Newsletter No. 268
August 2021

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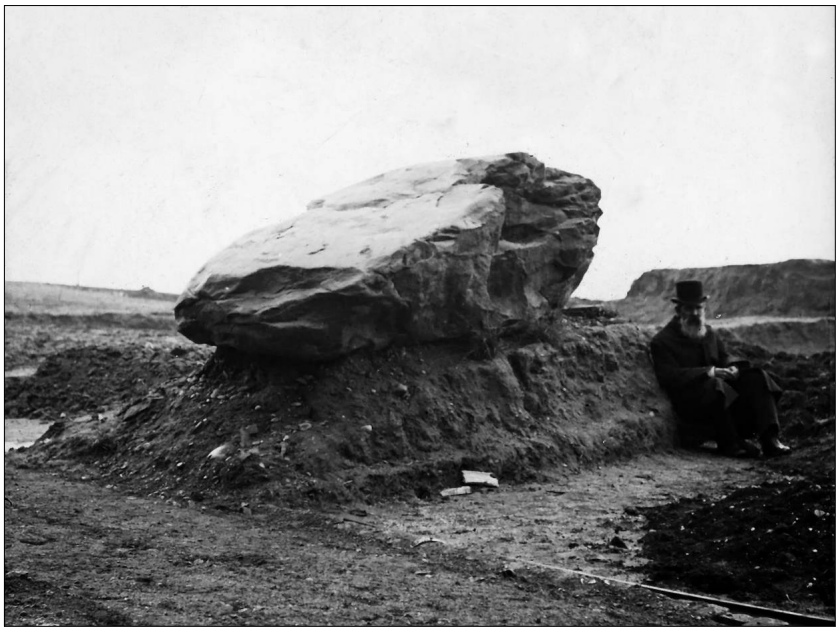


Copy date for the next Newsletter is Friday 1 October

Position vacant **Honorary Secretary,** secretary@bcgs.info	**Andy Harrison,** **Field Secretary,** ☎ 07973 330706 fieldsecretary@bcgs.info	**Julie Schroder,** **Newsletter Editor,** 42 Billesley Lane, Moseley, Birmingham, B13 9QS. ☎ 0121 449 2407 newsletter@bcgs.info

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 more information see our website: bcgs.info, YouTube, Twitter: @BCGeoSoc and Facebook.

Future Programme

Indoor meetings are normally 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. The same timing applies to the current programme of online 'Zoom' meetings.

Visitors are welcome to attend BCGS events.

Covid-19 Up-date

Field meetings have resumed in a limited way. There is no news yet on the resumption of the Geoconservation programme. The situation regarding Indoor Meetings is still uncertain. The schedule below shows the current situation, with talks via Zoom until the December meeting. We will keep you notified of any changes.

Wednesday 11 August *(Evening Field Meeting):* 'Rediscovering Black Country Geology and its Impacts on the Landscape 3: Bumble Hole', led by Graham Worton and Andy Harrison. Meet at 6.45 at the old 'Dry Dock' pub car park near the visitor centre at Windmill End (SO953880). The final walk in this series explores the landscape and industrial heritage around Bumble Hole. Finish at 8.45 - 9.00 followed by an optional visit to a local pub to socialise and continue discussions. **Don't forget to register with Andy (details above).**

Monday 20 September *(Zoom Meeting):* 'Geology of Devon & Cornwall'. Speaker: Dr Frank Ince (Russell Society). Dr Ince will be talking about the geology of Devon and Cornwall and the minerals of the China Clay Pits.

Monday 18 October *(Zoom Meeting):* 'Black Country Geopark: Progress through its first year'. Speaker: Graham Worton.

Monday 15 November *(Zoom Meeting):* 'Salt Industry and Brine Subsidence'. Speaker: Colin Knipe. The talk will examine the problems of brine subsidence in Droitwich and Stafford.

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, and further helpful information can be found in the Code for Geological Field Work published by the GA and available on our website. 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 not permitted unless specific permission has been sought and granted. Leaders provide their services on a purely voluntary basis and may not be professionally qualified.

Monday 13 December *(Indoor Meeting at the Archives):* 'Deciphering the Fossil Record'. Speaker: Dr. Dan Cashmore.

Monday 16 January 2022 *(Indoor Meeting):* 'West Midlands National Park'. Speaker: Kathryn Moore.

Monday 20 February *(Zoom Meeting):* 'The Rocks that don't belong'. Speaker: Dr. Martha Johnson, University of Highlands and Islands, Orkney. This talk will explore the geological basis for understanding the rock at the Ness of Brodgar, Orkney.

Other Societies and Events

Covid-19 arrangements

Some societies have cancelled their meetings for the foreseeable future. Many 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.

Woolhope Naturalists' Field Club - Geology Section

Saturday 21 August, Field meeting: Beth Andrews and Dr. David Hutton will lead a full day exploring our Ice Age Ponds. Full details will be sent later to those interested. To book: contact the field secretary no later than Saturday 14 August.

Non-members of the Club pay £2. Visit: https://www.woolhopeclub.org.uk/meetings or contact field secretary, Sue Olver on 01432 761693, email: susanolver@hotmail.com

Shropshire Geological Society

Wednesday 8 September: 'Platinum Group Metals – an increasingly valuable commodity.' Speaker: Dr Hannah Hughes, University of Exeter.

Lectures are being held using Zoom and commence at 7.15 for 7.30. Further info: http://www.shropshiregeology.org.uk/SGS/SGSEvents.htm

Mid Wales Geology Club

Wednesday 18 August: 'Limestone Pavements as a Unique Geoconservation Landscape'. Prof. Cynthia Burek, Chester University.

Wednesday 15 September: 'Climate Change and Coastal Heritage in Wales: Insights from the palaeoenvironmental record'. Dr Sarah Davies, Aberystwyth University.

Further information: Tony Thorp tel. 01686 624820 and 622517 tonydolfor@gmail.com
Web: http://midwalesgeology.org.uk lectures start at 7.15 via Zoom.

Geological Society, West Midlands Regional Group

Tuesday 14 September: 'Cenozoic Climate Change'. Dr Tom Dunkley-Jones (University of Birmingham).

Lectures are being held using Zoom and commence at 6.00 for 6.30. For further details please contact the Group Secretary at: geolsoc_wmrg@live.co.uk Click here for website.

The Geologists' Association

Friday 15 – Sunday 17 October: Annual Conference to be held in Edinburgh, with parallel on-line event. Further details here: https://geologistsassociation.org.uk/conferences/

Geology from your Sofa: Still functioning - see weblink below.

See the website for further details: https://geologistsassociation.org.uk/sofageology/

Abberley & Malvern Hills Geopark - GeoFest

The Abberley and Malvern Hills Geopark Forum are once again running their three-month summer GeoFest from 29 May to 29 August 2021. The GeoFest includes self-led geology and landscape trails and activities all around the Abberley and Malvern Hills Geopark promoting its geology, heritage and wildlife. Further information about the Forum and the 2021 GeoFest can be found on the Abberley & Malvern Hills Geopark website at http://geopark.org.uk/ The GeoFest programme can be downloaded here: http://geopark.org.uk/pub/wp-content/uploads/2021/05/GeoFest-Events-2021.pdf

Check websites for the following societies:

Teme Valley Geological Society: http://www.geo-village.eu/
East Midlands Geological Society: http://www.emgs.org.uk/
Lapworth Lectures: https://www.birmingham.ac.uk/facilities/lapworth-museum/events/lectures.aspx
Herefordshire & Worcestershire Earth Heritage Trust: https://www.earthheritagetrust.org/
Manchester Geological Association: http://www.mangeolassoc.org.uk/
North Staffordshire Group of the Geologists' Association: https://nsgga.org/
Warwickshire Geological Conservation Group: https://www.wgcg.co.uk/

Editorial

Two project launches - the end of one, and the birth of another!

It is strange and surely worthy of note that two projects involving BCGS should be in the headlines at the same time!

Firstly, the completion of the Birmingham Building Stones trail leaflets will add a new dimension to Birmingham City Centre for those with time to explore, and secondly, the official birth of the project, 'Birmingham's Erratic Boulders: Heritage of the Ice Age' will keep the spotlight on the geological heritage of Birmingham for the foreseeable future. There is more on these success stories in separate items, including the official press release for the erratics project to put you all fully in the picture. We will hope to involve BCGS volunteers as the project gets underway in the coming months.

We have been lucky over very many years to be able to present Andy's detailed reports of our Field Trips, and now - at last - there is something to report once again, after the long months of Lockdown. See Andy's reports (p.6) of the two local evening field trips held in July. There is still one to come – the trip to Bumble Hole on the 11 August.

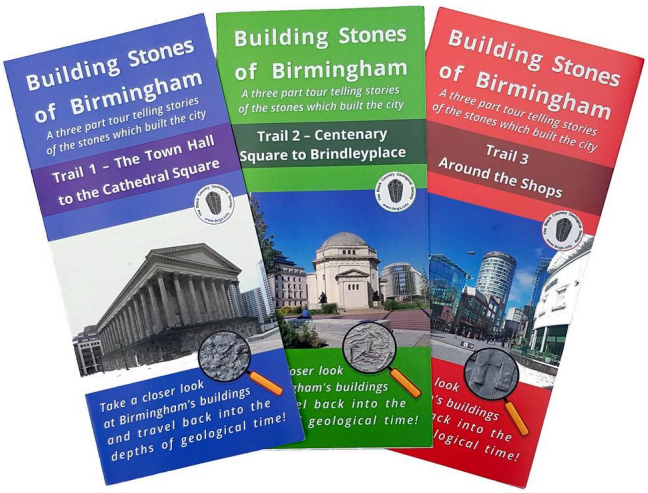
Finally, we will be holding our September talk by Zoom, and probably the next two, but intend (and hope!) to be back live in the Archives for the December meeting. We know that some of you will be anxious about returning to indoor meetings, and some want to get back to the Archives as soon as possible. Now we are familiar with holding meetings by Zoom, this may be a way to engage speakers from further afield even when we can meet at the Archives once again. If you have any views on this, please let us know. We want to make sure that we do the best we can for all members of the Society. ■

Julie Schroder

BCGS Committee – there is still a vacancy for Honorary Secretary!

The Committee meets about 4 times a year to discuss all matters concerning the Society, and particularly to forge together our programme of events. The Society can only thrive with the efforts put in by the Committee behind the scenes, and we are always looking for new ideas. There is **still** a vacancy for the post of Honorary Secretary, and we urgently need someone to fill this post. If you are interested, or would like more information about the work that this entails please don't be shy to put your name forward! Please use the email address secretary@bcgs.info if you are interested.

The Building Stones of Birmingham Trail Leaflets



At last - the long delayed project to produce the three Birmingham Building Stones trail leaflets has now satisfactorily concluded with the printing of 1000 copies of each of the 3 leaflets: Trail 1 - The Town Hall to The Cathedral Square; Trail 2 - Centenary Square to Brindleyplace; Trail 3 - Around the Shops.

The progress of this project has been documented in these pages from time to time, most recently with an article in issue 263 (October 2020) and a brief Editorial up-date in the last issue.

The trails are all based on the original trails produced by Ruth Siddall which have been available on the BCGS website since 2017, and we are delighted that Ruth will be joining us for a small launch event on 15th August. The leaflets are free and copies will be available from the launch date onwards. They will also be available as downloads on the BCGS website.

As only a limited number of people will be able to join us on the launch day, we will be organising walks on all three trails in the coming months - so watch this space! The leaflets will be available at various outlets after the launch event, and by request. ■

Julie and John Schroder

Field Meeting Reports

This report covers the first two field trips in the 3 part series: 'Rediscovering Black Country Geology and its Impacts on the Landscape' Ed.

Wednesday 7 July *(Evening Field Meeting):* 'Rediscovering Black Country Geology and its Impacts on the Landscape: Walk 1, Wren's Nest NNR'. Led by Graham Worton.

Since becoming the world's first National (Geological) Nature Reserve in 1956 and a Site of Special Scientific Interest in 1990, Wren's Nest has remained an important conservation site for its geology, human heritage and biodiversity. Today it forms Geosite No.2 of the Black Country UNESCO Global Geopark, which was officially awarded on 10 July 2020.

Route Summary

We met at the warden's base at 6.45 for a 7.00 start. From here, we headed east along Wren's Hill Road to Geopoint 1: The Snake Pit, before crossing back over the road to Geopoint 2: The Nature Conservancy Council (NCC) Cutting. Walking up the cutting to a wooded track, we headed south onto the Wren's Nest Hill summit fields, and onto the place where Wren's Nest Farm once stood. We ►

then continued to the southern end of the Hill and Geopoint 8: Murchison's Lookout, before heading back north along the hill's western side to Geopoint 9: The Severn Sisters Caverns. Our route then continued north to Geopoint 10: Ripples Through Time and Quarry Lookout, before heading down into the quarry at Geopoint 4. We finished our route at Geopoint 11: overlooking the ripple beds on the western edge of the hill before returning to the cars.

Geological Background

Along the way, Graham showed how as geologists we use individual outcrops to create a picture and timeline illustrating Earth's history, employing two simple principles to help us determine how outcrops relate to one another in time (superposition), and to interpret what we see using modern analogies (uniformitarianism). Fossils and ripples help to determine which way up inclined rock layers are lying.

The Snake Pit, Wren's Nest

At the Snake Pit we saw how each rock layer represents fluctuations between different energy conditions and environmental settings, from relatively deep quiet water (Coalbrookdale Formation and Lower Elton Formation) to shallower more energetic conditions at the wave base (Lower and Upper Quarried Limestone Members), with a prolonged period between representing cyclic tropical storms (Nodular Member). Bentonite clays from ash layers represent episodes when volcanic eruptions interrupted normal conditions killing off bottom living fauna. The fossils present give a rough age to the rocks as Silurian, but radiometric dating from zircon crystals within the ash layers provide a precise date stamp at 427.77 million years which can be traced globally. Radiometric dates from ash bands at the top of the sequence in Sweden show how the sequence at Wren's Nest represents 1.4 million years of Earth history over an approximately 40m thickness of rock.

Miners Memorial, Seven Sisters Caverns

Human History

Looking at the landscape, we could see how human activities have shaped Wren's Nest Hill over time. Limestone use dates to Medieval times when it was crushed and burnt for agricultural purposes to sweeten clay rich soils such as those associated with the Coal Measures. Handy brick-sized lumps from the Lower Quarried Limestone were also used to construct Dudley Castle and the Priory. The quarries, caverns and trenches ringing the hill hint at the Earl of Dudley's mining legacy to extract the pure Lower and Upper Quarried Limestone for iron smelting. ►

Wren's Nest's part in Dud Dudley's story for advancing iron smelting, which led to the Industrial Revolution, began with Queen Elizabeth I and the war with Spain. With trees being required for ship building, wood for charcoal was a rare commodity. Therefore, Dud Dudley was tasked with producing good quality iron using coal as fuel. Either through experiment or accident, the discovery that limestone could be used to remove impurities revolutionised iron production from 1619 onwards and led to greater demand from the Wren's Nest and Castle Hill mines.

Rainbow and view over Birmingham from the Murchison Lookout

The 1830s saw the then Geological Society of London president, Sir Roderick Impey Murchison, visit Wren's Nest and Castle Hill to study the rocks and fossils found there. With help from the local miners, Murchison was able to establish 'The Silurian System' which he published in 1839. Through Murchison's work, the Dudley collection, today housed at Himley Hall, and the first incarnation of our own geological society, 'The Dudley and Midland Geological Society', were conceived.

The flat Wren's Nest hill summit, shaped during the last Ice Age, was historically used for farming. The clay-rich soils associated with the Coalbrookdale Formation are at the hill's core and underlie the summit. During the First World War the summit was formed into three terraces and used as a firing range to prepare 17 and 18-year-old boys for fighting on the front.

The Wren's Nest today

The trenches and quarries forming the hill's western side provide ideal locations for fossil hunting and viewing ripple structures. Over 700 - and counting - macro and micro fossil species have been discovered at the reserve and include corals, crinoids, molluscs, arthropods, various trace fossils and some not even identified. Over 160 species, such as the trilobite *Calymene*, are endemic to Wren's Nest. Ongoing research continues to throw up many questions about the Silurian and the accuracy of the Principle of Uniformitarianism. Sections through corals show their growth rings that can be counted like those in a tree. According to these, a year on Earth during the Silurian was longer, around 400 days, compared with today. Also, NASA experiments have shown that the Moon was much closer to the Earth during the Silurian, which would have resulted in stronger tidal influences and waves acting deeper into the water column compared with today. Currently, we do not fully understand what influence this had on life or Earth systems during this period.

Wednesday 21 July *(Evening Field Meeting):* 'Rediscovering Black Country Geology and its Impacts on the Landscape: Walk 2, Saltwells NNR'. Led by Andy Harrison.

The Earl of Dudley's wife, Lady Dudley, had woods planted in the 1700s to hide the scar left behind from extracting minerals from the area. Covering over 100 hectares (247 acres) the reserve today hosts a variety of habitats in an urban environment that are rich in wildlife. Designated a Local Nature Reserve in 1981, the reserve is also a three times Site of Special Scientific Interest (SSSI) for its geological interest. To celebrate its world class geology the site was designated a National Nature Reserve in October 2020 and forms Geosite No. 4 within the Black Country Geopark. ►

Route Summary

We met at the reserve car park (Geopoint 1), at 6.45 for a 7.00 start. From here, we walked northwards along the tramway to Doulton's Clay Pit (Geopoint 2) and the Tramway Cutting (Geopoint 3). Crossing Highbridge Road, we continued north to the Dudley No. 2 Canal and Brewin's Cutting (Geopoints 4 to 6). Heading west along the canal, we returned to the car park via the 'Two-Locks' Canal Branch southwards along the Blackbrook Valley and through Lady Dudley's Wood.

Human History

From the 1600s, the site was worked for the Thick Coal, which can no longer be seen in exposure at the site. With the global cholera outbreak in 1826-1837, the associated clays and ironstones were extracted to provide raw materials for sewer pipes and bathroom wares. The result was to shape the local landscape that provides the multitude of habitats seen today.

With the Thick Coal being removed, the Royal Doulton Company in Stoke-on-Trent, opened up Doulton's Clay pit in 1870 and worked it until 1940. Minerals from the pit would be loaded into tubs and sent either south to the Round Oak Steel works, where Merry Hill sits today, or north to the Dudley No. 2 Canal. There it would be loaded onto boats and transported via the canal to the Staffordshire and Worcestershire Canal where it would travel up to Stoke and the Potteries. The 'Two-Locks Canal Branch was constructed from the Dudley No.2 Canal as a short cut across the Blackbrook Valley, via an aqueduct. This reduced the travel time for transporting raw materials to the Staffordshire and Worcestershire Canal. However, ongoing coal extraction, which did not cease until 1970, resulted in the aqueduct piers being undermined. Consequently, the aqueduct collapsed around 1860, closing the branch line for good, and causing considerable disruption to the local canal network and flooding Blackbrook valley.

The waste from Doulton's Clay Pit was placed along the western side of the tramway above the Blackbrook Valley, which today provides wooded and wildflower meadow habitats. Marshy conditions and pools reside in the bottom of Doulton's Clay pit providing a home for butterflies, dragonflies, orchids and yellow iris.

The Geology

Studying the rocks in Doulton's Clay Pit

Within Doulton's Clay pit, we saw three exposures that represent cyclic sequences of sandstone, mudstone/shale, ironstone, seatearth or fireclay and coal from the Carboniferous Middle Coal Measures. The principles of superposition helped to locate each exposure relative to one another. The exposures in the clay pit's northern side represent those associated with the Thick Coal. Those seen in the southern side represent the layers associated with the Lower Heathen and New Mine Coals that underlie the Thick Coal layers. Therefore, it is interpreted that a fault, trending roughly east to west, has downthrown the layers in the northern half to a similar level to those seen in the clay pit's southern half. ►

Within each cycle, the yellow-brown fine to coarse cross-bedded sandstone layers hint at deposition from energetic fluvial sources. Gradation into the grey mudstone, red ironstone, yellow-brown fireclay and black coal seams indicates change to lower energy conditions. Ancient plant roots in the mudstone layers and remains in the coal seams, plus a lack of marine bands suggest these sequences are of terrestrial origin. Applying the Principle of Uniformitarianism, we see such conditions occurring in tropical, equatorial forests today, where rivers flowing over broad flat flood plains give way to flooded forests where dead vegetation can accumulate and is preserved under anaerobic conditions. The cyclicity of these sequences has been put down to steady periodic subsidence in a shallow basin to the north, called the Pennine basin with the Black Country being on the northern shore of a small landmass called the Wales-Brabant Massif. Flying through these ancient forests were giant dragonflies, called *Meganeura*, the metal sculptures of which are dotted around the clay pit.

From the Tramway Cutting to Brewin's Bridge we saw very different rocks: olive-green mudstones belonging to the upper Elton Member and yellow-brown laminated mudstone and sandstone belonging to the Downton Castle Formation. Fossil molluscs in the Upper Elton Formation hint at a marine origin. These beds sit towards the top of the Silurian and represent fairly deep-water conditions. The Downton Castle sequence straddles the Silurian-Devonian boundary. The presence of the Upper Elton Formation rocks at the Tramway Cutting results from a second fault, trending roughly east to west between this location and Doulton's Clay Pit, which has downthrown these rocks to the north.

At Brewin's cutting a conglomerate layer separates the Devonian rocks from the overlying mudstone belonging to the Middle Carboniferous Coal Measures. The conglomerate layer represents 100 million years of missing geological time after the Devonian old red sandstone continent formed following the Caledonian Orogeny. Noticeably through the reserve, all the rocks dip towards the east, the Carboniferous strata matching closely the underlying earlier layers. This suggests that the Old Red Sandstone continent was stable and not impacted by tectonic forces.

Andy explaining the geology at Brewin's Cutting

The tilting and faulting recorded at the reserve resulted from the Hercynian Orogeny at the end of the Carboniferous, the beds being tilted eastwards on the eastern limb of the Netherton Anticline. The Blackbrook flows down the centre of this anticline taking advantage of a weakness, likely faulting, along the structural axis. The tectonic forces causing this event resulted in dolerite being intruded into the country rocks. These can be seen along the northern section of tramway and at Brewin's Cutting.

Towards the end of our route and behind the Saltwells Inn public house is a wooded area that hides the remains of several buildings. These included a stables, hotel and bath house. During the 1800s a borehole brought hot salty water (brine) from the depths to feed the bath house and spa, which was said to cure many ailments. It is from this upwelling brine that the reserve gets its name 'Saltwells'. Unfortunately, local dewatering practices for the coal mines led to groundwater levels in the area being reduced, and this resulted in the brine becoming diluted with fresh water and leading to the baths eventually closing. The precise source for the brine is unknown, but it is believed that it originates at depth somewhere within the underlying Silurian rocks. ►

Information relating to Wren's Nest and the Saltwells Geosites can be found in the following Black Country UNESCO Global Geopark leaflets:
Geosite 2: Wren's Nest, The Geology of Wren's Nest National Nature Reserve, and
Geosite 4: Saltwells, The Geology of Saltwells Nest National Nature reserve.
These can be downloaded from the Geopark website www.blackcountrygeopark.dudley.gov.uk. ■

Andy Harrison

Birmingham's Erratic Boulders: Heritage of the Ice Age

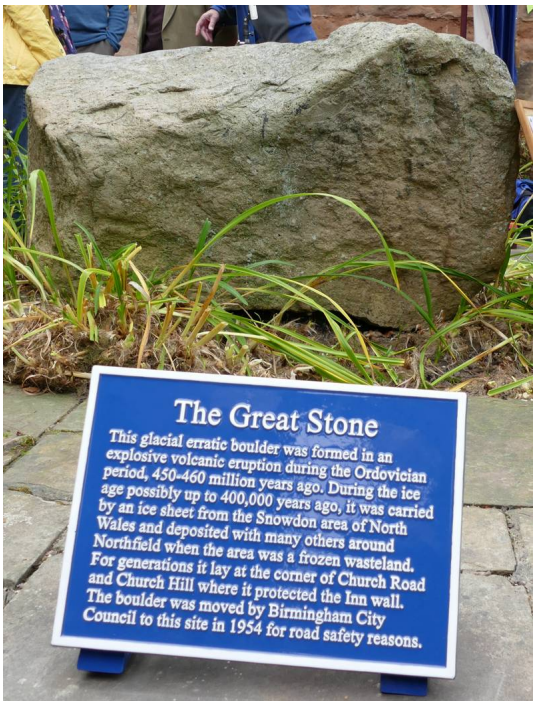
Below is the press release for this major project, which was issued on 12 July. I quote it here in full (with added photos) including the notes about the 4 participating organisations to put you all fully in the picture. Applications for the posts of Project Manager and Volunteer Coordinator close on 10 August – so still just time to apply if you know anyone who might be interested! Ed.

Local organizations secure National Lottery support for Birmingham's ice age heritage

Four local organisations have worked together over the last 18 months to win an award of £112,800 from the National Lottery Heritage Fund for a project called 'Birmingham's Erratic Boulders: Heritage of the Ice Age', it was announced today. The project will run from July 2021 to January 2023 and the award is to a partnership of the Herefordshire and Worcestershire Earth Heritage Trust, the Black Country Geological Society, Birmingham Open Spaces Forum and the Lapworth Museum of Geology. Thanks to National Lottery players, the project aims to restore the large boulders, which were brought from the mountains of North Wales in the Ice Age, to their rightful place as a prominent feature of Birmingham's natural heritage and a source of local pride.

The organisations running the project are responsible for maintaining knowledge of landscape features and geology in our region and promoting the use of public open spaces. Seven walking and cycling trails covering several parts of SW Birmingham and the Bromsgrove District of Worcestershire will be publicized. There will be added value from moving some boulders short distances in Woodgate Valley Country Park so that the public can see them. The organisers are also excited about finding creative ways of engaging people with a mobility or visual impairment in the project. ►

At the beginning of the 20th century, hundreds of boulders moved by ice (erratics) were known in the area, mostly volcanic rocks from north Wales, but also including hard rock from Rowley Regis. Now we know of only four dozen survivors including clusters in Kings Norton, Bournville, Frankley, Romsley, Bromsgrove and Cotteridge and Selly Oak Parks, and a lone boulder in Cannon Hill Park. One of the project aims is to engage the public in finding some of the boulders that have been lost and discovering some geology in the process, for example by coming to see displays and a concluding exhibition at the Lapworth Museum of Geology at the University of Birmingham. The Lapworth will also be hosting many school groups, including those with boulders within walking distance.



The Great Stone, Northfield – plaque installed in 2016. The final stop on Trail 1.

The Earth Heritage Trust will coordinate the different parts of the project and will engage one or two part-time staff to lead the project as a whole and the work with volunteers. We will build on the enthusiasm of volunteers, many of whom belong to local groups affiliated to the Birmingham Open Spaces Forum. They will keep an eye on the boulders and lead groups of all ages on the new trails. Both the Earth Heritage Trust and the Black Country Geological Society will use their networks to bring geologists in contact with the public to spread the word about the heritage. They will also decide on the best sites to be protected via the local authorities in the planning process.

A special local group will be set up in New Frankley to design a geological time line along the centre of the district running from 450 million years, when the volcanic rocks formed in what is now Wales, to 450 thousand years, when the ice moved them to Birmingham. Use will be made of 3-D printing and other resources from the Lapworth Museum of Geology, for example to make replicas of fossils that represent different geological time periods.

Commenting on the award, Earth Heritage Trust chair Ian Fairchild said: "100 years ago, the Birmingham public were excited to learn about these relics of the Ice Age, but the boulders have been disappearing. We're delighted that, thanks to National Lottery players, our partnership of local organisations has received this support to bring the boulders the prominence they deserve. They are the only visible relics of what happened deep in Birmingham's history"!

About Herefordshire and Worcestershire Earth Heritage Trust

The Trust was set up 25 years ago to promote conservation of geology and landscape in the region. It has designated many Regionally Important Geological Sites (now Local Geological Sites) and is active in site conservation through working parties and site champions. In the last decade, mainly through a series of National Lottery Heritage-funded grants, sector-leading projects have been completed on site conservation strategies, building stones, of app development and integrating geology with biological conservation practice (in partnership with wildlife organisations). The Trust provides professional geological expertise and advice and has a programme of geoeducation and public engagement. www.earthheritagetrust.org ►

About the Black Country Geological Society

The Black Country Geological Society was formed in 1975, is based in Dudley, and has always had strong connections with neighbouring Birmingham. Members come from a wide variety of backgrounds including professional geologists, interested amateurs, teachers, and students. The Society provides a programme of talks with invited speakers, field visits to local and more distant sites, and has an active geoconservation programme to maintain local geological sites. In future much of this work will be run in liaison with the recently established Black Country UNESCO Global Geopark. bcgs.info

About the Birmingham Open Spaces Forum

Birmingham Open Spaces Forum CIO (BOSF) is a membership organisation set up in 2005 that brings together people in Birmingham with an interest in parks and green open spaces. We support groups who want to ensure that green spaces are accessible to people who live and work across the city. We create opportunities for groups and individuals interested in open spaces to share skills, knowledge and experience by arranging networking and knowledge exchange events. We help new groups to set up, create a community voice and produce regular updates about funding, training, events and other information of interest to our members. bosf.org.uk

About the Lapworth Museum of Geology

Enabling visitors to explore life over the past 3.5 billion years, the Lapworth Museum of Geology showcases exceptional objects from one of the UK's most outstanding geological collections. From rocks and fossils to minerals, earthquakes, and dinosaurs, the Museum captures the imagination of all ages and backgrounds with its state of the art, free-entry galleries and range of innovative and interactive exhibits. Its mission is "To preserve, develop and share collections and knowledge of Earth Sciences in order to stimulate learning, research and enjoyment for the widest possible audience." More information about the museum including how to visit and our programme of events can be found at www.birmingham.ac.uk/facilities/lapworth-museum or on our social media pages @LapworthMuseum.

Birmingham University erratic, unearthed during construction. The start of Trail 1. See also front cover: boulder with Prof. Charles Lapworth. (Photos c. 1900, courtesy of Lapworth Museum)

About The National Lottery Heritage Fund

Using money raised by the National Lottery, we Inspire, lead and resource the UK's heritage to create positive and lasting change for people and communities, now and in the future. www.heritagefund.org.uk.

Follow @HeritageFundUK on Twitter, Facebook and Instagram and use #NationalLotteryHeritageFund

Further information

For further information, please contact Ian Fairchild at Herefordshire and Worcestershire Earth Heritage Trust on 07968 169678 i.j.fairchild@bham.ac.uk

See also:
www.earthheritagetrust.org/birminghams-erratic-boulders-heritage-of-the-ice-age ■

BCGS Poet in Residence

R.M.Francis

Over the last few months, I've been concentrating on re-drafting, re-writing and editing my work. Ironically, as the rest of the UK starts to open up, I'm heading back indoors. Such is the strange realm of the poet. Since starting my residency, I've written about 45 pages of poems and a further 40 pages of prose that lay out my methodology of using geology in poetic practice and my observations in my geopark explorations. I'm really excited about this work. I feel like I've got an innovative collection of poems, field notes and micro-essays that weave together to examine the role our region's geological wonders play in impacting our individual and communal sense of self. I'm just about ready to start sending this manuscript off to publishers. There'll be thank you copies for each of you - poetry fan or not.

There's plenty more work I've got coming up too. As so much of my residency has involved negotiating lockdown restrictions, I've been asked to contribute an essay on my travels in the Geopark for a collection of work about Micro-Travel during the pandemic. In this, I'll be thinking about the literal and symbolic layers of these unique and fascinating places, and the ways geological observations can help us feel more grounded.

I met some of you at the recent field trip to Saltwells which I really enjoyed, and look forward to the trip to Bumble Hole. I know these sites really well already from a lay person's perspective, but with Graham and Andy as tour guides, I've been given even more poetic and geological arsenal for my work. Being able to chat and get together was lovely, and getting the opportunity to see how geologists and geology enthusiasts respond to landscape has been inspiring. Like Andy said at the start of the Saltwells trip; "in the Black Country, it's the people that make the land and the land that make the people". A true and beautiful thought.

Fingers crossed you'll see more of me over the coming weeks and months. My residency has been extended until the end of the year, so I'll make sure I use this extra time to organise and run some poetry writing field trips. I'll leave you with this poem, which is inspired by the Society's February online talk, 'Atmospheric Cave Science', by Professor Ian Fairchild. ■

On the Currents of Carbon Dioxide in Underground Caves

Cave mouths. Epikarst pores.
Where speleothem tines track the gas
of limestone regulations and ground air.
Breathes in rhythms, that wave in bands
of calcite tears. Seasons fluctuate
the heat, the air. In spring, CO_2 swings.
There's distinct atmospheres down here.

She points it out, little girl found,
in her wor(l)d grounding:
the strange fog of stoned exhales
misting like the roots of alien triffids
up to our human habitats. Sitting.

R.M. Francis

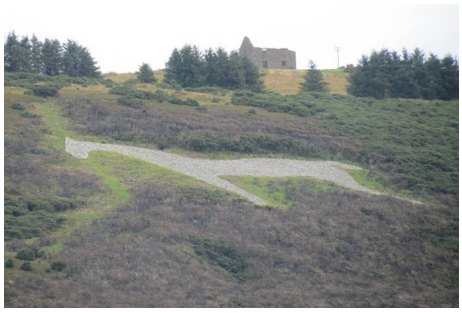
Mike's Musings No. 34

Gigantotomy, Leucippotomy & Staurotomy - Part 2

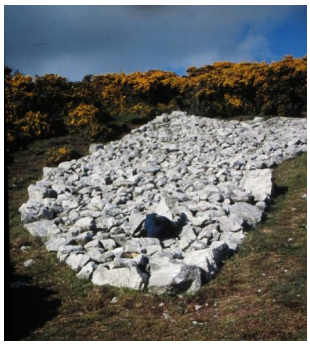
In the first part I described the specific 'otomies' concerning giants, horses and crosses. But many other designs decorate our hillsides and smaller embankments, as I shall now describe. (Part 1 of this investigation concluded with the white horses of Wiltshire... Ed.)

Kilburn White Horse

Horses feature elsewhere, and not all figures are, or were, cut on Chalk. A well known landmark on Roulston Scar (Yorkshire), part of the Hambledon Hills escarpment in Jurassic 'Corallian' oolite, is the **Kilburn White Horse**, a splendid beast first created in 1857. Further north still, on Mormond Hill in Aberdeenshire, lies the conspicuous **White Horse of Strichen**, constructed from local quartzite. Both require 'extra measures' to create a sparkling white appearance, with the help of painting or an application of 'Snowcem'. The Mormond Horse used to be accompanied by a close-by **Mormond Hill Stag**, but this has sadly been swallowed up beneath forestry operations. Another series of losses have been the **Red Horses of Tysoe**, formerly cut on the Marlstone (hence 'red') escarpment near the Edge Hill battle site in Warwickshire. Here, no fewer than five horses, all very different in appearance, have been documented over the centuries, from a 'magnificent galloping beast' cut by 'Anglian colonisers' as early as around AD 600 to a 'lacklustre and inebriate pantomime horse' cut by persons unknown in the late 1800's.



White Horse of Strichen



WH of Strichen close up of the head showing quartzite blocks

The Folkestone 'Chunnel' White Horse. Note most Wh's are left facing

Amongst all these horses, some suffer from being rather crude and clumsy depictions whilst others have far more grace and style, giving a real sense of movement. In this respect, none do so more successfully than the 'original' stylish beast at **Uffington** *(featured in Part 1, Issue 267),* and the most recent (2003) controversial addition, the **'Chunnel' White Horse** at Folkestone, where we are back on chalk. This is deftly cut in similar stylish strokes (albeit constructed of chalk / limestone slabs). Further horses lost from chalk hills were those at **Hindhead** in Surrey (c. 1910) and one at **Litlington** not far from the **Long Man of Wilmington** (c. 1838). In this latter case a replacement from 1925 is happily still in existence. Sometimes projects never see the light of day, as is (so far) the case with a horse planned for the New Millenium at Liddington, near Swindon. ►

The Litlington White Horse

'Poppy' alongside one of the surviving, and refreshed badges

Nor are horses, giants or crosses the only designs (or *'otomies'!*) to be featured. Perhaps the best known alternative forms are the celebrated **Regimental Badges of Fovant**, including nearby the **'Australia'** map on Compton Down, the **Bulford Kiwi** and the **Codford Rising Sun** (representing further regiments), which bring us back to the chalk of the Wiltshire Downs. Numbering over 20 in total, most date from World War 1 with some later additions during the 1950s and 1960s, most being well documented. They represent some of the more complicated images ever carved out on our hillsides. Many have now been left to fade away, with just 10 or so remaining, albeit nicely freshened up recently - together with the 2016 addition of a new 25 metre high **'Poppy'** to commemorate the centenary of all the carnage of 'Flanders Fields'. In keeping with the other 'otomies', the term *'insigniotomy'* (Latin - insigne: emblem) might be applied here!

'Australia' map on Compton Down

The Whipsnade Lion

As ever, there are always a few examples of anything that defy categorisation (*'miscellanotomies'*). Such is the place of the sadly missed **Laverstock Panda** near Salisbury. This was apparently created as a student prank (from Bangor!) and only survived for as long as it took nature to reclaim her own, with just a few scars visible at close quarters when I visited in 2010. Similarly eclectic is the **Whipsnade Lion**, still very much 'alive' and prowling the Chiltern slopes. This was first cut in outline in 1933, before filling out a couple of years later. At almost 150m in length, it is the largest hill figure in Britain. It was, and still is, of course, an advert for the eponymous zoo, and was recently refurbished with 800 tonnes of donated Chiltern Chalk.

By contrast, one of the smallest figures at a mere 19m by 8m is the **West Clandon** 'fire-breathing' **Dragon**. First created for the Silver Jubilee in 1977, it became overgrown by 1990 before being renovated, and most recently fully restored in 2018. The figure is outlined with wood on a low roadside embankment of compacted chalk on the site of a former quarry waste tip.

The West Clandon Dragon

Final mention should go to a rare inanimate creation (other than crosses), near Ashford in Kent. The **Wye Crown**, which appeared in 1903 to mark the coronation of Edward VII, while cut in chalk, actually consists of gabions filled with Snowcemmed flints (now I wonder where they came from)!

Nor are such features an exclusively British idiosyncrasy, but examples overseas are comparatively few in number, and some of these appear to pay tribute to those closer to home: white horses copied or modelled on the Uffington example appear as far away as Georgia (USA), Mexico and Canberra (Australia). The remarkable images that were created in the Nazca Desert (Peru), and commonly referred to as **'The Nazca Lines'**, also come to mind. These well known 'geoglyphs' date from somewhere between 500 BC and 700 AD and are on a scale (in terms of size, number and variety) of their own. ►

The Dover Aeroplane, composed of granite slabs

This is by no means an exhaustive account of all hill figures. Venturing beyond the strict definition of an 'otomy', additional, smaller features have appeared in recent decades, inspired by a variety of causes. Closely related art forms, if such they be, are mosaics, or designs cast in stone or concrete, such as the **Dover Aeroplane** (a silhouette in granite slabs, commemorating Louis Bleriot's first cross-channel flight in 1909, and marking the spot where he landed) or the **Portknockie Fishes** (a colourful mosaic on local themes, in sight of the celebrated natural sculpture of the 'Bow and Fiddle Rock' just off the Moray coast). Indeed, surprises keep on cropping up from time to time. A few years ago I happened through Lutterworth where I came across yet more **White Horses**, small but perfectly formed - all four of them in a row nose to tail - cast from limestone and concrete slabs, decorating a corner slope just down from the High Street. In researching further for this article I have discovered many more figures than I was previously aware of, mostly created since the turn of the millenium, but often with some kind of 'advertising' (a product, a cause, etc.) in mind, so their ethos seems to have changed with time.

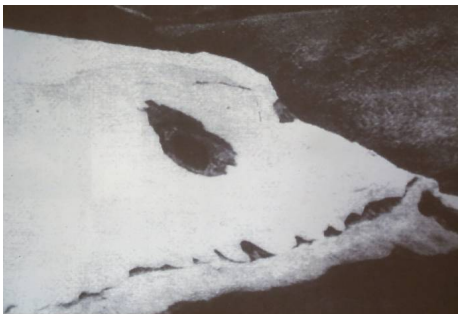
The Portknockie Fishes

Stag Rock at Bamburgh

I haven't yet mentioned paintings - but they too crop up here and there, adorning natural rock faces in lieu of canvas, and reminiscent of prehistoric cave paintings or rock inscriptions. Perhaps the best known examples are the **Marsden White Horse**, painted on a small outcrop of Permian Magnesian Limestone (actually an old quarry face) near South Shields, and the **Stag Rock** at Bamburgh, similarly painted on a small but natural vertical sea-cliff in the Whin Sill a few hundred metres north-west of the Castle. Both are around 'life size' and easy to reach, so are potentially easily 'modified' - which has been the case at Marsden, where the horse has at times been transformed into a zebra or highlighted in lurid colours.

Far less accessible is the **Figure of the Crucifixion** which adorns the interior of a sea-cave on **Davaar Island**, across the tidal flats from Campelltown, Argyllshire. Originally painted by a local art teacher in 1887, its relative isolation sadly doesn't exempt it from deliberate vandalism - nothing seems sacred these days - but remains well cared for although two original accompanying figures have been allowed to degrade through natural means.

Stretching the subject still further, I will close with mention of a couple of entirely natural 'figures' that have been 'imagined'! One I christened **The Octopus**, which appeared after a landslide on Chalk cliffs in Swanage Bay in 2001. What condition it's in today I cannot say. The other apparition from 1969, recounted in 'The Dalesman' magazine as **The Dragon of Birkdale**, may have startled more than just myself - a ghostly figure created by melting snow on a roadside hill slope in the Yorkshire Dales - very scary in such a remote location, in fading light, in deep midwinter! ■



The Dragon of Birkdale

Mike Allen