



# Newsletter No. 245

## October 2017

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To find out more about this photo - read on!



**Copy date for the  
next Newsletter is  
Sunday 1 December**

<p><b>Robyn Amos, Honorary Secretary,</b></p> <p>☎ 07595444215</p> <p><a href="mailto:secretary@bcgs.info">secretary@bcgs.info</a></p>	<p><b>Andy Harrison, Field Secretary,</b></p> <p>☎ 01384 379 320</p> <p>Mob: 07973 330706</p> <p><a href="mailto:fieldsecretary@bcgs.info">fieldsecretary@bcgs.info</a></p>	<p><b>Julie Schroder, Newsletter Editor,</b></p> <p>42 Billesley Lane, Moseley, Birmingham, B13 9QS.</p> <p>☎ 0121 449 2407</p> <p><a href="mailto:newsletter@bcgs.info">newsletter@bcgs.info</a></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.</p> <p><b>For all other business and enquiries please contact the Honorary Secretary.</b></p> <p>For further information see our website: <a href="http://bcgs.info">bcgs.info</a> and Twitter account: <a href="https://twitter.com/BCGeoSoc">@BCGeoSoc</a></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.*

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

**Monday 16 October (Indoor meeting): 'The Corsi Collection of decorative stones: where geology meets the arts.'** Speaker: **Monica Price**, Head of Earth Collections, Oxford University Museum of Natural History, and known to many members as a result of visits to OUMNH. Monica is the author of a major work on the subject: Price, M.T. (2007) 'Decorative stone: the complete sourcebook', Thames & Hudson, London, and she has made a special study of the Corsi collection at OUM. This early 19th century collection made by Roman lawyer Faustino Corsi comprises 1,000 polished slabs, each of a different decorative stone. He first obtained those used by the ancient Romans, and then added Italian stones used from medieval times to his own day. He also included a selection of decorative rocks and minerals from England, Russia, and other countries. In 1827, Oxford student Stephen Jarrett purchased the collection and presented it to the University of Oxford. It is now in the Oxford University Museum of Natural History. Monica has developed an excellent website documenting the contents and history of the Corsi Collection: <http://www.oum.ox.ac.uk/corsi/>.

**Saturday 4 November (Geoconservation Day): Barrow Hill.** Directed by Mark Williams. Meet on Vicarage Lane off High Street, Pensnett (A4101), at the top end near to the nature reserve and the church (St. Marks), for a 10.30 start. The day will involve vegetation clearance in the East Quarry. Wear old clothing and bring stout boots and gloves. Tools and safety glasses will be provided. Bring a packed lunch. We will aim to finish around 2.30.

**Monday 20 November (Indoor meeting): 'Cave Development, at home and abroad.'**

**Speaker: Tony Waltham.** Tony Waltham left Imperial College, London in 1968, with a first degree in geology and a PhD in mining geology. A keen caver, he took up a lectureship in the institution now known as Nottingham-Trent University, where he taught miners until Britain's coal mining industry died. He then moved through civil engineering into engineering geology. The combination of teaching engineering geology, ground engineering and a growing understanding of limestone ground from beneath led to research in the specialised field of geo-hazards, in particular on sinkholes and rock collapse over caves. Tony is recognised as one of the world experts on karst. His long list of published works includes numerous academic papers, accounts in more popular style, and more than a dozen books. Tony has received many awards, and may also be known to members as a result of his editorship of *The Mercian Geologist*, or as a board member of Geology Today. Tony's wealth of experience exploring cave systems across the World, coupled with his engaging and enthusiastic style, combine to make an unforgettable evening.

Introduction from Tony: "Most of the world's caves lie in karst terrains that have been eroded out of limestones. Cave passages are polygenetic, developed above, at and below the water table. Current concepts recognise all of these, but also accept significant influence by geology structure. Erosion by through-drainage of rainfall water forms most caves, but a notable type is formed by rising sulphuric acid. Once formed, caves are modified by collapse (which can be on a truly gigantic scale) and by infill of sediments (which can yield a wealth of palaeo-environmental data). The lecture takes an overview of caves and their geomorphology, with numerous examples from Britain and far-flung karst terrains".

**Saturday 2 December (Geoconservation Day): Saltwells LNR** (Local Nature Reserve). Meet at the Nature Reserve car park (Grid ref: SJ 934 868) on Saltwells Lane for a 10.30 start. Wear old work clothes, waterproofs and stout footwear or wellies. Please bring gloves and garden tools; loppers, secateurs, forks and spades if you have them. Either bring packed lunch or hot food can be acquired from the Saltwells Inn adjacent to the car park. Finish at 2.30.

**Monday 11 December (Indoor meeting, 7.00 for 7.30 start): Members' Evening - Christmas Social and Quiz!** This is our annual chance for members to share their geological experiences in a sociable atmosphere with a Christmas buffet provided by the Society. This year we are venturing into new pastures with a team quiz (with prizes!) rather than the usual short presentations. But please bring along your specimens for admiration, discussion and identification as usual.

**Monday 15 January 2018 (Indoor meeting): 'King Coal'. Speaker: Alan Hill,** author of 'The South Yorkshire Coalfield: A History and Development'. Alan is a retired manufacturing engineer, who has worked in the UK and overseas. In semi-retirement he worked for Warwick University, particularly in Hong Kong. Born at Barrow-in-Furness, he was brought up in a mining village in South Yorkshire and later spent much of his career working in Birmingham.

**Monday 19 February (Indoor meeting): 'Gemstones'** (exact title tbc). **Speaker: Gwyn Green, FGA, DGS.** Gemmologist and gemstone collector Gwyn Green has a lifetime of experience in gemmology. Her teaching has inspired many industry professionals and long-term gemstone enthusiasts. A former tutor and examiner for the Gemmological Association, Gwyn was Chairman of the Midlands Branch for ten years. She was also responsible for inauguration of the HND in Gemmology at Birmingham City University School of Jewellery. She is a passionate and knowledgeable speaker about her subject.

**Monday 19 March (Indoor meeting, 7.00 for 7.30 start): AGM** followed by 'Archival Research'. **Speaker: Roy Starkey.**

**Monday 16 April (Indoor meeting): 'My favourite science: James Parkinson's *Organic Remains of a Former World*'. Speaker: Cherry Lewis**, winner of The Geological Society of London's Sue Tyler Friedman medal. Some of you may know her as a result of her book 'The Dating Game'. She is the author of a recently published book on James Parkinson: 'The Enlightened Mr. Parkinson: The Pioneering Life of a Forgotten English Surgeon'.

### 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.

## Other Societies and Events

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

### Teme Valley Geological Society

**Monday 16 October: 'Mountain Building'**. Speaker: Paul Gannon.

**Monday 13 November: 'The Coal Measures of Martley and Newent'**. Speaker: Dr Bernard Besly.

Events are held in Martley Memorial Hall. Contact John Nicklin on 01886 888318. For more details visit: <http://www.geo-village.eu/> Non-members £3.

### Mid Wales Geology Club

**Wednesday 18 October: 'Bricks and Brickmaking'**. Speaker: Michele Becker.

Further information: Tony Thorp (Ed. newsletter & Hon. Sec): Tel. 01686 624820 and 622517 [tonydolfor@gmail.com](mailto:tonydolfor@gmail.com) Website: <http://midwalesgeology.org.uk> Unless otherwise stated, meetings start at 7.15 (tea/coffee & biscuits) with talks at 7.30 at Plas Dolerw, Milford Road, Newtown.

## Woolhope Naturalists' Field Club - Geology Section

**Friday 24 November: 'Railways in the Weald'.** Speaker: John Lonergan, West Sussex Geological Society.

Guests are welcome with day membership of the Club: £2.00. Contact Sue Olver email: [susanolver@hotmail.com](mailto:susanolver@hotmail.com) or visit: <http://www.woolhopeclub.org.uk/Programme.html>

## North Staffordshire Group of the Geologists' Association

**Thursday 12 October at 7.30: 'Environment and extinction in the late Cenozoic of the North Atlantic area'.** by Dr Andy Johnson, University of Derby.

**Thursday 9 November at 7.30: Wolverson Cope Lecture - 'Geoconservation for Science and Society - past, present and future'.** Speaker: Dr Colin Prosser, Natural England and President of the Geologists' Association.

For enquiries: Steve Alcock, Longfields, Park Lane, Cheddleton, Leek, Staffs, ST13 7JS. Tel: 01538 360431 or 07711 501028. Email: [steves261@aol.com](mailto:steves261@aol.com) More info: [www.esci.keele.ac.uk/nsgga/](http://www.esci.keele.ac.uk/nsgga/)

## East Midlands Geological Society

**Saturday 14 October: 'The Lairg Meteorite'.** Speaker: Michael Simms.

**Saturday 4 November: 'The Earth's Climatic Change'.** Speaker: Colin Summerhayes.

Non-members are welcome. Further info: [www.emgs.org.uk](http://www.emgs.org.uk) or email: [secretary@emgs.org.uk](mailto:secretary@emgs.org.uk)

## Shropshire Geological Society

**Wednesday 11 October: 'Re-interpretation of the Ediacaran fauna on Longmynd as gas bubbles'.** Speaker: Latha Menon of Oxford University.

Some events have an attendance charge, indicated where known. An additional daily membership charge of £3 is levied for attendance by those who are not existing Members of the Shropshire Geological Society. Lectures are generally held in the Conference Room of the Shropshire Wildlife Trust HQ in Abbey Foregate at 7.00 for 7.30. Further info: [www.shropshiregeology.org.uk/](http://www.shropshiregeology.org.uk/)

## Warwickshire Geological Conservation Group

**Wednesday 15 November: 'The secret life of your mobile phone (strategic metals)'.** Speaker: Andrew Bloodworth (BGS).

For more details visit: <http://www.wgcg.co.uk/> or email: [WarwickshireGCG@gmail.com](mailto:WarwickshireGCG@gmail.com). There is a charge of £2.00 for non-members.

## Manchester Geological Association

**Wednesday 25 October at 7.00 (NB change of date): 'The Science and Engineering of Shale'.**  
Speaker: Prof. Ernie Rutter.

**Saturday 18 November at 1.30: The Broadhurst Lectures: Deep Earth Matters.** The speakers will include: Prof Hugh Rollinson, Dr Jason Harvey, Dr Andrew Walker.

**Saturday 9 December at 1.30: 'Some Aspects of Planetary Geology in the Solar System'.** Speakers: Prof David Rothery, Dr Rhian Jones, Dr Susanne Schenzer.

Contact email: [outdoors@mangeolassoc.org.uk](mailto:outdoors@mangeolassoc.org.uk) For further information about meetings go to: <http://www.mangeolassoc.org.uk/> Visitors are always welcome.

## Lapworth Museum Events

**Wednesday 11 October 1.00 - 1.45: 'Discovering the origin of Dinosaurs'.** Professor Butler was part of the team which recently described a new species, which has filled a critical gap in the fossil record. Venue: The Lapworth Museum of Geology. Please register online. Earth Science Week event.

**Friday 13 October 12.00 - 12.45: 'Fifty Years of Plate Tectonics'.** Join Dr Marco Maffione, University of Birmingham Field Geologist, whose specialisms include palaeomagnetism and structural geology. Venue: The Dome Lecture Theatre. Please register online. Earth Science Week event.

**Monday 16 October: 'From source to mouth: Understanding the preserved successions of rivers'.**  
Speaker: Dr Hazel Beaumont, University of Birmingham. Venue: The Dome Lecture Theatre.

**Monday 30 October: 'Fossil Fish'.** Speaker: Dr Sam Giles, University of Oxford. Venue: The Dome Lecture Theatre.

**Monday 13 November: 'Planetary Geology'.** Speaker: Dr Natasha Stephen, Plymouth University. Venue: The EI Lab.

**Friday 24 November 12.30 - 1.30: 'Vanished: a historian's guide to extinction'.** This talk will be a whistle-stop tour of the history of extinction from a historian's perspective. Part of the 'Being Human Festival'. Run by Birmingham Research Institute for History and Cultures in conjunction with the Lapworth Museum of Geology. Venue: The Lapworth Museum.

**Monday 27 November: 'The Fossil Record and Conservation'.** Speaker: Dr Erin Saupe, University of Oxford. Venue: The Dome Lecture Theatre.

Lectures are at 5.00 - 6.00 unless otherwise stated and are in the Earth Sciences Building - Aston Webb. All are welcome to attend and there is no admission charge. For more information and booking: <http://www.birmingham.ac.uk/facilities/lapworth-museum/events/lectures.aspx>

## Lickey Hills Geo-Champions

**Saturday 14 October, 10.30 - 3.30: 'Lickey Rocks' Activity Day in the Lickey Hills.** The day includes displays, geologically-themed family activities, and a **Guided Walk on the Champions Trail at 1.30.** The walk is about 1.5 miles, and will end at approx. 3.00. Mostly easy walking, some rough ground and one fairly steep slope with steps. Wear strong shoes. No pre-booking and no charge - all are welcome.

**The Geological Society History of Geology Group Conference**  
**'The Society of Arts and the Encouragement of Mineralogy and Geology, 1754-1900'**

**Thursday 9 November** at the Geological Society, Burlington House, Piccadilly, London. Fee for members is £35 and for non-members is £45. For more information and to register, please see: <http://historyofgeologygroup.co.uk/the-society-of-arts-and-the-encouragement-of-mineralogy-and-geology-1754-1900/>

The Society of Arts' role in the history of geology and mineralogy is a generally overlooked aspect of development of our disciplines, which this conference will begin to rectify and, hopefully, to stimulate further research.

**The Geologists' Association Annual Conference**  
**Climate: past present and future?**

**Saturday 21 October: Lecture Programme** in the Reardon Smith Lecture Theatre, Amgueddfa Cymru - National Museum of Wales, Cathays Park, Cardiff, Wales CF10 3NP.

**Colin Summerhayes:** Earth's climate evolution - a new geological perspective; **Ian Fairchild:** Snowball Earth; **Dianne Edwards:** The impact of pioneering colonisers of the land on the biosphere, lithosphere and atmosphere; **Chris Berry:** Devonian; **Chris Cleal:** Come visit the jungles of south Wales - the Carboniferous coal-swamps; **Andy Newell:** Triassic; **Hugh Jenkyns:** The Cretaceous greenhouse climate; **Carrie Lear:** Descent into the Icehouse: A Cenozoic perspective on climate change and ice sheet stability; **Suzanne Bevan:** Quaternary; **Jan Zalasiewicz:** The Anthropocene.

**Sunday 22 October: Field excursions: The last glaciation of Wales** (Gower peninsula) - John Hiemstra; **Fforest Fawr Geopark** - Alan Bowring; **Building Stones in Cardiff** - Welsh Stone Forum.

For more information and to register visit: [www.geologistsassociation.org.uk](http://www.geologistsassociation.org.uk)  
or email: [conference@geologistsassociation.org.uk](mailto:conference@geologistsassociation.org.uk)

**The Geologists' Association Festival of Geology**

**Saturday 4 November, 10.30 - 4.30: Admission Free.** UCL, Gower Street, London WC1E 6BT.

**Exhibitors from the World of Geology:** Fossil and mineral displays, stonecraft, books, maps, geological equipment, jewellery, Building Stones walk around University College London, Tours of the UCL Earth Science Laboratories and more... **Discovery Room:** Rockwatch with activities for children of all ages with fossils, racing trilobites, Jurassic dioramas and more....

**Geological Talks:** **Lidunka Voadlo:** Core! What a scorcher! Hot and squashed in the centre of the Earth; **Chris Jackson:** Hot Rocks Under Our Feet: What can we learn about Volcanism From X-raying the Earth?; **Iain Stewart:** Hot Rocks: the Fall and Rise of UK Geothermal Energy; **Susannah Maidment:** How to weigh a dinosaur.

**Sunday 5 November - Festival Trips**

**Building Stones Walk - Central London.** Led by Matthew Loader.

**Riddlesdown Quarry, Croydon: London's best chalk exposure.** Led by Liam Gallagher.

**The Route of HS2 in the Misbourne valley.** Led by Haydon Bailey.

Further Festival details see [website](#). Email: [festival@geologistsassociation.org.uk](mailto:festival@geologistsassociation.org.uk) Tel: 020 7434 9298.

## Volunteering Opportunities

We need help from members in a number of activities. If you can help with any of these please contact Roy Starkey. In each case we'll send more information to those who respond.

**1. Birmingham Building Stones Trail testing.** Now that we have the grant for printing we want as many people as possible to trail-test the draft leaflets. Trail No. 1 is ready for testing. If you can spare a couple of hours to wander round Birmingham with a draft copy of the leaflet (with plenty of coffee stops and retail opportunities en route!) please get in touch and we will send you a copy.

**2. Archiving BCGS records** in their new home at the Dudley Archives.

**3. Checking and/or up-dating geological site information for the website.** The text relating to the 3 sites listed below has remained unaltered on the BCGS website for a long time.

[3. Holloway Street, Lower Gornal](#)

[5. Norton Covert](#)

[6. Stafford Road cutting, Wolverhampton](#)

If you live near one of them, or know them well, please have a look at the site and let us know: the current condition; if the access has changed; whether any of the photos are still representative; and whether the text needs to be revised. Taking this a stage further, new photos and revised text would be appreciated for those sites which are still visible and accessible.

**If you can offer to help with any of these activities, please contact our Meetings Secretary, Roy Starkey at: [meetingsecretary@bcgs.info](mailto:meetingsecretary@bcgs.info)**

## Editorial

### Dudley Museum and Art Gallery Re-opens

There is some good news to report in this issue. First and foremost, the Dudley Museum and Art Gallery re-opened in its new home on Saturday 30 September. It has been re-housed within the Dudley Archives, which, conveniently is also the venue for our Society meetings. The Black Country Geopark headquarters has also been re-located to the Dudley Archives. Our Meetings Secretary, Roy Starkey attended the re-opening ceremony, and you can see some photos here and on the front cover.

We are also pleased to announce that the Society has been successful in its grant application to the GA's Curry Fund for resources to print our proposed Birmingham Building Stones trail leaflets. There will be three leaflets, based on the detailed trails already on the BCGS website in pdf format, and in a web version. This version should be compatible with smart phones and also enables access to additional information. We hope to launch the new leaflets during Spring 2018 **but we need your help!** Please see the 'Volunteering' box above. More information about this project can be found in Newsletters 240 (December 2016) and 241 (February 2017). ►



*Black Country Geopark room*



*New geology gallery - lots of Silurian fossils*

Finally, please note that our Members' Evening this year is taking on a new look. There will be a geological quiz - with prizes! But there's no need to panic - it will be team work (see our Programme on p3 for details).

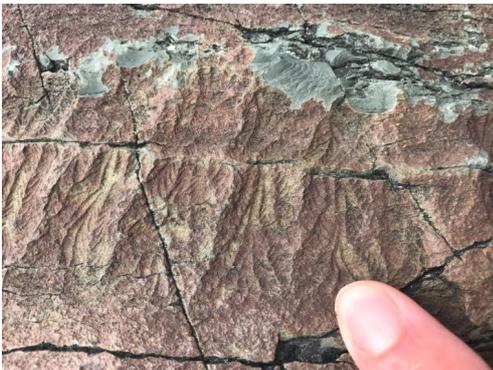
In the meantime, we have two more talks to look forward to with comprehensive introductory notes (in the Programme, above) from Roy Starkey. There are also two more Geoconservation clearance sessions this year. At Barrow Hill in particular, it is to be hoped that there can be a concerted effort at this important site, which has become very overgrown in recent years. ■

*Julie Schroder*

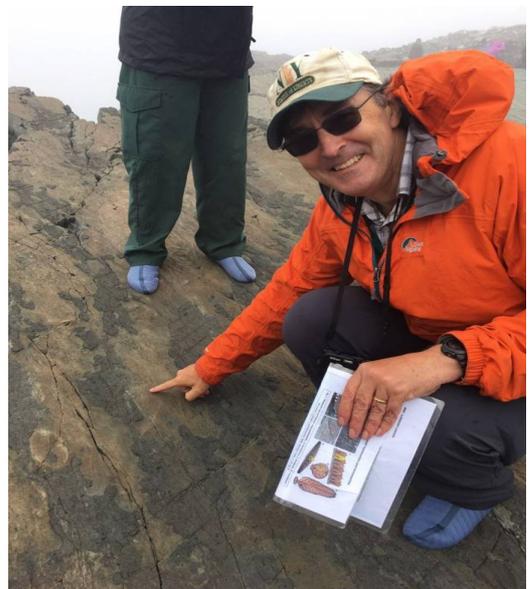
## A Trip to Mistaken Point, Newfoundland

In July 2017 I was very fortunate to be able to visit the Mistaken Point Ecological Reserve in Newfoundland on two successive days. Mistaken Point is the southernmost tip of Newfoundland and faces out into the bleak Atlantic Ocean. It was nearby at Cape Race that the distress call from the Titanic was first received. The Gulf Stream meets the cold Arctic currents and thick fog blows inland much of the year.

My eagerness to visit such a bleak place was to see the world's oldest multi-cellular soft bodied fossils. Access is strictly controlled and a limited number of people are allowed on the daily Ranger-guided 6km walk to the fossil beds. Absolutely no collection or unpermitted access is allowed. At Mistaken Point over 100 bedding planes are reported to have fossil impressions. The Ranger-guided visit is to the 'D' and 'E' bedding planes within the Mistaken Point Formation. They were impressive with hundreds of fossils on each bedding plane. We had to remove our boots and were given soft slippers to wear before being allowed onto the rock surfaces. As my son later pointed out, all old things need slippers! ▶



*Close-ups of fossils with very fine details*



*Graham on the 'E' surface, Mistaken Point*





As a geology graduate from Leicester University I was very familiar with the ancient fossil Charniodiscus. My lecturer, Dr Trevor Ford, had been instrumental in publishing and naming the fossil after the schoolboy Roger Mason, who discovered it while rock climbing near Charnwood Forest. Subsequent discoveries of similarly old fossil strata from around the world have been studied, and a great deal more is now known about this period of time. In 2004 it was given its own period name in the Geological Chart, the 'Ediacaran', after the mountains in Australia. It runs from 635 to 541 million years (according to the latest ISC chart) and is the last period of the Neoproterozoic Era (late Precambrian).

The amazing thing about Mistaken Point is the in-situ preservation, abundance and variety of Ediacaran fossils. Some 20 different species have been identified. The sediments are fine-grained turbidite silts and mudstones with only minor structural deformation. Many of the fossils have disc like attachments with which they attached themselves to the substrate. The turbidites are interpreted to have been deposited at the edge of submarine fans in water depths below the photic zone. The in-situ fossilisation and environmental interpretation makes these fossils primitive animals rather than plants.

The diorama (above) shows the likely life positions of the different species of animals found at Mistaken Point. (The photo was taken in the Miller Hall Geological Museum in Kingston, Ontario, CA.) The preservation has occurred due to a layer of volcanic ash with little disruption to the fossils; a slight alignment is observed in the fossils but few broken or displaced pieces. The photo (bottom right p9) shows an abundance of fossil impressions on the 'E' bedding surface. The lighter brown areas are where the volcanic ash layer has not been eroded from the outcrop.

There is much ongoing research to understand how this community fed, reproduced and evolved. The absence of bioturbation suggests life had

Group	Formation		
St. John's	Renews Head	Known range of Ediacaran macrofossils in Newfoundland c	
	Fermeuse		
	Trepassey		
Conception	Mistaken Point		H14 'E' 'D'
	Briscal		
	Drook		
	Gaskiers		
	Mall Bay		



not yet become mobile and the absence of shells indicates lack of predators. Dr Alex Liu from Cambridge University is actively studying these fossils and has found evidence for bioturbation in younger overlying strata. Many of his papers are free to download as his research funding is through a NERC Independent Research fellowship. The fine details and preservation of fractal front patterns is truly amazing. If you ever get a chance to visit, do so - it is a great experience.

Graham Hickman

**References:**

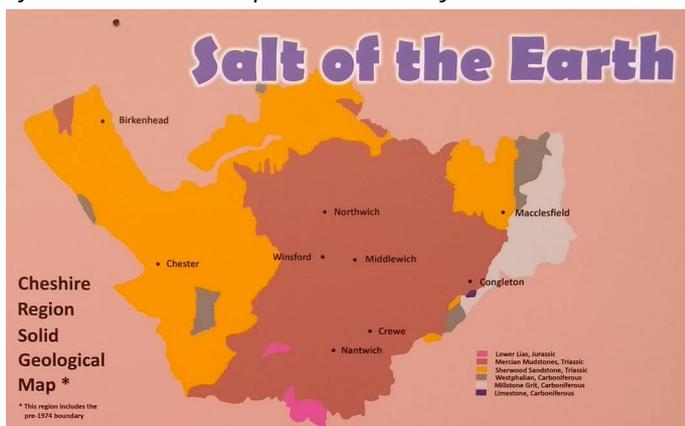
A.Liu et al. 2014 – Remarkable Insights into the palaeoecology of the Avalon Ediacaran macrobiota. *Gondwana Research*, 27:4 1355-1380. <http://eprints.esc.cam.ac.uk/3182/> ►

Government of Newfoundland and Labrador, 2009. Mistaken Point Ecological Reserve – Management Plan. Parks and Natural Areas Div.

[http://www.flr.gov.nl.ca/natural\\_areas/pdf/mistaken\\_point\\_ecological\\_reserve.pdf](http://www.flr.gov.nl.ca/natural_areas/pdf/mistaken_point_ecological_reserve.pdf) ■

## The Saltscape Landscape Partnership's Geodiversity and Geoconservation Conference - Report

*From the Saltscape website: 'Saltscape is a project to protect, enhance and celebrate the unique salt landscape of the Weaver Valley in mid-Cheshire. The Saltscape extends along the Weaver Valley in Cheshire from Frodsham in the North to the salt towns of Northwich, Winsford and Middlewich in the South. It is one of Cheshire's best kept secrets!' Maybe the Lion Salt Works Museum and surrounding Saltscape could be considered for a future BCGS field visit? Ed.*



I was fortunate to get a place at this excellent free conference held on 23 June. It was organised by Cheshire RIGS in association with the fabulous Lion Salt Works Museum, which hosted the event. The event was one of two workshops organised as the finale to a multi-year HLF-funded project.

The day started with an introduction by Veronica Holmes and Steve Woolfall, followed by a presentation from Dr Ian Drew and Professor Cynthia Burek on geodiversity. This was an interactive lecture which explored geological concepts, and provided an introduction to the history and definitions of geodiversity. Next, Cynthia Burek spoke on geoconservation, and examined the drivers for this type of conservation in Cheshire within the wider national and international scene. The difference between biodiversity and geodiversity conservation measures was discussed, and to round off the morning, Dr Kevin Crawford took a look at the language and the background and history of geoheritage.

After lunch, Kevin again took to the rostrum and developed the theme of geotourism, and what it has to offer the local community and a wider audience. Dr Ros Todhunter gave a fascinating talk on 'The Natural Resources of the Saltscape', and what can be seen in the landscape today. The final speaker of the day was Dr Kevin Crawford, who examined some of the legislative issues surrounding geoconservation and geoheritage. Delegates were then offered a choice of a short local walk to view evidence of salt working induced subsidence, or a brief tour of the Lion Salt Works.

During the lunch break, Susan Brown of the Geologists' Association unveiled four new display panels funded by the Association's Curry Fund. The boards give in-depth geological information about the salt beds beneath Cheshire and are designed to appeal to the country's many amateur and professional geologists. ■



Roy Starkey

Demonstration by Dr Ros Todhunter

## Field Meeting Report

**Saturday 17 June: Lapworth Museum Visit.** Led by Jon Clatworthy (Lapworth Museum).

### Background

The BCGS previously undertook behind the scenes tours of the Lapworth Museum in March 2008 and January 2010. This visit focussed on the newly refurbished museum, which reopened its doors on 10 June 2016. Accompanying us on this visit, were members of the Geology Section of the Woolhope Naturalists' Field Club. We met Jon Clatworthy at 10.30 in the new education room for tea and coffee. Here, Jon provided an introduction to the day and the background to the Museum's refurbishment. At the time of our visit the Museum was in the running for Art Fund Museum of the Year 2017.



*Lapworth Museum Main Hall*

The Museum's origins began with Mason College, founded in 1875, which was set up to train people in the sciences. From Mason College, the University of Birmingham grew and in 1900 moved to its current Edgbaston location. Construction of the Museum building was completed in 1908 and originally housed the Hall of Machines for the Engineering Department. During the First World War the University's main hall became a hospital and the Museum building was used as a garage and ambulance station.

The Museum opened in 1926 following the Geology Department's move from Mason College to the University of Birmingham campus. It is named after Professor Charles Lapworth, the first Professor of Geology at Mason College. Up to 2010, the Museum had remained relatively unchanged, but began to shrink as space was used for laboratories and offices. Therefore, the refurbishment works aimed to strip the museum interior back to its 1926 origins to create space.



*The Rockwall*

However, before museum staff could think about a refurbishment, they had two other tasks to achieve. Firstly, they had to get 'designated status' for the existing museum and collections, through the Arts Council of England. Secondly, they had to receive and house the geology collections from the Birmingham Museum and Art Gallery, which included the Matthew Boulton Collection. With these tasks completed in 2009, the Museum was granted lottery funding to commence the refurbishment works in 2010. The Museum closed its doors in December 2014, after taking 20,000 visitors. Since reopening in 2016 the Museum took over 50,000 visitors in the first year, beating the 40,000 required as part of lottery funding. The refurbishment cost around £2.7 million and included a donation of £250,000 from a former student and volunteer, Keith Palmer. ►

Through the refurbishment, the Museum aimed to achieve better access, tell the story of the Museum building and its collections, take better care of the collections and improve outreach provision. As part of the preliminary scheme they undertook a huge amount of consultation with museum staff, the university and the general public. The consultation process highlighted key requirements for the refurbishment, including improving signage to locate the Museum, having a staff presence, displaying more 'Wow' objects, improving facilities and not dumbing down too much.

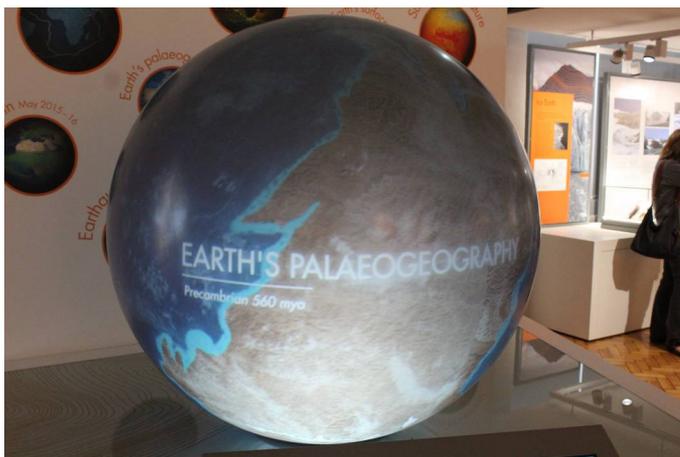
### After the Refurbishment

These points have been addressed in the displays that include 'Evolution of Life', 'Earth Processes', 'Mineral Wealth' and 'Learning and Discovery'. The first three displays each have their own gallery, whilst 'Learning and Discovery' runs throughout the Museum. To help with reaching out to schools and the general public there is a community officer who gives tours and encourages learning.

The Museum entrance has been opened up, removing the old enclosed space and adding a reception and gift shop to welcome visitors.

The open space brings in more light and draws the visitor into the Museum. Moving the

former offices and laboratories to other parts of the building added more exhibition space within the main hall. A purpose built education room provides space for groups and schools.



*The Globe*

The Main Hall houses the 'Life Gallery', with the cast of an *Allosaurus* skeleton, named Roary, greeting visitors as they enter from the reception. Wooden and glass cabinets educate visitors about fossils, cosmology and general geology and include floor level displays for children. Around the perimeter of the Main Hall, snapshots show each geological period, starting with the Precambrian and the origins of life. Particular emphasis is attributed to how the Midlands looked during the Silurian, Carboniferous, Jurassic and Quaternary, based on key museum collections. Each snapshot also includes an animation to illustrate what the environment looked like, based on real science.



*The Mineral Gallery*

Towards the centre of the Main Hall is the Active Earth Gallery, introducing important names in the field of geology. The display includes Professor Lapworth and shows examples of his tools, work and teaching aids. Adjacent to the Active Earth Gallery is a ceiling high Rockwall that displays the key sedimentary, metamorphic and igneous rocks and their characteristics. Some of the specimens are very large and heavy, which made putting it together something of a challenge. ►

Behind the Rockwall, a mezzanine floor splits the space into two floors with the Globe Hall on the lower level and the Minerals Gallery on the upper. A globe projector, costing around £70,000, dominates the Globe Hall and illustrates various global features such as plate tectonics, earthquakes, volcanoes, tsunamis, ocean currents and human movements in action. Around the perimeter of the Globe Hall, displays illustrate how various structural processes work. A ship captain's diary provides a first-hand account of the 1883 Krakatoa eruption, and a microscope allows visitors to see into the world of micropalaeontology. Together the globe, snapshot animations and microscope are examples of how the Museum is adopting new technology to help visitors view geology in a new light. Behind the Globe Hall a small space is ideal for the Museum to hold community based photographic and research exhibitions.

Dominating the Minerals Gallery on the mezzanine floor is a large glass fronted case displaying a vast range of minerals arranged in order of shape, size and colour. Up to seventy volunteers spent months meticulously cleaning each specimen, many of which had sat on shelves, gathering dust for over one hundred years. The case includes specimens from the UK and around the world. It is the only display not to have any graphics.

Other mineral displays are situated around the Minerals Gallery perimeter and behind the main case. These include three cases that illustrate key mineral extraction locations: lead from Snailbeach in Shropshire, iron from West Cumbria, and fluorite from around the UK. Educational displays illustrate the properties of minerals. Historical displays, such as Matthew Boulton's collection illustrate the importance of minerals in the past. A display of fluorescent minerals shows their appearance under visible, short and long wave ultra-violet light, which according to Jon is one of the most visited attractions along with the Allosaurus and the Rockwall. As a link to Birmingham's Jewellery Quarter, the Mineral Gallery also houses displays of precious, semi-precious and gem stones.

After lunch, Jon showed us round the two newly refurbished interconnecting store rooms packed with mobile shelving units that replaced the former static ones. The stores were emptied of all specimens during the refurbishment, which were not replaced in any particular order. Therefore, volunteers and museum staff are involved with an ongoing project to sort, reorganise and audit the collections. Hopefully, this will be completed in 2019. The Museum's community officer ensures that everything going into the stores ties in with the Museum's learning programmes.



*BCGS and Woolhope members with Jon Clatworthy*

From the stores our tour ended in the Museum's map archives. The archive is built around four main map collections - those of Charles Lapworth, Fred Shotton, Professors Boulton and Wills (all former heads of department) and miscellaneous maps. We saw various examples of Charles Lapworth's intricately detailed teaching aids, slides and notebooks as well as those of his students. Maps within the archive include Lapworth's from Scotland, Murchinson's early Silurian maps and Shotton's WW2 D-Day maps of the Normandy coast and North Africa. Early and current British Geological Survey maps are also stored in the archive for use by students. A visit from the judges of the 'Art Fund Museum of the Year' campaign had meant that the archive needed a little tidying. ►

We finished our tour around 4.00 with some time to have a look round the Museum before it closed. I would like to thank Jon for another very interesting visit and the members of the Woolhope Group for their attendance. ■

*Andy Harrison*

## Mike's Musings No. 11 - The 'Nobel Prize' for Geology?

Every year (it seems interminably so) we go through the razzmatazz of the Oscars, the Emmys, Grammys, Soaps, Baftas and Brits. Likewise the Turner and Pulitzer Prizes, and probably more I can't presently recall. The Arts (or at least the media) are not coy about trumpeting their heroes and champions.

Similarly, October, once again, will bring the annual announcements of this year's Nobel laureates. These, and their 'anti' counterparts, the IgNobel Awards, will raise a modest level of media awareness. But needless to say, no geologist will get a mention. Geology was not a science that counted for much in 1895 when the Nobel Prizes were established. Nor was geology alone in this omission. Where are the Nobels for geography, mathematics or astronomy? for engineering, architecture or computer science?

In fact all these disciplines do have their Nobel equivalents; along with subjects like sociology, education, anthropology, music and philosophy. The Fields Medal, awarded every 4 years to any mathematician(s) under the age of 40 deemed worthy enough, is perhaps the best known 'alternative Nobel'. The Abel Prize is awarded to mathematicians annually by the Norwegian government, giving their fraternity twice the opportunity for high-level recognition.

Well, did you know that geology does actually have its own 'alternative Nobel'? If you are already familiar with the Vetlesen Prize you need read no further.

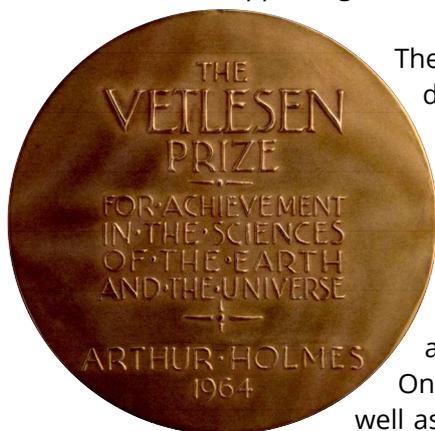
The prize, which, apart from the customary medal, carries a cash award of \$250,000, was established, and is administered, by the American Lamont-Doherty Earth Observatory in 1959. In keeping with the nature of this facility, it recognises excellence in any area of the earth sciences that gives a clearer understanding of how the earth-system functions, its history, or its place within the universe as a whole: a broad canvas indeed.

It is named in honour of a Norwegian, Georg Unger Vetlesen, born in Oslo in 1889, who curiously had little to do directly with geology (or earth science) other than a brief stint in his 20's as a miner in Canada. Despite coming from a well-to-do family (his father was a surgeon), he chose to go to sea at the age of 11. He later returned to a higher education, earning degrees in naval architecture and mechanical engineering at the Imperial Institute in London (later Imperial College). A career in shipbuilding in the United States followed. The family vessel 'Vema', purchased in the 1930's, operated for many years as an oceanographic research ship for both Columbia University and the (then styled) Lamont Geological Observatory. It still plies the high seas in its latest incarnation as a luxury cruise ship! ►



*Georg Unger Vetlesen*

Meanwhile, Vetlesen had a distinguished career in both shipping, (the U.S. Navy as a Commander) and the Scandinavian airline industry, having helped to rebuild the Royal Norwegian Air Force after WW2. He died in 1955, soon after having established the foundation that funds the award of the Vetlesen Prize, as well as supporting the earth sciences in other ways.



The award is open to any individual worldwide, and the list of winners demonstrates the wide reach of its recipients. Unlike the Nobel Prizes, it is awarded 'intermittently'; initially every 2 years was the norm but thereafter at more irregular intervals of between 1 and 6 years. It has been awarded to individuals, either one, two or even three at a time, and occasionally to collaborating workers.

Amongst their ranks are geophysicists, geochemists and geologists as well as a host of other more specialised 'ologists and 'ographers! One early recipient is described as a geodesist (where are they now!?) as well as an astronomer, an astrophysicist, and a 'normal' physicist. Some of the names are well known (at least amongst geological circles): Maurice Ewing and Felix Vening-Meinesz (from the early days of Plate Theory); J. Tuzo Wilson, M. King Hubbert, Walter Alvarez and S. Keith Runcorn are other names that rang bells with me, but probably the best known name is that of Arthur Holmes, who shared the prize with Pentti Eskola in 1964. A perhaps familiar recent recipient is Stephen Sparks, the only volcanologist to have been honoured (in 2015).

The winners this year, incidentally, are Mark Cane and George Philander from Princeton, who have helped to clarify our understanding of, and thus better predict, the incidence of El Nino events - a useful service to mankind, one imagines. Now where, in the media, did I hear about their success?? ■

Mike Allen

## Junior Geo-Sleuths on the Isle of Arran

Arran is a well-known haunt for geologists, with a feast of treasures waiting to be uncovered by the discerning geo-sleuth around every corner. Your editorial team (Julie and John Schroder) had the pleasure of a few days on the island during the summer holidays with our grandchildren, Sam (aged 9) and Eva (7½). Whilst their Mum and Dad were hard at work in Leeds, we pursued an action-packed itinerary which included plenty of time on the beach, a visit to the fabulous Brodick Castle adventure playground, crazy golf, and for



Sanidine crystals from 'The Doon'

Sam and me the triumph of conquering Goat Fell, Arran's highest mountain at 874 metres.



But what about the *An impressive hoard of crystals!* geology? Armed with clues to the whereabouts of some tempting sanidine crystals from Roy Starkey, and a dinosaur footprint from Alan Richardson (both BCGS members), there was some serious detective work to be done. ►

Sam and Eva were excited by the knowledge that the sanidine crystals were in a 'secret place', unknown to most people, and they were impressed that our friend Roy had divulged the secret to us (it's all in the marketing)! We set off for the S.E. corner of 'The Doon', a hill crowned with an Iron Age Hill fort on the west coast of Arran. The hill is composed largely of a Palaeocene sill, displaying classic columnar jointing on its western face. But our mission was to locate a spot at the south-east corner, notable at first glance only for its dense overgrowth of gorse bushes! Undaunted, the children were through the gorse bushes in no time and, pivoting on a steep slippery slope, were soon gathering an impressive hoard of the little crystals weathered out from the host rock. Sanidine is a type of alkali feldspar. At this location it had formed phenocrysts in the quartz-feldspar porphyritic host rock in the lower section of the Doon sill.

On to our next stop a little to the north of the Doon, we ploughed through deep bracken (past a dead mouse!), and across a stream to a fallen block of Triassic sandstone - the prize: a dinosaur footprint. A failure in the preliminary marketing gave rise to some puzzlement from Eva as to the vertical orientation of the footprint, but having accepted that it was on a fallen block, she was happy to place her hand on the hand-shaped print and marvel at the great age of this fossil. Later research revealed that it belonged to a lizard-like creature called *Isochirotherium* which roamed the land during the Triassic period, around 230Ma. Technically this creature pre-dates the age of dinosaurs, but that did not diminish its star status for us!



*Eva tries the dino footprint for size*



*Found! The fulgurite at Corrie*

It was discovered in the 1960's.

Finally, and across the other side of the island near the village of Corrie, we set off in full sleuthing mode to see if we could find a fulgurite which we understood was visible at or near low tide, set into the colourful Permian bedrock of the foreshore. John and I had failed to find this after much sniffing around on a previous occasion. This made it even more of a challenge for the children, and after a short time, thanks to their bright eyes we stumbled upon it!

A fulgurite is a fossilised lightning strike. This fossil shows the exact spot on a dry desert sand dune where a bolt of lightning struck during the Permian



*Close-up of the 250Ma fulgurite*

I thank Roy and Alan for giving us the clues, but most of all, Sam and Eva for their detective work, their company, their enthusiasm, and for adding the 'fun' factor to geology! ■

*Julie Schroder*