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"Geological Collectors & Collecting"

HOGG meeting at Burlington House, 16 February 1996

This meeting, on the theme of Geological Collectors and Collecting, was held jointly with the Society for the History of Natural History, at the Geological Society. Some 35 people attended and listened to five exciting papers. The first was by Professor Neville Haile, Visiting Professor at Oxford Brookes University , with a paper entitled **"Rumphius, Plot and Scheutzer (17-18thC): aspects of their collections and interpretations of figured stones and other problematica"**

The views of the three scholars considered, are representative of the problem posed by 'figured stones' (mainly what would now be known as fossils) in the 17th and 18th century, and their relationship to biblical accounts of the earth's history, namely the Noachian deluge.

Gerard Everard Rumpf (Rumphius)

Born in Germany around 1628, he arrived in Amboina in 1653, and spent his life in the service of the Netherlands East Indes. About 1662 he began his systematic study of the flora and fauna of Amboina and nearby islands, in his spare time. In spite of being struck blind in 1670, and losing his wife and youngest daughter in an earthquake, and soon afterwards most of his collection, books, and manuscript in a disastrous fire, he managed to complete his major work, the *Amboinsche Kruidboek* (Herbarium of Amboina), which was not published until four decades after his death in 1702 . His other major work, the *Amboinsche Rariteitkamer* (Amboina

Closet of Rarities),was published in 1705 soon after his death. In this he describes in detail, with many engravings, all kinds of marine arthropods, echinoids, and molluscs, including the fleshy animal of *Nautilus pompilius*, probably one of the first times this was illustrated. In the third book of the *Rariteitkamer,* he describes some rocks, minerals, fossils, and stone and metal artefacts.. He recognised that some of the fossils, such as petrified crabs, corals, and bivalves, as remains of living organisms, in which he was in advance of many European scientists, who still regarded many of such 'figured stones' as freaks of nature (*lusus naturae*). Where he was furthest from the mark is in his treatment of 'thunderstones'. He attributes stone implements, fossil echinoids, and belemnites, to formation in clouds associated with thunder, and subsequent falling to earth with great violence, frequently piercing trees and buildings. This view (which now seems bizarre) was the generally accepted one in the Indies, and indeed, in Europe, where it was of great antiquity. A major section is devoted to *mestica* or *mostica* which are unusual and rare stones or growths reputed to occur in various plants and animals; the most famous is the *mestica kelapa* or coconut pearl, calcareous stones reputedly found, extremely rarely, in coconuts.

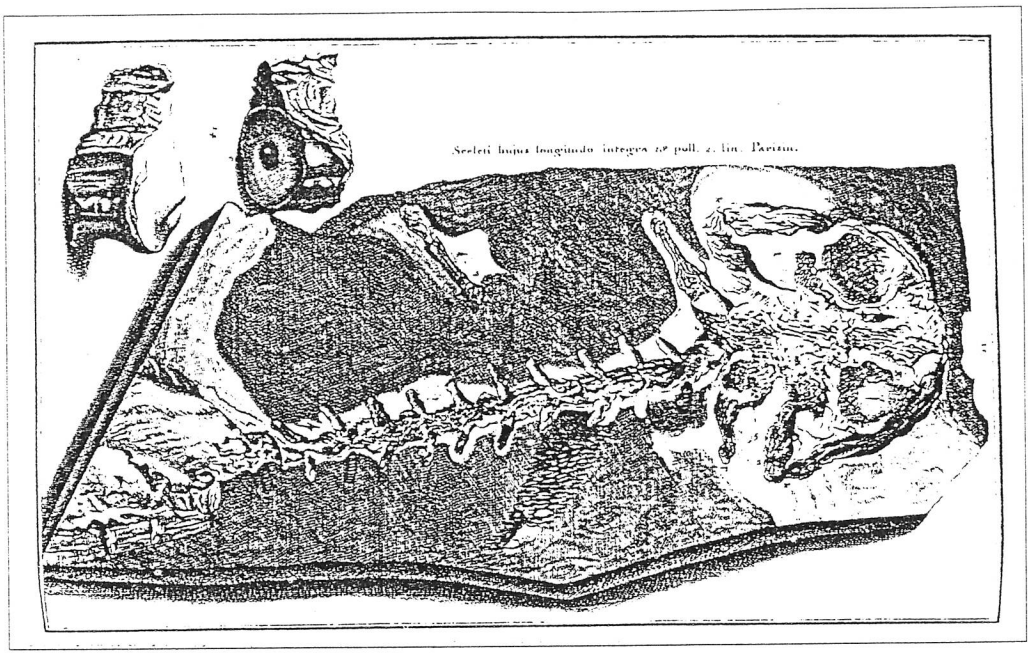
Because written in Dutch, the *Rariteitkamer* was not widely accessible beyond Holland, although Buckland, for one, possessed a copy, that had previously been owned by 'Mr Parkinson.'

The major work of **Robert Plot** (1640-96), *The Natural History of Oxfordshire,* was published in 1677, based on a questionnaire and his own fieldwork. The book includes descriptions and accurate illustrations of what would now be clearly recognised as organic fossils (echinoids, molluscs, brachiopods, corals, and ammonites) and some crystals and concretions of unusual shape. He gives nine reasons why it seems impossible that these formed stones could be petrified organic remains, and concludes that they are *lapides sui generis* formed by some 'plastic virtue' within the Earth. He also considers the view that belemnites and fossil echinoids are thunder-stones, generated in the clouds.

Johann Jacob Scheuchzer (1672-1733) , a generation after Rumphius and Plot, was, like them, a natural philosopher of wide interests and knowledge. Born in Zurich, at the age of 20 Scheuchzer entered the University of Altdorf , where he studied mathematics and physics, then moved to Utrecht where he took the degree of Doctor of Medicine in 1694. After travelling for two years, he returned to Zurich, and began work in geography and geology, with study of fossils his primary concern. Originally (1697) he maintained that figured stones were *lusi naturae* but (influenced by Woodward) he adopted the view that they are organic. Scheuchzer is mainly known, however, for his sensational announcement in 1726 of the discovery of a human lithified part skeleton -- the notorious *Homo Diluvii Testis* (The man who witnessed the flood). This observation remained firmly credited in paleontological literature until well after Scheuchzer's death in 1733, when, after Camper had opined (1787), that the fossil was a lizard, Georges Cuvier published in 1825 the accepted view that it is of a giant salamander. Looking at the illustrations with hindsight, it seems astonishing that a trained medical anatomist and experienced paleontologist such as Scheuchzer undoubtedly was, could make such a grievous error, and that the identification went unchallenged at the time and for 61 years afterwards.

Comment

The views on 'figured' or 'formed' stones of these three natural philosophers, show a slow but not linear evolution approaching the modern view. Rumphius accepted some fossils as of organic origin, but like Plot and other natural philosophers of the time, regarded most as inorganic, formed in the rock by a process akin to the growth of crystals. Rumphius accepted



Homo diluvii testis from the first volume of Scheutzer's *Physica Sacra* (1731)

that some fossils, notably echinoids, were derived from the clouds as 'thunderstones', which view was given by Plot, rather more cautiously, as 'believed at least by the vulgar' -- although he does not advance any alternative explanation. Rumphius's view that stone and metal tools were also thunderstones was widely believed and had authority from classical writers -- and is still held by many inhabitants of Southeast Asia. Scheuchzer, in 'advancing' to the view that fossils are the remains of living organisms, adopted the then only other widely accepted view, namely that they had been swept into position by the Noachian flood, which led him to his notorious mistake, that unfortunately seems to have eclipsed his undoubted achievements in other fields. Nevertheless, their observations, collections, and discussions were part of the process whereby, by the end of the 18th Century, the way was made clear for the rapid advances in understanding of earth history, the discovery of 'Deep Time', and the recognition by the 'English School' of geologists of progressive eras of pre-Adamic 'former worlds', which in turn made possible the Darwinian revolution.

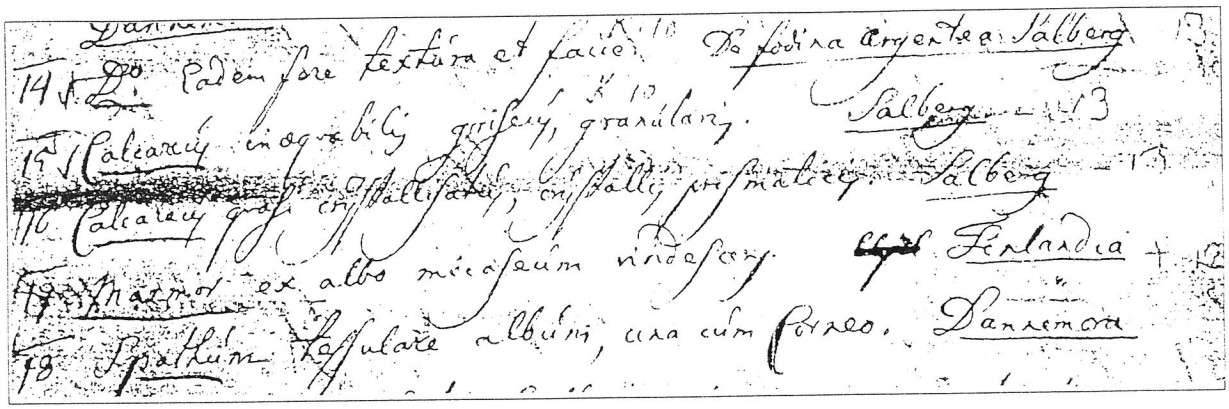
Neville Haile

Following this, Dr Mike Bassett, Keeper of Geology at the National Museum of Wales, gave a paper on **"Linnaeus & Thomas Pennant: Collectors and collaborators"**

Thomas Pennant was born at Downing, in Flintshire in 1726 and educated at Wrexham Grammar School. He early on developed an interest in birds but at the age of 18 went to Oriel College, Oxford to study law. He only stayed about 18 months but as he hailed from the landed gentry he did not need to earn a living. In his first summer at Oxford he took a trip to Cornwall and there met William Borlase who introduced him to mineral collecting. Back in Flintshire he started surveying the area and found a rich lead vein in the Carboniferous Limestone, from which he made a monetary fortune. From then on he devoted much of his to natural history. In 1750 he published his first paper, on an earthquake in Flintshire, which was published only after his uncle, to whom he had shown it, sent it to the Royal Society. He turned his attention to parts of adjoining Shropshire, and published his next paper on fossil

corals from Shropshire.

Linnaeus had been born in 1707 and at the age of 20 went to the University of Lund in southern Sweden. Here he showed his first interest in natural history, making a collection of Cambrian & Ordovician fossils and minerals. In 1730 he went to Uppsala where he was initially an assistant to Celsius who was a physical mineralogist and who introduced Linnaeus to mineralogy as a science. In 1730 Linnaeus went to Dannemora and Falun in northern Sweden to survey the extensive mines. He set out to try and understand the nature of the topography and mineral distribution of Sweden - a study which eventually included botany. In 1741 with finance from the Swedish Government he went to the islands of Oland and Gotland to collect fossils, and in the same year was appointed Professor of Botany and Medicine at Uppsala University. While on Gotland, which is composed entirely of Silurian rocks, Linnaeus visited most localities traversing the whole island. From at least 1755 Linnaeus corresponded with Thomas Pennant, and also exchanged specimens. Material which Pennant probably had collected from Shropshire was sent to Linnaeus and used in the latter's *Systema Naturae*. New evidence has shown that in return, Linnaeus provided Pennant with suites of minerals from classic Swedish localities.



Part of Linnaeus' catalogue showing specimens collected from Swedish localities

Some of Linnaeus' collections now reside in the Linnean Society's museum in London, but much was sold, dispersed and essentially lost. Some is still in the University of Uppsala and in the Natural History Museum in Stockholm. In 1912 Pennant's collections (including birds, fish etc) were transferred to the Natural History Museum in London, where many of the minerals at least still reside, but in 1912 part was given to the National Museum of Wales when it was formed. (from notes by the editor)

Following a brief discussion and short tea interval, Professor Patrick Boylan gave a paper entitled **"William Buckland and his 'Instructions for conducting geological investigations and collecting specimens', 1821".** William Buckland came from Devon in 1784 and went to study at Oxford. In 1813 he became Reader of Mineralogy and also curator ("custos") of the old Ashmolean Museum in Oxford, although the title of curator was not legalised until the time of John Phillips. He inherited about 200 years of accumulated uncatalogued material. He was a major traveller in Europe - probably the most widely travelled of all British geologists of the time. In about 1807 he visited Freiburg, and then Paris where he saw spectacular facilities for science and especially those of Georges Cuvier.In Britain there was a great argument about science which had a lack of Government support and interest - even the Geological Survey was intended to be a temporary measure, to survey the land and then be wound up. By 1818-19, Pentland was working on Cuvier's material in Paris and was in correspondence with

Buckland. Cuvier was made a baron with the appropriate salary and a staff of 12 technicians. Buckland who was a middle of the road Tory and a broad church man, on seeing this campaigned for an improvement using his contacts from the days when he tried to enter University. Through patronage, in 1818 influential people led by Lord Grenville pursuaded Lord Liverpool and the Prince Regent to create a readership in geology. Buckland was appointed and also held the chair in mineralogy, but found the salary only £100 per annum for each post. He argued that professional travel over the previous 8 years had averaged £200 per annum. He got nowhere, and the salary remained at £100 until the end of his career in the 1840s. He did manage to persuade the Government, in particular Lord Bathurst, to use the British ambassadors overseas to send geological & mineralogical samples back for scientific, and more importantly commercial interest. He had extensive correspondence with Benjamin Silliman and saw the importance of north America. When Silliman launched his American Journal for Science in 1819, the first volume contained a paper by Brongniart asking for specimens to be sent. Brongniart had worked with Cuvier on the Paris Basin and had been given a sinecure position and was very well paid. Buckland saw it as all being very unfair. In his note in the *Am.Journ.Sci.*(Vol. 5, p.251, 1821), (see extract left) Buckland tried to lay down rules to assist those without specific knowledge to collect worthwhile material. He saw it as important to talk to practical people, engineers, miners, even vicars, and to record details of collecting data. He laid an emphasis on practical and economic aspects such as coal, bitumen, alabaster etc., and also on fossils, particularly on human bones. In 1831 he undertook a major study on sub-fossil bone collected on the Beaches expedition to Alaska, and in analysing and publishing a 3-volume work began to speculate on changes of what we know of as ice ages. By 1840 he was able to present evidence for ice ages. In about 1830 the Ambassador to Buenos Aires was reminded he was supposed to be looking for material; strange mammal fossils were being found. A gaucho tying his lasso to a pinnacle on the edge of the River Plate pulled out a skeleton of Megatherium. The first full meeting of the British Association at Oxford in 1832 was enlightened by the bizarre interpretations especially political aspects of Megatherium. (from notes by the editor)

Rules for selecting and conveying specimens.

In selecting specimens of common rocks, the best size is that of a common flat piece of Windsor soap, taking not the outside bit, but the second slice that is struck from the block by the hammer.

Every specimen should be ticketed with the name of the place where it is found, or with a letter or number referring to a catalogue describing it: in case of places little known, their distance from the nearest important town, and in what direction should be specified.

Every specimen should be wrapped in a separate piece of paper, and the whole closely packed with moss or hay, in a barrel or strong box, to be sent by ship to London, directed to "Rev. Professor Buckland, Museum, Oxford, to the care of Mr. Hunneman, 5 Mead-street, Dean-street, Soho, London." The bill of lading, with notice of the arrival of the vessel, should be sent to Mr. Hunneman, who is Mr. Buckland's agent, and will duly forward the package to Oxford.

This was followed by a paper from John Thackray on **"The Thomas Hawkins collection of fossil vertebrates at the Natural History Museum".** Thomas Hawkins was born in 1810, the son of a Somerset farmer and cattle dealer. Hawkins was given a liberal allowance and developed delusions of grandeur. He lived in Glastonbury and started collecting at the age of 12. In 1833 he tried to sell his collection of vertebrates to the BM as he thought the BM offered the best hope. He enlisted the help of Professor Buckland to make his case but there were four fundamental problems associated with the deal. Firstly the personality of Hawkins, who was unstable, eccentric, argumentative, litigious, sycophantic, but nonetheless a successful collector. Then the fossils themselves, he said, weighed over 20 tons and would

cover 4000 square feet of space. Thirdly, the composition of the Board of Trustees at the time, who didn't understand what they were getting in the deal. Lastly there was the jealousy of the museum staff of the time, who were regarded as a lowly bunch especially compared with the aristocratic Trustees; most staff were expected to stand and listen and have no opinions. Purchase was approved and the collection arrived in the autumn of 1834, but unpacking and examination was slow. It was put in the care of Charles Konig who had trained as a botanist and who had been appointed to the museum in 1807 and made Keeper of Natural History in 1813. He was seen as being rather stiff and formal, once writing out 12000 labels by hand for the bird collection and never once complaining about lack of assistance. Once the specimens were looked at, questions began to be asked. Did the museum get what it expected? Had the specimens been tampered with? Was the price correct? Word spread that the museum had been made a fool of. In particular, the specimen shown in plate 4 of Hawkins' memoir had been sold to someone else; Konig thought it most interesting anatomically , but the substitute plesiosaur, though being large was essentially worthless and had even been made up with Plaster of Paris. When Konig looked in detail he was horrified - parts of the large ichthyosaur and plesiosaur were made up with Plaster of Paris and he said were unfit to be displayed to the public. An argument raged as how best to overcome the problem. Buckland suggested drawing lines around the plaster areas, Mantell that it is best left alone but a note should be put in the next edition of the public guidebook. The Trustees decided that they would paint the plaster a different colour, state it on the label and print it in the next edition of the "*Synopsis*". The argument had reached high circles, being mentioned in The Times, The Literary Gazette and the Athaneum magazine, but the damage was done. The whole affair did nothing for the reputation of the BM, and made it much more cautious about buying fossils. Hawkins though started almost immediately to sell the BM a second collection, and though he succeeded it took a very long time.

To end, Hugh Torrens of Keele University, gave a paper on **"E.T Higgins, geological collector and natural history dealer, Bengal to England and then Australia (twice)".**

E.T.Higgins was born in Bengal, the son of an army officer in about 1816. His first year was filled with the unexpected - he marched with the battalion to the relief of Nagpur. His father died in 1828, and by 1851 we find his mother living in Cheltenham. E.T.Higginsmay have attended the same school as Charles Lyell in Salisbury. He was then apprenticed as a surgeon in Gloucester and by 1839 was a practising surgeon in Cheltenham. By 1835 he was involved in a circle of historians in Lyme Regis. He was attracted by the efforts of Mary Anning to collect specimens and indeed one Mary Anning specimen consisting of the jaws of an extinct shark was then, in 1839, in the cabinet of Higgins. In 1837 Ludwig Leichhardt had visited Mary Anning, whom he called the "princess of palaeontology" ; Leichhardt later went to Australia, and noted that in September 1840 he would be joined there by Higgins. But Higgins couldn't adjust to the rough bush life and 3 years later he returned, to Bristol, where he filled the museum with specimens. He then busied himself with fossil insects. In 1845 he was contributing to the "Zoologist" about things he'd seen in Australia, and in 1847 was a chief supporter of Charlesworth's Geological Journal. An 8' ichthyosaur discovered at Lyme Regis had been given to York Museum, and in 1847 Higgins himself was in York. Higgins enjoyed travelling while supporting himself from private means. In 1849 he met and married a woman from Newcastle-upon-Tyne, and a year later entered Guys Hospital . After attending medical classes between 1850-51 he went to Birkenhead to practice as a physician. In 1860 he returned to Bristol where he pursued his interests in birds and zoological material. In 1865 he moved to London and was elected a member of the Royal Entomological Society, and two years later purchased the major natural history agency of Samuel Stevens, but his interest in

his own collections was on the wane. In 1867 he was elected a Fellow of the Royal Geographical Society, with Murchison as sponsor. At the time, fossils had little public attraction, and in 1873 there was an appeal to save Higgins' collection of fossils from Aust Cliff. With the support of S.G.Percival this was successful and this collection survives (save for some loss during the war) today. In 1875 the remainder of the Higgins collection went to Reed in York. In 1880 Higgins resigned from the London societies of which he was a member; some thought he had died!. He sold all remaining collections and emigrated to Tasmania at the age of 64, settling in Launceston as a doctor. He tried to become a museum curator, but being unsuccessful, he moved on and again many thought he had died! But he was alive and now living in Melbourne. Finally on 1 April 1891 he did truly die.

Following a brief discussion, the meeting closed with a few hardy souls finding a local hostelry to further discuss matters. The HOGG committee is indebted to John Cooper of the Booth Museum, Brighton for organising the meeting and to the Geological Society for providing facilities.

History of Geology at Applied Geoscience '96, Warwick University, 15-18 April 1996

The Scociety's first Biennial Meeting got off to an excellent start with over 800 registrants appearing in series, if not always in parallel, at the Warwick University's splendid campus, for four days of meetings which spanned the gamut of Applied Geology from aggregates and aquifer susceptibility to velocity modelling and volcano emissions.

In the midst of all this, the Engineering Group of the Society held a fascinating meeting (18th April, convened by Dr E.P.Rose, Royal Holloway) on the theme of **Best use of Ground - Lessons from Military Geology.** Indeed so enthralling was the topic that not only were some of the audience standing in the aisle for the afternoon sesion but (thanks to Ms. Anna Grayson) following the meeting it also made a spot on Radio 4's *Science Now.*

The introductory talk, "*The Military Service of GB Greenhough, Founder president of the Geological Society*" (E.F.P.Rose, Royal Holloway) set the scene, with his involvement with the Light Horse Volunteers of London and Westminster, from which he resigned in 1819 in protest at the "Peterloo Massacre" [see also E.P.Rose, "*Geologists and the army in 19th century Britain: a scientific and educational Symbiosis ?*", Proc. Geol. Assoc., **107** (2): 129-141, 1966]. T.J.Halsall (Reading) then discussed in "*Geological constraints on Battlefield Tactics in Britain during the Middle Ages and the Civil Wars*", the effect of geology on early battlefield tactics in an account of the decisive role a steep scarp slope of Magnesian Limestone played in the battle of Towton (1461), while in "*Geological Constraints at the Battle of Waterloo*", K.Spink described how torrential rain (? as a result of the 1815 eruption of Tamboro) turned the Lutetian into a muddy quagmire which Wellington turned to our distinct advantage. W.E.Pittman (West Alabama) then described the work of Eugene Woldemar Hilgard (1833-1916), geologist, chemist, soil scientist, ecologist, and manufacturer of gunpowder in "*A Geologist in the American Civil War*".

The perspective then changed to more modern times, with geologists providing a vital role in determining areas suitable for the digging of trenches, securing adequate supplies of water and aggregates, and participating in latter-day siege warfare using offensive tunneling, in "*Geology and Warfare on the Western Front, 1914-1918*" (P.Doyle, M.Bennet & F.M.Cocks, Greenwich). Subsequent papers were concerned with the role of geologists in World War II:

"The Royal Engineers from Dowsing to Hydrogeology" (F.Moseley), *"The Organisation of Military Geology in the German Wehrmacht 1939-1945"* (H.Hausler, Vienna & D.Willig, Ulm); *"Organisation and use of Military Geology Teams of the German Army 1941-1945"* (H.Hausler); *"The Geological Basis of Military Airfields in the United Kingdom: an Historical Perspective"* (R.Blake, Nottingham Trent); *"A Comparison of British & German Military Applications of Geology in World War II"* (E.P.Rose, H.Hausler & D.Willig: and *"Military Geology and the Fortess of Gibraltar"* (E.P.Rose & M.Rosenbaum).

Aspects of what military geology entails in the modern army were described in *"Operational Roles for Military Geologists"* (M.S.Rosenbaum, Imperial College) and *"Well Drilling in the British Army"* (J.F.Nathanail, Delta-Simons, & R.Johnson). The benefits to geological science as a whole, resulting from spin-off from military technology (embracing such things as satellite imagery, GPS and GIS), was surveyed in *"Interactions between Information Technology, Defense, Terrain Analysis and Geology"* (C.P.Nathanail, Nottingham Trent). Finally, in *"Geo-environmental Security - the Challenge to Tomorrow's Geologists ?"* (C.P. & J.Nathanail) we were reminded, perhaps rather depressingly, that most wars are fought over 'prestige or natural resources' and that water supply is likely to become as important a source of friction as has mineral supply and mere territorial ambition in the past. It is hoped to publish the papers presented at the meeting in a *Special Publication* of the Society.

The meeting was followed by a field excursion (19th-24th April), led by E.P.Rose & Prof. Claude Pareyn (Caen) to sites associated with the D-day landings and the subsequent battle for Normandy in 1944 [see E.P.Rose & C.Pareyn, *"Geology and the Liberation of Normandy, France, 1944", Geology Today*, **11**:58-63, 1995].

Elsewhere, Dr J.G.Fuller (Tunbridge Wells [and **HOGG** Treasurer! - Ed.]) was awarded a Special category prize in the Best Poster competition, for his [multiple] exhibit on the History of Geology:

Prelude to Geology in England 1549-1649, A Glasse Representing the Face of the World;
Stratigraphy in England 1649-1799;
Order: The Great Chime and Symphony of Nature;
The Subsurface Density-log, 1712, John Woodward's theory sunk by gravity;
Organic Metamorphism in Pennsylvania, 1863, Henry Darwin Rogers & the origin of Petroleum;
The invention of stratigraphic cross ections, 1719, Natural order of strata displayed;
Stratigraphic Stand-off at the 49th Parallel, 1956, Swivel-eyed Geology in the American West.

...and the next HOGG event

will be held in the Geology Department of Bristol University, on 25th September 1996

This is a general meeting without a specific theme, and the following speakers have accepted invitations to talk on the following subjects:

The meeting starts at 11.00am

Introduction		
Charles Copp	-	On Charles Moore, the 19th Century Somerset geologist
Michael Cooper	-	On 19th century mineral collectors and dealers

Lunch about 12.30 - 2.00pm (provide your own in the vicinity of the department)

2.00 John Wyatt - On Worsworth and the geologists
Roger Vaughan - On Edwin Witchell and the Cotteswold Naturalists' Field Club
Norman Higham - On Henry Clifton Sorby

c. 4.15-4.30 Break for tea (provided in the department)

4.30 - 5.00pm A chance to see a small exhibition of maps and books from the Eyles collection

There is no charge for this meeting, and there is no requirement to contact the organiser, but. anyone wanting further details should contact Bob Savage (tel: 0117-928-7788 (Geology Dept. secretary); or e-mail: Bob.Savage@bristol.ac.uk)

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HOGG meeting in 1997...

Spring meeting at Burlington House, London, on **Wednesday 19th March 1997**

"Publishing and the World of Print in the Making of Geology"

It would of course be impossible to write the history of geology without books, periodicals and other printed materials. All too often, however, we take these for granted anf think of publications only in terms of their famous authors. the less visible - but fascinating and no less significant - role of publishers, printers, editors, booksellers and reders is often forgotten.

Plans are underway for a HOGG day meeting to investigate the role of publishing and printing in the history of the earth sciences. The meeting will be held in London on Wednesday 19th March 1997 at the Geological Society. Possible topics include: publishers important in geology (such as Murray, Macmillan, Cambridge University press, or W.H.Freeman); the role of publishers and printing processes in shaping the reception of key texts; the history of popular publishing programmes in the earth sciences. Twentieth century topics are especially welcome.

Anyone interested in being considered for inclusion on the programme should submit a title and abstract **by 15th September 1996** to Dr J.A.Seccord, Dept. of History & Philosophy of Science, University of Cambridge, Free School Lane, Cambridge CB2 3RH (e-mail: jas1010@cam.ac.uk).

Information wanted....

Australian women palaeontologists

Sue Turner has written two contributions to the Encyclopaedia on the History of the Geological Sciences (editor Dr Greg Good) due to be published by Garland Press (USA) this year: one on History of Palaeontology in Australia, and another on women palaeontologists in Australia. She returned to this latter subject at a meeting on the history of natural history organised by the Royal Society of Queensland, held on October 14th 1995 at the Queensland Museum. Here she spoke particularly of the contributions to Queensland palaeontology made by Emeritus Professor Dorothy Hill and recently retired Museum Curator of Geology/Invertebrate Palaeontology, Dr Mary Wade, as well as the involvement of women

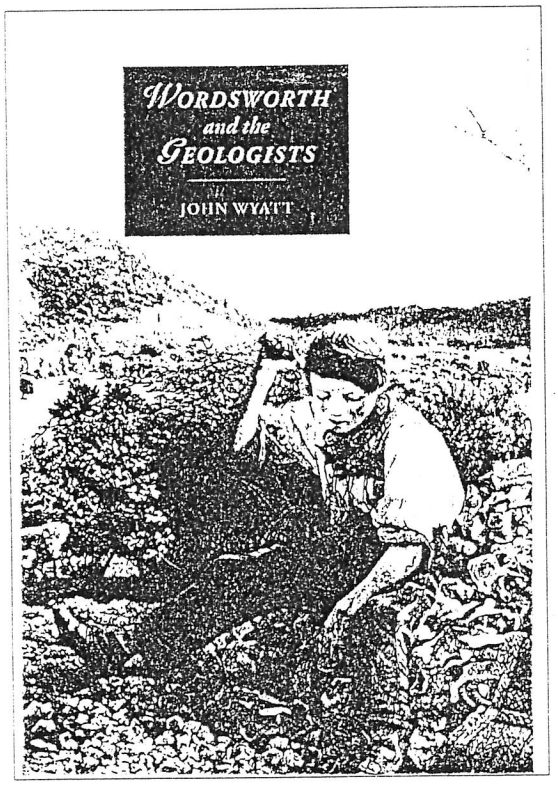
and girls in collecting fossils in the State. This is an attempt to find the sort of data that Aldrich (1982) amassed on women in the USA.

Last year she devised, with the help of Vivienne Waterworth of PN Technology of Brisbane, a Filemaker database on any women involved in fossil collecting and palaeontology in Australian history, to complement the rich resource of the Tom Vallance card file now kept by David Branagan in Sydney. Any useful information on, anecdotes about, lists of people, or information on objects (whereabouts of collections/cabinets/, hammers, photos, notebooks etc) relating to women palaeontologists in Australia will be gratefully received [please transmit to Dr Sue Turner, c/o Queensland Museum, PO Box 3300, S. Brisbane Queensland 4101; Fax 7 3846 1918; e-mail S.Turner@mailbox.uq.oz.au]. Thanks especially to those who have already helped, notably David Branagan himself, Joan (Crockford) Beattie, Oliver Chalmers, Larry Harrington and Jack Jell.

(Aldrich, M., *Women in Palaeontology in the United States 1840-1960*, History of geology 1, (1982): 14-22.)

For your bookshelf....?

"*Wordsworth and the Geologists*" by John Wyatt, pub. Cambridge University Press, Nov.1995, price £35.



"Examination of the links between science and literary history is providing new insight for scholars across a range of disciplines. In *Wordsworth and the Geologists* John Wyatt explores the hitherto unexamined relationship between a major Romantic poet and a group of scientists in the formative years of a new discipline, geology. Wordsworth's later poems and prose display unexpected knowledge of contemporary geology and a preoccupation with many of the philosphical issues concerned with the developing science of geology. Letters and diaries of a group of leading geologists reveal that they knew Wordsworth, and discussed their subject with him. Wyatt shows how the implications of such discussions challenge the simplistic version of 'two cultures', the Romantic-literary against the scientific-materialistic; and he reminds us of the variety of interrelating discourses current between 1807 (the year of the foundation of the Geological Society of London) and 1850 (the year of Wordsworth's death)"

(Precis from the flyleaf)

"A Review of the Archives of the Geological Society Club", by David A. Gray, C.B.E., Oct.1995, Pub: c/o The Geological Society, Burlington House, Piccadilly, London W1V 0JU.

"Of particular importance to these early gatherings [of small groups of eminent men] were the members of the Askesian Society and the British Mineralogical Society. In 1806 the Askesian Society incorporated its more junior partner and soon afterwards the members '...transferred their attention to the more comprehensive master science of Geology...'. Eleven of them formed the Geological Society on 13th November 1807 at a dinner held in the Freemasons' Tavern. Humphry Davy had written to W.H.Pepys, the Secretary and Treasurer of the former Mineralogical Society, to say "... We are forming a little talking Geological Dining Club, of which I hope you will be a member, I shall propose you today...." These societal dining arrangements lapsed within three or four years...[however] dining in some form continued at least until 1818. The present review does not deal *in extensio* with the dining activities...[but]... bearing in mind the importance attached to a gastronomical component in these various gatherings...it can be argued cogently that the present Club is the direct descendent of that ' ...little talking Geological Dining Club...' The sesquicentennial was celebrated on 8 November 1974 at the 2192nd meeting. The object of the present review is to examine the archives as such, rather than to recall the principal events...[and has been].. undertaken on a chronological basis.

(extracted from the Introduction)

HUTTON - LYELL BICENTENARY 1997

James Hutton Plaque Fund

As part of the Hutton - Lyell bicentenary celebrations in Edinburgh in 1997, it is proposed to erect and unveil a plaque to James Hutton (1726-1797) on the site of the house on St John's Hill in Edinburgh where he wrote the *Theory of the Earth* and all his other works. Negotiations for this are underway with the local authority . A special fund to defray the costs has been established, and donations to this are invited. Cheques should be made payable to the Edinburgh Geological Society, and should be sent to the Treasurer, Mr David Gould, at the British Geological Survey, Murchison House, West Mains Road, Edinburgh EH9 3LA, preferably by 31st December 1996.

(Norman E. Butcher)

Symposium on the History of Mineralogy, Petrology and Geochemistry

Mineralogische Staatssammlung Munchen, Munich, Germany, 8-9 March 1996.

The meeting, attended by 47 delegates drawn from Germany, Russia, Italy, UK, Portugal, Poland, Norway and the USA, was organised and both genially and generously hosted by Dr. Bernard Fritscher on behalf of Ludwig-Maximilians-Universitat Munchen, Technische Universitat Munchen and the Mineralogische Staatssammlung Munchen. The talks were presented, appropriately enough, in a lecture theatre adjoining the Museum Reich der Kristalle of the Mineralogische Staatssammlung Munchen. The proceedings took place mainly in English, apart from a number of speakers from the former East Germany for many of whom Russian was their second language and, as it was explained to us, it was still a novelty for them to be able to give a paper at a scientific meeting in their native language

The meeting began with "*Origin and evolution of fundamental mineralogical ideas*", by N.P. Yushkin (Syktyvkar, Russia) which included some interesting graphical analyses of the development of mineralogy in terms of the numbers of new minerals found per annum and activities of mineralogists from the earliest times up to the present. J. Lima-de-Faria (Portugal) talked on the "*Past, present and future of the classification of minerals*" which began with Whewell and Federov and ended up with a discussion of his own proposal (1983) for a new classification system for minerals based on their internal structure. Clearly disappointed that mineralogists have not taken up his proposals, he saw the two major obstacles as "the negative reaction of many mineralogists to the change of their mental habits" and "the lack of complete information of the crystal structures themselves." The former was clearly demonstrated by a formidable old German Professor who appeared to have attended the meeting simply in order to carry out a vigorous (and increasingly personal) attack on the speaker's proposals, which Professor Lima-de-Faria fended off with his customary charm.

"*The history of fluid inclusion studies*" was described by R. Wiesheu (Munich) in an excellent and well-illustrated review which began with epigrams on 'quartz with water inside' by the poet Claudian in the 4th Century and ended in modem times. We learnt that Humphrey Davy (1822) was the first to observe fluid inclusions with a microscope; Brewster (1823) identified calcite cubes within inclusions; and Zirkel (1866) first attempted spectroscopic analysis of their contents. Despite the fact that Sorby (1858) recognised the potential of fluid inclusions for determination of the conditions at the time of mineral deposition, scepticism about their utility persisted until ca.1953. The vast majority of the papers published on fluid inclusions have appeared in *Economic Geology* and *Geochimica et Cosmochimica Acta*, attesting to their economic significance, but since 1950 there has been a distinct diminution in the volume of published work.

Early mineralogical developments in Italy were attractively outlined by N. Morello (Genova), "*Mineralogical classifications in 16th century Italy*"; A. Kuhne (Munich), "*Kristallographische Darstellungen in der Kunst der Deutschen und Italienischen Renaissance*"; and E. Vaccari (Genova) "*Mining and mineralogy in late 18th century Italy: Wernerian influences in Turin and Naples*". Mineralogical aspects of the meeting were complemented by a handsome exhibit "*Goniometry in Mineralogy*" by O. Medenbach (Bochum) [see: "*Rho und Phi, Omega und Delta - Die Winkelmessung in der Mineralogie,*" *Mineralien-Welt* 5/95].

R.Howarth (London) bridged the gap from mineralogy to geochemistry in "*Early usage of Graphical Methods in Mineralogy and Petrology*" which described the use of sterographic and gnomonic projections and the role of graphical methods, such as the variation and ternary diagrams, in data display. It was shown that significant growth in the use of graphical methods did not begin until about 1870. This was followed by a well-illustrated and intriguing look at laboratory apparatus and experimental techniques in petrology through the ages in "*Laboratory variables in late 18th century Geology*" by S. Newcomb (Largo, USA). It formed an excellent complement to a spectacular exhibit, on loan from U. Burchard (Technische Universitat Munchen) on "*One Hundred Years of Blowpipe Analysis*" which included Bunsen's personal kit for chemical analysis in the field! [see *Mineralogical Record*, **25**: 251 (1994)].

In "*Origins of the Norwegian School of Geochemistry*", G. Hestmark (Oslo) made a good case (practically heresy in Norway) for regarding Th. Kjerulf (1825-1888) rather than the

great V.M. Goldschmidt (1888-1947) as the real originator of the Norwegian school of geochemistry. He showed that Kjerulf, who had studied abroad with Bischof and Bunsen, began systematic geochemical investigations of igneous rocks from Iceland and Norway. However, his successor, Brogger did not do his own chemical determinations and concentrated mainly on optical work. He was succeeded by Goldschmidt and it was he and his students, who included T.F.W. Barth, I. Oftedhal and I. Rosenquist, whose work underpins much of early-modern geochemistry.

The presence of Werner, not unsurprisingly, permeated the proceedings in talks by F. Henderson (Munich) "*Novalis and Werner: classification and encyclapaedisrn*"; and in "*G.B. Greenough and W. Buckland's visit to Werner and his collection in 1816*", H. Torrens (Keele) gave us a witty and incisive look at a visit to a man who Greenough decided "talks intolerable French & abuses ye poverty of that language in conveying geological ideas." Despite this, the visit apparently did much to encourage co-operation between British and Continental geologists in the period after the Napoleonic wars. Other personalities were explored in studies by J. Haubelt (Prague) "*The significance of Ignaz von Born (1742 - 1791) for the Development of Mineralogy, Petrology and Geochemistry*"; B. Ambrose-Hamilton (Castle Douglas) "*Two men 'Out of their time' - M.F. Heddle and Patrick Dudgeon*"; R. Hochleitner (Munich) "*Paul von Groth and the development of mineralogical collections*" (which would make an excellent talk for the Curator's Group); S. Wolff (Munich) "*Woldemar Voigt (1850-1919 and his investigations of crystals*"; and P. Schimkat (Kassel) "*C.W. Gumbel on C.G. Bischov, or Two different ways of losing out*". Biographical matters included "*Das Poggendorff-Handworterbuch - Ein wichtiges Hilfsmittell zur Geschichte der Mineralogie und Petrographie*" by M. Kostler (Leipzig) in which we were given a comprehensive review of the evolution of this invaluable work of reference, soon to become available on CD-ROM

Nuclear issues cropped up in a variety of papers: In "*The development of applied mineralogy in Russia: from Lomonosov's era up to modern problems such as nuclear waste disposal*", S. Soboleva (Moscow) described recent work on using progressive structural alteration in kaolinite as a sensitive tool to monitor radiation damage around nuclear waste disposal sites (such as lakes which were apparently used for this purpose in the 1960s!). A. Chernikov (Moscow) reviewed "*The history of the study of uranium minerals by Russian mineralogists*" in which he revealed the results of work to locate uranium minerals in the former USSR and East Germany, and in Czechoslovakia which had been persued between 1945 and 1992 under a cloak of state secrecy . Finally, in "*Early links between geochemistry, atmospheric electricity, radioactivity, and the heat and age of the earth*" H. van Philipsborn (Regensburg) described the hitherto little-known work of Julius Elster (1854-1920) and Hans Geitel (1855-1923) who in 1903 were the first to recognise the ionisation of air to be caused by the presence of trace amounts of radioactive elements present in the soil and some building materials, giving rise to detectable "emanation" (radon) concentrations in the open air and in the air of caves and cellars.

Another interesting link with the former Soviet empire appeared in an exhibit by I. Babicz (Warsaw) of "*The Statistical Atlas of the Kingdom of Poland*", recently discovered in military archives in Moscow. Made in 1840, it includes geological, hydrological and metalliferous maps. It is hoped to reproduce the atlas in facsimile before too long.

Finally, B. Fritscher (Munich) rounded off the proceedings with an excellent talk on "*The fabrication of rocks. Traces of modernity in mineralogy and geochemistry*". This took as its

prime example the work of the Geophysical Laboratory of the Carnegie Institution, and European uptake of ideas regarding the phase rule in experimental petrology. It proved a lengthy philosophical debate on just what "modernity" means, which was a fitting end to an excellent meeting

It is intended to publish the proceedings of the meeting, but owing to Dr. Fritsher's other commitments, final versions of the papers will he put together and the volume published in 1997-8.

(Richard J Howarth)

The Archive for the History of Geology in Freiburg

(Geologenarchiv)

This archive, which has close links with the Geologische Vereinigung (G.V.), is a treasure vault for those interested in the history of geology. After the first "Geologenarchiv', had been destroyed in Berlin during the war, the present one was established in 1958 under the guidance of the G.V. Max Pfannenstiel of Freiburg, who was not only a geologist but also an experienced librarian, was asked to establish this new archive. The G.V. gave moral support as well as some small financial assistance, e.g. for the acquisition of rare documents.

When Pfannenstiel handed the collections over to the University library for storage and future cataloguing in 1972, they already consisted of more than 30 000 documents, among them complete sets of scientific correspondence mainly of geologists, palaeontologists and, to a lesser extent, also of mineralogists. After Pfannenstiel's death in 1976, his work was continued by colleagues who were proposed by the G.V. Today, the archive owns about 70,000 documents; in addition to the letters, there are some movies as well as tapes, maps, sketches, fieldbooks, portraits, medals, obituaries and other papers of historical interest. The photo collection holds about 700 pictures.

The bulk of this material is catalogued and thus easily accessible. The development of the archive depends almost entirely on gifts from interested and generous colleagues. Examples from the last two decades include the bequests of Andre Cailleux, Eugen Wegmann, Hans Stille, Hans Cloos and major gifts from Curt Teichert and Georg Knetsch. Archive news, which includes a list of recent benefactors, is published annually in the *Geologische Rundschau.*

Address: Geologenarchiv (Prof.Dr. Eugen / Dr Ilse Seibold), Universitatsbibliothek, Werthmann platz 2, D-79098 Freiburg i.Br. (Fax: 0761-203-3987)

(via H.S.Torrens)

Worth a visit...?

"Vases and Volcanoes"

This splendid exhibition detailing the life of Sir William Hamilton is currently on at the British Museum, Bloomsbury, London until 14th July. It is open on Mondays to Saturdays from 10-4.50pm and on Sundays from 2.00-5.50 pm. Admission costs £3.50 (concessions £2). The exhibition is accompanied by a lavishly illustrated book.

XXth International Congress of Science, Liege, Belgium

"Development & Cultural Influence of Geological Sciences in an Age of Technological Expansion"

This is a two-part symposium being held within the framework of the Congress of History of Science at Leige, Belgium, 20-26th July 1996. The two themes of the symposium are (1) **Geology & Mining in the Old and New Worlds**, and (2) **use of Non-written sources for the Histrory of Geological Sciences.** In accord with congress guidelines, the symposium organisers plan to include contributed as well as invited presentations. Decisions on contributed papers will be made by Programme Committee referees on the basis of submitted abstracts. Prospective authors of contributed papers under either of the two themes are invited to contact one of the symposium organisers:

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Anyone planning to take part in the congress should also request the first circular from the Congress Office:

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