HOGG

Newsletter of the History of Geology Group of the Geological Society of London

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Front cover

EDWARD FORBES FRS

This year saw the bicentenary of the birth of Edward Forbes who is known variously as an artist, naturalist, marine biologist, oceanographer, palaeontologist and explorer. He was born on 12th February 1815 at Douglas on the Isle of Man and became an authority on the marine life of that island. Talented but not accepted at the Royal Academy as a painter, he studied medicine at Edinburgh before pursuing natural history as a full time occupation funded by his father. Following his father's bankruptcy, he found paid positions in London including curator of the Geological Society's collections (1843–4) and then palaeontologist (the first) at the Geological Survey (1844–54). He was elected FGS in 1844 and FRS in 1845, and was a founder member of the Palaeontographical Society (established 1847). In 1853, he became President of the Geological Society. He resigned from the Survey in 1854 and took up a professorship in natural history at the University of Edinburgh but died, aged only 39, in November of that year.

Source (and references therein)
Eric L. Mills, 'Forbes, Edward (1815–1854)', *Oxford Dictionary of National Biography*, Oxford University Press, 2004.

Image: en.wikipedia.org

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

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LETTER FROM THE CHAIR

I have just returned (31st May) from a week with our grandchildren (aged 6, 9 and 11) on the Isle of Wight. We stayed on the Undercliff area near Ventnor Botanic Gardens. The kids' keen interest in the stories of pebbles, the clues of landslips, the colours of sands was refreshing and rewarding—a reminder of how geology can reach out to engage curiosity. We didn't get so far as the dinosaur museum as the weather was dry and there were no indoor days—perhaps next year. I recalled my first HOGG field trip. I was on the Isle of Wight in 2007, another bicentenary year, when we explored the coastal exposure of the monoclinal fold, attempting the geological mindset of geologist Thomas Webster in 1811-12. Then, and last week, the absence of the usual frames of reference made for interesting discussions, although I wasn't avoiding anachronisms with the children, just keeping it simple.

In this bicentenary year, I am pleased to report that our William Smith conference was successful, as Jim Spencer reports elsewhere in this Newsletter. I think that I have thanked all concerned directly, but would like here to say thank you to all who made the conference run so well, including the behind-the-scenes exhibition at the Natural History Museum, and the post-conference field trip to Churchill and the Oxford University Museum of Natural History archive. The conference papers will be published in *Earth Sciences History* in 2016.

Events such as this conference and the field trips and meetings that are a feature of HOGG, don't just happen. They start with an idea usually prompted by an individual and/or an anniversary. With the support of many individuals—on the committee, from the library and archive, and the GSL staff—the idea is brought to fruition as a meeting or field trip over the course of one to one and a half years. Reviewing the situation at our most recent committee meeting, I can report that we have the programme more or less mapped out to 2017 and that we need to plan for a larger than usual change of committee members at the end of this year.

HOGG's committee consists of 10 members each elected from the membership for a period of three years. The chair, treasurer and secretary are elected by the committee members from within the committee. This year four committee members come to the end of their terms of office, including yours truly. During their three year term, each committee member is expected to organise a meeting or field trip with the assistance of other committee members. I encourage HOGG members to consider joining the committee. The three year term means that there is an end in sight—you won't be lumbered with a never-ending commitment as I know happens on many volunteer committees. There are four committee meetings a year, usually in London, for which travel expenses are paid. I have enjoyed being on the committee for the stimulus of ideas, involvement with other interested enthusiasts and the accomplishment of goals—in my case the William Smith conference and the plaque at 15 Buckingham Street. If you would like to know more, please contact me at john@geolmaps.com.

For the rest of 2015, we have the Open Meeting on 18th June and a visit in October to the Eyles Collection at the University of Bristol. Open Meetings occur every three years and are an opportunity to offer papers on topics which don't find a place in themed HOGG conferences. As a consequence, they are more eclectic and wide ranging. Bill McGuire, a keynote speaker at the forthcoming 2015 Open Meeting, is well known as an expert on geohazards, particularly those associated with volcanism and seismicity; his starting point is the eruption of the supervolcano Tambora in 1815—another bicentenary.

During their researches, Victor and Joan Eyles amassed a large collection of William Smith material, which they donated to the Archive at the University of Bristol. The timing of HOGG's visit in October will precede an evening public lecture, one of four organised to celebrate the bicentenary of William Smith's map. While the other three follow what will be fairly well-trodden Smithian story-lines, the lecture we have aligned with might well be called "Smith on Mars"'!

As always, these meetings promise to be interesting and I look forward to seeing you at them.

John Henry (e mail john@geolmaps.com)
June 2015

HOGG COMMITTEE 2015

Chairman John Henry **Vice Chairman** Dick Moody **Secretary** Tom Hose
Treasurer David Earle **Membership Secretary** Cherry Lewis
Ordinary members Alan Bowden, Beris Cox (**newsletter**), Jill Darrell, Chris Duffin, Ted Rose, Dave Williams.

NOMINATIONS FOR HOGG COMMITTEE 2016

The 2015 HOGG AGM will be held at Bristol University on 21st October 2015 during the Visit to the Eyles Collection meeting (see P. 00 of this newsletter). At this AGM (the time of which will be given in the next newsletter), new committee members will be elected to fill the vacancies left by retiring members. Ordinary committee members normally serve for three years, starting on 1st January following the AGM. Committee meetings, which committee members are expected to attend (travel expenses paid), are held at Burlington House four times each year (usually in January, April, June and September).

If you are willing to assist in the general running of HOGG, have an idea for a future meeting, or would be interested in convening a meeting, please contact John Henry at geol.maps@virgin.net Names of those prepared to stand for election must be received at least 14 days before the AGM.

HOGG NEW MEMBERS

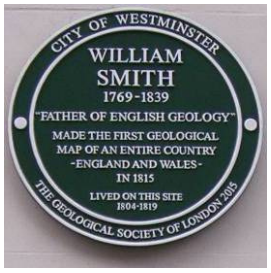
HOGG welcomes the following new members.

Graham Carlisle (High Wycombe, Bucks.)
Janet Catchpole (Addlestone, Surrey)
Francis Herbert (London)
Piotr Krzywiec (Warsaw, Poland)
Rod Leonard (York)
Elaine Shaw (Dumbarton, Scotland)

HOGG WEBSITE

Since October 2012, HOGG has had its own website at http://historyofgeologygroup.co.uk/. This is our main website although we continue to have a presence at www.geolsoc.org.uk/. The HOGG site provides easy access to all aspects of HOGG including details about HOGG meetings and the facility for online registration and payment. It also includes links and latest news from elsewhere.

If you have any queries about the site or material to add to it, please contact our new web editor Marc Srour at marcsrour@gmail.com.



UNVEILING OF COMMEMORATIVE PLAQUE AT 15 BUCKINGHAM STREET

John Henry[1]

William Smith leased a house at 15 Buckingham Street in London from December 1804 to August/September 1819. It was his principal home during this period although he was away working on projects much of the time. On 23rd March this year, Sir David Attenborough unveiled a green plaque on the current building to commemorate the site of Smith's London home. The date was Smith's birthday and the unveiling kicked off the launch of the bicentenary celebrations for his 1815 map, *A Delineation of the Strata of England and Wales with part of Scotland.*

On the day of the unveiling, the weather was kind and 60–70 people attended including several press photographers. During the speeches, my resemblance to Gerry Adams and the fact that a green 'flag' fluttered over the plaque led to a mild 'insurrection' from a couple of very cheerful Republicans staggering by, all adding to the festive atmosphere. Sir David spoke movingly of Smith the great scientist and hero. We are very grateful to him for accepting his friend Dick Moody's invitation to unveil the plaque and afterwards to attend the Geological Society (GSL)'s launch reception. Thanks also to Marubeni Oil and Gas who provided a meeting place and refreshments for Sir David and the launch party from Westminster City Council in their board room. This room occupied the same space as William Smith's main reception room in the original no. 15 and at a window, we could stand in approximately the same space as Smith must have done on many occasions. However, our view of Embankment Park was very different from Smith's river view.

Image: Tom Hose

FAQs

1. *Why a green not a blue plaque?* Because blue plaques from English Heritage are only for a building lived in by the commemorated person. Fortunately, Westminster City Council offers a green plaque for a building subsequently built on the site in question. I researched the address using contemporary maps and various trade directories to confirm that Buckingham Street had not moved or been renumbered, and that Smith resided at no. 15. Westminster City Council accepted and checked this evidence, and arranged the necessary planning and building owner's consents, as well as the casting and mounting of the plaque. The process began three years ago and the plaque was mounted just two hours before the event!

2. *Source of the wording?* The wording on the plaque was worked out with the GSL who agreed to pay Westminster City Council's substantial fee.

3. *How to get there?* The nearest tube stop is Embankment on the Circle, District and Northern Lines. Leave by the north side and enter Embankment Park heading left for the ancient York Water Gate. As you leave the park by the Water Gate, you will see steps leading through a gate in wrought iron railings to Buckingham Street; the plaque is on the modern white building on your right. Alternatively, it is a 20 minute walk via Piccadilly and Trafalgar Square from Burlington House. The post code for your Smart phone map is WC2N 6DU.

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200 YEARS OF SMITH'S MAP

22nd–25th April 2015

Jim Spencer[1] reports on HOGG's meeting celebrating the William Smith map bicentenary.

Wednesday 22nd April 2015
Display of William Smith's maps and fossils at the Natural History Museum

Ahead of the main meeting at Burlington House, Helen Pethers (NHM Librarian) and Jill Darrell (Curator of the William Smith Collections in the NHM Department of Palaeontology), arranged a display of William Smith material in the NHM Library for viewing by participants of the HOGG meeting. The NHM possesses three copies of Smith's map: the first and finest is No. 89, which can be laid out to its full extent but folds away and fits into a carrying case. A second copy is in sections bound together in book form, while a third is in loose sections—all of these were on display. The museum had also acquired a collection of Smith's fossils which he was forced to sell to raise money to pay off his debts. Smith continued to collect fossils but not all of these were marked whereas the museum's collection is marked. A selection of these was on display together with, and for the first time, the corresponding plates from Smith's book on fossils.

The NHM Library also possesses a lot of notebooks and other archival material of other geologists. Also on display was a 1808 section by John Farey; a lot of his material had been lost in a fire but the museum had acquired their Farey material with the Joseph Banks collection.

Thursday 23rd April 2015
Burlington House

Opening the proceedings, **John Henry**, Chairman of HOGG, welcomed participants to the meeting which was convened by himself, Cherry Lewis and Dave Williams, and which had been in planning for two years. John welcomed everyone to join the reception that would take place in the GSL Library at the end of the day's proceedings and also, looking ahead, a post-conference drink at the finish on Friday. Before introducing the first speaker, he also noted that on Friday, Geoffrey Walton would give a talk in place of Peter Scimkat who was unable to attend.

In his keynote address ***William Smith's search (1769–1839) for a money-earning career,*** **Hugh Torrens** pointed out that Smith faced many difficulties in his life, something not always apparent when working through his archives; this is due in part to the reticence of John Phillips, who was brought up by the Smiths, in revealing details of his own early years. Smith was apprenticed at the age of 18 to a surveyor, Edward Webb, in Stow-on-the-Wold, and lived at the Webb home. He worked in 1791 as a Land Surveyor surveying coal-mining in Somerset. In 1793, he was appointed Surveyor then Engineer

of the Somerset Coal Canal Company but was dismissed in 1799 due to the failed installation of a caisson to raise and lower canal boats. With the loss of his regular income, Smith sought work elsewhere advising on the drainage of agricultural land (in 1801, he drained Longleat), carrying out tunnelling work in Yeovil, and then spending six years in Norfolk. By 1806, Smith was having problems with his mortgage, having borrowed money from Willis. Smith found plentiful work in Norfolk in land drainage and also, as an engineer, working on sea-defences. There is a monument in Holkham commemorating the irrigation work, with a plaque depicting Smith and his foreman Crook, an engineer on the estate. However, bills were often not paid, and the financing of coastal defence work caused financial problems. Smith spent time in a debtors' prison. As an author, his attempt to publish *Description of Strata…..* was foiled by the bankruptcy of the publisher Debrett and he had to remainder 1000 copies of his *Description of Norfolk*. Despite his determination, he even faced competition publishing his map from the Geological Society who published their own.

Owen Green then discussed ***William Smith's visits to East Anglia: the legacy of a sea-defence and drainage engineer***. Smith's map is amazingly detailed but lacks detail in the Norfolk area. If Smith was only interested in rocks of the Carboniferous to Cretaceous periods, why did he come to East Anglia? After his early education in Churchill, Oxfordshire, Smith was taken on as an apprentice to Edward Webb, where he became a land surveyor. After his dismissal from the Somerset Canal Company, he was employed by James Stephens to drain his land. Thomas Coke (of Holkham in Norfolk) introduced Smith to the area north of his estate—a marshy area that needed draining. Subsequently, Smith advised the Duke of Bedford on drainage problems at the Woburn estate. The low-lying East Anglian coast was subject to recurrent flooding and, on his return to Norfolk, Smith became involved in the repair of the sea-defences, reporting to the Sea Breach Commissioners. His sea-defences were completed in 1805, based on his observation of the resilience of natural dunes covered in marram grass. Smith's legacy from his time in East Anglia includes improvement of the land, preservation of the coastline, cross-sections of Norfolk and Suffolk, and a map of Norfolk. His *Norfolk, its Soil and Substrata* gives a description of country life in Norfolk and Norwich, where he resided, and is now available on-line.

Peter Riches continued the review of Smith's time in East Anglia in ***A breach too far? East Norfolk's place in Smith's search for success***. The Broadlands are only slightly above, and in some places below, sea-level. Rivers require embankments and the area is protected from the sea by a line of dunes. It was the prospect of work in land improvement and sea defences, and hence money, that brought Smith here. Norwich Record Office has a large collection of Smith's papers which allow his time in Norfolk to be examined in more detail. Following a massive sea breach, a commission had been set-up and it was the Commissioners who employed Smith. Landowners, who were financially responsible for the upkeep of any sand banks, didn't want to pay for this, but Smith persuaded them that it was better to club together to do it. Work by the Dutch in the Netherlands had shown the importance of the amount of material used in a sand bank and its slope. Smith's design of the sand-banks protected the land from flooding, but not entirely so. During a big storm, the sand-hills were breached and Smith was faced with the cost of repairs. For Smith, this was probably a breach too far.

In ***William Smith: the principles of stratigraphy, and their impact on the search for underground water supplies***, **John Mather** examined the growing understanding of groundwater and the application of stratigraphy to find it. In the eighteenth century, there was confusion over the formation of deep groundwater. It was variously believed that it formed by water derived from rain, filtration of sea-water, condensation from the air below surface or evaporation from sea blown inland. Even Erasmus Darwin believed in the last of these. John Farey, a pupil and friend of Smith, pointed out that all groundwater formed from rain and demonstrated, on the basis of Smith's principles, how London was able to get its water from villages many miles away; Joseph Townsend also publicised the Smith's work. Smith was called in for advice on the shortage of water for the Wiltshire and Berkshire Canal due to clay at the surface. He realised that underlying Corallian rocks could provide water and was proved correct. The

water ran out by 1820, which may have been due to insufficient headings. A further example was the Scarborough Water Supply, problematic in summer when the many holiday-making tourists depleted it. Smith understood that the Kellaways Rock overlay the Cornbrash and Estuarine Series, and so water was discovered. Smith also suggested conserving water in the winter months. The failure of this supply was due to the thinness of the strata. In summary, John Farey demonstrated how deep ground water formed, and Smith and others showed how it might be exploited by noting the continuance of strata underground.

Richard Irving examined Smith's years at Combe Down in ***William Smith and Combe Down: the story of a geologist and his 'cherished' home***. Combe Down Heritage Society have produced a booklet on Tucking Mill, Smith's home. Tucking Mill is in an attractive spot adjacent to the canal. An early picture of the house was taken from the nearby canal bridge, both of which Smith had had built. The mill was a place to which Smith retreated; he loved the area and the house. Indeed, he wrote four poems about it, one of which, where he resigns himself to never going back there, may have been written in prison. Smith was partnered by Connolly and O'Neill in a Bath Stone quarrying venture behind and above the mill on Combe Down. O'Neill worked the adjacent Vinegar Down Quarry. A railway ran from both, then down hill to the mill, where stone was to be worked. Smith had realised that there should be a bed of Bath Stone to be exploited on the Down and explained his plan and costings to Connolly, who put up the money; O'Neill was brought in to share the cost of the railway. Smith excavated the Great Fault to reveal the Bath Stone but had to mine to excavate the stone. In 1815 (the year of Waterloo), money became short, O'Neill died and the venture failed, perhaps because the stone-bed thinned out—the mine is now blocked off. Connolly was embittered and had Smith imprisoned and also took possession of the mill.

In ***David Mushet, John Farey and William Smith: Geologising in the Forest of Dean***, **Cherry Lewis** recounted how her purchase of an early cross-section of the Forest of Dean had led her to investigate its origination and history. She discovered that 79 copies had been produced, including one held in the Geological Society (No. 22) and one in the National Archives; her own was unnumbered and so might be the original. The section had been produced by David Mushet and had been used by Conybeare and Buckland in a memoir on the Forest of Dean coalfield. Mushet was someone who had an interest in iron and steel, having published many papers on the subject. He had discovered the Black Band Ironstone, important in the economic geology of Scotland, and founded the Calder Ironworks in 1801. When this venture failed he moved to Alfreton to start a new ironworks and there met John Farey. Farey had been employed by the Duke of Bedford on his estate, where William Smith was also employed in land drainage, and there Farey had learnt Smith's mapping techniques from Smith himself. Farey produced a cross-section of the country from Ashover to the Lincolnshire coast, acknowledging Smith's ideas, and later became Smith's champion. It is likely that Farey would have passed on these techniques to Mushet who moved to the Forest of Dean to assist Thomas Halford, a London financier who had invested in the Whitecliff Ironworks. Mushet had produced a stratigraphic column of the area which he showed to Farey when he visited him. Confusion over the New and Old Red Sandstones, due to lack of fossils, had caused Mushet to search, mistakenly, for coal below the Old Red Sandstone. Mushet and Halford were also involved in the Bixslade Low Level Coal Mine (1811) but when this ran into difficulties Halford was forced to sell up. Cherry concluded that the section she had bought had been part of the sale prospectus of the mine.

Tom Sharpe summarised what is known of Smith's maps in ***William Smith's 1815 Map: Its production, distribution and survival***. Smith was working on his map in 1815, finishing it in May of that year; it was eight foot, nine inches by six foot, two inches, in fifteen sheets. Production started in June and about 20 had been produced by the end of the year, with the Duke of Bedford and Joseph Banks receiving their copies; these formed the unnumbered First Series. Smith then began to number the maps produced during November to February 1816; these were in three series—numbered 1 to 100, a1 to a100 and b1 to b46 (with a further 29 taking it to b75). Smith rejected nine copies due to colouring problems though Cary, the publisher, probably sold them anyway. Joan and Victor Eyles had studied 27

copies of the map and noted, in a paper of 1938, a range of variations; so everyone did not get the same map—for instance, there were changes to the Isle of Wight. It seems Smith was updating the map as

further knowledge became available. A Subscribers' List in Oxford shows the likely recipients of the map, but this is really a list of interested parties—some later declined to take up their subscription and some had died in the meantime. Although the exact number produced is unknown, various estimates have been made: Eyles 500, Cox 350–400. Tom made an educated guess of 350 of which possibly 150 survive—one had turned up recently in New Zealand.

Karen Cook then spoke on ***Cartographic innovation and tradition in William Smith's maps*.** By the end of the eighteenth century, London had become a centre of map production. John Cary was a map-producer who had met Smith by 1794 when Smith was working on the Somerset coalfield. Cary had accumulated a large amount of information on Great Britain; he provided the county base-maps for Smith and became his business manager, employing cartographers. Smith's maps were limited by the size of paper and copper plates. Metal tools were used to engrave a V-groove in the plate and a ruling machine employed to engrave the grid-lines. The maps used the conic projection and standardised on the statutory mile. Roads, which were important features on the base maps, were shown in background on Smith's map, whereas coastlines and rivers were made more prominent. Beds were shown in aquatint with the formation edges darkened. There has been speculation on the origin of this graded colouration. Eyles thought it was first used in Britain by Smith. Werner had used a similar technique in Germany but this was unknown in Britain until 1808, when Jameson first described it. Smith had used it in the 1790s, so it may well be original or from an earlier German map.

In the final talk of the day, **John Henry** looked at the maps behind Smith's map in ***William Smith: The maps supporting his published maps***. Mid-eighteenth century maps, produced in different styles, at different scales and with no triangulation points, were inadequate as a base map. However, the enclosure of land, the development of canals, mining and railways, and the improvement in equipment, meant that Smith, born in 1769, lived during the Age of the Surveyor. He began work by surveying for land-owners and was encouraged by Webb to take note of soils and slopes. After four years training-up, Smith worked at High Littleton estate in his own right. He became engineer for the proposed canal, determining the canal route, and met John Cary (maps) and John Rennie (engineer). During the canal development, Smith became familiar with the local strata and accompanying fossils and from this his ideas on stratigraphy developed. He realised that a large-scale base-map was needed in order to produce his map, however, accurate Ordnance Survey maps were not available at that time so he had to use a variety of county maps, some of which are listed in Phillips' memoir. Not much is known about John Cary but clearly he appreciated the connection between bedrock and soil, and realised the economic importance of maps to land-owners. He produced maps to Smith's requirements and was undoubtedly essential to the production of Smith's map.

Image: Tom Hose

Following the day's proceedings, a reception was held in the Geological Society Library; this included a recital of poems that had been written especially for the William Smith bicentenary. A display of the Society's own Smith maps were laid out in an adjacent room—these included a pristine copy of the 1815 map (discovered fairly recently in their collections), various county maps and maps around Bath.

Friday 24th April 2015
Burlington House

Replacing a missing speaker, **Geoffrey Walton** provided ***Notes on William Smith's local drainage works***. Smith grew up in Churchill and, as a boy, would have known of the local sheep-wash on the Sars Brook. In Smith's time, sheep-farming was the only economic activity in the area other than stone

-quarrying. Sheep-dipping was important for wool-quality—over 132 dips were recorded in the Cotswold area as indicated on early Ordnance Survey maps. Geoff had managed to re-locate the dip by finding the remains of a stop-lock and some of the original timber in the brook. The landowners had cleared vegetation away to reveal the ramp down into the dip. As his diaries show, 20 or so years later when he was harried by debt collectors, Smith returned to Churchill where his brothers lived and was asked by a local landowner to carry out some irrigation work further down the Sars Brook. The work involved the diversion of the brook and the drainage of an area of land near to where the brook joined the River Evenlode. Geoff had located four bridges that were part of this scheme. There may have been a plan to divert the Evenlode, though further research is needed. This is the only work of Smith's in Oxfordshire.

Pierre Savaton reviewed the mapping of France in ***The First Detailed Geological Maps of France***. In the 1820s, the administration was persuaded to produce a map of France, including maps of all départements. The département maps were often published attached to books on statistics of the département and some were carried out as local projects by learned societies supported by the prefect—the field-workers included an aristocrat, a grocer, a schoolteacher, a pharmacist and a professor of medicine. Some of these maps were never published. The national map, produced by de Beaumont and Dufrénoy, appeared in 1841 but had been completed earlier in the 1830s. Two trends can be seen in early mapping. Firstly, the gathering of statistics for kings, princes, then administrators and local scholars. Secondly, from the 1780s, maps focussing on economic geology, such as coal and ironstone, and influenced by the translation of German works, such as those of Werner. From these, a national map was produced in 1822. Some French maps included parts of adjacent countries—Belgium, Spain and Italy.

Similarly, **Ezio Vaccari** summarised the mapping history of Italy in ***The 'Practical' Roots of Stratigraphy and Geological Mapping in Italy during the early decades of the 19th Century***. Geological mapping of Italy occurred much later than in Britain and France—its Geological Survey was set up in 1860 following unification. Some geological maps were produced of Tuscany (1832) and Corsica, Sardinia, Majorca and La Spezia by 1856, so simplified drafts of Italy were produced in the 1850s, but the first 'modern' maps appeared in the 1870s and 1880s. In the latter part of the 18th Century some topographic maps showed the occurrence of minerals, sometimes including geological details; most work was on North and Central Italy carried out by scientific societies; in the south of the country, researchers were more isolated. It was discovered that Italy was not rich in mineral wealth and the minerals were difficult to extract. From 1805, Italy felt the influence of Napoleonic France and a Council of Mines was set up in 1808, based on the French model, to document the occurrence of minerals throughout the Italian peninsula. The inspectors received a small salary to cover travel expenses but it allowed time for personal research (e.g. Brocchi on volcanics). This project ended with the collapse of the Napoleonic empire. Hapsburg Austria influenced things between 1850 and 1856. Prior to the 1830s, not much was known about Smith's work, except by a few intellectuals; the economist Gioja noted Smith's map in his writings concerning clay for brick-making in 1826.

Patrick Wyse Jackson looked at the mapping of Ireland by Smith in ***William Smith and Ireland: sources of information on his geological maps***. There is very little of Ireland shown on Smith's 1815 map and that without any geological information. The map of 1820 shows some basic geology. Where did Smith get his information from? Patrick attempted to provide an answer. The earliest geological writing in Ireland may be the Dublin Philosophical Society's description of the Giant's Causeway and the Giant Irish Deer in the 1690s. University geology began in the 1770s—William Fitton, for instance. Some early maps were produced by the Royal Dublin Society. Richard Griffiths produced maps and sections of coal-fields in 1814. The Geological Society promoted work in Ireland from 1807 resulting in some maps (Berger, 1816). Thomas Weaver became a geologist and produced maps of Southern Ireland. Comparing Smith's 1820 map with that of Berger shows some mismatches. The southern portion of Smith's map corresponds with Weaver's 1819 map, which may have been based on information provided by Griffiths. The Irish Survey's map is closely coincident with Griffiths.

Martyn Pedley then discussed the production of Smith's 1824 county map of Northumberland in ***New Light on the 1824 William Smith Northumberland County Map***. Northumberland is the most northerly of Smith's county maps. His 1815 map does not show Northumberland in much detail but the 1820 edition does include the Whin Sill and the Cheviots and, according to Eyles, was probably based on information from Winch. Field maps of 1769 may have been used as the base map for the 1820 map. It is probable that much of the 1824 map was the work of Smith's nephew, John Phillips, using an 1821 manuscript map of Northumberland published by Cary. Differences between the 1820 map and the 1821 manuscript map, which was used to produce the 1824 map, such as the 1821 map showing the Whin Sill as limestone, can be explained by tracing Phillips' movements from his notebooks—the omissions and mistakes are in areas that he did not visit. The 1824 map shows the line of the Stublick Fault, a major boundary fault of the Alston Block, and other faults—the first time faults appear on any Smith map. Martyn speculated that this being the last of the county maps may have been due to the major setback of a fire at Cary's works, where all of the manuscript maps were lost.

In ***William Smith's Error in South Wales***, **Duncan Hawley** discussed the misidentification on Smith's map of the limestone outcrop in South Wales. F.J. North had noted that the crescent of Carboniferous Limestone shown around the South Wales coalfield was wrongly identified as 'Magnesian Limestone.' In September 1802, Smith had begun a tour of Wales travelling through South Wales and in 1810, he had spent a lot of time in South Wales working at Kidwelly Harbour. He travelled from Bristol by coach, across the Severn Estuary to Bridgend, Neath and Swansea, walking the final stretch to Kidwelly; he may have been looking at the soils of the area. He had noted the long line of Magnesian Limestone from Durham through Yorkshire and Nottinghamshire and suspected it occurred in South Wales, but it is surprising he mistook the Carboniferous Limestone for Permian. He continued to mark it so on his 1820 map. Mapping largely on topography and land use, he seems to have decided as early 1803 that it was Permian, ignoring contemporary geology.

Kate Santry went on to describe the digitisation of the Smith Archives at the Oxford University Museum of Natural History in ***William Smith Online: the impact of re-curating the William Smith Archive***. This is the largest archive of Smith material, comprising more than 1000 letters, 20 years of diaries, 200 hundred maps, 200 sections and many hundred pages of notes. They were discovered in the stores in the 1930s and were sorted and described by L. R. Cox, who documented it in the *Proceedings of the Yorkshire Geological Society.* They are thought to have come from John Phillips. The Arts Council funded the digitisation, which took eight months. The aim was to catalogue the collection to international standards, to make it available on-line and to interpret it from various perspectives, not just the geological. Items are represented as authentically as possible, allowing users to interpret material. The archival description specifies authenticity (Who created it?) and provenance (Who owned it? and How long for?). The users are likely to be geologists but it may be of interest to others—the collection also contains poetry and prose. The project has also established procedures for other on-line archives—possibly that of John Phillips.

The next speaker, **Peter Wigley**, a geologist by profession with an interest in maps, then described the digitisation of Smith's maps in ***William Smith: from Fuller's Earth to Google Earth***. For digitisation, a flat continuous map is needed. Some of Smith's maps were based on Greenwich and some on London, probably St Paul's Cathedral. An attempt was made to match the maps to a variety of projections—the Cassini projection gave the best match. Place names on Smith's map were used to position it on a modern map. It was found that central regions were the best fit, not quite so good in the north or south-west. The problem was that the country had not been triangulated so, following triangulation, inaccuracies were noted in many maps of the time. Some of Smith's maps used a triangulated base map and are quite accurate (e.g. Kent, Sussex), others not so (e.g. Devon). Having sorted out the above and overlain details on a modern map, the digitisation could begin. With the electronic version produced, it was then possible to allow 3-D zooming across country, matching things up with seismic sections and completing the county maps that Smith did not produce. The resulting on-line maps are available to

view at http://www.strata-smith.com. Peter concluded that overall the accuracy of the original Smith maps was very good.

In the final presentation **Simon Knell** delivered his keynote address ***William Smith Lecture: The coming of the father***. The well-known portrait of Smith shows him at age 68. John Phillips, his nephew, produced a memoir on William Smith in 1844. Phillips had his education paid for by Smith and learnt about fossils and rocks from him. In the memoir, he suggested that the Geological Society should have accepted Smith's principles in 1808. For Smith, his work was a way of making a living and he suspected others wanted to pinch his data, whereas he wanted to sell it. Farey and Meade may have given information to Greenough, though Greenough said he never saw Smith's map until it was published; Smith produced his map in 1815, Greenough his in 1819. In 1819, Smith was put in a debtor's prison and lost Tucking Mill. By 1820, his wife was losing her sanity. At the age of 50, Smith had to start again. Heading northward with his nephew Phillips, they noted the geology and examined fossil collections. Touring the north in 1824, they became celebrated as lecturers—Phillips very good, Smith not so good but very knowledgeable. Phillips was regarded as a great geologist; he had demonstrated the connection of the geology of the north of England with that of the south and produced a section of the Yorkshire Coast. In Scarborough Museum, the fossils were arranged in Smithian fashion, with strata shown in reverse order to give older to younger. Sedgwick awarded Smith the Wollaston Medal in 1831 and noted he was far ahead of everyone else. Fitton revised his *History of Geology* to make Smith's role explicit. Smith had been dubbed the "Father of English Geology"; Simon proposed that the term "English Geology" should be understood to refer to Smith's tripartite system of: geological position, mineralogical character and the organic remains contained therein.

Following the post-conference discussion, a group of participants walked to the site of Smith's London home from 1804 to 1819 at 15 Buckingham Street, where a green plaque had been unveiled on March 23rd—Smith's birthday. The proceedings of the last few days were then reviewed in the nearby lively outdoor wine-bars.

Image: Tom Hose

Saturday 25th April 2015
Visit to William Smith's birthplace and the Smith Archives at Oxford University Natural History Museum

From Oxford, the coach took a party of people to the village of Churchill where Smith was born on 23rd March 1769. Smith is one of the village's two famous sons—the other being the English stateman Warren Hastings (1732–1818). Smith is commemorated in a large monument of silicified Chipping Norton Limestone, the Cotswold equivalent of Sarsen Stone widely used in standing stones (e.g. the Rollright Stones). The monument was erected in 1891 by the Earl of Ducie. A

short walk from there past the church took the party to the site of Smith's birthplace—Spring Cottage—so called because the grit hereabouts, underlain by clay, gives rise to springs. Here a plaque had been set in a surround of York Stone, appropriately enough for Smith's later work, and unveiled on March 22nd.

Refreshments were very kindly provided by parishioners at All Saints Church, built 1826, after which the group walked a short way out of the village to view the sheep-dip on the Sars Brook referred to by Geoff Walton in his earlier talk. Geoff had noticed a groove in the stone-wall lining a stream and subsequent investigation had uncovered some of the original wood of the sheep dip and a piece of the wooden hatch, which could be raised and lowered in the grooves. The landowners, Rupert and Amanda Ponsonby, had dug out the village-side of the stream to reveal the stone ramp entering the dip.

Sheep were usually dipped in June for shearing in July. The dip was sited by the side of the road-bridge to allow sheep to be brought there. From the sheep-dip, the group retraced steps to the village then walked across fields to the Heritage Centre, located on the other side of the village in the original church. A fire had destroyed the old village and a new church had been built near the centre of the re-located village. The old church fell into disrepair but had been renovated as a museum showing items of country life and memorabilia of Smith and Hastings.

After a very pleasant lunch at the Crown Inn at Church Enstone, the coach returned to Oxford and the Oxford University Natural History Museum where a display of material from the Museum's Smith Archives had been set out, including maps and correspondence. The material had been saved by a Whitby gentleman when Smith had been thrown in prison.

As John Henry had pointed out in his introduction, a lot of planning had gone into this meeting, involving many people. The results of their efforts in producing an up-to-date summary of research on William Smith were appreciated by the participants and wholly worthwhile. In particular, thanks go to Helen Pethers and Jill Darrell for the display of the William Smith Collections at the Natural History Museum, to John Henry, Cherry Lewis and Dave Williams as convenors of the conference, and to Geoffrey Walton and Owen Green for the guided tour of Churchill village and the display of the Smith Archives at the Oxford University Natural History Museum. Thanks are due to all the speakers for their contributions and also many others behind the scenes who helped to make this a most successful tribute to William Smith.

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Ahead of the William Smith meeting, HOGG featured in the weekly international journal of science *Nature* (Vol. 520, No. 7547, p. 294, 16 April 2015) where HOGG Chair John Henry was interviewed by Alexandra Witze about William Smith and the bicentenary.

FUTURE HOGG EVENTS

2015

***OPEN MEETING**
Thursday 18th June 2015
Burlington House, Piccadilly, London
Programme on page 14 and registration form on page 27 of this newsletter.

***EXCURSION TO SOUTH-WEST FRANCE**
Saturday 3rd–Friday 9th October 2015
A 7 day excursion to study the history, geology and wine of south-west France for members of HOGG, GA and DinoSoc.
Further information on page 15 of this newsletter.

***VISIT TO THE EYLES COLLECTION AT THE UNIVERSITY OF BRISTOL AND LECTURE BY PROF. JOHN GROTZINGER**
Wednesday 21st October 2015 *Note revised date*
University of Bristol
Details on page 16 of this newsletter. **NB This meeting will include the HOGG 2015 AGM.**

2016

***EUROPEAN OIL & GAS INDUSTRY HISTORY CONFERENCE**
Thursday 3rd–Friday 4th March 2016 *Note revised date*
A joint conference with the Petroleum Group of the GSL and the Petroleum History Institute marking a number of important anniversaries including 150 years of oil exploration in Poland & Romania, the centenary of the drilling of the first oil well in the UK and 50 years of oil production onshore Spain.
Further details on page 17 of this newsletter.

***MILITARY ASPECTS OF ENGINEERING GEOLOGY, PAST AND PRESENT**
Wednesday 16th November 2016
Burlington House, Piccadilly, London
A joint meeting with the GSL's Engineering Group, convened by Ted Rose and Dr Judy Ehlen, to mark the centenary of the year in which (Sir) Edgeworth David was deployed on the Western Front, the first "engineering geologist" to serve as such with the British Army in combat.
CALL FOR PAPERS on page 18 of this newsletter.

HOGG OPEN MEETING

Thursday 18 June 2015
Burlington House, Piccadilly

PROGRAMME

09.00 DOORS OPEN, REGISTRATION
09.40 Welcome etc.

SESSION 1: BUILDING STONES
09.45 *'A Thousand Years of Building-Stone' Project in two Welsh Border Counties.*
Kate Andrew
10.15 *Some Maps, Measures and Models of Building Stone Use.*
Roger Cordiner

10.45 COFFEE & BISCUITS

SESSION 2: OPENING DECADES OF THE 19TH CENTURY
11.15 KEYNOTE ***Tambora: Supervolcano Eruptions and their Impacts on Society & History***
Bill McGuire
12.00 *Brighton and Hove Basement: Geological Basis of a Conurbation.*
Geoffrey Mead
12.30 *Geology and Fiction 1815–1850.*
Adelene Buckland

13.00 LUNCH

SESSION 3: OUR GEOLOGICAL HERITAGE
13.50 KEYNOTE ***Geoheritage and the UK's most significant Geological Sites.***
Rob Butler
14.45 *Interpreting Geoheritage: Challenges and Themes—Case study of the World Heritage Site of the Jurassic Coast.*
Sam Scriven
15.15 *The Importance of Global Geoparks—Case study of the English Riviera Geopark.*
Melanie Border
15.45 *The Importance of Being RIGS!—Case study of the Sussex Geodiversity Sites.*
John Cooper

16.15 TEA & BISCUITS

SESSION 4: MISCELLANY
16.45 *Geology, Groundwater and Tunnelling Problems at Merstham, East Surrey.*
Paul Sowan
17.15 *The Mineral Prospecting Expedition to the South Atlantic islands by the Scottish geologist David Ferguson, 1912–1914.*
Phil Stone
17.45 CLOSE

CONFERENCE ORGANISER: Anthony Brook e mail anthony.brook27@btinternet.com

REGISTER ONLINE at www.historyofgeologygroup.co.uk/hogg-open-meeting OR COMPLETE REGISTRATION FORM AT BACK OF THIS NEWSLETTER

HOGG FIELD EXCURSION TO SOUTH-WEST FRANCE

with GA and Dinosaur Society

3rd–9th October 2015

Leaders: Dr Eric Buffetaut and Prof. Dick Moody

FLIGHTS: BA London-Marseilles return.
LOCAL TRANSPORT: Minibuses from Marignane Airport.

DAY 1 Saturday 3/10/15: Overnight Aix-en-Provence. Local geology.

DAY 2 Sunday 4/10/15: Trip to dinosaur egg sites at Montagne Sainte-Victoire. Possible visit to palaeontology collections at Aix-en-Provence Museum (no public display at moment) and visit to city. Overnight Aix-en-Provence.

DAY 3 Monday 5/10/15: Drive from Aix-en-Provence to Vallon Pont d'Arc (2h30). Visit to **Chauvet cave replica** in the afternoon. Overnight in Vallon Pont d'Arc.

DAY 4 Tuesday 6/10/15: Drive from Vallon Pont d'Arc to Saint-Laurent de Trèves (2h15). Visit to Jurassic dinosaur footprint site. Drive to Millau (1h40). Sightseeing along the way (canyon of the Jonte) and in Millau (Norman Foster's Millau Viaduct). Overnight in Millau.

DAY 5 Wednesday 7/10/15: Visit to Millau Museum (dinosaur footprints, plesiosaur, archaeology) in the morning. Drive to Béziers or Saint-Chinian (2h) and visit to town. Overnight in Béziers or Saint-Chinian.

DAY 6 Thursday 8/10/15: Day in Cruzy: dinosaur sites, museum (palaeontology, archaeology, local history). Overnight in Béziers or Saint-Chinian.

DAY 7 Friday 9/10/15: Drive from Béziers or Saint-Chinian to Marignane airport (3h). Flight to UK.

ESTIMATED COST (based on 12–15 participants):

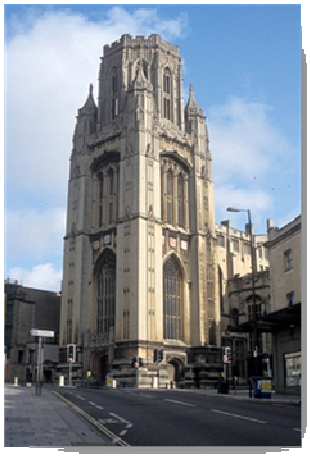
£780–800 per person including airfares, hotels, local transport but excluding lunches and dinners.
Hotel prices based on twin room occupancy.

EXPRESSIONS OF INTEREST AND OTHER ENQUIRIES TO PROF. DICK MOODY
(e mail rtj.moody@virgin.net)

Chevaux de la grotte Chauvet (31 000 BP)
Lieu de la découverte: Grotte Chauvet, Ardèche, France Date 31 000 BP (Aurignacien) (Wikipedia Public Domain)

VISIT TO THE EYLES COLLECTION AT THE UNIVERSITY OF BRISTOL
AND LECTURE BY

Wednesday 21st October 2015



As part of the ongoing William Smith bicentenary celebrations, HOGG will visit the Eyles Collection at the Arts & Social Sciences Library, University of Bristol, on Wednesday 21st October, 2015.

The basis of the collection originally formed part of the library of Dr Victor and Mrs Joan Eyles, which was then considered to be the finest accumulation of early geological publishing in private hands. It was bequeathed to the University of Bristol in 1986.

The papers, maps and volumes were collected as a library on the history and practice of geology. Thanks to a legacy left by Joan Eyles, the collection is regularly added to.

- **Books.** The extensive collection of almost 1,000 rare books dating back to the early 1600s includes works by William Buckland, Thomas Burnet, Georges Cuvier, Jean Baptiste Lamarck, John Playfair, James Parkinson, Joseph Townsend, William Whiston and many, many others.

- **Maps**. A large collection of European maps of historic interest, with detailed maps of the British Isles, 1804–1937, includes a number of maps by William Smith.

- **Papers.** Correspondence relating to the study of geology in the early nineteenth century, includes letters to and from the Sowerby family, 1679–1892; the wills of Rev. John Buckland and Rev. William Buckland; and papers and correspondence relating to John Farey, 1806–1822, amongst a large number of other items.

A selection of material will be available for viewing but should participants wish to see anything in particular, please notify cherry.lewis@bristol.ac.uk. A list of the publications can be found by going online to http://www.bristol.ac.uk/library/ and typing Joan Eyles into the library search box.

After the meeting, participants are invited to attend a lecture in the University's Great Hall, given by Professor John Grotzinger, Chief Scientific Officer on the Mars Curiosity Project. Before the lecture, there will be an opportunity to talk to Prof. Grotzinger over wine and nibbles.

Full details of this meeting will appear on the HOGG website: http://historyofgeologygroup.co.uk and in the next HOGG newsletter (early October) but, in the meantime, anyone interested in the meeting should contact Cherry Lewis (cherry.lewis@bristol.ac.uk).

European Oil & Gas Industry History conference
3rd–4th March 2016
Burlington House, Piccadilly, London

The focus of the conference will be to examine the history and heritage of the oil industry from the earliest onshore drilling (and digging) to its development into the industry that we know today, and also to examine the transition from conventional to unconventional resource plays in the onshore arena.

Keynote speakers from across the UK, Europe and the USA will share the historical framework of exploration and development activities. Invited Keynote Speakers include:

JONATHAN CRAIG: *Hardstoft Britain's first Oil Field*
FRANCO CAZZINI: *The Early History of the Oil & Gas Industry in Italy*
E. ARCHER: *Baku—Ten Centuries of Oil*
JORGE NAVARRO: *Ayoluengo—50th anniversary of Spain's only onshore oil field*
JULIE BARLOW: *East Midlands Fields, Past, Present & Future*

A field trip will be arranged over the weekend following the conference to examine the history, industrial archaeology and geology of the UK's earliest oil and gas fields in the East Midlands and the Peak District. During the trip, a memorial plaque and information board will be unveiled at the Hardstoft-1 well site in Derbyshire, marking the 100th anniversary of the drilling of the well under the Defence of the Realm Act to reduce Britain's dependence on oil imports.

A Geological Society *Special Publication* is planned in association with the conference.

A poster session will be held during the conference.

CALL FOR ABSTRACTS

Please e mail paper and poster contributions to laura.griffiths@geolsoc.org.uk and copy to fiona@rockhopperexploration.co.uk by 1st August 2015.

For further information, please contact:
Laura Griffiths, The Geological Society, Burlington House, Piccadilly, London W1J 0BG
T: 020 7432 0980 or e mail: laura.griffths@geolsoc.org.uk

MILITARY ASPECTS OF ENGINEERING GEOLOGY: PAST AND PRESENT

Burlington House, Piccadilly, London
Wednesday 16th November 2016

FIRST CALL FOR PAPERS

A whole-day meeting at Burlington House is being convened for next year under the auspices of HOGG, the GSL's Engineering Group and potentially also the Institution of Royal Engineers. It will follow the precedent of a meeting in November 2009 on *Military Aspects of Hydrogeology*. Like that meeting, it is hoped that it will generate manuscripts to be worthy of peer-reviewed publication as one of the GSL's Special Publications.

The meeting is scheduled for 2016 to mark the centenary of first deployment of an engineering geologist by the British Army to support combat operations—Major (later Sir) Edgeworth David on the Western Front in 1916—with book publication in 2018 to help mark the centenary of the end of the First World War.

Papers on any aspect of military engineering geology, both historical and topical, will be considered for presentation and/or publication. Suitable subjects include fortification, tunnelling, quarrying, military construction projects (e.g. ports, airfields) and terrain assessment. Papers describing work in the two World Wars will be particularly welcome; also later conflicts and recent work relating to redundant or ageing military facilities.

Further details will be announced later via the HOGG and Engineering Group newsletters as plans progress, and on the HOGG and GSL websites, but those interested in contributing a talk or poster, and/or an article for publication, are asked to make early contact with one of the convenors, Edward P.F. Rose (e-mail ted.rose@earth.oxon.org; home telephone: +44 (0)1425 279124) or Judy Ehlen (e-mail judyehlen@hotmail.com).

2015 SUE TYLER FRIEDMAN MEDAL WINNER

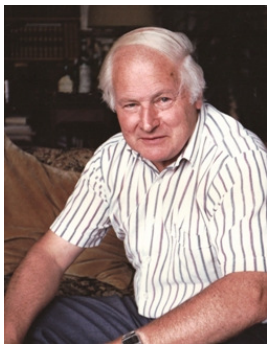
As announced in the last HOGG newsletter, this year's GSL Sue Tyler Friedman Medal for distinguished contributions to the recording of the history of geology has been awarded to Dr David Branigan (University of Sydney, Australia). He was presented with the award at the GSL President's Day on June 3rd. The full citation and the winner's response has not yet been released but will feature in the next (October) HOGG newsletter.

HOGG BECOMES INHIGEO AFFILIATED ASSOCIATION

The Board of INHIGEO (International Commission on the History of Geological Sciences) has agreed to approve HOGG as one of its first Affiliated Associations. The affiliation process will conclude with an announcement and discussion at the forthcoming INHIGEO Business Meeting to be held in Beijing on 27th June.

OBITUARY: GORDON YOUNGER CRAIG 1925–2014

Gordon Craig was one of the earliest members of HOGG. This obituary notice, by Prof Stuart K Monro, was published in* Geoscientist Vol. 25 No. 3 (April 2015); *a longer version is available on the GSL website.



Gordon Craig was born on 17th January 1925 in Milngavie, attending Hillhead High School and Bearsden Academy before entering Glasgow University where he graduated in 1946 with first class honours. In 1947, he became a lecturer in palaeontology at Edinburgh University, going on to become Senior Lecturer and Reader (1960), first James Hutton Professor of Geology (1967) and Head of Department (1981-84).

Gordon served under both Arthur Holmes and Fred Stewart. Each supported Gordon in his research in palaeoecology, but Gordon's main contribution was in his ability to see the 'big picture'. Just as students over the years have treasured Holmes's *Principles of Physical Geology,* Craig's *Geology of Scotland* became the bible of Scottish geological interpretation, running to three editions with Gordon as editor. He was able to communicate ideas in the most succinct way, summing up his research into the paleoecology of *Lingula*: "*Lingula* burrows vertically, anterior end uppermost and always did"!

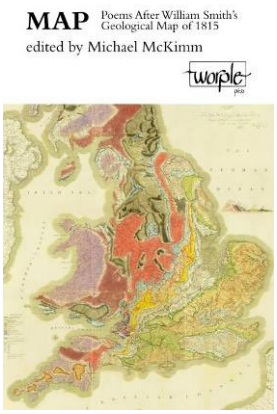
When the Clerk family (Penicuik House) found drawings by Sir John Clerk of Edin which looked geological, they took them to Charles Waterston (National Museum of Scotland) where Prof Donald McIntyre was visiting on sabbatical from Pomona University. They identified immediately what they were, and their importance. Together with Gordon Craig they researched the localities and 'The Lost Drawings', intended to illustrate Hutton's second volume of the *Theory of the Earth*, were published (with Craig as editor) in 1978. In 1997, Gordon was involved in the organisation of a Edinburgh and London-based symposium to celebrate the bicentenary of Hutton's death and the birth of Charles Lyell. One of Gordon's most successful publications was the book, *A Geological Miscellany,* a "potpourri of adventure, anecdote, epigram, autobiography, discovery, hypothesis and bureaucratic absurdity" (with Jean Jones) about geology and geologists.

Gordon was keenly interested in the International Commission on the History of Geological Sciences (INHIGEO) serving as President (1984–89) and setting up international conferences in Moscow, Pisa, Washington, Edinburgh and Budapest. Through this engagement, he promoted the significance of Edinburgh as home to 'father of modern geology' James Hutton. In 1990, he was awarded the Mary C Rabbitt History of Geology Award (Geological Society of America). Gordon was a founding Trustee of *Our Dynamic Earth*, seeing it through its turbulent early years to its opening (1999), and continuing to take a keen interest until his death.

All who knew Gordon will remember a man who gave us that most precious gift—time. He had time for all of his colleagues, students, and wide circle of friends, neighbours and family. His family life had its ups and downs. Losing his first wife, Molly, was a devastating experience but his later years were enriched by Mary, with whom he enjoyed many years of happiness and laughter as visitors from around the world visited Lasswade. He was a keen golfer and captain of the Mortonhall Golf Club (1972–73). His garden also meant much to him and he enjoyed its ever-changing vista to the end. He meant a great deal to many, and will be sorely missed.

BOOK AND MAP NOTES

MAP. Poems After William Smith's Geological Map of 1815
Michael McKimm (editor)
Worple Press, Tonbridge. 2015. 88pp.
ISBN 978-1-905208-32-6 paperback. £10.



Review by John Henry

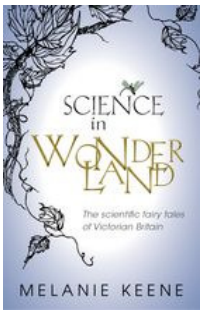
This is a remarkable anthology of poetry; I cannot think of another geological map or geologist that is so honoured. It is a wonderfully diverse creative response to William Smith's map, his unique insight and his dramatic life story, evoked in 42 poems from 31 invited poets. The editor, Michael McKimm, is a poet whose day job is librarian at the Geological Society. Previously, he has organised two successful Geology and Poetry Days and has attended several geological field trips as poet-in-residence. He is thus well placed at the intersection of these two worlds to conceive this anthology and attract the poetic talent. McKimm notes in his introduction that "these poems illustrate not only the vibrancy and variety of contemporary poetry but also poetry's unique ability to take on uncharted territory with vision, to make connections and find relevance: the poems here make Smith's map anew in moving and surprising ways". Smith himself took on uncharted territory 200 years ago.

In his introduction, McKimm outlines Smith's life to provide the context for the poems. This is very helpful. Greater familiarity with Smith's story and his map raises awareness of many allusions and references. The quality of the poetry is professional and alive. The form varies from formal sonnet and ode, and an almost-haiku to completely free verse. There are two experiments in layout that, I think, indicate faults through the poetic strata. Some poets respond viscerally to the colour and structure of Smith's map. Others start from a familiar location and visualise an aspect of his life. Still others start with incidents in his Smith's life such as his 1799 dictation of *Order of the Strata and their embedded Organic Remains* to friends in Bath, and the rivalry of his map with Greenough's. Two poets bring rather arcane knowledge to reveal Smith in a continuum with ancient Egypt and Greece. Several link their own personal geological/landscape experience to Smith's great achievement. His marble bust and portrait inspired other poets. One poem in others' voices brought to me new insight into Smith's unhappy marriage. McKimm has attracted substantial talent to his anthology; most were unknown to this reader apart from the former Poet Laureate, Andrew Motion, whose moving poem "The Afterlife of William Smith" is in Smith's voice.

The Smith map on the cover of the book is the recently discovered very early version belonging to the Geological Society. As Smith's maps were hand-coloured and as he introduced new information during the initial two years of its production, no two maps were identical at the outset and all have weathered to some degree over the past two centuries. The recently found copy is a particularly bright and vibrant survivor.

I heartily recommend this anthology. For the geologist, the insights of (mostly) non-geologists are thought-provoking and insightful. For the poet, and the poetically inclined, this anthology is a model for the imaginative and poetic visualisation of landscapes, geological detail, historic incident and great characters. I congratulate Michael McKimm for his vision, his ability to assemble so much talent and his realisation of such an attractively produced volume with Worple Press.

It is available for sale in the library of the Geological Society. For further details, see http://www.worplepress.com/map-poems-after-william-smiths-geological-map-of-1815/.

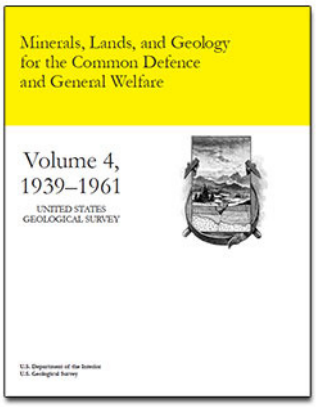


Science in Wonderland: the scientific fairy tales of Victorian Britain
Melanie Keene
Oxford University Press. 2015. 256pp.
ISBN 978-0-19-966265-4 hardback £16.99

"In Victorian Britain an array of writers captured the excitement of new scientific discoveries, and enticed young readers and listeners into learning their secrets, by converting introductory explanations into quirky, charming, and imaginative fairy-tales; forces could be fairies, dinosaurs could be dragons, and looking closely at a drop of water revealed a soup of monsters. *Science in Wonderland* explores how these stories were presented and read. Melanie Keene introduces and analyses a range of Victorian scientific fairy-tales, from nursery classics such as *The Water-Babies* to the little-known *Wonderland of Evolution*, or the story of insect lecturer *Fairy Know-a-Bit*. In exploring the ways in which authors and translators—from Hans Christian Andersen and Edith Nesbit to the pseudonymous 'A.L.O.E.' and 'Acheta Domestica'—reconciled the differing demands of factual accuracy and fantastical narratives, Keene asks why the fairies and their tales were chosen as an appropriate new form for capturing and presenting scientific and technological knowledge to young audiences. Such stories, she argues, were an important way in which authors and audiences criticised, communicated, and celebrated contemporary scientific ideas, practices, and objects. A range of scientific subjects are examined, from palaeontology to entomology to astronomy." (from publisher's website)

This book was reviewed in *New Scientist*, no. 3016 (11/04/15).

Minerals, lands, and geology for the common defence and general welfare. Volume 4, 1939–1961
Rabbitt, M. C. and Nelson, C. M.
US Geological Survey, Reston, Va., 704pp.



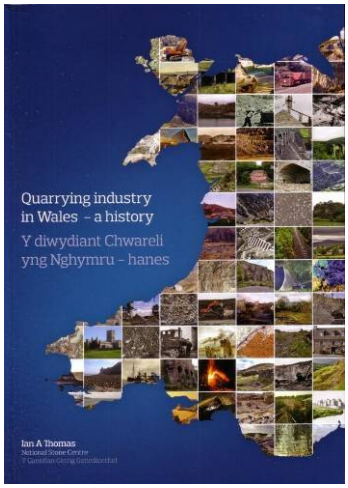
This book can be downloaded without charge at
http://pubs.usgs.gov/book/2015/rabbitt-vol4/
The official URL is http://dx.doi.org/10.3133/70142267

The title of this fourth volume of the comprehensive history of the U.S. Geological Survey (USGS) is based on a passage in the preamble of the U.S. Constitution.

"The late Mary C. Rabbitt (1915–2002), a geophysicist who served with the U.S. Coast and Geodetic Survey (1948–1949) and the USGS (1949–1978), wrote the first three volumes in this series of USGS Special Books. *Volume 1, Before 1879* (1979), *Volume 2, 1879–1904* (1980), and *Volume 3, 1904–1939* (1986), although long out of print and out of stock, are now available online. The 704-page Volume 4, supplemented by more than 200 illustrations, was begun by Rabbitt and completed by coauthor Clifford M. Nelson, a geologist with the USGS since 1976. The book is described as "A History of Geology in Relation to the Development of Public-Land, Federal Science, and Mapping Policies and the Development of Mineral Resources in the United States From the 60th to the 82d Year of the U.S. Geological Survey." Volume 4 focuses on the United States and the USGS in war and peace from the beginning of World War II in Europe to the end of the administration of President Dwight D. Eisenhower. Like the earlier books in the series, Volume 4 places the nature and significance of USGS operations in mapping and the earth sciences in the wider contexts of national and international history. The new volume, like its three predecessors, is intended for general readers and historians alike, so it

follows a chronological rather than a thematic pattern, although themes are traced throughout the book." (from publisher's website)

After preparing Volumes 1–3, Rabbitt wrote a brief report summarizing the agency's history in its first century, "The United States Geological Survey: 1879–1989," which was originally issued as USGS Circular 1050 in 1989. It was reissued in 2000 as part of USGS Circular 1179, which also contains Renée M. Jaussaud's inventory of documents accessioned through 1997 into Record Group 57 (USGS) at the National Archives and Records Administration's Archives II facility (NARA II) in College Park, Maryland.



Quarrying industry in Wales—a history
Y diwydiant Chwareli yng Nghymru—hanes
Ian A. Thomas
National Stone Centre. 2014. 224 pp.
£19.50 (including p&p)

Review by Tom Hose

This A4 bilingual volume appeared towards the end of 2014 as a most welcome populist account of the Welsh quarrying industry. It has already been described elsewhere as the first 'coffee table book on quarrying' but that hardly does the volume justice; the quality of the research behind its publication is evident from the considerable technical detail recording the transformation of Welsh quarrying from relatively small-scale family ventures to today's multi-million tonne producers. Within the volume, the quarry industry of Wales is divided into eleven areas each of which is prefaced by a short description of the local geology to introduce the specific themes that each area illustrates. Detailed descriptions of selected specific quarries then follow. With inclusion of some real human interest elements, these are more than just technical accounts; for example, the account of Trefor quarry informs us of both family tragedy and commercial success, and features a memorial in the Falkland Islands to the HMS Glamorgan (see illustration right). There are also little useful snippets of historical information such as about stone transport and the foundation of the Institute of Quarrying. The use of stone in the major Welsh industries is also noted. The local use of stone is illustrated through vernacular architecture—both quarry buildings and streetscapes; even ancient stone circles and Medieval castles get a mention and an illustration or two. Likewise, the natural history of some of the quarries is mentioned and illustrated. Indeed, one of the strengths and much of the aesthetic appeal of the volume is due to the well-chosen historical and modern photo-images and the occasional colour-wash drawings that appear on almost every page. Whilst it looks like a coffee-table book and cannot hope, as the author acknowledges in the forenote, to be a comprehensive account, there is still much that the historian of Welsh geology will find new and informative in this volume. My own acquaintance with the limestone quarries of North Wales, which actually stimulated my early interest in geology, began on a childhood holiday and continued whilst I was working at museums in Liverpool and Chester. I found the volume's necessarily condensed accounts of the rise and decline of specific quarries which are known to me to be of real value. The volume received considerable support from the Aggregates Levy Fund (Wales) but, under their terms, it

specifically had to exclude slate and general building stone quarries. It has thus laid the foundations for, and the challenge to produce, a kindred volume—but it will be a hard act to follow. Similarly, the volume's production quality is superb and a credit to its Welsh printers. It's so nice to be able to acknowledge that such a full-colour perfect-bound soft-cover volume doesn't have to be printed in Spain or China and yet be affordable—at just £19.50 (including p&p), it's something of a bargain and highly recommended at that. Copies can be obtained from the National Stone Centre; just drop Ian Thomas an e mail (ian@nationalstonecentre.org.uk) using the subject 'Quarry Industry in Wales'.

Cherry Lewis recently drew the attention of HOGG members to "A Gorgeous Rainbow 19th Century Geological Map of Europe" which, on 27th April, featured on *The Vault*—the history blog of the American on-line current affairs and culture magazine *Slate*. The map is Andre Dumont's Carte Geologique de l'Europe (1875). See and read about it at

www.slate.com/blogs/the_vault/2015/04/27/history_of_geological_maps_andre_dumont_s_map_of_europe_html

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CHESTER SQUARE—NOW AND THEN

Anthony Brook[1]


Friday, May 1, 2015 METRO 31

Prestige: Over six floors, the home has six bedroom suites, four reception rooms (inset) and a roof terrace PICTURES: SWNS

Fortune in rent? Try £40k *a month*

MICK JAGGER, Roman Abramovich and Margaret Thatcher all enjoyed its exclusive trappings. Now a rare opportunity of having the same premier league address has become available – at a staggering £40,000 per month. Estate agents are looking for a 'super-wealthy' individual to rent out the six-bedroom property with roof terrace in London's Chester Square, where the average house costs £11.1million. 'This a home of real grandeur, offering the privacy, security and space that are prerequisites for modern tenants,' said Mark Tunstall, of Tunstall Property.

On Friday 1st May, as is my custom on a train journey up to London, I read the free newspaper *Metro* which is available at all railway stations. Eventually, I came upon the photograph (*see left*) of an imposing Victorian terrace—one of many in inner London—with the text proclaiming that the cost to rent out the six-bedroom property with roof terrace in Chester Square was a staggering £40K per month, where the average house sells for over £11 million! It would seem that Chester Square is one of the premium addresses in London. It is a small residential 'Garden Square', the last of three such squares built by the Grosvenor family when they developed this part of Belgravia between 1825 and 1845. The terraces of spacious, stuccoed houses were designed and built in the 1830/40s by Thomas Cubitt (1788–1855) for people with wealth and social status. Notable residents of Chester Square have included Mary Shelley, author of *Frankenstein*, who lived at No. 24 from 1846 until her death in 1851, and Baroness Thatcher, Prime Minister from 1979 until 1990, who lived at No. 73 from 1991 until her death in 2013.

The monthly rental and the purchase price were both stratospheric and I would have ignored the item except that Chester Square nagged at my memory. After a while, it came to mind that Gideon Mantell had lived there from 1844 until his death in November 1852. Dissatisfied for various reasons with Crescent Lodge, his house by Clapham Common, Gideon Mantell decided to look for another property in central London that would be nearer to those venues that were the foci of his scientific life. Accordingly on 16th August 1844, he went house-hunting with his eldest brother Thomas, in the newly-built, Regency-style terraces and squares in the district he called Pimlico. He soon found what he was looking for and on 29th August, took a 21-year lease on No. 19 Chester Square with the option of leaving after only five. We have no record of the annual/monthly cost of this lease, but Mantell

must have been able to afford the considerable cost of residing in such a new and fashionable, upper-class area; he had social aspirations. He did not look forward to moving and losing contact with all his Clapham friends who had been so good to him during the most traumatic years of his life nor, at his age and with his painful lumbar disability after his carriage accident of 11th October 1841, all the upheaval; these factors only encouraged his black moods. Nevertheless, as he wrote in his *Journal* on 21st September: "For the last fortnight, in constant bustle with the removal of my effects to my new residence in Pimlico"; two days later: "Slept at my new residence for the first time"; a week later: "All my furniture, etc removed, and my family and establishment settled into Chester Square"; and, a little over a fortnight later, on 10th October: "Almost settled into my new residence". So the process of moving house was not as traumatic as he had feared.

A week or so later, on 18th October, he wrote a long letter to his American correspondent, Professor Silliman of Yale College (as quoted in Spokes' 1927 biography of Mantell, p. 166) which included "...all conspired to induce me to take my present residence, which is within 20 minutes' drive of my former one, and yet in the heart of the most aristocratic part of London, close by Belgrave Square [where Sir Roderick Murchison had a grand mansion] and Buckingham Palace. I have taken a pretty and cheerful house on a 21-year lease, with the privilege of leaving at 5.....Mr Lyell called on me just now, after his return from the BAAS Meeting at York, and was delighted with my house and fossils.....I have a large drawing-room in my new house, and your bust, with Lord Egremont's, form a conspicuous ornament". Another letter to Silliman, on 2nd December, provides further details of the Mantell household (again quoted in Spokes' 1927 biography, p. 168): "I am quietly settled into my new abode, which, as a small, very pleasant house, is all I could wish for.....My [widowed, eldest] sister, Mrs West, presides over my establishment; my son, Reginald, goes to his office every day at 9 and returns to dine at 6, except when out of town; the young man, Mr [Hamlin] Lee, who has been my assistant ever since I left Brighton, remains with me; one male and two female servants, a cat and a canary—and you have the complete inventory [of my household]". It seems a rather large house for a relatively small household.

To what extent the two elegant reception rooms on the 1st floor were used for that purpose remains debatable, as there is little record of soirées or other social gatherings at No. 19. His great friend and geological colleague, Charles Lyell who lived in Harley St, called from time to time, but Roderick Murchison, who resided just around the corner in Belgrave Square, visited only twice, in September 1846 and June 1851, in his official capacity rather than as a neighbour. Although visitors to Chester Square were infrequent, there were a couple of remarkable occasions, both related to the belated arrival, in December 1847, of boxes of unusual fossils from New Zealand forwarded by Gideon's elder son, Walter. Gideon washed and sorted the bones and laid them out on tables in the drawing room, ready for inspection and determination by his archrival, Richard Owen, who called on 20th December, and again on 2nd January 1848 for that express purpose. He was completely taken aback by Mantell's scientific generosity. Later, on 22nd February, the Dean of Westminster (Dr William Buckland) and Professor Richard Owen called and selected a series of New Zealand fossils for the British Museum, which rather suggests that the fossils were still laid out on the drawing room tables!

Gideon Mantell resided at 19 Chester Square until his untimely death on 9th November 1852. Because the contents of the house were sold at auction in April/May 1853, it is possible to reconstruct the house in terms of its floors and rooms. As per usual, the two attic rooms were the domain of the female servants; the 3rd floor had three bedrooms, presumably one for Reginald, another for Hamlin, and a spare; the two large bedrooms on the 2nd floor were reserved for Gideon and his sister; on the 1st floor were two richly-decorated drawing rooms; on the ground floor was an equally-elegant dining room and, most important of all, Gideon's study. There was room in the spacious basement for the kitchen and butler's pantry, as well as ample storage space. It was a typical, early-Victorian terrace house of attic, four floors and basement—as shown in the newspaper photograph.

In my view, No. 19 Chester Square is in urgent need of a (Blue) Plaque to record the residence of a great pioneer geologist. Indeed, commemorative plaques should be on all five properties occupied by Gideon Mantell during his lifetime: 23 Station Street, Lewes; Castle Place, High St., Lewes; 20 Old Steine, Brighton; Crescent Lodge, Clapham Common as well as 19 Chester Square, Belgravia. Remarkably, all five buildings are still standing, more or less in their original condition. It provides a singular opportunity to mark the progressive lifetime establishments of Gideon Mantell; 19 Chester Square was just the last and the most up-market—but not as up-market as nowadays, it would seem!

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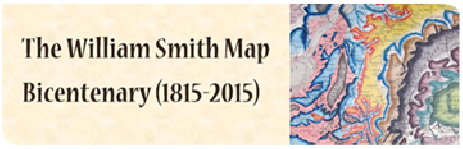
OTHER FUTURE MEETINGS AND EVENTS

WILLIAM SMITH MAP BICENTENARY EVENTS



A master list of William Smith bicentenary events is available on the GSL website at http://www.geolsoc.org.uk/Events/William-Smith-Bicentenary?

including

THE GEOLOGISTS' HOUSE
BURLINGTON HOUSE, PICCADILLY, LONDON
THURSDAY 9TH JULY 2015

The Geological Society Library is holding a special evening adventure giving a unique opportunity to view many of the Library's William Smith maps and publications up close with commentaries and explanations provided by expert geological hosts. Visitors to The Geologists' House will in turn enter:

The Room of Fossils
in which Diana Clements (GA and NHM) will offer a practical introduction to William Smith's recognition of the order of strata according to the fossils he found within them and which formed the basis of his geological practice.

The Room of Books
in which Tom Sharpe FGS will explain how William Smith developed and translated his stratigraphical theories to paper, and in doing so changed the face of geological map-making for ever.

The Room of Minerals
in which Duncan Hawley FGS will contrast the different approach to the production of the Society's 'rival map' of England & Wales issued by George Bellas Greenough in 1820, and look at how closely Smith's and Greenough's maps compare.

The Room of Maps
in which John Henry FGS will describe William Smith's publishing collaborations with John Cary, and offer explanations as to why they all ultimately failed.

Entry to The Geologists' House is limited with callers expected promptly at 6.30pm, 6.50pm, 7.10pm and 7.30 pm. Pre-booking is essential. Admission £12
Contact library@geolsoc.org.uk or telephone 020 7432 0999 stating which time you would like to visit.

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Murchison to the Modern Era

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The King of Siluria — how the Marches became known to geologists everywhere

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

Emeritus Professor David Siveter (Leicester)
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History Of Geology Group

HOGG OPEN MEETING
Thursday 18 June 2015 Burlington House, Piccadilly

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CONFERENCE FEE: HOGG members £20 All others £25

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Send (first class post) the completed form and your cheque (*payable to HOGG*) to Anthony Brook, 15 Cambourne Court, Shelley Road, Worthing, BN11 4BQ

or register online at **www.historyofgeologygroup.co.uk/hogg-open-meeting**

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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…….

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