GEOLOGICAL SOCIETY

HISTORY
OF
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GROUP
Newsletter

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HOGG meeting at Oxford on 4th October 1995

Early arrivals just about had enough time to look around the University museum or perhaps to look at a few of the secondhand bookshops Oxford offers, or even just to take advantage of the sunny weather in one of the parks. By early afternoon about 30 members had gathered in the lecture theatre of the Department of Earth Sciences, in Parks Road, for this meeting on the theme of ***Historical Studies in Earth Science Mapping.*** Following a brief introduction and welcome from chairman John Thackray we sat down to listen to three excellent papers. The first was from Denise Crook on the subject of "Geological Mapping in Cornwall before De La Beche". In Denise's words.....

"The first paper of the afternoon, on early geological mapping in Cornwall before De la Beche, made use of a number of slides of Cornish maps, mainly from the Transactions of the Royal Geological Society of Cornwall, an institution founded in Penzance in 1814. Although the society had intended that its project to map the geology of Cornwall should be a co-operative one, its early maps were the work of individuals. Three were constructed by members who had studied medicine at the University of Edinburgh, and who would have had the opportunity to study geology at the same time

There were a number of reasons for the failure of collaborative efforts in Cornwall; in the first place, few of the members, other than the compilers of the successful maps, had had any tuition in map making or geology, nor did the society provide such lessons. Most members had joined for social reasons, to provide an activity not otherwise available in Penzance. The majority of members were middle class, physicians, surgeons, tin smelters, bankers and attorneys, and they had little real interest in geology, or time to devote to it. The society did not recruit from the mining community probably mainly for reasons of class, and thus did not have available the surveying skills and other expertise necessary.

However the main reason for the failure of co-operative work must be the limitations of Baconian induction, a method to which the society had made clear its adherence, writing in 1818 [1]:

> Any person, although unacquainted with the principles of Geological Science, can, it is obvious, collect specimens of the various rocks in his vicinity.. . [and] ascertain the exact limits of the different Granite and Killas districts. The farmers and miners in any part of Cornwall could give this information to any gentleman that would take the trouble to record it, or trace the boundary lines on any part of the County Map .

It was also argued that without understanding of the methods of recording the 3-dimensional structure of the rocks, a process akin to learning a new language, it was not possible to produce a satisfactory map".

[1] Annual Report, Royal Geological Society of Cornwall, 1818

After Denise's excellent talk, Norman Butcher spoke on "John Phillips, Lithography and the Geological Map" ; as Norman explains...

"John Phillips (1800-1874), nephew of William Smith (1769-1839), became a devoted geologist and one of the great scientific polymaths of the nineteenth century. Orphaned at 8, the young Phillips joined his uncle in London in 1815, receiving instruction in geology from him. Later, he successively became Secretary of the Yorkshire Philosophical Society and Keeper of Geology, from 1825, at York Museum, Professor of Geology at King's College, London (1834-41) and at Trinity College, Dublin (1844-45), moving to Oxford in 1853 where he became the first Professor of Geology from 1856 until his death. He also held posts with the Geological Survey and was a key figure in the foundation of the British Association for the Advancement of Science in York in 1831, serving as an Assistant General Secretary for some 30 years.

As a young assistant to William Smith, John Phillips learned the art of lithography, preparing a MS on the subject as early as February 1819 based on a study of the technique over two years. His interest in lithography remained with him over many years, drawing many illustrations of fossils on stone. He collaborated with William Monkhouse, the first lithographer to be established in York in Lendal. Together, they produced the earliest-known colour-printed geological map in England, that of Yorkshire, in John Phillips's popular book on the county published by John Murray in London in 1853".

[Editor's footnote: Some weeks after listening to this fascinating talk, I was fortunate to see a small exhibition of geological lithography put on by the Bavarian Museum at the Munich Mineral Show. A lithographic stone featuring a geological map of part of Bavaria was on show and it struck me how incredibly skilled were the lithographers, not just in producing a complex map, which is difficult enough, but also in adding the fine copperplate writing and most of all, in doing everything IN REVERSE!! If you don't believe this is difficult, try writing nothing more than your own signature in reverse.....]

The third paper of the afternoon was presented by Professor Richard Howarth on "Structural Attitudes - the Early Mapping and Use of Orientation Data"

Recording and analysis of spatial orientation and location forms a key part of the survey of rocks and the minerals of which they are formed.
Although the orientation information provided by the dip and strike of beds when seen in outcrop was recognised by De Sassure in the 1760s, and Lord Webb Seymour and John Playfair in 1807, their significance in the context of a purely geological map seems to have been first developed by Macculloch in his Description of the Western Isles of Scotland (1819), and C F Neumann (1824). Following the introduction of graphical summaries of wind direction (e.g. by von Buch, 1819 and Lalanne, 1843), similar diagrams showing orientations of mineral veins, faults, joints etc became an increasingly common method of summarising such data from the mid 1830sonwards.

The stereographic projection, originally devised by Hipparchus as an aid to the depiction on a planar surface of star locations in the celestial sphere, became central to the development of the astrolabe from the 2nd century AD onwards, but it was not until the 16th century that it became a cartographic tool. Following the first use of the stereographic projection for the representation of crystal forms by F E Neumann in 1823, nets based on the polar and equatorial projections were first used by the Russian crystallographer Fedorov in the 1860s to assist with his detailed measurements of interfacial angles using the Universal goniometer and published in 1892. Other stereographic nets were subsequently published by Viola (1898), Penfield (1901), and Wullf (1901). Wullf's 2 degree net became so popular that it is still known to geology students today as the Wulff net.

In 1925 the Austrian geologist Schmidt used a zenithal equal-area projection onto the equatorial plane, first devised by Lambert in 1772, for the study of the statistical distribution of the poles to bedding planes and other macroscopic features, as well as to the study of crystal orientation based on microscopic studies of small-scale rock fabrics. (The latter made possible by the development by Fedorov of the Universal microscope stage). Schmidt's work was brought to a wider audience by his fellow countryman Sander (1930) and by Fairbain and Elenora Knopf (1933) in the United States. Further developments in this field during the 1930s led to the systematic study of petrofabrics which now forms a vital part of modern structural geology.

Following the early use of isoline bathymetric maps by Marsigli (1725), Cruquius (1729) and Bauche (1737) and its subsequent adoption in topographic maps, the principle of contouring the elevation of (or depth to) a geological horizon as an aid to understanding its structure seems to have

first been adopted by the American mining engineer Lyman in a report on the oilfields of the Punjab in 1870, following earlier studies by him in Virginia during the 1860s. Subsequent early structure contour maps included detailed studies of the Pennsylvania coal fields by Lesley and Ashburner between 1874 and the early 1880s. Other notable early contour maps were made of the depth to the top Chalk under the projected line of the Channel Tunnel by Potter and de Lapparent (1877) and in the Paris Basin by Dollfus (1888). By 1920 the use of the contour map as a structural aid to oil exploration had become commonplace.

In order that we should all have strength for the AGM, tea was taken in the University Museum, and there was an opportunity to visit the library and see a small exhibition of items from the William Smith collection. These had been selected and displayed by Stella Brecknell of the library. These featured original hand coloured examples of his earliest maps as well as some simple sections. Members were fascinated by them and it was difficult to get them to return to the lecture theatre for the AGM and a talk by HOGG Treasurer John Fuller on "William Smith and his Geological Sections"

"During 1793, William Smith began contemplating ways to make "a model of the strata of earth, &c. in a coal country," and "a section of it." (1). Smith was at that time surveying properties in the parishes of Stowey and High Littleton, Somerset, chiefly parts of the estate of Mary Jones (1705-1791), lately deceased, the last remaining niece of John Strachey, F.R.S.(1671-1743).

Phillips' carefully chosen words describing Smith's work at Stowey and High Littleton, and Smith's later fame in the world of geology, can lead unwary readers to believe that Smith had been occupied in geological investigations since his arrival at Stowey in 1791.

Smith's horizontal sections of strata exhibit a distinctive style that resembles Strachey's sketches to illustrate " the Section of a Coal Country." (2). Smith presented hills and areas of low ground virtually as three-dimensional models, or "geological views" as he called them, and the profiles of strata under the topographic outlines are, with small exception, severely geometric. There are also in his writings numerous key words and concepts derived from Strachey's works; and though one may not infer that Smith deliberately copied Strachey, he manifestly found draughts of geological inspiration therein.

Smith also understood very well that relationships among the strata could best be demonstrated and explained by cross-sections that would show how they were arranged underground, and how they emerged at the surface in regular succession. In this way, a dominant southeasterly dip of the strata, and unconformabilities that occasionally broke the regular sequence, could he made more apparent than by a map alone. Smith's cross-sections had just this purpose.

The sections were hand-coloured under Smith's close supervision, a necessacy precaution, for consistent colour tints and shades for each stratum enabled easy recognition and comparison between one cross-section and another. This stratum-specific colouring also provided visual links between the sections and the maps. The logic of Smith's colour-scheme arose from his experimentations dating back to 1793. Notes found among his papers included suggestions to colour models of strata with "the same materials of which they are composed" (1). For example, "Red ground ... may be mixed up with gum-water," and "The grays [shales] may be in pieces stuck together with gum". His fundamental and entirely novel idea was to make a colouring medium from the rock itself.

Smith knew that representation by colour alone would he insufficient either for colourists working on blank copies of his maps and sections, or to attract notice where strata were missing, so he introduced a system of numbering. It was an early idea: his Table of Strata (1799) was numbered from 1 to 23, with Chalk, no.l, at the top, and Coal, no.23, at the base. A later Table, issued in 1817, named 34 stratigraphic units with index numbers referring both to the 1815 Delineation of the Strata and its various illustrative sections".

(1) Phillips, John. 1844, p.6-7.

(2) Strachey, John. 1719, 1721 (p.260), 1725, 1727, 1734.

[Editor's note: Reproductions of some of William Smith's sections will shortly be available for purchase; see the end of this newsletter for information]

So, at the end of a very successful and enjoyable meeting it was time to make our tracks back to the railway station. The committee would like to thank Stella Brecknell for arranging the display of William Smith's material, and the Department of Earth Science, Oxford, for the use of facilities.

HOGG Annual General Meeting 1995

The first Annual General Meeting of the History of Geology Group, chaired by Mr John Thackray, was held at Oxford on Wednesday 4th October 1995. The meeting was called immediately after tea during the Group's Oxford meeting with the theme of Historical Studies in Earth Science Mapping. By so doing a captive audience of approximately 35 was held for the AGM, thereby having one of the largest AGM attendances of any Group in the Society.

The minutes of the inaugural general meeting and the secretary's report were taken as read, conveniently and thankfully getting the meeting off to a quick start. The treasurer reported that the group now has a membership of 102, considered a very satisfactory total for the first year of the group. He expected the group to have a bank balance of between £400 and £500 at the year-end enabling the annual subscription to be kept at £7.

Mr Stuart Baldwin was elected onto the group committee as an additional member. The increase in size of the committee was made in order that in coming years a rotation of retirements from the committee can be established while preserving continuity among the majority of the committee.

The Chairman reiterated the intention of holding two main meetings a year, one in London and one outside. The next meeting will be held at Burlington House on 16th February 1996, jointly with the Society for the History of Natural History, and the second meeting will be held in the early autumn at Bristol. Details are yet to be formulated.

The meeting closed at about 4.45pm and returned to the second half of the Oxford meeting.

John Martin (Secretary)

....and the next HOGG meeting

The next HOGG meeting will be held on Friday 16th February, jointly with the Society for the History of Natural History (S.H.N.H.), at the Geological Society, Burlington House, Piccadilly, London. The theme will be

"GEOLOGICAL COLLECTORS & COLLECTING"

The meeting starts at 2.00 pm; individual times of papers will be announced in a programme on the day. The list of speakers and their papers are:

Neville Haile - Rumphius, Plot and Scheuchzer (17-18th C): aspects of their collections and interpretations

Michael Bassett - Linnaeus and Thomas Pennant: collectors and collaborators

Patrick Boylan - William Buckland and his 'Instructions for conducting geological investigations and collecting'

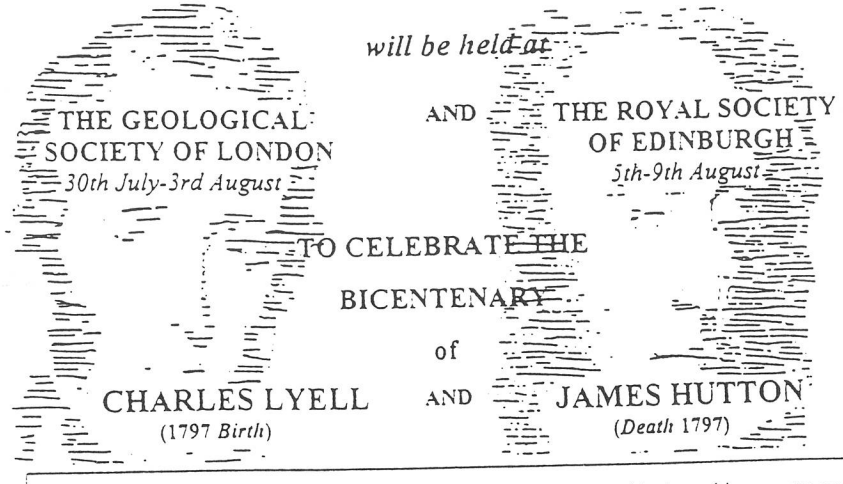
John Thackray - The Thomas Hawkins collection of fossil vertebrates at the Natural History Museum

Hugh Torrens - E.T.Higgins (c.1816-1891): Geological collector and natural history dealer, Bengal to England and then Australia (twice)

Enquiries about this meeting should be addressed to the organiser, John Cooper, c/o Booth Museum of Natural History, Brighton BN1 5AA (tel: (01273)-552586; fax (01273)-563455)

Advance notice....

IN 1997 AN INTERNATIONAL GEOLOGICAL CONFERENCE



The first part of the Conference in London will be concerned with the achievements and impacts of the work of Lyell: the second part in Edinburgh will deal with the past, present and future relevance of Hutton's theories. The lectures will include contributors of international renown and be interspersed by periods for discussion. They will be followed by visits to classical sites linked with Hutton and Lyell. The programme is being arranged to catch the interest of all - whether geologists or historians.

For further information contact The Conference Office, The Geological Society of London, Burlington House, Piccadilly, London W1V 0JU. Tel: 0171 434 9944 and fax: 0171 439 8975 and e-mail conf@geolsoc.cityscape.co.uk

PLEASE EXPRESS YOUR EARLY INTEREST IN A) ATTENDING B) SPEAKING OR C) PRESENTING A POSTER ON THE FORM ATTACHED

A detailed programme will be available at the beginning of 1996

September 1995

SCIENTIFIC ARCHIVES AT BATH

The National Cataloguing Unit for the Archives of Contemporary Scientists was established at the University of Bath in 1987. It is the successor to the Oxford-based Contemporary Scientific Archives Centre (CSAC). The mission of the Unit is to locate, catalogue and find permanent places of deposit for the manuscript papers of distinguished contemporary British scientists, and so preserve and make accessible the original soure materials for the history of science. The Unit is a processing centre rather than a repository; it does not retain the papers it catalogues.

Since the establishment of the CSAC in 1973 the Unit has catalogued some 175 collections of papers covering a wide range of scientific disciplines for deposit in 45 repositories throughout the UK. The collections of papers of geoscientists catalogued by tbe Unit are listed below, with the place of deposit, the catalogue reference number and the length of the catalogue:

Sydney Chapman (Bodleian Library Oxford, CSAC 11/5/74, 4pp)

R.G.S. Hudson and the Palaeontological Association (Department of Palaeontology, Natural History Museum, CSAC 66/4/79, 30pp)

Sir Edward Bullard (Cburcbill College Archives Centre, Cambridge, CSAC 100/4/84, 373pp)

T.N. George (National Museum of Wales, Cardiff, and Glasgow University Archives, CSAC 101/5/84, 104pp)

R.A. Bagnold (Churchill College Archive Centre, Cambridge, NCUACS 35/3/92, 61pp)

D.M.S. Watson (Library, University College London, NCUACS catalogue 42/4/93, 40pp)

Sir Peter Kent (Nottingham University Library, NCUACS 43/5/93, 287pp)

Janet Watson (Library, Geological Society of London, NCUACS 48/4/94, 30pp)*

The research activities and scientific career of a scientist are not the only areas of interest that may be documented in their papers. The papers may well record other aspects of their life such as education, family connections, the development of the profession, membership of a university department or commercial company, public service and so on. Inevitably, the content of each collection varies according to the pattern of the scientist's career, their method of working and according to their own attitude to the preservation of their papers.

In addition to its core function as a cataloguing unit, the NCUACS has a role as an information centre. Twenty-two years of making enquiries and cataloguing scientists' papers have enabled the Unit to assemble a great deal of information about tbe existence of original source materials for the history of science iu Britain.

Copies of all CSAC and NCUACS catalogues are available from the Unit. The Unit produces twice-yearly Progress Reports on its work which are widely distributed to interested individuals and institutions. If you would like to know more about the Unit's work please write to the National Cataloguing Unit for tbe Archives of Contemporary Scientists, University of Bath, Bath BA2 7AY .

Timothy E.Powell
24 November 1995

*For a fuller account of the work of tbe Unit on papers of these scientists see *The Geoscientist* **4**, 6 (November/December 1994), pp.9-10.

Where are they now ?....

In the course of my work I have had a request to try and trace a collection of New Zealand "rocks" sent over to Britain in 1886 for the "London Exposition" (sic). I can find no trace of a London "Exposition" of that year, though there was a Colonial and Indian Exhibition in London in 1886, and as New Zealand was a colony then, this may well be the one. The rocks were collected by a Mr Charles Lewis, and they may have been from Golden Bay, Nelson, and may have been just that - rocks! But this area was also famous for gold mining as well as iron ore, and maybe there were samples of these minerals. Any information about these specimens or items in general from this exhibition would be gratefully received, and would make the descendents of Mr Lewis very happy.

Peter Tandy [Editor]

DINOSAURS IN HUNT FOR MONEY!

Following the first HOGG meeting at the usually inaccessible geological islands of Crystal Palace Park (see HOGG Newsletter no. 2, July 1995), the following item was sent by Steve McCarthy, Chairman of the Crystal Palace Foundation:

"The London Borough of Bromley and the Crystal Palace Foundation have made an application to the National Lottery Heritage Fund proposing the restoration of Crystal Palace Park. The initial proposal was submitted in July, and if a positive response is received, a full application will be made next year. The proposal includes an extensive restoration of the Crystal Palace "Geological Islands", created by Benjamin Waterhouse Hawkins from 1852 - 1855. If funding is agreed, the restoration programme will incorporate repair and preservation of the life-size iron and stone extinct animal models, including the relocation of a number which have been moved, and replacing some originals which are now missing, restoring the extensively damaged and overgrown display of geological strata, removing inappropriate overgrown foliage and providing interpretive material. The intention is to restore the geological islands to their original glory, allowing the nuique display to be seen once again as a geological 'time trail' depicting the development of life on earth in context with the geological formations associated with the fossil remains of the animals represented in the display.

English Heritage have in the meantime offered Bromley a £7,000 grant towards the cost of feasibility studies on the project, structural surveys and the compilation of accurate costs. Support for the proposals from anyone wishing to give it would be welcome. You can write to the Heritage Fund case officer fro the project, Sue Bowers, at the following address:

The Heritage Lottery Fund
10 St James' Street
London SW1A 1EF

Anyone who would like to know more detail about the proposals covered by the application may wish to contact Steve McCarthy, Chairman, Crystal Palace Foundation, c/o The Crystal Palace Museum, Annerley Hill, London, SE19 2BA."

For your bookshelf...

The Geological Survey of Ireland's sesquicentennial celebrations throughout 1995 reached a fitting climax on 13th December with the launch by Mrs Avril Doyle, TD, Minister of State, Department of Transport, Energy and Communications, of **North from the Hook*** by Gordon Herries Davies. (Geological Survey of Ireland, 1995, 356pp). This magnificent casebound volume, containing no fewer than 15 colour plates and many black and white illustrations, several not previously published, surveys the history of GSI's activities since its inception in 1845, written in the authoratitive yet highly readable style for which the author, Fellow Emeritus of Trinity College Dublin, is already renowned. There will be few, if any, national earth science agencies throughout the world able to boast such a publication.

Earlier in the year, on 6th July 1995, An Post issued a commemorative 52p stamp depicting the geological map of Ireland in colour. This will remain on sale until July 1996 and can be obtained from the Philatelic Bureau, G.P.O. Dublin 1, Ireland; Collectors News, issue 3/95 p.14 has full technical details of this superb production.

The very beautifully-produced publication **Hidden Landscapes** (National Gallery of Ireland, 1995, 88p, price IR£9.95) , was produced to accompany the exhibition of the same name at the National Gallery of Ireland. This exhibition bought together for the first time all the geological, landscape, antiquarian, palaeontological and botanical work of the early-Victorian artist George Victor Du Noyer (1817 - 1869), who worked in the service of the Geological Survey of Ireland from 1847 until his death. A measure of the success of this exhibition, sponsored by Bord Gais Eireann is that it attracted some 40,000 visitors before it closed on 31 August 1995. The book is obtainable from the Bookshop, National Gallery of Ireland, Merrion Square, Dublin 2, Ireland.

Finally, of other events, and publications, it is worth mentioning the booklet **Written in Stone** by Padhraig S.Kennan, (Geological Survey of Ireland, 50pp, 1995, IR£6.95) which complemented a series of programmes broadcast on Irish television.

(* **North from the Hook** is obtainable from the GSI at a cost of £23 **before 12 January 1996,** and £34.94 afterwards + £5 postage & packing)

Norman Butcher

"Strata Smith" and his Geological Cross-Sections, 1819

Seven horizontal cross-sections by William Smith, first issued in 1819, have been reproduced in the form of a poster for sale by the Geological Society and the American Association of Petroleum Geologists. The poster reproduction is in colour from high quality photographs of an original set of sections belonging to the Geological Society. Strong paper with a smooth surface has ensured that all Smith's notes and comments that were engraved on the original plates can be read easily. The poster is scaled at about eighty percent of the original size and measures 30" x 48" overall. It will be supplied with an accompanying booklet subtitled A review of facts worth knowing about the origin of stratigraphic geology in the mind of William Smith (1769-1839). The poster and booklet go on sale in January 1996, and will be obtainable by post from the Society's publishing house at Bath, or by personal collection at the Geological Society, Burlington House, London.

For the UK and European Community countries the price is £14.10 (inclusive of VAT). Delivery by post in the UK costs an additional £2. The cost including delivery by post to European Community countries is £17.10, and to non-European countries is £15. For the rest of the world the cost including delivery is £18.

Orders for postal delivery (which will be in a strong cardboard tube) should be sent to:

The Geological Society Publishing House
Unit 7, Brassmill Enterprise Centre
Brassmill Lane
Bath BA1 3JN
(Telephone 01225 445046, or fax 01225 442836)

Please make sterling cheques payable to The Geological Society Publishing House.

And finally HOGG is sorry to announce....

....that it is time again for renewal of subscriptions. There is no change in subscriptions for 1996 ; these remain at just **£7** per person. We hope everyone will continue their subscriptions (and even encourage their friends to join); please see the tear-off slip at the end of this newsletter for details. Prospective new members should use the same form.

HOGG SUBSCRIPTION RENEWAL

I wish to continue my subscription to HOGG for 1996 and enclose a cheque*/postal order/other ..... (please specify) for £7

Name:.....

Address:.....

.....

.....

Please return this slip, together with the remittance* to:

The HOGG Treasurer, c/o Conference Office, The Geological Society, Burlington House, Piccadilly, London W1V 0JU

[* Please make cheques & postal orders payabe to: The History of Geology Group]