



Newsletter No. 262

August 2020

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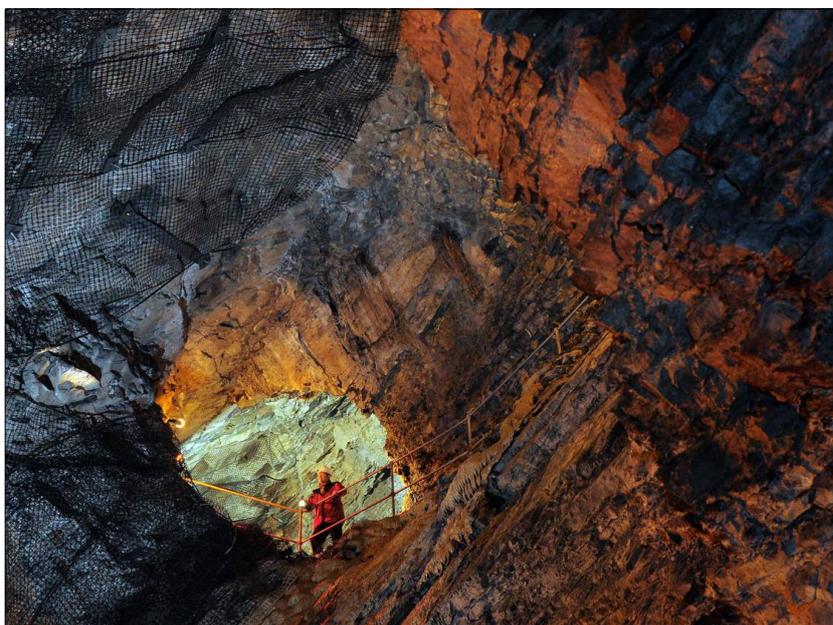
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John Schroder

Other Member

Bob Bucki

To find out more about this photo - read on!



Copy date for the
next Newsletter is
Thursday 1 October

<p>Robyn Amos, Honorary Secretary,</p> <p>☎ 07595 444215</p> <p>secretary@bcgs.info</p>	<p>Andy Harrison, Field Secretary,</p> <p>☎ 07973 330706</p> <p>fieldsecretary@bcgs.info</p>	<p>Julie Schroder, Newsletter Editor,</p> <p>42 Billesley Lane, Moseley, Birmingham, B13 9QS.</p> <p>☎ 0121 449 2407</p> <p>newsletter@bcgs.info</p>
<p>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: bcgs.info, Twitter: @BCGeoSoc and Facebook.</p>		

Future Programme

**Indoor 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.**

Visitors are welcome to attend BCGS events but there will be a charge of £1.00.

Monday 21 September (Zoom Meeting, 7.00 for 7.30 start): AGM (postponed from 16 March) followed by 'Glacial Change and its impact on sea levels'. **Speaker: Dr Lucy Clarke (Senior Lecturer in Physical Geography, School of Natural and Social Sciences, University of Gloucestershire).** Lucy will describe and discuss some of the glacial change research she undertook in Antarctica and the impact of glacial change on sea levels.

Covid-19 arrangements for Indoor Talks: September – December 2020

We hope we find you well and looking forward to the 2020-21 BCGS programme. Due to the current ever-changing Covid-19 situation we have decided as a committee that all indoor meetings until Christmas 2020 will take place virtually. Having successfully trialled the platform 'Zoom' as a committee, and having spoken to other societies about the process of moving meetings online, we feel that this is in the best interests of members going forward. We will reassess the situation at Christmas. The 'Zoom' software is free and easy to download and has proved not too difficult to use. In due course you will receive an email from our Meetings Secretary, Keith Elder, with further instruction.

Please contact the Meetings Secretary for further information.

Keith Elder,
☎ 07477075899

BCGS Meeting Secretary
keith.elder@hotmail.co.uk

Monday 19 October (Zoom Meeting): 'The Bob King Mineral Collection'. Speaker: Tom Cotterell, National Museum of Wales (currently furloughed).

Monday 16 November (Zoom Meeting): 'Saltwells and Wren's Nest - Dudley's SSSIs for Geology'. Speakers: Alan Preece (Saltwells Warden) and Ian Beech, (Wren's Nest Warden). Details TBC.

Monday 14 December (Christmas Zoom Meeting): Talks by young geologists (postponed from 16 March):

1. 'Phytoplankton and the response of ocean ecosystems to ancient and future climate change'. Speaker: Matt Sutton, (University of Oxford).

2. 'Planetary Science'. Speaker: Connor King (BSc graduate from Plymouth University).
Full details for this meeting TBC.

Monday 18 January (Indoor Meeting): 'Geology in Paradise'. Speaker: Graham Hickman.

Other Societies and Events

Covid-19 Cancellations

Many societies have cancelled their meetings for the foreseeable future. Some are running virtual on-line meetings. Below is a list of the societies whose events we normally promote in this Newsletter. Please check websites for further information.

Oxford University Museum of Natural History

The Museum has a YouTube channel: <https://www.youtube.com/user/oumnhvideos/videos> e.g. there is a recent talk by Director Paul Smith: 'The Cambrian explosion and the evolutionary origin of animals'.

Wednesday 12 August (online talk): 'First Animals: How did they move?'. Speaker: Prof. Xiao, Professor of Geobiology in the Department of Geosciences at Virginia Tech.

Wednesday 26 August (online talk): 'Extraordinary soft-bodied fossils highlight the Cambrian explosion'. Speaker: Derek Briggs, G. Evelyn Hutchinson Professor of Earth and Planetary Sciences at Yale University.

These are free online talks starting at 7.00. More information from their website: <https://www.oumnh.ox.ac.uk/> Booking necessary.

Geological Society of London – Public Lectures

Wednesday 2 September at 2.30 (online talk): 'Getting inside the heads of early vertebrates'. Speaker: Sam Giles, University of Birmingham.

This lecture will be virtual via Zoom. It is free, but booking is essential. For more information and booking instructions go to: <https://www.geolsoc.org.uk/earlyvertebrates>

Geological Society, West Midlands Regional Group

Tuesday 8 September (*online talk*): '**Cold Supraglacial Volcanic Deposits and their effects on Glacial Ablation**'. Speaker: Laura Hobbs (Lancaster University).

Tuesday 13 October (*online talk*): '**Understanding the Triassic and Jurassic Geology at Hinkley Point C**'. Gemma Sherwood (EDF Energy).

Meetings are by Zoom Video Conference at 6.30. For further details please contact the Group Secretary at: geolsoc_wmrg@live.co.uk Click [here](#) for website.

Warwickshire Geological Conservation Group

Wednesday 19 August at 7.30 (*online talk*): '**Mining in North Wales**'. Speaker: Rob Vernon.

This is a Zoom talk which will also be broadcast live on YouTube <https://youtu.be/gIIAcI0ZxKA> For more details visit: <http://www.wgcg.co.uk/> or email: warwickshiregcg@gmail.com.

Manchester Geological Association <http://www.mangeolassoc.org.uk/> **Holding meetings by Zoom.**

Mid Wales Geology Club: <http://midwalesgeology.org.uk/> **Holding meetings by Zoom.**

North Staffordshire Group of the Geologist's Association <https://nsgga.org/>

Teme Valley Geological Society: <http://www.geo-village.eu/>

Woolhope Naturalists' Field Club - Geology Section <https://www.woolhopeclub.org.uk/meetings>

Shropshire Geological Society: <http://www.shropshiregeology.org.uk/SGS/SGSEvents.htm>

East Midlands Geological Society: <http://www.emgs.org.uk/>

Lapworth Lectures: <http://www.birmingham.ac.uk/facilities/lapworth-museum/events/lectures.aspx>

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

Herefordshire & Worcestershire Earth Heritage Trust: <https://www.earthheritagetrust.org/> **It's worth having a look at this impressive new and improved website!**

Dave Waters, (former Curator of Earth Collections at Oxford University Museum of Natural History), has publicly shared some of his Microscopic Rock Art. It can be found at: <http://davewaters.jalbum.net/Micro-rock-art/>

Editorial

Black Country Unesco Global Geopark! No longer do we have to add the word 'project'! At last after a long and painstaking process all the hard work of the Geopark team has come to fruition. Our Chairman, and Geopark team leader, Graham Worton looks back - and forward at this defining moment for geology in the Black Country, and for our Society (see p5 below).

'BCGS Poet in Residence' will be a regular slot in the Newsletter for our very own poet, R.M. Francis, to keep us up to date with news and events as they unfold over the coming year. ►

It is an extraordinary co-incidence that we've had a request from another local poet, Ian Henery to include his poem 'Cotwall End Valley – a Magical Place' in our Newsletter. He may be known to some of you, as he has a profile as a poet in a number of local outlets, and hosts a show on the recently established Hope Radio. Cotwall End Valley is one of the Geopark Geosites, so Ian's poem makes a fitting finale to this Geopark celebratory issue of the Newsletter. You'll find the poem and explanatory notes on pp17 & 18.

With Covid-19 still looming over us all, we have reluctantly had to take the decision to hold our indoor meetings virtually, at least until the end of the year. Our Meetings Secretary, Keith Elder has been working hard to get together a varied programme of talks, with speakers willing to operate virtually, and to establish a satisfactory means of achieving this. Keith will be sending out a full explanation and instructions in due course, and we hope that you will all be able to join us for our autumn 'virtual' programme.

Finally, please note that the September meeting starts at 7.00 with our postponed AGM. Please refer back to the April Newsletter (issue 260) for full details of the special arrangements. The Chairman's Report and Audited Accounts were sent to all members by email on 1st April, (or by post with the April Newsletter). They will be re-sent shortly before the September meeting – April was a long time ago!

I look forward to 'seeing' you all in September. ■

Julie Schroder

The Black Country UNESCO Global Geopark – it's official!

A New Chapter for Geology in the Black Country Begins

It is with great joy that I can tell you that The Black Country officially became a UNESCO Global Geopark at 9am on the 10th July 2020. The UNESCO Executive Board approved the ratification of 15 new Global Geoparks at its meeting on the 7th July 2020, and the Executive Board confirmed the ratification at their plenary session on the 10th July. The Black Country is now a UNESCO Global Geopark... How great is that! (*The front cover photo shows Graham in the Wren's Nest 'Singing Cavern' – and there's a whole lot more to sing about now! Ed*).

Perhaps now might be a good time to recap - it's been a long process! Our journey was an unusually complicated one because of a number of very significant external factors beyond our control along the way that no-one could have foreseen, but belief and endurance eventually saw us safely past all those obstacles.

The Long and Winding Road

It began back in 2006/2007 during work on the 'Black Country Study' (a report published in May 2006), to look at creating a transformational/inspirational 'Urban Park'. The evidence base for this included a pretty thorough audit of the special features and heritage assets of the Black Country.

This audit showed that there was an impressive number of surviving natural and cultural heritage features and sites that we knew about with some form of designation (more than 1500 within the 356km² of the four Black Country Boroughs) - staggering isn't it! ►



The 'Coseley Spider'

In the case of the geological sites, we, the Black Country Geological Society had been playing a key rôle in this for a very long time (having been founded in 1975 with part of the original remit to record and list these sites and help with local geological collections). The local authorities' planning departments also understood the importance of green spaces and cultural sites for the educational benefit, health, well-being, and economy of an area, and adopted many 'second-tier' geological sites within their planning process, providing protection as 'Sites of Importance for Nature Conservation' or SINC's as we came to know them. This was important in the Geopark bid.



Brewin's canal cutting, Saltwells Nature Reserve

'defining geological heritage', (and that also collectively told the landscape story for the Black Country), and drafted our first version of a Geopark bid (in discussion with external partners and other Geoparks who were advising us). Everyone felt we had the makings of a good bid and so we decided that there was no point in waiting for a perfect time when the world's economy was better... we would go forward in a practical, bold and confident way within our foreseeable means and finalise and submit the bid.

In 2008 we started looking in earnest at this idea for what was then the European Geoparks Network. This also turned out to be the year of the start of the financial crisis and the introduction of austerity. A lot of plans and projects were stalled, reviewed and cancelled by that, but we made our case and progressed the bid, albeit at a much-subdued rate in the midst of the economic crisis.

By 2014 things were still very difficult but we had assembled a management team with a very wide range and depth of experience and pulled a wider supporting partnership together. We had selected a suite of Geosites that held our

During 2014 and 2015 in essence we began operating as a de-facto Geopark. This had to be done anyway to demonstrate our capability going forward. This gave confidence to existing UK Geoparks and we passed the threshold test to be given a supporting letter from the UK UNESCO National Office. In November 2015 the bid was ready to go, and in the same month UNESCO formally adopted the Geoparks programme as a new formal UNESCO programme. We knew then that the scrutiny process would be very rigorous, and we would be the first UK Geopark to go through and trial the new process should it change significantly, but we were confident in the quality of our geological and related heritage and our people, and we went ahead.

Next an 'evaluation mission' of experienced specialists was sent to see us in June 2016. That date may 'ring a few bells' in people's memories. It was when the Brexit referendum happened. The actual referendum took place on the very day that the inspectors were here looking around the wonders of our territory, meeting the teams and checking out our commitment to being a serious international player. ►





Dudley Museum at the Archives

Austerity was deepening too, and as part of the re-structuring happening because of that, political decisions had just closed the former Dudley Museum – the Geopark Headquarters cited in the bid! At the time of the inspectors' visit, the Museum and Art gallery was in the process of being dismantled and moved to the brand new Archives and local History Centre, that would become the new Geopark Headquarters. We ended up in a situation where we were showing them an empty shell

that was going to be a museum/new Geopark Headquarters, telling them we would be good international colleagues, (as total strangers to them at this point), and asking them to have faith in us about the future in a number of important ways...

In their visit though, it was clear that they were impressed with the heritage and the people looking after it. After a few months of anxiously waiting for our verdict, in 2017 the decision was that we were deferred from accession to the Geopark Network until we had provided additional assurances. Needless to say, we were really disappointed that we weren't accepted there and then, but not surprised, given the larger things going on that were out of our control, but which could compromise our future ability to function.

We presented our assurances in a final progress report to the UK Geoparks Committee in May 2019. This was approved by the UK Network and the UK National Commission and forwarded to the Global Network and UNESCO Executive for a final decision which we were to be given in March/April 2020. But then came COVID-19 and the UNESCO Executive couldn't meet and we had to wait once more...

As you now know, UNESCO managed to hold the Executive meeting at the start of July and we became the UK's next UNESCO Global Geopark... and the rest, as they say, is history! - or rather, in our case, is the future!

At the end of the day, I guess, our UNESCO Global Geopark was, and will be a celebration of all the good works that so many passionate and committed people (like the BCGS membership since 1975) have been doing every day for decades - but the international recognition and the added value that the Geopark designation will bring to what we do and how it is seen from this point on is the 'cherry on the top'.

To Boldly Go....

Now we begin going forward as a UNESCO Global Geopark so what do we do next, given that COVID-19 has effectively shut down our original ambitions for community celebrations and a 'Black Country Month', which is very sad. However, the value of the announcement as a good news story in the midst of so much sadness and restriction was picked up and promoted widely through the media. It was particularly good to let people know about their local green spaces and things to see and do on their doorsteps, at a time when these things have never been needed so much. ►



Red House Glass Cone

We will soon have a new badge from UNESCO and so we will need to roll out the new logo and brand across the territory. There are many sites, and the particular characteristics of each requires a variety of methods for this to happen, so this will take a little while given the current restrictions. Some of what we'll be up to next is a bit dull but very necessary I'm afraid. There will be a lot of meetings and briefings with various teams and organisations in the next few months, including international ones through the global network. We are entering the delivery and 'capacity building' phase now, and that needs to be planned and actioned.



Smethwick Pump House

As ever, we expect all that talking to yield creative and inspirational gold! When you get a lot of excited, dedicated people talking... magic happens! We expect we'll get all sorts of new ideas and project suggestions now that we are a UNESCO designated territory. It has already been happening with many new contacts, requests for briefings, information, and practical support in projects ranging from planning applications, quarry restoration, heritage landscape development work, film making and magazine articles... so watch this space!

We are writing lots of new stuff too, focussed on different groups like businesses, local folks, tourism and education groups. We will also be looking to add value wherever we can to existing heritage areas like the Glass Quarter where we can bring in more features and storylines.

One of the most complicated projects that we are looking at is 'The Black Country Geopark Way' – a long distance walking and cycling route that connects the Geosites together via a waymarked route that threads between them along canal towpaths, old railway lines and cycle lanes. We are also looking at developing a mobile phone app for this.

There are some fairly major activities going on that you may have seen in local press, such as the improvement of visitor infrastructure (like the Midland Metro Extension) and new information facilities at key visitor 'nodes' and nature reserves like Leasowes, Saltwells and Wren's Nest Geosite in Dudley. When the world is more normal again we will be making a few announcements about some of these things... so again, watch this space.

Your Black Country Geological Society/Geopark needs YOU!

The fact that we can't have large gatherings for field trips and festivals should not stop us from celebrating. We are planning to do something fun to celebrate the Geopark in the October half term holiday (as it's looking increasingly likely that travel restrictions will keep most Brits at home). This will again be a chance to remind people about their local sites and features.

One of the very cool bits of work we have been able to start looking at despite being a bit limited by the pandemic at the moment, is the idea of virtual tours of Geosites. We intend that local passionate people who are very 'into' a Geosite get the chance to shout about it and share its wonders with others online via a short video or a self-executing power-point with a voice over – or anything else we can think of! If you are proud of a site or feature, capture it in a way that we can share in October to help other people to know and enjoy their local area. ►

I intend to do something for the museum and Geopark Headquarters and a short video captured on my mobile phone. I will probably go out on my own or with someone in my 'bubble' to one or two of the lesser known Geosites too, and capture something fun, quirky or cool about those as well (again as a short video on my phone and some still pictures and a bit of voice over).

So have a look at the list of Geosites on the Geopark website at this link <https://blackcountrygeopark.dudley.gov.uk/bcg/>



*West Park, Wolverhampton,
glacial erratic boulders*

See if there is something in that list you fancy telling the world about, but don't limit it to these Geosites or think that you have to do a full walk around a nature reserve or along the entire canal system! No - a single building, or artwork or rock face or fossil will do. We are celebrating them all and we will make October half term a 'geo-sharing week' to help people find interesting things to do and some Geopark inspiration in these difficult times.

To help with your filming, we've done some guidelines which we recommend you read before you start. You can find these on the BCGS website here:

https://bcgs.info/pub/wp-content/uploads/pdf_files/Geopark%20Exposed%20Final.pdf

Whatever you come up with, send it to me at my museum email address or let me know what you're thinking and we can chat through it: (graham.worton@dudley.gov.uk).

Whatever we get, our team here will put them all into a celebration programme for the week. Please help in any way that you can. Many thanks. ■

Graham Worton

BCGS Poet in Residence

R.M. Francis

Since the last Newsletter Rob has produced three interesting and thought-provoking blogs under the heading 'Towards a Black Country Geopoetics', and these will be a regular feature during his residency. You can find them here: <https://rmfrancis.weebly.com/chain-coral-chorus> and shared through his twitter account: [@RMFrancis](https://twitter.com/RMFrancis)

In June, there was a press release from Wolverhampton University about the Residency with illuminating and encouraging statements from Graham and Rob. Have a look at it by [clicking here](#).

Being Human Festival, 12 – 22 November 2020 <https://beinghumanfestival.org/>

This is a national festival of the Humanities that aims to bring research to non-academic audiences and places. In Rob's words, "I thought it might be cool to put on a geopoetry walk/workshop". Rob applied for an 'open access option' to run a walk and poetry workshop at Wren's Nest. This should get some national publicity, and fulfil one of the goals of the residency; "getting new people into the geoparks and into Black Country Earth Sciences".

Rob's application was successful, and he got the green light for the 'Wrenna Geopoetry Walk' for this year's Being Human Festival in November. This will go ahead, subject to Covid-19 measures, but if ►

not physically possible it will be a virtual tour. In Rob's words, "one way or another I'll be running a Black Country Geosite poetry session, and we'll get some really cool national coverage being associated with this". Here are details of the walk (date yet TBC) and other news from Rob.

'Rich Soils': Join R. M. Francis for this creative exploration of the green side of the Black Country. As poet in residence for the Black Country Geological Society, Rob will guide you through some of the important geological landmarks of the region, using the fossil rich grounds to consider our place in the world in exciting, creative ways.

Geopoetry 2020

I've also been selected to deliver a conference paper at this year's Geopoetry 2020 in October, where I'll be exploring my ideas, your important work and giving a reading of my poems. The conference is organised by the Scottish Centre for Geopoetry and the Geological Society. This will be a free online event on the 1st October. You can register here: <https://www.geolsoc.org.uk/geopoetry20#> ■

R.M. Francis (and Julie Schroder)

Volcanic Experiences trip to La Palma Part 2 – Report of the Tour, February / March 2020

'Volcanic Experiences' is a small company running trips to volcanic areas around the world. It is run by Alan Clewlow (our Treasurer), who accompanies all the tours. This is Part 2 of his account of a recent trip to La Palma in February/March just in time before Covid-19 put a stop to all such adventures. Part 1 (in our June Newsletter), described the geological setting, and this final part is a day by day account of the tour.

Diary of the week

Day 1

Following an overnight stay at our airport hotel, we had an uneventful direct four hour flight with TUI to La Palma, landing at the main island town of Santa Cruz de La Palma. This was followed by a coach-transfer to our hotel on the other side of the island. The route involved a steep climb with many hairpin bends up towards the Cumbre Nueva ridge, before entering the tunnel beneath the ridge. On previous trips in the past our coach has been in cloud and drizzle on entering the tunnel on the eastern side, but has always emerged into bright sunshine on the western side. This time was no exception. We then dropped down, eventually to reach the small resort of Puerto Naos and our hotel, with some free time before a pre-dinner meeting to outline the geology of the island and discuss the week's activities.



View of the caldera wall at Taburiente, with its summit at Roque de Muchachos, as seen from the viewpoint at Cumbrecita

Day 2

The coach arrived promptly after breakfast, and we made contact with our local guide, Peter, who did a superb job for the group throughout the week. We ►

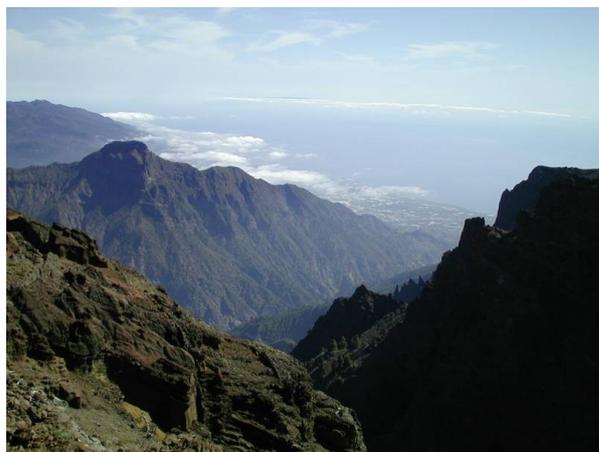
then headed up to the Taburiente National Park, with our first stop at the Visitor Centre, spending an hour there to take in information about the geological history and development of the landscape. Following this, the coach took us up to Cumbrecita - a high point with superb views of the Caldera de Taburiente. It was here that Charles Lyell in 1855 first coined the term 'caldera', to refer to a large basin-shaped feature forming part of a volcano. Many are formed during large eruptions either by the upper part of a volcano being blasted away or by cauldron subsidence following the emptying of a magma chamber, but Lyell recognised that in this case, the Taburiente caldera was created by a huge landslide on one side, followed by rapid deep erosion. From Cumbrecita, the view extends upwards to the 'Roque de Muchachos' at the summit, but also down into the Barranco de Angustias at the base. While there, we undertook a circular walk, passing numerous dykes with their associated features.

In the afternoon, the coach dropped off the group beside a path on the slopes of the Bejenado volcano. We did not have the time to climb to the summit, but were rewarded with some glorious views.

Day 3

This day took in a variety of locations around the north of the island. Firstly, we took the main route back to the east, once more passing through the road tunnel beneath the Cumbre Nueva ridge, and then dropped down for a short stop at the Santuario de La Nieves, the most important religious shrine on the island.

From there, the coach then took the long, winding road with many hairpin bends up to the summit of Taburiente, at Roque de Muchachos. In the latter stages, the road runs parallel with the rim of the caldera and layered exposures of deposits on the steeply sloping volcanic flanks can easily be picked out, including ash layers, agglomerates and lava flows. Eventually we reached the summit at Roque de Muchachos, and took a walk to get the view down across the caldera wall and deep into the barranco (gorge) below. The caldera side exhibited numerous dykes, which stood out having been much more resistant to erosion than the ashes and other deposits into which they had been intruded.



Looking south from Roque de Muchachos, with Bejenado volcano, active around half a million years ago, across the deep barranco.



The caldera wall at Roque de Muchachos, with resistant dykes standing out. Some of the array of huge astronomical telescopes can also be seen.

After a brief stop to admire and photograph some of the array of huge astronomical telescopes sited here, we then dropped back down the volcano's north flank and headed for La Zarza, the site of numerous petroglyphs (rock carvings) created by the Benahorita, the native people who settled the island before the arrival and conquest by the Spanish in the 15th Century.

Day 4

The morning was spent in the Barranco de Angustias at the base of the caldera. It started with a drive down the precipitously steep slope on a narrow ►



Pillow lavas from the original seamount in the Barranco de Angustias, cut through by feeder dykes for the later Taburiente volcano.

road with numerous hairpin bends. Stopping eventually at the base, the group then took a trek upstream along the valley floor. Here, we were seeing exposures of the original seamount - superb pale green pillow lavas, whose colour is largely due to the presence of the minerals chlorite and epidote, formed by secondary alteration. On moving upstream there were also increasingly, many basalt dykes, with good examples of later dykes cutting through earlier feeder dykes of the seamount. The trail ended for the group at the waterfall of Dos Aguas, where it would have required some rock-climbing skills to proceed any further.

We retraced our steps and after a short picnic lunch took the coach back up to the viewpoint which looks down into the barranco, stopping for a drink at the small café/bar perched on the edge. In the afternoon, we headed for Todoque and the massive lava flow which swept down the hillside in 1949.

It took only a matter of days for the basalt travelling down the western flank to get from its source just below the Hoya Negro crater at 1800 metres as far as sea-level, a distance of around 10 kms, where it built out a new coastal platform, now the site of a lighthouse and covered with banana plantations. The flow is typically 'aa' in character, with a broken, cindery upper surface, but there are also frequent places where the surface has cooled as 'pahoehoe' (ropey) lava. Beneath the flow, there are numerous lava tubes. In past visits, it required a trek over the flow to reach one of the tube entrances, but now, the site has become more accessible, with a visitor centre built over one. A set of steps took the group down into the lava tube, where we were able to see a range of features.



Pahoehoe stream within the mainly aa lava flow from 1949, near Todoque



Tuff ring at La Caldereta, with the main island town of Santa Cruz de La Palma in the distance

Day 5

The group spent a pleasant morning and took lunch in the main island town of Santa Cruz de La Palma. Just before reaching it we stopped at the Mirador de la Concepcion, to look down on La Caldereta, a circular tuff-ring formed by a single explosive eruption in shallow water, thought to be triggered by sea-water entering the magma chamber. It consists mainly of hyaloclastite deposits, but also includes a small strombolian cone and short lava flow within, presumably formed near the end of the eruption once the source of the magma was sealed from sea-water contamination. ►

In the afternoon, we ventured to the south of the island, first visiting the San Antonio cone at Fuencaliente. This was the site of a major eruption in 1677 which effectively buried and destroyed the warm-water spring which gave the village its name. A short walk along a narrow path along the crater rim, past impressive exposures of steeply sloping ashes and volcanic breccias, leads to a viewpoint looking down on the southern tip of the island, with good views of the Teneguia cone, formed during the most recent eruption of the island in 1971.



View from the San Antonio Cone looking south towards the 1971 Teneguia Cone, and the lava flow extending out to the coastal platform



The path along the edge of the San Antonio crater

After spending time in the impressive visitor centre beside the San Antonio cone, the group embarked on a walk down to the Teneguia cone, passing the much older 'Roque de Teneguia', a pale buff-coloured phonolite spine. Phonolite is a fine-grained rock, low in silica, iron and magnesium, but rich in sodium, potassium and aluminium. It has a high content of feldspathoid minerals and is thought to form when a basaltic magma has resided for some time in a chamber prior to eruption.

We then spent some time at the Teneguia cone (noting that there were still hot gases emerging in places) before continuing our walk over and alongside the lava flow which emerged from the 1971 cone, eventually spreading and extending to the coastal platform to the south.

Day 6

This was the final day of our set itinerary. On this day, the coach took us to a high point alongside the famous 'Route of the Volcanoes' - a path which extends all the way from the Caldera de Taburiente to the southern tip of the island. Our aim was to cover just part of it! We started at (and eventually returned to) the Refugio El Pilar, at an altitude of 1450m, following a well-marked path, easy to follow but steep in places, passing through Canarian pine forests, with many superb viewpoints. On the way, we skirted around Pico Birigojo, Monte Barquita and Monte de los Charcos. Eventually, after about 2 hours, we reached the crater of Hoya Negro, formed alongside the ridge of the Cumbre Vieja in 1949, just 500m above the fissure from which emerged the westward-flowing 1949 lava flow mentioned before. The Hoya Negro is a very impressive feature, largely consisting of steeply-sloping layered ash deposits of various types and colours, with some earlier formed lithic blocks from deeper in the conduit, broken away and brought up in the course of the eruption (*see photos on p.14*).

Just a few minutes further walking brought us to the viewpoint over the Duraznero crater lake which also formed during the 1949 eruption, this time on the eastern flank of the ridge. Lava ponded up at first to form a lake. Eventually it flowed away down the eastern slopes, although in this case it did not reach the ocean. The viewpoint gives a superb view of the now-solidified lava lake, and the ridge nearby allows the chance to see both coastlines of the island and other islands (Tenerife, La Gomera and El Hierro) in the far distance (*see photo in Part 1, Newsletter 261, June 2020, p.10*). ►



*The Hoya Negro Crater (left) and the solidified lava lake at Duraznero (right)
both formed during the eruption of 1949*

Days 7 & 8

The final two days gave the opportunity for members of the group to take part in a range of activities. Some opted for a whale and dolphin watching trip. Some took local walks and two brave souls took part in a paragliding flight, leaping from the cliffs of the basalt ridge high above the hotel.

Our return flight was as smooth and trouble-free as our outbound flight, though it was noticeable that on our return, Gatwick airport was noticeably much quieter. All in all, it had been a great trip and we had had a memorable time - we just wonder if and when we will be next be able to repeat it. ■

Alan Clewlow

Mike's Musings No. 28

Egg on the face, money down the (bore)hole

I have come across more than a few examples where failure to conduct adequate, or any, site investigations (cutting budgetary corners?) in advance of engineering projects has only served to end up costing a lot more to put right when things have gone badly wrong. This is not the prelude to a diatribe about the rest of the world undervaluing the role of geology, but more about illustrating how a better understanding of the physical world can actually prove to be of some practical value.

Three historical examples show how easy it is to waste a lot of money in hopeless enterprises due to a lack of basic geological understanding: perhaps more understandable at the time, although asking the right people even then could have saved a lot of misplaced investment and wasted effort.

Spinney Hill Park and Crown Hills, Leicester

The first case dates to the period 1876 -1881 during which the Evington Coal Boring Company sank two boreholes in the Spinney Hill Park and Crown Hills areas to the east of Leicester's city centre. The mindset for this exploration seems to be summed up by a few words in the Geological Survey memoir for the Leicester and South Derbyshire Coalfield (1907) stating 'it was long hoped that Coal Measures might be found on the eastern side of the Charnwood ridge...', although the author concluded that ►

FIG. 15.—Plan of North Evington, Leicester. Showing position of boreholes of the Evington Coal Boring Company.

From: Memoir of Geological Survey: Leicester 1903

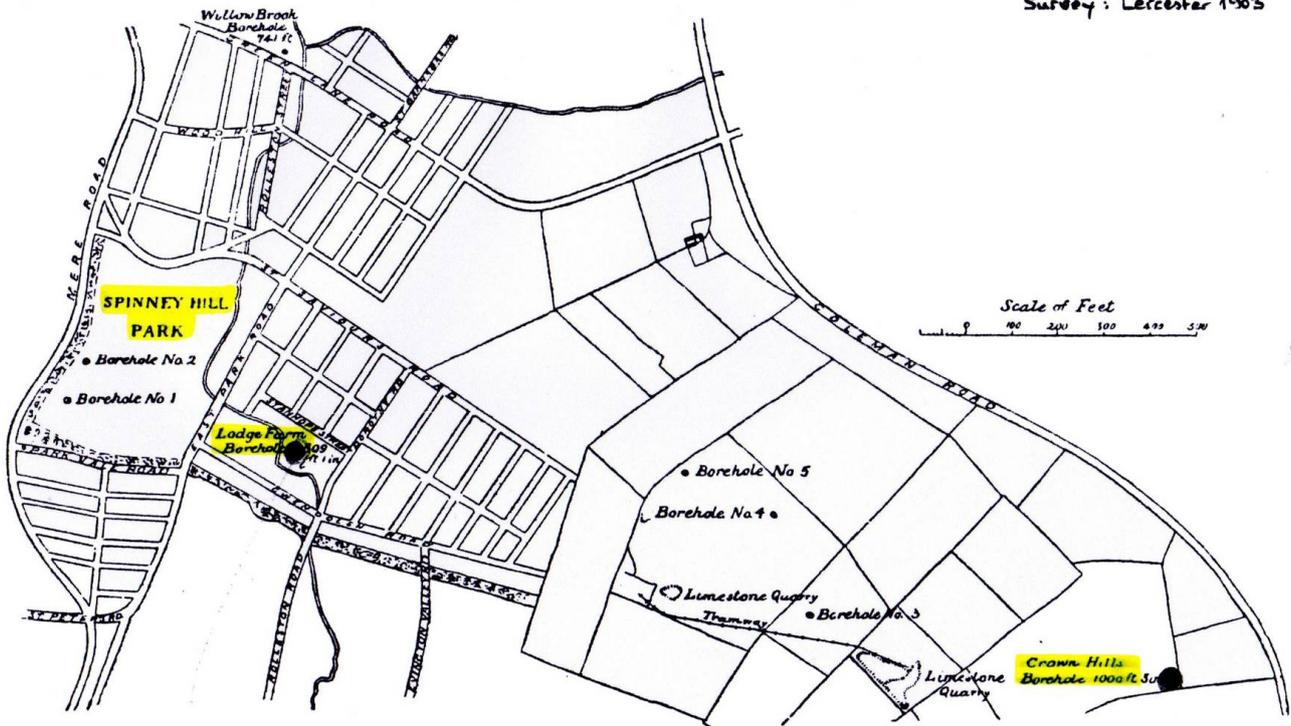


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the likelihood of anything of economic worth was not probable. Two deep boreholes (sunk to depths of 1000 and 819 feet, a considerable undertaking for the time) proved only a great thickness of Triassic rocks, the deeper hole penetrating 'hard, purple and black slaty rock with mineralised veins' (Cambrian basement) below 837 feet. Three other deep boreholes in the wider area around Leicester met with similar failure, although one did prove 'two thin veins of coal' brought up in washings, but probably representing nothing more than Jurassic fossil wood or jet.

Lyme Regis

The second case is that of the doomed Lyme Regis borehole, sunk in 1901 also in search of coal. This eventually reached a depth of just over 1300 feet, beginning (as you might expect) with some 80 feet of Lias, some 60 to 80 feet of Rhaetic, and all the rest in the Keuper Marl (in contemporary terminology, rather than modern nomenclature). This enterprise seems to have been the initiative of 'a practical man with experience of coal-mining in South Wales' who had become convinced that coal was likely to be present in Dorset at a comparatively shallow depth. He managed to convince a small syndicate of investors to go along with his scheme, whose subsequent demeanour remains unrecorded (as ►



What they found – Blue Lias near the surface, White Lias on Black Shales lower down and Red Mudstones with gypsum bands below. This core of red mudstone is from the very bottom of the hole at 1,300 feet below Lyme Regis – and no coal in sight!

Image reproduced with permission: Richard Bull & Lyme Regis Museum

far as I can ascertain). Despite no vestige of any coaliferous strata by the expected depth of 600 feet, drilling continued to double that amount (still, of course, without any success) before deciding to throw in the towel. At this point another local man decided to shoulder the cost of extending the hole a little further because it seemed a pity not to achieve the more definite outcome of at least proving the Keuper Sandstone (and thus the base of the Keuper Marl - which subsequent authorities have estimated to be at around 1400 feet depth). Even the most elementary knowledge of the stratigraphy present in the Dorset cliff sections nearby should have been sufficient to prevent such folly, but this was clearly not in evidence on this occasion. Whether any worthwhile Coal Measures would ever have been reached seems unlikely in view of the changing nature of the Upper Carboniferous successions between South Wales and the 'Culm' of Devon and Cornwall - recognised even before the turn of the 20th century.

Presteigne

The third case is even more absurd and concerns a 'boring for coal at Presteign' [sic] in 1912. Now Presteigne is located in Powys (formerly Radnorshire), in the heart of the Welsh Borderlands, where geological maps even of early 20th century vintage show surface outcrops to consist of Devonian and Silurian strata for miles around. The nearest Carboniferous presence is the small coalfield around the Clee Hills some 20 miles distant. Nevertheless, this enterprise (prophetically located on land belonging to a certain 'Folly Farm!') had already proceeded to a depth of 540 feet, through strata liberally strewn with Silurian fossils, when T. C. Cantrill, a member of the Geological Survey, paid the site a visit.

He immediately submitted a report to one of the active promoters of the scheme advising of the futility of the enterprise, but drilling nevertheless continued to a final depth of 888 feet 6 inches. Interestingly, this passed through Wenlock Shales, Woolhope Limestone and Shale, Llandovery Sandstone and probable Longmyndian rocks before passing through a substantial reverse fault which returned the hole to a further thick succession of the Wenlock Shale! Not only this, but a short drift (adit) was further cut for some distance into the foot of an adjacent ridge composed of the same Silurian lithologies, naturally to no avail. ►

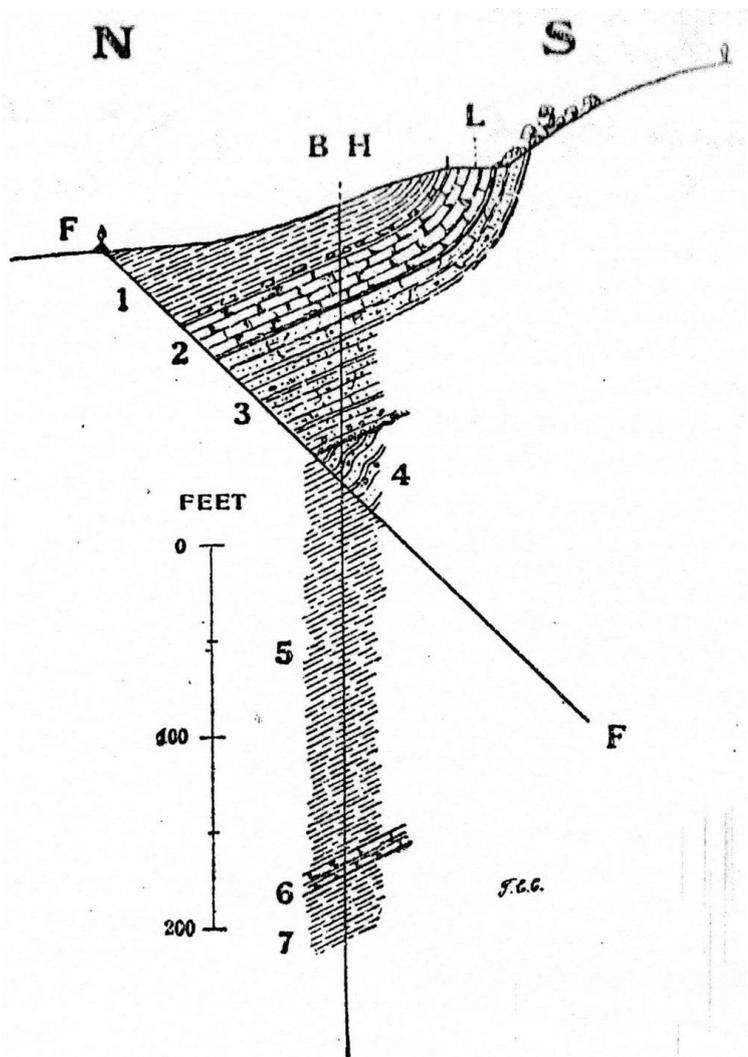
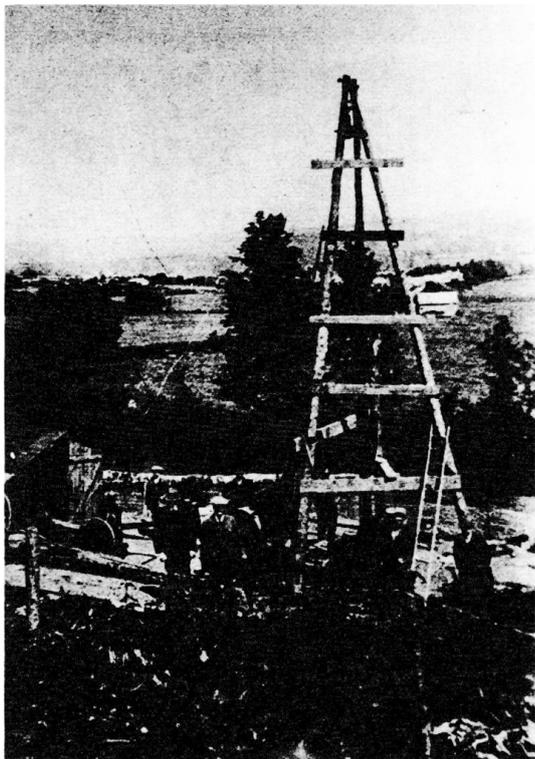


FIG. 2.—Vertical section, in a north and south plane, of the upper part of the Folly Farm Borehole, Presteign. L, lane; B H, borehole; F-F, overthrust fault; 1, 5, and 7, Wenlock Shales; 2, Woolhope Limestone and Shales; 3, Upper Llandovery Sandstone; 4, supposed Archæan (Longmyndian); 6, 12 ft. limestone-band.

Cantrill, T. (1917) 'On a Boring for Coal at Presteign, Radnorshire', *Geological Magazine*, Vol 4 (11), pp 481-492



*Test Boring at Folly Farm
Parker W. K. (1983) 'The Presteigne coal
venture, 1912-15', Radnorshire Society
Transactions, 53, pp.10-27*

It appears that what prompted this misguided effort was the discovery of 'several beds of coal' on the site of Folly Farm. The publication of a detailed article by T. C. Cantrill in the Geological Magazine (volume IV, November 1917) interpreting the complicated structure the borehole had brought to light, resulted in a response from (Professor) W. W. Watts who had independently visited the site and elicited the observation from a local quarryman with a long memory that 'in slack times past, coal was carted in from the Clee Hills for lime-burning, and to better preserve the coal it was necessary to bury it, often in considerable quantities'. This piece of quaint historical practice was evidently forgotten by 1912, such that a chance rediscovery of the remnants of one such cache may have given rise to the mistaken notion that coal-bearing strata really existed in the area!

Such a trio of unwise investments may not be repeated in this age of much better information and understanding, but failure of adequate site investigation is still a recurrent theme. The natural world is a complicated beast, and it is still easy to get things wrong (much like weather forecasting), but there are ways to minimise risk. Let history serve as a warning. ■

Mike Allen

A Poem to celebrate The Black Country UNESCO Global Geopark

We are pleased to be able to include this poem by Ian Henery, which will also be included in a book to be published later in the year. The poem explores the themes of biodiversity and geodiversity set in one of the Black Country Geopark geosites – a fitting finale for this issue of the Newsletter. Ed.

Note: In the reign of Edward II, Cotwall End was a small farming hamlet. Bob's Brook in The Dingle is a headwater for the River Stour and water from the Cotwall End Valley was used to supply Dud Dudley's revolutionary iron foundry in the 17th century. Geological reserves such as Gornal sandstone, limestone and clay were quarried for the building industry and four coal seams were once mined in the valley including the famous 30 foot thick Staffordshire Coal Seam. In addition to the valley now being a wildlife haven, Turners Hill geological site is of Special Scientific Interest because it provides important exposures of a sequence of strata from the Silurian age including Sedgeley Limestone and Ludlow Bone Bed. For more information see the leaflet: 'Countryside Walks in Dudley: Cotwall End Valley' Ed. <http://www.gornalandsedgley.org.uk/content/pages/documents/1326782680.pdf> ►

Cotwall End Valley - A Magical Place

In memory of Edwin Underhill, born in 1870, whose family founded Ruiton Chapel. He self-published a book of poems, 'Patchwork', in 1932 and the once definitive 'Ancient Manor of Sedgley' history book in 1941.

There is a magical place, bluebells grow
On a woodland carpet of wild flowers;
Summer songsters play in April's showers,
The aroma of wild garlic below
Perfuming The Dingle as the wind blows.
Violets and wood sorrel delight tired eyes
Flora, perfect in proportion and size,
Splashes of colour, a sylvan rainbow.

A walk into this beating heart of green
Through ancient woodland, past natural springs;
Sugarwell, sweet water, from rocks it sings
And then into pools in a timeless scene,
Beneath the leaves, sunbeams glint between
Towering trees as green sap flows through veins
In a magical place where nature reigns:
A paradise where God's footprint has been.

Cotwall End was once a tropical sea,
Silurian age, fish in limestone beds
And molluscs, fossilised once they were dead.
Turners Hill Wood, a rich geology,
Now species diverse in ecology.
Oxeye daisies grow in a woodland shrine
Called The Old Quarry and two old coal mines,
Ellowes Hall and London Fields Collieries.

Deep in the greenwood, The Horse Chestnut Glade
And the locally rare flower, pale sedge.
Dogs mercury along the woodland edge,
With saxifrage and enchanter's nightshade.
Flowers grow on sites where bricks were once made,
Gornal sandstone quarried on Turner's Hill,
A pond at Spout House Farm and water mill,
Now an oasis where dragonflies played.

Wood anemones spread across the floor,
Habitat for ringlet butterflies,
Kissing the flowers, joins them to the skies.
The Old Coach Road, with lines of sycamore,
A cathedral of peace, absence of war;
To Ellowes Hall, a tree-lined avenue,
Palace of the migratory cuckoo:
A wildlife haven where nature is law.

Natural springs, in The Dingle, Bob's Brook,
Out of Sedgley Limestone and Ludlow Beds
Water genesis of River Stour's head,
Rock strata reads like pages from a book.
A midsummer night's dream, the trickster Puck,
Would laugh at the ambitions of this stream;
To feed canals with transport from coal seams
And the drifting blooms of woodland flowers,
Like confetti over the River Stour
Coursing to the sea from its little nook.

This poem to Cotwall End is now done,
I hear woodland birds call their evensong,
Time to go, their world I do not belong.
Signalled by red rays of the setting sun,
Daytime over, night on the horizon.
Oblivious, Bob's Brook laps thirstily
Out of Cotwall End and down to the sea
A timeless constant as night fell, moon shone.

Ian Henery

www.ianhenerypoet.com