

GEOLOGICAL SOCIETY



HISTORY OF GEOLOGY GROUP NEWSLETTER

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The next HOGG meeting

"Murchison in the Welsh Marches"

HOGG is offering a field trip from Friday, May 8th, to Sunday, May 10th, 1998, to visit Welsh Borderland sites that featured in Roderick Murchison's initial journey of 1831. Three of his geological precursors in the region, Arthur Aikin, FGS, the Reverend Thomas Lewis, and Robert Townson will be appreciated as organisers of the stratigraphy on which much of Murchison's Silurian fame rests. The trip will be led by John Fuller. An itinerary & more details are available on request.

Registration will be limited to 16 people on a first come, first-served basis. Hotel charges, at the special rate for two nights, single occupancy, with dinner & breakfast, is £70.00 per person, per night, staying at the famous Feather Hotel. Transportation in the field will cost £25.00 per person. Total cost of the trip, starting at Ludlow, Shropshire, will be £165.00

To register, send a cheque for £35.00, payable to **History of Geology Group**, to HOGG Treasurer, 2 Oak Tree Close, Rodmell Road, Tunbridge Wells, Kent, TN2 5SS, by the 1st April at the latest. Of this £35.00 registration fee, a reimbursement of £30.00 will become due to each participant attending. No reimbursement of registration fees will be made for cancellations received after April 10th 1998.

...and Autumn 1998

CONSERVATION will be the theme of the Autumn 1998 HOGG meeting, which will be held on Thursday 24 September 1998, at Burlington House, London. Subjects of talks or displays will include the conservation of historical geological sites, the conservation of important geological collections, and conservation matters relating to geological books and manuscripts. The meeting is being organised jointly between HOGG, The Geological Curators' Group, and the Society's

Conservation Committee. The convenor of the meeting is John Thackray, c/o The Natural History Museum, Cromwell Road, London, SW7 5BD (e-mail j.thackray@nhm.ac.uk), and he will be delighted to receive offers of contributions.

A detailed programme and booking form will appear in the next HOGG Newsletter.

The History of Palaeontology in Great Britain

Report of the HOGG meeting, in combination with the Palaeontographical Society, held at the University of Cambridge on Wednesday 24th September, 1997.

Following registration & coffee, and opening remarks by Stuart Baldwin (the Convenor) and John Thackray (Chairman) it was left to Bob Markham, formerly of Ipswich Museum, to get proceedings going with a short talk on Searles V. Wood .

Then it was Dr Robin Cocks of the Natural History Museum, London, to talk on Thomas Davidson (1817-1885). He was the most internationally famous brachiopod worker in the 19th century. His central & monumental work was the six volumes on British fossil brachiopods which he wrote for the Palaeontographical Society, comprising 2280 pages and 234 plates and published at intervals between 1851 & 1886. Coming from a reasonably wealthy family, Davidson conducted all his research from his own home, firstly in London and subsequently in Brighton, but he was recognised as a professional by the awards of the Wollaston Medal by the Geological Society, the Gold Medal of the Royal Society, and a special "Silurian" medal from Sir Roderick Murchison himself. He worked on brachiopods of all ages from the Cambrian to the Recent but his first work was on the Silurian species from the Wenlock Limestone of the Welsh Borderland. He was a consummate artist and not only drew all of the specimens himself but even engraved the lithographic stones for printing the plates. The Palaeontographical Society owes much of its reputation to this much quoted and substantial series of monographs.

Next was Prof. Neville Haile of Oxford Brookes University, to talk on aspects of the progress of English palaeontology to 1830. In the 17th century, the main palaeontological debates among English Natural Philosophers centred on whether 'figured' stones (fossils) were the remains of once living organisms (Hooke), or had grown inside rocks, like crystals (Plot and Llwyd). English palaeontology seems to have languished in the 18th century, although William 'Strata' Smith was ploughing a lonely furrow (actually canals!) by the end. However, mainly owing to ideas from France, by the 19th century most fossils were recognised as undoubted organic remains, extinction was accepted, adequate 'draughts of time' were becoming available, and the stage set for the Golden Age of English geology, exemplified by Buckland's reconstructions of the way of life of fossil cave animals and cycad forests, his recognition and explanation of coprolites, and the pictorial representation of Jurassic life by De la Beche, which together excited the imagination of the generation of educated English men and women, and paved the way for the work of Lyell and Darwin.

Following Neville Haile was Prof. Martin Rudwick of Cambridge University, on George Cuvier's fossil bones and the museum as a place of knowledge. George Cuvier (1769-1832) fully deserved his towering reputation among palaeontologists of all nationalities throughout the nineteenth century. His work was seen as having provided a model for scientific practice, not just for the

fossil mammals on which he focussed his research, but for fossil zoology in general. A reconstruction of his working methods is attempted, from the historical evidence of his manuscript research files (still in Paris), all the way from his treatment of specimens in the Museum d'Histoire Naturelle and elsewhere, to the publication of his densely illustrated Recherches sur les Ossements fossiles (1812 and later editions). Cuvier's work was a persuasive precedent for those who founded the Palaeontographical Society.

Then it was Prof. Philip Rehbock of the University of Hawai'i on Extinction and its recognition on the Continent and its acceptance in Britain. From the awakening of natural history in the Renaissance until the close of the 18th century, the impossibility of species extinction was a generally accepted corollary of the fixity of species doctrine among European naturalists and, especially, natural theologians John Ray, Carl Linnaeus, William Paley, and even Thomas Jefferson in the New World. All concurred that no rational and omnipotent Creator would allow His harmonious economy of nature to be disrupted by the loss of all the occupants of a particular station.

In Enlightenment France as natural history became less dominated by theological considerations, the possibility of extinction began to be entertained. According to traditional historiography, Buffon first threw doubt on the anti-extinction principle, and Cuvier, with his analysis of the remains of extinct pachyderms, then demonstrated the reality of extinction conclusively at the turn of the 19th century. With species *extinction* established as one of the major events in the history of life, its opposite - species *emergence* - had now to be explained, and the long saga of creation vs. evolution was underway.

After such a long period of anti-extinctionist belief, why was Cuvier's discovery so painlessly accepted, not only on the Continent but in Britain, at the beginning of the 19th century? Why is there so little evidence of controversy over this revolutionary discovery, especially in Britain, at the moment when a reactionary Britain was least apt to look kindly on *any* revolutionary ideas--regarding either the Order of Nature or the Order of Society--from a revolutionary France.

This paper highlighted the problematic nature of our understanding of the adoption of extinctionism at the beginning of the 19th century. The rapid acceptance of the extinction concept will be related to the rise of historicism in Germany and to the foundations for Cuvier's work laid by Johann Friedrich Blumenbach at Gottingen. The progress of extinction ideas in Britain during the early decades of the 19th century will also be briefly surveyed. Finally it will be suggested that this episode in the history of palaeontology has interesting implications for the larger questions of (1) the flow of natural history data and theories from the Continent to Britain during the crucial, pre-Darwinian period, and (2) the prevalence of "non-controversies" elsewhere in the history of geology.

Professor Bill Chaloner FRS followed with his talk on John Lindley and the founding of British Palaeontology.

The Fossil Flora of Great Britain by John Lindley and William Hutton (1831-37) was the first attempt to document the fossil plants known at that time in Britain. It was the only excursion into palaeobotany by Lindley, who has been rated as "among the most industrious, many-sided and productive of the 19th century botanists".

That work contains some of the primary descriptions and illustrations of many of our Carboniferous and Jurassic plant fossils. But it also gives a remarkable insight into the struggle of a scientist seeking to reconcile a pre-Darwinian picture of biodiversity with the inescapable messages coming from the fossil record. John Lindley also prepared and illustrated the first fossil leaf cuticle (from a Jurassic gymnosperm) although the technique that he used was not to be

exploited until nearly a hundred years alter. He also experimented on the taphonomy of plant fossils, studying the different rates of decomposition of specimens from different living plants, submerged in a water tank , over three years! He even speculated on "the probable condition of the atmosphere at the most remote periods...and...what gradual changes that climate may have undergone..." In the inevitable phrase, he was a man ahead of his time.

Professor John Callomon was next with a talk on British Mesozoic ammonites in the monographs of the Palaeontographical Association.

British Mesozoic ammonites have been described in 14 of the Palaeontographical Society's Monographs, with modern synoptic revisions of the three earliest. The volume of the publications comes to over 4500 pages and 780 plates, produced by only 12 authors over a period of 147 years. As a series devoted to a relatively small segment of animal life , and one extinct at that, it clearly represents a quite exproportionately large fraction of the Society's output. What makes ammonites apparently so special ? Who were the authors? How enduring have been their contributions and how influential have they been in the world of ammonoid palaeontology as a whole? What remains to be done? And who is going to do it ?

Dr David Norman

Convenor Stuart Baldwin opened the 3rd session with a talk on the progress of pictorial palaeontology on British Book bindings, and illustrated it with a stunning array of examples.

Prior to about 1830, most British publishers offered their works bound in thin boards with paper spine labels. This gave purchasers the opportunity to keep them as issued or to have them bound in leather according to their taste. During the 1830s the introduction of coloured bookbinding cloth initiated a revolution that is with us today. Cloth had the advantage of making bound books more attractive and durable and also available to a wider audience who could not afford leather. Concurrently, printing and binding technology advanced shortly after the introduction of cloth for binding, resulting in gilt ornamented book covers. Many of these have great aesthetic beauty and were an important factor in Victorian book marketing. Brass dies were made for embossing to give geometrical or pictorial designs on front covers, spines and occasionally the rear covers

Covers featuring fossils were displayed and illustrated from the earliest known (to the speaker) in 1842 to the most recent in 1994. Gold leaf is used in the embossing process and there truly was a 'golden' age during the Victorian era when book cloth decoration reached its heyday. The advent of improved colour printing, dust jackets, printed boards and the need to reduce costs sounded the death knell for gilt embossing. It lingered sporadically into the 1930s and today is all but extinct. It is hoped that an expanded form of this lecture will be published in book form one day. with of course, a superb gilt embossed cover.

Though the main emphasis was on British hardback books, two well-known paperback series were mentioned - those of the Palaeontographical Society and the Palaeontological Association, the latter revealing some formerly-unrecognised political affinities. The display also included a number of non-British examples, notably Hall's Natural History of New York, Paleontology Vol.VII, New York, 1888. Though serious works were predominant, fiction was not forgotten, e.g. a first edition of Conan Doyle's *Lost World* with embossed dinosaur footprints.

The theme was then illustrated with some 100 slides & books in date order showing the enormous variety of embossing, covering vertebrates, invetebrates, plants, trace fossils, microfossils, and vertebrate taphonomy. The major works included those listed below:

Moxon	The Geologist	1842	Bakewell	Geology Illustrated	1854
Lycell	Manual of Elementary Geology 3rd ed.	1851	Donaldson	The Geological staircase	1855

Lyell	Manual of Elementary geology, 5th ed.	1855	Hutchinson	Autobiography of the Earth	1890
Murchison	Siluria, 3rd ed.	1859	Gibbeme	The World's Foundations	1891
Symons	Old Bones and Notes etc	1861	Hutchinson	Extinct Monsters	1893
Page	The Past & present Life of the Globe	1861	Hutchinson	Creatures of Other Days	1894
Anon.	Geological Wonders of London	1862	Lydekker	Life and Rock	1894
Lyell	Antiquity of Man, 1st ed.	1863	Kimms	Moses & Geology	1895
Lyell	Elements of Geology, 6th ed	1865	Sola	Klondyke (vertebrate taphonomy)	1897
Nicholson	Manual of Palaeontology, 1st ed.	1872	Seely	Dragons of the Air	1901
Figuiet	The World Before the Deluge	1872	Taylor	Geological Stories	1904
Meunier	Life in the Primeval World	1872	Carey	The Mammoth Hunters	1907
Hartwig	The Subterranean World	1872	London	Before Adam, 1st ed.	1907
Jukes	The School Manual of Geology	1873	Grew	The Romance of Modern Geology	1912
Medlicott & Blandford	A Manual of Geology in India	1873	Doyle	The Lost World, 1st ed.	1912
Taylor	Geological Stories	1876	Avebury	Prehistoric Times, 7th ed.	1913
Nicholson	Ancient Life History of the Earth	1877	Scott	Hist. of Land Animals, W. Hemisphere	1913
Adams	Animal Life in the Primaeval World	1878	Waterloo	A Tale of the Time of the Cave Man	1924
Dawson	The Story of Earth & Man	1880	Keith	The Antiquity of Man	1925
Dawson	The Chain of Life in Geological Time	1880	Smith	The World in the Past, 1st ed.	1926
Lee	Note Book of an Amateur Geologist	1881	Digby	The Mammoth Hunters in NE Siberia	1926
Taylor	Our Common British Fossils	1885	Parkinson	The Dinosaur in East Africa	1930
Gibbeme	The World's Foundations	1886	Wright	The Quaternary Ice Age	1937
Dawson	The Story of Earth & Man, 9th ed.	1887	Chambers	Vestiges of the Nat.Hist. of Creation	1994
Hall	Nat.Hist.New York, Paleon VII	1888			
Nicholson & Lydekker	Manual of Palaeontology, 3rd ed	1889			

Following this, Dr Peter Crowther of the Ulster Museum spoke on Palaeontographical Society Illustrations.

In the 19th and early 20th centuries the monographs of the Palaeontographical Society were almost exclusively illustrated by high quality lithographs and (to a much lesser extent) engravings. Today, apart from the obvious aesthetic appeal of such images, their taxonomic importance often remains high, and may even eclipse the scientific text, particularly where the original specimens have disappeared. Yet many of the illustrators responsible for this important legacy remain little known.

A comprehensive survey of the published plates and a search of the Palaeontographical Society Council's Minute Books has thrown some light on how the triangular relationship between a scientific author, the Society, and their artist(s) actually worked. Examples will be used to highlight the Society's day-to-day dealings with its illustrators, and to reveal some of the particular difficulties faced by Palaeontographical Society Council in the decades before photography came to dominate the visual language of taxonomy.

Peter Doyle of the University of Greenwich then spoke on the Crystal Palace 'dinosaurs' and their place in representing theoretical geology to the paying public

The Crystal Palace 'dinosaurs' are well known to generations of people, both to those who have casually visited Crystal Palace in southeast London, and to those scientists and amateurs looking for an appropriate historical starting point for the development of the scientific study of dinosaurs. However, as already documented elsewhere (Doyle, *Geology Today*, 9:107-109; Doyle & Robinson, *Proc.Geol.Assoc.*, 104:181-194) there is more to the Crystal Palace displays, than just simple, and now somewhat quaint, reconstructions of dinosaurs. In fact in their heyday, the 'Geological Illustrations' included a potted geological history of Britain, exhibiting not only the scientific wealth of the nation's stratigraphy, but also emphasising its economic importance, with reconstructed Coal Measures and Carboniferous Limestone lead veins. These 'Geological Illustrations' had in fact many creators: Joseph Paxton, the originator of the concept; Professor David Ansted, economic geologist and designer of the complex stratigraphical scheme which housed the extinct animals; Waterhouse Hawkins, manager of the 'geological displays' and both designer & builder of the full-scale vertebrate reconstructions; and Richard Owen, author of many of the species displayed and close advisor to Hawkins. The intention of all was the same; by riding

on the back of the popular Victorian 'heyday of natural history', these complex displays were to provide a scientifically accurate 'rational entertainment' for the *paying public*. In this sense, the 'Geological Illustrations' of Crystal Palace Park were, and remain to this day, innovative in providing a glimpse into 'deep time' which was to be extremely influential in the years following their construction in 1854 (Rudwick, *Scenes from Deep Time*, Univ. of Chicago Press, 1992). The presentation explored the wider significance of the 'Geological Illustrations' to the provision of geological education in the late 19th century.

...and an INHIGEO conference

The Commission is organising two meetings on the history of geology in 1998, as follows:

August 30- September 2, at Geocentre, University of Vienna on "Advancing Geological knowledge of the Carpathian -Balkan Region in the Nineteenth & Twentieth Centuries". This is part of the XVIth Congress of the Carpathian-Balkan geological Association. For further information contact:

Organising Committee, XVI Congress of the CBGA, Geological Survey of Austria, Rasumofskygasse 23, PO Box 127, A-1031, Vienna (fax: 431-712567456; e-mail wjanoschek@cc.geolba.ac.at) or Dr Endre Dudich, Geol. Inst. Hungary, PO Box 106, H-1142, Budapest, Hungary (fax: 361-2510703; e-mail geo@mafi.hu). The congress language is English, registration fees are US\$130, and accomodation is available from US\$25 (student rooms) to US\$200 (luxury hotels). There will be 5 pre-congress field excursions (24-29 Aug.) and 1 post congress (3-11 Sept.)

September 7-14 at Neuchatel, Switzerland, INHIGEO Conference on "From Folds to Nappes to Plates" and The History of Ideas about Glaciation". For further information contact Prof. Jean-Paul Schaer, Universit  de Neuchatel, Institut de Geologie, Emil -Argand 11, 2007 Neuchatel, Switzerland (fax: 41 32 7182601; e-mail sabine.robert@geol.unine.ch) Congress languages are French & English, registration fee is 75 Swiss francs (100 Fr after April 1998), & 20 Fr for accompanying members. Accomodation available from 30Fr - 290 Fr. A field excursion in Glarus Canton from 7-8 September is estimated at 300Fr, at another from 12-14 Sept to Vaud & Valais, Arve Valley, Chamonix and the Bex salt mines is estimated at 400-500Fr.

...worth a visit ?

"Craggs to Crystals"

at Brantwood House, Coniston, Lake District.

The aim of the exhibition is to portray the story of rocks - from the largest mountain to the smallest pebble on the beach. They are an everyday part of our lives and shape the world in which we live. This is their story, from the oldest rocks of outer space to the rocks and stones that surround us today. We have used the Lake District to demonstrate how they form our landscape of mountains, rivers and lakes and its unique wealth and variety of minerals such as slate, copper, iron, graphite and granite. We have shown the variety of industries created from this rich geology and the mining communities which grew up over the centuries to provide the materials to make

some of the everyday items we take for granted - even the houses we live in.

Geology was also to have a profound effect on the life of Ruskin from an early age, and throughout his life he was to play an important part in the understanding of geology during the Victorian era. This avid interest was particularly reflected in the beauty and detail of his Alpine mountain and rock studies. Over the years he was to create a vast collection of rocks and minerals, a number of which are on display at Brantwood today. Literally thousands of minerals passed through Ruskin's hands including hundreds of agates, jaspers, chalcedonies, opals, uncut emeralds, garnets and topazes, and native gold in its various forms. Ruskin was to give away much of his collection to museums and schools. This collection was gathered on his numerous travels around Europe and was to give him much solace in his last years at Brantwood.

The exhibition opens at Easter 1998 and runs throughout the season until the end of October. There will also be related study courses during the season to complement this exhibition. Entrance is included in the house or grounds admission (house opening times, every day from 11.00am to 5.30pm). For further details, please contact Helen Surtees at Brantwood on 015394-41396 or by post to Brantwood, Coniston, Cumbria, LA21 8AD.

Helen Surtees



...for your bookshelf ?

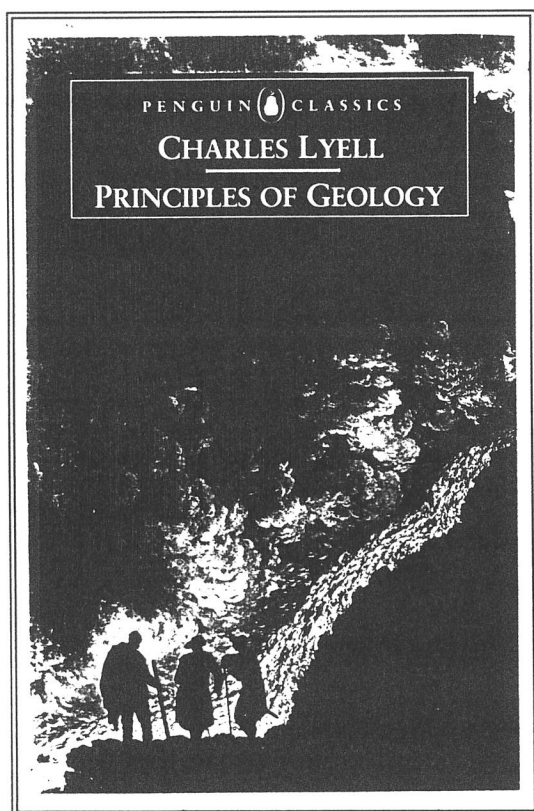
"A Busy Man - Charles Doolittle Walcott, Palaeontologist", by Ellis Yochelson. Pub: Kent Staet University Press, P.O.Box 5190, Kent, Ohio 44242-0001 (fax: 330-672-3104) Charles Doolittle Walcott is one of the most important and highly respected figures in the history of geology. This in-depth biography documents his career and life from birth to retirement from the US Geological Survey in 1907, when he became Secretary of the Smithsonian Institution.

With very little formal education (he did not complete high school), Walcott became speciel assistant to James Hall, State Palaeontologist of New York, and made a fundamental contribution to the study of trilobites by decsribing their limbs. He joined the new US Geological Survey in 1879 and rose through the ranks to become its Director in 1894, a position he held for 13 years. Walcott is known best for having documented in detail the 'Cambrian', the oldest richly fossiliferous rocks in the world. His primary efforts for the US Geological Survey were in keying

fossils to the sequence of rocks, and he brought new precision to the biostratigraphy of the older rocks of North America.

A talented and productive scientist, he also applied his talents to administration and made the USGS the most successful scientific organisation in the world. At one time he was Director of the USGS, Chief of Reclamation Service (effectively in charge of national forests), Secretary of the Carnegie Institution of Washington, and chairman of two committees appointed by President Theodore Roosevelt. The publication of his biography will serve to illuminate the life of an important but little-known American scientist.

"Principles of Geology" by Charles Lyell, Penguin Classics edition (xlvii + 472pp.; £9.99, \$15.95; ISBN 0-14-043528)



This work was published towards the end of 1997, and is introduced by a longer version of the talk given by Jim Secord at the Linnean Society during the Lyell Symposium in July. This edition also lists all the known British reviews of the *Principles* - well over thirty.

(Just after publication, two further reviews were discovered. Both are substantial and well-informed, and it is worth recording their existence here:

The Edinburgh Journal of Science, n.s., 3 (Oct 1830), pp.343-9; n.s., 4 (Jan 1831), pp 172-80; by James David Forbes; reviews Lyell's first volume (1830)

The Printing Machine; or, Companion to the Library and Register of Progressive Knowledge, 2 (8 Nov. 1834), pp 153-6; 2 (15 Nov. 1834), pp 171-5; reviews the third edition (1834).

If anyone knows of any further reviews of *Principles*, please contact Dr Jim Secord, Department of History and Philosophy of Science,

University of Cambridge, Free School Lane, Cambridge CB2 3RH, who would like to record them).

Lyell in America - His Lectures, Field Work, and mutual influences, 1841-1853, by Robert H. Dott, Jr, in *Earth Sciences History*, vol15, no.2. 1996.

Charles Lyell visited America four times between 1841 and 1853, and except for the last occasion when he was British representative at the New York Industrial Fair, he lectured in Boston, Philadelphia & New York, & travelled widely to study geology. Together with his wife Mary, he ventured from Atlantic coast to the Mississippi & Ohio Rivers and from the St Lawrence Valley to the Gulf Coast, and saw more of this territory than had most of its citizens. Although a poor speaker, his lectures were a great success with the public, even if geologists had a more sceptical view. For field work he used local experts as guides and grilled them incessantly, which slowly made them apprehensive about his acquisitiveness for their data. He later published more than 30 titles on American geology, and many examples were included in his *Principles* and

Elements of Geology.

Sir Archibald Geikie (1835-1924) & the "Highlands Controversy": New Archival Sources for the History of British Geology in the 19th Century, by David Oldroyd, in *Earth Sciences History*, vol. 15, no.2., 1996.

With the discovery of new archive material at Haselmere Educational Museum, David Oldroyd offers revisions to his previous account of the "Highlands Controversy" (pub 1990), & throws new light on the so-called "Archaen Controversy", especially regarding rocks at St David's Pembrokeshire. It is shown that Geikie did visit the north of Scotland before 1884, though he made no observations of any bearing on the controversy, and that he changed his mind before examining rocks at Loch Eriboll in 1884. New information on Edward Greenly and the procedures of the Wharton Committee are also presented.

Old or New Red Sandstone? Evolution of a Nineteenth Century Stratigraphic Debate, Northern Scotland, by John A Diemer, in *Earth Sciences History*, vol 15, no.2, 1996.

The rocks of the Old & New Red Sandstone are lithologically similar and a scarcity of fossils make distinguishing them problematical. Their stratigraphic relationships were generally agreed upon by the late 19th century. The resolution of the debate was the result of collaboration between local men, the Rev. Dr George Gordon (1801-93) and Dr James Joass (1829-1914) with Roderick Impey Murchison.

Thomas Webster (1772-1844): first Professor of Geology at University College London, by Wendy Kirk, in *Archives of Natural History*, vol 23, pt 3. Oct. 1996

This paper looks at Webster's (after whom the mineral websterite is named) connections with University College London, where he spent the last few years of his life as the first Professor of Geology. His letters are reproduced in full, and show the difficulties encountered in trying to establish a geology collection.

Darwin at Llanymynech: the evolution of a geologist, by Michael B. Roberts, in *British Journal for the History of Science*, vol 29, 1996.

This paper looks at the effect a simple field trip in 1831 from Shrewsbury (Shropshire) to Llangollen, past the Eglwyseg escarpment and on to Ruthin (Denbighshire), had on Darwin and his ability as a geologist. Michael Roberts also re-traces his steps in the modern landscape and compares modern observations with Darwin's .

James Hutton honoured

On Wednesday 6th August 1997, a plaque honouring the life of James Hutton and carved on a single block of Clashach stone from the edge of the Moray Firth, was unveiled in Viewcraig Gardens, Edinburgh. Alas the house which he built on a plot of land purchased in 1770, and in which he lived with his three sisters until his death on 26th March 1797, was demolished many years ago. It was here that he wrote his remarkable *Theory of the Earth*, which was not published until 1785. Despite the demolition of the house, the site is now being landscaped, and will be turned into a James Hutton Memorial Garden, with the monument as its centrepiece. The garden will contain boulders taken from Glen Tilt, where Hutton made his discovery that some rocks

have an igneous origin, and that they intrude those which have a sedimentary origin. Hutton also realised that geology works in repeated cycles with rocks being continually formed, eroded, transported and re-deposited; boulders from Barbush quarry, near Dunblane will be used to illustrate this.

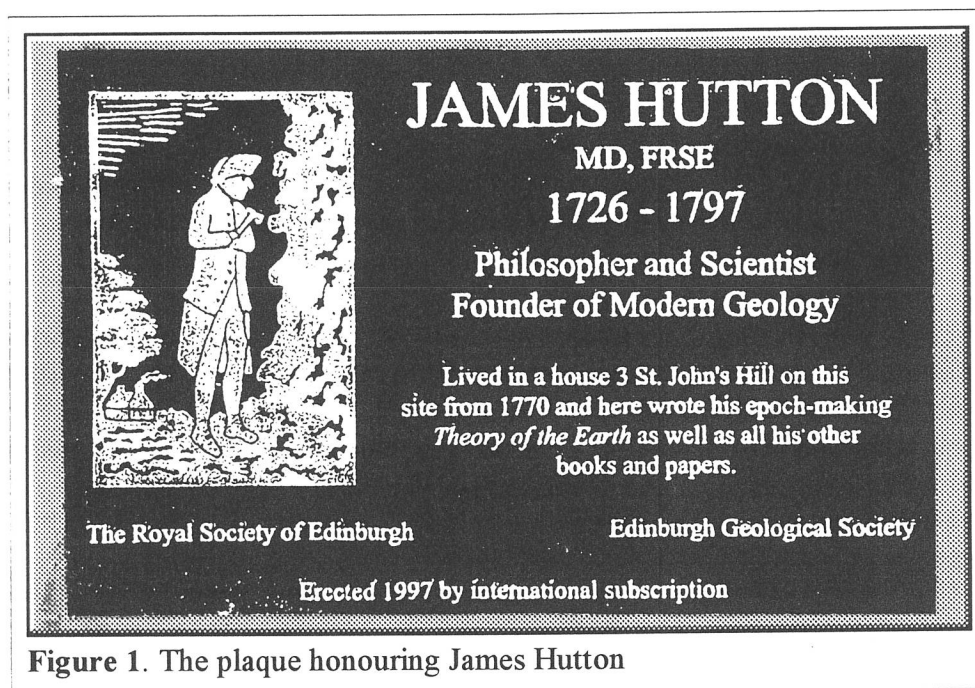


Figure 1. The plaque honouring James Hutton

...and finally

Contribution to the Newsletter

Members have asked whether they can make contributions to the Newsletter by Bankers' Standing Order; a method of payment that avoids postal expense, cheque writing and memory failure. The short answer is yes. A form to set up a Standing Order on your bank account in the United Kingdom is provided below. **The HOGG account regrettably cannot handle Direct Debiting.** Please send your completed Standing Order form to the HOGG Treasurer (John Fuller, 2 Oak Tree Close, Rodmell Road, Tunbridge Wells, Kent TN2 5SS). **DO NOT SEND IT TO YOUR BANK** otherwise the Treasurer has no way of knowing you intend making payment by this method. The Treasurer will send the form to the member's bank, and for that to be done a **COMPLETE BRANCH ADDRESS** (including the sort code number) on the form is essential. For those continuing to pay by cheque, please make cheques payable to "History of Geology Group" and send them to **John Fuller (Treasurer), c/o The Geological Society, Burlington House, London WV1 OJU**

Banker's Standing Order Form for HOGG members

To: The Manager:

(Insert the name of your bank below and the address of the branch where you keep your account)

1. Name of your Bank:.....

2. Postal address of your Branch:.....

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3. Your Bank Account Number:.....

4. Sort Code no. printed on your cheques (this is **ESSENTIAL**):.....

5. Instruction to your Bank Manager:

Please pay by Standing Order on the above named account, in favour of the History of Geology Group of the Geological Society (Girobank Account no. 14 665 9406, Sort Code 72-00-00) the sum of Seven Pounds annually beginning January 1, 1998, and annually thereafter until terminated by me in writing.

6. Your name: (capitals please).....

7. Your personal mailing address, and postcode, for Newsletter delivery:

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8. Your signature: Today's date:.....

9. **Send this form when completed to the Treasurer, at the address given above.**

