

HOGG

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



**Number 16
August 2002**

Cover picture: Hugh Miller (1802-1856)

Hugh Miller started life, after leaving school early, as a stonemason, and later went on to edit the Kirk newspaper "The Witness"; it became a serious rival to the other Edinburgh newspaper of the time, "The Scotsman". In 1843 he helped to establish the Free Church of Scotland. As a fossil collector whose collection amounted to more than 6000 specimens and later formed the basis of the Scottish National Collection, he was able to use his journalistic talents to bring the subject of geology to life. He suffered from silicosis for most of his life, the result of his work as a stonemason, and died on Christmas Eve from a single self-inflicted gunshot wound to the chest.

See page 16 for details of an International conference to mark the bicentenary of his birth.

What's in a name.....?

.....well, nothing it would seem! In the previous Newsletter, a chance was offered to members, to give the newsletter a name. This arose from a suggestion from the floor, at the previous AGM. The request elicited just 1 reply, and that from a committee member. At a subsequent meeting the committee decided that, especially in view of the poor response, the name **HOGG**, which is well known and easily remembered, should stand, at least for the time being.

Future HOGG events

"200 Years of British Hydrogeology "

A joint programme between HOGG and the Geol.Soc. Hydrogeology Group, devoted to 200 years of British Hydrogeology will be held at the Geological Society on **12th December 2002.**

This joint meeting will review the History of Hydrogeology in Britain from the pioneering work of William Smith some 200 years ago to the use of modern sophisticated technology in the latter part of the 20th Century. The meeting includes papers on the development of hydrogeology and on the individuals who made a significant contribution. The work of British hydrogeologists overseas, ideas on the origins of mineral waters and the contributions of mining and civil engineers will also be reviewed.

9.30 Registration and coffee

9.55 Introduction by convenor

10.00 Hugh Torrens: The hydrogeological work of William Smith

10.20 Michael Price: Dr John Snow and an early investigation of groundwater pollution

10.40 William George: William Whitaker (1836-1925) - father of English hydrogeology?

11.00 Coffee

11.20 John Mather: Joseph Lucas (1846-1926) - hydrogeologist, naturalist and philologist

11.40 John Tellam: 19th C studies of the hydrogeology of the Permo-Trias of Lancashire and Cheshire

12.00 Martin Preene: Robert Stephenson - The first groundwater engineer

12.20 Paul Younger: From water makes to water works: how Britain's mining

- engineers invented groundwater pumping technology
- 12.40 Ted Rose: The contribution of British military geologists and engineers to the development of groundwater
- 13.00 Lunch, Posters and Displays**
- 14.00 Tim Atkinson: A history of groundwater tracing in Britain
- 14.20 Andrew Mackenzie : Exploiting groundwater -evidence from the BGS National Well Record Archive
- 14.40 Mike Edmunds: Bath thermal waters: 400 years in the evolution of ideas in hydrogeochemistry and hydrogeology
- 15.00 John Fuller The chalybeate spring at Tunbridge Wells and its role in the development of a seventeenth century New Town
- 15.20 Tea**
- 15.40 John Lloyd: British hydrogeologists in North Africa and the Middle East - an historical perspective
- 16.00 Robin Hazel: British hydrogeologists in West Africa - an historical evaluation of their role and contribution
- 16.20 Dick Downing: Groundwater development in the UK between 1935 and 1965 - the role of the Geological Survey
- 16.40 Howard Headworth: The golden age of groundwater development in the UK reflected in the schemes of Southern Water 1970 to 1990
- 15.00 Rick Brassington: Developments since 1974 - bringing the story up to date
- 15.20 Summary by Convenor
- 15.30 Wine and Savories**

"The History of Geophysics"

12-13th March 2003

Call for Papers

The History of Geology specialist group of The Geological Society, London, UK, is holding a meeting on History of Geophysics at The Geological Society, Burlington House, Piccadilly, London on 12-13th March 2003

Offers of papers should be sent to the convenor, Professor Richard J. Howarth, Department of Geological Sciences, University College London, Gower Street, London WC1E 6BT, England; Email r.howarth@ucl.ac.uk.

...previous HOGG (and other) events:

Three Days in a Palindromic Spring

Anthony Brook

In the spring a young man's fancy turns to thoughts of love, so they say, but, because of my age & decrepitude, I go to geological conferences instead! Such is life! Two consecutive meetings in March 2002 had the pleasure of my company, and therefore, the benefit of my reportage.

On Saturday 9th March I attended a Day School at the Hunterian Museum of the Royal College of Surgeons, in Lincoln Inn's Fields, on **Heroes and Villains in the Early History of Geology**, organised as part of Science Week by the London District of the WEA in Association with the Hunterian Museum. During the course of the day *Dr Chris. Duffin* gave 4 well-illustrated lectures on certain larger-than-life characters from the early days of Geology, and evaluated their heroic or villainous tendencies, in contemporary and retrospective terms. I had not made the acquaintance of Prof. Johannes Beringer (1667-1740) before. He gained notoriety for describing elaborately-faked fossils in his treatise, *The Wurtzburg Lithography*, of 1726. It turns out that he was the hapless victim of academic villainy perpetrated by rivals at Court and University who bitterly resented his intellectual arrogance & pomposity. The 21 Plates of



J. Beringer, *Wurtzburg Lithography*, 1726.



William Buckland

exotic fauna & flora in his sole geological publication were based on the many fraudulent fossils in his Cabinet of Curiosities, frauds deliberately planted by those bearing a gangrenous personal grudge. Fossil forgeries have persisted, from the Piltdown fly to the Great Sea Serpent to the recent imbroglio which enveloped *The National Geographical Magazine* over Fossil Birds. With the advantage of hindsight Beringer's gullibility seems almost redeemable, as a product of its time.

In the early career of William Buckland (1784-1856) fossils were still considered to be evidential remnants of the Noachian Deluge. Buckland was the brilliant eccentric who became Prof. of Geology at Oxford in 1818. All his life he strongly advocated, and enthusiastically participated, in fieldwork, & was a specimen kleptomaniac. His lectures were grandstanding theatrical performances, his appetite extremely

omnivorous, and his palaeontological experiments i.e. pastry footprints, prescient. From the slab of Stonefield Slate he brought forth *Megalosaurus*, and from the recesses of Kirkdale Cavern in N. Yorkshire an ecological rather than diluvial model for tropical fauna in a cold climate, based purely on observation & deduction. His *Bridgwater Treatise* (1836) tried unsuccessfully to reconcile theology and geology. His mental health deteriorated badly in his latter years, after decades of advocating a more rigorous 'scientific' approach to rocks & fossils than faith or speculation. Swiss-born Louis Agassiz (1807-73) is remembered for two achievements: Fossil Fishes and Continental Glaciation. The son of a rural Pastor, with a brilliant intellect and boundless energy, he determined, aged 15, to become 'the premier Naturalist of his time'. Whilst completing his peripatetic studies at Munich University, he began a monograph on The Freshwater Fish Fauna of Western Europe, which brought him to the notice of the great French comparative-anatomist Baron Cuvier, who became his mentor. Appointed Prof. of Natural History at Neuchâtel University in 1832, his enthusiasm was infectious; his 'publishing empire' brought forth 5 enormous Vols. on 1700 species of fossil fishes in the next 10 years. Excursions to the Alps initiated his research interest in glaciated landforms, followed by summer fieldwork on the Unteraar Glaciers; which led to the idea of an 'Ice Age'. Scotland in 1836 seemed to have 'glaciation without glaciers' — plentiful landscape evidence but no ice. His revolutionary concept of Continental Glaciation, proposed in *Etudes sur les Glaciers* (1840), was ridiculed at first but eventually confirmed. A victim of the prevailing paradigm, Agassiz was less than generous in acknowledging prior & contemporary associates: fame had made him too presumptuous. He emigrated to America in 1846.

Richard Owen (1804-82) is the oleaginous genius we all love to hate! A tall lanky lad from the backstreets of Blackburn, Owen effortlessly transmuted into a silky social operator, who, by intellectual brilliance, hard graft and adroit manoeuvring had risen to become Prof. of Comparative Anatomy at the Royal College of Surgeons by 1834, a position of immense prestige & patronage in Victorian Society. He quickly realised that the newly-founded BAAS had research funds, publishing outlet and another power base. 3 examples were provided of Owen's scientific methods and unscrupulous tactics: *Dinornis* (Big birds of New Zealand), where he risked his reputation on identifying an extinct species from a single fragment of bone; *Megatherium*, where he pronounced Darwin's exhumed creature from Patagonia to be a giant ground-sloth; and the Dinosauria, a whole family of Mesozoic fossil reptiles, much to Mantell's intense annoyance. Owen came to believe that he had proprietorial rights to all extant & extinct species! Like Agassiz, he was a fervent, almost rabid, anti-Darwinist, and likewise wallowed in his own self-righteous self-importance.

Perhaps the early difficult days of Geology, when it was full in the limelight, required such grandiose & extravagant personalities, with personas and egos to match. Cheer or boo according to taste.

After only a short respite, I returned to the fray, this time a 2-day jamboree on The Amateur in Geology, arranged jointly by the Geologists' Association and the History of Geology Group of the Geological Society, held at Burlington House on 14th/15th March, to "acknowledge the tremendous contribution made by amateurs to the science of Geology."

As Conference Organiser, *Stuart Baldwin* set the agenda in the primary presentation by evaluating the contrasting role of the amateur and the professional in the progress of Science, and proposed the dimensions of Financial dependency and Time availability within which all researchers have to make their contribution. Professional scientists, such as geologists, were all amateurs not so long ago and gained public support from a field army of acolytes who provided the 'infantry battalions' for scientific societies. Although the overarching theme of *The Amateur in Geology*, and the dimensions of Time and Finance, pervaded the following proceedings, they were not really made explicit enough to hold the centre ground, and deviations and excursions were numerous. Presentations ranged far and wide, in time, space and context, which turns coherent commentary into a nightmare.

All except 2 of the lectures on Day 1 concerned specific individuals. *Eric Robinson* emphasised that, to most people, the Geologists' Association had always represented the Amateur in Geology. It was founded in 1859 to facilitate the social interaction of geological neophytes, as a counterblast to the Geological Society, and to provide meetings, excursions and access to publication. The aim was very much 'geology without jargon for everyone', as per the splendid Field Guides, and Local Groups were established after 1920 to

counter the London bias. Recent campaigns have raised the public profile, but whether/how the laudable aims of the GA pioneers can be sustained is causing considerable anguish. *Cynthia Burek* considered the role of Women in Geology against the criteria for professionalisation viz. specialist education, remuneration and entry into scientific societies (GA 1859: FGS 1919). Case-study of 30 deceased, British female 'geologists' emphasised their major but oft-unrecognised contribution to the advancement of geology until fairly recent times. The accomplishments of Women geologists, often only 'field assistants', needs to be reassessed in terms of prevailing social attitudes. Even Mary Anning, without whom palaeontology would be dead in the water, suffered the worst excesses of social snobbery.

There were presentations on 'gentleman-geologists' from widely-separated times. *Stephen Donovan* related the life and achievements of Charles Trechmann (1855-1964) who became financially independent in 1924 and thereafter devoted his time to geological research, in Northeast England (summer) and the West Indies (winter). Independent means encouraged heterodoxy, and his prickly personality discouraged collaborators; nevertheless, his controversial ideas acted as a spur to later developments. In complete contrast, Dennis Curry (1912-2001) was a modest and charming polymath, as regaled by *Jake Hancock*. Liberated from all or any academic or financial constraints, and possessing a fine analytical mind (First in Geology from Cambridge), Curry pursued important original research on 1) Cretaceous-Palaeogene strata and fossils and 2) the sediment sequence of the English Channel, using all his considerable powers of observation and deduction. The Curry Fund of the GA remains as his memorial. Almost 2 centuries earlier the lawyer George Bellas Greenough (1778-1855) had come into a tidy fortune and decided to pursue his geological interests, as outlined by *Martina Kolbl-Ebert*, but he was less an original researcher, more a diligent amasser of scraps of data. Probably his most important contribution to Geology were his polemical Presidential Addresses to the Geological Society, critically evaluating scientific advances. He shaped and influenced early Geology until the advent of Lyell, Sedgwick, Murchison, etc. Not afraid of venturing into controversy, Greenough sought simple orderly elegance in Nature, but did not let facts get in the way of a good theory. From the same era comes the eccentric Thomas Hawkins (1810-89), of Glastonbury, as described by *Ralph O'Connor*. In the 1820's/30's geological expertise was fashionable enough to confer social status on such provincial 'collectors'. Another option was to publish a popular geological treatise, which Hawkins proceeded to do, twice (1834, 1840). Such grandiose geological treatises cashed in on popular demand for spectacle, panorama and melodrama, with jaw-dropping baroque imagery of a timeless past — precursors, in many ways, of 'Walking with Dinosaurs'.

Patrick Wyse Jackson, et al told us about George Robert Vine (1825-93), who came from a poor Portsmouth family and was largely self-taught. In 1865 he settled in Sheffield and established a staymaking business. In the late 1870s he developed a fascination with Carboniferous forams, and published 75 papers on bryozoans between 1876-93, all the product of his spare time. He authored an ambitious series of Reports on British Faunas published by BAAS, and also dealt in micro-fossils to augment his income. Because of his working-class roots he remained marginalised. *Geoffrey Tresise* focussed on the more rational classification of Triassic footprints initiated in the 1890's by 2 members of the Liverpool Geological Society. George Morton (builder/decorator) catalysed Henry Beasley (bookkeeper) into action, and it was Beasley who, in 1895, made the first serious attempt to classify ichnites, recognising 8 different types. After Morton's death in 1900, Beasley produced 6 Reports on footprints for the BAAS for their survey of the Triassic System (1904-10). Morton and Beasley introduced a semblance of logic and order into a research domain previously characterised by confusion.

And finally, but certainly not least for Day 1, the spotlight was turned, by *Jim Kennedy* and *Andrew Smith*, on C. W. (Willy) Wright (b. 1917), who, together with his younger brother Ted, specialised in collecting the fauna of the Chalk of the Yorkshire Wolds, eventually amassing a huge, well-localised collection, which formed the basis of a whole series of taxonomic papers from the early 1930's. Despite a high-flying career in the postwar Civil Service, Willy Wright was still deeply involved with specific volumes of the Treatise on Invertebrate Palaeontology, and continued to produce important monographs on various Cretaceous faunas: indeed, no professional geologist of this period had such a profound understanding of Cretaceous invertebrates. After retiring at 60, with 70 publications to his name, he became Research Fellow at Wolfson College — and a full-time researcher, at last.

The sequent day was another mix-and-match mélange around the Conference theme. Two papers had a wider remit than the individual and considered amateur geologists over time in specific regions. *Alan Smith*, of the Cumberland Geological Society, pointed out that amateurs have long played a fundamental role in deciphering Lake District Geology, and provided case-studies of 6 pioneering (and long-lived) geologists, who, despite minimal education and no professional training, nevertheless, contributed significantly to Earth Science. There were certain key parameters: profound local knowledge, based on acute observation of rocks/fossils over a long time; the diversity and diorama of the Lakeland landscape; linkages and networking with professional geologists; supplementary income from geologically-related activities; outlets for publications; and the exuberant enthusiasm of expounding upon regional geology, in many diverse and exhilarating ways. *David Freeman*, Curator of the Royal Geological Society of Cornwall, evaluated the contribution of amateur members of the Society in a peripheral County with a long tradition of metalliferous mining. Founded in 1814, this was the first provincial society to specialise in geology. Amateurs exerted the greatest influence during the 19th century when there was a strong emphasis on the Utilitarian aspects of geology, particularly with regard to the economic base of the region in minerals and their extraction. This was wealth-producing geology: geology served a purpose, and practical matters prevailed e.g. Joseph Carne's initiatory work on the types and origins of mineral veins. A Coastguard Officer, Charles Peach, made the momentous discovery of fossils in Cornwall's 'barren' Devonian rocks; transferred to the far North of Scotland, he made a similar discovery in the Durness Limestone!

Two separate presentations covered different aspects of the same brilliant amateur geologist, W. S. Bisat (1886-1973). *Stuart Baldwin* related Bisat's childhood, teenage fossil-hunting propensities and early manhood (to 1924). Bisat trained as a surveyor and civil engineer and spent all his working life with a major public-works contractor in and around Yorkshire. During construction of the dam/reservoir at Leighton, near Masham, excavations passed through the fossiliferous Colsterdale Marine Beds, upon which Bisat published a paper in 1914 aided, in fossil identification, by Dr. Wheelton Hind, another local amateur geologist, and the expert on Carboniferous fauna. Realising, years later, that Hind had made serious errors, Bisat began the tedious and meticulous task of unravelling Carboniferous stratigraphy, which, surprisingly quickly, enabled much greater accuracy in correlating Carboniferous strata over huge areas. An affable and congenial gentleman, *Patrick Boylan* pointed out that Bisat was, in many ways, equally influential in deciphering the Pleistocene landscape of his native County. Following upon his move to North Ferriby on Humberside, Bisat quickly expanded his geological horizons to encompass the Quaternary, firstly of Holderness and then Yorkshire in general. His masterwork was the extremely-detailed, long-term recording of the stratigraphy of the whole of the rapidly-receding coast of Holderness. This took more than 20 years, often working with other local amateur geologists from the Hull Geological Society. In the course of all this careful fieldmapping he developed a new perspective on the Pleistocene of the East Riding, which formed the basis of his 1939 Presidential Address to the Yorkshire Geological Society. In 1961 he endowed the John Phillips Medal of the Society, in honour of another autodidactic pioneer geologist, who likewise changed our views of Yorkshire geology and geomorphology.

Anne O'Connor related the contribution of Samuel Hazzeldine Warren to the geological subdiscipline of palaeolithic archaeology, where competent amateurs were most welcome and could really make an impact. In the late 19th century there was still considerable confusion over the correlation of isolated Pleistocene patches, and their enclosed palaeolithic artefacts, within an established chronology. When Warren moved to Essex in the early 1900's, he set about recording all temporary exposures of any sort, until his death in 1958. Such long-term local observations of geology/archaeology within a specific area enabled him to postulate some penetrating propositions re into the significance of the Essex Palaeolithic within larger spatial scales.

The life and work of another dedicated amateur, Martin Venables (1901-90), of Bognor Regis, was expounded by *Neville Haile* and *David Bone* (Venables' protégé). Venables was, by profession, a fruit/poultry farmer, who had been smitten by the natural-history of Sussex since early childhood. As a youth he explored the local coastline where, along the Bognor foreshore, London Clay is exposed at neap tides. Successful investigation of such exposures meant frequent visits over many years at odd times; the result was an important paper (1929). Venables soon gained expertise in identifying microfossils from the Lower Tertiaries, such as pyritised beetles, and a lifetime of spare-time scientific scrutiny went into his definitive 1963 paper which refined and defined the stratigraphy of the Bognor Foreshore. Although he

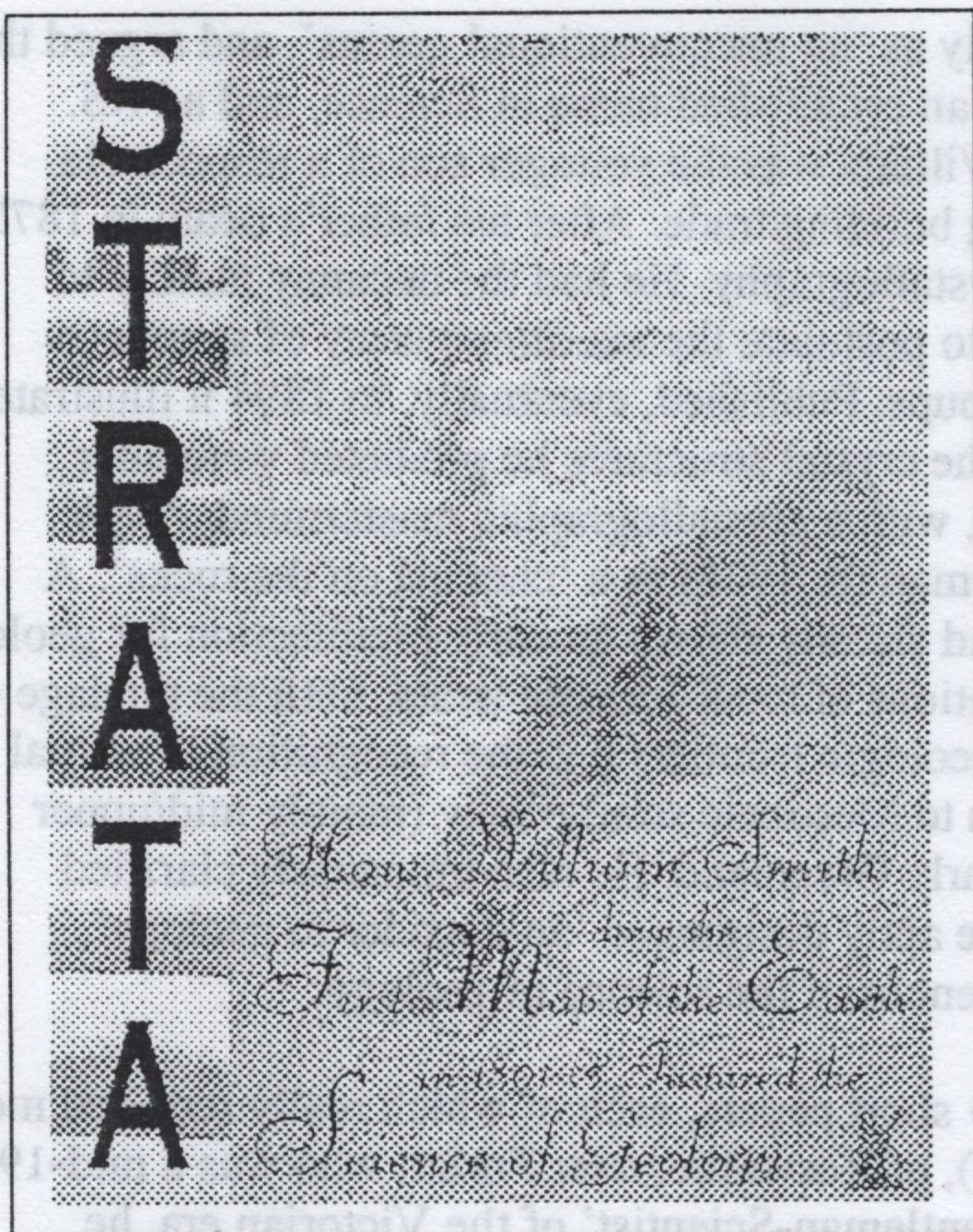
published little in scientific journals, he wrote a weekly column on Natural History for the West Sussex Gazette for 50 years (1940-90), often with geological tendencies. The lowly-paid Curator of Bognor Museum for 30 years (1944-74), Venables was most generous in his support and encouragement of local groups and acolytes.

Peter Tandy described William Barlow (1845-1934) simply as 'an unconventional genius', and argued that it is rare, and getting ever rarer, for an amateur to become an established name in Science, and a FRS. William Barlow did just that. Born in Islington in 1845, William was the younger son of a respectable middle-class family whose patriarch was in the prospering building trade. After his father's death in 1875 William used his inheritance to indulge his passion for crystallography. He had the uncanny facility to visualise 3-dimensional atomic structures, which led him to postulate the maximum array of symmetry arrangements for all crystal structures, known as space groups. Published, eventually, in 1894 it illustrated the innovatory thinking that was his trademark. Some of the crystal structures he predicted were later proven by X-ray diffraction. A man of fortune and leisure, with a crystallographic mastermind. *Hugh Torrens* epitomised the geological work of Dr. John Calloman (b. 1928) as a 'chemist on the rocks'. A graduate of and tutor in chemistry at Oxford, Calloman had already shown an early predilection for geology before going up to University, and continued his investigations of local Jurassic strata, until the tutelage of Arkell. From mid-century, Calloman has pioneered new geologic frontiers e.g. the recognition of sexual dimorphism in Ammonites, and made major contributions to Mesozoic stratigraphy (mainly mid/upper Jurassic) as well as the strata of the boreal realm, particularly Greenland. He also immensely clarified stratigraphic precision, taxonomy and nomenclature. More aptly designated 'an outsider to geology', Calloman has used his scientific acuity to the enormous benefit of the science of geology.

The final plenary session of the Conference consisted of 3 short papers, each of which really required more time. *Bob Davidson* told us about James Powrie (1814-95), of Reswallie, near Forfar, who was a mid-19th century chronicler of the Scottish Lower Devonian. A 'Gentleman-Scientist' of the Victorian era, he published and corresponded widely within the scientific community, but has remained a shadowy figure until a recent fortuitous artefactual discovery. *Wendy Simkiss* and *Alan Bowden*, of Liverpool Museum, were concerned with 2 Liverpool gentlemen of Victorian times, the Rev. Henry Higgins (1814-93) and Frederick Marrat (1820-1904), both of whom should rank among the foremost amateur palaeobotanists of the late 19th century. From the Mid-Coal Measures of the Ravenhead Railway Cutting, the Rev. Higgins, in 1869-70, accumulated one of the prime fossil plant collections, at a time when palaeobotanic taxonomy was in turmoil. His meticulous methods of specimen collection facilitated the improvements in taxonomy made by Marrat when he subsequently described the flora, creating 9 new types in the process. And finally, *Richard Wilding* turned the spotlight on a 'Parson Geologist and Pioneer Geophysicist', the Rev. Osmond Fisher (1817-1914). Born in Osmington in Dorset, Fisher was keen on geology from childhood. Returning to Dorchester as Curate in 1845 he relished the opportunity of working again on Dorset geology: result was one of his classic papers, *On the Purbeck Strata* (1856). His seminal publication *The Physics of the Earth's Crust* (1881) was the first textbook on geophysics and presaged many of his ideas integral to Plate Tectonics. He continued his geological/geophysical investigations well into his retirement, expiring in 1914, at the grand old age of 97, just before The Great War.

In the concluding General Discussion it was universally agreed that the word 'Amateur', used in this context, should be consigned to the dustbin of history with immediate effect. It was patronising, derogatory and demeaning, and created completely the wrong impression. Without so-called 'Amateurs' there would be no Geology in the first place, and without the massed contingents of countryside auxiliaries the science of Geology would not have survived and thrived. Any and every intellectual arena needs its multiplicity of volunteer enthusiasts, to generate and provide continual public support, even in these days of highly-paid specialist professionals. Enthusiast is perhaps the more appropriate designation, applying equally well to occasional members of local geology fieldclubs as to Profs. of Geology, etc. Time and Finance have always tempered and channelled enthusiasm, but so also has the unyielding British class-system. Self-taught enthusiasts, sometimes with a burning passion verging on clinical obsession, have outshone the best of geological brains at times. Geology as a field of intellectual enquiry remains open to all, everyone can make a contribution in some way or other, but Geology must equally ensure that its strongest supporters are on board at all times. This Conference clearly demonstrated that Geology disparages the 'Amateur' at its gravest peril: they need each other, and have always done so.

For your bookshelf...?



William Smith is rightly described as 'the father of English Geology'. It was he and he alone who first mapped out the major rock units of which England and Wales are composed, and produced a map in 1815 showing these rocks in unfamiliar colours and shapes, yet now, familiar to us all. It was Smith who first realised the significance of fossils to the identification of different strata, and who first deduced the law of superposition - the fact that a stratum of rock below an upper

stratum must have been deposited at an earlier time to the upper. For such a genius, and for someone of such stature in what is essentially an English science, it comes as a major surprise to learn that no-one has attempted a thorough biography until now, or at least not since 1844 when John Philips, Smith's nephew attempted the first.

John L. Morton, an active member of the Horsham Geological Field Club has presented us with an eminent account of Smith's life, from his birth in 1769 near Oxford to his death in Northampton in 1839. Of humble origins, Smith was a successful student, and his abilities in geometry led him to pursue a career in surveying. His early work led him into many counties of England and his interest in the structure and the shape of the land provided him with a detailed working knowledge of what we now call geology. His later work brought him into the realms of coal mines and canal digging. By the late 18th century, he had established in his mind and in his notes the basics of a plan of 'the delineation of strata' - a geological map to you and me, but a huge leap in the imagination of one man. In eventually publishing his 1815 map of the Strata of England and Wales, Smith laid the foundation stone for science. Yet Smith's life was difficult. His contribution to science was largely ignored for most of his life, he was bankrupted, served time in a debtor's prison, lived as a homeless man for many years and had a wife

who went mad. Only in the last years of his life was his valuable service to geology fully recognised.

John Morton tells Smith's story in a readable and straightforward manner. He makes extensive use of Smith's own writings, either a strength or a weakness, depending on the reader's aims and interests. It is Morton's very bad luck that this book has appeared almost simultaneously with Simon Winchester's far more scholarly and perhaps more significant biography of Smith *The Map That Changed the World: The Tale of William Smith and the Birth of a Science* (Penguin: Viking 2001). I am aware from other reviewers that it contains significant errors of historical fact. So while recommending the book in general, and in particular for its wide use of Smith's writing, it should be read with caution. It is nevertheless a commendable book.

(From Brighton & Hove Geol.Soc. Newsletter, no.63, Sept 2001, with permission, and due acknowledgment)

ASPECTS OF MURCHISON by Anthony Brook, Pub: West Sussex Geological Society, Occasional Publication no.2, December 2001.

GIDEON MANTELL MEMENTO MORI - 1 by Anthony Brook, Pub: West Sussex Geological Society, Mantell Memorial Series, March 2002

These two small publications of 32 pages each attempt to draw together known published items from the past on Roderick Impey Murchison on the one hand, and Gideon Algernon Mantell on the other. Items are reproduced as they appeared in publications, from the more exclusive Illustrated London News and Proceedings of the Royal Society, down to the Sussex Advertiser and Sussex Agricultural Press. Both are augmented with the author's own modern-day researches.

The Dragon Seekers : How an extraordinary Circle of Fossilists Discovered the Dinosaurs and Paved the Way for Darwin, by Christopher McGowan, Pub: Perseus Publishing, Cambridge, Massachusetts, 2001, pp254.

Against the backdrop of the Industrial revolution, that screaming, clanking behemoth that rumbled across Britain like a locomotive, an extraordinary circle of fossilists struggled to make sense of a mysterious prehistoric world - a world they had to piece together from the fossilised and often fragmentary remains of animals never before seen. In this charming and transporting book, Christopher McGowan takes us back to a time when geology and palaeontology were as young and vibrant as genetic engineering is today. The nineteenth-century pioneers of these new disciplines were an eccentric lot, and included Mary Anning, a working class woman who was determined to enter the gentleman's club of fossilists; Thomas Hawkins who had a flair for faking fossils and

inciting riots; William Buckland, Oxford Professor with a theatrical bent who discovered the world's first dinosaur (*Megalosaurus*); Gideon Mantell, the crisis-ridden country doctor who was never quite accepted among London's scientific elite; and Richard Owen, the expert anatomist (he once dissected a rhino in his own living room) who synthesised the discoveries of an age and ultimately coined the word dinosaur in 1842.

These were the Dragon Seekers, the people who brought the myths to life and sought to persuade a populace raised on a literal interpretation of Genesis that the ground they walked was once a very frightening and unfamiliar place.

Through heated public debates on everything from the age of the Earth to the notion of extinction - not to mention the astonishing nature of the finds themselves - the early fossilists initiated the shift from a biblical to a scientific interpretation of the remote past. In this way they laid the intellectual groundwork for Darwin's revolutionary ideas, and launched a global obsession with the Age of Reptiles that continues even today.

A sweeping narrative history of a critical period in the development of scientific thought, *The Dragon Seekers* shows how the early fossilists - remarkable characters in their own right - forever changed our interpretation of the world and its inhabitants.

(from the flyleaf)



INHIGEO

International Commission on the History of Geological Sciences

28th Symposium on the theme of "Geological Travellers"

The International Commission on the History of Geological Sciences (INHIGEO) is holding its 28th Symposium in Dublin, Ireland during **July 2003** on the general theme of "Geological Travellers". The dates of the symposium are Monday 14th - Friday 18th July 2003; the optional post-symposium field trip will take place between Saturday 19th - Saturday 26th July 2003. The symposium will be held in the Department of Geology, Trinity College, Dublin. The 40-acre campus is situated in the heart of Dublin, within walking distance of shops, theatres, cinemas and museums. The programme will comprise 4 days of talks and poster sessions. The symposium language will be English.

The optional post-meeting field trip will involve an anticlockwise circumnavigation around Ireland during which some classic areas of Irish geology will be examined. A number of these

sites hold particular significance in the history of geology. Sites to be visited may include the Giant's Causeway in north east Ireland; the Donegal granite upon which much of the debate of the granite controversy of the 1950s was debated, Cregg Castle the ancestral home of the celebrated mineralogist and chemist Richard Kirwan; the Burren in County Clare a site of exceptional beauty in karstic limestones; Cashel, Co. Tipperary - an important early Christian site; the River Blackwater valley where J.B. Jukes examined the nature of Tertiary river drainage patterns; and Hook Head in the southeast corner of the country where Captain Thomas Austin described wonderful Lower Carboniferous crinoids. The trip will be led by Patrick Wyse Jackson and will be joined by Gordon Herries Davies for part of the trip. Numbers will be limited to 30 persons.

Estimated costs are as follows: Registration fee: c. £380 (Accompanying members: £100). Accommodation: c. £58 per night. Field trip: £500 per person.

Further details including the 1st Circular, Registration Form, Details of abstract submission, and the Post-Symposium excursion are available on the Web site: <http://www.tcd.ie/Geology/> or from the convenor.

Convenor: Dr Patrick N. Wyse Jackson, Department of Geology, Trinity College, Dublin 2, Ireland. Tel: 353-1-6081477; Fax: 353-1-6711199; e-mail: wysjcknp@tcd.ie.

"...We find no vestige of a beginning, no prospect of an end..."

The Hutton memorial garden at St John's Hill, Edinburgh

2002 sees the completion by Fountains plc of the construction of the Hutton Memorial Garden at St John's Hill, Edinburgh, for the University of Edinburgh, the architect for the project being Crichton Laing Willis + Galloway of Edinburgh. Constructed on what was effectively a small piece of waste ground since the late 1960s, the site coincides exactly with the house and garden of James Hutton (1726-1797), recognised throughout the world as the Founder of Modern Geology. As the second son of William Hutton, merchant and City Treasurer, and Sarah Balfour, James Hutton abandoned farming in Berwickshire at the two small farms he inherited from his father at the end of 1767. He then returned to Edinburgh, building a house in the early 1770s at St John's Hill, then a fancy new development within the sight of Salisbury Crags where Hutton was to make his first profound geological observations. He lived with his three sisters and wrote the four books and other papers, including his *Theory of the Earth*, for which he is renowned. Hutton is still probably the least known of the four great figures of Scottish enlightenment in the second half of the eighteenth century, the others being Adam Smith, David Hume and Joseph Black.

James Hutton died at his house at St John's Hill on 26th March 1797 and is buried in the Greyfriars Kirkyard in Edinburgh. His grave remained unmarked until 1947, the 150th anniversary of his death, when the then Lord Provost, Sir John Falconer, unveiled a plaque commemorating Hutton as the "Founder of Modern Geology". For the bi-centenary of his death, an International Conference was organised in August 1997 in the Royal College of Physicians of Edinburgh, by The Royal Society of Edinburgh, which

Hutton co-founded in 1783. On the afternoon of Wednesday 6th August, during the meeting, a bronze plaque cast by the foundry of Charles Laing & Sons Ltd, was unveiled at the north side of the site of Hutton's house in the names of the Royal Society of Edinburgh and the Edinburgh Geological Society (founded in 1834). Participating in the unveiling ceremony, attended by delegates and invited guests, were Mr David Land, (President Edinburgh Geological Society), Mr Fraser Morrison, CBE (executive Chairman Morrison Construction Group Plc), Councillor Brian Weddell (Chairman Housing Committee City of Edinburgh Council), Professor Sir Stewart Sutherland (Principal & Vice Chancellor University of Edinburgh), and Professor Malcolm Jeeves, CBE (President Royal Society of Edinburgh).

The bronze plaque was mounted on a single block of Clashach stone, a Triassic dune-bedded sandstone, from a coastal quarry north of Elgin, on the southern edge of the Moray Firth, and now being much used in major buildings (for example the new Museum of Scotland). On the cut face of the stone beneath the plaque, David Lindsay's Stone Carvers inscribed the famous final sentence of Hutton's 1788 paper: "...we find no vestige of a beginning, no prospect of an end..."

At the unveiling ceremony in 1997, the stone bearing the bronze plaque was surrounded by other large boulders designed to illustrate two of the main themes of Hutton's remarkable geological work, Hutton's own collection of rocks having long since disappeared. These were brought to St John's Hill by the Morrison Construction Group Plc. Two boulders showing granite veins came from the famous locality above Duke of Atholl's hunting lodge in Glen Tilt in the Scottish Highlands by courtesy of Charlie Pirie (the Duke's gamekeeper), and illustrate Hutton's work from September 1785 on the origin of granite. The three other boulders of conglomerate carried by ice and water came from Barbush on the edge of Dunblane by courtesy of Andrew Fleming & Sons, and illustrate Hutton's understanding of the cyclicity of geological processes.

Since 1997, all these materials have been in store with the British Geological Survey in Edinburgh and they are all now incorporated in the splendid new Hutton Memorial garden. Excellent features in the design include a substantial flight of well-lit steps with railings leading up the steep bank from Viewcraig Gardens, with disabled access from the back of the garden by a ramped path leading from the University car park off the Pleasance.

Norman E. Butcher

"Where are the women in the history of science, let alone geology?"

Researching the place of women in history of science is very informative especially when you question fellow scientists of all ages about famous women they know either inside or outside their expertise area. Most admit they know few. In order to raise the profile of women and their work, I joined a women's discussion group on the web originating in USA. I found an affinity with a lady in Germany at the Johann Wolfgang Goethe University who has published an Encyclopaedia of European Women in Science. This dictionary includes 540 short biographies of European scientists and naturalists from

antiquity to women born before 1921. It is in German. I was interested to see how many geologists were included. When I asked for a list there were 38 listed, 6 of whom were British. The others were from Poland, France, Germany, Denmark, Yugoslavia, Italy and Russia. The British women included in chronological order:

Mary Morland (Mrs. Buckland) 1797-1857

Mary Anning listed as 1800-1847

Mary Horner (Mrs. Lyell) 1808-1873

Catherine Raisin 1855-1945

Maria Ogilvie Gordon 1864-1939

And finally Janet Watson 1923-1985

This last one is interesting as she was actually born outside the set parameters.

The list I have mentioned above are only the geologists not the geographers or botanists of which there were several more British entries.

I have now added several others including Gertrude Elles, Ethel Wood and Etheldred Benett. Obviously there are many others which could be included. There is hope that the encyclopaedia will eventually be translated into English. But it is an interesting publication and perhaps one not readily known to British researchers.

Cynthia Burek Dept of Biology, Chester College of Higher Education

IN MEMORIAM

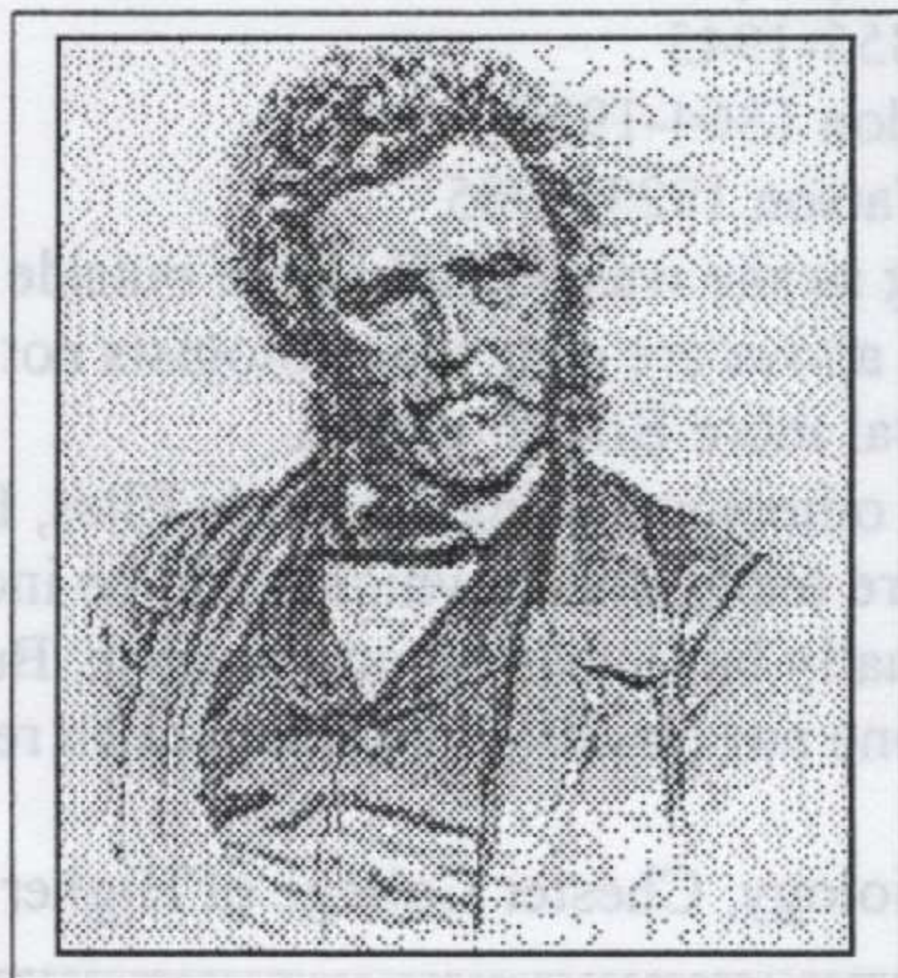
Dean Bumpus (1912-2002)

Dean Bumpus was born in Newburyport, Massachusetts, and became a member of the Woods Hole Oceanographic Institution in 1937. After researching plankton in the fishing grounds off Massachusetts he taught submariners in WW2 how to use temperature & water density gradients to avoid acoustic detection. In 1959 he started looking at water currents off the east coast of North America. For this he used empty bottles, which he called 'dead soldiers' into each of which he put a label asking people to "break this bottle", along with a numbered postcard asking for the date and place of finding. He also offered a 50c reward on each one returned. In all he launched over 200,000 bottles of which about 10% were returned. From this he was able to determine that currents north of Cape Hatteras move in a different way to those south of it, and this aided studies of transatlantic drift amongst other things. He never lost his enthusiasm for using bottles despite the advent of satellite tracking technology.

(abstracted from The Daily Telegraph of 3rd April 2002, with due acknowledgement)

FORTHCOMING EVENTS

A Cromarty International Conference to celebrate The Bicentenary of Hugh Miller



"DEAREST LYDIA,—My brain burns. I *must* have walked; and a fearful dream rises upon me. I cannot bear the horrible thought. God and Father of the Lord Jesus Christ have mercy upon me. Dearest Lydia, dear children, farewell. My brain burns as the recollection grows. My dear, dear wife, farewell."

HUGH MILLER.

From "Testimony of the Rocks", 1867

The bicentenary of Hugh Miller, geologist and naturalist, writer & folklorist, falls on 10 October 2002. His birth will be celebrated in Cromarty, 20 miles north-east of Inverness with an international conference from 10-13th October, arranged by the Cromarty Arts Trust, in association with the University of the Highlands & Islands and the University of Aberdeen, with the support of Scottish Natural Heritage.

The opening session will begin at 3.30pm on Thursday 10th October, with keynote papers from Professor David Lowenthal of Berkeley, California, Professor Christopher Harvie of Tübingen University, and Professor Eric Richards of the Flinders University of Adelaide, South Australia. On the morning of Friday 11th October, an excursion will be made to the Eathie foreshore, site of Hugh Miller's early fossil discoveries. On Sunday 13th October

there will also be an excursion to Morayshire to visit the outstanding Elgin Museum's collection, and other sites which were explored by Hugh Miler's contemporaries.

On Friday & Saturday, 11th & 12th October, the conference will divide into 3 subject themes: Geology & Natural History, Ethnography & Folklore, and Church & Society. Speakers in the geology theme will include Dr Hugh Torrens of the University of Keele, Dr Simon Knell of the University of Leicester, jointly with Dr Michael Taylor of the National Museums of Scotland, Professor Michael Collie, Dr Ralph O'Connor of St John's College, Cambridge, Dr Nigel Trewin of Aberdeen University, Dr Phillipe Janvier of the National Museum of Natural History in Paris, Professor John Hudson of the University of Leicester, and Dr Alison Morrison-Low of the National museums of Scotland.

At the Plenary Session on Saturday 12th October, the main speaker will be Dr James Secord of the Department of History & Philosophy of Science of the University of Cambridge. The conference will have a supporting social programme.

Details of registration may be obtained from Dr Lester Borley, Cromarty Arts Trust, 4 Belford Place, Edinburgh, EH4 3DH.



Hugh Miller's House

Editor's Note: A further Exhibition devoted to Hugh Miller takes place at Groam House Museum, High Street, Rosemarkie, Ross-shire IVIO 8UF (Tel: 01381 620961) from 20 June - 30 September 2002



"HOOKE 2003"

London 6-10th July 2003

A conference and other events sponsored by Gresham College and The Royal Society to mark the tercentenary of the death of Robert Hooke (1635-1703)

Background

Robert Hooke (1635-1703) was a true polymath. Author of the influential *Micrographia* (1665), he was one of the leading natural philosophers of his day. As an inventor, he was second to none. He also played a major role in the rebuilding of London after the Great Fire, while his diaries give a revealing picture of his lifestyle and milieu in the Restoration metropolis.

Conference Programme

Many aspects of Hooke's life and work will be discussed at a major international conference to be held at the Royal Society, London on 7th & 8th July. Papers will be

presented by speakers from Canada, Holland, Israel, Japan, Poland, UK, and USA. In addition, keynote addresses will be given by:

Michael Nauenberg, (University of California, Santa Cruz), on Hooke's dynamics

Jim Benett (Museum of the History of Science, Oxford), on Hooke's scientific instruments

Mordechai Feingold (Virginia Polytechnic Institute), on Hooke's social role and relationships

Jacques Heyman (University of Cambridge) on Hooke's structures and buildings

Outline main events

6th July Guided tour* of places in the City of London associated with Hooke (repeated on 10th July)

6th July Memorial Evensong in Westminster Abbey followed by a guided tour* of Abbey and School

7-8th July Conference & Exhibitions at the Royal Society, Carlton House Terrace, London

7th July Conference Dinner* in College Hall, Westminster School

8th July Evening reception at the Royal Society, including presentation of competition prize for portraying Hooke, and the first performance of a commissioned play about Hooke by John Sansick

9th July Return visit by coach* to two of Hooke's structural works:

a) Ragley Hall, Alcester, Warwickshire (incl. lunch and guided tour)

b) St Mary Magdalene Church, Willen, Buckinghamshire (commemorative events and tea)

10th July Guided tour* of places in the City of London associated with Hooke

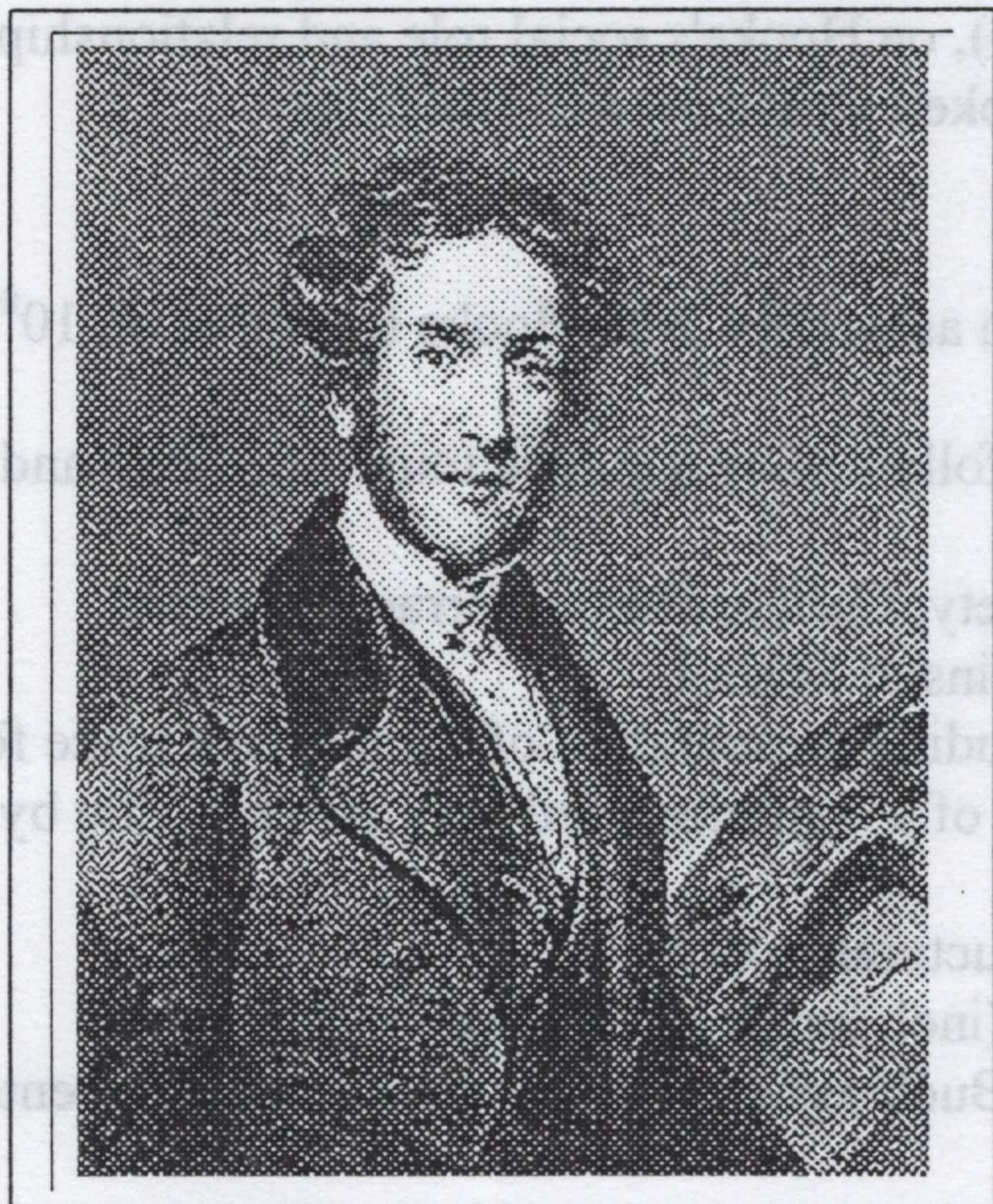
(* Event for which the number of participants is strictly limited.)

Costs and Registration

The registration fee (to be decided at the end of July 2002) will be approximately £120. It includes admission to the conference and Exhibitions, refreshments and lunches on 7th and 8th July, a printed set of Conference Papers, a delegate pack and the tours on 6th and 10th July. The Conference Dinner on 7th July and the coach tour on the 9th July will be at extra cost. For more information please contact the administrator, Mrs Julie Jones (julie.jones6@btinternet.com) or telephone her on (+44(0)1235 762744). Further detailed information and costs will be made available at the end of July when registration will open. See the Gresham College website at www.gresham.ac.uk/hooke.

A Plaque, Please, for Dr. Mantell.

Anthony Brook

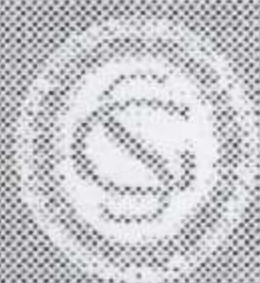


Recently I made a diversion. Usually, after toiling away all day in the Geological Society Library, I like to stretch my legs and walk the mile or so to Victoria Station, via Green Park and Buckingham Palace Road, to catch the train back to sunny Worthing. But this time, I deviated, on purpose, to visit the quiet residential enclave of Chester Square in Belgravia, so I might contemplate one house in particular—No. 19, Chester Square, the last home of a famous Sussex-born protagonist of the Heroic Age of Geology.

Dr. GIDEON MANTELL leased and lived in this splendid Regency townhouse for 8 years, from

23rd September 1844 until he expired mid-afternoon on 10th November 1852, during which time he endured excruciating backpain, engaged in acrimonious controversies with Professor Richard Owen and yet continued to produce significant books and papers. This grandly-porticoed, narrow, multi-storeyed, mid-terrace Residence for a Gentleman resembles in many ways No. 20 The Steine, Brighton, where Mantell previously lived (1833-38), only on a much grander scale. Because the House contents were sold by auction in early May 1853 we even have a complete record of the location, usage, fixtures and fittings of every room in the house in Mantell's time, a remarkable assemblage of the household accoutrements of a mid-19th century scientist.

This house stands as a wonderful remembrance of the latter years of a great pioneer geologist, BUT where is the Blue Plaque?! Lesser mortals have plaques on buildings for far lesser reasons, so why not Mantell, who at least made an enduring contribution to Science. So my Question is this: would it be at all possible to make all the necessary arrangements for a Blue Plaque to be unveiled on No. 19 Chester Square on the 10th November 2002, the sesquicentennial of his passing? I realise time is short, but then I only realised on this visit that Mantell's old house was plaque-less. I am sure Gideon would appreciate the belated gesture. An urgent case for HOGG!



From the Geological Society Publishing House

Geological Society Memoir no 23



**Geological Society
Memoir 23**

Publication June 2002

ISBN 1-86239-102-5

104 Pages

Paperback

List price:
£45.00/US\$75.00

GSL member price
£20.00/US\$33.00

HOGG member price
£20.00/US\$33.00
(offer closes 31 October 2002)

**Geological Society
Publishing House**

Unit 7 Brassmill
Enterprise Centre,
Brassmill Lane, Bath
BA1 3JN, UK

Tel: +44 (0)1225
445046

Fax: +44 (0)1225
442836

Email: dawn.angel@
geolsoc.org.uk
(Sales Dept)

Online bookshop:
[http://bookshop.
geolsoc.org.uk](http://bookshop.geolsoc.org.uk)

Society Web Site:
www.geolsoc.org.uk

The Life of Frank Coles Phillips (1902-1982) and the Structural Geology of the Moine Petrofabric Controversy

By Richard J. Howarth (University College London, UK) and Bernard E. Leake (Cardiff University, Wales, UK)

Frank Coles Phillips was a petrographer, mineralogist and structural petrologist working in the middle of the twentieth century. He was very influential, both in the UK and abroad and was responsible for encouraging the development of structural geology as a discipline in Australia and for the adoption of the stereogram as a fundamental interpretational tool in structural geology in the UK. He was a superb teacher, perhaps best known amongst mineralogists and geologists of today for his classic textbooks, *An Introduction to Crystallography* and *The Use of Stereographic Projection in Structural Geology*.

Phillips was the first to apply the methods of structural petrology (the study of the microscopic fabric of deformed rocks) in an attempt to unravel the complex structural history of the Moine rocks of northwestern Scotland. His findings were at odds with those of his contemporaries and resulted in the Moine petrofabrics becoming embroiled in a long-running controversy, only completely resolved since the mid-1980s.

This geological biography of an important twentieth century mineralogist and petrologist takes a critical look at Phillips' research in the context of contemporaneous developments in structural and Moine geology. It reviews his work in relation to both past problems and present solutions. It will be of interest to all geologists, especially structural and microstructural geologists, historians of science and the general reader with an interest in science.

Contents

Chapter 1: Family background and personality • Chapter 2: School years (1910-1920) • Chapter 3: Cambridge (1920-1935): First degree • Research studentship • Post-doctoral work • The Green Bed study • The universal stage • Stereographic projection • New skills • Departmental reorganization • Chapter 4: Petrofabric research • Basic principles • Sander's petrofabric method • Kinematic interpretation • Structural petrology at Cambridge • Chapter 5: Understanding of Moine geology in the 1930s • Chapter 6: Cambridge (1935-1946) • Microfabric of the Moine schists I • The 'Tarskavaig Moines' • Other pre-war activity • War years • Petrofabrics of the Ben Muirich granite • Dissonant voices • Microfabric of the Moine schists II • A return to crystallography • Time for a change • Chapter 7: Liverpool (1947) • The appointment • A new environment • Catastrophe • Aftermath • Chapter 8: Bristol (1948-1952) • The petrofabric controversy begins • Phillips prepares a rebuttal • A counter-example from Norway • Structural petrology short courses • Chapter 9: An Australian lecture tour • Western Australia • South Australia • New South Wales • Queensland • Return to New South Wales • Outcome • Chapter 10: Background to controversy • Developments in understanding of Moine geology during the 1950s and 1960s • Chapter 11: Bristol (1953-1967) • Stereograms for macroscopic data • New petrofabric difficulties • Cornish sea-floor studies • Further controversy • Gemstones • Chapter 12: Retirement • Chapter 13: Benefits of hindsight • The true significance of Sander's b-axis • The explanation of 'crossed-girdles' • The nature of the Moine Thrust • Unravelling the 'Tarskavaig Moines' • The cause of Kyle's confusion • Modern understanding of the cause of the lineation and fabrics measured by Phillips in the Moine rocks • Chapter 14: Conclusion Notes • References • Index