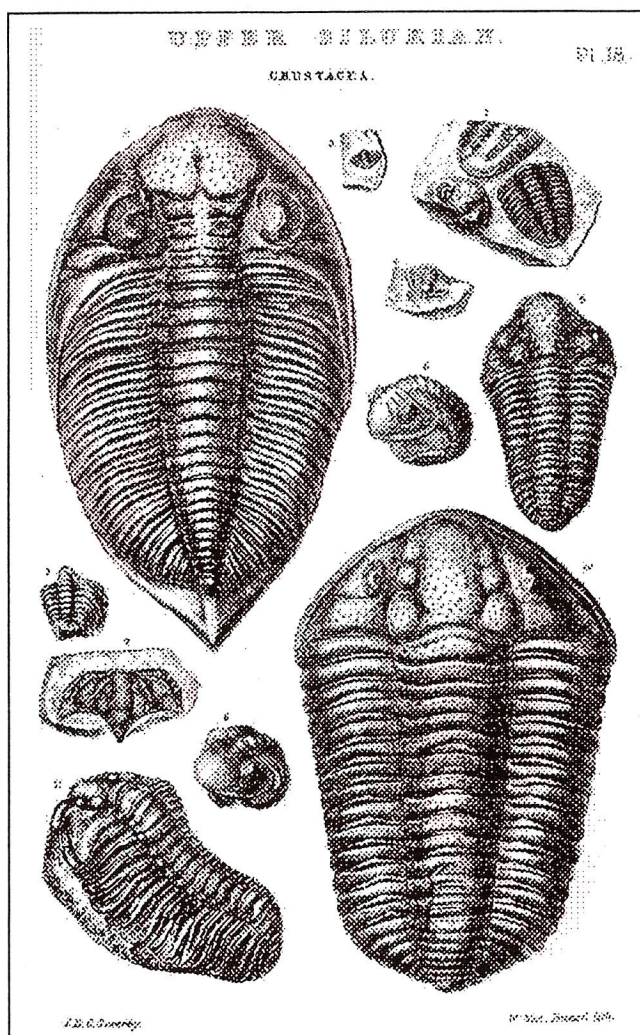
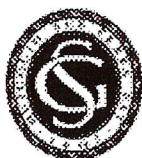


HOGG

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



**Number 28
September 2006**



Cover Illustration:

This illustration comes from the 4th edition of Sir Roderick Impey Murchison's *Siluria*, published in 1867. Murchison had already described the Silurian System in Great Britain in 1838, though his 'Silurian' also included rocks now assigned to the Cambrian and Ordovician. *Siluria* contains superb illustrations of high artistic quality, of the faunas found in the Silurian System. The trilobites shown are:

Fig.1. *Phacops caudatus* Brogn. W.L. Shropshire and Dudley. [This is now assigned to *Dalmanites*.]

Fig.2,5 *Phacops downingiae* Murch. W.L. Dudley. [This is now assigned to *Acaste*.]

Fig.3,4 Tails of young specimens. From Ludlow Rock, Pembrokeshire.

Fig.7,8 *Acidaspis brightii* Murch. W.L. Malverns and Dudley.

Fig.9 *Encrinurus variolaris* Brogn. W.L. Dudley.

Fig.10 *Calymene blumenbauchii* Brogn. W.L. Dudley.

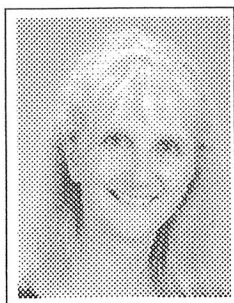
Fig.11 *Calymene tuberculosa* Salter W.Sh. Burrington, Shropshire

Murchison, Sir Roderick Impey, 1867. *Siluria*. Fourth edition. *A History of the Oldest Rocks in the British Isles and Other Countries; With sketches of the Origin and Distribution of Native Gold, the General Succession of Geological Formations, and Changes in the Earth's Surface*. John Murray: London, p.1-566, pl.1-41.

Examples of some of these may be seen during the HOGG meeting in Dudley in November (see details of the History of Geoconservation conference, and the HOGG AGM, inside)

Editor: Peter Tandy, Department of Mineralogy, The Natural History Museum, Cromwell Road, London, SW7 5BD (tel: 0207-942-5076; fax 0207-942-5537; e-mail p.tandy@nhm.ac.uk)

Moving into the digital age



Do you ever feel as if the world is overtaking you? I know I do. 'Celeb' culture, MP3 players, blogs and many other features of modern life all seem to have passed me by, such that I sometimes feel like

that judge who, at the height of their popularity, had to admit he had not heard of the Beatles. OK, I confess, I even take some pride in not knowing (or caring) who, for example, Paris Hilton is – I always thought she was a hotel in Paris.

So it may come as something of a surprise to hear me say that in line with other papers and journals the HOGG Newsletter is about to go digital. Why? Well, several reasons really. The first one is, of course, that it will save us a considerable amount of money. The Newsletter is one of HOGG's biggest expenses and with the introduction of the new Post Office charging system, it is going to cost us even more, eating into our

meagre resources that would otherwise go towards organising meetings, field trips and other events.

Another reason is that hard copies use up a lot of paper which, I suspect, often goes into the bin unread. A third motive is that we plan to give the Newsletter a make-over, bringing it closer towards the 21st century and since that will be done digitally, it makes sense to also send it out digitally, saving our hard-working Editor a lot of time and effort.

But don't worry! For those of you not on email, or even those of you who are on email but would still prefer to have hard copy, we will still print one for you and send it out. We don't want anyone to miss out and we don't want to force on you something you don't want. So there is a form below that allows you to choose. But I do ask that you seriously consider taking the digital version if you possibly can, thereby saving us money and time. After all, you could always print it out yourself!

Cherry Lewis
HOGG Chairman

Your name:

Please tick the appropriate box

I am happy to receive the Newsletter by **EMAIL**.

☐

This is my email address:

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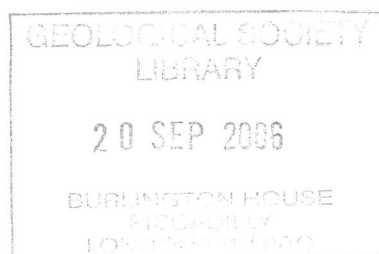
I would prefer to receive the Newsletter by **MAIL**.

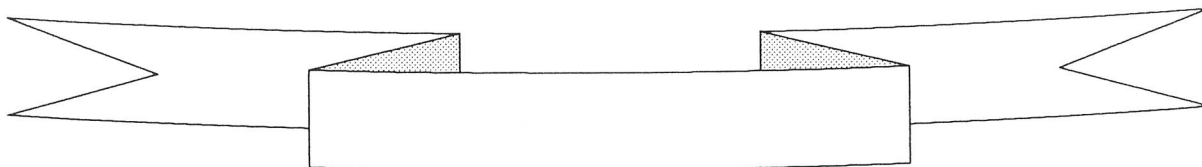
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Please either email your reply to hoggsec@hotmail.com or send this form to:

Anne O'Connor, 13 Manor View, High Pitington, Durham DH6 1AD.

Please reply by **30 September 2006**.





1807-2007 Bicentenary of the Geological Society

The Geological Society, founded 13 November 1807, is the oldest national geological society in the world. **The History of Geology Group (HOGG)** will be holding an international two-day conference on **12-13 November 2007** to celebrate the Geological Society's bicentenary.

Conference

The conference will focus on the achievements of the Society, the founders, and some of its members and their activities over the past 200 years.

- **Theme 1:** The status of geology in comparison to other sciences in the UK and to geology in other countries around 1807
- **Theme 2:** The foundation and founders of the Society
- **Theme 3:** The first 100 years
- **Theme 4:** Towards the 21st Century

Field trip

The conference will be preceded by a field trip to the Isle of Wight on the **10-11 November 2007** to visit some of the classic geological localities of historic interest.

Dinners

On the evening of **12 November 2007** a dinner will be held in the Connaught Rooms, which now incorporates the Free Mason's Tavern where the Geological Society was founded. A plaque commemorating the founding of the Society will be unveiled.

On the evening of the **13 November, 2007**, the Geological Society will be holding a dinner in the Natural History Museum.

Call for papers

Anyone interested in offering a paper should send an abstract of **not more than 300 words** to cherry.lewis@bristol.ac.uk to arrive not later than **1 June 2006**. Please clearly state which theme your paper addresses. As we anticipate a large number of papers to be offered, we regret we will not be able to include everyone. However, we intend to publish a Geological Society Special Publication based on the conference proceedings in which we will be able to include a much larger number of papers, subject to the normal peer review process.

Register your interest

Anyone wishing to go on the mailing list to receive further information about this event should email cherry.lewis@bristol.ac.uk putting '**HOGG bicentenary event**' in the subject line.

For information on this and other HOGG events, go to:
<http://www.geolsoc.org.uk/HOGG>

HOGG Annual General Meeting, 2006

The Annual General Meeting of HOGG will take place on Friday 24th November, during the "History of Geoconservation" meeting to be held in Dudley

HOGG ANNUAL GENERAL MEETING 2006

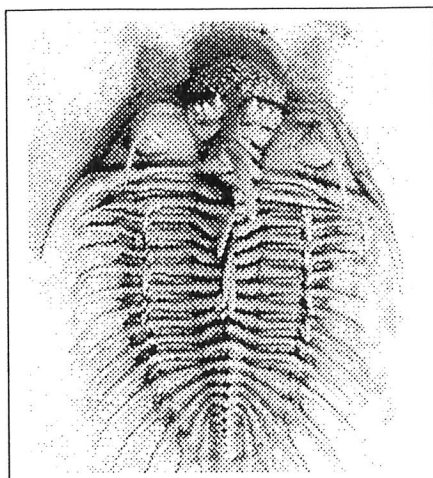
AGENDA

- 1) Apologies
- 2) Minutes of the last AGM
- 3) Matters Arising
- 4) Election Matters
- 5) Secretary's Report
- 6) Treasurer's Report
- 7) Newsletter Editor's Report
- 8) Motions
- 9) AOB

If you have a motion you wish to raise, please send it to the Secretary, by 14 November 2006, at hoggsec@hotmail.com

or by post to the following address:

Dr. Anne O'Connor
13 Manor View
High Pittington
Durham DH6 1AD
UK



HOGG Diary of Future Meetings

The HOGG Committee has set an ambitious provisional agenda of meetings for the future. More details will be given of each meeting nearer the date, but so far the provisional diary is:

2006

History of Geoconservation (24-25th November) (in conjunction with the Black Country Geol.Soc.in Dudley)

2007

"From Oil Shales & Seeps to 'Shaleopolis' & imported Roughnecks!" meeting (April 2007)

HOGG Celebration of the bi-centenary of the Geological Society (12-13th November)

2008

Smith, Phillips & Rotunda meeting (Scarborough, April, May or June)

History of Igneous Petrology

Mapping Literary Geology (Summer?)

Pre-Cambrian meeting, Leicester, (?September)

History of Metallurgical Mining (possibly held in Cornwall)

2009

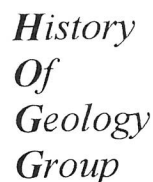
Field trip to Liverpool (in conjunction with the Geologists' Association ?)

History of Micropalaeontology

Other topics may include:

History of the Philosophy of Geology, the History of Mineralogy, something on Collections Lost and Found, and more on Hydrogeology

If members have any additional ideas for meetings (or field excursions) the Committee would be pleased to hear of them.



History of Geoconservation Conference

24th - 25th November 2006

DRAFT Conference Programme

Friday 24th November

09:00 – 09:50 Registration and coffee
09:50 - 10:00 Introduction and Welcome

The origin of geoconservation

10:00 The origins of geological conservation - Phil Doughty
10:30 Geoconservation in the 19th century - Barry Thomas
11:00 History of Geotourism - Tom Hose
11:30 Geodiversity: the origin and evolution of a paradigm – Murray Gray
12:00 Buffet lunch

Geoconservation in the British Isles

13:00 The role of the voluntary sector in the evolving geoconservation movement – Cynthia Burek
13:30 The history of the Geologists' Association involvement in geological conservation - Chris Green
14:00 The history of the Geological Conservation Review – Neil Ellis
14:30 Statutory and legislative milestones - Colin Prosser
15:00 A historical perspective on local people in geological conservation – Graham Worton
15:30 Tea

Geoconservation on an international scale

16:00 History of Geoparks - Cheryl Jones
16:30 History of Geoconservation in Europe – Lars Erikstad
17:30 World Heritage Sites - Patrick Boylan
Evening: Brief return to hotel
19:30 Conference dinner in Dudley Caverns (with underground canal boat trip)

Saturday 25th November

AM: Visit to Wren's Nest
Buffet lunch at Dudley Museum and Art Gallery
PM: Visit to Museum to see geological specimens and art

"Histoires de la Terre"

Call for Papers

International Conference: University of Sheffield, **Fri 30th March – Sun 1st April 2007**
CONFIRMED KEYNOTE SPEAKERS: Ceri Crossley (Birmingham), Tim Unwin (Bristol),
Grégory Quenet (Versailles Saint-Quentin-en-Yvelines)

The publication of Buffon's *Théorie de la Terre* in 1749 heralded the advent of an era in which thinkers would seek a new understanding of the earth and humanity's relationship with its physical environment. This conference invites exploration of how Enlightenment and post-Enlightenment developments in the earth sciences and related fields (e.g. cartography, oceanography, mining, tunnelling, palaeontology, evolution) have informed French and Francophone literatures of the eighteenth, nineteenth and early twentieth centuries.

Proposals are invited for papers in English or in French, on the conference theme from any of the periods cited above and from any discipline of French and Francophone studies.

Possible areas of study may include:

- Natural disasters – earthquakes, volcanic eruptions, tidal waves, landslides, etc.
- Goldmines, ironmines, coalmines, etc. and mining
- Oil prospecting and drilling
- Mineralogy and minerals
- Mountaineering, alpinism, rock-climbing
- Caves, caverns, potholing, tunnels
- Exploration of extreme terrains – deserts, tundra, the Arctic
- Subterranean spaces and networks, journeys, creatures
- Maps, cartography, topography
- Myths and legends of the earth and in earth sciences (Gaia, Hades, Vulcan, etc.)
- Palaeontology, fossil-hunting, dinosaurs
- Evolutionary theory and the earth
- Birth and development of geology, earth sciences and theories of the earth
- Uniformitarianism and catastrophism
- Geological time, the age of planet earth
- Cosmogony and the earth sciences
- Archaeological digs, sites, discoveries
- Collections of minerals, gems, fossils, antiquities taken from the earth
- Tourism and the exploration of sublime landscapes
- Glaciers, ice-fields, icebergs
- Creation / disappearance of islands
- Oceans and oceanography
- Electricity and the earth
- Other worlds, early theories of interplanetary exploration

This list is in no way intended to be exhaustive.

Proposals (300 words maximum) for 20-minute papers should be sent to the conference organisers Dr Louise Lyle (l.lyle@sheffield.ac.uk) and Dr David McCallam (d.mccallam@sheffield.ac.uk) by **31st October 2006**.

Conference organisers to publish a volume of selected essays from the papers presented.

For your bookshelf....?

"Jurassic Mary - Mary Anning and the Primeval Monsters" by Patricia Pierce, Pub: Sutton Publishing, 2006, pp238.

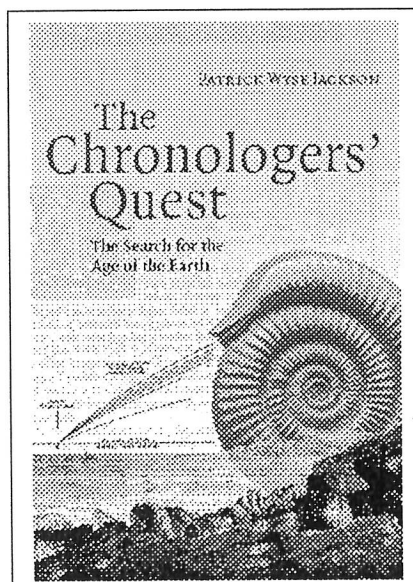
Spinster Mary Anning, uneducated and poor, was of the wrong sex, wrong class and wrong religion, but fate decreed that she was exactly the right person in the right place and time to pioneer the emerging science of palaeontology, the study of fossils. Born in Lyme Regis in 1799, Mary learned to collect fossils with her cabinet-maker father. The unstable cliffs and the stealthy sea made the task dangerous but after her father died the sale of fossils sustained the family.

Mary's fame started as an infant when she survived a lightning strike that killed the three adults around her. Then aged twelve she caught the public's imagination when she unearthed the skeleton of a 'fish lizard' or Ichthyosaurus. She later found the first *Pleiosaurus giganteus*, with its extraordinary long neck associated with the Loch Ness monster, and dramatically, she unearthed the first still rare *Dimorphodont macronyx*, a frightening 'flying dragon' with hand claws and teeth.

Yet her many discoveries were announced to the world by male geologists like the irrepressible William Buckland and Sir Henry De La Beche and they often received the credit. In *Jurassic Mary*, Patricia Pierce redresses this imbalance, bringing to life the extraordinary, little-known story of this determined and pioneering woman.

(from the flyleaf)

New from Cambridge University Press:



The Chronologers' Quest

Episodes in the Search for the Age of the Earth

Patrick Wyse Jackson
Trinity College, Dublin
Hardback; 296 pp; £19.99

20% off
for HOGG members
(see included flier)

The debate over the age of the Earth has been ongoing for over two thousand years, and has pitted physicists and astronomers against biologists, religious philosophers against geologists. *The Chronologers' Quest* tells the fascinating story of our attempts to determine the age of the Earth. This book investigates the many novel methods used in the search for the Earth's age, from James Ussher and John Lightfoot examining biblical chronologies, Comte de Buffon and Lord Kelvin determining the length of time for the cooling of the Earth, to the more recent investigations of Arthur

Holmes and Clair Patterson into radioactive dating of rocks and meteorites. *The Chronologers' Quest* is a readable account of the measurement of geological time. It will be of great interest to a wide range of readers, from those with little scientific background, to students and scientists in a wide range of the earth sciences.

Discoverers of the 20th Century: Perfecting the Search, Edited by Charles Sternbach, Marlan Downey & Gerald Friedman. 2005, hardcover, 216pp, ISBN 0-89181-828-6

Geoscientists who believe, as the editors of this book do, "... that a study of history is extremely valuable: A shortcut to wisdom and additive to personal experience..." will want this Special Publication as a handy reference. This volume contains case histories of both exploration triumphs and breakthrough concepts; fascinating stories of early discoveries, landmark technologies, and modern innovation as told by the authors with privileged glimpses into critical thought processes. The editors hope that students and seasoned professional alike will enjoy these stories, learn from them, and then cause some new stories of their own to be write!
(advertising in AAPG magazine)

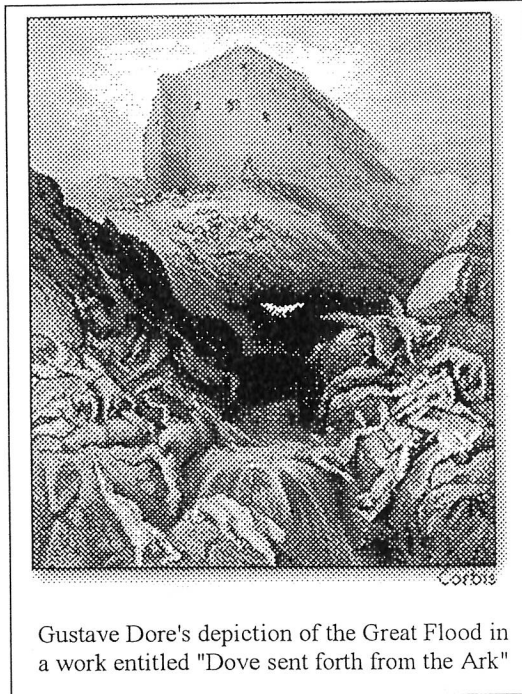
William Buckland 150th Anniversary Symposium

Held in the lecture theatre of the Oxford University Museum of Natural History, this was a joint meeting between the Museum, HOGG, and the Palaeontological Association, to mark the 150th anniversary of his death in 1856. The meeting was well attended with about 140 delegates, keen to listen to aspects of Buckland's life and work.

Meeting convenor **Jim Kennedy** (Oxford) started the session with a look at Buckland's life. He was born at Axminster in 1774, the eldest son of Charles Buckland and his first wife Elizabeth. After education firstly at home, then at schools in Tiverton (Devon), and Winchester (Hampshire), he was taken by his uncle Charles Buckland to Warnborough, just south of Oxford, to complete his education. In 1801 he was admitted to Corpus Christi college, Oxford to study Latin & Greek literature, and Geometry and Theology. He graduated in 1804, and was elected to a fellowship and ordained as a priest in 1808. He became friends with scientists John Kidd, Christopher Pegge, W.J. Broderip and W.D. Conybeare, whose lectures he attended, and whose influences changed his life. In 1813 he was appointed to the readership in Mineralogy, and 5 years later to the newly-established post of readership in geology, for which he had petitioned. In 1823 he travelled to the cave at Paviland, south Wales, where human remains covered in red ochre, and subsequently known as the 'red lady of Paviland' were found. A year later he described remains of a large creature found in the rocks at Stonesfield (Oxford) - this was megalosaurus. But, dissatisfied, he accepted the living at Stoke Charity (Hampshire) and would have left Oxford, but for being appointed Canon of Christ Church in 1825. In that same year, at the age of 41, he married Mary Morland, aged 28, whom he had known for some years. The defeat of Napoleon by Wellington had opened up avenues for European travel, and they went on the Grand Tour, for a honeymoon. It also allowed Georges Cuvier, the great anatomist, to visit Oxford, and Buckland showed him bones from Stonesfield. In 1836 he wrote his 'Bridgewater Treatise' which was to be a best

seller. But his popularity as a teacher was declining, and in 1845 he was appointed as Dean of Westminster, which also included the rectorship at Islip near Oxford. Robert Peel made the appointment and claimed it as "the best I have ever made"; Darwin said Buckland was a buffoon! In 1849 he started to show eccentric behaviour was confined to an asylum in Clapham; he never resumed his duties as Dean, but managed to retain the salary and the house at Islip. In 1856 he died in the asylum, and was buried at Islip. Mary died a year later.

Following this opening, it was **John Brooke** (Oxford) who looked at the palaeo-theology of Buckland. As a theologian, Buckland had a problem in uniting the known human world with the prehuman, and took the decision to become an actor within the scenes he



Gustave Dore's depiction of the Great Flood in a work entitled "Dove sent forth from the Ark"

reconstructed. By using extant forms he was able to transfer the language of natural theology to extinct forms, and so refine what was meant by 'progression' in the fossil record. In his inaugural lecture he had to vindicate science, not religion. The Bible was only concerned with the period of human history, and there was no decisive evidence to extend the age of the human race. But Buckland knew that the Earth had undergone a number of revolutions, and the problem was to affirm the unity that would reflect the unity of a divine mind. If Earth is the product of one piece of work we may expect to find unity and regularity. Buckland strove to integrate extant and extinct forms into a single chain - the Great Chain of Being- which started at the bottom with 'ethereal matter' followed upwards by air, water and pure earth, and thence through all the known geological objects (rocks, crystalline materials), to life forms and the known fossils, known living forms, finally

ending with human beings at the top. He had evidence for things such as the great deluge, and there was a tradition of evidence of divine wisdom in earlier works of nature by luminaries such as Boyle and Newton. Buckland also had skills in reconstructing ancient habitats. The fossil species found which gave links to the living, gave him proof of the "unity and universal agency of a common great first cause....where every individual is shown to be an integral part of one grand original design".

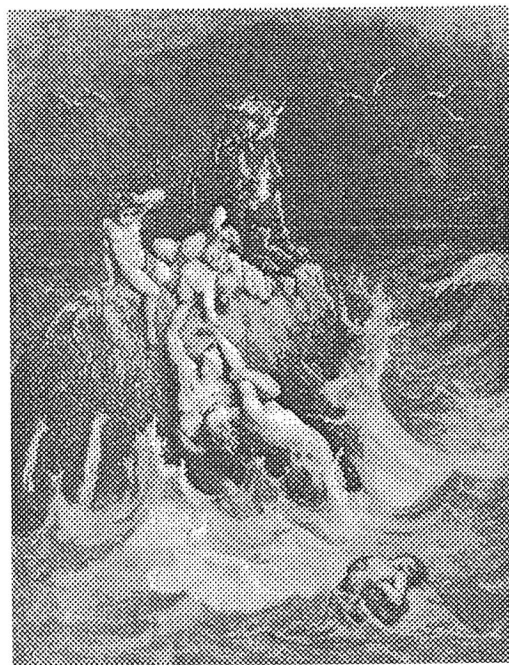
Hugh Torrens (Keele University), looked at Buckland's transmission of British stratigraphic knowledge. William Buckland is often portrayed as a rather eccentric character - in 1886 he was spoken of as the man who "ate his way through the whole animal creation". But he was a multi-faceted character who in 1814 had issued a broadsheet entitled '*Order of Superposition of Strata or Tabular Arrangement of Rocks*' which had attempted to list the known strata in their correct order as found. The broadsheet was revised nine times between then and 1818, as newer information was found. This newer information was not restricted to discoveries made in England, but also included information given to Buckland by Werner in 1816. It also relied to some extent upon the work of Henry Steinhauer (1782-1818), a Moravian church minister from Haverfordwest. Exactly when in 1814 this chart was first produced isn't clear. An extant copy has no date, but has a watermark of 1811, so could not be earlier than this. But the first series of sheets showed 12 formations, from granite and working upwards to end with peat bogs. It's also noticeable that the name of the Oxford Clay pre-dates William Smith's naming it 'Clunch Clay'. The second series adds the Stonesfield Slate for the first time, which was Buckland's addition from Farey's book of 1811. The 3rd series is dated at about 1816, since Etheldred Bennett wrote to Gideon Mantell in that year, telling him that she had "received this version 2 months ago". Version 3 of this series was later copied into French

and Italian by Breislack in 1818. The 4th version attempted to correlate German and English formations, and Buckland allies the Lias with the Oolite. The 5th version was published by Robert Blackwell and was started by Buckland during his tour of Germany, accompanied by W.D. Conybeare, and where they met both Goethe and Werner. Series 3 became the most impressive of all. The strata now read downwards, as in nature, and it was used, with permission by Phillips in his book of 1818. A version was published in Westgarth Forster's book on the strata from Newcastle to Cross Fell. The charts became more influential than realised, and inspired many others. They were produced annually from 1814-1820 for Buckland's students.

Martin Rudwick (Cambridge) examined the work of Buckland relating to Flood, Deluge and the Ice Age. Those who see Buckland as essentially English or even Oxfordian, do him a disservice. He was more European, and went on several tours, including a whole year for his honeymoon. He was in contact with people on the Continent (and even some in the USA). Cuvier had linked geology to human history and had developed a theory of a catastrophic event in the distant past; there was evidence for an aqueous catastrophe in many places. Buckland adopted the idea of a natural mechanism for this flood event - which might now be called a 'mega-tsunami'. The Edinburgh geologist Hall had already advanced a theory of uplifted oceanic crust which causes waves to spread outwards and a retreat of the sea, which then returns with a vengeance. It was applied to an area of western Edinburgh where there are visible striations and deep land ridges (now covered by housing). Buckland plotted the occurrence of gravels containing quartzite pebbles from the West Midlands, to Oxford and on to London, and said it must be due to a great deluge. He noted that the coastline near Lyme Regis showed a series of deep valleys which were truncated at the cliff line; these must have been cut by a large flood. But how recent was this event?

For Buckland the Biblical event was "The Flood", but a geological deluge might have occurred much earlier in pre-human times. Although both were seen as natural events, neither was linkable to Genesis. Most geologists accepted a huge event in the past; the work of Leopold von Buch in tracing erratic boulders from Mt Blanc all the way across the Swiss plain and on to the Jura Mountains was held as evidence, as was the work of Rasumovsky who described erratics from Finland all the way to Russia and the Baltic. Others, notably Brogniart (1824 in Sweden), de la Beche (1830 at Lake Como), and Sefstrom (1836, in Sweden) mapped eskers, erratics and scratched surfaces respectively, and came to the same conclusion - a pre-human event of some size. To avoid a clash between geological and biblical theory, it was suggested that rocks may have been transported on icebergs, but this didn't account for how they got onto land. The theory of glaciation had been advanced by Esmark

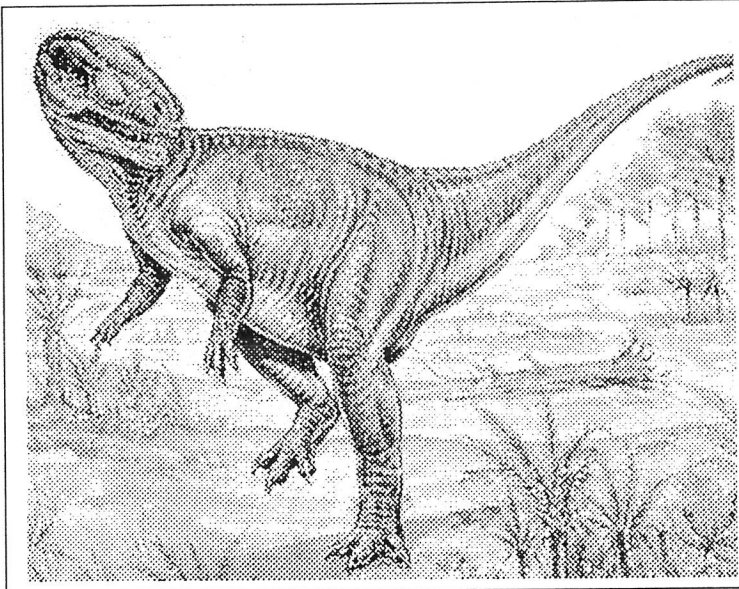
but was ignored. Jean Charpentier (1786-1855) mapped erratics from the Upper Rhine Valley to the Jura Mountains, and proposed the extraordinary theory that climate might once have been different in the past. The only way of having an Ice Age was by assuming the Alps were raised higher than at present. Buckland was present at several crucial meetings on a possible



Gustave Dore's depiction of the deluge

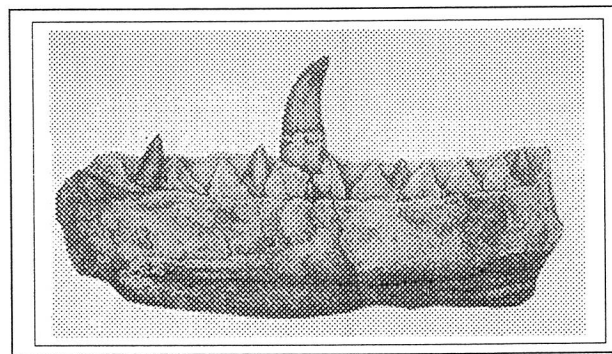
ice age.. The eventual change towards ice-age theories was not straightforward, but was logical.

Philip Powell (Oxford) examined the history of *Megalosaurus*, in the light of recent discoveries. *Megalosaurus*, or the 'great fossil lizard of Sttonesfield', is one of the best known



of all fossils. A recent paper has said that the bones collected by Buckland were "scatterd remnants of a single individual", even though Buckland's paper of 1824 (Trans. Geol. Soc. London, Ser II, p.190) said that the bones "represent several individuals of different ages and sizes". The difference may come from a misunderstanding of the nature of the Stonesfield Slate. These beds are thin, never greater than

6 feet, and though part of the Great Oolite, are a rock type and not a structure. They have been used as roofing slates from the 17th century, and were mined from shafts, some up to 60 feet deep. They are fossiliferous, and one of the earliest finds was a tooth, illustrated in 1699 by Edward Llhuyd.. John Woodward's catalogue of 1728 shows the broken shank of a dinosaur limb bone. A thigh bone some 29" long with waterworn ends was unearthed by Joshua Platt in 1758, and compared by him with an elephant bone, but there was no similarity. The bone is now lost. Other bones were also found. A Dr Watson described a scapula which was found in 1784, and presented to the Woodwardian Museum, but this might not be a *Megalosaurus*.



The now famous 'lower jaw' was known to have been in Oxford in 1797. Now, some new evidence in the form of several letters in the Buckland archive, have shed new light on how the bones came to be in Oxford. The outcome is that *Megalosaurus* is a mess!

Simon Knell (Leicester) looked at Buckland and the museum as a 'network hub'. Buckland was very much a museum man, and as curator occupying upper floors of the Old Ashmolean Museum, had by 1821 amassed a collection of fossils. Instructions on collecting had been given by many authors before Buckland, going back to John Woodward in 1696. When Murchison saw them, he complained that they were untidily kept! Buckland was in any case a celebrity since his work at Kirkland Cave, and he was aware of his own status which he could exploit to construct a network. Buckland used fossils to explain the new science of geology, as these made it all the more powerful to his audiences. His museum became a hub, into which flowed specimens and information, and out of which flowed correspondence and

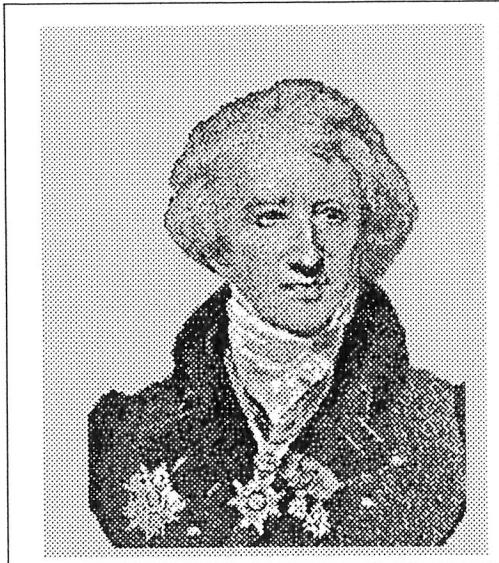
theories, and teaching. Buckland exported this idea after his Kirkland discoveries in 1821 with the establishment of a museum and later Philosophical Society in York. One of his students, William Vernon, the son of the Archbishop of York, did much to raise funds for purchases, get to know people and establish a strong network.

In 1822, de la Beche visited Conybeare and was shown a lower jaw of a plesiosaur. Conybeare wondered what the whole creature looked like. De la Beche had been finding similar material at Lyme Regis. When Buckland saw it, he was amazed, and perhaps seeing its potential for teaching, said it should be cast in gold! It was too, in Francis Chantry's workshop, though not, alas, in gold. Unfortunately Buckland had hired a Prussian named Mueller to work on the collection, and in the process he dropped the casting and broke it. Nonetheless it stayed in Oxford. Such was the power of actual specimens or even casts for Buckland. He was a sophisticated museum man, and with his reputation, was asked to advise on the quality of specimens being offered, as well as their meaning. Not only was he a good museum man, but he also understood the politics necessary to procure specimens or win other favours.

Marianne Sommer (Zurich) had the interesting title of 'You say it does not stick to your tongue?' in connection with Buckland and the problem of antediluvian remains. Buckland's visions of the animal life of antediluvian Britain came about in the context of natural theology and Mosaic history. The big problem was, where does 'man' fit into this picture? And it wasn't easily avoided. The problem of human antiquity in connection with both a post and antediluvian world, troubled Buckland. His own researches led to the discovery of human remains, and he was aware that the evidence for human antiquity being very great, was growing. But, he remained adamant in his rejection of the contemporary nature of humans with extinct faunas of Europe. There were problems in deciding if human remains were 'recent' or of great antiquity, especially in the absence of any stratigraphic dating. Buckland the showman, is reputed to have shown that some bones had a tendency to stick to the tongue, and to have on several occasions attached a bone to his tongue, and still continued talking! The use of humour was one of his great attributes.

Ralph O'Connor (Aberdeen) chose to look at the literary side of Buckland's work and in particular his ability as a great raconteur. For the public, now freed from the problems of a war with Napoleon and able to enjoy wider pursuits, geology was emerging as a history of the deep past which they found interesting. Buckland became the chief storyteller. His work on the Kirkdale hyenas allowed the public to envisage the past but he started by testing his storytelling on more sympathetic audiences than the public. This was not just caution - geology was seen as anti-church. The public could read about the theories, but for most people books were too expensive, and geology was an unknown concept for them. Buckland was fairly uninhibited when presenting geology out loud - to students or the public - where he could be clear who he was talking to as well as know their social class. Speaking also gave more scope for improvisation. He was known to have mixed humour and seriousness when talking, in order to avoid a serious discussion, and the mixture made it more memorable for his audience. This style made a big impression, though Charles Darwin found the 'buffoonery' in bad taste. Today it's not easy to feel what it was like in his lectures, partly because history only records the humorous anecdotes. Buckland was seen by some to have a hero status and to be able to travel back in time. Buckland's ability as a populariser of geology was sealed with the publication of his book "Bridgewater Treatise" in 1824 which contained imaginative plates of creatures which helped to capture the public's imagination.

Philip Taquet (Paris) looked at the professional relationship between Buckland and the great French anatomist George Cuvier. Cuvier was born in 1769 in Montbéliard, in the Jura Mountains. After studying in Germany he took a job with a noble French family, in a chateau near Caen which still stands. He set out to be the new Aristotle! And wanted to make an inventory of all known animals. At the time the French Revolution was raging but he was protected from the worst of its violence. His excellent drawing of birds especially were recognised, and in 1795 he was invited to Paris by Geoffroy Saint-Hilaire at the newly reformed Musée National d'Histoire Naturelle (National Museum of Natural History), where after a period as an assistant, where his first job was to make an inventory of artefacts saved



by the revolutionaries, he became a full professor of animal anatomy. His strategy was to collect skeletons of creatures for comparative anatomy studies, which he was able to house in a building with 7 rooms, each one devoted to a different class of animal (e.g. birds, mammals, fish etc). In a few years he had 16,000 skeletons. When Napoleon came to power, Cuvier continued his work, but times were hard under the Emperor. As his fame spread he was appointed to different posts including one as foreign correspondent to the Royal Society. In 1818 he visited London for the first time, in his capacity as Inspector of the University of France, for which he received a sum of 6000Fr to visit British Universities, with his wife as an assistant. In addition to universities, he met William

Herschel and saw his telescope, as well as King George IV. During this visit he went to Oxford and met William Buckland, and saw the bones from the Stonesfield Slate, as well as the skeletons of two woolly rhinoceros at Radcliffe. With Buckland he established a cordial relationship, exchanging many letters documents, fossils, casts, and most importantly, ideas. Between 1822-30 at least 25 letters and drawings were sent by Buckland, and these are still extant, and Cuvier returned similar. Buckland also sent exquisite drawings done by Mary Morland between 1822-23, who was later to become Buckland's wife Both we also helped by Joseph Pentland, an Irish naturalist, who was making excellent casts of specimens. Buckland and Cuvier's mutual admiration for each other is shown by the homage paid in various works. Cuvier died in 1832, in Paris.

Claudia Schweizer (Vienna) took as her subject the relationships of Buckland, Brogniart, and Sternberg with Ernst Friedrich Schlotheim (1764-1832). For them 1804 was a landmark year, for it was then that Schlotheim published a seminal work on fossil plants. In this work he noted the fossil imprints of plants in coal formations and compared their morphologies with with still extant plant species. The oldest plants appeared as tree-like ferns similar to those from the coal transition rocks, while primordial plants were more similar to modern equivalents. This led to a thought that the temperature may have fallen since primordial times. Further steps were taken in 1820 when Schlotheim published a further work which deepened the knowledge of fossil imprints from 1804, and raised the idea of a continued history of life, thus replacing the then widely-held diluvian theories. This was also about the time that Buckland started taking an interest in fossil plants. Kaspar Sternberg (1761-1838), who had initially studied theology in Rome before moving on to botany and fossil plants, also published his findings in 1820. He continued a correspondence with Schlotheim up to 1832, and this gave an insight into ideas for a change in climate based on similarities between plant fossils and still extant forms. Adolphe Brogniart was born in Paris in 1801, the son of Alexandre Brogniart, already known for a botanical classification of plants. In 1824 he visited Schlotheim and exchanged ideas. In 1827 he was studying medicine in Paris, but by 1833 he held a professorship in botany and plant physiology. He followed Sternberg and Schlotheim's basic ideas in his major publication. Buckland visited Sternberg in 1822, and started corresponding with him, but never met Schlotheim. While Schlotheim, Sternberg & Brogniart all followed the same idea of several successive vegetational periods, and a climate shift in Europe, which lead to morphological similarities between fossil plants and extant ones, Buckland saw it differently. He accepted that the theory of the Earth was ordained by a plan of God. He saw the process of one of a biblical deluge which was allied to religious learnings.

The final speaker was **Patrick Boylan** (Leicester) who looked at Buckland's association with the Oxford Readership, the Geological Society and the BAAS, as a way of institutionalising English geology. The idea of travelling to Europe to study the geology in

situ, as part of a Grand Tour, was one which was devolving downwards towards the middle classes. At least 40,000 English people were estimated to be travelling or living on the Continent in 1785, just before the French Revolution. Not only did it offer education, but the cost of living in Rome for instance, was only about 1/5th that of London. Other nationalities also partook, including Goethe who went on a 2-year Grand Tour in 1785. It reinforced a complex web of introductions, contacts, studies at universities, private tutoring and correspondence. But in 1789 it all changed as revolution spread in France. While this marooned Buckland and his contemporaries, it did have a beneficial effect, as Grand Tours were undertaken to look at English geology. Buckland also became well aware of just how different things were on the Continent, with funding being available from official sources. In Bologna there was substantial funding from the Church, and academicians in Paris received state salaries, while the Swedish Academy of Sciences gave scholars a reward for every almanac sold. Buckland and others felt that the State in England could help, and geology especially needed to be brought in from the margins. After Wellington's victory at Waterloo, Buckland was once again able to travel freely, and did so almost every year. This only reinforced his feeling that the State should take a greater part in funding. Despite Buckland's own position in the mostly privately-funded Oxford University being precarious, he started in 1818 to try and persuade patrons and friends of the Prince Regent, that there should be a publicly-funded Chair of Geology. With the support especially of Lord Grenville, a former Prime Minister and a man involved in anti slavery legislation, the Government made available £200 for a Reader in Geology. Buckland was eventually elected to the post (which he held along with his Readership in Mineralogy, since 1813). Buckland was pleased to get the post, but the funding was miserly, and was not the start of general funding as he had hoped. Buckland was aware of the funding and Royal patronage for the Royal Society, and he wanted a similar situation for the Geological Society. In 1824, during his first Presidency, he started on a high-risk strategy of raising the matter with influential people. The response was positive and in 1825 the charter was presented. Buckland wasn't satisfied, and wanted geology to be brought before a wider audience. He was familiar with the annual meeting for scientists in Leipzig and became a most enthusiastic supporter of the BAAS to have an annual meeting in the United Kingdom. The first meeting was in 1831, but its first full meeting as the "Parliament of Science" was in 1832 at Oxford. Buckland served as the President.

It was simply left for convenor Jim Kennedy to thank all those who had given talks, the audience for attending, and the projectionist for faultless work, before delegates were allowed to take a glass or two of wine and to wander among the dinosaurian skeletal remains.
