

HOGG

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



**Number 53
February 2015**

Front cover

William Smith (1769–1839)

2015 is the bicentenary of the publication of William Smith's remarkable geological map of England, Wales and part of Scotland. There will be commemorative events occurring throughout the year. Read about some of them in this and following newsletters.

Portrait © GSL

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 53

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LETTER FROM THE CHAIR



Belated best wishes for the New Year, now already well established.

Several on the committee are very caught up in the arrangements for the William Smith Conference on 23rd–24th April (see page 16 of this Newsletter) which HOGG is organising. Smith's achievement, largely single-handed and against the odds, is salutary if ever one feels up against it. The selection of papers which will be presented provides excellent coverage of his life and works. The response since the opening for registration has been heartening in the first month and the field trip to Oxfordshire is already fully booked.

One month before the conference, on William Smith's birthday 23rd March, a commemorative plaque will be unveiled at 15 Buckingham Street; it was Smith's London base and home from 1804—1819. Sir David Attenborough will do the honours. All are welcome; directions appear elsewhere in this Newsletter and will also be announced via the HOGG Jiscmail.

You may recall a protest last year against a proposed outfall pipe at Siccar Point. Protests were received from geologists around the world as well as from HOGG and the Geological Society. At the end of January, I received a letter from the Scottish Borders Council stating that after consideration of all observations received, the council has approved the proposal subject to conditions. For more information, see <http://eplanning.scotborders.gov.uk/publicaccess> ; the reference no. is 12/00929/FUL. So, our protest did not succeed.

I wonder if we will be any more successful in the case of the proposed closure of the Ludlow Resource Centre in Herefordshire, moth-balling of its geological collections and letting go of its staff of three. Thanks to Brian Rosen for flagging up the issue and attending a meeting in Ludlow regarding the closure. Thanks also to Hugh Torrens for attending. I have received an acknowledgement of HOGG's letter objecting to the proposed closure from the head of the local council with a standard FAQ sheet. In so many of these instances, one feels that minds are already made up, minds not interested in our history. Still, if we don't protest, who will? If you become aware of budget cuts affecting the maintenance of and access to our public collections, libraries or archives that impact on the history geology, please let other HOGG members know via HOGG@jiscmail.ac.uk or john@geolmaps.com or by writing to me at 71a Oxford Gardens, London W10 5UJ.

Finally, HOGG members who have had dealings, either directly or indirectly, with 'head office' (i.e. Burlington House) may be interested to know that Edmund Nickless, Secretary of the GSL, is retiring in September this year after 18 years service to the Society. The announcement was made by the GSL President, David Manning, at a meeting of the GSL Dining Club on Wednesday 4th February.

I look forward to seeing many of you at the various HOGG and other meetings in this special William Smith celebratory year.

John Henry (e mail geol.maps@virgin.net)
February 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.

NEW COMMITTEE MEMBERS

At the HOGG 2014 AGM, held at Burlington House on November 4th during the Geology and Medicine meeting, Jill Darrell and Ted Rose were elected to the HOGG committee. They fill the vacancies left by Tom Sharpe and Leucha Veneer whose terms of office have ended. Tom Hose replaces Leucha as Secretary.

Jill Darrell



Jill Darrell is a curator in the Earth Sciences Department of the Natural History Museum, London where she has worked since graduating from Kingston Polytechnic (BSc Hons Geology) in 1975. She is responsible for the Cnidaria (corals etc.) collections and the William Smith Collections of fossils and rocks. She has contributed to research publications on corals from the Cambrian to Recent and on Darwin's specimen collections at the NHM, in particular his coral reef material.



Ted Rose

Edward P. F. (known as Ted) Rose graduated from Oxford with first class honours in geology, and completed a doctorate in echinoid palaeontology, before a career lecturing in geology at Bedford College and subsequently Royal Holloway in the University of London. He retired to an Honorary Research Fellowship at Royal Holloway in 2003 and is still active in scholarship. Recent publications include two substantial papers (on Gibraltar) in *Earth Sciences History*; an introductory chapter in the Geological Society of

America *Reviews in Engineering Geology*; a contribution to a BRGM guide book to geological features of the World War II D-Day landing beaches in Normandy; and a contribution to a guide book to geological features of World War I battlefields near Ypres in Belgium. The GSL awarded him the Sue Tyler Friedman Medal for 2014; for the citation, his reply, and a list of those of his publications that relate to the history of military applications of geology, see HOGG Newsletter 51 (June 2014).

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 Cherry Lewis at cherry.lewis@bristol.ac.uk in the first instance.

HOGG SUBS

Annual subscriptions are due at the beginning of January. If you do not pay by standing order and have not yet renewed for this year, please do so now by either

- a) Visiting the HOGG website <http://historyofgeologygroup.co.uk/> and following the renewal option on the JOIN US page (payment by credit/debit card or direct bank transfer).

OR

- b) Sending a cheque (*payable to HOGG*) to the
HOGG Treasurer (David Earle)
61 Straight Road, Old Windsor, Berkshire SL4 2RT.

In future years, please consider paying by standing order. This will save both you and HOGG time and money. Just complete the standing order mandate at the back of this newsletter and send it to the HOGG Treasurer (address above).

For all other membership queries or enquiries, please refer to the Membership Secretary, Cherry Lewis at cherry.lewis@bristol.ac.uk Please check that she has your correct e-mail address and advise her of any future changes, otherwise HOGG news and alerts will not reach you.

HOGG NEW MEMBERS

HOGG welcomes the following new members.

Soraya Almeida (Rio de Janeiro, Brazil)
Maria do Sameiro Barrosa (Lisbon, Portugal)
Andrew Hopkins (London)
Nigel Israel (London)
Ruby Lee (London)
Roy McIntyre (Bristol)
Alessandro Porro (Chiari-Brescia, Italy)
Hugh Rance (Florida, USA)
Gregory Todd (New York, USA)
Peter Ward (Hemel Hempstead)

GEOLOGY AND MEDICINE: EXPLORING THE HISTORICAL LINKS AND THE DEVELOPEMNT OF PUBLIC HEALTH AND FORENSIC MEDICINE

3RD–4TH NOVEMBER 2014

Jim Spencer¹ reports on HOGG's autumn meeting held at Burlington House.

SUNDAY 2nd NOVEMBER: In the Steps of James Parkinson (1755-1824)

A pre-Meeting walk around Shoreditch and Hoxton, where James Parkinson lived and worked, led by Chris Derrett and Christopher Gardner-Thorpe

The walk began at Arnold Circus, where Chris explained that in Parkinson's day the area was rural, with market gardens, and clay pits in some of the fields. There were also five mental asylums in the area. The local population consisted of both wealthy and poor people. London, to the south, was within walking distance. From Arnold Circus, we proceeded along Calvert Avenue to St Leonard's Shoreditch, the church where Parkinson worshipped and was buried. We were welcomed into the church, where there is a memorial plaque to Parkinson. His grave has not survived; due to



overcrowding in the graveyard all the graves were cleared and the skeletal remains stored in the crypt. We were unable to examine the crypt, but Christopher very kindly arranged for a visit on the following Tuesday evening for those who wished to see it.

Leaving the church, we walked along Old Street, passing Shoreditch Town Hall, to Hoxton Square. It was here at No. 1 (now Bill's Wine Bar) that Parkinson's father had the family home and his apothecary business, which James subsequently inherited. In Parkinson's day, the square was fairly refined (the garden in the centre of the square was locked, residents each having a key) with a number of dissenting



academies at which science was taught. However by 1824, the area had begun to change, with furniture workshops appearing, evidence of which was pointed out on the north side of the square. Continuing

along Hoxton Street, Chris pointed out Hoxton House (No. 34 Hoxton Street), which is the only one of the five mental asylums to remain standing. This was used from 1690 to 1902 to house mentally-ill sailors from the Royal Navy, a lucrative business for those involved in supervision. Further along Hoxton Street, we went past Hoxton Hall, a former place of entertainment that was eventually closed due to licentiousness, subsequently re-opening as a Temperance Hall.

A small green-space further along Hoxton Street, Hoxton Trust Community Garden, is the former site of Holly House, a mental asylum where Parkinson once worked. It was here that the celebrated case of Mrs Daintree occurred. Mrs Daintree had been placed in the asylum, though not insane, by her nephew who was trying to get his hands on her money. The case ultimately led to a change in the law—before committal, the patient would have to be assessed by two doctors who had to see the individual personally before making an assessment. After walking past the site where Parkinson died (the building no longer in existence), we crossed Kingsland Road to the Geffrye Museum. This was formerly almshouses built for the Ironmongers' Company in 1714 by a bequest from Sir Robert Geffrye. The houses and gardens were eventually turned into a museum in 1914 by London County Council and now display the history of the “home,” showing how living spaces have altered over the centuries. One of the almshouses has been restored to show how a pensioner lived in the 18th century.



MONDAY 3RD NOVEMBER

In their talk entitled *James Parkinson (1755–1824) and his environs*, **Chris Derrett** and **Christopher Gardner-Thorpe** jointly reviewed the life of Parkinson from several aspects and in the light of new information that they had discovered—the times he lived in, the area he lived in, his religious, educational, professional, political and geological interests. During Parkinson's life, there were great advances in scientific knowledge (e.g. Priestley, Davy) and an increase in book publication. There was also the upheaval of the French Revolution. Parkinson grew up in Hoxton—his father owned a house in Hoxton Square with an apothecary business at the back, which James inherited upon his death. In later life, he moved to Pleasant Row. He had seven children. He was Orthodox Church of England and was baptised, married and buried in the local church, St. Leonard's. However, there were Dissenting Academies in the area, including one on Hoxton Square. He studied medicine at London Hospital under Richard Grindell and would have attended lectures by John Hunter. Besides owning a private apothecary, he was also in charge of Holly House, a local mental asylum. He wrote books on a number of subjects, including alcohol, diet and exercise, as well as *The Villagers' Friend and Physician* and *The Chemical Pocket Book*. He became very interested in geology and palaeontology, keeping a large fossil collection in his house and producing *Organic Remains of the former World*. The speakers had found some catalogues from which they were able to identify some of the fossils Parkinson had bought.

F. Sabaté Casellas then talked about *Pau Estorch Siqués and his Magnes Venenorum*. Pau Estorch Siqués was born in 1805 in Olot, a town near the Pyrenees. He trained as a physician in Valencia and Barcelona, where he graduated in 1831. He worked in St James Hospital in his home town. In 1844, he financed privately a bath in Olot, where there was no drinking water in the houses. He moved to Barcelona in 1858 and died in 1871. He wrote poetry and about the theatre in Catalan under a pen-name, and also wrote a book on Catalan grammar, as well as translating works from French to Spanish. He had three brothers—a composer, a lawyer and a writer. In May 1858, he sent an article to a newspaper about a stone, used by country folk, which had the property of counteracting poison from a venomous bite, and he reported it to medical societies in Madrid and Paris. In 1862, he further claimed

that this could also cure a variety of diseases—anthrax, smallpox, plague, etc.—but he was criticised over a lack of proof.

Jane Davidson discussed the life of Joseph Leidy in *Joseph Leidy (1823-1891) Pioneer in Medicine, Forensics and Palaeontology*. Leidy trained as a doctor and was employed at the Wagner Free Institute of Science in Philadelphia, where eventually he rose to be its head. While there, he sponsored Edward Drinker Cope and taught him the principles of Comparative Anatomy—palaeontologists had to learn this from medical people. This may have been the only education Cope ever had. John Warren, a friend of Leidy's who was also a physician with an interest in palaeontology (he produced among other things a pamphlet on dinosaur footprints), helped Leidy get a post at the University of Pennsylvania. When America became embroiled in civil war, Leidy served as an Army Physician, carrying out autopsies as a coroner. His interest in palaeontology continued. Together with Thomas Waterhouse Hawkins, he restored a hadrosaur and displayed it at the Academy of Natural Sciences in Philadelphia, along with a model of a *Megalosaurus* which they had purchased. Leidy also produced a number of books on palaeontology, among them *Ancient Fauna of Nebraska* and *Cretaceous Reptiles of the United States* published by the Smithsonian in 1865. All this was achieved during the Civil War.

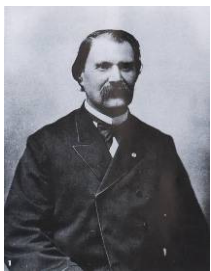
In **Ella Hoch's** talk on *Enlightenment under Politics—the Case of Otto Sperling*, she noted that, in 1810, a new plant genus *Sperlingia* had been named in honour of Sperling, who died in gaol after seventeen years as a political prisoner. So, who was Sperling, she asked. He had an interest in botany which led to him becoming apprenticed to a pharmacist and eventually graduating in medicine in Italy after travels in Norway and Gotland where he had examined the flora, fauna and geology. He found himself in Norway again when by chance blown off course in a storm whilst en route to England. There he was persuaded to stay as a physician. It was in the course of his work that he met and became a friend of Count Ulfeldt, who looked after the Norwegian estate of King Christian IV. Sperling's career blossomed after Ulfeldt drew him to the king's attention. However, fortunes changed for the worse when Sweden attacked Denmark in 1657 and Ulfeldt was felt to be complicit. He was sentenced to death for treason but had fled to Sweden; Sperling, on the other hand, was caught and imprisoned. While in prison, he continued to write on fossils and runic inscriptions but gradually weakened and died—a great waste of someone with a lot to offer public health, a man of talent, fluent in Greek, Latin and Italian, and with no interest in politics.

George Rousseau, biographer of John Hill, then discussed *Can John Hill be considered an important Geologist?* Hill's father was a clergyman who taught him Greek and Latin. His interest in science led him to collect specimens for the Duke of Richmond. The Duke attracted famous scientists from across Europe to Goodwood, one of these being da Costa, from a Portuguese Sephardic Jewish family, who had settled in London as a fossilist and been elected FRS. Hill became a friend of da Costa but, through financial necessity, he became an apothecary which gave him less time to collect. In 1746, Hill published his translation of Theophrastus' treatise *On Stones*. Hill was the first to produce an English translation of Theophrastus' work, though not the first to translate it; he based his work on a Latin translation. Theophrastus had written on many subjects but it was da Costa's influence that gave Hill the idea of translating this particular work—he thought geology would become important. He hoped da Costa would help him be elected to the Royal Society, but the friendship ended after Hill plagiarised da Costa's work.

Chris Duffin viewed the same character, John Hill, from a geological rather than a historical perspective, in *John Hill (1714-1775), a neglected Georgian Apothecary and Geologist*. Early enquirers, such as Thomas Burnet, John Ray, William Whiston and John Woodward, had been interested in fossils and a fashion had grown for 'Curiosity Cabinets' in which these treasures could be displayed. By Hill's time, it was accepted that fossils (as the term is currently used) were ancient life forms. Hill was a field worker, collecting for the Duke of Richmond, which gave him access to the Duke's library. He wrote on medical and geological topics. His first geological work was a letter on *Windsor Loam*, a thick clay used for making bricks. His *History of Stones*, an English translation of Theophrastus, later translated to French and German, brought an obscure text to wider notice and placed geology on a

scientific basis. To this work, he appended two letters—one on the colours of sapphire and turquoise, the other on copper, in which there is first mention of the use of the blowpipe to establish mineralogical facts. Borlase encouraged Hill to produce *The Natural History of Cornwall*, in which he catalogued the different qualities of minerals (e.g. hardness) and observations made with a microscope. Linnaeus had tried to classify minerals into families using his binomial system. Hill classified minerals into classes, genera and species, but this was not generally accepted. His *History of Materia Medica* is informative on ‘earths.’ These publications added to his fortunes.

Massimo Aliverti’s paper on *A Letter by Nicolaus Steno about a Cavern near Como*, presented by Chris Duffin, concerned Steno’s letter about the cavern of Moncodeno in Lombardy. Steno showed an early interest in science and studied medicine, obtaining a degree in medicine in 1664. Failing to get a chair in Denmark, he settled in Florence where he became Professor of Anatomy and continued his anatomical and other scientific researches. There he was physician to the Medicis, converted to Catholicism, became a priest and eventually gave up science for his religious work. He investigated sedimentation and erosion and this took him to look at two caverns, Gresta in Trentino and Moncodeno in Lombardy, to study the formation of ‘ice’ in the caverns. In the letter referring to the latter cavern, he describes and illustrates the cavern in detail and goes on to refute Aristotle’s theory that the ‘ice’ formed due to the interaction of heat and cold intensifying each other. The caverns had been visited by Leonardo da Vinci and recently by geological researchers from Milan. During ‘Questions’, it was revealed that Steno had four ‘fathers’—his mother had been married four times, each time to a goldsmith all of whom died from mercury poisoning.



Victor Lemoine was the subject of **Eric Buffetaut’s** paper *From Giant Birds to X-rays: Victor Lemoine (1837-1897), physician and palaeontologist*. Lemoine was born in Reims where, after studying medicine in Paris, he became a professor in the School of Medicine. Along the way, he developed an interest in natural history—botany, geology and palaeontology. He became particularly interested in the fossil assemblage found on a hill called ‘Mont de Berru,’ a Tertiary outlier overlying Chalk. The Cernay conglomerate, which formed part of this, represented a Palaeocene fluvial bed containing vertebrate fossils. He wrote many papers on his discoveries there, including the remains he found of the giant flightless bird *Gastornis* which had first been described from near Paris. The remains were so abundant that Lemoine was able to reconstruct a skeleton, but later analysis by Martin in the 1980s showed that Lemoine had inadvertently included reptile and fish bones in the reconstruction, causing confusion to later workers. It was also realised that *Diatryma* and *Gastornis* were very similar—they are now regarded as identical with *Diatryma* the junior synonym. Mammal remains were also abundant; Lemoine was one of the first to study their brain endocasts. He also investigated the histology of *Arctocyon*, a mammal combining features of bears, pigs and marsupials. He was visited by both Cope and Osborn, who noted the similarity to fauna of the same age in the USA. He was quick to realise that the newly discovered x-rays had a role to play in palaeontology.

In *Duncan and Son—two generations of scientific polymaths*, **Tim Carter** and **Anne Spurgeon** discussed the careers of father and son Peter and Cecil Duncan, both of whom were interested in geology, natural history and health. Peter Duncan graduated in medicine and practised in Colchester, where the range of his interests became apparent with production of papers on topics such as the building stones of the Roman walls of the town. From Colchester, he moved to London to practise in Blackheath but made a career-move into geology, eventually becoming Professor of Geology at King’s College, London and President of the Geological Society. He was sceptical about Darwin’s theory of evolution.

Cecil Duncan graduated in chemistry and became a lecturer on agricultural chemistry in Cirencester then Worcester. He was also knowledgeable on bacteriology and epidemiology, and became a specialist in

the chemistry of public health, for instance, water quality and the adulteration of food. He investigated the outbreak of anthrax among cattle in the county. He pursued his earth science interests in his private life being a member of the Worcester Naturalists' Club and the Malvern Field Club for whom he wrote papers. His father Peter, living in the age of the generalist, was able to change career, whereas this was not possible for Cecil.

Lorenzo Lorusso reviewed the role of physicians in Italian geology in *Physician Pioneers of the Italian Geological Society*. From the thirteenth century onwards, various people had contributed to the understanding of earth sciences in Italy, notably Leonardo da Vinci who had noticed worm traces in sedimentary rocks; Fracastoro who realised fossils were former life; Aldrovandi who had a large geological collection; Scilla, one of the founders of palaeontology; Ramazzini, a doctor of medicine; Vallisneri; Ardnino, regarded as the father of Italian geology; Catullo who studied medicine then became interested in natural history; and Gemmellaro. Two men who contributed to the formation of the Italian Geological Society were Leopolda Pilla, who qualified in medicine in 1834, became Professor of Geology at the University of Pisa in 1841 and was particularly interested in volcanoes, and Giuseppe Meneghini who also qualified in medicine in Padua and, in 1848, moved to Pisa to become Professor of Geology then eventually Chancellor of the University as well as president of the Italian Geological Society.

In *'Arabian' Gem Stones*, **Zohar Amar** presented the results of researches, now published in a book, into the Arab use of gemstones, based on Arabian literature from the eighth century onwards. From the literature, they had deduced that gemstones could be placed in three groups: the first group were regarded as extremely valuable and as such were worn by the ruling classes (corundum, emerald, diamond and pearls), the second group of less expensive gems were owned by the middle classes (turquoise, carnelian, onyx, lazurite and malachite), and a third group used by the lower classes (jasper, amethyst and crystal). Others mentioned in the literature were coral, bezoar, amber, jet, zircon and spinel. The Arab empire expanded and traders travelled great distances, to countries such as India and Sri Lanka, to acquire special stones. Rulers surrounded themselves with collections of gemstones, with the most expensive ones being given special names (The Orphan, The Horseshoe). New gems (diamonds and topaz) are mentioned in later literature. In mediaeval times, sapphires and rubies were most valued, along with pearls and emeralds. There is little mention of their use in medicine; although, bezoar was used as a preventative.

Tom Blaen then considered whether it was possible to determine if jewels were worn as decoration or for medical reasons in *Not used to be worn as a Jewel*. Sections of early medical tomes refer to the use of precious stones. Gems could be swallowed, powdered or worn for protection. The physician Cardano noted that gems were powdered. Charles the Bold wore a diamond in battle. Turquoises were mostly worn by men. Amulets (gemstones with inscriptions upon them) were obviously worn for other than decorative reasons. Similarly, Ugly Stones must have been used for medicinal reasons as they had no aesthetic value. Toad-stones and Eagle-stones were worn by pregnant women to guard against miscarriage.

In *Minerals, Plants and Animals in 17th Century Iatrochemistry Treatises*, **Renzo Console** discussed the works of ten authors produced for use by apothecaries in seventeenth century France. Books for medical students were written in Latin but for apothecaries, who prepared medicines and were not academics, there was a need for books to be produced in French. The earliest of these was by de Renou (1624), translated from Latin after his death. He listed sections on minerals, plants and animals used in medicines, something followed by the later authors. Fabre (1636) mentioned the use of gold and gems and De Clave (1646) mentioned iron and sulphur but not gems. Barlet (1653) contains good illustrations and includes metals. Le Febvre (1660) mentioned gold, silver and emeralds; as a Huguenot, he emigrated from France to England, and the work was translated into English. Glaser (1663) showed instruments for distillation and was translated into German; he criticised the writings of some authors. Meurdrac (1666) is the only female author. La Faveur (1671) published a book on chemistry, Lémery

(1675) copied from Glaser's book and was; translated into five languages. Ettmuller (1693) discussed minerals, animals and plants.

Mike Swanton revealed *Ethelred the Unready's Gift to parturient Women*. The tenth century king Ethelred ruled for 37 years from the age of ten ('unready' meant 'without advice'). He carried stones on his person, reputedly to protect himself. King Offa had 'identified' the bones of the first English martyr, St Alban, and placed them in a monastery, around which grew a centre of wealth—St Albans. Ethelred intended to give a stone he possessed to the monastery to form the top of the shrine to St Alban. The stone, dark with a horizontal white streak across it, was so large it could hardly be held in the hand, similar to a stone said to have belonged to Pyrrhus, king of Sicily. It survived until the thirteenth century and was illustrated by Matthew Paris. Touch-stones were commonly used in gynaecology in mediaeval times to ease childbirth. The pregnant woman held the stone between the breasts and drew it down the body, where the baby, retreating from the stone, was born.

TUESDAY 4TH NOVEMBER

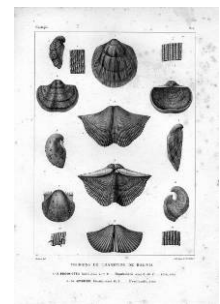
Maria do Sameiro Barroso summarised the medicinal use of coral in *The Coral Stone in Petrus Hispanus 'Treasury of the Poor'*. There are few reliable facts known about Peter of Spain; he was born around 1210–15 and educated in Lisbon and Leon. He went to Paris and studied at Montpellier. He was a physician to Pope Gregory and himself became a Pope. He wrote a popular book on medicine intended to help poor people. His work was not always highly regarded by the church—several chapters were suppressed and it was produced without his name. In it, he used recipes from Greek, Roman, European and Arabian works, with spices and minerals listed among the ingredients. He mentioned red and white corals, which were used for a wide variety of ailments. Coral had been prized in ancient times in India and Arabia for its ability to drive away evil spirits if kept in the home, according to Pliny. The polymath Al-Biruni also noted it.



In '*Serpent Stones: Myth and Medical Application*', **Rachael Pymm** noted that serpent stones were first mentioned on seventh-century cuneiform tablets and occur throughout early and mediaeval literature. Various properties were attributed to them and various fossils have been claimed to be the serpent stones. The Ancient Greeks described two things which have become confused—dragon stones and snake stones. Dragon stones were thought to have been obtained by slaying dragons in India and

removing the white stones from the head. It is impossible to be certain of the nature of dragon stones but from the description, they might have been pearls. Travellers returning from China and India told of serpent stones. They were claimed by some to be good for dropsy and rheumatism and by others for snake-bites. Gessner and Kirchner interested themselves in them, as did Faraday and Davy. They appear throughout the Celtic literature of Scotland, Wales and Cornwall. Through time, they have been described as round white stones, black stones, ammonites, glass beads and ophites (green stones resembling snake-skin).

Irina Podgorny had become interested in how pharmaceutical material from the Old World came to be associated with materials in the New World. In *Eagle-stones and Terebratulae*, she described her investigations into the association of eagle-stones with various objects in South America. Her searches through archival material had taken her to Seville to look at records there. Although Spanish Colonies were required to lodge samples of all remedies in Spain, not much could be found on eagle-stones; they were, however, mentioned in reports from Peru, Bolivia and Argentina. In Bolivia, brachiopods were known as eagle-stones and used in the same way—worn on the arm of pregnant women, while in Argentina, trilobites were known as eagle-stones.





In *Medicinal Uses of Earths and Minerals from Antiquity to the 21st Century*, **Spyros Retsas** related how, in 1931, two drawers of pharmaceutical specimens, belonging to Sir Hans Sloane, had been rediscovered in the Natural History Museum. Sloane had suffered poor health and, having to rest for long periods, had spent time reading rather than exercising. He eventually became physician to three monarchs, President of the College of Physicians and of the Royal Society. He acquired the collecting habit following a trip to Jamaica as physician to the Duke of Albemarle. However, the drawers, containing one hundred and seven

mineral specimens, related to his medical practice. Amongst the specimens included in Sloane's catalogue are arsenic, mercury and Lemnian earth. Sloane's catalogue refers to red and yellow arsenic (the sulphides) and white arsenic (the oxide). Though arsenic itself is not poisonous, arsenic trioxide is—it has recently been applied in the treatment of leukaemia. Mercury was used in distemper. Another of the specimens, Terra Sigillata, had been used by Sloane on his patients. These clays, from a number of Greek islands (Samos, Limnos, Kimolos) had been known since antiquity. Lemnian earth was used as an antidote to poison. Dioscorides said the earth was mixed on Lemnos with goat's blood and stamped with an official seal with the image of a goat on it. Galen had visited Lemnos twice to discover where it was manufactured, successfully on his second visit. He discovered that no goat's blood was used but brought back 20,000 seals with him which he found useful for animal bites.

Effie Photos-Jones described, in *Applying Microbiology to Myths*, recent work on the properties of Aegean earths, in particular Lemnian sphragides from a museum collection in Basel. The earths are composites manufactured from raw materials extracted from Greek islands, not single minerals. It appears there are only three eye-witness accounts of the extraction of Lemnian earth. The pit was sealed except for one day a year. Field work carried out to identify the extraction site of the alum—near a spring by a hill—had corroborated what Pliny had written. The symbol on the seal was not that of a goat but the words *Tin-i-maktum*, meaning Terra Sigillata. The sphragides contain clay minerals—the red one contains illite, the grey one contains montmorillonite and the white one dolomite. In studying the microbiological properties of these, the white one was found to be most effective at reducing certain bacteria. The soils, however, weren't effective, so there must have been further factors involved; for instance, a Dutch observer says the pit was flooded all year and only drained for one day, so the ground water may have affected the properties.

Chloe Keane continued this line of inquiry in *The Medicinal Minerals of the Aegean*. She pointed out that increasing bacterial resistance to antibiotics had led to an urgent need to find new ones. The Archaeology Department of Glasgow University had suggested to the Microbiology Department that they test biologically the properties of some Earths. They had examined two alums (potassium alum and alunogen) found around fumaroles in Melos, borates (colemanite, ulexite) from Samos and silicates (bentonites) from Melos and Samos. Under very carefully controlled conditions, they then carried out experiments on the effects of these earths on bacteria (Gram negative *Pseudomonas* and Gram positive *Staphylococcus*) and yeasts. The alums wiped out the bacteria but had no effect on the yeast; the borates reduced the bacterial colonies by factors of 10^3 to 10^4 ; the Melian bentonite had no significant effect but the Samian bentonite reduced *Staphylococcus* significantly.

In *New Light on Darwin's Ills*, **Louis Heyse-Moore** looked at the causes of Darwin's illness. Darwin suffered ill health for most of his working life. Examination of his papers indicates ninety-five different symptoms. People have speculated as to the cause—Adler suggested Chagas' Disease (bitten by a bug in South America) but the symptoms do not match or MELAS syndrome, though Darwin is not known to have had fits or dementia. Recently, Crohn's Disease has been put forward and Darwin's DNA does show a number of markers for this. From various incidents in Darwin's life—at the age of eight, he witnessed his mother's death ("a death of terrible suffering") but could not remember it; in Edinburgh, he was distressed to see patients undergoing surgery without anaesthetic, which gave rise to later flashbacks; and the slow death of his beloved daughter Annie, though he only visited her grave many

years later—Louis concluded that Darwin also suffered from post-traumatic stress disorder, a condition unrecognised in Victorian times. Darwin was initially enthusiastic about the “Water Cure” he underwent at Dr Gully’s establishment in Malvern. This involved being wrapped in wet sheets, rubbed with wet towels and perspiration baths, as well as drinking Malvern waters and exercising in fresh air. Later, he became disillusioned with it. He suffered and eventually died from angina.



John Mather described the history of one of the earliest spas, Shooter’s Hill, in *Nathaniel Hodges and the Purging Wells of Shooter’s Hill*. The first mention was in a broadsheet of 1673, probably written by Nathaniel Hodges, a physician who remained in London during the plague, died in a debtors’ prison and was buried in St Stephen’s Walbrook. The broadsheet proclaimed great cures done by the water—inside and out. It had been discovered by John Guy on the north-west side of Shooter’s Hill, which overlooks the London to Gravesend road near Eltham. The exact location of the well, behind what was once the Eagle Tavern on Red Lion Lane, can be seen on old maps, but it was filled in in 1924. The hill is capped by gravel overlying London Clay, at the top of which is a sandy layer (the Claygate Member). Drinking water is derived from this, but the purging waters came from the clays about 20 metres below. The oxidation of pyrite (iron sulphide to iron sulphate), followed by reaction with dissolved calcium carbonate, produces calcium sulphate in the clay, the calcium in which is slowly replaced by magnesium. It is the resulting magnesium sulphate (Epsom Salts) that causes the purgative effect.

Taking the Milan water-supply as a case-study, **Lorenzo Lorusso** discussed *Water and the City at the end of the 19th Century*. By 1870, Milan was expanding into rural country that included an area of cemeteries dating back to the early Christian era. Pollution of the water supply had become a problem and the Lombard Institute offered an award for anyone offering a solution to the problem; this was eventually won by Pavesi and Rotondi who concluded that groundwater from the cemeteries was causing the problem and recommended that deeper artesian wells should be used instead. Milan had a system of canals, used for commercial and military purposes. A study of the water supply of the main hospital showed it to be an exemplar of how to avoid pollution—the hospital wastewater by-passed two of the canals before debouching into a canal used specifically for drainage.

The next presentation in the scheduled programme was replaced by **Sükran Sevimli** on *Cognitive Evolution of Individual Hygiene Concept in Anatolia*. In her talk, she reviewed the changing perception of personal hygiene over Anatolia’s long history. Archaeologists have dated the earliest inhabitants of Anatolia to 600,000 years ago. During the Hittite era (1650–1200 BCE), towns were situated near springs, with distribution and storage systems providing water to baths; their hygiene related to ritual. In the Greek period (1050–5 BCE), philosophers had opinions on hygiene—cleanliness satisfied the gods and biological needs. It was Hippocrates who noted the link between pollution and disease. In the Roman era (30–330 CE), cities were clean areas with clear water. Daily baths were taken communally. There were lots of civic waterworks—some baths and pipes still survive today. Personal hygiene was dictated by laws, which replaced philosophy. Anatolia stands at the cross-roads of Africa, Asia and Europe and so has always seen the exchange of ideas. Through time, concepts of hygiene have altered from spiritual value-based to law-based systems, which allowed uniform country-wide application.



Terence Doyle then recounted *The Medical History of Antimony; Panacea or Fool’s Gold?* Antimony is used today in the treatment of tropical diseases and also of tumours but this is only part of its long history in medicine. It is found as the mineral stibnite. Metallurgists in Alexandria used it to separate silver from gold, and found that with copper it could produce a gold-coloured alloy (“elevating the lesser to the greater”). Based on Aristotle, it was believed that any substance could be changed to any other using the quintessence, so antimony came to be associated with the Philosopher’s Stone. In medicine, its purgative properties have long been recognised. Paracelsus recommended its use as a panacea. His views

and those of his followers were disputed by the followers of Galen's, largely along religious lines—Galenist Paris (Catholic) and Iatrochemical Montpellier (Protestant); this led to de Mayerne being expelled from Paris and coming to England. A College of Physicians' pharmacopeia mentions many antimony potions. One such was the 'Antimony cup' where wine standing in a cup of antimony produced a powerful liquid purgative.

In *The Inexcusable Persistence of Silicosis. A Brief History*, **Sabina Michnowicz** reviewed the lung disease silicosis which is common but need not be; it arises from the inhalation of silica, causing a progressive disease for which there is no remedy. It occurs where silica dust is created—in potteries, quarrying, construction and demolition. Agricola, the 'Father of Mineralogy' observed that dust caused coughing; Ramazzini first described it as a medical condition in 1713 and Visconti coined the term "silicosis" from the word "silex" (flint). A study of granite workers in Vermont recommended limiting the amount of quartz in the air. Probably the worst incident was during the excavation of the Hawks Nest Tunnel (West Virginia) where over 700 workers died from it; they were not provided with masks though managers wore them on their visits to review progress. Silicosis still occurs—c. 6,000 deaths per year in China, 300 in the USA and less than 100 in the UK. A number of treatments have been trialled, without success, so avoidance—by better education and the wearing of masks—is vital.

The final talk, *Lead, Isotopes and Ice*, was given by **Beverly Bergman**. Over ten million tons of lead are produced every year, mainly from China and the USA. It was used as a currency in the Middle East c. 2000 BCE and in glass c. 1500 BCE. The Romans used it in water pipes and cisterns, and to store wine although they were aware that earthen pipes were safer than leaden ones. Its toxicity has long been recognised—lead mining contaminated land, and smelting caused atmospheric pollution. Lead piping was banned in the 1970s and its use in paint was also banned. Its biggest use was as lead tetraethyl, an anti-knock ingredient in petrol, which had been discovered in 1920 by Thomas Midgley—researchers were affected by the compound. In using lead for isotopic dating of ice-cores, Patterson discovered his results were affected by anthropogenic lead. There was a two hundred-fold increase in the washout of atmospheric lead by 1960, when 300,000 tons of lead was being burnt. Lead is also used in ammunition—200 million shells were used on the Western Front—so remediation of battlefields as well as industrial working is needed. Lead poisoning is caused when lead is taken up in bone and the blood, a significant amount of which comes from the atmosphere. It particularly affects children. Lead levels are now falling but older people have it in their bones so it affects their blood.



Many thanks go to Chris Derrett and Christopher Gardner-Thorpe for devising an interesting and enjoyable pre-Meeting walk and sharing the results of their research, and to the meeting convenors--Dick Moody, Chris Duffin and Christopher Gardner-Thorpe--for their considerable efforts in putting the event together. The speakers provided a really interesting set of presentations on a wide range of topics. In addition to the main lecture programme, participants also enjoyed discussions with

acquaintances, new and old, during the coffee-breaks which the Geological Society staff conducted with their usual quiet efficiency.

¹ e mail jimspencer11@gmail.com

Pictures © Jim Spencer, Chris Derrett
or from Abstract book

FUTURE HOGG EVENTS

***UNVEILING OF WILLIAM SMITH COMMEMORATIVE PLAQUE**

Monday 23rd March 2015 16.30hrs

15 Buckingham Street, London WC2N 6DU

Details on page 15 of this newsletter.

***GSL WILLIAM SMITH MEETING 2015**

200 YEARS OF SMITH'S MAP

23rd–24th April 2015

Burlington House, Piccadilly, London

This two-day HOGG conference will cover the production of Smith's map, his methods and contemporaries, and its legacy for geology. Programme and registration details on pages 16–18 of this newsletter.

***OPEN MEETING**

Thursday 18th June 2015

Burlington House, Piccadilly, London

Programme on page 19 and registration form on page 37 of this newsletter.

***VISIT TO THE EYLES COLLECTION AT THE UNIVERSITY OF BRISTOL, AND LECTURE BY RICHARD FORTEY**

Wednesday 14th October 2015

University of Bristol

Details on page 20 of this newsletter.

***EXCURSION TO SOUTH-WEST FRANCE**

Autumn 2015

A 5–6 day excursion to study the history, geology and wine of south-west France. Further information on page 21 of this newsletter.

***EUROPEAN OIL & GAS INDUSTRY HISTORY**

25th–27th November 2015

A joint conference with the Petroleum Group of the GSL and the Petroleum History Institute marking a number of important anniversaries. 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 area.. Further details in the next newsletter.

Looking further ahead...

***MILITARY ASPECTS OF ENGINEERING GEOLOGY, PAST AND PRESENT**

Wednesday 16th November 2016

Burlington House, Piccadilly, London

A joint meeting with the GSL's Engineering Geology 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. The meeting is intended to complement that held in November 2009 which generated the Geological Society Special Publication 362: *Military Aspects of Hydrogeology*. A Call for Papers will be issued later this year as plans for the meeting develop.

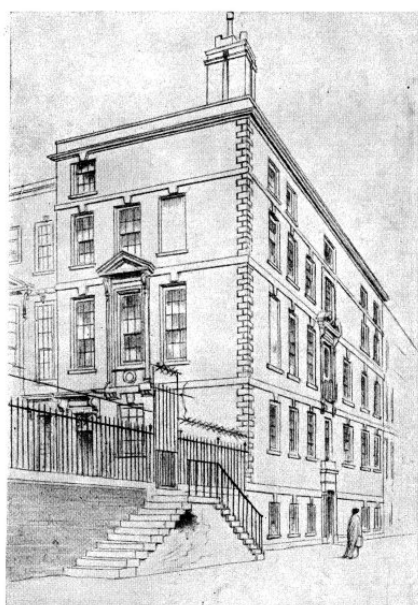
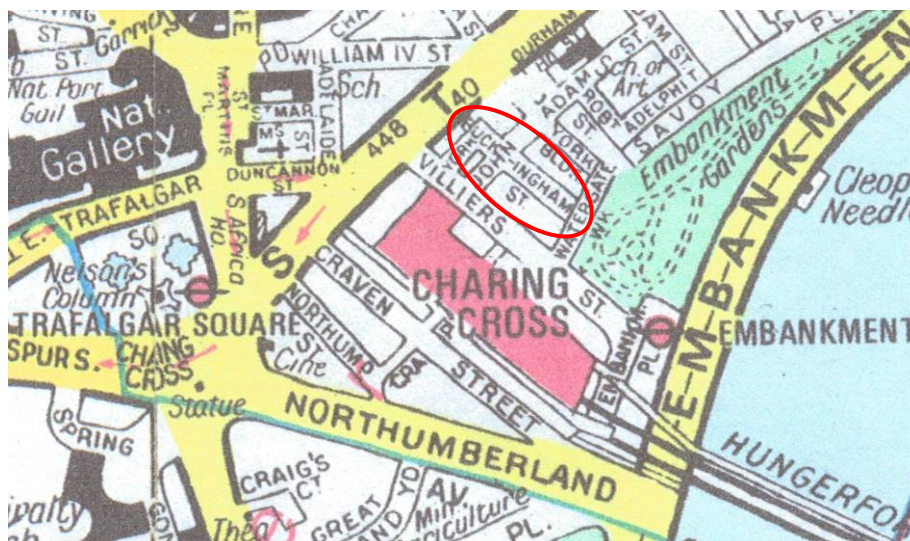
UNVEILING OF WILLIAM SMITH COMMEMORATIVE PLAQUE

Monday 23rd March 2015



William Smith lived at 15 Buckingham Street in London from 1804–1819. To commemorate him, in this bicentennial year of his famous map, a plaque is being unveiled on 23rd March at 16.30 hrs on the modern building occupying this address. Sir David Attenborough will unveil the plaque. All are welcome to attend.

The nearest Tube stations are Embankment and Charing Cross. The best approach is via Watergate Walk reached by a short stairs down from Villiers Street. In Smith's day, his house sat at the river's edge by York Watergate. The latter remains within the reclaimed land of Embankment Gardens. London's oldest wine bar would be a convenient shelter; it is situated on Watergate Walk between Villiers Street and Buckingham Street. After the unveiling, the Geological Society is holding a Bicentenary Launch event for sponsors. At the moment, this is a GSL invitation only event; however, when the replies are received, we are hoping that several more places may become available. We will know about this closer to the event and will keep you informed via the HOGG Jiscmail list and at www.historyofgeologygroup.co.uk/

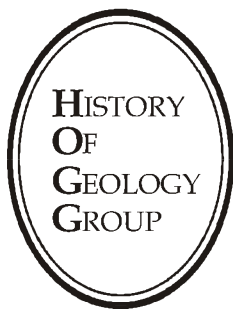


Sketch of
15 Buckingham
Street as William
Smith knew it.



2014 view of the
building now
occupying the
site, viewed
from Watergate
Walk.

© John Henry



200 Years of Smith's Map

Private Exhibition at Natural History

Museum: 22 April 2015

Conference: 23-24 April 2015

Geological Society, Burlington House, London

Field excursion in Oxfordshire: 25 April 2015



William Smith (1769–1839) was an English geologist who created the first nationwide geological map. In 1794, working as a surveyor on the construction for the Somerset Coal Canal, Smith recognised that each stratigraphic horizon contained a unique assemblage of fossils. This enabled him to work out the order of strata from the fossils they contained. From 1799 he mapped local strata, eventually creating the first geological map of England and Wales, published in 1815. In the interim, his ideas were widely disseminated throughout the geological community. Like many new theories they took time to become accepted. In 1831 the Geological Society of London awarded Smith the first Wollaston Medal and the President, Adam Sedgwick, referred to him as 'the Father of English Geology'.

This bicentenary meeting aims to address:

- Smith's achievements and his impact on the state of geology in his time, his fossil collection, his contemporaries, his relationship with the Geological Society of London, and his various careers including canal builder, land drainer, mineral surveyor and lecturer.
- Smith's map, '*Delineating the Strata of England and Wales with Part of Scotland*', contemporary concepts of geological survey and map design, and past and present research into surviving Smith maps, sections and documents.

CONVENORS: David Williams, Cherry Lewis, John Henry

PUBLICATION It is intended to publish the conference proceedings supplemented by invited papers. Late abstracts will be considered for the conference publications; if you are interested in this, contact wsmith2015@gmail.com

REGISTRATION is being handled by the Geological Society's Conference Office, see <http://www.geolsoc.org.uk/wsmith15> **For HOGG members, the registration fee is £55.**

PROGRAMME DETAILS

WEDNESDAY 22 APRIL

Natural History Museum, South Kensington

Delegates will be shown original William Smith geological maps and sections, and his collections of fossils and rocks. This will be a private, behind the scenes tour in small groups of 20. Four tours each lasting 40 minutes will be conducted, starting at 1.00, 2.00, 3.00 and 4.00 pm.

Places on the tours are available only to delegates registered for the conference at the Geological Society and will be allocated on a first come, first served basis.

Details regarding access and time of your visit will be forwarded with other registration details.

£6 per person

THURSDAY 23 APRIL
Burlington House, Piccadilly (Day 1)

09.30 REGISTRATION; tea, coffee

MORNING SESSION 1: Practical aspects of Williams Smith's maps

10.10 *Opening remarks*

John Henry (Chair HOGG)

10.15 *William Smith's 1815 map: its production, distribution and survival.*

Tom Sharpe (Lyme Regis Museum)

10.45 *Cartographic innovation and tradition in William Smith's geological maps.*

Karen Cook (University of Kansas)

11.15 *William Smith, the maps supporting his published maps.*

John Henry (independent scholar)

11.45 COMFORT BREAK

MORNING SESSION 2: William Smith today

12.00 *William Smith online: the impact of re-curating the William Smith Archive.*

Kate Santry (Oxford University Museum of Natural History)

12.30 *William Smith—from Fuller's Earth to Google Earth.*

Peter Wigley (independent scholar)

13.00 LUNCH BREAK

AFTERNOON SESSION: William Smith's career

14.30 KEYNOTE: *William Smith's search for a money-earning career.*

Hugh Torrens (Keele University)

15.15 *William Smith's visits to East Anglia: the legacy of a sea defence and drainage engineer.*

Owen Green (University of Oxford)

15.45 *A breach too far? East Norfolk's place in Smith's search for success.*

Peter Riches (independent scholar)

16.15 COMFORT BREAK

16.45 *William Smith, the principles of stratigraphy, and their impact on the search for underground water supplies.*

John Mather (University of London)

17.15 *William Smith and Combe Down: the story of a geologist and his 'cherished' home.*

Richard Irving (Kwansei Gakuin University, Japan)

17.45 *Summing up and discussion.*

18.00 DRINKS RECEPTION

19.00 CONFERENCE DINNER

The Conference dinner will be held in the Lower Library at Burlington House.
The dinner will be a hot buffet including wine. Registered delegates may invite a guest.
£30 per person.

FRIDAY 24 APRIL

Burlington House, Piccadilly (Day 2)

MORNING SESSION 1: William Smith's contemporaries in Europe

09.30 *The first detailed geological maps of France: between individual plans and national plan.*

Pierre Savatier (Université de Caen, Basse-Normandie)

10.00 *The 'practical' roots of stratigraphy and geological mapping in Italy during the early decades of the 19th century.*

Ezio Vaccari (Università dell'Insubria – Varese)

10.30 *Geological mapping in Germany during the early decades of the 19th century.*

Peter Schimkat (independent scholar)

11.00 COMFORT BREAK—tea and coffee provided

MORNING SESSION 2: Revealing William Smith's maps

11.30 *William Smith and Ireland: sources of Irish geological information on his geological maps.*

Patrick Wyse Jackson (Trinity College, Dublin)

12.00 *New light on the 1824 William Smith Northumberland County map.*

Martyn Pedley (University of Hull)

12.30 *William Smith's error in South Wales.*

Duncan Hawley (independent scholar)

13.00 LUNCH (no lunch provided for delegates)

AFTERNOON SESSION: William Smith: the man and his influence

14.30 *William Smith, family man.*

Nina Morgan (science writer)

15.00 *John Farey (1766–1826), pioneer geologist and an advocate of Smithian methods.*

Alan Bowden (National Museums Liverpool)

15.30 *David Mushet, John Farey and William Smith—geologising in the Forest of Dean.*

Cherry Lewis (Honorary Research Fellow, University of Bristol)

16.00 COMFORT BREAK

16.30 KEYNOTE: William Smith Lecture 2015: The coming of the father.

Simon Knell (University of Leicester)

17.15 *Closing remarks.*

SATURDAY 25 APRIL

FIELD TRIP

Smith's birthplace and the Smith Heritage Centre in Churchill village, Oxfordshire, and the Smith Archive at Oxford University Museum of Natural History.

£35 per person.

FULLY BOOKED.

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 *Brighton and Hove Basement: Geological Basis of a Conurbation.*

Geoffrey Mead

11.45 *Tambora 200: Supervolcanoes and the Course of History.*

Anthony Brook

12.15 *Geology and Fiction 1815–1850.*

Adelene Buckland

13.00 LUNCH

SESSION 3: Our Geological Heritage

13.50 *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

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

REGISTRATION FORM AT THE BACK OF THIS NEWSLETTER

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

Wednesday 14th October 2015



*University of Bristol
Wills Tower*

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 14th 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 Richard Fortey, celebrated for his books on geology and its history.

Full details of this meeting will appear in the next Newsletter and on HOGG's website: <http://historyofgeologygroup.co.uk>



Entrance to the Great Hall

EXCURSION TO SOUTH-WEST FRANCE

AUTUMN 2015

A 5-6 day excursion to study the history, geology and wine of south-west France for members of HOGG, GA and DinoSoc.



Proposed schedule

DAY 1: Flight from UK to Montpellier or Béziers, arrival mid-afternoon. Drive to Carcassonne (2 or 3 hours depending on airport). Overnight in Carcassonne (and visit medieval city).

DAY 2: Drive from Carcassonne to Espéraza (50 km), visit dinosaur museum and (if possible) a dinosaur locality. Drive to Béziers in afternoon (about 2 hours). Overnight in Béziers (another option would be Saint-Chinian, a much smaller town but perhaps more pleasant).

DAY 3: Drive to Cruzy (less than ½ hour from either Béziers or Saint-Chinian), visit Cruzy Museum, palaeontological collection and laboratory; visit dinosaur sites. Overnight in either Saint-Chinian or Béziers.

DAY 4: Drive to Aix-en-Provence (about 3 hours). Visit the Natural History Museum. Overnight in Aix-en-Provence.

DAY 5: Visit city of Aix-en-Provence; trip to dinosaur egg sites at Montagne Sainte-Victoire. Overnight in Aix-en-Provence.

DAY 6: Drive to Montpellier or Béziers; flight to UK.

Dates in Autumn 2015 and costs to be announced.

EXPRESSIONS OF INTEREST AND OTHER ENQUIRIES TO DICK MOODY

(e mail rtj.moody@virgin.net)

STOP PRESS

The GSL has just announced (on 18th February) that this year's **Sue Tyler Friedman Medal** has been awarded to **Dr David Branigan** (University of Sydney, Australia). The citation will be issued after the award ceremony which will be held at Burlington House in London on June 3rd.

The award was established by Gerry Friedman in 1987 by a gift of the Northeastern Science Foundation Inc. of Troy, New York, and dedicated to his wife Sue Tyler Friedman. The award is made annually, or at such intervals as the GSL Council may determine, in recognition of distinguished contributions to the recording of the history of geology.

More details in the next newsletter.

REGISTER OF HOGG SPEAKERS

Chris Duffin's¹ proposal for promoting the history of geology is repeated from the last newsletter.

Talks on the history of geology are generally quite popular and well received—they bring an extra depth to the topic under review, and consideration of the personalities and the methodologies they used adds a personal dimension which breathes new life into a subject, as well as giving a sense of continuity with the past. Our subject is of interest in this way to a wide range of local geology and natural history associations, historical societies and general interest groups. Local groups often find it difficult to find potential speakers who might broaden their lecture programmes.

For this reason, and as a means of promoting both the history of geology and HOGG itself, we wondered if it would be useful to compile a bank of potential speakers and their subjects for posting on the website and distribution amongst local societies. The reservoir of interest and expertise resident in HOGG, together with the wide geographical distribution of our membership, means that we could potentially provide a unique service to our subject.

If you already give talks to local groups, or would welcome an opportunity to speak about your area of interest, perhaps you would consider adding your name and details to a REGISTER OF HOGG SPEAKERS. To help you think about this, I suggest that a potential format might be as follows:

NAME OF SPEAKER
INITIAL CONTACT DETAILS
TITLE OF TALK(S)
ABSTRACT(S) (IF POSSIBLE)
AREA SERVED
FEE

By way of example, I offer the following:

NAME OF SPEAKER: Dr Chris Duffin
INITIAL CONTACT DETAILS: email cduffin@blueyonder.co.uk
TITLE OF TALK: *Louis Agassiz (1807–1873)*

ABSTRACT: Swiss born Louis Agassiz adeptly avoided his parents plans for his career and rapidly established a reputation in ichthyology which brought him to Paris to study with Cuvier. His first major work on fossil fishes (5 volumes) added around 1500 new genera and species of fossil fishes, and he set up his own printing press to publish the results. He was the pioneering proponent of the effects of glaciation (“God’s great plough”) during what he termed the “Ice Age”. Emigration to the United States brought nationwide popularity as a lecturer. He was instrumental in setting up the Museum of Comparative Zoology at Harvard and spearheaded the American anti-Darwinism movement. The vastness of his plans usually exceeded his ability to complete them, and he was never far from controversy.

AREA SERVED: South East England but prepared to travel further afield.

FEE: No lecture fee, but travel expenses appreciated.

It could be argued that a SPEAKER’S BIOGRAPHY, a couple of sentences long, might also be useful.

If you would be willing to have your details added to such a register, even if you would prefer to omit some of the sections above from your entry, please send the information to Chris Duffin (contact details below) who will collate and distribute the final list.

¹Email: cduffin@blueyonder.co.uk

¹Postal address : 146, Church Hill Road, Sutton, Surrey SM3 8NF

GHOSTS OF THE MUSEUM

John Henry¹ reports on a historical event held in the GSL Library.

On 6th November 2014, the Upper Library of the Geological Society was transformed to its previous incarnation as the Society's Museum in order to provide the venue for "an elementary class on fossils" given by Edward Charlesworth (1813–1883), geologist and would-be curator of the Museum. Until 1911, specimens in the Society's collections occupied shelves which were closed as panelled cupboards. (The present Fellows' room off the library still has shelves behind the wood panelling). The Library was arranged as class room with 'lanterns' on the student tables, a pair of great elk horns above the black board, and a large real fossil rhinoceros skull at the entrance. The shelves surrounding the students on the main floor were labelled by Period and by geographical location along the galleries for the imagined fossils. The scene was theatrically set for our instructor to give the lesson.

Charlesworth started promisingly with a notable paper—The Crag of East Anglia—which led to his election as a Fellow of the Geological Society in 1835. He pursued a museum career coupled with the editorship of several short-lived geological journals. In the museum world, he worked at the Ipswich Museum (honorary, 1835), the British Museum (staff), London Zoological Society (assistant, 1837), and York Museum (curator, 1844–1858). He applied to the Geological Society in 1842 to succeed William Lonsdale as Curator and general factotum but was rejected due to editorials (see below) attacking William Buckland, Charles Lyell and Richard Owen. His journalistic career was equally varied as editor of the *Magazine of Natural History* and *Annals of Natural History* (1837–1840) with which it later merged. From this platform, his opinionated editorials provoked at least one libel suit and angered eminent members of the Geological Society. Subsequently, he started the *London Geological Journal* in 1846 which failed after three issues. He attended meetings at the Geological



Society, often arguing at length and loudly about its management. While his points may have occasionally deserved attention, he was too often "aggressive and needlessly offensive, and his want of tact ...in critical remarks... Charlesworth came gradually to lose position and friends" And so, the event on which the evening was based, with Charlesworth played by Ted Nield in academic gown, never actually happened but it might well have and, in any case, it felt 'real'.

From the above précis of and quote from the programme notes, some in the audience may have feared a rough ride, but in fact Ted eschewed what he referred to as the 'am dram' approach and gave a very clear and helpful lesson distinguishing between drawing and diagrams. The former employs shading and replicates a specific fossil. For the latter, lines are used to illustrate a fossil type with labelling for didactic purposes. Ted was admirably suited for teaching the lesson due, not only to his encouraging and kindly manner, but also to having written and illustrated, in an earlier life *Drawing and Understanding Fossils* (1987) and (with V C T Tucker) *Palaeontology: an Introduction*

(1985) for Pergamon Press, Oxford. Both are sadly out of print and fail to appear in Google searches. Ted guided us with a few ‘cartoonist’s tricks’—drawing taut springing lines with a sweeping fore-arm motion. For models, we were provided with casts manufactured by notable HOGG member, Stuart Baldwin, and a choice of actual fossils, all on loan from the Natural History Museum.

Each of the 24 pupils received a clipboard of blank specimen pages to limn their fossils. On the reverse side of these were humorous information sheets in Victorian hand-bill style about Charlesworth, his career, inventions, the British Natural History Society (of which he was the only member), and the former Museum.



Thanks go to Caroline Lam, who conceived this meeting and its presentation and who persuaded Ted to demonstrate his skill and share his knowledge and cartoonist’s tricks. I asked her how the concept of this meeting came to her. She said that “I wanted to do something on the old museum using the space which it left. Parallel to this, I was keen on doing a drawing class of some sort on fossils as I thought people would be interested. On finding out that Ted had written a book on how to draw fossils, well it all came together. He agreed to do it under two conditions: (1) he could dress up, and (2) he could use a blackboard. Following on from this, it made sense that he might want to channel one of our old, embittered curators (of which there were many) for the evening.....the focus soon settled on Charlesworth as he was so unusual. In the archives, there is indeed a file on the special committee which met to consider his rejection and we also have Greenough's contemporary notes on the issue”.

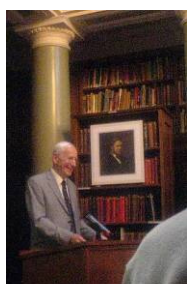
Thanks to Ted Nield, who brought the event alive, and mercifully was himself rather than the unfortunate Charlesworth. Thanks, too, to the library staff who together achieved the transformation and assisted the pupils on the night.

This was the second very successful transformation of the Upper Library into a historic GSL setting (see Newsletter 51 for news of the post-WW1 lecture) and we wait to be amazed by forthcoming historical re-constructions and creations. Tickets to these Library events sell out within a week. To be alerted, sign up to the Library Newsletter at <http://www.geolsoc.org.uk/newslettersignup>.

¹ email geol.maps@virgin.net

Pictures © John Henry

GEOLOGY AT THE WESTERN FRONT



Those who were unable to attend the re-enactment lecture given by Ted Rose in the Geological Society’s library in July last year (the “Historic meeting restaged” reported by John Henry in HOGG Newsletter 52 (October 2014)) may like to know that a 22-page article derived from that lecture is scheduled for publication in the next issue of *Earth Sciences History* (publication due in April 2015):

David, T.W.E. & Rose, E.P.F. 2015. Geology at the Western Front. *Earth Sciences History*, **34** (1), in press. “The central text of this paper has been transcribed directly from the handwritten, unpublished ‘Abstract of Notes’ by Tannatt William Edgeworth David (1858–

1934), an Australian geologist of great distinction, from which he lectured at the Geological Society of London on 26 February 1919. He was then *en route* home to Australia after serving on the Western Front, across parts of Belgium and northern France, in the First World War—as the senior of two geologists at General Headquarters, British Expeditionary Force. His text provides the first overall account of military applications of geology on a battlefield by any geologist to serve as such in action with British troops. An introduction, illustrations, references, footnotes and concluding discussion have been added by E. P .F. Rose to amplify (and slightly amend) David’s hastily-compiled personal record.”

GEOLOGY AND HISTORY IN SOUTH-EAST ENGLAND

*John Henry¹ reports on the Geologists’ Association meeting held on
29th November 2014 at Worthing College*

This lively, very well-attended meeting covered the overlapping interests of geologists, archaeologists and historians in the development of Sussex, concentrating on the Weald and the South Downs; 164 people attended, greatly exceeding the initial estimates of 60-ish.

History of geology interest was touched on in **Dave Martill**’s entertaining paper on *Conan Doyle, Pterosaurs and Piltdown*. In addition to Conan Doyle, the other chief protagonists drawn into the great Piltdown hoax were discussed. **John Lonergan**’s paper, *Transport Innovations and Wealden Geology: Canals and Railways*, compared the considerations of canal and railway builders to the problems of topography and geology as they affected route location and cost estimates. Regarding the London and Brighton Railway, he contrasted the approaches of competing engineers John Rennie and George Stephenson as they interpreted the relative influences of the High Weald’s topography, railway economics and steam power in selecting the route.



Appreciation of landscape change was explored from various aspects in several papers. **Matt Pope**, in his paper, *Prehistoric Peoples and Wealden Landscapes* integrated dated archaeological finds with geological evidence of alternating glacial and interglacial periods to demonstrate that in the past 500,000 years, there have been nine documented attempts to colonise SE England from the continent and that we represent the tenth colonisation. **Matthew Pitts**, in his paper *The Making of the High Weald*, guided us through a series of visualisations of the landscapes of the past as humans gradually occupied the High Weald and exploited its resources. Forest-owner **David Brown** took up the theme of past resource exploitation and the opportunities available through LIDAR images that record the landscape surface through the forest cover in *Mineral Extraction from Ancient Woodlands of the Weald*. Holes of various shapes, sizes and densities pock areas now overgrown and it is not always readily apparent what material was being exploited given the lithological variability and the limited extent of useful deposits—building stone, iron, marl, gravel, clay for bricks, and clay for pottery were among the options. As a

consultant to other forest owners, he appealed to archaeologists and geologists, for advice to solve the question of past use when the evidence was limited and/or unclear.

Given the shortage of good building stone in the Weald and the Downs of Sussex, limited local resources and much importing has led to the situation where Sussex has a greater variety of stone in its ancient buildings than any other county, a claim made and substantiated by **Roger Cordiner** in *Building Stone in Medieval Sussex*.

Using early photographs, maps and drawings, **Geoffrey Mead** revealed the early building resources now obscured by modern development in *Brighton and Hove Basement: Geological Foundation of a Conurbation*. In two geological papers, **Rory Mortimore** and **David Bridgeland**, both past presidents of the GA, addressed aspects of geology of archaeological interest. In *The Geological Mysteries of Flint: the Implement of the Neolithic Age*, Rory described the geological environmental conditions that enable flint to form, the process of flint formation and how it varies, and how particular flint 'strata' form marker bands traceable over hundreds of kilometres into mainland Europe. David demonstrated in *Gravel in the South-east: Superficial Deposits an Under-rated Resource*, how the non-flint gravel component and the matrix of South East gravels could provide much useful information for reconstructing Pleistocene drainage and landscape evolution in terms of palaeoclimates and palaeoenvironments of use to archaeologists.



The various speakers' topics were all well received and their lectures integrated well. In addition to the programme of speakers, the organisers provided space for local and national groups to display information about themselves and sell their publications. At the HOGG table, I displayed abstracts of past meetings and field guides of recent field trips as well as GSL special publications that followed HOGG-organised conferences. In the large audience, there were many people who expressed an interest in joining HOGG. Finally, the venue at Worthing College was spacious and welcoming with good catering.

For all aspects of the conference—programme, venue, proselytising opportunity and the well-illustrated abstracts booklet, considerable thanks must go to Tony Brook, stalwart of the GA, HOGG and the West Sussex Geological Society, who organised it and enthusiastically chaired the meeting.

¹ e mail geol.maps@virgin.net

Pictures © Roger Cordiner

OBITUARY: DAVID ROGER OLDROYD 1936–2014

This is the official GSL obituary written by Hugh Torrens, and is reproduced here with his consent.



The select band who care for the history of our (most historical) science have suffered a grievous loss with David's death, in Sydney, on 7th November 2014. His multiple skills, whether as author, critic, editor extraordinary, English script-writer, whether from Japlish, Chinglish or Russlish, secretary to INHIGEO, or as a fine cellist, will be impossible to replace.

He was born in Luton, son of Kenneth Oldroyd and Gladys Buckley, on 20th January 1936. He studied sciences at Luton Grammar school (with the initial intention of becoming a doctor). In 1955, he entered Emmanuel College, Cambridge, where there was no place for medicine, so he took natural sciences, migrating from physics to chemistry, while adding the 'half subject' geology. He gained a second class, in chemistry, but then found, having been much diverted by too much cello playing, there was no opening for what he most wanted to do, with such a degree. So he first became a school teacher, in Harrow, and married Jane Dawes, whom he had found playing the oboe in our National Youth Orchestra, in 1958.

While teaching, David had started an (evening class) taught master's degree in history of science at University College, London. In its midst, in 1962, Jane and he decided to emigrate to New Zealand as 'ten pound poms', with that government paying their tickets and furniture removal. What a bargain Australasia got! But David still had to find his MSc dissertation topic. He chose "Geology in New Zealand prior to 1900", examined, and passed postally, by Victor Eyles (1895–1978). David could now start to think of becoming a university teacher, and having moved to Australia in 1969, soon found a new, history of science, job—teaching at the University of New South Wales (but still with no publications, and no high level teaching experience. Those were the days!).

His PhD on the history of the development of mineralogy in relation to chemistry was awarded in 1974. Australia proved generous with both research leave and expenses, and David managed regular study trips to England. These resulted in his *Highlands Controversy* book in 1990, and for this, and other classics like his *Archaean Controversy* series (published in *Annals of Science* 1991–1995), he was awarded the Geological Society's Friedman Medal in 1994.

David retired in 1996, to give himself more time to do what he most wanted; and with such success that he was awarded the GSA's History of Geology award in 1999, and a Centenary Medal from the Australian Government. He had already been made a fellow of the Australian Academy of the Humanities in 1994, the first historian of science there to be so honoured.

In 1998 came his volume of *Variorum Studies* published by Ashgate. In 2003 followed his GSL Memoir *Earth, Water, Ice and Fire*, on the history of geological research in the Lake District (where he had been first sent as a WW2 evacuee). He next proved immensely helpful with our *Oxford Dictionary of National Biography*, contributing 15 masterful essays when it appeared in 2004.

His last equally remarkable memoir, which appeared after he had been diagnosed with a brain tumour, in 2013, is his extraordinary *Maps as pictures: The early development of geological maps* (GSA Special Paper 502). This is fine work which will remind us all of his extraordinary skills next year, when we will now be forced to celebrate the bicentenary of William Smith's equally extraordinary map without him.

<http://www.geolsoc.org.uk/About/History/Obituaries-2001-onwards/Obituaries-2014/David-Roger-Oldroyd-1936-2014>

BOOK AND MAP NOTES

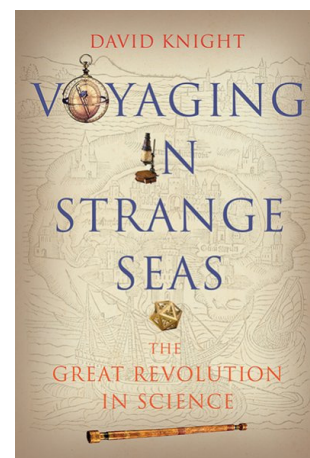
Voyaging in Strange Seas. The Great Revolution in Sciences

David Knight

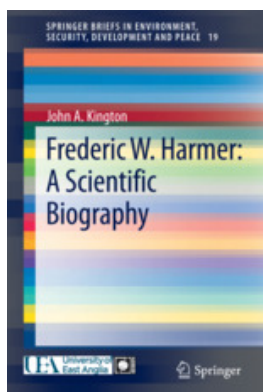
Yale University Press. 2014. 344 pp.

ISBN 9780300173796

Amazon prices: Kindle edition £15.00; hardcover £25.00; paperback £10.74



“This engaging book takes us along on the great voyage of discovery that ushered in the modern age. David Knight, a distinguished historian of science, locates the Scientific Revolution in the great era of global oceanic voyages, which became both a spur to and a metaphor for scientific discovery. He introduces the well-known heroes of the story (Galileo, Newton, Linnaeus) as well as lesser-recognised officers of scientific societies, printers and booksellers who turned scientific discovery into public knowledge, and editors who invented the scientific journal. Knight looks at a striking array of topics, from better maps to more accurate clocks, from a boom in printing to medical advancements. He portrays science and religion as engaged with each other rather than in constant conflict; in fact, science was often perceived as a way to uncover and celebrate God’s mysteries and laws. Populated with interesting characters, enriched with fascinating anecdotes, and built upon an acute understanding of the era, this book tells a story as thrilling as any in human history.” (from publisher’s website)



Frederic W. Harmer: A Scientific Biography

John Kington

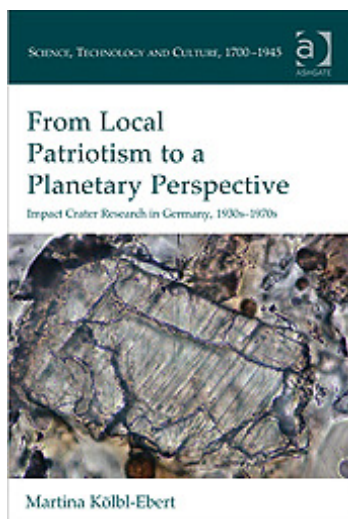
SpringerBriefs in Environment, Security, Development and Peace. Vol. 19.

Springer-Verlag. 2014. 97pp. + 53 illustrations

ISBN 978-3-319-07704-8 e book £35.99; softcover £44.99

“Pioneer in the field of East Anglian geology, Frederic W. Harmer was also one of the last members of a distinguished group of amateur geologists who had been responsible for making major advances in the science during the Victorian era and early years of the 20th century. In particular, he played a key role in elucidating the Pliocene and Pleistocene stratigraphy in the east of England by developing the use of mollusca for biostratigraphic correlation with the Craggs of East Anglia.” (from GCG Coprolite)

“Comprising the first definitive account of the geological and palaeometeorological studies made by Harmer, this book contributes a previously missing chapter to the history of science. The main objective of the author is to ensure that Harmer’s scientific work, which unfortunately has been widely neglected or forgotten, becomes more generally known and acknowledged.....” (from publisher’s website)



***From Local Patriotism to a Planetary Perspective
Impact Crater Research in Germany, 1930s-1970s***

Martina Kölbl-Ebert

Ashgate 2015. 402pp.

ISBN 978-1-4724-3886-7 Hardback £80.00 (Ashgate website price £72.00)

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50BVY14N**

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“The Nördlinger Ries and Steinheim basins, two conspicuous geological structures in southern Germany, were traditionally viewed as somewhat enigmatic but nevertheless definitely volcanic edifices until they were finally recognised as impact craters in the 1960s. The changing views about the origin of the craters mark a paradigm shift in the Earth sciences,

from an Earth-centric approach to a planetary perspective that acknowledged Earth’s place in the wider cosmos.

Drawing on a range of printed sources, detailed archival material, letters, personal notes, and interviews with veterans of Ries research, Martina Kölbl-Ebert provides a detailed reconstruction, not only of the historical sequence of events throughout the twentieth century, but also of the personal thoughts, emotions and motives of the scientists involved and the social context of their research. She shows that there was a sudden reconnection of German researchers with the international scientific community, particularly with more progressive American researchers, after some twenty-five years of scientific isolation during the build-up to WWII and its aftermath. This reconnection brought about not only a new view of geoscience, but also saved German geology from self-sufficiency and patriotic arrogance by integrating it in an interdisciplinary and international framework. In so doing, this book sheds much valuable light on an under-explored but crucial development in the way we understand Earth’s history, as well as the way that science functioned during times of conflict.” (from publisher’s website)

Earth’s Climate Evolution

Colin Summerhayes

Wiley Blackwell. 2015. 396pp. £50.00

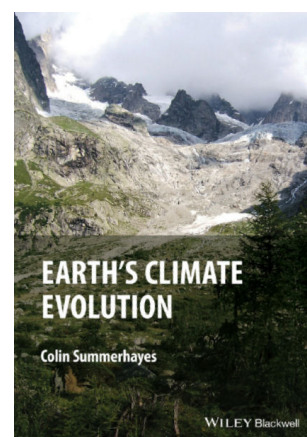
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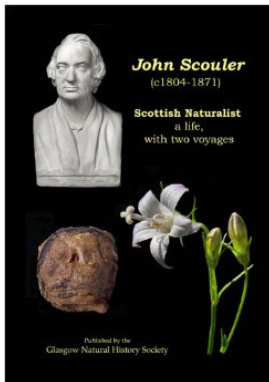
Tel. 01243 843294; Fax 01243 843296; E mail cs-books@wiley.co.uk

“To understand climate change today, we first need to know how Earth’s climate changed over the past 450 million years. Finding answers depends upon contributions from a wide range of sciences, not just the rock record uncovered by geologists. In *Earth’s Climate Evolution*, Colin Summerhayes analyses reports and records of past climate changes dating back to the late 18th century to uncover key patterns in the climate system. The book will transform debate and set the agenda for the next generation of thought about future climate change.



The book takes a unique approach to the subject providing a description of the greenhouse and icehouse worlds of the past 450 million years since land plants emerged, ignoring major earlier glaciations like that of Snowball Earth, which occurred around 600 million years ago in a world free of land plants. It

describes the evolution of thinking in palaeoclimatology and introduces the main players in the field and how their ideas were received and, in many case, subsequently modified. It records the arguments and discussions about the merits of different ideas along the way. It also includes several notes made from the author's own personal involvement in palaeoclimatological and palaeoceanographic studies, and from his experience of working alongside several of the major players in these fields in recent years.” (from publisher's promotional flier)



John Scouler (c. 1804–1871), Scottish Naturalist: A life with two voyages

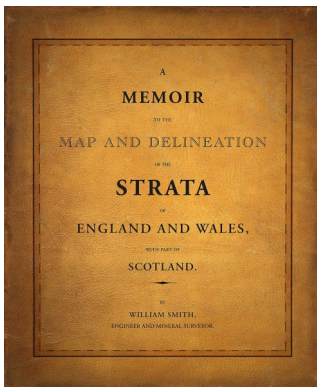
E. Charles Nelson

Glasgow Natural History Society. 2014. 142pp.

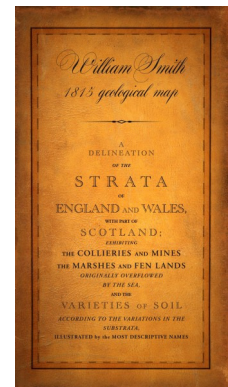
ISBN 978-0956529510 paperback. £11.00

John Scouler was professor of geology, natural history and mineralogy, and the first curator of the Andersonian Museum, Glasgow. His career also included a period as professor of mineralogy, and subsequently geology, zoology and botany, at the Royal Dublin Society.

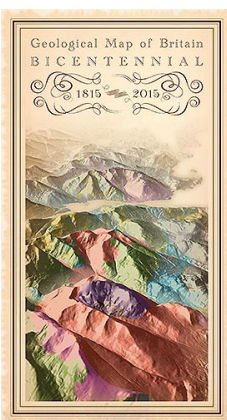
WILLIAM SMITH 1815 MAP AND MEMOIR



To complement their 2014 folded reproduction of William Smith's 1815 map (see HOGG Newsletter 51 June 2014), the British Geological Survey has published a reproduction of William Smith's accompanying memoir *A Memoir to the Map and Delineation of the Strata of England and Wales with part of Scotland*, remastered from an original held in the BGS Library.



Also new from BGS:



Geological Map of Britain Bicentennial 1815–2015

Scale 1:1000000

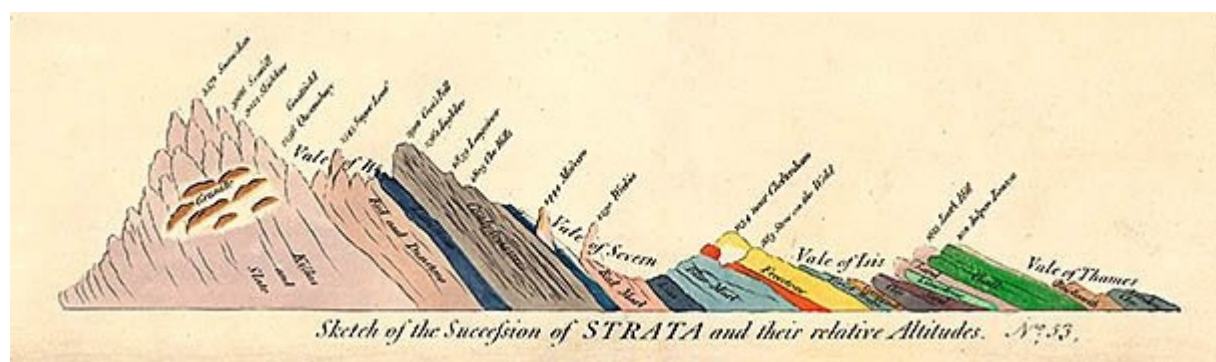
Folded ISBN 9780751837902

Flat (measures 1265 x 950 mm) ISBN 9780751837919

Both £12.95

This map depicts modern geological bedrock data in the style of William Smith's early 19th century cartography.

WILLIAM SMITH MATERIAL IN THE GSL PICTURE LIBRARY



As part of the bicentenary celebrations of William Smith's 1815 map, the GSL Library has "made images of maps, sections and other material relating to Smith from the Geological Society collections publicly available online for the first time. From Smith's early geological map of Bath, to his plans for water-meadows and canals, and his beautiful and intricate drawings of fossils, you can explore a fascinating range of images....., all accompanied by informative biographical and historical notes." (GSL Library newsletter)

Visit <https://www.flickr.com/photos/geologicalsocietylibrary/sets/72157649250448759>

PACKE MAP OF KENT (1743)



The GSL Library has recently digitised one of the oldest map's in its collection— Christopher Packe's *A New Philosophico Chorographical Chart of East Kent*. Dating from 1743, prior to the invention of the modern geological map as we know it, this chart shows the location of various important geological resources, such as building stones and springs, and has a polar co-ordinate system with the origin at Canterbury giving the bearing and distance to each resource. The map can be viewed in the GSL Picture Library. (from GSL Library newsletter)

GEORGE OWEN (1552–1613), 'PATRIARCH OF ENGLISH GEOLOGY'

John M. Virgoe¹

Introduction

George Owen was born in about 1552, probably at Henllys, his family's ancestral home in North Pembrokeshire². He is best known for writing *A Description of Pembrokeshire* amongst other literary endeavours. Two manuscript copies of the *Description* survive, one in the National Library of Wales, the other in the British Library. Extracts from these were published at various times, but the first full edition was not published until the end of the nineteenth century.³ Owen intended to produce two volumes of the *Description*, the first being completed in 1603.⁴ It gives a general account of the county,

including the geography, topography, economics, population, customs, buildings and other topics. The second volume was not completed before Owen's death in 1613, but was intended to give a detailed account parish by parish. Parts of the manuscript of the second volume survive in poor condition, and excerpts have been published.⁵



In 1841, an article in the *Edinburgh Review* described Owen as 'The Patriarch of English Geologists', based on his writing in the description, and a brass plaque in Nevern Church, Pembrokeshire, the family church of the Owen family, commemorates him in those terms.⁶ The use of the adjective 'English' seems badly chosen, since Owen was totally Welsh. A popular book on Pembrokeshire appears to try to rectify this by twice referring to Owen as the 'patriarch of British Geologists'.⁷ In an earlier publication Conybeare and Phillips had commended Owen's understanding of the relationship

between an upper and a lower limestone above and below a coal seam and the way that they could be traced over considerable areas of the county.⁸ Conybeare was the rector of a Glamorgan parish, and one of the first geologists to examine Wales. His book with Phillips was one of the first geological text-books to be published in England.⁹ It was mainly on Owen's *Description* that such recognition was based. In this short article, an attempt is made to re-assess his place in the history of geology.

There is no mention of George Owen in Porter's history of early geology¹⁰, although this is perhaps not surprising since Owen's life pre-dates the main period (1660–1815) with which Porter is concerned. Nor is there any mention of Owen in the 454 hits obtained from consulting the on-line version of the *Oxford Dictionary of National Biography* for any articles containing the term geologist. Only two of these are earlier than 1700, the earliest being Cotton Mather (1663–1728), described as a minister in America and author, alive some 100 years after Owen. The only modern sources in which an appraisal of Owen's contribution to geology is made, albeit sketchily, appear to be those already cited. For an assessment of Owen, it is therefore necessary to go back to his written works. In this note, the versions produced by Miles and Howells have been used.

Building stones

Much of Owen's geological writing had an economic basis. Indeed, perhaps he should be considered to be the first economic geologist. He described the building stones of Pembrokeshire and their characteristics with great detail. Limestone he considered to be the foremost, which could be cut into large stones [freestone], was durable, and which could be polished like marble. Its only drawback he considered to be that on steps and pavements it could be dangerous because it became slippery.¹¹ He described also how the limestone was prepared for burning and the benefits it brought to the soil. These economic factors are evident throughout Owen's geological descriptions. He listed the outcrops of two limestone horizons in considerable detail, both running from east to west, one with a narrow outcrop, the other, more southern outcrop being broader, and which he traced eastwards into Glamorgan and Monmouthshire. For the northern outcrop, he described how it was not seen at the surface between Talbenny and Johnson, and how its quality varied, making it uneconomic to work in places. His description has been considered to be a remarkably accurate one of the Carboniferous Limestone distribution in South Wales considering the problems he would have encountered and probably the earliest appreciation that the rocks of the Earth's crust are arranged in an orderly manner.¹² He mentioned a third, narrow outcrop of limestone which had more recently started to be worked (in Owen's time) and was in places not found at the surface. It was found north of the other two, but followed the same east-west trend. This limestone was browner in colour, and whilst it was equally suitable for use on the land and building, it was less favourable for plastering and as lime wash.¹³

Another rock which was widely used for buildings, he called 'Nolton Stone' because it outcropped there, although he recognised that it was widely found elsewhere, especially in the cliffs around Newport. Owen therefore seems to have introduced, albeit unwittingly, another geological procedure, that of

designating a type area. Nolton Stone was a dark, grey gritstone, used both as a freestone and for making good grindstones. It was easily worked and used for making window frames, door surrounds, chimneys, arches, quoins and any hewn items. It had been widely used in castles and was highly durable, and also refractory, Owen reporting that he had seen it used in making glass furnaces.¹⁴ Owen's correlation of the rocks of Nolton and those of Newport was, however, probably in error—the rocks he described around Nolton are most likely Carboniferous, those near Newport are Ordovician. He described as a different kind of stone that found in the cliffs near St David's, the brown and red stone which can be hewn into large blocks up to four foot square in size and of which St David's cathedral is built. This is, of course, the Cambrian Caerbwdy Sandstone found in the bay of that name.

Owen described as 'tuff,' a very hard, but easily worked rock which is full of holes, presumably vesicules, and found on the mountain "over Newport and Coedcadw in Nevern parish". This (he said) could be worked in large pieces, ideal for making mantelpieces, door frames, quoins, windows and stairs, because it does not polish.¹⁵ This is presumably an Ordovician volcanic, which occurs in that area, but Owen's use of the word tuff is interesting. He also gave details of a number of localities where roofing slates and tiles could be found. In one instance, he described how such a rock could be used as walling stone, being found in large slabs which always inclined towards the south. This was clearly a recognition of the cleavage of these rocks, although Owen did not use the term as such. He did infer a possible origin for this phenomenon, ascribing it to the violence of the general flood which, although total nonsense, indicates that he was prepared to speculate on possible geological mechanisms.¹⁶

In Owen's opinion, there was such a wide abundance of building stones in Pembrokeshire that he did not consider it necessary to describe them all. One further building stone that he did consider worthy of special mention was from Moylegrove, where it was found both lying in the fields and in the sea cliffs, but was not worked in any quarries. Owen found it to have been used in St Dogmael's Abbey, which was then in a ruinous state, and therefore concluded that it was likely to have been found nearby.

Coal

But George Owen's main economic geology statements concern coal and how it is found in relationship to the outcrops of limestone. He also touched upon mining methods, giving graphic details of how the mines were worked, problems of drainage and the way they were overcome.¹⁷ Owen recognised different qualities of coal, in particular 'stone coal' and its special characteristics, and how it was exported even to London. This was anthracite for which the Pembrokeshire coalfield was noted.

Agriculture

Owen was a country gentleman and one of his abiding interests was agriculture and manners of improving it. His interest in limestone was driven by its use as a soil conditioner and, in a similar manner, he was an advocate of the use of marl. He wrote a treatise on the use of marl, completed in 1599, in which he summarised its benefits by quoting a saying of country folk that "a man does sand for himself, lime for his son, and marl for his grandchild".¹⁸ Owen listed four types of marl, the most important being the one he described as clay marl. This he described as occurring in great heaps or lumps as big as hills, tough and clammy, containing within it all sorts of shells, some rotted, timber, some of which was worked and burned, and overlain by sand, gravel and rounded pebbles which he considered as clear evidence that they had been water-worn. From this description, the clay marl has been identified as glacial till, and Owen quoted the country people as being of the opinion that it originated from Noah's Flood, a belief which he thought was probably true. In this respect, he and the common people of sixteenth century Pembrokeshire, although in error, did not differ from the majority of early nineteenth century geologists.

Maps

Although Owen never produced a geological map, his observations were such that he could have drawn up a primitive geological map of the county. It is perhaps surprising that he did not think to do so, because he had a great interest in maps and purchased a set of Saxton's maps of Welsh counties produced in 1577–8. Owen went on to produce his own map of Pembrokeshire and Carmarthenshire

based on Saxton's maps, in or before 1594 and, in 1595, Owen was commissioned to survey and draw up a map of Milford Haven as background to the defence of the harbour against a further Spanish attack after the Armada.¹⁹ In 1602, he produced his own map of Pembrokeshire on a scale of just under half an inch to the mile; although there are errors in the orientation of the northern coast-line, the map has many modern features including the clear indication of roads, both major and minor, rivers and bridges, moorlands, and the distinction between larger places and smaller ones by varying print size.²⁰

Conclusions

Much of Owen's *Description of Pembrokeshire* is concerned with the history of the county and of little geological interest, but he does give several descriptions of the landscape, which touch upon geomorphology. For visitors to Pembrokeshire, an interesting addition to a leisurely walk is to compare the modern landscape with that of four hundred years ago. It is amazing how accurate some of Owen's descriptions are, illustrating how little Pembrokeshire has been changed by the activities of man in the intervening years, but also bearing testament to Owen's abilities as an acute observer. Unfortunately, there is no known portrait of the man existing, so we are dependent on only word pictures to learn more about him as a man. This subject has been well covered by Charles. To call George Owen 'the Patriarch of English Geologists' is certainly an affront to his Welsh ancestry and is perhaps overstating his importance, but he was undoubtedly a significant figure in the early recognition of simple geological principles and, in particular, their application to economic matters. Outside his native Wales, he seems to have been largely overlooked in the early history of the development of the science.

Notes

- ² B G Charles *George Owen of Henllys: A Welsh Elizabethan* (Aberystwyth: National Library of Wales, 1973), p. 25.
- ³ Dilwyn Miles, ed., *The Description of Pembrokeshire: George Owen of Henllys* (Llandysul: Gomer Press, 1994, pp. xlii–xliv, xlvii–xlviii.
- ⁴ Charles, *George Owen*, p. 99.
- ⁵ B. G. Charles, *National Library of Wales Journal*, v, pp. 265–285; B. E. Howells, 'Elizabethan Pembrokeshire; The evidence of George Owen', *Pembrokeshire Record Series 2* (Pembrokeshire Record Society, 1973).
- ⁶ Miles, *The Description*, p. xxxvii; *Edinburgh Review*, 73, (1841), p. 3.
- ⁷ Brian John, *Pembrokeshire Past and Present* (Newport; Greencroft Books, 1995), pp. 17, 55.
- ⁸ W. D. Conybeare and W. Phillips, *Outlines of the Geology of England and Wales* (London, 1822), part 1, xl.
- ⁹ F J North, *Geological maps: Their History and Development with Special Reference to Wales* (Cardiff: National Museum of Wales, 1928), p. 19.
- ¹⁰ Roy Porter, *The Making of Geology 1660–1815*.
- ¹¹ Miles, *George Owen*, pp. 78–86.
- ¹² F. J. North, *Geological maps: Their History and Development with Special Reference to Wales* (Cardiff: National Museum of Wales, 1928), pp. 5–6.
- ¹³ Miles, *George Owen*, pp. 67–71.
- ¹⁴ Miles, *George Owen*, pp. 81–82.
- ¹⁵ Miles, p. 82.
- ¹⁶ Miles, p. 85.
- ¹⁷ Miles, pp. 90–94.
- ¹⁸ Miles, pp. xxxviii, 77.
- ¹⁹ Charles, pp. 151–155.
- ²⁰ Charles, pp. 155–159 and fig. 7; Miles, pp. xxxviii–xli, 5–7.

¹ e mail johnvirgoe@waitrose.com

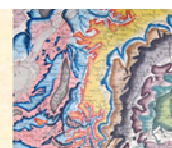
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WILLIAM SMITH MAP BICENTENARY EVENTS

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