HOGG

Newsletter of the History of Geology Group of The Geological Society (GSL)

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Front cover

Some images from the HOGG weekend field meeting in the Forest of Dean (May 2017).
See PP. 6–14 of this Newsletter for further details.

Editorial subcommittee
Beris Cox (e mail: beris.cox@btinternet.com)
David Earle (e mail: daearle@btinternet.com)

The HOGG newsletter will be issued in February (copy deadline 31st January), June (copy deadline 31st May) and October (copy deadline 30th September).

HOGG NEWSLETTER 60

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LETTER FROM THE CHAIR

Our meetings programme for the year is now underway, and I have recently returned from a great weekend in the Forest of Dean, ably organised by Cherry Lewis. The weather was kind to us and we saw a lot of fascinating geological and mining sites, many associated with David Mushet; almost all of these were new to me despite having lived within an hour's drive of the Forest for 40 years. There was a good turnout and some 29 of us were led by Cherry, along with local industrial archaeologist Ian Standing and local geologist Dave Green, and we were able to go underground in both iron and coal mines (see report later in this newsletter).

Online booking has opened for our next meeting, in Lyme Regis on 9th–10th September and places are filling up fast. In November, John Henry has also put together a very interesting day, coinciding with our AGM, when we shall be considering the role played by the Society of Arts in the encouragement of geology and mineralogy.

Your committee is also looking ahead to our meetings programme for 2018 and 2019. We hope to arrange a joint meeting with the Geological Curators' Group, perhaps in Bath; another to look at the history of coal geology, which fits in with the Geological Society's theme for next year—the Year of Resources; and one on the history of polar geology. We may also arrange an open meeting. 2019 sees not only HOGG's 25th anniversary, but also the centenary of the admission of women to Fellowship of the Geological Society, and the bicentenary of the date on the Society's map of England and Wales compiled by G. B. Greenough for which a commemorative meeting will be held either in 2019 or 2020.

Last month, I attended a meeting of the chairs of all of the Geological Society's specialist groups. We meet once a year and it is a chance to hear what the other groups are doing, compare notes and experiences, and pinch any good ideas. We're hoping to improve communication and liaison between groups, perhaps by all of us following one another on Twitter and Facebook. I was interested to learn that some groups are planning meetings with a historical bent which might be of interest to HOGG members, such as the Engineering Group who are marking 50 years of engineering geology next year with a meeting in Cambridge.

Recently, I was fortunate to have the opportunity to visit, albeit briefly, the *Volcanoes* exhibition at Oxford's Bodleian Library. What a treat it was! Some stunning material from the collections of the Bodleian and the wider university was beautifully displayed in the gallery of the Weston Library, brought together to demonstrate how volcanoes have been portrayed through time, what their impacts have been, and how our modern understanding developed. From blackened papyrus scrolls from Herculaneum, charred by the eruption of Vesuvius in 79 AD, through early 15th century illustrations of volcanoes and, of course, Sir William Hamilton's *Campi Phlegraei*, to movie posters, teaching models, rock specimens and modern equipment, this exhibition was packed with wonderful stuff. I was struck particularly by two diaries, one recording the poor summer weather and 'putrid air' in England due to the huge 1783 eruption of Laki on Iceland, and another for 1816, the 'year without a summer', the result of the eruption of Tambora. Memorable too, and also from that same wet summer of 1816, a draft manuscript of Mary Shelley's *Frankenstein*. This was one of the best geological exhibitions I have seen for a long time; the concept was well executed and thought out, the quality of the exhibits could not be bettered, and the design, layout, lighting and labeling were excellent. My only complaint is that the exhibition was on for only three months and deserved longer. I hope many of you had the chance to see it but, if you missed it, the Bodleian has published an attractive, well-illustrated book, *Volcanoes. Encounters through the ages* by David Pyle of Oxford's Department of Earth Sciences and the lead curator of the exhibition.

Sadly, we have heard of the recent passing of several of our members, in particular Norman Butcher who I first met almost 40 years ago and whom I saw several times in Edinburgh over the last few years

when I was trying to track down a Smith map in Reading which he had exhibited back in the 60s. We're sorry too to hear of the death of Elizabeth McIntyre who joined us, with her husband Roy, just a year or two ago but who will probably be familiar to those of you who have attended the Geologists' Association Reunion over the years where she exhibited her wonderful geological relief models (see P.4 of this newsletter). Another famous face to leave the history of geology 'community' is Ron Cleevely, formerly of the Department of Palaeontology at the Natural History Museum and best known for his very useful 1983 reference tome, *World palaeontological collections*, and for his work on the Sowerbys (see P.5 of this newsletter). With the loss of Trevor Ford and Deryck Laming earlier this year, 2017 is taking its toll of geological historians. We extend our condolences to all their families.

Tom Sharpe e mail tom@tomsharpe.co.uk
June 2017

HOGG COMMITTEE 2017

Chairman Tom Sharpe **Vice Chairman** Geoffrey Walton **Secretary** Chris Duffin
Treasurer/Membership Secretary David Earle **Ordinary members:** Beris Cox (**newsletter**), Stephen Cribb, Jill Darrell, John Henry, Sabina Michnowicz (**web officer**), Ted Rose.

HOGG WEBSITE

The HOGG web officer **Sabina Michnowicz** (s.michnowicz@ucl.ac.uk) co-ordinates material for inclusion on our main website http://historyofgeologygroup.co.uk/. The site provides easy access to all aspects of HOGG including details about our meetings and the facility for online registration and payment, as well as subscription renewal. Please contact Sabina if you have any queries or items for inclusion. We also have a presence at www.geolsoc.org.uk/ where you will find some useful resources.

HOGG NEW MEMBERS

HOGG welcomes the following new members

Graeme Churchard (Stoke Bishop, Bristol)
Mark Cope (Newport, Gwent)
Pamela Smith (Birmingham)
Nick Walton (Southsea, Hampshire)
Barry Ward (Bellingen, NSW, Australia)

and returning member

John Smallwood (Reigate, Surrey)

RIP We are sad to record the deaths of HOGG members Norman Butcher and Elizabeth McIntyre.

OBITUARIES

For an obituary of HOGG member **Trevor Ford,** whose death we announced in the last newsletter, see https://www.geolsoc.org.uk/About/History/Obituaries-2001-onwards/Obituaries-2017/Trevor-David-Ford-1925-2017

For an obituary of HOGG member **Deryck Laming**, whose death we announced in the last newsletter, see https://www.geolsoc.org.uk/About/History/Obituaries-2001-onwards/Obituaries-2017/Deryck-James-Colson-Laming-1931-2017

ELIZABETH McINTYRE
(1st July 1932–31st March 2017)
Elizabeth's husband Roy[1], also a HOGG member, shares this tribute.

My daughter Nancy and I both remember the visit to the Eyles Collection on October 21st 2015 when we were there with Elizabeth to see the William Smith Maps in the University and the Museum, and saw the remarkable documents in the Collection. Elizabeth was so pleased to meet the members then.

In Liverpool, she studied Biochemistry, but one of her friends was reading Geology and recommended Holmes' *Principles of Physical Geology* for good bedtime reading. Her copy is still on our bookshelves. It is since we retired that we found opportunities to learn more about the subject through the Open University and the West of England Group of the GA which we joined in 1996. Field trips took us to some wonderful places, including over forty of the Scottish Islands.

Some twelve years ago, she started a new hobby of making 3D model maps from BGS and OS sheets, working out how to do it and what materials to use entirely herself. She hand-painted the vertical edges to match the BGS colours, needing forty pots of paint for the task. She gave several away including one of the area surrounding Bristol University, which the members happened to see during the visit. She made her first 3-D model map in 2004. It was of the land between our home here in Winterbourne and the Cotswold Edge. It stretches from Dursley to Bath (*pictured above*). She did it to help her get a better understanding of the bedrock we can see. It was ready in time to take to the GA Reunion, which in that year was in Cardiff. I reckon it had taken her about 500 hours of painstaking work over a three month period.

She appreciated being a member of HOGG. One visit we made last year which we greatly enjoyed was to Churchill to see the William Smith exhibition there.

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[1]e mail bencruachan@icloud.com

RON J. CLEEVELY
1934–2017

Although not a member of HOGG, Ron Cleevely was well known to many HOGG members and those of our sister group GCG (Geological Curators' Group). The following obituary is taken largely from the GCG website.

Ron Cleevely, former Senior Scientific Officer in the Department of Palaeontology [Natural History Museum, London], died after a short illness on 26th February 2017, aged 82. For 30 years between 1961 and 1991, Ron was a stalwart of the Fossil Mollusca section, curating and advancing the taxonomy of Cretaceous gastropods and bivalves. He published extensively on Cretaceous molluscan faunas, for example, the Blackdown Greensand gastropods (with Noel Morris and John Taylor in *Palaeontology*) and made a considerable contribution to the Palaeontological Association *Field Guide to fossils of the Chalk*. However, his fame in palaeontological circles lay more in his exceptional knowledge of 18th and 19th century collectors, their specimens and associated natural history works. His publications included several on the Sowerby family, beginning with a bibliography of their publications in 1974, and a biography of the famous Scottish collector, Elizabeth Gray, with details of her extensive collections held in the Natural History Museum (1989). Amongst palaeontologists, he is perhaps best known for his encyclopaedic guide *World Palaeontological Collections* (1983), which has become the standard reference to fossil collectors and their collections. Unfortunately, as part of the major restructuring of 1990, Ron lost his job in 1991. He set up a consultancy, 'RonCAIRS' (Ron Cleevely Archive & Information Research Services), "providing assistance with natural history bibliography, biography and history, especially of 19th century geology and palaeontology, the curation of fossil collections, and the identification of fossil mollusca". After retirement to Devon, he continued his research which resulted in *Collecting the New, Rare and Curious Letters selected from the Correspondence of the Cornish Mineralogists Philip Rashleigh, John Hawkins & William Gregor* (2009). Colleagues last saw Ron on December 8th 2016 at a commemorative meeting to celebrate the life and work of 'Bob' Symes (see HOGG Newsletter 59, pp.8-10). Concerned about preserving historic data, Ron gave a talk entitled "The use of archiving material to enhance our knowledge of mineral collecting in the past". His presentation, which generated good discussion, was about the changing nature of records and the ephemeral nature of electronic media, and its potential loss in the future. He made a tremendous effort to travel up from Devon to contribute to this meeting because of the support and encouragement that he had received from Bob for his work on mineral collectors and dealers. Ron will be missed–colleagues have fond memories of field trips with him, and he was a kind and thoughtful person, always willing to impart some of his immense knowledge about collections and collectors.

Selected bibliography

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THE RON CLEEVELY RESEARCH ARCHIVE

***Roy Starkey*[1]**

Many members will have been aware of Ron's exemplary track record as an historical researcher and archivist. His interests spanned many areas of Natural History, including butterflies, heathers and

Alpine plants. Professionally, Ron worked on gastropods and bivalve molluscs, but he also developed a passion, and a great skill, for researching the history of geology. He had made detailed studies of Gideon Mantell, Philip Rashleigh, John Hawkins, James Sowerby, George Montagu, Archibald Geikie, James Parkinson and their associates, amongst others.

His researches are built upon thousands of hours trawling libraries, records offices and other archives for snippets of information, and transcribing hundreds of letters, which he then wove expertly into a coherent story about whatever particular aspect he was investigating. With the permission and enthusiastic cooperation of his wife, Rosalyn, Hugh Torrens and I have retrieved the majority of Ron's research notes, files and electronic records.

His papers on the history of the Sowerby family, Mantell and various general aspects of the history of geology will be retained by Hugh Torrens for the time-being; his work on Montagu has been passed to his co-researcher Graham Oliver (formerly of the National Museum of Wales); his work on the "Barnstaple Zeolite" (wavellite) has gone to co-author David Green; and his papers on Rashleigh, Hawkins and Gregor to Tom Cotterell at the National Museum of Wales. His files on the Geikie archive will be returned to the Haslemere Educational Musuem. Other files have been left in Devon for the moment, pending finding suitable recipients / homes for them. If you have a particular interest in palaeontology and fossil taxonomy, especially of the Blackdown Hills near Honiton, please get in touch with Hugh Torrens to discuss whether there is anything which may be of interest to you.

I have taken copies of all relevant electronic files, and propose to make these available to anyone who may be interested in following-up Ron's work. Given the passage of time, some of the files may be accessible only with difficulty, as they date from the late 1980s and 1990s, and include formats such as Word Perfect (which can be opened using MS Word), and various file extensions which will require a little more ingenuity to access. If you are interested in any of Ron's research areas and would like copies of the electronic files, please contact me[1] and I will provide a link where you can download the data (approx. 3GB).

This exercise has highlighted the need for us all to try and take steps in these difficult times, to consider what happens to our (in some cases, very extensive) personal archives and records, especially electronic records and digital images—perhaps now is a good time to give this some thought, and to put some plans and instructions in place before it is too late.

[1] e mail roy.starkey@gmail.com
Tel: 01527 874101)

NOT JUST ONE COALFIELD, BUT TWO: THE HISTORY OF GEOLOGY AND MINING IN THE FOREST OF DEAN.

Report of the HOGG weekend (May 19th–21st 2017) field trip led by Cherry Lewis, Ian Standing and David Green

Brian Roy Rosen[1]

"Where is the Forest of Dean? It's still back there. It's a sort of mythic Forest of Dean. There's the real one (laughs), with the same signs and stresses as the real anywhere, and there's the other one, the one I grew up as a small child in, and those rather ugly villages in beautiful landscape. Just accidentally a heart-shaped place between two rivers, somehow slightly cut off from them, the rest of England and Wales on the far side, the other border ..." Dennis Potter (born Forest of Dean 1935) in interview with Melvyn Bragg (https://www.theguardian.com/theguardian/2007/sep/12/greatinterviews)

On the few occasions I have been to the Forest of Dean (hereafter 'FoD', as in my student-days' geology notes), mostly when I was a lot younger, I have been struck by the extent and depth of its mostly deciduous woodland, sometimes even to the point of feeling somewhat oppressed by it. Roads crossing the relatively high topography rarely yield views, as we found as our field trip bus wound, seemingly interminably, amongst the stately trees of the Forest, forever confusing our sense of direction. But I suppose it gives some idea of what much of Britain must have looked and felt like in the past, before farming and other land use took their huge toll, leaving the FoD as one our few notably large remnants of ancient woodland, along with, for example, the New Forest and Sherwood Forest.

Compared with the large, more heavily populated, busier and lower-lying, more open areas surrounding the FoD today, you enter a very different ambience of dark seclusion—even isolation and remoteness—as you climb into its rolling, densely wooded hills. Even the few townships of its interior seemed rather lost in a former time, reminiscent of those in much more distant parts of the British Isles. Geography is the clue. This is also a mini Mesopotamia, set between the two major rivers of the Wye and Severn, carrying large volumes of often fast flowing water out of the wetter regions of their Welsh hinterlands—rivers prone to flooding and difficult to bridge. This was a major challenge to those who wanted to develop its rich coal and iron resources. The roads linking it to the outside world were few and frequently impassable, and the hilly terrain was unfavourable for canal-building. Even today, the recommended eastern approach by road forced us into a southward dog-leg before allowing us to climb into the Forest to the well-known **Speech House** [SO 620 121] where our field trip party was booked to stay.

The writings of Dennis Potter, widely known as a playwright son of the FoD, relate to social factors of its geography and relative isolation. But also, his father was a coal miner, and as we saw, mining is still one of the two main occupations of the Forest (the other, unsurprisingly being Forestry), and this links us to the main aims of the trip. Obviously, we came not to praise Potter's dramas, but to consider some true-life dramas acted out in the FoD especially during the late 18th to mid 19th centuries. In a broader context, this time period witnesses the emergence both of modern geology and of factory systems of industrial production in what might be thought of as the 'New Iron Age'. Casting our minds back to this time, we have to think how the glittering economic, commercial (hence speculative) prizes of the day were the resources of coal and iron, the importance of which, to Britain at least, has now almost faded away, even from collective memory. Yet the basic principles of geological mapping, so essential for finding these resources, were only just being established. How successfully did the combined efforts of the contemporary men (mostly) of iron and money, engineers and industrialists, overcome this, as well as the fastnesses of the FoD, to hit this coal-and-iron jackpot?

This trip was convened by Cherry Lewis "to comprehend what it was like trying to find iron and coal when the geology of the area was poorly understood." Notably, some of the key characters in this drama came from elsewhere: Dalkeith (David Mushet), Bedford (John Farey Snr) and Churchill, Oxon (William Smith). Cherry co-led the trip with Ian Standing (local industrial history) and David Green (local geologist), making up a nicely balanced trio of complementary expertise which also led to excellent discussions in the field. Trip participants were also given the guides' comprehensive 25-page itinerary guide (Lewis *et al.,* 2017) put together by them with much care, breadth and fascinating attention to detail. This is not just a mine (ha-ha!) of useful information, but a valuable document in its own right which, though as yet unpublished, should surely be made more widely available in due course.

At our first stop [SO 605 048] on the first day, we visited two sites close to each other. We entered a deep oak wood to view the remarkable **Devil's Chapel Scowles** near Bream and also **Chelfridge lime kilns** ***(picture left)*** just on the

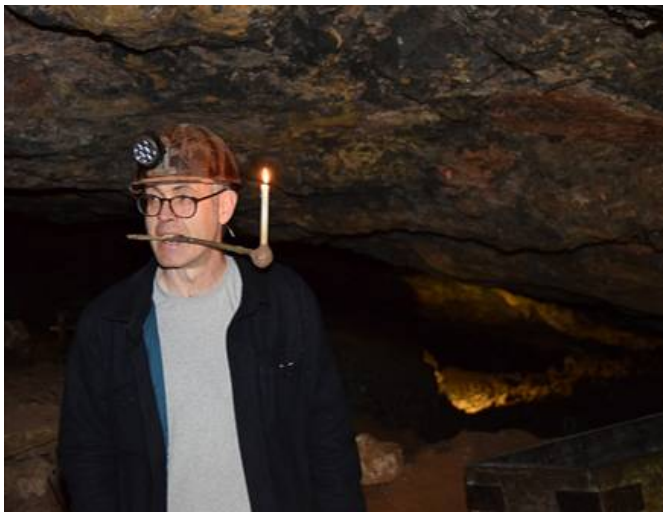
further edge of the wood, with a fine view of the house at Chelfridge, and just a glimpse of the River Severn in the distance. Lime burning is quite ancient, but here the attractive double brick structure is probably 19th Century in age. It is no longer used and is in need of conservation work. Limestone for the kilns would have been readily available from the Lower Carboniferous outcrops in the immediate area.

Dave Green explains the geology of the Forest of Dean.

The Scowles ***(picture left)*** were one of the two most outstanding scenic features of the trip (the other being the Old Red Sandstone scarp just E of Monmouth—see below), and in various senses, a mystery. Certainly, the deep wooded atmosphere of numerous small, irregular, rugged, reddened limestone crags, separated from each other by a labyrinth of deep clefts and hollows, all covered by moss, undergrowth and leaf litter, and hemmed in by trees, evokes myth and mystery, even before embarking on the real riddles of their scientific and historical origin. Great trees even grow atop some of the rocks, with their roots wrapped around them, looking like overgrown bonsai or Chinese engravings of tower karst. It is no surprise to discover that these and other scowles in the FoD have been used as locations for all the obvious science fiction films and series (*Harry Potter*, *Doctor Who, Star Wars, Lord of the Rings, Blake's Seven*) as well as *Midsummer Night's Dream*. But our party soon became animated about science fact rather than fiction ***(picture right)***. Are the clefts simply natural weathering of joints in the limestone, or are they old workings, possibly as old as Roman, for the iron ore which typically inhabits such joints in many parts of the FoD area? A combination of both seems most likely. Modern techniques of rock-surface dating, now well established, might help to clarify human and natural processes.

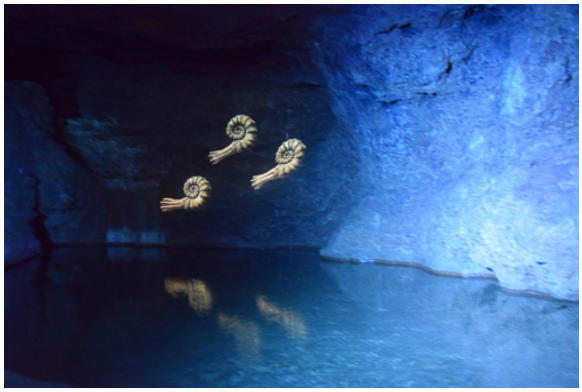
We continued to think about these questions at our next stop, the outstanding working mining museum, a little confusingly known as **Clearwell Caves** [SO 578 082] just S of Coleford. Here we were guided by Jonathan Wright who operates the mine here. His explanations were fascinating and broad-ranging,

including the mine operation itself, and the history of iron mining and miners in the Forest. He told us that he himself was a Free Miner of the Forest of Dean, and what that meant, now and in the past. Mines and caves don't suit everybody's idea of a nice day out, and just for a moment, the rambling complex system of caverns and galleries with various small, often rather makeshift-looking railway systems running here and there throughout the mine, conjured up the frisson of Indiana Jones' encounter with the crazy violent mine and its subterranean roller-coaster beneath the 'Temple of Doom'. However, the



In Clearwell Caves, with Jonathan Wright *(right)* demonstrating how to hold a 'Nelly' (a traditional FoD miner's clay candle holder).

parts Jonathan took us through at least, all felt reassuringly calm, solid, and roomy, and were well enough lit, with much to see by way of artefacts and explanation boards. There is even a small entertainment venue. You can find 'living fossils' here too in the form of a recently installed highlight exhibit of an animated, scientifically-researched, two-dimensional succession of ghostly-white translucent Carboniferous fish, goniatites ***(picture left)*** and crinoids. I wish we had this technology available to us when I was helping to specify content for the *From the Beginning* gallery at the Natural History Museum.



In fact, Cresswell Caves are at least in part a complex cave system which probably formed initially in Permian times along dissolved-out joints in the Crease Limestone (Chadian, Lower Carboniferous). This became lined not only with the usual kinds of cave limestone deposits but also iron ores, derived perhaps from weathering of iron-rich rocks exposed on the Permian land surface, creating a kind of downward, underground continuation of the similarly mineralized scowles we saw earlier. Then going back perhaps as much as 7,000 years, miners entered this cave system, and added to its complex warren, much of it now penetrating much further, far deeper and far less accessibly than what visitors normally see. Iron ore was mined until 1945, but remarkably perhaps, this has also been a pigment mine—and still is. The iron ores and iron-rich clays of Cresswell are a source of luscious-coloured ochres. It is intriguing to think that the heavy labour and industrial tools and machinery of mining, here yield prized materials which end up being delicately used by artists on their canvasses, which perhaps eventually become world famous, valuable works of art.

From iron as raw ore, we progressed after our packed lunches at the Cresswell Caves café (and the only time it rained during the trip), to a story of failed endeavour and speculation about iron-the-metal by 'men of iron' at the ruins of **Whitecliff Ironworks, Coleford** [SO 568 102] as told by Ian Standing. The first replacement of long-used charcoal for iron-smelting by coke (1709) is generally attributed to Abraham Darby I (1678–1717) in Coalbrookdale, Shropshire, possibly following earlier efforts by some of his family predecessors. But strangely perhaps, there was a century lag before this method reached

the FoD here at Whitecliff, through local ironmaster James Teague. Was this lag a reflection of the FoD's relative isolation? Teague collaborated with outsiders from Shropshire, and further impetus to improve his furnace came from other outsiders in the form of London-based stockbroker, Thomas Halford, and Scottish metallurgist, David Mushet. But by 1816, it was all over, leaving nature to turn the furnace into a romantic ruin, happily however, now being properly conserved in stages as a Scheduled Monument ***(picture right)***.

We next moved from iron and ochre pigments to consider two further important resources of the FoD—building stone and coal—by walking between a number of sites in the **Bixslade Valley** [SO 605 099]. From where our coach parked [SO 60511 09996] near the **Forest of Dean Firms Stoneworks** yard at Parkend at the southern end of Cannop Ponds, we walked along the remains of the local horse-drawn narrow gauge tramway (Bixslade Tramroad, 1812 onwards) which preceded the steam railways of the area (now gone, too, apart from preservation lines). This was a plateway (L-section rails) laid on still visible stone setts in place of sleepers, carrying wagons with unflanged wheels, as we saw later at the Dean Heritage Centre. We reached the locked gates of **Mine Train Quarry** [SO 60186 10060] to peer through them at quarry faces in reddened Pennant Sandstone (Upper Carboniferous, Upper Coal Measures, Westphalian D or Asturian). Use of this fine, well known and widely used blue-hearted building stone goes back at least to the Bronze Age. The building-stone term 'Pennant Sandstone' is used for almost all of these kinds of Coal Measures sandstones throughout the FoD, South Wales and the Bristol area (analogously to 'York Stone in the N of England). They are fluviatile in origin, sometimes deposited in channels, and occur at many levels in association with coals and shales. Examples of the stone's attractive range of uses can be found at https://www.fodstone.co.uk

In the same immediate area, we also saw the closed-off adit entrance to **Bixslade Low Level Coal Mine** [SO 60166 10029], the history of which brought together the efforts of William Bradley, David Mushet, Thomas Halford and also William Smith to tackle the geology both locally, as well as for the FoD as a whole, culminating in Mushet's spectacular geological column and cross-section, just a few years before Smith published his great map (1815) of the geology of Britain. The mine, dating back to 1809, extracted coal from the Coleford High Delf seam (Westphalian D or Asturian).

We then paid our respects at the moving sculpture [SO 60281 09998] ***(picture left)*** commemorating the tragic loss of miners in 1902 in a sudden flood in the workings of Union mine nearby, which worked the same seam. Finally, we looked around the little area of surface plant and installations around the entrance to the relatively modern (1980) **Monument Mine** [SO 60319 09966], a drift working for the Yorkley Coal (Westphalian D or Asturian), tens of metres higher, stratigraphically, than the High Delf. Coal and iron mining concessions ('gales') in the FoD are granted according to rules of the Royal Forest of Dean Free Miners Association which goes back to medieval times. In the recent past, these rights have been upheld in a conflict when the Government of the day tried to close down all the coal mines in Britain. The site of Monument Mine ***(picture right)*** was a delightfully

quirky, not to say rather makeshift-looking, set-up, with apparently improvised structures made of salvaged bits of old road vehicles, corrugated iron and seemingly almost anything else that could be pressed into use. Narrow gauge railway tracks and a hand-worked turntable complete the scene, which looks more like a film set for an old Wild West gold mine than a classic British pit-head, and is also the kind of thing that inspires a certain kind of model railway enthusiast. Nevertheless, it is evidently a going concern for the three-man team who work this mine, who use an electric mechanised coal-cutter.

We rejoined our bus at the **Forest of Dean Firms Stoneworks** (above) after looking around their site (not open) where the quarried Pennant stone is cut, prepared and stored for sale. By the public car-park however [SO 60721 09963], there were plenty of slabs stacked up outside the yard for us to inspect the stone, and plenty of scattered waste for us to pick over for souvenirs.

Our last stop of the day was at **New Fancy** [SO 629 095] in the heart of the Forest, which was once the site of a substantial coal mine which began operations in the mid 19th Century. There's now little here to suggest this once-extensive industrialised site. Even most of the waste tips have been removed, and the remaining waste has been turned into a pleasant reclaimed landscape in a kind of gentle wooded amphitheatre, reverted to a natural and older FoD landscape. On its flat floor is a geological map (Geomap) of the Forest of Dean, paved with rocks representative of its stratigraphy. This was ideally

suited for a spontaneous group photo taken by our coach driver ***(above)***. The map shows the former railways and the numerous sites of mines and quarries. We also went up on to the viewing point, well known to goshawk watchers (but we saw none ourselves), which further confirmed for us the sheer extent of the forest, both ancient and planted ***(picture right)***.

Our first stop on the next day was for some important and striking outcrops forming the north-western scarp of the FoD above the River Wye, to see the Quartz Conglomerate of the Upper Old Red Sandstone (Upper Devonian: Famennian). Leaving our bus, a short walk through the forest brought us dramatically to the scarp edge itself at the **Near Hearkening Rock** [SO 543 140]. By some strange trick of acoustics, probably

The Harkening Stone (Quartz Conglomerate, Upper Old Red Sandstone)

due to the sound-focusing effect of its partly concave vertical surface, people standing by it could (can?) hear others talking about a mile away. The area was therefore 'bugged' in effect, by natural causes, allowing gamekeepers to listen-in on poachers, and Royalist soldiers to listen-in on Roundheads during the Civil War. There were many other things here, however, of greater immediate significance for our party. We had a good discussion about the depositional environment of these relatively mature cross-bedded conglomerates, postulating flash floods, alluvial fans, rapid fluviatile deposition in braided channels, or some combination of these. A large isolated block (**The Suck Stone**), tens of metres down the scarp face below the crest, had evidently fallen from the outcrop proper. We discussed the cause and timing of the fall which seems to have happened without human witness, so we speculated that it was due to release of the block when ice or tundra conditions retreated in the Pleistocene. Or perhaps it fell from a former face of the scarp when it was destabilised by uplift and/or by downcutting by the River Wye just below us, during a rejuvenation stage. (The Wye famously follows a superimposed and incised course through the FoD.)

From the Quartz Conglomerate cliffs, Cherry took our minds back in time to understand the confusions that built up, historically, in the task of understanding the stratigraphic position of the Quartz Conglomerate in relation to British coalfield geology in general. This brought together a chain of loose collaborations and influences between Mushet, who was trying to synthesise his knowledge of the FoD geology, Farey who was doing much the same in Derbyshire, and Smith and Greenhough, both of whom were attempting to produce the first geological map of the whole country. A further issue was the apparently similar marls, which in different parts of the country seemed always to overlie coals. Although Farey championed Smith's use of fossils to distinguish the stratigraphy of otherwise similar lithologies, there were not enough fossils (well, macrofossils) in the marls or the Quartz Conglomerate for them to make this possible. In summary, Mushet concluded (alarmingly as it would seem to us today) that there must be another set of coal measures stratigraphically beneath us where we stood on the Quartz Conglomerate.

Afterwards, we proceeded to **Hopewell Colliery** [SO 603 114], another working coal mine in the same Yorkley seam as Monument Mine, but as a bigger operation, and also one where visitors like us can be taken on underground tours. Hopewell is also much older (1823). We split into two parties each guided by different miners ***(picture right)*** and entered the mine through different adits, to meet up at the single current working coal face. Although we could just stand upright in the galleries themselves, the Yorkley seam here is only 18 inches (450 mm) thick and worked by the miners lying on their sides. As with every mine of any kind that I have ever visited in Britain, including Cresswell the day before, this was a time for guides to reflect on the very sobering subject of working conditions past and present. Considering that slavery was abolished by Britain in 1833, it took nearly another decade before the first Mines Act began to improve slavery-like working conditions in mines, starting with prohibition of all females, and boys under 10, from working underground. Mushet himself gave evidence which led to this Act. A

particularly interesting mitigating detail about conditions in the FoD coal mines in general is their relative safety on account of only rare occurrences of the explosive gas methane ('firedamp').

We got back to fresh air by taking a short walk down a former railway track to see the ruins of **Dark Hill Ironworks** [SO 591 087] near Coleford. With the track somewhat higher up on a later embankment of the Severn & Wye Railway that cut across Mushet and sons' industrial site, it was like those classic views looking down on various ruins of ancient Rome. In the end, nature does not distinguish the age of the ruins it overgrows. Ian ***(picture left)*** explained that this was Mushet and sons' site of metallurgical experiments as they sought to improve the quality of iron smelting and production of other metals over the next few decades following the first iron furnace in 1818 or 1819. Financial problems brought their efforts to a close. Other uses followed but the site became a ruin after 1928.

Our final stop, appropriately, was at the **Dean Heritage Centre** [SO 665 105], in an attractive set of former mill buildings on one side of a mill pond, at Soudley, south of Cinderford. The exhibits added to our understanding of many of the things we had seen in the field, and gave us a chance also to catch up a little with the natural history of the area. For those who needed it, there was also scope for a little retail therapy, to buy some FoD keepsakes. But the main objects were to look at **Thomas Sopwith's geological model** of the FoD ***(picture right)***, and for the archivist and Ian to show us important documents of Mushet and Sopwith in the archives relating to this. In the 1830s, Sopwith made two three-dimensional block models of the FoD, this, the larger one, being on permanent loan from the Sedgwick Museum, in the University of Cambridge. Having learnt so much geology in my student days from the sadly long-gone block models that once graced the former Geological Museum in South Kensington, I wondered if Sopwith was the first to devise this didactic way of demonstrating the geological structure and stratigraphy of an area. Unfortunately, it is difficult to view the model conveniently from all angles in its present location and it is hoped that this can eventually be remedied by a move to somewhere more suitable within the Centre.

It is fitting to end this report proper by pointing out that by the time Sopwith was making his models, Mushet had realised and corrected his 'double coal-field' problem, and the accuracy of Mushet's geological work (though a metallurgist himself) still stands in its own right.

All in all, this was an outstanding, exciting, interesting and adventurous field trip with not just one coalfield but two, and not just one descent in Hades, but two, as well as numerous zig-zag journeys back in time from a century or so ago to 370 million years ago. Who else but historians of geology can do all that?! This really was a 'Forest of Dean Experience' as the travel brochures might have called it. It was also a major surprise for me at least to see that coal is alive and well in this part of the country, notwithstanding the efforts of successive governments, and now environmentalists, to terminate our coal

mines (whatever our views on that). We gained lively insights into how the problems connected with the birth of modern geology were thrashed out on the local scale, as well as the struggles to make it all pay through industrial innovation and exploitation. The expertise made available to us by all three leaders, as well as others who conducted particular tours, was impressive and everyone was rightly full of praise for them and their work in preparing and running this ambitious and unusual trip. *NB Unfortunately, I have no record of the names of the miners who showed us round Hopewell Mine.*

REFERENCE

Lewis, C., Standing I., & Green, D. 2017. *The history of geology and mining in the Forest of Dean. History of Geology Group field trip, 19–21 May, 2017.* Unpublished guide produced for field trip participants. 25 pp.

NOTES

The field guide by Lewis *et al (above) should be consulted for further reading, and contains numerous references. I have used a few of my own, mostly BGS publications and BGS online resources. Although I have drawn heavily on the field trip guide for this report (accurately I hope), I have also introduced facts and thoughts of my own as well as reporting points made by others during our discussions in the field. The leaders of this trip are obviously not necessarily responsible for information, ideas or mistakes which were not in their guide.*

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[1]Department of Earth Sciences, Natural History Museum, London
email b.rosen@nhm.ac.uk

FUTURE HOGG EVENTS

***WEEKEND MEETING:**
THE GEOLOGISTS OF LYME REGIS
9th–10th September 2017
Lyme Regis, Dorset
Convenor: Tom Sharpe
Details on P. 15 of this newsletter. Registration form on P. 31.

***THE SOCIETY OF ARTS AND THE ENCOURAGEMENT OF MINERALOGY AND GEOLOGY—1754–1900**
Thursday 9th November 2017
Burlington House, Piccadilly, London (including HOGG 2017 AGM)
A joint meeting with the William Shipley Group for RSA History
Details on P. 16 of this newsletter. Registration form on P. 32.

THE GEOLOGISTS OF LYME REGIS
9th–10th September 2017
Lyme Regis Museum, Bridge Street, Lyme Regis, Dorset DT7 3QA
Convenor: Tom Sharpe

This summer, Lyme Regis Museum opens its new extension, the Mary Anning Wing, and to mark the occasion HOGG is holding a weekend meeting based at the museum to discuss the remarkable contribution made by geologists associated with Lyme Regis. Saturday 9th September will be a day of talks on Lyme and its geologists, with a rare opportunity to hear Professor Hugh Torrens, *the* expert on Mary Anning, speaking on his 40 years hunting the Mary Annings, as well as talks on Henry De la Beche, William Buckland and William Daniel Conybeare, the Philpot sisters and James Frederick Jackson, a prolific collector of Lias fossils during the first half of the 20th century. There will also be a chance to see the museum's new geology gallery.

On the morning of Sunday 10th September, a town trail led by Hugh Torrens and Tom Sharpe will take us around sites and buildings associated with Lyme's geologists. For those who wish to stay after lunch, we will head on to the beach to see where Mary and Joseph Anning collected their famous ichthyosaur and take a look at the Lias section of the coastal ledges and the cliffs towards Black Ven which have been the source of so many spectacular specimens over the last two hundred years. The town trail will involve a walk on paved surfaces, walking uphill, and negotiating steps. The afternoon walk will be on the loose sand, gravel and boulders, and potentially slippery bedrock surfaces, of the beach. Please wear appropriate footwear.

Lyme is best reached by car, but trains run to nearby Axminster which is on the Waterloo to Exeter main line and from where a bus connects with Lyme. Lyme has a wide range of accommodation options from famous old inns, such as the Royal Lion Hotel in the centre of town and the Mariners on Silver Street (at the top of the hill), to many B&Bs and self-catering accommodation. Further details and links on travel, parking, and accommodation as well as lots more information about the town can be found at www.lymeregis.org The number of participants will be limited to **30** (including speakers) which is the capacity of the venue, so book early to avoid disappointment! The meeting fee is **£35.00**. Registration form is on P. 31. Bookings, with payment, will be taken on a first-come, first-served basis. Or visit http://historyofgeologygroup.co.uk/product/the-geologists-of-lyme-regis-tickets/

Stop press: THIS EVENT IS NOW FULLY BOOKED BUT THERE IS A RESERVE WAITING LIST.

PROVISIONAL PROGRAMME

Saturday 9th September

10.30 Coffee
11.00 *Welcome* David Tucker, Director, Lyme Regis Museum
11.10 *Introduction* Stephen Locke, Chairman, Lyme Regis Museum Trust
11.30 **Keynote address:** *Lessons from 40 years hunting the Mary Annings* Hugh Torrens, Crewe
12.30 Lunch (not included) is available in local cafes and hostelries
14.00 *William Buckland* Chris Duffin, The Natural History Museum
14.30 *William Daniel Conybeare* Leucha Veneer, University of Central Lancashire
15.00 *Henry De la Beche* Tom Sharpe, Lyme Regis Museum
15.30 Tea
16.00 *The Philpot sisters* Eliza Howlett, Oxford University Museum of Natural History
16.30 *James Frederick Jackson* Cindy Howells, National Museum of Wales
17.00 Meeting ends

Sunday 10th September

10.00 Meet outside the museum for town trail
12.00 Lunch (not included) in local hostelries
14.00 Meet outside the museum for walk to Church Cliffs and Black Ven
16.00 Meeting ends

THE SOCIETY OF ARTS AND THE ENCOURAGEMENT OF MINERALOGY AND GEOLOGY 1754–1900

Thursday 9th November 2017
Geological Society, Burlington House,
Piccadilly, London.

THE WILLIAM SHIPLEY GROUP FOR RSA HISTORY

A joint meeting of the History of Geology Group and the William Shipley Group for RSA History

Convenors: John Henry and Susan Bennett

The Society for the Encouragement of Arts, Manufactures and Commerce (now the Society of Arts) was established in 1754, when arts had a broader definition encompassing invention and application. Characteristic of the Enlightenment, the SA aimed to raise the standard of living through the encouragement and practical application of new discoveries, new inventions, and improved processes and methodologies. It sought to encourage by awarding prizes across a wide range of activities and disciplines. Its prizes in the fields of chemistry, metallurgy, cartography, and land improvement encouraged the new sciences of mineralogy and geology. Direct and indirect spin-offs from SA prizes advanced mineralogy and geology in field mapping, mineral exploration, coastal defence works, drainage and irrigation and securing clean water supplies. Membership of the Geological Society overlapped substantially with the Society of Arts and with other institutions, such as the Royal Institution, concerned with the development of science.

The programme comprises nine papers illustrating the wide range of the Society of Arts' influence on the earth sciences. This foray into a little known area of history of geology promises to be an interesting day and alert you to new research possibilities.

The conference registration fee includes the programme (see below), lunch, refreshments and abstracts of all presentations. The fee for members of HOGG, GA, WSG and GSL is £35.00. The fee for non-members is £45.00. Registration form on P. 32 or register online at http://historyofgeologygroup.co.uk/the-society-of-arts-and-the-encouragement-of-mineralogy-and-geology-1754-1900/

PROGRAMME

09:30–10:00 Registration
10:00–10:10 Welcome and Housekeeping

10:10–10:40 'If diligently sought after'—encouragement given by the Society for the Encouragement of Arts, Manufactures and Commerce' ***Susan Bennett***
10:40–11:10 Society of Arts Map Awards; an assessment of their contribution to Geology ***John Henry***

11:10–11:30 BREAK

11:30–12:00 National Water Supply, conflicts between geologists and engineers and role of the Society of Arts ***John Mather***
12:00–12:30 Silver Medals for Agriculture: to John Farey and William Smith ***Cherry Lewis***

12.30–13.45 LUNCH (provided) **HOGG AGM 13:15-13:45**

13:45–14:15 Promoting Art Manufactures and Commerce in One—the Society's role in the development of British marble industry ***Gordon Walkden***

14:15–14:45 Collecting Minerals in the Early Nineteenth Century: the Royal Institution and Humphry Davy ***Frank A.J.L. James***
14:45–15:15 Waterhouse Hawkins and the First Dinosaur Models ***Mike Howgate***

15:15–15:35 BREAK

15:35–16:05 Royal School of Mines Outreach Through Lectures to Working Men ***Anne Barrett***
16:05–16:35 Illustrating the Ideal—making sense of mineralogy in the early 19th Century ***Jane Insley***
16:35–16:30 Panel discussion/summary chaired by ***Hugh Torrens***

www.historyofgeologygroup.co.uk www.williamshipleygroup.btck.co.uk

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POPE'S GROTTO

John Henry[1] gives an update on HOGG's collaboration with the Pope's Grotto Preservation Trust.

As reported in the last newsletter, HOGG was contacted in the summer of 2016 by the Pope's Grotto Preservation Trust for help in assessing the history of geology and mineral content of the Grotto which occupies what remains of the basement of Pope's 1720 mansion on the banks of the River Thames. Pope had wanted to create the impression of a mine and so shaped tunnel-like galleries, and encrusted the walls and ceilings with thousands of rock, mineral and fossil specimens (see HOGG Newsletter 59, pp. 13–16 for more information).

The Trust needed to identify the minerals and rocks for the conservators, and wanted to know more about their provenance. Quite a bit is known from correspondence between Pope and his donors but much remains undocumented. HOGG member Roy Starkey visited the Grotto in April and found the variety of minerals disappointing, although he identified brewsterite which could only have come from Strontian in Scotland. There is not much marble or granite but fairly abundant breccia with weathered gypsum, and a lot of limestone and sandstone. It is apparent that Pope was eclectic and indiscriminate in his acquisition of specimens. It is also likely that after his death in 1744, there was much souvenir hunting but no record of later materials used to patch the gaps.

Nevertheless, Pope created a very early example of the mineral grotto and was a trend setter. His grotto was an extension of the concept of cabinets of curiosities that were popular in the 18th century. Cabinets and grottos were precursors of, and transferred a social respectability to, the more scientific and systematic approach that followed as geology and mineralogy.

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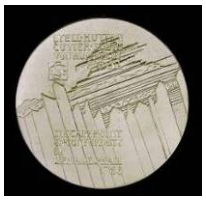
[1] email john@geolmaps.com)

SUE TYLER FRIEDMAN MEDAL 2017



At this year's GSL President's Day on June 7th, the Sue Tyler Friedman Medal, for distinguished contributions to the recording of the history of geology, was presented to Professor Mott T. Greene, an American historian of science, living in Seattle.

He is a MacArthur Fellow (1983-1987), and from 1985-2012 taught at the University of Puget Sound, a liberal arts college in Tacoma, Washington State. In retirement, he is Affiliate Professor of Earth and Space Sciences at the University of Washington, Seattle.

He has authored three books: *Geology in the nineteenth century: changing views of a changing world* (1982), *Natural Knowledge in preclassical antiquity* (1992) and, most recently, *Alfred Wegener. Science, Exploration, and the Theory of Continental Drift* (2015).

A full citation and Mott's response will appear on the GSL website
www.geolsoc.org.uk/About/History/Awards-Citations-Replies-2001-Onwards

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BOOK AND MAP NOTES

John Phillips's Lithographic Notebook
edited by Michael Twyman
Printing Historical Society, London. 2016 103pp. ISBN 978-0-900003-16-5 hardback
List price £30.00 (£15 to members of the Printing Historical Society)

Reviewed here by Nina Morgan[1]

From humble beginnings, John Phillips (1800–1874) rose through the geological ranks to become the first Professor of Geology at Oxford University and the first Keeper of what is now the Oxford University Museum of Natural History. Orphaned at the age of 8, he was taken under the wing of his uncle, William Smith, who paid for Phillips's education. In November 1815, Phillips moved to London to work with Smith and became, in effect, the first apprenticed geologist. But Phillips's interests and talents extended far beyond geology and palaeontology. A prolific writer, and by all accounts a fluent lecturer, he also designed and constructed several scientific instruments and carried out research in meteorology, magnetism, electricity and astronomy.

Although his first job for his uncle was to organise and describe Smith's extensive fossil collection, after his arrival in London Phillips's talent for technology soon came to the fore. Encouraged, it seems by Smith, who saw the potential for lithography–literally printing from stone--as a means for publishing his own drawings, manuscripts and maps, and the White Lias around Bath as a useful source of lithographic limestone, Phillips began a series of experiments to improve and understand the process. He recorded his experiments and observations, which were carried out between 1817 and 1819, in a notebook, now preserved in the archives of the Oxford University Museum of Natural History.

In this book, Phillips's lithography notebook is reproduced as a series of double page spreads, with each page of the notebook shown as a facsimile on one page and a transcript and annotations by Michael Twyman, an historian of printing, included on a facing page. It's a fascinating document and a wonderful example of a lab notebook from the past which not only provides an insight into the development of lithography as a printing process, but also reveals Phillips's skill as an experimentalist and his ideas for improving the process. In addition, it documents the type of materials available at the

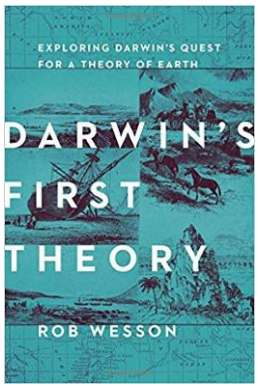
time and the work on the process being carried out by others. Phillips had clearly done his homework before starting out on his own research.

Documents like this, which were not meant for publication, often bring the personality of their author to life. Just the sight of Phillips's clear copperplate handwriting is evocative of a time when handwriting was a major means of communication. Phillips's cover image, which includes drawings of two ammonites, provides evidence of his skill as a draftsman. Charmingly personal comments appear in some places. For example, on one page Phillips expresses his frustration with the commercially available ink provided by David Redman, an early practitioner of lithography, noting that "In conclusion I think Mr Redmans [*sic*] Bottle Ink the worst I ever saw". On another, he bemoans how thoughts fly out of one's head, and writes: "When a thought suddenly occurs it most probably will soon depart, therefore I think it best to mark it in a black letter." We've all been there, and comments like this really bring the past to life.

Twyman's introduction, annotation and endnotes are a model of what historical scholarship can and should be. They are informative, clearly, concisely and engagingly written. The layout too is exemplary, with transcripts appearing opposite the facsimile pages, and very informative footnotes to the transcripts presented in wide margins on the transcript pages. As well as background information, the footnotes document Twyman's sources and provide the detailed information necessary for others to check and follow up.

The book itself, a slim hardback, is beautifully produced and printed on thick cream-coloured paper. It would grace any coffee table. But it also highlights the links between geology and lithography, sheds a new light on the activities and motivations of both William Smith and John Phillips, and emphasises the importance of presentation as a means of communication. Highly recommended on all counts!

[1] e mail nina.morgan@cooptel.net

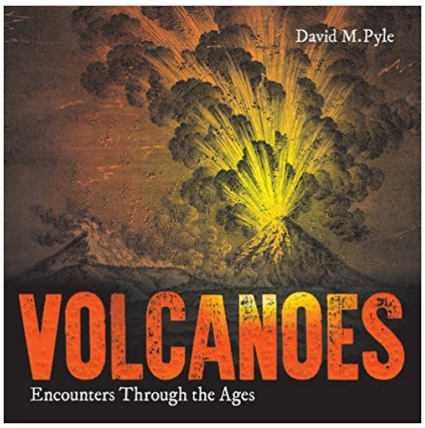


Darwin's First Theory: Exploring Darwin's Quest for a Theory of Earth
R. L. Wesson
Pegasus Books. 2017. 384pp.
ISBN 9781681773162 hardback
RRP £23.33

"Everybody knows—or thinks they know—Charles Darwin, the father of evolution and the man who altered the way we view our place in the world. But what most people do not know is that Darwin was on board the HMS *Beagle* as a geologist—on a mission to examine the land, not flora and fauna. Retracing Darwin's footsteps in South America and beyond, geologist Rob Wesson treks across the Andes, cruises waters charted by the *Beagle*, hunts for fossils in Uruguay and Argentina, and explores sites of long vanished glaciers in Scotland and Wales. As he follows Darwin's path—literally and intellectually—Wesson experiences the land as Darwin did, engages with his observations, and tackles the same questions Darwin had about our ever-changing Earth. Upon his return from his five-year journey aboard the *Beagle*, after examining the effects of earthquakes, tsunamis, volcanic eruptions, and more, Darwin conceived his theory of subsidence and uplift—his first theory. These concepts and attitudes—the vastness of time; the enormous cumulative impact of almost imperceptibly slow change; change as a constant feature of the

environment—underlie Darwin's subsequent discoveries in evolution. And this peculiar way of thinking remains vitally important today as we enter the human-dominated Anthropocene age. Expertly interweaving science and adventure, *Darwin's First Theory* is a riveting and revelatory journey around the world with one of the greatest scientific minds in history." [publisher's notes]

Volcanoes. Encounters through the Ages
David M. Pyle
Bodleian Library, University of Oxford 2017 224pp
ISBN 978 1 85124 459 1 softback £20.00

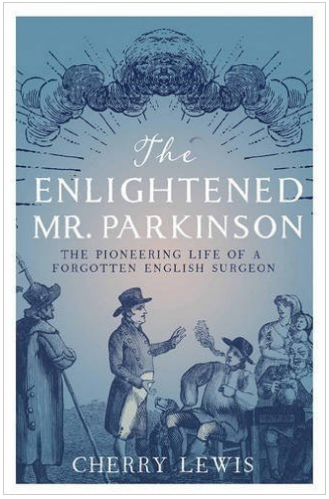


"Volcanic eruptions and their aftermath have fascinated us for millennia. Whether as signposts to an underworld, beacons to ancient mariners or as an extraordinary manifestation of the natural world, many people have been drawn to volcanoes and have left records of those encounters. This book explores the history of the study of volcanoes. From fragments of scrolls, carbonized in the great eruption of Vesuvius 2,000 years ago, to the first photographs of a volcanic eruption, it brings together records that document, describe and interpret volcanoes and their activity through time.

Britain has no active volcanoes, but has bred many volcanologists. Ancient volcanoes are responsible for some of Britain's most spectacular uplands and island scenery, from the Inner Hebrides to Snowdonia and the central Lake District. To understand these ancient rocks, natural historians have over the centuries travelled all over the world to see volcanoes for themselves. Many of these accounts have contributed immeasurably to our current understanding of volcanoes.

The materials that we have drawn on from Oxford's archives and research collections are dominated by the reports, letters and sketches of European travellers and natural historians. Some travelled for personal gain, looking to map and acquire new territories, lands and resources; others travelled to seek the edges of the known world, as it appeared to Europeans; and still more simply travelled for pleasure, education and personal enrichment. This book explores some of these themes, as well as showing the visual delights, depicted through the ages, of some of the world's most spectacular volcanoes." [from the book's Foreword by Richard Ovenden, Bodley's Librarian]

The Enlightened Mr Parkinson: the Pioneering Life of a forgotten English Surgeon
Cherry Lewis
Icon Books Ltd 2017 304pp.
ISBN 9781785781780 hardback £20.00



Reviewed here by Nina Morgan[1].

Having enjoyed one of Cherry Lewis's lectures about James Parkinson (1755–1824) and geology, I was surprised to read a review in *Nature* which categorised Cherry's new book, *The Enlightened Mr.*[sic!] *Parkinson, The Pioneering Life of a Forgotten English Surgeon*, as a book about medical history. While the *Nature* review does mention that Parkinson was one of the founding members of the Geological Society, it touches only briefly on Parkinson's fascination with fossils.

My first reaction was that *Nature's* reviewer, Tilli Tansey, a professor of the history of modern medical science at Queen Mary, University of London, had got the balance wrong. But after reading Cherry's

very enjoyable and well researched account of Parkinson's life, I think Tansey probably got the balance just about right.

Like all the founding members of the Geological Society, Parkinson was a 'geophilist'—a talented man who could claim geology as one of his many intellectual interests—rather than a geologist *sensu stricto.* In Parkinson's case, these interests were wide ranging and very passionately felt. Following in his father's footsteps, Parkinson trained as a medic and is best known today for his definition of the symptoms of Parkinson's disease. But in his medical work he also became acutely aware of the social conditions that led to diseases among the poor. These experiences not only turned him into a medical and a social reformer—he campaigned to improve conditions for child labourers and in asylums—but also turned him into a political radical. In the 1790s, he joined, and wrote inflammatory pamphlets for, the London Corresponding Society, a group which campaigned for parliamentary reform. He was also interrogated over a plot to kill King George III.

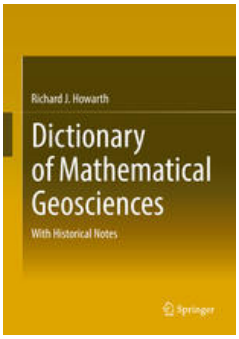
And around that time, having been inspired by the surgeon John Hunter's lectures on anatomy and natural history, Parkinson also developed a serious interest in fossil collecting. This in turn led him to speculate about the meaning of fossils and ultimately to publish, in 1804, the first volume of his three-volume textbook, *Organic Remains of a Former World*. The classification Parkinson adopted was later used as the basis for the arrangement of fossils in the Geological Society's Museum, which opened in 1812 and whose collections were dispersed to other museums in 1911. Parkinson's work on fossils also led him to champion the work of William Smith to Society members and to publish a footnote about the value of Smith's work in a paper published in 1811 in the first volume of the *Transactions of the Geological Society*.

Cherry herself is certainly a champion of Parkinson, and believes his contributions to the emerging sciences of palaeontology and geology have never been fully recognised. This is clearly an oversight she would like to redress. I'm not in a position to judge whether or not Parkinson really was an unsung hero in geological terms—there were, after all, many other 'amateurs' who worked in other fields but amassed important fossil collections and made significant contributions to geology that are only now being recognised—but reading Cherry's book has tempted me to look into Parkinson's *Organic Remains*, and very interesting it is. (You can download a pdf of volume one by clicking on the link Organic Remains of a Former World - Wikimedia Commons)

One word of warning though. Although *The Enlightened Mr.* [sic!] *Parkinson,* provides a very readable account that summarises all of Parkinson's achievements and interests, only 50 of the 250 or so pages of text focus specifically on Parkinson's geological interests. Like Simon Winchester's book, *The Map that Changed the World*, it is written in a popular style for a general audience. Although it includes an extensive section of notes and references and a comprehensive bibliography, it was never meant to be a scholarly account of Parkinson's geological research. Rather, it serves as a great holiday read that may well tempt you to do a bit of scholarly research yourself to try to find out more about Parkinson's role – pioneering or otherwise—in the science of palaeontology.

[1] e mail nina.morgan@cooptel.net

Dictionary of Mathematical Geosciences with historical notes
Richard J. Howarth
Springer International Publishing 2017 xvi+893pp.
ISBN 978-3-319-57314-4 hardback £222.50
ISBN 978-3-319-57315-1 e book £178.00



"This dictionary includes a number of mathematical, statistical and computing terms and their definitions to assist geoscientists and provide guidance on the methods and terminology encountered in the

literature…….There are also citations from the relevant literature to show the term's first use in mathematics, statistics, etc. and its subsequent usage in geosciences." [publisher's notes]

COMING SOON

Geology and Medicine: Historical Connections
C. J. Duffin, C. Gardner-Thorpe & R. T. J. Moody (editors)
GSL Special Publication 452 PUBLICATION DATE 23RD AUGUST 2017

List price £100.00 (Fellows' price £50.00; other societies £60.00)

"The development of the geological and medical sciences shows overlap through numerous historical threads, some of which are investigated here by an international authorship of geologists, historians and medical professionals. Some of the medical men considered here are the relatively well known Steno, Parkinson, William Hunter and Peter Duncan, as well as several more obscure individuals such as Sperling, Hodges, Lemoine, Siqués and a number of Italians. Their work included foundational geological studies, aspects of hydrogeology and the nature of fossils. The therapeutic use of geological materials has been practised since ancient times. A suite of magico-medicinal stones, some purportedly harvested from the bodies of fabulous animals, have ancient folklore roots and were worn as protective amulets and incorporated into medicines. Medicinal earths were credited with wide-ranging medicinal properties. *Geology and Medicine: Historical Connections* will be of particular interest to Earth scientists, medical personnel, historians of science and the general reader with an interest in science."

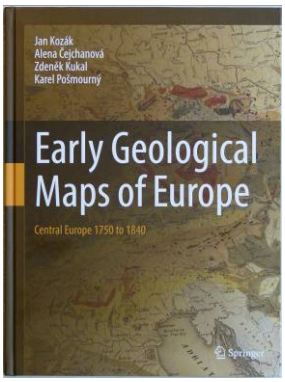
"This volume is a follow-up to the very successful SP375: *A History of Geology and Medicine*. It investigates further the lives and work of physicians who have contributed to geology, and the historical links between geology and disease (lithotherapy, public health, hydrogeology and occupational health)."[publisher's notes]

Prior to publication in August, the included papers are largely available at Online First, the online feature of the Geological Society's Lyell Collection, as follows:

- Christopher J. Duffin. Men, methods and materials: exploring the historical connections between geology and medicine *Geological Society, London, Special Publications, 452, first published on April 26, 2017, doi:10.1144/SP452.19*
- Ella Hoch. Earth science as a philosophical background to medicine: an essay based on the autobiography of Dr Otto Sperling (1602–81) *Geological Society, London, Special Publications, 452, first published on April 10, 2017, doi:10.1144/SP452.18*
- Marco Pantaloni, Fabiana Console, Lorenzo Lorusso, Fabio Massimo Petti, Antonia Francesca Franchini, Alessandro Porro and Marco Romano. Italian physicians' contribution to geosciences *Geological Society, London, Special Publications, 452, first published on March 22, 2017, doi:10.1144/SP452.17*
- Christopher J. Duffin. 'Fish', fossil and fake: medicinal unicorn horn *Geological Society, London, Special Publications, 452, first published on March 1, 2017, doi:10.1144/SP452.16*
- Irina Podgorny. The name is the message: eagle-stones and materia medica in South America *Geological Society, London, Special Publications, 452, first published on February 27, 2017, doi:10.1144/SP452.14*
- Joaquin Carrasco and Christopher J. Duffin. Alectorius: a parasympathomimetic stone? *Geological Society, London, Special Publications, 452, first published on February 21, 2017, doi:10.1144/SP452.15*
- F. Sabaté Casellas and B. Torres Gallardo. Pau Estorch Siqués (1805–71) and his 'magnes venenorum' *Geological Society, London, Special Publications, 452, first published on February 2, 2017, doi:10.1144/SP452.12*
- Rachael Pymm. 'A charm to impose on the vulgar': the medicinal and magical applications of the snakestone bead within the British Isles *Geological Society, London, Special Publications, 452, first published on February 2, 2017, doi:10.1144/SP452.13*
- E. Photos-Jones, C. Edwards, F. Häner, L. Lawton, C. Keane, A. Leanord, and V. Perdikatsis. Archaeological medicinal earths as antibacterial agents: the case of the Basel Lemnian *sphragides Geological Society, London, Special Publications, 452, first published on February 2, 2017, doi:10.1144/SP452.6*

- J. J. Liston and L. Alcalá. The obstetrician, the surgeon and the premature birth of the world's first dinosaur: William Hunter and James Parkinson *Geological Society, London, Special Publications, 452, first published on January 18, 2017, doi:10.1144/SP452.7*
- Maria do Sameiro Barroso. Coral in Petrus Hispanus' 'Treasury of the Poor' *Geological Society, London, Special Publications, 452, first published on December 22, 2016, doi:10.1144/SP452.11*
- Alessandro Porro, Antonia Francesca Franchini, Bruno Falconi, Paolo Maria Galimberti, and Lorenzo Lorusso. Water and the city of Milan at the end of the nineteenth century *Geological Society, London, Special Publications, 452, first published on December 22, 2016, doi:10.1144/SP452.9*
- Tom Blaen. 'Not used to be worn as a Jewel': The wearing of precious stones in early modern England – ornaments or medicine? *Geological Society, London, Special Publications, 452, first published on December 22, 2016, doi:10.1144/SP452.10*
- Spyros Retsas. Geotherapeutics: the medicinal use of earths, minerals and metals from antiquity to the twenty-first century *Geological Society, London, Special Publications, 452, first published on December 20, 2016, doi:10.1144/SP452.5*
- Beverly P. Bergman. Lead, isotopes and ice: a deadly legacy revealed *Geological Society, London, Special Publications, 452, first published on December 19, 2016, doi:10.1144/SP452.2*
- Rachael Pymm. 'Serpent stones': myth and medical application *Geological Society, London, Special Publications, 452, first published on December 19, 2016, doi:10.1144/SP452.1*
- John D. Mather and Christopher J. Duffin. Nathaniel Hodges and the purging wells of Shooter's Hill *Geological Society, London, Special Publications, 452, first published on December 19, 2016, doi:10.1144/SP452.4*
- Tim Carter and Anne Spurgeon. Duncan and Son: changing professional boundaries in the geological and medical sciences in the nineteenth and twentieth centuries *Geological Society, London, Special Publications, 452, first published on December 19, 2016, doi:10.1144/SP452.8*
- Eric Buffetaut. From giant birds to X-rays: Victor Lemoine (1837–97), physician and palaeontologist *Geological Society, London, Special Publications, 452, first published on December 19, 2016, doi:10.1144/SP452.3*

Early Geological Maps of Europe
Central Europe 1750–1840
Jan Kozák, Alena Čejchanová, Zdeněk Kukal & Karel Pošmourný
Springer 2016 155pp.
ISBN 978-3-319-22487-9 (hardback) £16.99
ISBN 978-3-319-22488-6 (e book) £12.99



Reviewed here by John Henry[1]

Geological mapping did not begin with William Smith or even, indeed, in England. This book/atlas is a wonderful antidote to our Anglo-centric world view. Of course, we may quibble about what is geological; the earliest maps here (1736 and 1741) are mineralogical—with symbols at mineral locations; and then, by 1764, geognostic or petrographic—showing the distribution of lithologies by colour but without a sense of structure, although gradually some legends record the sequence of occurrence. But, by 1803, the maps, with accompanying sections and legends in the observed sequence are geological.

The book is consciously addressed to a Western audience as it is in English and does go to some trouble to define what is meant by Central Europe, historically and geographically. The term Visegrad group, from a royal summit in 1335 of the kings of Hungary, Bohemia (the modern Czech and Slovak republics) and Poland, describes the core area which has been extended to include areas of the former Austrian Empire and the German lands of Bavaria, Saxony and Thuringia. Physically, from the Alps to the Harz and Holy Cross Mountains in the north, and a bit vague to the east and west.

The introduction starts with a broad, but brief historical review of the influences of great mineral wealth, the Enlightenment, French royal and imperial invasions, and reforming Austrian emperors on the development of geology. The nature of what a geological map is, is discussed and numerous technical maps of mines and mining areas are included. Finally, the geological development of Central Europe is briefly outlined, and a page of references which includes some English translations and authors.

The main section of 47 selected maps follows with each fitted to an A4 page facing a description of it. The descriptions follow a standard organisation of the title, date, author, the title in English, the scale, the context of the map (i.e. if it was part of a book or had accompanying information such as a section), the legend translated, the coordinates of the map's corners, the area of the map, the constituent modern countries, where the map is held, and supplementary information. Generally, the text runs to half an A4 page. The format gives an impression of most maps, which are considerably reduced, but several later 'modern' maps have either double-page spreads or additional extracts which allow an appreciation of detail. The 47 selected maps give an excellent impression of progress from the initial variety of approaches, which contended with inadequate base maps and grappled with geological complexity, to modern-looking geological maps. The next two brief chapters attempt to summarise the development of geological mapping in Central Europe as exemplified by the selected maps and their authors by grouping them under stratigraphic or tectonic approaches. The final section is a substantial appendix of portraits and short biographic profiles of the map authors followed by selected references of their works. There are a few 'big' names—Guettard, von Buch, Werner, Murchison and Sedgwick—and a whole world of talented and accomplished geologists who I would suggest are generally unknown in the West.

This is a remarkable, well produced and affordable book which is a very accessible introduction to a fascinating parallel historical universe. Publisher's price is £16.99 but paste the ISBN into the search box of www.bookdepository.com and you will find it for £14.51 including delivery.

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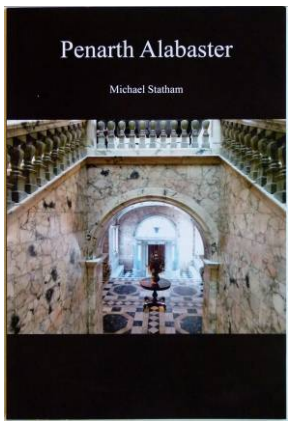
[1]email geol.maps@virgin.net



Penarth Alabaster
Michael Statham
Welsh Stone Forum 2017 55pp.
ISBN 978-1-5262-0677-0 (paperback)
£9.90

Reviewed here by John Henry[1]

In *Penarth Alabaster*, Michael Statham describes the historical exploitation of the relatively limited outcrop of the gypsum alabaster near Penarth and its widespread trade and architectural use. He has explored the limited documentation to discover and profile masons and architects who used it. Through his excellent photography of Penarth Alabaster as monuments and furniture in churches and as architectural detail and panelling in the homes of the wealthy, mainly in Wales but extensively in Southern England, the author has created a record of an, until now, scarcely recognised building material.

In the introduction, calcite alabaster or onyx is distinguished from gypsum alabaster which is softer (scratched by a fingernail) and reacts only slightly to hydrochloric acid, although testing of decorative stonework is not appropriate. Other English alabasters from the Midlands, Cumbria, Yorkshire and Somerset are briefly described and compared before setting out on the main subject, the history of the use of Penarth Alabaster. Although its use is first recorded as a monument in 1626 and documented in 1635, it was really between 1850 and1920 that its use peaked and was best documented. It is this period

that has the greatest coverage with photographs of architects and of building details and sculptured furniture and monuments.

The occurrence of Penarth Alabaster is limited. It is found in irregular thin bands and lenses, up to 0.32 m thick, in the Mercia Mudstone between the south end of the Cardiff Bay barrage and Lavernock Point. Much of it is found as loose rock on the beach due to cliff erosion, although there was an unsuccessful attempt in the 1870s to mine it near Lavernock Point, possibly for Cardiff Castle.

Penarth Alabaster concludes with a map of numbered locations where Penarth Alabaster has been used and a table giving the place name, grid reference, feature and architect where known for each number.

The book is an excellent brief record of the individuals and buildings using Penarth Alabaster supported by relevant clear colour photographs beside the descriptions. With its map, it serves as a guidebook. Although the author is a geologist, he has kept geological description to a minimum, with one section and two site photos, and concentrated on the material. The publication was deservedly supported by the Welsh Stone Forum and the Curry Fund of the Geologists' Association. The production is a handsome slim nearly A4 sized book which may be obtained by contacting the author at stathammichael@hotmail.com.

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[1] email geol.maps@virgin.net

CHERRY LEWIS WINS BALH AWARD

(www.theforestreview.co.uk/)

HOGG founder member and past Chair (twice) Cherry Lewis has been awarded the British Association for Local History (BALH)'s David Hey Memorial Article Award for 2017. Her paper *David Mushet and his contribution to the "map that changed the world*" published in *The New Regard* (journal of the Forest of Dean Local History Society), No. 30 (2016), pp. 60–73 won the long article category. The award was presented at the BALH's annual Local History Day on June 3rd in London (see www.balh.org.uk/news/balh-awards-2017).

RECENT HISTORICAL PUBLICATIONS BY HOGG MEMBERS

Please let us know of your recent output so that we can publicise it in the Newsletter.

Rudwick, M. J. S. 2017. The origin of the Parallel Roads of Glen Roy: a review of 19th Century research. *Proceedings of the Geologists; Association*, **128 (1)**, 26–31.

Summerhayes, C. P. 2017. Blowing hot and cold. *Geoscientist*, **27(4)**, 10–15. [a survey of our evolving ideas about climate change from 1750 to 1900].

BGS ARCHIVE OF ITS PRINTED PUBLICATIONS

In April 2017, the British Geological Survey (BGS) released a virtually complete archive of its printed publications since 1835, all free to view online. This includes not only the BGS sheet memoirs but also a range of other publications including regional guides, subsurface memoirs, survey bulletins, open file reports, world mineral statistics and geochemical atlases. The archive includes all past editions of these publications as well as the most recently released versions. They are delivered as colour image files for online viewing, and are best consulted on a desktop PC, laptop or tablet PC.

The BGS publications viewer can be consulted and searched at http://www.bgs.ac.uk/opengeoscience/publications.html, along with portals to view BGS printed maps online as well as a range of more recent electronic publications.

(Information from Dr Andrew Howard's 'Presidents Word' *in* Yorkshire Geological Society Circular 608, May 2017)

GSL NEW PICTURE LIBRARY

The GSL Library have re-launched their Picture Library of historic images on a brand new platform with print-on-demand service.

Search the Library's rich collection of drawings and photographs in the following categories: Dynamic Earth, Early Man, Ethnography & Travel, Extinct Animals, Fossils & Minerals, Geological Formations, Industrial & Engineering, Maps & Sections, Natural Curiosities, Portraits & People, Satires & Cartoons, William Smith. In addition, high quality prints can now be ordered direct from the site. Prints are available in a range of sizes and are printed on demand on state-of-the-art giclée printers.
Visit https://www.gslpicturelibrary.org.uk

INVITATION TO JOIN THE HISTORY OF EARTH SCIENCES SOCIETY (HESS)

HOGG members are invited to join, or renew their membership of, the History of Earth Sciences Society (HESS). Membership includes two issues per year of the journal *Earth Sciences History*. It is an ISI/Web of Science listed international journal and is the only one in the world devoted exclusively to history of the earth sciences. HESS is affiliated with the International Commission on the History of the Geological Sciences (INHIGEO). Online subscriptions provide access to the full run of the journal dating back to Volume 1 in 1982. By joining now (see below), you can receive both issues for 2017.

How to join

Joining HESS by submitting payment online is the preferred method, for both print and/or online access, for US and non-US members, and for both individuals and institutions. It is a two-step process: firstly, visit our Allen Press site (our online and payment processing host) at *earthscienceshistory.org*; secondly, simply click the 'Register Now!' link in the lower left corner. You will have to enter your name, email address, and a password. A mailing address is required for print subscriptions. Select the type of *ESH* subscription you want (see 'Dues rates' below). Instructions for joining online are on the HESS website membership page: http://historyearthscience.org/membership.html

Email membership@historyearthscience.org for instructions if you find it more convenient to pay by mailing a cheque or money order. We will send you a membership form to return to the Treasurer along with your payment (in US dollars, made out to 'HESS', by a cheque drawn on a US bank, or by an International Money Order). In your email, please send us your postal address and indicate the type of subscription you want (see below) so that we can set up your account. It is also possible to pay directly to HESS using a credit card and our new Paypal account. Contact the Treasurer (davidspanagel@comcast.net) to arrange for an invoice to be generated. If you encounter any problems or have questions please contact: membership@historyearthscience.org

Dues rates for 2017 *Rates (all in US$) are the same for US and non-US addresses. Memberships are for the calendar year.*

Individuals/Institutions: print subscription $55/$85 online subscription* $50/$80 print+online subscription* $70/$105. *Students*** $25 (online only).

*Online access includes full back issue access (back to Volume 1) *for the duration of your subscription* (*i.e.* for new 2017 online subscribers, you will have full archival access; if your subscription lapses in 2018, you will only maintain access to Volume 36 (2017)). You must provide an email address for online access.

**Students must provide verification of student status. Students wanting *ESH* in print rather than online must pay the full membership rate ($55).

EARTH SCIENCES HISTORY
Volume 36, No. 1, 2017

CONTENTS

LAPWORTH MUSEUM NOMINATED FOR ART FUND AWARD

The Lapworth Museum in Birmingham (see http://www.birmingham.ac.uk/facilities/lapworth-museum/index.aspx) has been shortlisted for Art Fund Museum of the Year 2017, along with Tate Modern, The Hepworth Wakefield, Sir John Soane's Museum, and The National Heritage Centre for Horseracing & Sporting Art. The nominations were announced at an event held at the British Museum in London on 27th April and broadcast live on the BBC Radio 4's *Front Row* programme. The

announcement received widespread coverage in the national press. The Art Fund Museum of the Year award recognizes innovation and excellence, and is considered to be the largest and most prestigious prize for museums worth £100,000 to the winner and £10,000 to the other finalists. The winner will be announced at the British Museum on 5th July.

According to the Art Fund, last year saw the completion of an ambitious expansion project at the Lapworth, transforming it from a niche academic institution into a dynamic, public-facing museum telling the story of the world's four billion-year history (see HOGG Newsletter 57, pp. 18-19).

The Art Fund organizers are asking visitors to the five finalists to share their best museum stories, reviews, photos, memories and moments on social media using the hashtag #museumoftheyear (see https://www.artfund.org/news/2017/04/27/art-fund-museum-of-the-year-2017-social) and the Lapworth are keen that you should do so, using also the hashtag #lapworthrocks The Art Fund will be offering a weekly prize of a National Art Pass and a museum goody bag for their favourite post (across all five museums). The Lapworth will also award a prize to a favourite post each week.

OTHER FUTURE MEETING AND EVENTS

THE OLD RED: HUGH MILLER'S GEOLOGICAL LEGACY
9TH–10TH SEPTEMBER 2017
VICTORIA HALL, HIGH STREET, CROMARTY, SCOTLAND

Organised by the charity The Friends of Hugh Miller

A focus will be the presentation of a paper by Professor Ralph O'Connor and Dr Michael Taylor concerning publication of a new edition of Hugh Miller's great work, *The Old Red Sandstone*, following 10 years of research. A keynote speaker will be palaeontologist and author Professor John Long, from Flinders University, South Australia. Gavin Berkenheger, a young Black Isle-based gold prospector, whose entire career was directly inspired by Hugh Miller, will also be on the presentation line-up, which will also include talks on Miller's Jurassic and mineral explorations and news of recent fossil specimens that would no doubt have interested Miller.

The conference will be followed by an excursion to Miller's famous Devonian fish bed. Delegates will be offered a three-day post-conference field trip to Achanarras Quarry, Sutherland. The event is envisaged as an important contribution to Visit Scotland's Year of History, Heritage and Archaeology 2017.

More information can be found at www.thefriendsofhughmiller.org.uk

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42nd INHIGEO SYMPOSIUM
12TH–18TH SEPTEMBER 2017
YEREVAN, ARMENIA

This conference is being planned as a 50th Anniversary INHIGEO conference. It will be organised by the Armenian Institute of Geological Sciences and Armenian National Academy of Sciences.

The first meeting of INHIGEO was held in Yerevan in 1967 and this conference will be held at the Armenian National Academy of Sciences in Yerevan, the same venue as the 1967 meeting.

The conference themes will be:
1. 50 years of INHIGEO
2. Development of geological ideas and concepts
3. History of geology in Armenia
4. Ancient knowledge of stone and metals
5. Studies of historic and prehistoric evidences of seismic and volcanic activity
6. General contributions and biographies of famous geologists

Both mid-conference and post-conference field trips are being planned to geological sites, historical sites, archaeological sites, geological museum and the Armenian Museum of Ancient Manuscripts (Matendaran). For any questions please contact the Organising Committee by e-mail at inhigeo2017@geology.am or Khachatur Meliksetian at km@geology.am

Visit the conference website http://inhigeo2017.geology.am/ for more information.

FUTURE INHIGEO SYMPOSIA
Future venues/dates for the annual INHIGEO symposia are as follows:

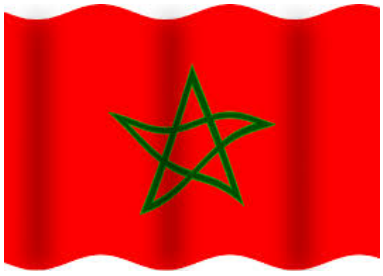
2018 43rd Mexico City, Mexico (4th–14th November).

2019 44th Como/Varese, Italy.

2020 45th New Delhi, India.

2021 46th Poland.

FIELD TRIP TO MOROCCO



Leaders: Professor R. T. J. Moody & Professor Habib Belayouni

27TH SEPTEMBER–10TH OCTOBER 2017

PROVISIONAL PROGRAMME.
This trip will be a combination of geotourism and the study of the diverse geology of a country that holds many of the answers to the history of the opening of the Atlantic, and the palaeogeography of Tethys and the Afro-European plates. The phosphate industry is particularly interesting to our understanding of the opening of the northern Atlantic Ocean in Cretaceous-Tertiary times and the economic wealth of Morocco. The major themes of the excursion will be:

- The structural geology of the Rif Mountains and the Straits of Gibraltar.

- Petroleum geology of the Rharb.
- Phosphates: Extractive industry and sedimentology, stratigraphy and palaeontology of Mesozoic-Tertiary deposits.
- Ordovician glaciation and regional tectonics.
- Precambrian-Palaeozoic Geology of Ouarzazate Region.
- Mesozoic sediments of Essouira Basin. Heteromorphic ammonites; reefs.

PROPOSED ITINERARY

DAY 1 (27/09/17) Fly London-Tangier or Algeciras. **Overnight Tangier.**

DAY 2 (28/09/17) Visit Grottes D'Hercule and views of the Straits of Gibraltar town centre and historic monuments**. Overnight Tangier**.

DAY 3 (29/09/17) From Tangier across Tetouan Valley towards Azla studying Rif Mountain geology en route and emplacement of peridotites and the contact of the Sebtide Nappes over the Dorsale Calcaire and the geology of the Tirinesse Intramontane Basin. Cascades d'Akchour. **Overnight Chefchaouen**.

DAY 4 (30/09/17) Chefchaouen to Meknes via N13, Ouezzane the Roman City of Banasa. **Overnight Meknes.**

DAY 5 (01/10/17) Meknes. Historic City and environs. Geology and petroleum geology of the Rharb Region of Northern Morocco. **Overnight Rabat.**

DAY 6 (02 /10/17) Rabat. Natural History Museum and city tour? **Overnight Rabat**.

DAYS 7/8 (03-04/10/17) Rabat to Khouribga (?Ben Guerir). Introduction to geology and mining processes of the Regional Phosphate Series in terms of the geology and commercial exploitation. **Overnight Khouribga.**

DAY 9 (05/10/17) Khouribga to Beni Mellal and Imilchil through the Gorges De Todra and Atlas Mountains to Tinghir. **Overnight in a local hotel or a hotel in Bourmalne de Dades.**

DAY 10 (06/10/17) Morning visit to valley at Bourmalne De Dades; regional geology Atlas Region. **Overnight Ouarzazate**.

DAY 11 (07/10/17) Ouarzazate to Zagora. Ordovician glaciation of Bou Ingarf Mountain, Zagora-Alnif area**. Overnight Zagora**

DAY 12 (08/10/17) Zagora to Taroudannt via Draa Valley. Desert terrain and view of Dj Siroua Volcano.. **Overnight Taroudannt**

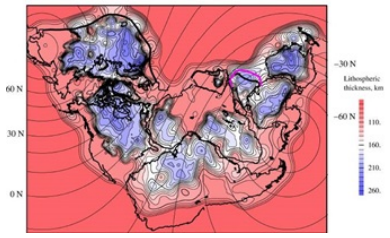
DAY 13 (9/10/17) Taroudannt to Essaouria. Coastal geology of Essaouria Basin. Heteromorphic ammonites. **Overnight Essaouria**

DAY 14 (10/10/17). Return UK via Marrakesh.

Estimated Cost (based on shared rooms): £1490.00

Enquiries to: PROF. R.T.J. MOODY, GNOLL HOUSE, 15 FORSTER ROAD, GUILDFORD GU2 9AE
Tel. 07973 273623 e mail rtj.moody@virgin.net

GSL WILLIAM SMITH MEETING 2017
PLATE TECTONICS AT 50
3rd–5th October 2017
Burlington House, Piccadilly, London



On the 50th anniversary of the advent of the paradigm of plate tectonics, this three day meeting is convened to examine the state of the art and scope out new directions.

The conference will be drawn to a close by the 2017 William Smith lecture, delivered by Dan McKenzie. Visit www.geolsoc.org.uk/wsmith17 for more information.

THE GEOLOGISTS OF LYME REGIS

9th-10th SEPTEMBER 2017

STOP PRESS: THIS EVENT IS NOW FULLY BOOKED.

Please notify Tom Sharpe (contact details at bottom of this page) if you wish your name to be put on a reserve waiting list.

REGISTRATION FORM

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e mail ……..

I will be staying for the Sunday walks ..... (please tick)

I enclose a cheque payable to HOGG for £ …… (£35 per person)

If you wish instead to pay by bank transfer, please contact HOGG Treasurer David Earle (e mail daearle@btinternet.com).

Registration closes on 18th August.

Please send the completed form and your cheque by first class post to:

Tom Sharpe
Clearwell Farm
Michaelston-y-Fedw
Cardiff
CF3 6XT

email tom@tomsharpe.co.uk

THE SOCIETY OF ARTS AND THE ENCOURAGEMENT OF MINERALOGY AND GEOLOGY 1754-1900

9th NOVEMBER 2017

REGISTRATION FORM

Name . . . . . .

Address . . . . . .

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. . . . . .

E mail . . . . . Phone no. . . . . .

Member of HOGG, GA, WSG, GSL @ £35.00 per person = £.....

Non-member @ £45.00 per person = £.....

Become a HOGG member @ £15.00 per person = £……
(includes membership for 2018)

TOTAL £.....

Please make cheques payable to HOGG and write 'SA conference' on the back.

Send the completed form and cheque to:

David Earle (HOGG Treasurer)
61 Straight Road
Old Windsor, Berkshire
SL4 2RT

HOGG STANDING ORDER MANDATE

Name of bank or building society……

Branch address…….

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Account name……

Please pay the amount of £15 (fifteen pounds) to the History of Geology Group of the Geological Society (Santander Business Account, Sort code ___-___-___ Account number _____) on 1st January (or closest date thereto) following the date of this instruction and annually thereafter until terminated by me in writing. [**NB Account details will be inserted by the HOGG Treasurer.**]

Signed……. Date…….

PLEASE SEND THE COMPLETED MANDATE TO

David Earle (HOGG Treasurer)
61 Straight Road, Old Windsor, Berkshire SL4 2RT