well attended further work was postponed.

The December weather was frosty, cold and occasionally sunny when we met Helen Sanger (Senior Countryside Ranger - Walsall MBC) at 10:30 in the main Barr Beacon car park. Kindly Helen also came equipped with tea and coffee.

Clearance work generally involved removing a lot of undergrowth, mostly brambles which had appeared over the summer, and more trees from the bottom of the quarry. Much more work is still required at this site ►

such as tree clearance, path improvements using existing on-site sources, and erecting some kind of interpretation display board. In February it was observed that horse riders are using and churning up the path through the bottom of the quarry and a new crack has opened up in the northern end of the Hopwas Breccia exposure. Apart from brambles the other issue facing the quarry and other sites like it are the cut backs in local Government and sapping of funds.

Sunday 22 March 2015: Rose Hill Quarry, Lickey Hills Country Park



This geoconservation session was changed from the advertised site (Barnt Green Road Quarry), since it was felt that there was more to be done at Rose Hill. BCGS members last visited Rose Hill Quarry during a field visit to the Country Park in June last year. Then the quarry was very overgrown, thick with trees and it was difficult to see much.

Since then the Country Park wardens and the Lickey Hills GeoChampions have been putting a lot of work into the quarry. Many trees and much vegetation, such as rhododendron, have been removed and used to form a dead hedge along the quarry perimeter. There is also ongoing work to reduce the piles of spoil in front of the main quarry wall to produce a level platform across the

quarry floor, while exposing the lower parts of the wall. It is hoped that conditions on the quarry floor can be improved to make access easier, put in official walkways and create marshy habitats for wildlife. There are also plans to include an interpretation board in the quarry.

The main wall of Rose Hill Quarry comprises an exposure of the Lickey Quartzite, which according to a paper written by Professor W.S. Boulton (Birmingham University) in 1928, also exhibits an example of thrust faulting within this stratum. There are no obvious signs of such a feature in the parts of the exposure currently visible; however it is anticipated that this could be deeper down, beneath the spoil that covers the lower parts of the wall.

We met with Julie and the Lickey Hills Wardens and GeoChampions at the Nature Reserve's Visitor Centre, at 10:30 on a cold and cloudy spring morning. After collecting tools we made our way to the quarry to begin work shovelling spoil and exposing tree roots from the base of the main quarry wall. The quarry looked very different from how it had during the BCGS visit in 2014 - more open and light, with the main wall more visible.

Finishing at around 14:30, with much achieved but much more to do, it was decided to hold another clearance session in this quarry before the summer onslaught of vegetation growth. All the sites we visit require ongoing maintenance and further work doing to them and they all require the attention of hard working volunteers to help with the battles of encroaching vegetation, Government cuts and misuse. All this hard work not only helps to rediscover local geology and help wildlife, but is also beneficial to local communities, and brings with it a good degree of satisfaction and well being.



Some of our geoconservation sessions this year have rather poorly supported by our members. There is one last chance to make a difference this season, so please come along to Rose Hill Quarry on Sunday 10 May (details on p.2). Geoconservation sessions are fun - not all hard work, so whether or not you've attended one of these sessions before, come along and you'll be made very welcome.

I would like to thank the various reserve wardens for their time and all those who have helped out over the past seven months. We look forward to seeing BCGS members helping out on 10 May and when the autumn season starts later this year. ■

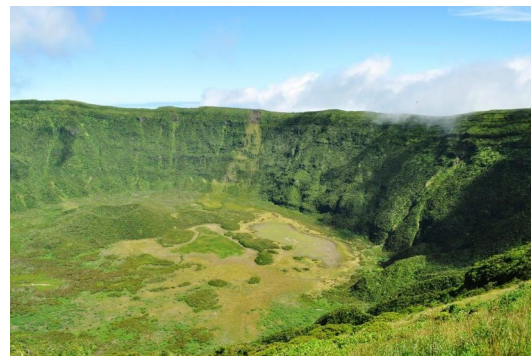
Andy Harrison

Geology of the Azores (Part 2)

This article is the second part, following Part 1 (Issue 229), and the talk I gave at a BCGS meeting in November last year. It is based on a group visit made to the Azores in 2014. In the last newsletter I gave a general introduction and a description of some of the locations we visited on São Miguel. This part deals with locations on Faial and Pico islands, which are situated in the central group of the three clusters which make up the Azores islands.

Faial

Faial is a very small island - only 21km long and 1km wide. Our group used a hotel on the main island town of Horta as a base for visiting Faial and the island of Pico, just four miles away across the Canal do Faial, the channel which separates the islands. At the centre of Faial is the large stratovolcano called Caldeira, reaching up to 1043m above sea level. The island lies on a fissure line running broadly NW-SE on the eastern flank of the mid-Atlantic ridge. As well as the main volcano on the island, there is a series of cinder cones which have developed along the same fissure line. At its most westerly point, the newly created Capelinhos volcano marks the location of the most recent major volcanic eruption in the Azores, which lies on the same fissure line as Caldeira. The oldest rocks on the island of Faial have been dated at 730,000 years.



The crater rim and floor of the Caldeira volcano on Faial

The Caldeira stratovolcano dominates the centre of the island. It is made up of lava flows and airfall deposits of alkali rich rocks with usually low or intermediate silica content - hawaiite, mugearite and trachyte. As its name implies, the main crater at the centre is a caldera, created by a large explosive eruption which emptied the magma chamber below, allowing the central section to collapse. This created a huge circular depression with steep-sided walls which are almost vertical in places. The Caldeira crater is about 2km in diameter and 470m deep, and its height above sea level is 570m. Much of the volcano is carpeted with a thick layer of pumice, produced by the eruption which created the caldera, probably about 30,000 years ago.

Since that time there have been a number of eruptions. The crater contains a dome and cinder cone on its floor and there are also a number of basalt cinder cones high on the volcano's sides. The most recent eruption was a small event within the crater, which took place in 1959, following a much more extensive event in 1958 associated with the Capelinhos eruption. Our group visit in 2014 included a complete walk around the rim of the caldera, which should have given spectacular views over the whole island, but unfortunately, this was marred by a low cloud base - at times we were lucky to see the crater floor!

The last major eruption in the Azores took place between September 1957 and October 1958. The eruption began offshore, in the area of the 'Ilheus dos Capelinhos' (Capelinhos islands). These lay about a kilometre out to sea from the cliffs making up the most western point of Faial, but still part of the Caldeira stratovolcano. After numerous earthquakes in mid-September, the eruption began quite violently, with huge volumes of black basalt ash being hurled up to a kilometre into the air, piling up on the sea bed around the



The old lighthouse and deposits from the Capelinhos volcano eruption of 1957-58 which buried the old Capelinhos islands. The old coastal cliffs are in the foreground.

islands. Over the following months, there were alternations between weeks of intense activity and periods of calm. Many of the eruptions were of the 'Surtseyan' type, where sea-water had entered the feeder-vent, mixing with rising magma to explode out into the air large volumes of ash. The feeder vent changed position at times, and when sea water was not reaching it, basalt lava flows were produced at the surface instead.

In May 1958, activity shifted inland up to the main caldera, which was producing fire-fountains in the Caldeira volcano. By the time all activity ceased a few months later, the Capelinhos islands no longer existed, having been buried under all the ►

new material. They now form part of the main island of Faial, which had increased in size by 2.4 square kilometres, though since that time rapid marine erosion has removed more than half of the new land originally created.

There is now an excellent information centre close to the old lighthouse, from which the early stages of the eruption were observed. It gives a detailed account of the various stages of the eruption, including a 3D video presentation. The group also took the opportunity to climb the old lighthouse, to take in the best views of the area and imagine what the lighthouse keeper was seeing at the time of the eruption.

There are two prominent features close to the main island town of Horta, an easy walk from our hotel in the town. Just to the south of the harbour lies Monte Queimado. It is a basaltic cinder cone, much eroded, made up of red and black basaltic cinders that probably erupted on land. Lying just to the south of this is Monte Guia. This has an unusual shape, with two circular cones which overlap each other (see front page photo). Monte Guia is built of fine yellow ash, suggesting it erupted in shallow water. The outer southern wall is eroded by the ocean, forming a sheltered natural cove. It is believed that Queimado is older, formed when sea level was lower, so the eruption occurred on land. Monte Guia formed later, after a rise in sea level. The two together have created a sheltered harbour and beach, though this old harbour is now little used, having been replaced by the much larger modern harbour. Both these peaks lie on the same fissure line as Caldeira and Capelinhos.

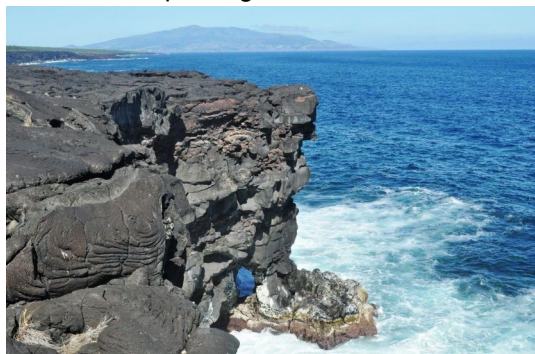
Pico

The whole island of Pico is part of, and has the same name as, the huge stratovolcano of Pico, the peak of which dominates the western part of the island. It is the youngest of the Azores islands, with the oldest rocks being only 37,000 years old. The island is also the second largest in the Azores and elongated in shape, around 50 km long but only 16km wide at its broadest point, in the west. It lies on the same NW-SE fissure line as the one which passes through Faial, and the shape of the island reflects this. The fissure line has produced a series of cinder cones forming the backbone of the island extending out to the east. There are also cinder cones on the slopes of Pico. The other key features of the island are the 'Mistérios' - huge recent black basalt aa lava flows. These have emerged from the higher parts and flowed downhill to spread out on the coastal platforms, covering wide areas and giving the unofficial name to the island as the 'Black Island'.



The summit of Pico, viewed from the east. The change in slope and 'Piquino' cinder cone forming the summit can be seen.

Though a long way from the mainland, Pico is the highest mountain in Portugal, at a height of 2351m. It is a stratovolcano, consisting of many black basalt lava flows with other layers of a mixture of volcanic ash, lapilli (small lava bombs) and cinders. The whole island forms part of the volcano, which began as a seamount growing from the ocean floor at a depth of 2000m. The volcano has a very distinctive profile. Its lower slopes have a more gentle slope angle, and here it takes on the appearance of a typical basalt shield volcano, with extensive outpourings of black basalt lava flows, peppered with over 100 cinder cones, many stretching out



Cliffs and coastal platform at Lajidos de Santa Luzia, one of the 'Mistérios' of Pico (Caldeira volcano of Faial in the distance)

on the WNW-ESE fissure line. The basalt tends to be free-flowing, covering some distance before cooling, hence the low slope angle. Above this, the higher part of the volcano (called 'Pico do Pico') has a much steeper profile. Chemically, the lavas making up the upper part are much the same as those on the lower slopes, and the rock-type is the same. The reason for the difference in slope angle is believed to be due to a concentration of activity here, causing a more rapid build-up at a particular time. At the very top of the volcano is 'Piquino', a cinder cone 60m high, which forms the summit of the volcano. Our group visit took us to the highest point a coach can reach on the volcano. For the fit and healthy, it would take a whole day, with an early start and late finish to reach the summit from this point and to return. ►

Possibly the largest and most spectacular in the whole of the Azores, the 'Gruta das Torres' is one of a number of lava tubes found on the island. It is located a few kilometres inland from the main island town of Madalena, on the lower western slopes of the volcano. When most of a lava flow has cooled sufficiently to solidify, there may still be passageways that lava can flow through downslope, under the influence of gravity. Provided the lava keeps moving, the passageway is maintained. Eventually, it may all drain away, leaving a lava tube or tunnel behind. In some cases, the lava leaves evidence of its level at different times in the form of flow-lines, and occasional features such as 'lava stalactites', where lava has dripped from the roof of the tube.

Our group spent some time walking on the 'Lajidos de Santa Luzia', on the northern side of the island, close to the airport. This is one of the many so-called 'Mistérios' on the island - black basalt lava flows which have spread out onto the coastal platform, covering large areas. The most recent lava flows have not had time to be weathered and covered by a carpet of vegetation. This gives a dramatic landscape, with a huge area of fairly smooth black basalt exhibiting features associated with typical pahoehoe lava flows: ropey lava, lava toes, tumuli, lava trenches and tumuli mounds.



The 'Cañadas' on Pico. A network of lava stone walls built to give protection from the wind to the vines being cultivated on the basalt lava platform.

The term 'Cañadas' describes features found on a part of the island's coastal platform where agriculture has taken place. The soil developed on the basalt lava platform is very fertile, though quite thin in places. Vines in particular grow well in this climate and to protect them from the strong winds which frequently blow, a network of stone walls was built in the past, using the readily available local basalt. Although in most places the cultivation has ceased, the stone walls are preserved and the landscape is very distinctive, possibly unique. For this reason, the landscape lying on the western part of the island, to the south of Madalena, has been declared a World Heritage Site by UNESCO. ■

Alan Clewlow

A new look for the BCGS Website (bcgs.info)

To celebrate our 40th anniversary our website has been overhauled with a move to WordPress which is a 'content management system'. This makes it easier for a website to have a style that is the same on each page. WordPress also has many plugins which do helpful jobs such as keeping a calendar or a photo album. We have also moved to a different hosting company which doesn't limit the size of the website.



I would like to thank Graham Hickman for his hard work on the previous site which has largely been transferred to the new one. Graham has been a long-standing, stalwart member of the Society and it is due to his efforts that we have the complete set of BCGS Newsletters on the website. Graham continues his work for us as our 'geowebmaster' and will respond to geological website queries that are emailed to him. I have taken over the day to day running of the website and have also joined the Committee, so that we can keep the website updated with the latest news.

The new site shows the next 5 meetings in the column on the right of most pages, and further information can be found in the Programme of Events. When you visit the Programme of Events page you will find the events come up in a list covering 2 months at a time. If you prefer, you can click the 'view as grid' to see one month displayed in this form. You may notice that events have a map link which will take you to the appropriate Google map with a flag. Events also have an iCal link which will download the details of the event to your computer, smart phone or tablet. This is in the standard form recognisable by calendar programs on computers and smart phones, so it is easy to get all the information to your machine. ►

We have started a photo archive of Society events on the website. Each year has its own page with a photo album for any month for which we have photos. We have been fortunate to receive photos from Peter Parkes and Peter Oliver from the early years of the Society and from Barbara Richards with some more recent additions. If anyone has photos that they would be willing to include in the archive please get in touch with me or another Committee member. Obviously it is easier for me to include electronic copies where possible but I can scan both prints and transparencies, so don't hold back on that account. If you think the colour has faded, that needn't be a problem either as there is some clever software available these days for restoring photos.

In 'The BCGS Society' drop-down menu we have a section on our more recent geoconservation efforts with some of Andy Harrison's Newsletter reports being given prominence. Our 'Young BCGS' section draws heavily on the 'Dudley Bug' pages that Alison Roberts and Chris Broughton wrote for the Newsletter.

If you notice any errors, or think that we could make improvements, or have suggestions for additional material, please get in touch as we want the website to be a useful resource. It would be helpful if members living near any of the sites mentioned on the website would keep us up to date with conditions and accessibility. ■

John Schroder (Webmaster)

Geobabble

Those who are keen on geology, tend to be collectors. It might start with fossils, minerals or rocks, and over time these collections will grow. Storage can be a problem at home: should they be in a place where they are on view, or put away somewhere? With time the amateur geologist will collect other related items: notes from fieldwork, maps and books. The professional may have the luxury of an office, or part of an office in which personal possessions can be kept, whereas most of us will use our own home. If you are sharing your home with your husband, wife, partner or some other person you will have to come to some arrangement as to where your collection is to be located. If the whole household is keen on geology there should be no problems, but if you are the only one with an interest, great understanding is needed.

Over the years you can build up a formidable collection. I picked up, and kept my first specimen in 1956, and it has gone on from there. The prize specimens end up on a shelf, on a bookcase, in front of geology books, but the run of the mill specimens have been given to schools in need of them, or a museum collection. Maps, articles and magazines, having been sorted, will end up in a labelled box and may be stored in the loft.

Problem solved? Not quite. Where did I put those field notes when I went on a trip to Whitby in the 1980s? Where is my old clinometer? Surely I have not got to go up in the loft again. But there are nice surprises; while looking for one thing you find another which you thought was long gone. As I write this, a story has emerged which illustrates this sort of problem at a higher level. The great William Smith produced a geology map of England, Wales and part of Scotland in 1815. He did not make very many of them and there are thought to be only 70 or so copies still existing. There are some on display, but the colours tend to fade, being water colours.



The Geological Society has a copy, in fact it has at least two, but one went missing about 50 years ago. It is a very early one as it is in 15 separate sheets, without serial numbers; that would mean it was probably amongst the first ten. It was stored in a leather file and put somewhere safe, but the person who put it there is no longer available and so it was lost. It has just been found. I think we all know the feeling when we find something we have been looking for.

It is worth looking at the pictures of the map on the BBC website, and an article by Jonathan Amos, and also the Geological Society website, where there are more of his maps. They are truly stunning. There is also an interactive website that is well worth looking at: www.strata-smith.com ■

You will also be able to see one of William Smith's maps in our own Dudley Museum and Art Gallery during our 40th anniversary celebration (see box on p.3). Ed.

Bill Groves

Obituary

In the February Newsletter we reported the sad news of the death of Gordon Hensman. He had served the Society as Meetings Secretary for many years, and was BCGS Chairman from April 2009 - March 2014. He was also a prolific contributor to the BCGS Newsletter, covering a wide range of topics over many years. 'Dudley's Geological Inheritance' (Issue 174) and 'The Black Country Geodiversity Action Plan Launch' (Issue 178) reflect his passion for the BCGS and Black Country geology. He wrote about people and places connected with the geological world eg: Shaw's Seismograph (Issue 187) and Darwin (Issues 193 and 194). Gordon's abiding interest and expertise in the field of meteorology crops up frequently, perhaps most notably in his fascinating article 'Our weather and the El Niño Southern Oscillation' (Issue 205). The Newsletters provide a lasting testament to Gordon's contribution to our Society, and below are tributes from some of those who knew him best, and a poem dedicated to him. Ed.

Remembering Gordon Hensman

I can't remember when we first met Gordon; it must have been 20-25 years ago. Perhaps we were discussing the lack of maps in a documentary shown on TV, the recent weather, or even which beers we had sampled! He was a man with many interests and passions, the greatest of which was his devotion to promote the history, geology and culture of the Black Country.

Over many years Gordon was an active member of the BCGS; a committee member, Meetings Secretary, and Chairman until March 2014. He regularly attended conservation days, field meetings and events to promote the BCGS. It was our privilege to have taken him to Oxford last year for the visit to the Natural History Museum hosted by Paul Smith. We all had an enlightening and enjoyable weekend.

During a visit to Gordon's house on BCGS business, he bet Sue £5 to identify one of his many exotic plants, and was astounded when she correctly named it as a frangipani. Unknown to Gordon they used to grow in her garden in Kenya! The debt was never settled. He was very proud of his garden and hot house and hated the badgers for their nightly activity in digging up his lawn. He and his son, Martyn, had a novel way of trying to discourage the animals which cannot be described in polite circles!



He once gave a short talk about the Wollemi Pine tree, a species known to geologists rather than botanists due to its age in the fossil record. In 1994 it was discovered growing in Australia. On behalf of the Society Gordon presented Barbara Russell with one in recognition of her contribution over many years.

In his back gardens in Rowley and Dudley Gordon kept a range of scientific instruments in order to take detailed daily readings of the weather. Every week he wrote an article entitled 'Gordon Hensman's Weatherview' for the Black Country Bugle in which he reported and commented upon the week's weather. These records are unique and it was Gordon's wish that they be sent to the Dudley Archive for safekeeping and future reference.

The first Black Country flag we'd seen was on the flagpole in Gordon's front garden. He was passionate that the Black Country should achieve its rightful place in the industrial history of England. He was always keen to point out to visiting speakers that it was Dud Dudley, not Abraham Darby who first smelted iron with coke, although Darby further developed the technique in Coalbrookdale, giving rise to the Industrial Revolution.

He was an avid reader of science, history, horticulture, cookery and poetry.

On a personal note we thank Gordon for his enthusiasm for all things scientific, hearty meals accompanied by a range of alcoholic beverages, and an introduction to the Icelandic Met Office website (which I consult on a daily basis). The Italian greetings on the telephone, strong espresso coffee, conversations concerning current political issues or the latest Doctor Who episode will be greatly missed.

Sue and Bob Fairclough

Few BCGS Members will need reminding of Gordon's contribution to the Society. However, it should be recognised that Gordon was a very dedicated amateur meteorologist who built up a unique record of weather recordings over many years, both on top of the Rowley Hills and latterly at Parkway Road, Dudley. It would be unfortunate if this data was now to be discarded, although I have no idea how it could be preserved and perhaps published in its own right.

Additionally, Gordon's contribution to our local publication 'The Black Country Bugle' through his weather column will be sorely missed by the editorial team and broader readership. Finally, Gordon also possessed a firm belief in social justice and, although from a relatively prosperous background (I believe his father was a headmaster), he had a firm conviction that market forces should not be applied at the expense of those less fortunate in society.

My visits to Parkway Road could never be measured in minutes but often lasted several hours and I shall miss his company.

Mike Williams

I think my own personal thoughts about Gordon stray to his tenacity and directness when he had something on his mind. He was never afraid to present his opinions and was a passionate champion for the Black Country and climate change. He cared about local geological sites and there is no doubting his commitment, passion and vigour when pursuing a cause. He was always keen to push the Society as the prime geological society in this area and to get more members attending a wider range of events and local history functions etc; also bringing forward ideas like the Society's 'boulder dash' initiative, particularly in Wolverhampton. I also believe that the Society gave Gordon a sense of purpose and friends to share that with, some of whom I know, supported him more directly in some difficult times that he faced over recent years, and I'm sure he would have been very grateful for all of this.

Graham Worton

Ian Henery (Walsall Poet Laureate 2013 -2014) has dedicated two poems to Gordon: 'The Dudley Volcano' and 'Black Country Geology'. They were both written in 2013 and were featured in the 'Black Country Bugle' at the beginning of March this year. To conclude this obituary, we are pleased to be able to include one of these poems along with a brief tribute from Ian Henery. Ed.

At the time of writing this poem I had been researching the Black Country. What did I know of the Black Country? - Dudley Castle, Cradley chain makers, canals, Wednesbury tube workers, Bilston blast furnaces, Brierley Hill glass - that's it isn't it? Gordon taught me of a much older reality - the rocks beneath our feet and everything that came to this region came from rocks: the coal, limestone, sand, clay, ores - and the industry that followed. I only ever met Gordon once but I remember him as a great bloke. He was an inspiration. I wrote this poem for Gordon.

Black Country Geology

Scorching deserts, icy wastes - Black Country,
Rock strata read like pages from a book
And tell a fascinating history,
Well worth a study if you take a look.
A wealth of minerals despite its size,
Coal and iron ore for forge and steel mill,
Beneath the soil, those rocks were the prize
For industry, roadstone at Rowley Hills.

Deserts covered Stourbridge, Bilston had dunes;
Dudley bathed on a Silurian shore.
Langley's sands looked like the face of the moon,
Molten rocks welling up from the earth's core.
The advancing glaciers carved the land,
Flood waters depositing new sand beds;
Mammoths and reindeer on frozen grassland,
Rowley Hills becoming a watershed.

Delta swamplands in the tropical heat,
Carboniferous deposits in mud.
Tropical forests laid down in the peat,
Sand and stone scattered widely from the floods.
Black Country highlands, Sahara-like plains:
Ice sheets from the melting glaciation,
Darlaston's dust bowls where it never rains,
A wealth of minerals for extraction.

Ian Henery