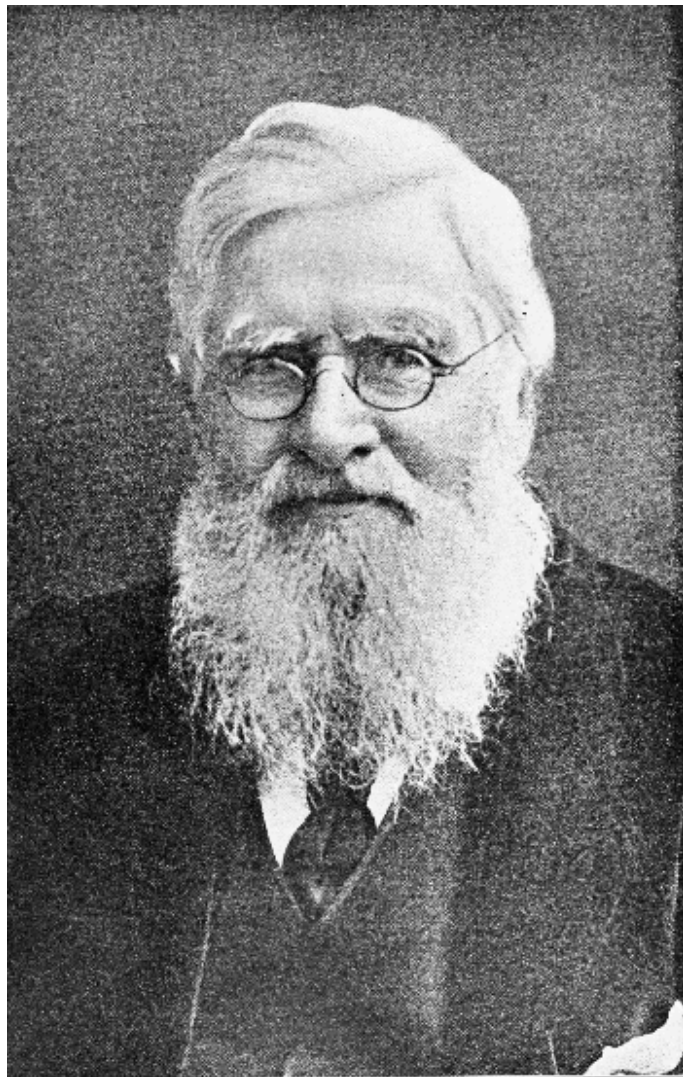


HOGG

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



**Number 47
February 2013**

Front cover (*illustration from Wikimedia Commons*)

Alfred Russel Wallace (1823-1913)

Described as an intrepid explorer, collector, brilliant naturalist, geographer, anthropologist, political commentator and remarkable intellectual, Wallace had the revolutionary idea of evolution by natural selection entirely independently of Charles Darwin.

WALLACE100 is an informal international association of organisations with projects that are designed to celebrate, in 2013, the 100th anniversary of Wallace's death.



See the Natural History Museum website www.nhm.ac.uk/nature-online/science-of-natural-history/wallace/index.html and the Alfred Russel Wallace website (wallacefund.info/wallace100) for details.

See also Dick Moody's article, with George Beccaloni, *Wallace in Neath* in HOGG Newsletter 36 (June 2009), pp.21-24.

Editorial subcommittee

Beris Cox (e mail: beris.cox@btinternet.com)

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

HOGG NEWSLETTER 47

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LETTER FROM THE CHAIR



By the time you read this, we will be well into 2013; nevertheless, I wish you all a belated Happy New Year. In 2012, HOGG members enjoyed meetings in Horsham on Geikie, and in London on Geotourism 1670-1970 and Piltdown Man, as well as an Open Meeting. Reports on the Geotourism and Piltdown meetings can be found in this newsletter. In 2013, the programme is very different and involves more travel.

However, we begin in London. On 31st May, we will visit the Map Library of the Geological Society and inspect a selection of treasures from the old map store room and the Archive, displayed for the occasion in the Lower Library. In this newsletter, Nina Morgan writes about the tour which will focus on the early career of Henry De la Beche and the conception of the Geological

Survey within the Ordnance Survey. 'Pre-ordnance' and 'ordnance'-based geological maps from other European countries will also be on display for comparison and to provide a wider context for British survey and geological maps.

In July, a major international congress on the history of science, technology and medicine takes place in Manchester. Within that congress, three of HOGG's committee members have been heavily involved in organizing an INHIGEO (International Commission on the History of Geological Sciences) conference which is open to HOGG members. This newsletter includes further information about this conference and associated field trips. Anticipating that the cost of the conference will preclude many HOGG members from participating, your committee has secured a re-run of one of the field trips for HOGG members next year and is working on the others.

In early September, David and Anne Bone will guide a HOGG weekend in Selsey and Chichester which focuses on local geology and archaeology through the career of foraminifera expert Edward Heron-Allen (1861-1943). The Natural History Museum houses his scientific library and collection in the Heron-Allen Library which is probably the finest and most comprehensive holding of literature on foraminifera in the world. The timing of this visit is determined by the coincidence of lowest tides with a weekend. Details will follow in the June newsletter.

In October, Dick Moody will lead a visit to Burgundy to explore the history of geology and wine making in the region. This promises to be a fascinating trip; see pages 26- 27 of this newsletter. Details of travel arrangements and costs will be further developed depending on the level of interest from members.

Rounding out the programme for the year, on 1st November we plan to visit the National Museum of Wales in Cardiff for a behind-the-scenes tour of its geological collections which are rich in the history of Henry De la Beche, William Smith and G.B. Greenough.

Finally, I would like to thank the Committee and members for their support in my first year as chairman. HOGG's committee have pulled together a stimulating programme for the coming year which I think you will enjoy but we are always open to ideas for meetings and trips, and welcome your suggestions and offers of help.

John Henry
February 2013

HOGG AGM 2012

The officers' reports, which were presented at the AGM held at Burlington House on 18th December 2012 during the 'Pitdown – 100 years on' meeting, are reproduced here for the benefit of those members who did not attend.

HOGG AGM 2012 Secretary's report

HOGG has had another good year, with several interesting and well-attended meetings. These have included a successful *Open Meeting* in March and the *Appreciating Physical Landscapes: Geotourism 1670-1970* conference in October, both held here at the Geological Society. HOGG was also involved in the *In the Footsteps of Sir Archibald Geikie* meeting, held at Haslemere Museum in April. The conference on *Geology and Medicine*, which hosted the last AGM in November 2011, went well and *Pitdown - 100 Years On*, which hosts this year's AGM, was also very successful.

The committee continues to plan meetings for the future, including a couple of one-day meetings early in 2013, and possibly a conference with the Linnaean Society next October. There will also be the 2013 ICHSTM Congress – the 24th International Congress of History of Science, Technology and Medicine – in Manchester in July, and HOGG has organized two symposia for INHIGEO, one on *Geologists in the Field* and one on *Geology in Art and Literature*. This event is the largest history of science event ever held in the UK, and will include more than 100 symposia on every aspect of the history of science, technology and medicine, as well as numerous field trips, social events, plenaries and receptions.

The Group's excellent publication record continues, with volumes from the *Applied Geology*, *Geology and Medicine* and *Appreciating Physical Landscapes* meetings all in progress. In terms of publicity, the Group has also successfully launched a new website (many thanks to Cherry Lewis and her son Dan for their hard work on this), and opened a Twitter account (@HOGGroup) this year.

I would like to thank our current committee for contributing so much to HOGG over the past year, and especially those who are standing down: Tony Brook and Richard Haworth are both leaving the committee. There is no change amongst the officers this year, though the role of the Secretary has been split so that there is now a Membership Secretary, with Cherry Lewis taking on this new role and Leucha Veneer remaining as Secretary. New elections to the committee as ordinary members are Alan Bowden, nominated by Cherry Lewis and seconded by Leucha Veneer, and Dave Williams, nominated by Dick Moody and seconded by John Henry.

Leucha Veneer
December 2012

HOGG AGM 2012 Treasurer's Report

Summary statement of accounts for period 28/10/11 – 15/12/12 (prepared for AGM on 18/12/12)

Opening Balance 28/10/11	£11466.12		
<u>Income</u>		<u>Expenditure</u>	
Subscriptions ¹	2125.00	Newsletters ²	313.36
Geol. & Medicine Meeting (Nov. 11)	1350.00	Committee expenses ³	720.50
Open Meeting (March 12)	850.00	Geol. & Medicine Meeting (Nov. 11)	4666.20
Co-operative a/c interest	5.29	Open Meeting (March 12)	983.37
Trial PayPal payment	0.50	Piltdown Meeting (Dec. 12) ⁴	250.00
PayPal surcharges	2.75	Website build	300.00
	-----	Inhigeo field trips coach deposits	465.00
	4333.54	Inhigeo field trips hotel deposits	1887.50
	-----	Donation to Age Concern (John Fuller)	100.00
		PayPal fees	10.93

			£9696.86

		Closing balance 14/12/12	£6102.80

Total	£15799.66	Total	£15799.66

¹ excludes subs paid as part of Open Meeting membership offer; includes subs paid as part of Appreciating Physical Landscapes Meeting offer.

² printing and postage for newsletters 44, 45 and 46

³ travel to HOGG committee meetings (4), Cherry Lewis to Inhigeo organizer meetings (2), postage

⁴ contribution made from British Gas donation

The HOGG finances are managed through three bank accounts – Alliance & Leicester Commercial Bank (now Santander) current account (mainly for subscriptions), Co-operative Bank Community Directplus account (mainly for meeting revenues) and PayPal Business account (mainly for overseas payments and other credit/debit card payments). Balances on 15/12/12 are: Santander £2361.13, Co-operative £3674.49, PayPal £67.18. The finances of our two most recent meetings have been handled by the Geological Society and therefore do not feature in the accounts in the usual way. The outgoings listed above for the Inhigeo meeting field trips, to be held in July 2013, should be fully reimbursed. At the moment, subscription income covers our regular outgoings but if we are to avoid raising the subscription rate, it is vital that our membership numbers do not decline and that subscriptions are paid promptly in January each year and preferably by standing order.

	2009	2010	2011	2012
Subscriptions income	1739.00	2144.00	2107.75	2125.00

Regular outgoings:				
Newsletters	301.64	229.90	326.75	313.36
Committee expenses	1127.44	1120.15	839.90	720.50
	-----	-----	-----	-----
	1429.08	1350.05	1166.65	1033.86

Difference	£309.92	£793.95	£941.10	£1091.14
	-----	-----	-----	-----

NB. Members are asked to advise the Membership Secretary (cherry.lewis@bristol.ac.uk) of changes in their contact details, particularly e mail addresses.

Beris M Cox
15th December 2012

HOGG SUBS FOR 2013 NOW OVERDUE

IF YOU HAVE NOT ALREADY PAID, PLEASE DO SO NOW.

SEND A CHEQUE FOR £15 (*payable to HOGG*) to the HOGG Treasurer (Dr B M Cox)
151 Browns Lane, Stanton-on-the-Wolds, Keyworth, Nottingham NG12 5BN

IN FUTURE YEARS, PLEASE CONSIDER PAYING BY STANDING ORDER.

SET ONE UP IN TIME FOR 2014 BY COMPLETING THE STANDING ORDER MANDATE
AT THE BACK OF THIS NEWSLETTER.

OVERSEAS MEMBERS HAVE ALREADY BEEN SENT PAYPAL INVOICES

HOGG COMMITTEE 2013

Chairman John Henry **Vice Chairman** Bob Symes **Acting Vice Chairman** Dick Moody
Secretary Leucha Veneer **Treasurer** Beris Cox **Membership Secretary** Cherry Lewis
Ordinary members Alan Bowden, David Earle, Tom Hose, Tom Sharpe, Dave Williams

Introducing the new committee members

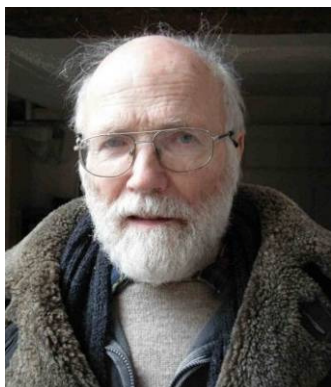
Alan Bowden has recently taken early retirement from his position as Head of Earth and Physical Sciences at the National Museums Liverpool. After gaining an MSc in Marine Earth Science at University College London, he spent two years working as both a petrographer and biostratigrapher in a quarrying consultancy. This was followed by ten years in the service sector of the petroleum industry before leaving to work in museums.

Professional interests revolve around micropalaeontology, meteoritics, Triassic palaeobotany and the history of science. He spent ten years as an external supervisor for the, now sadly defunct, University of Liverpool's MSc/PhD course on the History of Science and Technology. His main interests in this field are largely concerned with meteoritics and the work of Dr John MacCulloch and his geological mapping of Scotland. Alan has had a long association with HOGG and been both its past Treasurer and Chairman.



Past major Special Publications for the Geological Society have included the *History of Palaeobotany*, edited with Prof. Cynthia Burek and the late Richard Wilding (2005), the *History of Meteoritics*, edited with Dr Joe McCall and Prof. Richard Howarth (2006) and the *History of Foraminiferal*

Micropalaeontology, edited with Drs Andy Henderson and John Gregory of the Micropalaeontological Society (expected 2013).



After a BSc geology degree at Leeds, **Dave Williams** spent a couple of years in central Africa, as a mining geologist but never going underground. A geochemistry PhD at Leeds and a spell at UCLA being called a geophysicist followed. He returned to the UK as a materials scientist working on ceramics at the electricity council research labs at Chester. After a few years as a part-time tutor for the Open University, he joined the OU as a temporary lecturer in earth sciences in the early 1970s. After a long teaching career there, including some of the early work on the virtual microscope, he retired in the early 2000s to Cornwall where he runs a small replica fossil-making business. Dave has long been fascinated by Victorian geologists, particularly the illustrations in early geological materials. “The scale of the work

involved in the careful engraving of metal plates, or lithographic limestone slabs, must have been immense, especially for map production”.

HOGG WEBSITE LAUNCHED

In October 2012, HOGG launched its own website at <http://historyofgeologygroup.co.uk/>. This will be our main website although we will continue to have a presence at www.geolsoc.org.uk/. The new HOGG site will provide 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.

E MAIL ADDRESSES

Please check that the Membership Secretary has your correct e- mail address and advise her of any future changes. Messages to a number of members have been bounced recently which means that HOGG news and alerts are not reaching all members.

Contact the Membership Secretary at cherry.lewis@bristol.ac.uk

APPRECIATING PHYSICAL LANDSCAPES: GEOTOURISM 1670-1970

A report on the talks given at the HOGG meeting held at Burlington House on October 22nd 2012

A convivial gathering of about 50, including speakers, enjoyed a full day of 14 talks including keynote presentations by Professor David Norman and Professor John Gordon. In addition, a number of poster presentations were displayed in the Lower Library where refreshment breaks and the early evening wine reception were held.

After introductory remarks by the convenor **Tom Hose** (*left*), the opening talk was the keynote address by **David Norman** (*right*) who spoke about the development of the public awareness and understanding of earth history rather than geotourism itself. The mythical beasts described by early writers, such as Herodotus and Pliny, may have been based on skeletal remains of the dinosaur *Protoceratops* seen but not understood by early travellers along the Silk Road in the Gobi Desert. The public awareness of fossils and their significance was raised



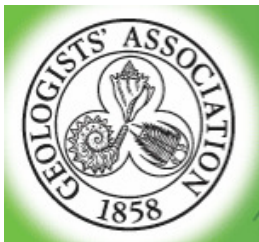
when, in the late 18th century, giant fossil bones discovered by the conquistador Manuel Torres were assembled in the court of the King of Spain. This led to the rise of a new science led by Georges Cuvier (1769-1832) in Paris who ‘related’ the fossil *Megatherium* to the tree sloths of South America. Cuvier’s contributions covered comparative anatomy and biostratigraphy, and raised awareness of extinctions and the fact that there had been ancient worlds which were very different from the present. Richard Owen followed on from Cuvier, elaborating on the discoveries made by Mary Anning and Gideon Mantell, and producing Palaeontographical Society monographs. It was Owen’s energy and drive that led to London’s Natural History Museum. The end product of the growing interest in fossils and lost worlds was the Great Exhibition (1851) at the Crystal Palace in Hyde Park, London where people came in their thousands to see the attempt at demonstrating how geological time was incorporated in rocks. Today there are challenges to the public understanding of science with a contest between science and belief such as demonstrated by the Creation Museum in Kentucky, USA. God’s word is taken as the key to the past, present and future. However, for the speaker, creation science is oxymoronic, cynically merging uncritical belief with the precepts associated with basic human intellectualism.



Art historian **Ruth Pullin**, from the National Gallery of Victoria in Melbourne, Australia, discussed the work of Eugene von Guérard, one of Australia’s greatest landscape painters of the 19th century in whom there has been a resurgence of interest since the 1980s. Born in Vienna in 1811, von Guérard discovered volcanic landscapes in southern Italy where, in 1834, he climbed and sketched Vesuvius during an eruption. Subsequently, he undertook a sketching tour of the volcanic Eifel region of Germany which served as an apprenticeship for his landscape work in Australia. He travelled, mainly by horse and on foot, on many expeditions across the volcanic plains of south-west Victoria and South Australia recording his observations in pocket sketchbooks which later formed the basis of his paintings. His 1855 painting *Tower Hill* (see right) was used as the basis for



the restoration of a young volcanic landscape and the Kanawinka Geopark (Australia's first geopark). Inspired by Alexander von Humboldt, von Guérard was committed to the detailed and accurate portrayal of geological subjects in his paintings. During his 28 years in Australia, he painted geological aspects of the Blue Mountains, the Grampians-Gariwerd Range, the south coast of Tasmania and the glacial topography of the Kosciuszko Massif (*see right*). He was accompanied on many of his Australian expeditions by geologically informed scientific explorers. The meeting of art and science, particularly geology, was a central theme of the National Gallery of Victoria's 2011/2012 touring exhibition of von Guérard's landscape paintings of which the speaker was guest curator. She also authored the book *Nature Revealed* about von Guérard (published by the National Gallery of Victoria in 2011).



After a coffee break, **Jonathan Larwood** (Natural England) spoke about the geological excursions of the Geologists' Association (GA) as recorded by the photographs, letters, postcards and associated ephemera in its archives. The GA was founded in London in December 1858 by George Potter and friends following a suggestion by W. J. Haywood who envisaged an association for amateur geologists. However, from its earliest days, the GA attracted people from all backgrounds, amateur and professional, men, women and children. Its

first excursions took place in 1860 when Folkestone, Maidstone and Charlton were visited. By 1870, there were at least three excursions, and maybe as many as ten, per year. In 1871, Easter, Whitsun, 'Long' or Summer excursions were in the programme plus half-day, whole day and weekend meetings. By 1910, over 1000 excursions had been recorded; in 1920, the excursions became known as Field Meetings. Originally focussing on the London area and south-east England, the trips later ventured further afield and in 1878, the Boulonnais in northern France became the first foreign destination. All the excursions are documented in the *Proceedings of the Geologists' Association* with details of the geology seen, the discussions that took place, the refreshments taken and the transport used. The GA Archive is named after Marjorie Carreck who was the archivist from 1955 until 2010 when the speaker assumed this role. Key people in its development were W. P.



D. Stebbing (1873-1961) who was the earliest archivist of the photographic collection, Miss M. S. Johnston (1875-1955) who was the librarian and an enthusiast for the field excursions, and T. W. Reader (1860-1923) who was an accomplished photographer whose albums document the GA excursions between 1907 and 1919. The archive mainly covers from 1880 to the present day although the oldest photograph dates from 1860. Combined with the written accounts in the *Proceedings*, the material in the archive brings to life the geotourism enjoyed by the GA for the best part of 150 years.

Cynthia Burek then spoke (also on behalf of **Tom Hose**) about the role of local societies, in particular the Chester Society of Natural Science (founded 1871) and the Woolhope Naturalists' Field Club (founded 1851), in the early geotourism movement. These two bodies had several things in common: they both had accommodation in prominent buildings in county towns, their aims were to provide practical study and lectures, and their second presidents were both geologists (Rev. T. T. Lewis at Chester and Thomas McKenny Hughes, Woodwardian Professor at Cambridge, at the Woolhope). The first president at Chester and founder of the Society had been Canon (Sir) Charles Kingsley, a keen naturalist but probably best known as author of the children's classic *The Water Babies*. Both societies sought to show people the holistic nature of the countryside through field excursions, and both had members who were not experts. Unfortunately, the speaker did not have time to develop all the ideas alluded to in her abstract.



Ros Westwood, Derbyshire’s Museums Manager, then spoke about Dovedale in the Peak District where the River Dove, which marks the boundary between Staffordshire and Derbyshire, has carved ‘a typical American canyon in miniature’ first mentioned by Robert Plot in 1686. By the 18th century, its many visitors included the scientifically inclined, the curious and those in search of the picturesque, and they contributed to a then huge market in travelogues and affordable prints. In pursuing the origins of this spectacular scenery, the speaker had soon come upon the name of J. W. Jackson whose archive is held at Buxton Museum. Jackson had met the geologist Professor Boyd Dawkins at night school in Manchester where, with his interest in conchology, he became knowledgeable about the shelly fauna of the Carboniferous Limestone. In 1907, he became assistant keeper at the Manchester Museum. He first visited Dovedale in 1919 taking notes and photographs (which survive) and collecting fossils and glacial erratics. In 1930, he submitted evidence before the National Parks Commission on the geological importance of Dovedale, following which many parts of Dovedale came into the management of the National Trust. Buxton Museum has worked with the National Trust to uphold the continuing legacy of Jackson’s work in Dovedale where today, on a good Bank Holiday, there may be over 10,000 visitors.



Ros is also manager of *Enlightenment! Derbyshire. Setting the pace in the 18th Century* – part of the Heritage Lottery Fund ‘Collecting Cultures’ initiative and a partnership between the museums at Buxton, Belper and Derby. The project has allowed the purchase of objects that help to tell the story of Derbyshire’s role in the age of Scientific Discovery (1712-1916). Early geological and natural science publications are amongst the items for which they are still on the look-out. Read their blog at www.enlightenmentderbyshire.wordpress.com



In the lunch break that followed, everyone (not just the speakers) was able to enjoy a buffet lunch in the Lower Library – the most welcome consequence of an administrative error!



After lunch, **John Gordon** (University of St Andrews) gave the second keynote presentation in which he explored the human experience of the physical landscape in Scotland as a source of inspiration, creativity and wonder from the mid 18th century to the present day. The writings of Sir Walter Scott (e.g. *The Lady of the Lake* 1810; *The Lord of the Isles* 1815), the Wordsworths (e.g. *Composed at*



Corra Linn - one of the Falls of Clyde) and other early travellers such as Sir Joseph Banks and Thomas Pennant (*A Tour in Scotland.....Voyage to the Hebrides* 1772) played a key part in promoting the expansion of tourism in Scotland. Banks' 'discovery' of Fingal's Cave on the Isle of Staffa (and the subject of an aquatint by William Daniell 1817) led to it becoming an essential destination for tourists. Daniell's 1819 painting of the Cuillins (also the subject of paintings by J. M. W. Turner) showed boatloads of tourists in the foreground. Daniell was also amongst those who produced contemporary illustrated

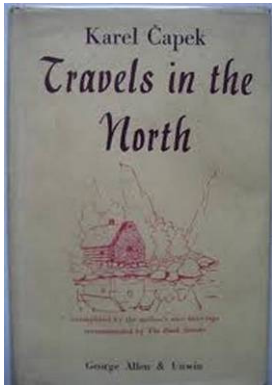
books (e.g. G. F. Robson's 1814 *Scenery of the Grampian Mountains* and William Beattie's 1838 *Scotland Illustrated in a Series of Views*). These works of literature and art coincided with the development of modern geological science as promoted by Hutton and Playfair (from whose work Siccar Point became so renowned) and, later, Lyell in his *Principles of Geology* (1830-33). In 1836, Macculloch's first geological map of Scotland was published and in October 1840 *The Scotsman* published a popular science scoop by Prof. Louis Agassiz headlined "Discovery of the Former Existence of Glaciers in Scotland, especially in the Highlands". Hugh Miller 'stonemason of Cromarty' was an influential literary character in Scotland at this time. Guidebooks appeared with Thomas Cook's first tour to Scotland in 1846 and new forms of recreation, such as deer-stalking and activities on the coast, became popular. With the development of photography came the promotion of scenic views and picture postcards, and mountaineering also became an increasingly popular pursuit. Archibald Geikie's *The Scenery of Scotland* (1887) was published around this time which also saw some early geoconservation; the Fossil Grove of Carboniferous tree stumps discovered in 1887 during construction of Victoria Park in Glasgow was housed in 1890 to make it available for future generations, and the striated Agassiz Rock in Edinburgh which played an important part in the recognition of glacial activity in Scotland was fenced in 1880. Even earlier, legal action was taken in 1819 to prevent quarrying at Salisbury Crags, Edinburgh.

In the 20th century, artists such as F C B Cadell (1883-1937), John Lawrie Morrison (1948-), Joan Eardley (1921-1963) and Charles Jencks (1939-) continued the tradition of Scottish landscape art following Horatio McCulloch (1805-1867; Scotland's most famous Victorian landscape painter) and Edwin Landseer (1802-1873, who was particularly associated with Scotland). In poetry, the landscape and people of Assynt provided the inspiration for the Scottish poet Norman MacCaig (1910-1996) (e.g. *A Man of Assynt*). Today, sites such as the Knockan Crag and Cairnsmore National Nature Reserves help the public to rediscover a sense of wonder at the Scottish landscape and its history, something that remains a challenge for geotourism in the future.



Northern Norway was the next region to be spotlighted when **Brian Whalley** (University of Sheffield) outlined some of the visits made there by tourists and mountaineers from the early 1800s to the 1960s. The writings of the early travellers such as Leopold von Buch's *Travels through Norway and Lapland during the years 1806, 1807 and 1808* (1810) prompted others such as

James D. Forbes to visit the region as described in his *Norway and its glaciers* (1853). In the latter part of the 19th century, climbers such as William C. Slingsby and Geoffrey Hastings, and the lady climber of independent means Elizabeth Main reported their exploits in books (*Norway: the Northern Playground* Slingsby 1904) and *Mountaineering in the Land of the Midnight Sun* Main 1908) as well as in the *Alpine Journal*. Although the focus of climbing tended to be in the southern, more accessible parts of Norway, *Travels in the North* by the Czech writer Karel Čapek was published, posthumously, in 1939. These accounts included photographs and sketches of the spectacular scenery some of which have proved scientifically important in the reconstruction of glaciated landscapes and the position of glaciers in the so-called 'Little Ice Age', not least because the region is generally poorly mapped and aerial photographs date only from 1953 and the early 1960s. This period also saw the publication of Tom Weir's *Camps and Climbs in Norway* (1953) and Showell Styles' *Mountains of the Midnight Sun* (1954). Sited north of the Arctic Circle, the region has, historically, been difficult to access but the road network was much improved in the 1970s opening it up for walking and fishing, as well as climbing and skiing. However, the suggestion that it be made a national park has not met with local support. Having quoted from John Ruskin's *Modern Painters* and mentioned the connection with Norway of Slartibartfast, the fictional designer of planets from *The Hitchhikers' Guide to the Galaxy*, the speaker ended by pressing the need to digitize all records and images as metadata.



From the mountainous scenery of northern Norway, we were then transported to the French Northern Alps by **Nathalie Cayla** (Université de Savoie). Sites in the Chamonix valley and Mont Blanc Massif have been international tourist destinations since the 18th century. Early accounts include William Windham Snr's *Letter from an English Gentleman... giving an account of the Glacières or ice alps of Savoy* (1744) based on his visit of 1741, André César Bordier's *Voyages pittoresque aux glaciers de Savoye fait en 1772* (1773) and the geologist and alpine explorer Horace Bénédict de Saussure's *Les Voyages dans les Alpes* (1803). The speaker then explored the history and development of some other tourist sites of geological interest. During the 19th century, the Sierroz Gorge was a pleasant excursion site for clients of the spa at Aix-les Bains; for 40 years, it was abandoned but an attempt has now been made to give it a second lease of life as part of a geopark. Other sites considered were the Rhone Gorge, the Sardières monolith, and the Vanoise National Park where the spread of recreational climbing followed the first ascent of the Grande Casse summit in 1861. Visits by crowned heads of state, such as Napoleon III, and the French presidential visit of 1897 further promoted the region. The move of the Écoles des Mines to Peisey-Nancroix in 1802, and the creation of a chair of natural history at the University of Grenoble in 1824 with the consequential influx of geologists to the region was also thought to be significant.



After a short break, **Djordjije Vasiljevic** (University of Novi Sad, Serbia) recounted the history of investigation of the Vojvodina region of northern Serbia where the thick Mid-Late Pleistocene loess deposits provide the best record of climate and environmental change in continental Europe. The region covers the confluences of the rivers Danube, Sava and Tisa and has featured in academic and artistic works for the past 300 years. The first scientific description of the loess deposits here was made by Luigi Ferdinando Marsigli (1658-1730) in his *Danubius Operis Prodromus* (1700) and *Danubius Pannonico Mysicus* (1724-26). Many of Marsigli's localities and descriptions of the loess-palaeosol sequences are still recognizable today. The speaker then reviewed some of the geo-



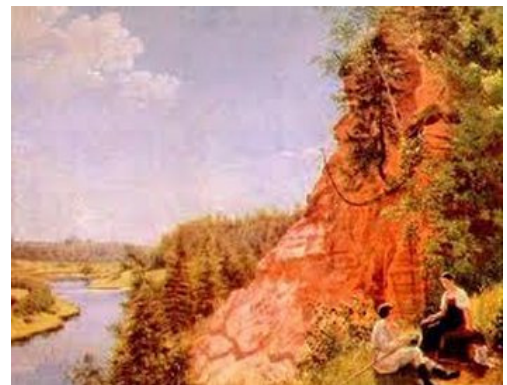
historical aspects of loess research through the works of some travel writers of the nineteenth century ranging from Michael Joseph Quin's *A Steam Voyage down the Danube* (1835) to Francis David Millet's *The Danube – from Black Forest to the Black Sea* (1893). In the 20th century, numerous Austrian and Hungarian geologists showed interest in the Quaternary deposits of the region and they were followed by others from the former Yugoslavia and further afield. In 1975, the loess profile at Stari Slankamen (*see below right*) was proclaimed a Monument of Nature and became the first protected geosite in the former Yugoslavia.

Contemporary research dates from the late 1990s when the Loess Research Group at the University of Novi Sad was formed. It is hoped that the Group's scientific work will lead

to the recognition of further protected areas and geotourist destinations.



Maria Tsinkoburova (St Petersburg Mining University, Russia) then spoke about the history of geotourism in Russia as exemplified by the St Petersburg region. Geological excursions began in the 18th century during the reign of Catherine the Great which was also the time of the Russian Age of Enlightenment. At the beginning of the 19th century, there was great enthusiasm for geology and, in 1817, the Russian Mineralogical Society was founded. For the first time, students from some of the St Petersburg educational institutions were taken on geological excursions near the city. In 1818, William Fox-Strangways, English consul in St Petersburg, made the first geological map of the St Petersburg area, and his description of the geology was published in the *Transactions of the Geological Society of London* in 1830. A Russian translation of this work appeared in the first issue of the *Proceedings of the Russian Mineralogical Society*. This specified noteworthy geological sites but, regrettably, many of these disappeared in the 20th century under the buildings of Leningrad. Some geological sites have been depicted in paintings such as A.V. Tyranov's *View on the River Tosna* (1827) (*see right*). Later in the 19th century, larger scale geological maps were produced but promotion of geological excursions declined. Subsequently, however, societies for natural science enthusiasts were formed in St Petersburg, Moscow and other Russian cities and, by the beginning of the 20th century, geological excursions again became popular. Geological sites in the St Petersburg region are now protected thanks to the introduction of conservation laws in the 1970s and 1980s. The most famous book on this subject is K. K. Hazakovich's *Geological monuments of the Leningrad area* (1982).



Piotr Migoń (University of Wrocław, Poland) followed with a presentation on current and past geotourism in the Sudetes – a mountain range on the boundary of Poland and the Czech Republic. Since the end of the 18th century, geological and geomorphological sites in the Sudetes have attracted interest, in particular the granite massif of the Karkonosze Mountains (for which a geopark was established in

2010; *see right*), and the central stepped sandstone plateau renowned for impressive rock formations (e.g. the ‘rock cities’ of Teplice and Adršpach). Nearby spa resorts, popular in the 17th and 18th centuries, also brought visitors to these areas including, in 1790, Johann Wolfgang Goethe who is considered to be a pioneer of geotourism in the Sudetes and for whom there are commemorative plaques. As early as the late 18th century, there were waymarked trails for tourists but they viewed the geological features merely as curiosities of nature. In 1880, a society (Riesengebirgsverein) was established in order to promote a more meaningful



understanding of the geological features for tourists. This society published scholarly accounts on different aspects of the geological history of the area. In 1914, a catalogue of geological ‘monuments’ was published. Current efforts to promote geotourism, such as thematic trails, information panels, education and information centres, books and maps, add an educational component to the sites which first attracted tourists several centuries ago. The speaker ended with the observation that we will never really know if these early tourists appreciated and understood the geoheritage of the area, and that this was surely an uncertainty which remained today in evaluating modern geotourism.

Keith Nicholls (University of Chester) then spoke about the work he has done with **Cynthia Burek** on Thomas Compton, surveyor and Drawing Master at the Royal Military Academy, who travelled throughout much of North Wales in the early part of the 19th century drawing the landscapes then being investigated by “the vanguard of empirical geologists”.

Although Compton drew well known scenes such as Snowdon, Cader Idris, Harlech Castle and the Vale of Llangollen, it was Compton’s paintings of Aberconwy (view looking south from Deganwy) and Bwlch y Groes (*see right*), in both of which the underlying geology comprises the Hirnantian Stage (terminal Ordovician), that were considered in more detail. Although Compton’s perception of scale regarding people, roads and boats seems to be somewhat amiss, his pictures show that he had a good eye for picking out breaks of slope, i.e. geological features.



Compton’s work is reproduced in *An attempt to depict the Northern Cambrian Mountains. An artistic impression* by David S. Yerburgh (2002) which is available new in paperback from Amazon for under £2.

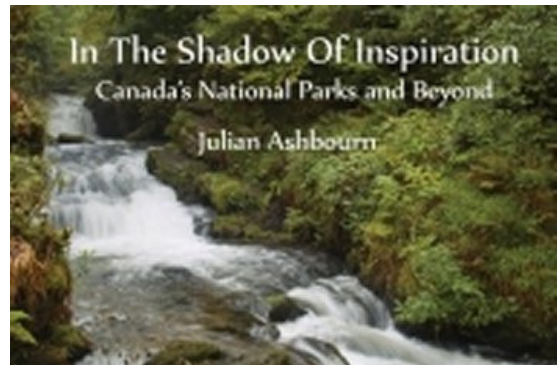
We returned to continental Europe when **Libera Arena** (Università degli studi di Bari, Italy) spoke about Carlo Amoretti (1741-1816) who was described as a “curious” of nature rather than a true geologist. In 2010, the speaker had retraced Amoretti’s trips of 1797 and 1798 in the Pre-Alps. She



suggested that, using Google Earth, interactive virtual tours could be made for tourists tracing the routes followed by early scientist-travellers and identifying places and points of geological interest. Historical maps could be compared with modern maps, and various other interest options (e.g. lithological, mineralogical, palaeontological, mining) could be offered. To set these up, there should ideally be collaboration between geologists, cartographers, computer scientists and educationalists. The proposed *HistGeoAlp* project, with partners from Italy, Austria, Slovenia, Germany and Switzerland, would create a network between different types of geo-sites and geo-historical routes, and promote educational geotourism.

The final talk came from photographer **Julian Ashbourn** who took us to the geological and natural treasure that is Canada, featuring the Precambrian Canadian Shield, the Cambrian-Devonian

sandstone, limestone and shale landscapes, the Cretaceous flat lands and prairies, the Rocky Mountains, the Columbia ice-field, the Coast Mountains and the Great Lakes and rivers. These landscapes and natural environments with spectacular scenery are represented in Canada's national parks, the first of which was established in 1883 at Banff in Alberta. Since then, more parks have been created (currently there are 43) with associated legislation, including the National Parks Act of 1930, a parks policy (1964) and national parks system plan (1970), and with increasing emphasis on preservation and conservation. Special attention was given to the Prince Albert National Park in Saskatchewan which was established in 1927. Spanning 3875 sq. km, the Park straddles the Canadian Shield and Western Sedimentary Basin and shows the transition between the grasslands of the Great Plains and the northern boreal forest with a range of associated environments and landscapes including lakes. Its aboriginal history dates back about 8000 years. The speaker introduced us to Archie "Grey Owl" Belaney who changed from a loutish, polygamous drunk to spend his life in saving the beaver and writing for *Country Life* as well as books for children. The Prince Albert National Park features the speaker's book *In the Shadow of Inspiration*.



in

Canada's National Parks and Beyond (ISBN 978-1-926780-11-5); see <http://shadowofinspiration.zzl.org>; mail@kitsbury.plus.com

HOGG chair John Henry, who had chaired the final session, brought the formal part of the day's proceedings to a close and delegates adjourned to the Lower Library for a wine reception followed, for some, by the Conference dinner at Getti's Restaurant in Jermyn Street.

APPRECIATING PHYSICAL LANDSCAPES: GEOTOURISM 1670-1970

A report by Jim Spencer¹ on the field excursion to Margate that took place on the second day of the meeting, October 23rd 2012



The day after the conference at Burlington House, 16 modern-day geotourists gathered at St Pancras Station, from where a Javelin Express train whisked us away at high speed to Margate. From the station at Margate, a short bus ride took us to the start of the tour at Cecil Square. Tom Hose, our guide, pointed out various buildings of interest en route along Union Crescent, Addington Road and Victoria Road. Beginning with the Baptist Church on Cecil Square (*see left*) (made of the Seaford Member of the local chalk which is more suitable for building purposes than the Margate Member owing to its higher silica content), Tom then showed us the Salvation Army Church on Union Crescent (utilising yellow London brick, available following the arrival of the railway), a flint wall on Victoria Road and a memorial to Edward VII on a house on the corner of Thanet Road.

Turning on to Dane Road, a short climb up Grotto Hill brought us to the most remarkable hidden treasure in Margate – the Shell Grotto.

After obtaining entrance tickets from the museum shop, we made our way through a museum of objects and artefacts made from shells (*see right*), before descending below ground to a passage leading to the Shell Grotto itself. The first record of its discovery appeared in 1838 and it has remained a mystery ever since as to who constructed it – suggestions include the Phoenicians, the Romans, the Knights Templar, the Tudors, and aristocrats returning from the Grand Tour inspired by the grottoes they had seen in Italy. The passage leads on to a rotunda, a serpentine passage then the altar room, all lined with millions of marine shells derived locally.



Along King Street, we passed the Tudor House, originally a farmhouse, standing on a plinth of flint to prevent ground damp rotting its timber, and surrounded by a more recent wall of flint. Passing through the Conservation Zone, with older buildings incorporating flint panels (*see left*), we continued along the sea-front up Fort Hill to the Winter Gardens which, Tom explained, were built on the site of the old fort. A bus ride took us eastwards to Cliftonville, where a brisk walk along the cliff tops and front brought us to the chalk sea-stacks at Botany Bay (*below left*), where lunch was taken. On the walk along the shore back to Margate, Tom pointed out

various features – cryoturbation of the soil atop the chalk, a number of denes (narrow channels running through the chalk to the coast, and through which the fishermen lug their boats), the changes in the coastline, and an outcrop of “Pelhamite,” an artificial stone made to resemble a cross-bedded sandstone (*below right*).



Return was made to Margate’s latest attraction – the Turner Contemporary, where afternoon tea was taken.

Thanks to Tom for such an interesting trip which, despite the mist that failed to lift all day, illuminated us all.

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‘PILTDOWN: 100 YEARS ON’

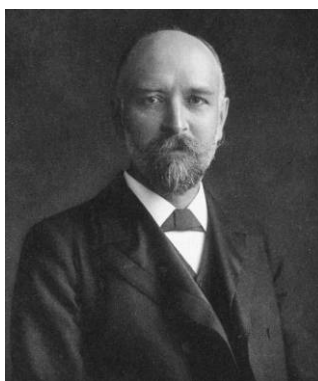
Jay Bosanquet¹ reports on the HOGG meeting held jointly with the GSL and NHM last December.

Piltdown – 100 Years On was the title of an afternoon meeting held at the Geological Society (Burlington House) on 18th December 2012, 100 years to the day after the announcement of the Piltdown finds as *Eoanthropus dawsoni* (‘Dawson’s dawn man’) at the same venue. The convenor, Richard (Dick) Moody, had assembled a distinguished group of speakers. During the preceding morning, delegates visited the Natural History Museum’s library to view a special exhibition of the Piltdown material, both the finds themselves and archival material, led by Karolyn Shindler and Paul Cooper. Karolyn, who has been studying the material for over a year, introduced four of the main dramatis personae: Charles Dawson (1864-1916), the Sussex solicitor and amateur antiquarian, who found the first pieces of cranium and jawbone, and who is the main suspect as the forger; Arthur Smith Woodward (1864-1944), vertebrate palaeontologist and Keeper of Geology at the British Museum (Natural History), whose granddaughter Ruth Niblett was one of those present; Kenneth Oakley (1911-1981), of the Geology Department at the BM (NH), whose fluorine dating of the fragments in 1949 dealt a devastating blow to their authenticity (and whose son Giles Oakley was also present); and Joseph Weiner (1915-1982), Reader in Physical Anthropology at Oxford University, who played an important part in the discovery of the forgery, and whose book *The Piltdown Forgery* (1955) was the first account of the whole story. It was fascinating to see the chocolate-brown cranial fragments, the reddish jawbone with two artificially flattened molars, and the dark brown, almost black, canine tooth, which were the crucial pieces of the hoax. Seeing what it was all about was an indispensable prologue to the afternoon of talks.

After introductions by Dick Moody, David Shilston (President of the Geological Society) and John Henry (Chairman of HOGG), the first speaker was **Anne O’Connor** on *Piltdown and the Geological Society*. Her talk focused on the original reception of the presentations in 1912 and 1913, which were given jointly by Dawson and Woodward. She commented that “it can be just as important where something is said, by whom and to whom, as what is said there”. The evidence presented was both geological and anthropological. Dawson first presented the



Charles Dawson



Arthur Smith Woodward (GSL)

geological evidence, including the estimated age of the Pleistocene gravel bed in which the fragments of the skull and mandible had been found (deduced from its height, estimated at about 80 feet, above the River Ouse), and the stone tools and eoliths associated with them. Then Woodward discussed the human and mammalian remains, which consisted of two groups: (a) Pliocene mastodon and elephant bones, and (b) Pleistocene mammals, such as deer, horse and beaver. If the human-like skull fragments, with exceptionally thick walls, and ape-

like jawbone were from the same individual, they seemed to be a 'missing link' in human evolution. Woodward made a reconstruction of the Piltdown skull which showed a near correspondence to a human cranium, with a high forehead and a smaller cranial capacity than the Neanderthals; this implied a branching line of human evolution, with the Neanderthals being an offshoot, which became extinct, from the line which led to humans. He thought Piltdown man was from this line before the appearance of the Neanderthals, a view which was consistent with the work of the French palaeontologist Marcellin Boule.

The next speaker was **David Martill** of the University of Portsmouth, who entertainingly defended Sir Arthur Conan Doyle from the accusation, made by Winslow and Meyer in their 1983 paper in *Science*, that he could have been the perpetrator of the hoax, not least on the grounds that he was too busy! Details were given of his literary output and travels during the years leading up to 1912 when he published *The Lost World* which popularized dinosaurs and pterodactyls. The fictional Professor Challenger's remark that "if you are clever and know your business you can fake a bone as easily as you can a photograph" can be seen as possibly suggesting Conan Doyle's awareness of the fraud, if not responsibility for it. But it is a slender piece of evidence. In the speaker's opinion, Conan Doyle was a 'good egg', perhaps too credulous where spiritualism was concerned, but certainly not the perpetrator of the Piltdown forgery.



The third speaker was **Miles Russell** of Bournemouth University, who has written a book, *Piltdown Man: the secret life of Charles Dawson* (2003), itemizing Dawson's record of dubious archaeological discoveries. He is amazed that there is any doubt remaining that Dawson was responsible for the forgery, as he was the perpetrator of a succession of frauds, such as the fossil tooth which Woodward named *Plagiaulax dawsoni* in 1891 ("the first evidence of a European Cretaceous mammal"). This serial fraudulence reinforces the near-certainty that it was Dawson who faked the Piltdown fragments and planted them in the gravel bed. There are 38 specimens in Dawson's collection which are fakes. In 1909, Dawson wrote to Woodward that he was waiting for a "big find" that had not yet turned up. Then, conveniently, the Piltdown discoveries came in 1912, soon after the publication of Conan Doyle's *The Lost World*. Possibly the 'cricket bat', a large bat-shaped piece of fossilised elephant femur found in 1914, was put in the site by someone else to discredit Dawson, but it is difficult to prove this.

Christopher Dean of University College London then spoke on *The Anatomy of the Piltdown Forgery* (work co-authored by Isabelle de Groote). He gave details of the interpretations made by various anatomists, notably Arthur Keith, a specialist in the comparative anatomy of primates, and a gifted popularizer of science. Keith was sceptical about the simian characteristics of the skull, though he did not go so far as to deny the authenticity of the find, even when the discovery was made of an ape-like canine tooth in a spoil-heap by Teilhard de Chardin in August 1913, which was a blow to his position. When the fraud was eventually revealed, he was most concerned about the "loss of faith in the testimony of our fellow-workers" which it caused.

Grafton Elliot Smith (1871-1937), then professor of anatomy at Manchester University, made endocasts of the cranium which showed the asymmetry of the brain. He was a forceful man and came into conflict with Keith and Woodward over the interpretation of the finds. All three, however, accepted their authenticity. David Waterston (1871-1942), on the other hand, an Edinburgh-trained anatomist who was then professor of anatomy at King's College London, was dubious, and believed that the apelike jaw did not belong with the human cranium. Another doubter was William King Gregory (1876-1970), vertebrate palaeontologist at the

American Museum of Natural History, who suspected a hoax as early as 1914. The Birmingham dentist W. Courtney Lyne noticed the “strange wear pattern on the canine tooth”, which meant it might not belong to the same individual as the skull and jawbone. But such dissenting voices were overwhelmed by the number of influential supporters of the veracity of the finds. The speaker told how Micro-CT images of the Piltdown objects are shedding new light on how the evidence was fabricated. Tests have revealed that small pieces of gravel packed into the orifice of the canine tooth do not match the gravel contained in the Piltdown beds.

Finally, **Chris Stringer** of the Natural History Museum gave a talk on *The Piltdown Forgery in Context* (co-authored with Adrian Lister and Simon Parfitt). The Piltdown find filled a hole in knowledge about evolution and seemed to offer an answer to the question of where humans originated and whether the line of descent was straight or branching. The speaker had recently become aware that there had been a ‘German Piltdown’ in 1911, at Steinau, the perpetrator of which had confessed to it as being a prank. Could this have been the spur that led Dawson to fabricate the Piltdown forgery? Was Teilhard de Chardin involved in the deception? De Chardin had found the canine tooth in 1913 —Dawson had thrown a stone on to the part of the spoil heap where the tooth was found, so perhaps de Chardin was the unwitting dupe of Dawson. During the question-and-answer session at the end of the talk, Giles Oakley said that his father, Kenneth Oakley, had spoken to de Chardin about it and that de Chardin had been embarrassed by the whole thing.



Chris Stringer (*right*) with Dick Moody

The Piltdown skull became increasingly impossible to reconcile with the later human skulls found in Africa and Asia between the wars, which showed the opposite characteristics to its simian jaw and human-like skull, suggesting that jaws and teeth evolved a human-like form before brain size expanded. This put Piltdown man into an anomalous position which was only resolved when it was revealed to be a forgery.

An important finding that undermined the credibility of the Piltdown finds was Kenneth Oakley’s fluorine dating in 1949, which showed they were only about 50,000 years and not 500,000 years old. After that, the consensus that they were genuine swiftly unravelled, culminating in the meeting in November 1953, again at the Geological Society, when the damning verdict that they were a forgery was announced.

The chief suspect was and remains Dawson, though several others have been accused of being involved. One man who has been implicated is Martin Hinton (1883-1961), a volunteer in Woodward’s department at the BM (NH) at the time of the original discovery, and later Keeper of Zoology. Years later a trunk belonging to him was found in an attic at the Museum, containing a number of stained mammal teeth and bones resembling the Piltdown fossils. This seemed to suggest his involvement in the fraud, unless he was trying to replicate the staining of the finds.

During the meeting, there were three posters on display in the library, two of whose authors spoke briefly at the end. **Colin Prosser** of Natural England told the story of how the Piltdown site had become, for a few years, the first geological National Nature Reserve in Britain. The revelation of the fraud led to its status being revoked and the site being handed back to the original owner. The poster asked the question whether the site merited protection now, as the fraud itself is a matter of great interest which is unlikely to diminish in the future.

Graham Mullan's poster, *Pitldown: a developing story*, put forward the thesis that the canine tooth found at Pitldown by Teilhard de Chardin had been 'seeded' there by de Chardin himself or someone known to him. Dawson's original plan may have been modified in the light of Woodward's reactions to the finds. The contents of Martin Hinton's trunk found at the Natural History Museum do not show that he was the forger, but that he was aware of the staining techniques used and that he was seeking to replicate them.

The poster by **Matt Pope** described the recent excavations of the fluvial terrace gravels of the River Ouse at Barkham Manor, Pitldown, by the Institute of Archaeology. The gravels appear to be a genuine Pleistocene sediment, and it is hoped to produce a detailed account of their constituents, for comparison with Dawson's account of them.

There was also the opportunity to see the group portrait by John Cooke (1915) of eight of the men involved in the Pitldown affair examining the skull, including Dawson posed in front of a portrait of Darwin on the wall. This may imply a distinction to which he aspired but which was to elude him.



Finally, I must mention the extremely well-produced illustrated abstract book which was issued to delegates, compiled by Dick Moody and sponsored by Halliburton and BG. This is a most welcome record of a fascinating meeting. I am sure everyone who was present is looking forward to learning the results of the current battery of high-tech analyses of the Pitldown material, which it is hoped will show if there was more than one forger involved. But one of the most intriguing questions, over and above the identity of the forger, is why he, or they, did it.

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FUTURE HOGG EVENTS

- *ORDNANCE MAPS THAT CHANGED THE WORLD:
A VISIT TO THE LIBRARIES OF THE GEOLOGICAL SOCIETY**
Friday 31st May 2013
Burlington House, Piccadilly, London
A joint meeting with the Charles Close Society. See Nina Morgan's article on pages 20 -22 of this newsletter.

 - *2013 INHIGEO CONFERENCE
MANCHESTER**
Monday 22nd – Sunday 28th July 2013
All HOGG members are invited to attend or participate in the 2013 INHIGEO Conference which will take place as part of the 24th International Congress of History of Science, Technology and Medicine (iCHSTM). See pages 23-25 of this newsletter.

 - *WEEKEND MEETING IN SELSEY AND CHICHESTER**
Early September 2013; timing will be determined by the coincidence of lowest tides with a weekend.
This meeting will focus on the local geology and archaeology through the career of foraminifera expert Edward Heron-Allen (1861-1943). Details in next (June) newsletter.

 - *FIELD TRIP: A HISTORICAL PERSPECTIVE OF THE GEOLOGY AND WINES OF BURGUNDY**
Early October 2013
See pages 26 - 27 of this newsletter.

 - *VISIT TO THE NATIONAL MUSEUM OF WALES, CARDIFF**
Friday 1st November 2013
A behind-the-scenes tour of the geological collections which are rich in the history of Henry De la Beche, William Smith and G. B. Greenough. Details in the next (June) newsletter.

 - *WILLIAM SMITH CELEBRATION
2015**
Planning is underway for a year-long, country-wide celebration of the bicentenary of William Smith's ground-breaking map of 1815. Further news and updates will appear in later newsletters. HOGG contact is John Henry (john@geolmaps.com).
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ORDNANCE MAPS THAT CHANGED THE WORLD

Nina Morgan¹ anticipates May's meeting with the Charles Close Society.

Scratch a geologist and you're likely to discover a map addict. The reason is simple: geological maps offer the key to understanding the geology, and hence the form, structure and origin of the surface of the Earth. As William Smith, the 'Father of English Geology' put it in a document included with the copy of Smith's *Geological Atlas* held in the Hope Library at the Oxford

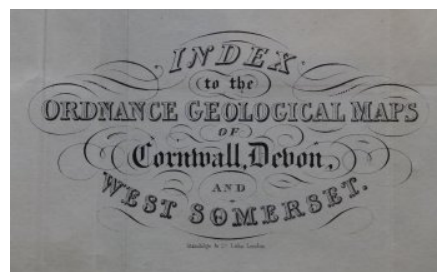
University Museum of Natural History: "By their colouring they [geological maps] bring up the natural features of the Country and facilitate the acquirement of Geology." And the more accurate the topographic base map, the more accurate and informative the geological map. This helps to explain the close relationship between the Ordnance Survey, the first national topographic survey in the world, and the British Geological Survey (BGS) – the world's oldest continuously functioning national geological survey.

Accurate topographic base maps were something that William Smith, creator of the first geological map of a nation, lacked. The base map used for Smith's 1815 map *A Delineation of the Strata of England and Wales with part of Scotland* – the map drawn to popular attention by Simon Winchester's 2001 book, *The Map that Changed the World* – was the index sheet to the second edition of John Cary's *New and Correct Atlas of England and Wales*, published in 1794. Cary's index map, at a scale of around 47 miles to the inch, showed the outline of England and Wales with hills depicted pictorially, but included no other topographic information. Other early geological mappers faced similar difficulties when it came to finding suitable base maps, and generally turned to topographical sheets published by Carey and other commercial firms including Arrowsmith and Crutchley.

Topography aids geology

It wasn't until the first topographical maps prepared by the Ordnance Trigonometrical Survey, the forerunner of the modern Ordnance Survey, became available that detailed geological mapping, in the modern sense, became possible. Among the first geologists to make use of new topographical maps for geological mapping – and the first to colour geologically the whole extent of an Ordnance Survey 1 inch sheet – was Henry De la Beche. Born in 1796 in London but, following the death of his father, brought up mainly in Devon and Somerset, De la Beche became seriously interested in geology after settling in Lyme Regis in Dorset in 1812. Although he joined the Geological Society of London in 1817, it wasn't until he came of age in 1819, and began to receive an income from his family's estate in Jamaica, that De la Beche was able fully to take up life as Gentleman Geologist, and travel extensively on the continent to meet and learn from other geologists. Following an extended visit to his Jamaican estate, he published the first modern account of the geology of Jamaica, *Remarks on the geology of Jamaica*, which was read at the Geological Society and published in the Society's *Transactions* in 1827.

During this time, he also continued his studies of local geology in Devon, and began colouring geologically the new topographic maps of Devon prepared by the Ordnance Trigonometrical Survey. When events in Jamaica meant that his income failed, De la Beche applied to the Ordnance authorities, then headed by Lt-Col. Thomas Colby, for £300 to allow him to complete his geological map of Devon. His request was granted and in 1832, De la Beche became a "Geologist to the Trigonometrical Survey of Great Britain". Other holders of similar titles included John MacCulloch, whose geological work in Scotland led to his appointment as a "Geologist to the Trigonometrical Survey of Great Britain" in 1814; and Joseph Ellison Portlock, who was appointed "Geologist to the Trigonometrical Survey of Ireland" in 1832.

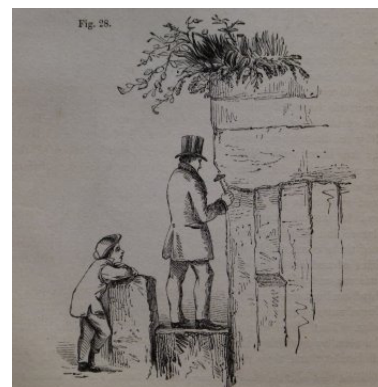


Trials and tribulations

De la Beche's geological mapping in Devon turned up some unexpected fossils that led to a bitter controversy about the age of the rocks and De la Beche's skills as a field geologist. Feelings ran high among the 'Gentleman Geologists' of the Geological Society – with one prominent member, Roderick Murchison, writing that 'De la Beche is a dirty dog... I knew him to be a thorough jobber & a great intriguer & we have proved him to be thoroughly incompetent to carry on the survey.' The dispute wasn't resolved until the 1840s, after further studies were carried out by another geologist, William Lonsdale, and by Murchison himself, resulting in the establishment of a 'new' geological System – the Devonian.

But in spite of the opprobrium, De la Beche completed his Devon map in May 1835. He was then asked to carry out a geological survey of Cornwall – and the Geological Survey of Great Britain was born. The first Geological Survey 'memoir', *Report on the Geology of Cornwall, Devon and West Somerset*, published in 1839, was the result of De la Beche's work and contained a folded geological map, along with sections and plans. A revised version included eight sheets of geological mapping on one-inch OS base maps of Devon. The Geological Survey remained a branch of the Ordnance Survey until 1845, when it was transferred to the Department of Woods, Forests, Land Revenues, Works and Public Buildings. De la Beche served as its Director-General until his death in 1855.

Although claims are made that earlier government-funded geological surveys were established in France, the United States, Ireland and Scotland, the Geological Survey of Great Britain (now called the British Geological Survey or BGS) remains the oldest continuously functioning geological survey organisation in the world. Its successful start was thanks to a combination of De la Beche's own geological skills, determination, diplomacy, and what some would call, deviousness; the teams of hard working and skilled field geologists; and the availability of the accurate topographic maps produced by the Ordnance Survey



De la Beche self portrait
(Geol. Survey Memoir 1846)

See for yourself

A joint Charles Close Society /History of Geology Group (HOGG) visit to the map library of the Geological Society of London will offer the chance to view some of De la Beche's and Lonsdale's maps of Devon and Cornwall as well as 19th century geological maps of Ireland and Wales incorporating many of the innovations De la Beche introduced. Also on show will be contemporary early geological maps from Germany, the Austro-Hungarian Empire, France and Belgium.

This half day visit, organised by CCS/HOGG members, geologists and map enthusiasts, Nina Morgan and John Henry, will take place on 31st May 2013 at the Geological Society, Burlington House, Piccadilly, London. The visit starts at 14:00hrs and will finish at 17:00hrs. Numbers are limited to 25. If this afternoon visit is oversubscribed, it may be possible to hold a morning session from 10:00hrs to 13:00hrs. The cost will be £7, to include refreshments, and places must be booked in advance.

Registration opens on 15th March 2013. To book and pay for your place, visit the HOGG website (<http://historyofgeologygroup.co.uk/>). Those without internet access can book a place and arrange to pay by cheque by phoning Nina Morgan on 01608-676530. No booking will be accepted before 15th March.

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Illustrations courtesy of John Henry



Largest-ever history of science meeting on your doorstep in July.

Don't miss it – it may not be back for 40 years!

All HOGG members invited to attend.

Registration opens 15 February.

The 24th International Congress of the History of Science, Technology and Medicine (ICHSTM Congress) will be the largest history of science meeting ever held, and the first time the Congress has met in the UK for over 40 years. It will be in Manchester 22-28 July 2013.

The ICHSTM Congress will incorporate the **2013 INHIGEO Conference** (which includes two history of geology symposia organized by HOGG on behalf of INHIGEO), as well as more than 100 other symposia organized by commissions and historians of science, technology and medicine from all over the world.

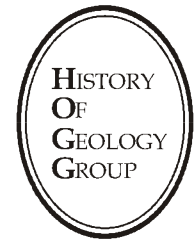
The Congress will also include a huge range of trips and excursions, including three history of geology field trips during the **2013 INHIGEO Conference**. There will also be a number of official receptions, special sessions and evening events such as theatrical performances, as well as an unofficial social programme. The conference dinner will be held at Old Trafford, Manchester United's famous football ground.

The call for papers for the Congress has now closed and the full programme will soon be available; a schedule and a list of symposia are already available on the Congress website.

For more information about the unique opportunities the Congress offers, please visit <http://www.ichstm2013.com/>

For full details about HOGG's and INHIGEO's involvement, please visit the Hogg website: <http://historyofgeologygroup.co.uk/>

For details of how to register, please see the following pages.



REGISTRATION for the 2013 INHIGEO Conference and field trips

This conference will be held during the **24th International Congress of History of Science, Technology and Medicine, Manchester, England.**

Thursday 18 – Tuesday 30 July, 2013, including field trips

Early registration for the **2013 INHIGEO conference** will open on **15 February 2013.**

In order to speak at, or attend, the conference, INHIGEO participants will need to register through the ICHSTM website. For full details please see the ICHSTM registration pages <http://ichstm2013.com/registration/index.html> where you can also find information about accommodation.

Registration fees for ICHSTM, which includes the 2013 INHIGEO conference, are as follows:

Until Sunday 14 April, 2013:	£205 (approx \$330)
After Sunday 14 April, 2013:	£280 (approx \$451)

Day rates Delegate day rates are under discussion. If these are agreed the rates will be available on the ICHSTM registration pages before registration opens.

Early registration for all **INHIGEO field trips** will also open on **15 February 2013.** Places can be reserved from this date onwards on a **first-come first-served basis** by paying a deposit direct to HOGG through the HOGG website.

Paying the field trips deposit At 00.01 hours GMT on 15 February 2013, field trip registration facilities will go live on the HOGG website at this page: http://inhigeo2013.historyofgeologygroup.co.uk/?page_id=225 There you will be able to pay by credit card through PayPal. **Please do not try to register before this date.**

If you live in the UK and cannot use the web, you can send a cheque, for the relevant amount and made out to HOGG, to: HOGG Treasurer, 151 Browns Lane, Stanton-on-the-Wolds, Keyworth, Nottingham, NG12 5BN. **Please mark your envelope 'INHIGEO field trips'.** In order to be as fair as possible, these will not be opened until 15 February 2013. If you live anywhere other than the UK, you will need to pay through the website.

INHIGEO Field Trips – costs and deposit required

Full details of all trips can be found in previous issues of the Newsletter or on the HOGG website:

<http://historyofgeologygroup.co.uk>

Before each trip starts, you will be asked to show that you have registered for the ICHSTM Congress (see above).

Field trip 1:	The Silurian of ‘Siluria’ and the idea of a Palaeozoic era
Trip Leaders:	Martin Rudwick and Hugh Torrens.
Dates:	18-21 July, 2013
Cost:	£320. Price includes dinner, bed and breakfast for 3 nights on a room-share basis, packed lunches.
Field trip base:	Longmynd Hotel, Cunnery Road, Church Stretton, SY6 6AG. www.longmynd.co.uk
Maximum no. of participants	30
Deposit required:	£50
Registration deadline	30 April 2013 – deposits will not be refundable after this date.
Deadline for full payment	15 June 2013

If numbers are sufficient, it may be possible to arrange coach travel to Manchester on the Sunday, in time for the opening of Congress on Monday 22nd. There will be a small extra charge for this.

Field trip 2:	Buxton Spar and Spa.
Trip Leader:	Tom Hose
Date:	25 July, 2013
Cost:	£62, to include train fare, museums entrance fees and lunch
Deposit required:	Full payment of £62
Registration deadline	30 April 2013 – payment will not be refundable after this date.

Field trip 3:	Ruskin's Geology.
Trip Leaders:	Alan Bowden and David Oldroyd.
Date:	28-30 July, 2013
Cost:	£255. Price includes transport from Manchester to Windermere; dinner, bed and breakfast for 2 nights on a room-share basis. £25 single room supplement.
Field trip base:	The Hydro Hotel, Helm Road, Bowness-On-Windermere, LA23 3BA: www.thehydro.co.uk
Maximum no. of participants:	30
Deposit required:	£50
Registration deadline	30 April 2013 – deposits will not be refundable after this date.
Deadline for full payment	15 June 2013

For queries regarding registration, please contact Beris Cox: beris.cox@btinternet.com or tel. 0115 9376333.

HOGG FIELD TRIP

A HISTORICAL PERSPECTIVE OF THE GEOLOGY AND WINES OF BURGUNDY

Leader: Dick Moody

Early October 2013

Duration 3 nights: Beaune

(Mode of travel will be influenced by number of members who register.)

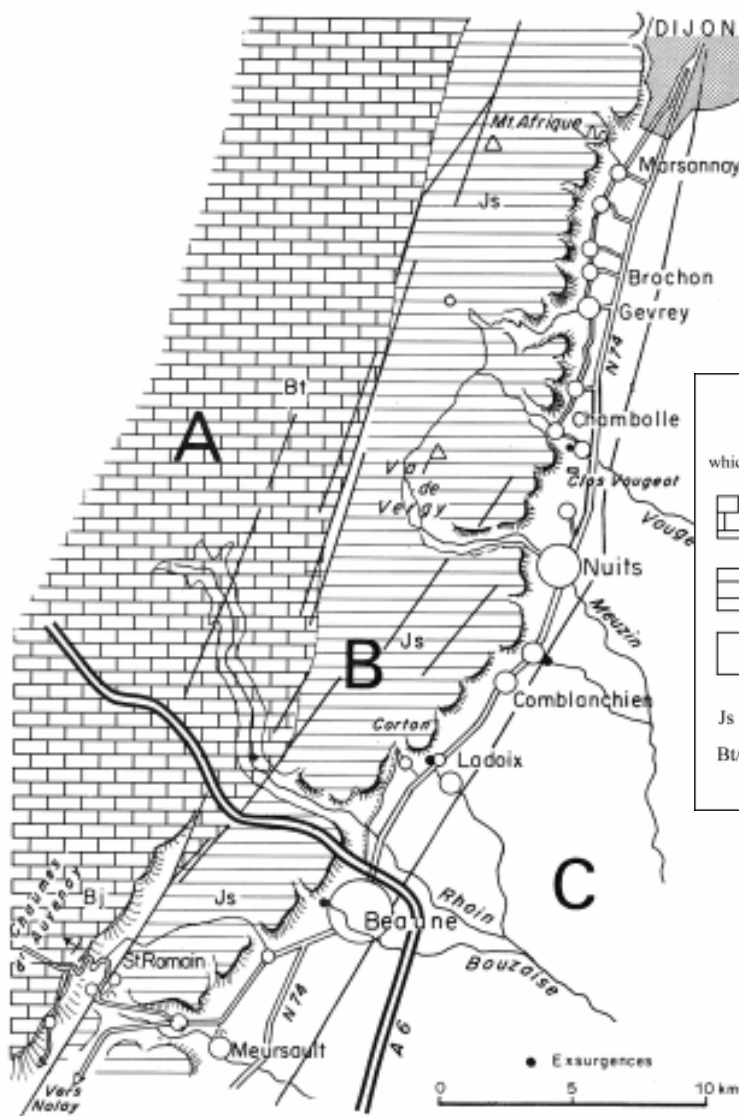
DAY 1 London – Dijon (mini-bus from Guildford or Eurostar).

DAY 2 Regional Geology and History of Region.

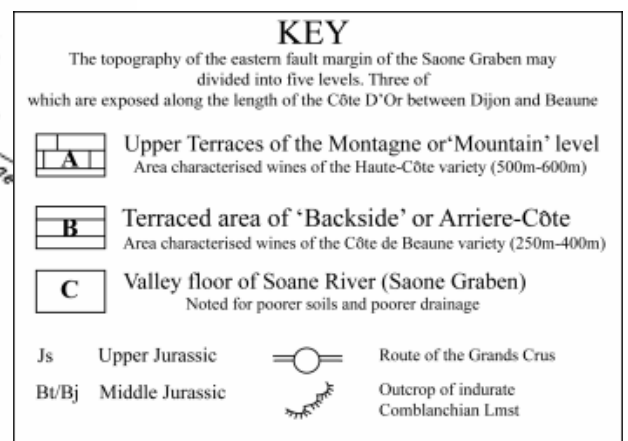
Lunch and wine tasting in Puligny Montrachet).

DAY 3 Geology and Wines of Nuits St George, Beaune and Puligny.

DAY 4 Return London.



Map of the Cotes to the north-north east of Beaune (Fig. 41, Rat, P. (1972). *Guide de Bourgogne – Morvan*. Masson & Cie. Paris



Estimated costs

Eurostar: £50.00
Hotel: Estimated cost excluding dinner. £290.00
(price based on twin or double shared rooms; single rooms extra)

Wine tasting at lunch including grand crus £50.00

Entrance to local museums or vineyards not covered in above estimates.



The Château de Sully, Burgundy, which was first built in the 12th Century but largely rebuilt between 1570 and 1610. It is thought to be one of the finest Renaissance-style castles in France. (Image: Dick Moody).

EXPRESSIONS OF INTEREST TO DICK MOODY

email rtj.moody@virgin.net

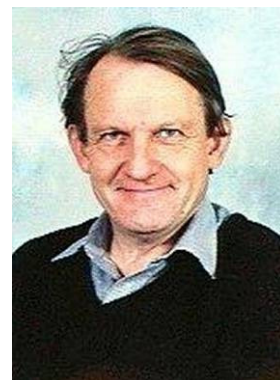
tel. 07973 273623

Prof. R T J Moody, Gnoll House, 15 Forster Road, Guildford, Surrey GU2 9AE

THE INAUGURAL IUGS TIKHOMIROV AWARD FOR THE HISTORY OF GEOLOGY

In the last Newsletter, we reported that Emeritus Professor Hugh Torrens had been awarded the inaugural V. V. Tikhomirov Award for the History of Geology. The Award is one of the IUGS Scientific Awards of Excellence which had recently been established to reward outstanding original contributions or achievements that mark a major advance or contribution to the Earth Sciences. Presented during the 34th International Geological Congress in Brisbane, Australia on 6th August 2012, the citation read as follows:

“Professor Hugh Torrens is one of those rare geologists who has bridged the divide between science and the humanities and made a huge contribution to the studies of the history of geological thought as well as being a notable university teacher.



Over most of his career, Hugh has been based at the University of Keele in the United Kingdom where he remains today as Emeritus Professor of History of Science and Technology.

After initial geological contributions in Jurassic stratigraphy and ammonites, Hugh’s life work has been devoted to studies in the histories of geology, technology, and industrial archaeology. He is the world authority on the work of William Smith.

His investigations have extended from the history of local natural history societies to the minute details of otherwise forgotten geological researchers. He is remarkable for his ability to locate rare and significant archival materials, particularly hitherto unknown maps, some of which are of signal importance and interest.

Typical of many history-of-geology specialists, Hugh’s work has chiefly focused on his home country, in his case the United Kingdom, with its exceedingly rich geological tradition and legacy, but his knowledge and interests and professional contacts extend far beyond the shores of the British Isles.

In his adopted field, Hugh is author of some 345 books, papers and reviews. Notably, his 47 articles for the *Oxford Dictionary of National Biography* constituted more than enough material for a major book and as editor for the *Dictionary’s* geological entries he encouraged and painstakingly checked and edited all the history of geology contributions and provided large amounts of unacknowledged information to other contributors. Hugh also had a collection of his major papers published as a ‘variorum’ book in 2002, entitled *The Practice of British Geology 1750-1850*.

His contribution has further extended to numerous historical organisations, in which he has served with distinction, including the following positions:

Chairman of Geological Curators’ Group of the Geological Society of London (1976-1980)

President of the British Society for the History of Science (1990-1992) (a notable honour for a scientist)

Councillor of the History of Earth Sciences Society (1996-1998)

Conseiller étranger of the Comité Français d’Histoire de la Géologie (1991-1992).

Most significantly, Hugh has long been a member of the INHIGEO, the IUGS Commission for the History of Geological Sciences, and a strong supporter of the Commission’s activities. He is notable for the immense amount of assistance he willingly gives to younger scholars and to colleagues in need of

information, of which he seemingly has an infinite supply. He is also notable for his strong sense of humour, as much as his dedication to scholarship over a wide range of fields and interests.

Hugh served as INHIGEO President in the years 1996-2000 and has since been recognised as an Honorary Senior Member of INHIGEO.

Hugh has also been internationally recognised for his history of geology contribution as recipient of the Mary Rabbit History of Geology Award of the Geological Society of America and the Sue Tyler Friedman Medal of the Geological Society of London.

It is, then, with great pleasure that IUGS honours today Professor Hugh Torrens as the worthy inaugural recipient of the V. V. Tikhomirov History of Geology Award.”

*The engraving on the back reads
“H.S.T. IUGS Science Excellence Award.
V. V. Tikhimirov History of Geology Award 2012”*



Hugh's response:

I am greatly honoured by this award. I take the greatest pleasure from its being so truly international (named after a Russian, announced by an Argentinian, and awarded to an Englishman at a Congress held in Australia—the adopted country of my daughter). Professor Tikhomirov was the founder of the International Commission on the History of Geological Sciences.

Ever since I took up geology, at school in the 1950s (where sadly it was an entirely extra-curricular subject), and then history in the 1970s, I found the skills needed to be an historian were very similar to those needed to be a geologist. This was despite their long separation, at least in my own culture, as explored by Charles Percy, Baron Snow (1905–1980). In his *The Two Cultures and the Scientific Revolution* (1959), he charged that ignorance of science by professed humanists (including historians) was as harmful to society as ignorance of the arts, by narrowly focussed scientists. (But in general scientists were more alert to the arts and humanities than vice versa.)

But the objects used to decipher records of the geological past (sediments, fossils, rocks and minerals, whether in outcrop or hand-specimen, etc.) seemed in many ways similar to those needed to uncover human history (images, maps, documents, books, objects, manufactures). And both have suffered the same problems: non-deposition/non-recording, and erosion/destruction. Both have also yielded wonderful ‘eureka moments’. As two of the most recent ones for me, I might recall: (1) the geological re-discovery of the first soft-bodied fossils ever to be recognised. These I found in a Philadelphia Museum over 21st–24th August 1992, having been lost ever since the collection yielding them had been sold to America in 1848 (thus the specimens were lost for 144 years; see cover of *Proc. Acad. Nat. Sci. Phil.*, 2000, Vol. 150 and pp 75–79); or (2) the re-discovery of the only copy that William Smith had had printed of the first part of his lost book on Norfolk, in 1807. This I found in January 2006, after it had been sought for 199 years (see *Geoscientist*, March 2006, pp. 22–23). It had been lost even longer than those soft-bodied fossils.

But it has not been all such fun. First, the amazing revelations that the internet has exposed, have had to be countered by the new problems that it has engendered. One needs to be alert to its possible shortcomings. Looking electronically, for example, for the name PARSLOW (the actual author of

the 1818–1819 MSS poem *The Lymiad* (recently published in 2011)—who was the female commentator on the Lyme Regis scene at the height of Mary Anning junior’s fossil-hunting career), meant one had to try also PARSLOE (from those days of ‘alternative spellings’), and PARFLOW (in these days of problems with OCR, when long s’s will become fs). Also, the too uncontrollable nature of the internet, and its newly ‘anti-social media’, produced a charge that I had been a plagiarist. It took me no less than ten years to reply, but in print, in the second edition of *The Complete Dinosaur*, published in June this year (pp. 40–42). So not everything is sped up by the internet!

Alas, the arrival of digitization has also caused major disposals by too many of our once fine libraries. It was claimed, in 2007, that “2 million books and journals [were then] being thrown out of British Universities each year” (*Times Higher Education Supplement*, 23rd November 2007, p. 15). An absurd ‘Gadarene Swine’ situation has since developed, in which Jesus gets replaced by so-called ‘information managers’ (who have replaced ‘librarians’), while swine are replaced by books. But both have ended up irretrievably over a cliff, or into a mine, to disappear.

My most recent historical contributions have been writing three chapters for a book about the English polymath and philanthropist, Thomas Beddoes (1760–1808), who was not just the “chemist and physician”, claimed in the new *Oxford Dictionary of National Biography*. These chapters discuss: (a) his major contributions to geology; (b) how he was the first to envisage, and try to promote, ‘rational toys’, which could be dismantled to show children, and others, how machines operated; and (c) his forgotten first biographer (1810) the dissenting John Edmonds Stock (ca 1774–1835). He had been indicted for high treason in 1794, but then escaped, avoiding the public beheading which befell one of his co-conspirators, and finally reached safety in Philadelphia. It was no wonder that Stock’s book gave Beddoes’ political activities rather little attention!

But, as I was working on these matters, my former University Library was pushing over the ‘cliff of disposal’, masses of highly relevant volumes, on both chemistry and geology. These were among over 1,400 disposed of over December 2011–January 2012 and another 700 disposed of over May–June 2012. The problem was not one of space, or that they were now available in digitized form (in fact many are not), but simply that they had fallen foul of that Library’s lunatic Policy Statement (as revealed on its website). This grandly, but ignorantly, announced how it was the Library’s policy “to withdraw items for which there is no reasonable justification for retention. Old and superseded texts can, [the managers suppose], be misleading or worthless, and unsought material can obstruct the search for relevant items” . . .

How this extraordinary statement can be reconciled with the presence of a good History Department at Keele University, which encourages the scholarly study of history by qualified historians, who were surely unlikely to be misled by ‘old and superseded texts’, has never been explained. Nor can it be.

So Keele University, which when founded had deliberately endeavoured to provide an undergraduate programme that helped to form a bridge between the ‘two cultures’ has now largely abandoned its original remit. Nevertheless I am grateful to it for providing me with the opportunity of a career in which I have been able and happy to try to have a foot in both camps.

And working as a historian has taught me how universal an interest in history is, and what fun international collaboration can be in this field (much more so than in science). I particularly want to applaud the work of INHIGEO in this regard. My journey with them has been full of wonderful friendships across the world, much helped for me, since I started, by the ‘Darwinian survival’ of the English language. This has allowed us English to become lousy linguists, but has demanded instead that we become careful editors of Japlish, Franglais, etc. Of these friendships, I should like to single out a few; the late François Ellenberger, of Paris, who taught me why, in his Second World War

prison camp, they opened a ‘university’ and did not try to return home; the late John Thackray, archivist extraordinaire - and for the Geological Society; the Essex book dealer Stuart Baldwin, whose book-hunting skills have been of inestimable assistance to me; David Oldroyd of Sydney, who is both one of the best historians of geology, and one of the best editors of its output; Peter Rozsa of Debrecen, who organised a wonderful Hungaro-tour and Ezio Vaccari of Varese, who did the same in Italy. The lives of both my wife and myself have been much enhanced by such friendships. Long may the truly international work of INHIGEO continue.

In this vein I have suggested to IUGS president Alberto Riccardi how a joint Anglo–Argentine history project might be promoted and, if the idea is pursued, how the work of the English-born first Director of the Argentine Geological Survey, Henry Davis Hoskold (ca1831–1904), might prove a highly suitable bridge to start with. It will need the sort of international collaboration with which only INHIGEO can help. Geology is a world-wide activity. And so too, as time passes, the study of its history is becoming ever more international in character. I am mightily pleased to see this development and to have been privileged to play some part in it.

BOOK and MAP NOTES

Dutch Earth Sciences: Development and Impact

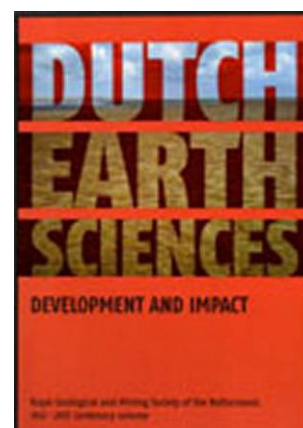
B. Brekschoten, T. van Loon & P. Floor (eds)

The Hague: Royal Dutch Geological & Mining Society of the Netherlands (KNGMG). 2012. 276pp.

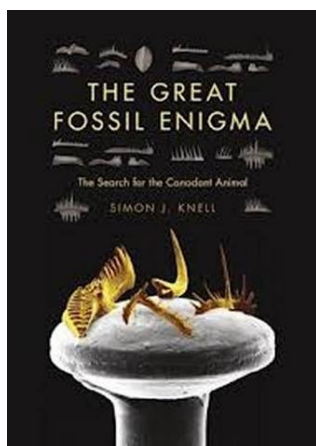
ISBN 978 90 818 6230 1 (hardback) £55.00

Distributed by the Geological Society Publishing House.

“This milestone book, which is published to coincide with the first Centennial of the Royal Geological and Mining Society of the Netherlands (1912-2012), summarizes the multiple achievements of Dutch geologists and mining engineers. It places the significance of what has been achieved in scientific, societal and economic contexts.



Dutch geologists and mining engineers have made fundamental contributions to many scientific and technological advances, and this timely and abundantly illustrated book should appeal to all those with an interest in the history of both pure and applied Earth Science.” (GSPH)



The Great Fossil Enigma

The Search for the Conodont Animal

Simon Knell. 2012. Indiana University Press. 440pp.

ISBN 978-0-253-00604-2 (hardback) £29.99

“Quite a remarkable and well-executed story...It should be of great interest not only to conodontologists but to palaeontologists in general as well as to everyone interested in the history of science. I cannot think of any other comparable work dealing so thoroughly with the exploration history of a widespread and important fossil group.” Stig M. Bergstrom, Ohio State University.

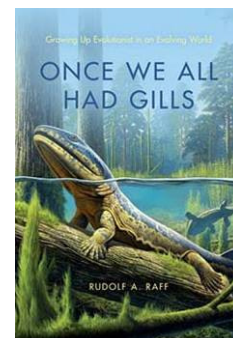
“This animal confounded science for more than a century. Simon J. Knell

takes the reader on a journey through 150 years of scientific thinking, imagining, and arguing. Slowly the animal begins to reveal traces of itself: its lifestyle, its remarkable evolution, its witnessing of great catastrophes, its movements over the surface of the planet, and finally its anatomy.” Combined Academic Publishers Ltd flyer.

Once We All Had Gills

Growing up evolutionist in an evolving world

Rudolf A. Raff. 2012. Indiana University Press. 354pp.
ISBN 978-0-253-00235-8 (hardback) £23.99



“In this book, Rudolf A. Raff reaches out to the scientifically queasy, using his life story and his growth as a scientist to illustrate why science matters, especially at a time when many Americans are both suspicious of science and hostile to scientific ways of thinking...*Once We All Had Gills* is also the story of evolution writ large: its history, how it is studied, what it means, and why it has become a useful target in a cultural war against rational thought and the idea of a secular, religiously tolerant nation.”
Birdbooker Report; Combined Academic Publishers Ltd flyer.

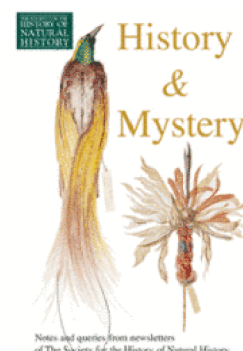
History & Mystery

Notes and queries from newsletters of The Society for the History of Natural History

Charles Nelson (editor). 2011. Society for the History of Natural History.
viii +200pp.

ISBN 978-0-901843-09-8 (paperback)

Available from SHNH; order form on their website www.shnh.org.uk
£15 (incl. p&p) for UK, £18 elsewhere.

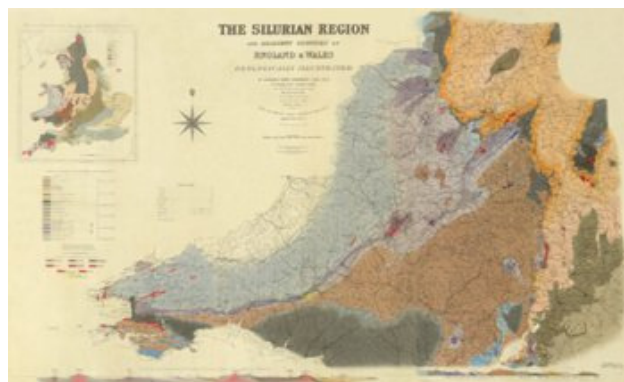


There is plenty of geological interest in this collection of some of the notes and queries published in the SHNH newsletters since the first issue in 1977. The book celebrates the SHNH’s Diamond Jubilee (1936-2011). According to the book’s editor, it is “intended to be an attractive potpourri, an entertaining anthology, a volume to be dipped into for pleasure as well as enlightenment”. One of HOGG’s founder members, the late John Thackray (1948-1999) who, at various times, had been Secretary, Newsletter Editor, Vice President, President and Honorary Member of the SHNH is well represented and warmly remembered. The index of the book can be downloaded as a pdf from the SHNH website www.shnh.org.uk

MURCHISON’S MAP OF ‘THE SILURIAN REGION’

Wendy Cawthorne (GSL Library) writes:

The Geological Society has recently commissioned a scan of Murchison’s map of ‘The Silurian Region’ and can now offer prints of the map for sale at the price of £25 + VAT & postage for Fellows of the Society or £35 + VAT & postage for non-Fellows. It is the first map to show the Silurian formations in



South Wales and adjacent counties of England. It accompanied his work *The Silurian System* published in 1839, although it is frequently missing from the book. The scanning work was undertaken to a high specification by the Royal Geographical Society.

Please visit the website for more information <http://www.geolsoc.org.uk/mapsale> or to order a copy, e mail Paul Johnson: paul.johnson@geolsoc.org.uk

THE LATE JOHN FULLER

Hugh Torrens has been asked to distribute the papers of the late John Fuller who was a founder member of HOGG (see Newsletter 44, p.13 and Newsletter 45, pp.5-7). The papers include a lot of John's own offprints which are available to HOGG members. If you are interested in any of these, please contact Hugh at h.s.torrens@keele.ac.uk

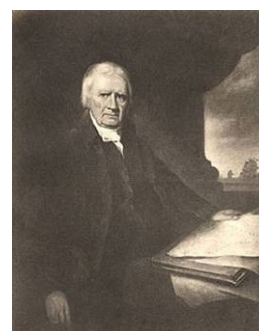
SURVEY THE PAST!

BGS archivist Andrew Morrison reports that the BGS archives are now available online.

BGS Archives holds the administrative and historical records of the British Geological Survey and its predecessors, personal papers of BGS staff, and papers of individuals or groups in related fields. The collection comprises over 30 000 items. The BGS Archives catalogue is now being made available online using the CalmView database. This will enable researchers to search the index to thousands of records from anywhere in the world. Ranging from before the founding of the Survey in 1835 up to the 21st Century, the database already includes descriptions of notebooks belonging to the Survey's founder Henry De la Beche, the memoirs of overseas geologist Edmund Oswald Teale, and letters from Charles Darwin. Details of more records will be added regularly as the database is updated. It can be accessed at <http://archives.bgs.ac.uk/CalmView/> .

CLERK OF ELDIN'S EXHIBITION COMES TO LONDON

Last year saw the 200th anniversary of the death of John Clerk of Eldin (1728-1812). Clerk was a friend of James Hutton and provided the illustrations for Hutton's *Theory of the Earth* (1788; 1795). (see Craig, McIntyre and Waterston 1978 *James Hutton's Theory of the Earth: The Lost Drawings*) In HOGG Newsletter 44 (February 2012) p. 21, we reported that Geoffrey Bertram was preparing a publication on Clerk of Eldin's etchings dating from 1770-1779, setting up a website (www.clerkofeldin.com) and curating an exhibition focusing on Clerk of Eldin's etchings. Having previously been in Edinburgh, this exhibition is now scheduled to come to the Fleming Collection gallery at 13 Berkeley Street, London W1J 8DU from 19th February to 6th April (<http://www.flemingcollection.co.uk/futureexhibitions.php>).



SICCAR POINT



It was with regret that last November, HOGG chair John Henry passed on the news that the proposal to construct a waste water pipeline from a vegetable processing plant across the foreshore adjacent to Siccar Point had been approved in principle by the Planning Authority, albeit subject to archaeological, ecological, geological and visual conditions and constraints. Scottish Borders Council received 441 objections, with a large geological and international component, concerned that the proposal would visually intrude and periodically foul the world renowned site of Hutton's Unconformity (see HOGG Newsletter 46, p.15). The summary and planning evaluation of the objections and the Planning Officer's recommendations may be found at http://eplanning.scotborders.gov.uk/online-applications/files/520987418F506C3C14AF13FEED59B74F/pdf/12_00929_FUL-OFFICERS_REPORT-2464579.pdf The Geological Society has sought assurance that a qualified engineering geologist be retained to assess the slope stability issues.

All correspondence, including objections, may be viewed at <http://eplanning.scotborders.gov.uk/online-applications/applicationDetails.do?activeTab=documents&keyVal=M7M1C3NT02Q00>

Nazi Germany's Contribution to the Geology of Antarctica and the South Atlantic

Colin Summerhayes¹

This is a story little told – of brave men setting off into the unknown to explore where there were no maps, and where the risks of rescue were slim. It was with the blessing of Herman Goering that the 3rd German Antarctic Expedition set sail for Antarctic shores in December 1938. They were heading in secret for Dronning (or Queen) Maud Land, south of Cape Town, a territory unofficially named and claimed by Norway, but the cat was soon out of the bag and before the expedition reached its target that claim became official.

The Germans planned to carry out an aerial reconnaissance of the hinterland behind the edge of the ice shelf discovered by the Norwegians. They were looking for a place to set up a base for their whaling fleet, and besides felt they had as much right as France and Britain to imperial ownership of the white continent. This expedition also offered an opportunity for scientific as well as geographic discovery, and the expedition vessel, *MV Schwabenland*, was fitted with the latest scientific echo-sounders to map the deep sea floor en route to and from the target.

The *Schwabenland* was a catapult ship used by Lufthansa to fly small Dornier-Wal seaplanes up and down the South American coast, collecting and delivering mail. Arriving on the Antarctic coast in mid January 1939, they managed several flights over the hinterland before the thin-hulled ship had to leave the coast in early February so as not to be trapped by the fast growing sea ice.



'Boreas', one of the two 10-ton Dornier-Wal aircraft used to survey Dronning Maud Land in 1939.



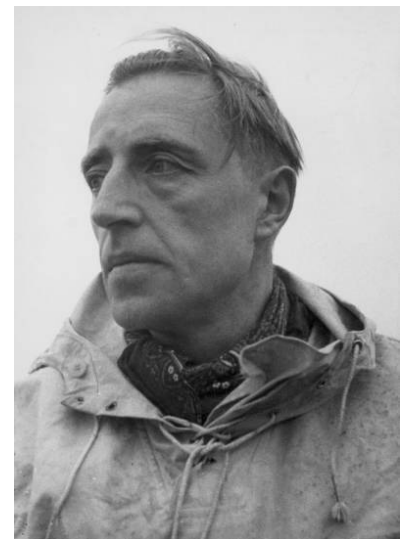
Aerial shot of part of the Mühlig-Hofmann (MH) Mountains

The Germans were amazed to discover a 1000 km-long and up to 3000 m-high mountain range - the *Mühlig-Hofmann (MH) Mountains* - some 200 km inland and parallel to the coast. Unable to land, the expedition's geologist, Dr Ernst Herrmann, deduced from pebbles regurgitated by captured penguins that the geology of the MH Mountains must be like that of the Transantarctic Mountains, with very old shield rocks admixed with younger basalts. He was partly right. The shield rocks are 1000-1400 Ma old, and were modified by the Pan-African Orogeny 500-570 Ma ago. They are the southern part of the East African Orogen, formed by the collision of East and West Gondwana to form the Gondwanaland super-continent around 550 Ma ago. Jurassic basalt dykes intruded the region when Antarctica split from east Africa 170-150 Ma ago during the break-up of Gondwanaland. Although the basalts were not of the same age as modern Mt Erebus, as Herrmann imagined, he was right in

suggesting that the N-S trending glaciers that cut through the mountains from the Polar Plateau to the sea followed major underlying fractures.

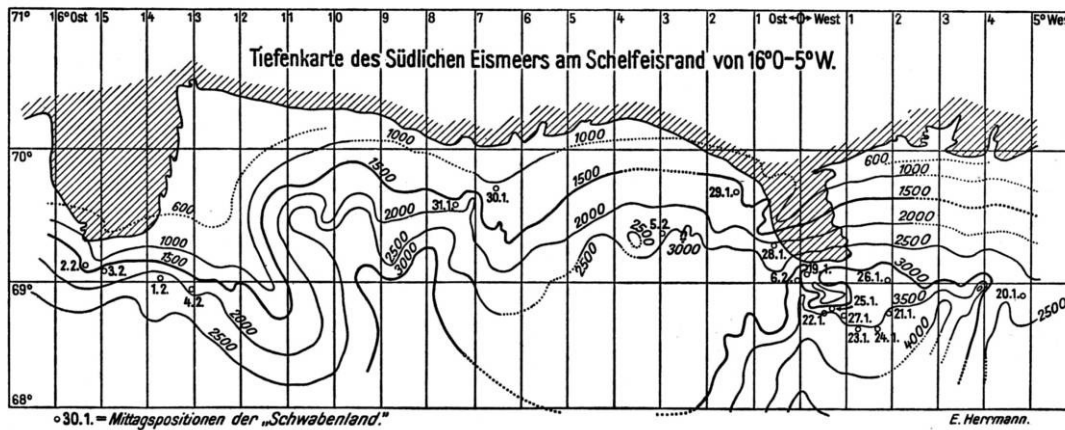
At the time, deep-sea echo sounders were rare and little was known in detail of the topography of the remote deep sea floor. Hence, as topography is the first clue to process, *Schwabenland* was also able to make a significant contribution to marine geology, though one that was little appreciated at the time. *Schwabenland's* soundings close to the margin of the coastal ice shelf revealed a number of channels

extending out to sea. We now know that they are the upper reaches of submarine canyons that channelled glacial sediments down to the adjacent almost flat Weddell Abyssal Plain, which can be identified on *Schwabenland's* echo-sounding records. This connection was not made by the expedition, as abyssal plains were not recognized for what they are until the Swedish Deep Sea Expedition to the Indian Ocean in 1947. In honour of the German expedition, Antarctic submarine canyons have now been named after the ship (*Schwabenland Canyon*), the expedition leader (*Ritscher Canyon*), the ship's geologist (*Herrmann Canyon*) and the ship's ice pilot (*Kraul Canyon*).



Dr Ernst Herrmann, the expedition's geologist

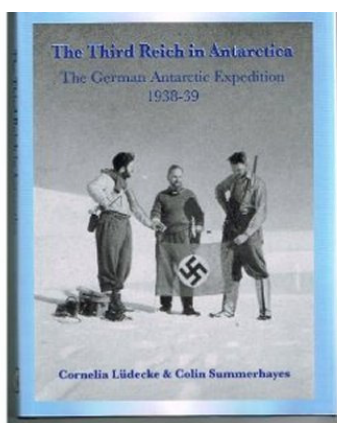
Schwabenland also provided the first ever echo-sounding transect along the crest of a mid-ocean ridge anywhere in the world, finding it to be extremely rugged between Ascension and Tristan da Cunha. Herrmann did not speculate on the origin of this ruggedness, which we now know is due to the ridge being cut at intervals of about 50 km by E-W trending fracture zones associated with narrow deeps. A volcanologist by inclination Herrmann speculated that the ridge was a continuous volcanic structure, fed from a central pipe and with its youngest rocks at the surface, as in a typical volcano. We now know that the ridge is a product of plate tectonics and sea floor spreading, with younger rocks at the ridge crest and older ones to either side – quite a different model. Even so, Herrmann had made an insightful guess and got it partly right.



Herrmann's map of the topography of the seabed along the Antarctic coast showing submarine channels (now known to be heads of submarine canyons).

The usual international exchange of scientific information that would have informed the world about the expedition's results did not take place, because the ship returned to Germany in April 1939, and its official report of initial results did not appear until just after war broke out at the beginning of September. Some indication of the mountains appeared on the Australian Antarctic map of 1939 and the US Hydrographic Chart of Antarctica and the Southern Ocean in 1943, but that was all until the full results volume appeared in 1958 as a contribution to the International Geophysical Year of 1957-58. Part of the delay was occasioned because four of the scientific party of nine were killed on active duty in the war before writing up their results. Even then, the final report was largely overlooked, being published only in German and in an obscure periodical.

Could more have been made of the results at the time, in the reports of 1939 or 1958? Perhaps, but it is worth reflecting that, in science, the meaning of measurements made with new technologies, like echosounders, is not always clear in the early stages when there is no hypothesis to explain them; the data often arrive before the explanation – as in this case. It was not until the early 1960s that the message of the shape of the seafloor was fully understood.



More details of the expedition can be found in Lüdecke, C. and Summerhayes, C.P. 2012. *The Third Reich in Antarctica: The German Antarctic Expedition 1938-39*. Erskine Press, Eccles, and Bluntisham Books, Bluntisham, 259 pp. ISBN 978-1-852-97103-8 (hardback)

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The Yorkshire Geological Society: 175 years of achievement

Noel Worley¹

The abstract to Noel Worley's Presidential Address to the Yorkshire Geological Society given on 1st December 2012. The full Address is intended for publication in the YGS Proceedings later this year. Noel spoke on this subject at HOGG's Geology in the History of Provincial Scientific Societies meeting in April 2010.

The story of the YGS records 175 years of scientific achievement often made by gifted amateur working people, with which Yorkshire has been so richly endowed. In the early 19th century, Yorkshire was a location for pioneering geological study. The discovery of the fossil hyaena den of Kirkdale Cave in 1821 made Yorkshire geology known world-wide, while it was in the County that, in 1824, William Smith sought refuge and rehabilitation from London and financial difficulties to re-establish his reputation. The County was also in the vanguard producing pioneer geologists, notably Adam Sedgwick and John Phillips, two of the earliest Honorary Members of the Society.



Paradoxically, despite the presence of Sedgwick and Phillips, and Yorkshire's diverse geology and scenery, it was the quest for commercial geological knowledge that provided the motivation for the Society's formation. It was born in 1837, the accession year of Queen Victoria, with the declared objectives of collecting and recording "...geological and mechanical information in connection with the coal trade generally of the West Riding of Yorkshire". It looked to the Natural History Society of Northumberland and Durham when drawing up its rules, and assisted with the formation of the Manchester Geological and Mining Association, collaborating with them in a project to correlate the seams in the Lancashire and Yorkshire coalfields. Its early membership was dominated by participants from the Yorkshire Coal Owners Association and first President, Earl Fitzwilliam, was a leading politician of the day and the owner of the largest coal estate. The wealth generated from his coal mines made Fitzwilliam one of the richest men in the 19th century world. In 1842, shortly after the Society was formed, some of its members found themselves embroiled in the Children Employment Commission's enquiry. The sanguine objectives of the early years of the Society were soon frustrated. Despite the wealth of some of the membership, it failed to raise sufficient funds to establish a museum which forced the establishment of peripatetic meetings held primarily in Leeds, Sheffield and Wakefield.

It contributed comparatively little to the unravelling of the geology of the Yorkshire coalfield but was successful in lobbying Parliament for the production of 6-inch-scale Ordnance Survey maps of the coalfield with topographical contours. Ironically, the Coal Mines Acts that were a consequence of the commissions of enquiry encouraged the expansion of the mining engineering and surveying professions. The rise of the local institutes of mining engineers better met the needs of an increasingly regulated industry to the detriment of the Society. Geology was regarded as an academic pursuit of limited utility to the coal industry. Professional geologists did not regain influence in management of the industry for a further 100 years. Its other Polytechnic interests also fragmented with the formation of the Yorkshire Naturalists Union in 1861 and the Yorkshire Archaeological Society in 1863. Other than the revelations from Henry Clifton Sorby, many of which were published in the *Proceedings*, the Society gradually declined and membership fell to around 100.

Rejuvenation came from a motivated group of amateur geologists from Halifax led by James Davis who became General Secretary in late 1876. His energy and enthusiasm restored its finances and he introduced field excursions and broadened the Society's interests to encompass the whole of the

County. It was during his period of office that the Society was re-organised close to its present structure, holding a combination of indoor and field meetings. He effectively introduced the position of Editor for the *Proceedings* and organised the Society's Jubilee Meeting held in Ripon in 1887. The appointment of Percy Fry Kendall in 1893 to the Yorkshire College (the forerunner of the University of Leeds) marked another turning point. After the death of its second and longest serving president, the Marquis of Ripon, in 1909, the Society decided in future to appoint a member with an active interest in its work or geologist of distinction connected with Yorkshire, and Kendall was the obvious choice.

The Sorby legacy that included the endowment of a chair of geology at the University of Sheffield brought G. W. Fearnside, a Wakefield man, back to Yorkshire in 1913. Yorkshire now had two university departments teaching geology whose leaders were enthusiastic supporters of the Society. Despite the privations brought about by two world wars and the economically depressed inter-war years, two memorable works by leading members of the Society were published. The great 995 page volume entitled *Geology of Yorkshire* by Kendall and Herbert Wroot (and privately funded by the authors) is perhaps the most comprehensive account of the geology of any county. The 1920s also saw the publication in the *Proceedings* for 1923 of William Bisat's great work on the Carboniferous goniatites and their zones of the north of England which was of major international significance and is still frequently cited more than 80 years later.

The effects of post-war expansion of higher education meant that by the 1950s, the number of universities teaching geology had risen to six. The Geological Survey also established a large office in Leeds in the late 1950s and the combined effect saw growth of the Society and membership reached around 1200 by the late 1960s. The success of the Society was marked by the establishment in 1961 of awards for achievement, due to the generosity of W. G. Fearnside with the Sorby Medal, and W. S. Bisat with the Phillips Medal. Re-organisation of university geology during the 1980s led to a disproportionate reduction in the provision in northern England and, with the closure of the Leeds Survey office, the Society's numbers gradually declined. Nevertheless, strong links have been maintained with the British Geological Survey but association with the universities that provided the feedstock for new members weakened. For a provincial group, the Society has achieved a great deal in 175 years. The ideas published by its members on petrography, sedimentology, stratigraphy, palaeontology and the Quaternary, have had an impact at a national and an international level. Many of the ground-breaking advances have been often achieved by groups of amateurs and this is perhaps the Society's most remarkable achievement and lasting legacy.

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19th century geological publications at the Booth Museum, Brighton

Anthony Brook¹

The Booth Museum at Brighton fully deserves national acclaim for the size, range and quality of its natural history collections but it is also a well-stocked repository for publications of interest to the historian of geology, and more use should be made of these.

The Booth Museum of Natural History, the second largest natural history museum in the country, was established in 1874 by the wealthy naturalist-collector Edward Booth (1840-1890). It is located in a Grade II listed building at 194 Dyke Road, Brighton, East Sussex. As well as housing Booth's original

collection of British birds, it also contains three-quarters of a million natural-history specimens in an outstanding collection that was designated, in 1998, as of pre-eminent national importance.

At the same time that Edward Booth was creating his unique dioramas of British birds in their habitat settings for his ornithological displays, Brighton Museum and Art Gallery was assembling a wealth of natural-history material under the successive chairmanships of geologists Thomas Davidson and Edward Crane. In his Will, Booth bequeathed his collection to Brighton Corporation. In 1975, all the geological and zoological collections were transferred to the Booth Museum which was renamed a Museum of Natural History. Significant collections from other Brighton societies were also acquired at this time. It now forms part of the Royal Pavilion and Museums of the City of Brighton and Hove.



The combined collections form an amazing archive of flora and fauna, with almost every group of organism represented, including many rare, endangered and extinct species. Although, as you would expect, the primary focus of the collection is the natural-history of Sussex and south-east England, it also extends to many other countries and continents. The complete collection comprises over 60,000 biological and 50,000 geological specimens, plus over 5,000 microscope slides, 3,000 books, journals and periodicals of historic value, and thousands of site records. Almost a thousand of the specimens have been cited or figured in scientific journals, and these include many type specimens (see the online publication *Catalogue of the Type, Figured and Cited Specimens in the geological collections of the Booth Museum*). The Museum also keeps details of all the 128 Sussex Regionally Important Geological Sites (RIGS). One of the cornerstones of the collection remains Henry Willett's 1860 bequest of his large collection of chalk fossils, mostly from the excavations for the Clayton railway tunnel in the late 1830s. In 1888, it was supplemented by the purchase of the fossil collection of George Bax Holmes of Horsham which contained various Wealden dinosaurian bones. By the turn of the century, the palaeontological material at Brighton Museum was already recognized as nationally significant. It was further enhanced by the bequest, in 1932, of the lifetime collection of the Brighton brachiopod specialist Agnes Crane which included an early plaster cast of *Archaeopteryx*. The recent online publications of the Booth Museum can be found at www.sussexrocks.inthepast.org.uk and www.brighton-hoverpml.org.uk/museums/boothmuseum including *The Unpublished Journal of Gideon Mantell 1819-1852*.

The following inventory of the Booth Museum holdings of published material relating to geology in the 19th century includes 1) books, firstly those of Gideon Mantell and Charles Lyell, and then others in chronological order 2) memoirs of the Geological Survey of Great Britain 3) reports of the US Geological Survey and 4) periodicals. These publications are subject to stringent viewing arrangements. They can be made available only to bona fide researchers, strictly by appointment and only on the premises. The Booth Museum of Natural History is open from 10 am until 5 pm, except Thursdays and Sundays; and can be contacted by telephone on 03000 290900, and by email at visitor.services@brighton-hove.gov.uk

GIDEON MANTELL

1822 *Fossils of South Downs*

1827 *Illustrations of the Geology of Sussex*

1833 *Geology of South-East England*

1849 *Thoughts on a Pebble* 8* Ed.[2copies]

1838 *Wonders of Geology* Vols 1 & 2 + 1839 3rd edition Vol. 2 + 1857-58 7th edition Vols 1 & 2

1844 *Medals of Creation* Vols 1 & 2 + 1853 Vols. 1 & 2

1851 *Petrifactions and Their Teachings* [2 copies]

CHARLES LYELL

- 1830 *Principles of Geology* Vol. 1 + 1833 2nd edition corrected Vol.2 + Vol.3 + 1872 Vol. 1 & Vol. 2
1838 and 1865 *Elements of Geology*
1855 *Manual of Elementary Geology*
1863 *The Geological Evidence of the Antiquity of Man*
1874 *The Students' Elements of Geology*

OTHER BOOK AUTHORS IN CHRONOLOGICAL ORDER

- 1816 **William Smith** *Strata Identified by Original Fossils* London; June 1
1822 **James Parkinson** *Outlines of Oryctology: An Introduction to the Study of Fossil Organic Remains, especially of those found in the British Isles* London. vii - 346pp., plus 10 Plates.
1822 **Rev. W. D. Conybeare and William Phillips** *Outlines of the Geology of England and Wales, with an introductory compendium of the General Principles of that Science* London, lxi + 470 pp. Frontispiece foldout: Geological map of England and Wales. Rear foldout: Series of Sections.
1825 **Edmund Tyrell Artis** *Antediluvian Phytology, illustrated by a Collection of the Fossil Remains of Plants peculiar to the Coal Formations.* London; xiii-23 Plates.
1828 **Peter J. Martin** *A Geological Memoir on a part of Western Sussex, with some Observations upon Chalk-Basin, the Weald-Denudation and Outliers-by-Protusion* London; x +-100 pp., plus Fold-out Frontispiece –tinted 'Geological Map of a Part of Western Sussex,' Synoptical Table and 3 colour Plates.
1833 **W. H. Fitton** *A Geological Sketch of the Vicinity of Hastings*
1833 **W. H. Fitton** *Inquires respecting the Geological Relations of the Beds between the Chalk and the Purbeck Limestone in the South-east of England*
1833 **Samuel Woodward** *An Outline of the Geology of Norfolk;* Norwich; 54 pp. 6 Plates; Systematic Tables of Organic Remains; Coloured frontispiece: Geological Map of Norfolk; Lateral Section of the Norfolk Cliffs.
1846 **George Fleming Richardson** *Geology for Beginners* London; Henry Bohn, 1846, 3rd Ed., xx + 624 pp.
1847 **James Tennant** *A Stratigraphical List of British Fossils, arranged under the Principal Division of the British Strata* London; 1847, xvi + 132pp.
1853 **John Phillips** *The Rivers, Mountains and Sea Coast of Yorkshire*
1854 **T. Rupert Jones** *A Lecture on the Geological History of the Vicinity of Newbury*
1855 ? **Donaldson** *The Geological Staircase*
1856 **D.T. Ansted** *Elementary Course of Geology. Mineralogy and Physical Geography*
1857 **W. S. Symonds** *Stones of the Valley*
1858 **Hugh Miller** *The Cruise of the Betsy*
1859 **J. G. Kurr** *The Mineral Kingdom, with coloured illustrations of the most important minerals, rocks and petrifications* Edinburgh, 1859, iii + 70 pp. - 20 coloured Plates
1859 **D. Page** *Handbook of Geological Terms*
1865 **S. J. Mackie** *The Geological and Natural History Repertory*
1870 **William Buckland** *Geology and Mineralogy as exhibiting the Power, Wisdom and Goodness of God* With additions by Richard Owen, John Phillips and Robert Brown. 4th ed., edited by Francis Buckland. Vol. 2 (Plates)
1871 **John Phillips** *Geology of Oxford and the Valley of the Thames*
1872 **Roderick Murchison** *Siluria* ?edition.
1872 **John Tyndall** *The Forms of Water*
1872 **William Topley** *On the Agricultural Geology of the Weald*
1873 **Edward Hull** *The Coal-Fields of Great Britain*
1875 **James Croll** *Climate and Time*
1875 **T. Hughes** *Classification of the Sedimentary Rocks*
1875 **T. G. Bonney** *Cambridgeshire Geology*
1876 **A. J. Jukes-Brown** *School Museum of Geology*
1876 **Henry Woodward** *The Geology of England and Wales*
1877 **Thomas Huxley** *Physiography*
1877 **James Geikie** *The Great Ice Age*
1878 **Frederick Dixon** *The Geology of Sussex or The Geology and Fossils of the Tertiary and Cretaceous Formations of Sussex* New Edition, revised and augmented by T. Rupert Jones. [3 copies]
1878 **Edward Hull** *The Physical Geology and Geography of Ireland*
1878 **Henry Willett** *The Record of the Sub-Wealden Explorations*
1878 **Andrew Ramsay** *The Physical Geology and Geography of Great Britain* 5th Ed.
1880 **Alfred Russel Wallace** *Island Life*
1881 **R. Etheridge and R. I. Jack** *Catalogue of Geological Works on the Australian Continent*
1882 **Archibald Geikie** *Textbook of Geology*
1887 **H. B. Woodward** *The Geology of England and Wales, with Notes on the Physical Features of the Country*
1888 **Joseph Prestwich** *Geology: Chemical. Physical and Stratigraphical*
1888 **W. B. Galloway** *The Chalk and Flint Formation: Its Origin*
1891 **H. G. Seeley** *Handbook of the London Geological Field Class*
1891 **R. Ball** *The Cause of an Ice Age*

GEOLOGICAL SURVEY MEMOIRS

1856 **Edward Forbes** *On the Tertiary Fluvio-Marine Formation of the Isle of Wight*

1864 **William Whitaker** *Geology of Parts of Middlesex, Herts, and Bucks.*

1875 **William Topley** *The Weald*

1889 **H. W. Bristow** *Geology of the Isle of Wight*

1889 **William Whitaker** *The Geology of London and Parts of the Thames Valley: Descriptive Geology*

1897 **Clement Reid** *The Geology of the Country around Bognor* [2 copies]

1898 **Clement Reid** *The Geology of the Country around Eastbourne*

US GEOLOGICAL SURVEY

US Geological Survey Reports

1855 **G.C. Swallow** *US Geological Survey of Missouri*

1871 **F. V. Hayden** *US Geological Survey of Wyoming and Contiguous Territories*

1872 **F. V. Hayden** *US Geological Survey of Montana, Idaho, Wyoming and Utah*

1873 **F. V. Hayden** *US Geological Survey of the Territories for 1867, 1868 and 1869*

1874 **G. C. Broadhead** *US Geological Survey of the State of Missouri, 1873-1874*

1874 **F. V. Hayden** *US Geological and Geographical Survey of Colorado*

1876 **F. V. Hayden** *The Geological and Geographical Survey of Colorado and Adjacent Territory*

1879 **F. V. Hayden** *US Geological and Geographical Survey of the Territories of Idaho and Wyoming (1877)*

Reports of the US Geological Survey of the Territories (Monographs)

1874 Vol. 6 **L. Lesquereux** *Contributions to the Fossil Flora of the Western Territories: Part 1 The Cretaceous Flora*

1875 Vol. 12 **E. D. Cope** *The Vertebrata of the Cretaceous Formations of the West*

1876 Vol. 9 **F. B. Meek** *A report on the Invertebrate Cretaceous and Tertiary Fossils of the Upper Missouri Country*

1878 Vol. 7 **L. Lesquereux** *Contributions to the Fossil Flora of the Western Territories: Part 2 The Tertiary Flora*

1878 Vol. 8 **F. V. Hayden** *Illustrations of Cretaceous and Tertiary Plants of the Western Territories of the United States*

Annual Reports of the US Geological Survey

1890 **J. W. Powell** *US Geological Survey: 10th Annual Report Part 1: Geology Part 2: Irrigation*

1891 **J. W. Powell** *US Geological Survey: 11th Annual Report Part 1: Geology Part 2: Irrigation*

1892 **J. W. Powell** *US Geological Survey: 12th Annual Report Part 1: Geology*

1894 **J. W. Powell** *US Geological Survey: 14th Annual Report Part 2: Accompanying Papers*

1895 **C. D. Walcott** *US Geological Survey: 16th Annual Report Part 1: Directors Report and Papers of a Theoretical Nature Part 3: Mineral Resources of the U. S. A.*

1896 **C. D. Walcott** *US Geological Survey: 17th Annual Report Part 1: Director's Report and other Papers*

PERIODICALS

Quarterly Journal of the Geological Society

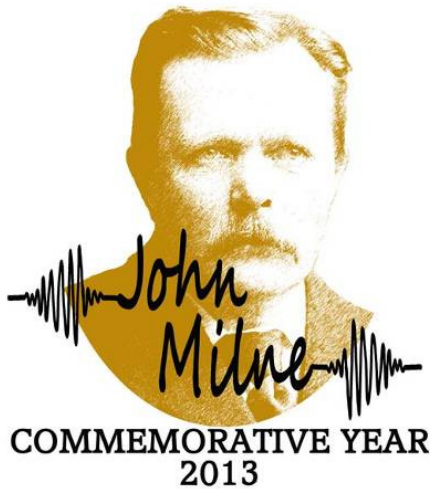
Vols. 12-21 (1856-1865); Vols. 23-29 (1867-1873); Vols. 32-42 (1876-1886); Vols. 44-51 (1888-1895)

The Geologist: A Popular Illustrated Monthly Magazine of Geology edited by S. J. Mackie Vols. 1 - 7 (1858-1864)
[Complete set]

The Geological Magazine or Monthly Journal of Geology; with which is incorporated The Geologist. Vols. 1-37 (1864-1900) [Complete set]; Vols. 1 & 2 (1864-65) edited by T. Rupert Jones; Vols. 3-37 edited by H. B. Woodward

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FUTURE MEETINGS OF OTHER BODIES



The 100th anniversary of the death of Professor John Milne ‘The Father of Modern Seismology’ (1850-1913) will be celebrated on 31st July 2013.

See the dedicated pages on the Isle of Wight Society’s website <http://www.isleofwightsociety.org.uk/jmilne.aspx> for listings of local Isle of Wight, national and international celebratory events.

ALFRED RUSSEL WALLACE CENTENARY

7th - 8th June 2013

Bournemouth University

Joint meeting of the Society for the History of Natural History (SHNH), Bournemouth University and the Linnean Society

Details to be announced on the SHNH website (www.shnh.org.uk)

*See the Natural History Museum website www.nhm.ac.uk/nature-online/science-of-natural-history/wallace/index.html and the Alfred Russel Wallace website (wallacefund.info/wallace100) for latest information on other Wallace100 events.



(GSL)

SIR ARTHUR SMITH WOODWARD (1864 – 1944)

Wednesday 21st May 2014

A one-day symposium at the Natural History Museum celebrating the 150th anniversary of the birth of Sir Arthur Smith Woodward. Ten invited speakers will cover historical aspects as well as his scientific legacy. Further details in future newsletters.

HOGG STANDING ORDER MANDATE

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Sort code.....Account number.....

Account name.....

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

Signed..... Date.....

PLEASE SEND THE COMPLETED MANDATE TO

Dr B M Cox (HOGG Treasurer)
151 Browns Lane, Stanton-on-the-Wolds, Keyworth, Nottingham NG12 5BN

From 'i' – the essential daily briefing from The Independent 30/10/2012:

“Pterodactyl doesn’t have two Ls in it

Children have less trouble spelling rarely used words such as “palaeontologist” and “pterodactyl” than they do common ones like “doesn’t” and “until”, a study by Oxford University Press has found. Experts believe children are more likely to consult a dictionary when using unfamiliar words.”