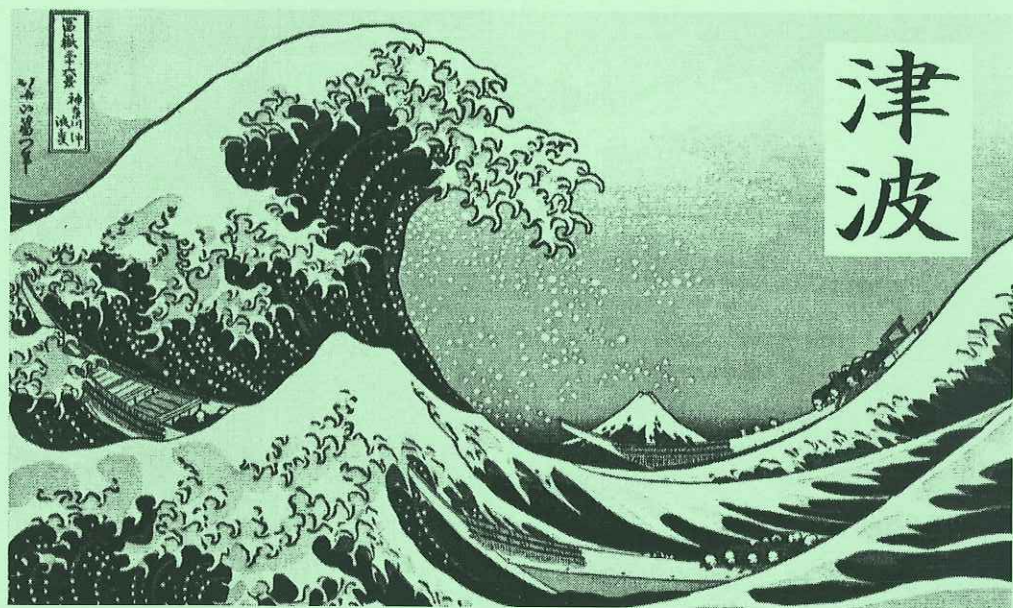


CHARNIA

New Year 2005



Leicester Literary & Philosophical Society
The Newsletter of Section C (Geology)
www.charnia.org.uk

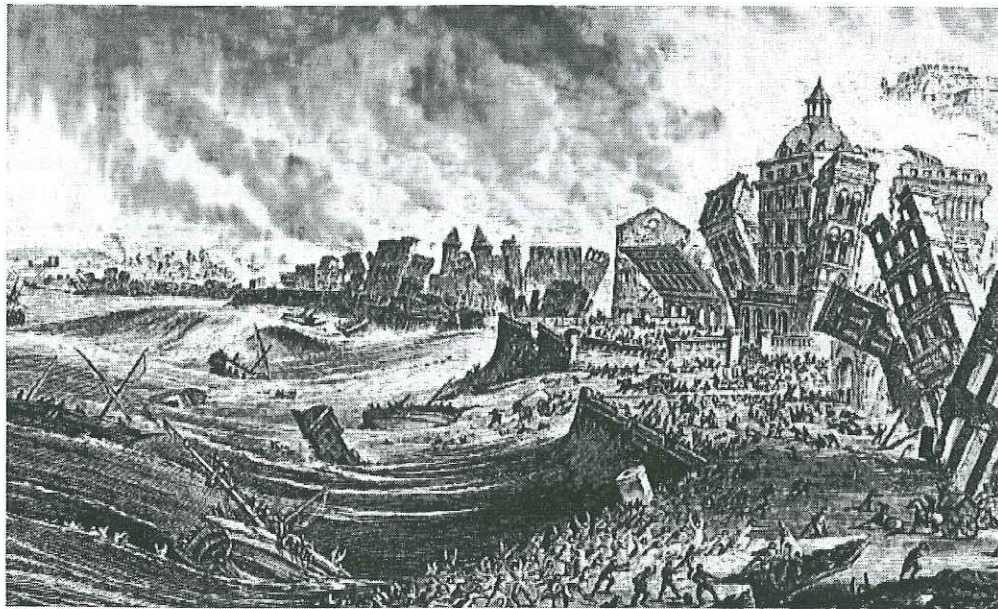
New Year Editorial – 2005

There's a picture, a C19th engraving (possibly by Gustave Dore – I can't remember) of a sailing ship ploughing through a sea choked with human corpses. Until the December 26th tsunami I thought such visions highly improbable. Not that the Sunda Arc is a stranger to cataclysmic seisms. The engraving referred to was, I think, made after the 1883 Krakatoa event. Following that eruption the surrounding seas were covered with a thick carpet of pumice. Months later, some of these floating islands, complete with human and animal skeletons clinging to their upper surfaces, washed up on East African shores.

Tsunamis are the result of huge displacements of water and there is plenty of evidence supporting the case that such phenomena, whether the result of shifting plates or littoral/underwater landslides or impacts by large objects from space, have occurred on a regular basis over a long period of the Earth's history. Four years ago BBC2's 'Horizon' screened an edition called 'Wave of Destruction'. This documentary focused not only on tsunamis but 'megatsunamis' and in particular the potential for a sizeable chunk of La Palma to slip into the Atlantic and devastate the eastern seaboard of the United States. On the western side of this volcanic island, a vent known as the Cumbre Vieja, did in fact experience a flank slip of four metres in 1949, though no one knew at the time of the potential for large-scale disaster. Come the day when this event takes place, South America, the Iberian Peninsula, France, the Netherlands and the south and east of England will be affected too. In fact, the 'Horizon' programme was rather simplistic and I would refer you to a four-page paper on this particular case at <http://www.benfieldhrc.org/SiteRoot/tsunamis/WardandDay.pdf>

Much has been made of the fact that the US and other countries have the Pacific covered by a pressure sensor network linked to satellite with downlinks to communications infrastructures. That there is a case for such protection for countries around the Indian Ocean is now beyond doubt, though the risk of frequent tsunamis is somewhat less than the Pacific. Does the Atlantic Ocean likewise merit the same warning technology? Any tsunami originating in the western Canary Islands will travel at around 700 km per hour, giving New York around eight hours to prepare, if indeed any preparations at all can be made. I recall from my schooldays a geography teacher telling us about a huge mudslide on the Newfoundland Grand Banks/Laurentian slope breaking the Transatlantic communication cable.

Looking into this it turns out that there was a Magnitude 7.2 earthquake on November 18th, 1929, 250km south of Newfoundland and the tremors were felt in Ottawa and New York. The resulting rotation and slump of around 200 cubic kilometres of sediment off the continental shelf actually broke twelve communications cables in multiple places. More significantly, this mass movement generated a tsunami that was detected as far south as Carolina and across the Atlantic in Portugal. The tsunami's greatest effect was in the Burin Peninsula in south Newfoundland. The tsunami arrived here approximately 150 minutes after the earthquake, claiming 29 lives; the sea was raised 27 metres along that coastline. Many buildings were pulverised by the weight of water smashing into them, though several simply floated off their foundations. A grocery store was moved 60 metres inland in this manner, being set down in a meadow with its stock intact. Perhaps the most famous Atlantic tsunami was the inundation following the November 1st 1755 earthquake in Lisbon (contemporary drawing below). This particular tsunami was caused by the slumping of marine sediments off the Portugese coast, generating three large waves.



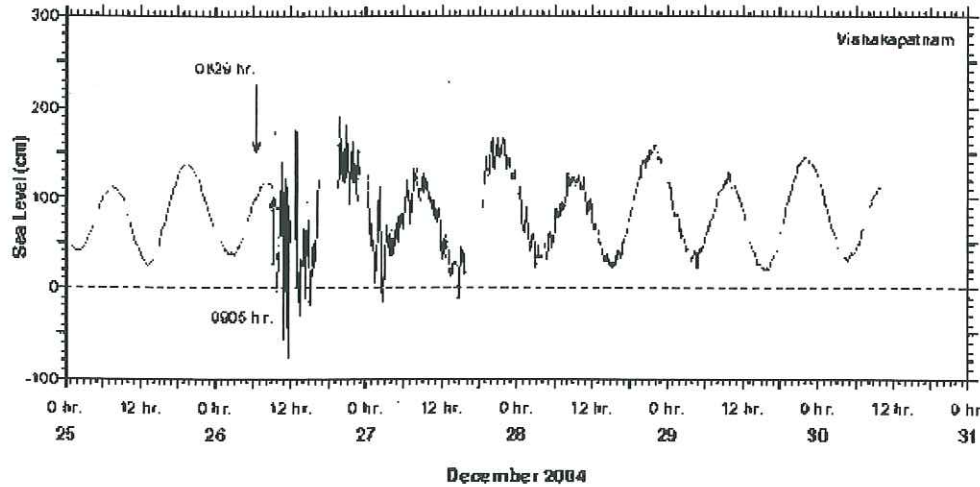
Around 80% of tsunamis occur in the Pacific, 10% in the Indian Ocean and 5% in the Mediterranean. Mediterranean tsunamis tend to be weaker though this is not to say the potential for widespread devastation does not exist.

Greece experiences more than 50% of Europe's seismicity and the last big tsunami recorded there was in July 1956. This was the result of a Richter 7.7 earthquake that threw up a 25 metre high wall of water on the island of Amorgos in the Cyclades, killing four. With the huge build up of tourism such an event would result in a great number of fatalities today. With this in mind, Greek and Japanese seismologists have been collaborating for the past decade to produce maps of high-risk areas. These are the Aegean, the Tunisian coast, the Algerian coast, Italy and Sicily (a tsunami in the Strait of Messina killed more than a thousand people in 1908) and the Turkish coast. There is a fear that Rhodes could one day be Greece's Phuket. As recently as May 2003 a small tsunami reached the Balearic Islands and the French Riviera, resulting from an earthquake at Boumerdes in Algeria.

Returning to tsunami warning systems, the Pacific system did know what was about to threaten countries around the Indian Ocean, though there was no infrastructure in place to effectively issue timely warnings. Having said that, a warning was received by the US military base on Diego Garcia in the middle of the Indian Ocean two and three quarter hours after the earthquake. The island itself is British territory and is linked to the US Pacific Command, though in spite of this our MoD has insisted that no advance warning was received. For a detailed analysis of the Sumatran earthquake and tsunami see <http://iri.columbia.edu/~lareef/tsunami/> from which the data table below, showing the main shock and aftershocks, is taken.

| MAG | DATE | UTC-TIME | LAT | LON | DEPTH | REGION |
|-----|------------|----------|--------|--------|-------|-------------------------------|
| | y/m/d | h:m:s | deg | deg | km | |
| 6.3 | 2004/12/26 | 11:05:01 | 13.542 | 92.877 | 10.0 | ANDAMAN ISLANDS, INDIA REGION |
| 6.2 | 2004/12/26 | 10:19:30 | 13.455 | 92.791 | 10.0 | ANDAMAN ISLANDS, INDIA REGION |
| 6.5 | 2004/12/26 | 09:20:01 | 8.867 | 92.382 | 10.0 | NICOBAR ISLANDS, INDIA REGION |
| 5.8 | 2004/12/26 | 07:38:25 | 13.119 | 93.051 | 10.0 | ANDAMAN ISLANDS, INDIA REGION |
| 5.7 | 2004/12/26 | 07:07:10 | 10.336 | 93.756 | 10.0 | ANDAMAN ISLANDS, INDIA REGION |
| 5.7 | 2004/12/26 | 06:21:58 | 10.623 | 92.323 | 10.0 | ANDAMAN ISLANDS, INDIA REGION |
| 7.3 | 2004/12/26 | 04:21:26 | 6.901 | 92.952 | 10.0 | NICOBAR ISLANDS, INDIA REGION |
| 6.1 | 2004/12/26 | 03:08:42 | 13.808 | 92.974 | 10.0 | ANDAMAN ISLANDS, INDIA REGION |
| 5.9 | 2004/12/26 | 02:59:12 | 3.177 | 94.259 | 10.0 | W. COAST OF NORTHERN SUMATRA |
| 6.0 | 2004/12/26 | 02:51:59 | 12.511 | 92.592 | 10.0 | ANDAMAN ISLANDS, INDIA REGION |
| 5.8 | 2004/12/26 | 02:36:06 | 12.139 | 93.011 | 10.0 | ANDAMAN ISLANDS, INDIA REGION |
| 5.8 | 2004/12/26 | 02:34:50 | 4.104 | 94.184 | 10.0 | W. COAST OF NORTHERN SUMATRA |
| 6.0 | 2004/12/26 | 02:22:02 | 8.838 | 92.532 | 10.0 | NICOBAR ISLANDS, INDIA REGION |
| 5.8 | 2004/12/26 | 02:15:58 | 12.375 | 92.509 | 10.0 | ANDAMAN ISLANDS, INDIA REGION |
| 5.9 | 2004/12/26 | 01:48:47 | 5.393 | 94.423 | 10.0 | NORTHERN SUMATRA, INDONESIA |
| 8.9 | 2004/12/26 | 00:58:51 | 3.298 | 95.779 | 10.0 | W. COAST OF NORTHERN SUMATRA |

The tide gauge graph below shows the effect of the tsunami on sea level before and after the arrival of the main run-up:



This data was obtained from the website of the Indian National Institute of Oceanography at www.nio.org/jsp/tsunami.jsp The Columbia University website, cited above, also has the animated tsunami sequence that gives a better understanding of the chatter and noise superimposed on the normal diurnal tidal rhythm, as a result of interference from multiple tsunami waves and their refractions and reflections.

The area of subduction that gave rise to the Indian Ocean tsunami is complex; the Indian plate descends as the Burma plate overrides and the line of fusion is marked by the Sunda Trench. For a detailed map, refer to the Columbia University website. The Sumatran Arc is itself the result of plumes of molten material rising from the friction-fed melt zone as kinetic energy is converted to heat at depth in the mantle. Will the acceleration in movement of these plates generate new volcanic activity in northern Sumatra and in the ocean to the east of the Andaman and Nicobar Islands, where most of the aftershocks occurred?

Which brings us, I suppose, to the rather perilous state of affairs in North America. Mount St. Helens appears to be a warning shot across the bows in that a considerable area of the Rockies is perhaps building up to cataclysmic volcanicity dwarfing anything witnessed in history. The whole chain from Mt. Lassen in the south, through Mts. Shasta, Jefferson, Hood, Adams, St.

Helens, Rainier and Baker in the north, up into the Canadian Rockies seem to be far from being anything other than a considerable threat. The Yellowstone caldera ejected 247 cubic miles of material when it 'blew' 600,000 years ago and the caldera chain could well perform several encores as the North American plate passes over this hot spot. Section C hosted a talk recently where the existence of hotspots was questioned. The evidence provided by the Yellowstone plume and its chain of precedent volcanic fields seems incontrovertible to me: furthest away in the south west and oldest is the McDermitt VF at 16.1 million years, followed in a straight line by the Owyhee-Humboldt VF at 13.8my, the Bruneau-Jarbridge VF at 12.5my, the Picabo VF at 10.2, the Heise at 6.5, plus two more at 4.3 and 1.2my, finishing with the Yellowstone at 0.6my. In fact, the whole situation for the American North-West looks rather precarious as the Juan de Fuca and Gorda Plates slip under the North American Plate, rather than sliding past it as the Pacific Plate does to the south, or the Queen Charlotte transform fault to the north.

Before venturing northwards out of Washington state and over the border into Canada it is well worth having a look as the US Geological Survey's website at <http://vulcan.wr.usgs.gov/Volcanoes/Baker/framework.html> There are plenty of informative links here to keep you browsing for quite some time. Examining the situation up from Vancouver to Queen Charlotte's Island there are a number of active and dormant volcanoes associated less with the subduction arc that characterizes the Cascades and more with hot spots and rifting; in fact a mirror image of the situation to the south of the Cascades. It's only until you reach the Yukon-Alaska border area that vulcanicity associated with subduction is once again characterized. Here, the largest volcano is the dormant Mount Churchill which last erupted around the time when King Ethelbald of the Mercians was killed in a mutiny which led to Offa succeeding the throne. It may seem a long time ago since squabbling Anglo-Saxons were the news of the day but geologically this is nothing.

There is method in the madness of taking a roundabout tour to Alaska. The Horizon 'megastunami' documentary referred to earlier began with a reference to two events which took place approximately fifty years ago in Glacier Bay National Park, southern Alaska. The actual location was Lituya Bay, a narrow body of water fed by three glaciers. In 1958 an earthquake dislodged a huge amount of material at the head of the inlet, which in turn created a tsunami that rode over a headland to a height of 1,700 feet above sea level. The details of this and a preceding tsunami in the bay which took place five years earlier can be found at the 'Horizon' website where there is a

transcript of the 'Wave of Destruction' programme:
http://www.bbc.co.uk/science/horizon/2000/mega_tsunami_transcript.shtml



Locomotive swept inland by the 1964 Alaskan tsunami

The Lituya Bay tsunami was a local affair in comparison with the 1964 Alaskan tsunami. I remember this well because I was studying A-level geography and geology at the time and the descriptions and pictures of the event have stuck in my mind. In particular was the rather grainy film footage shot by a Russian trawlerman; this showed the sea receding prior to the tsunami run up. This was the very feature preceding the destructive waves that hit Thailand and adjacent countries that alerted ten-year old Tilly Smith of Oxshott in Surrey; she had recently studied earthquakes and their effects at school and was able to warn over a hundred people to get off the beach area and escape to the safety of high ground. Modest Tilly said that the credit should go to her teacher, Andrew Kearney, of Danes Hill Preparatory School!

Finally, there are innumerable websites from which more information can be gleaned, though the one I'd recommend starting with is the website of a very clever chap, Dr. George Pararas-Carayannis: <http://www.smallshop.com/science/tsunami.htm> There's another very important website too and you'll find that at <http://www.dec.org.uk/> if you haven't done so already.

GS

Programme of indoor meetings 2005

All held at 7.30pm in Lecture Theatre 3 in the Ken Edwards Building, Leicester University, except where stated

Wednesday January 12th

Barry Hunt (IBIS Ltd., London) – 'Building stone pathology'

Wednesday January 26th

Professor Dick Merriman (British Geological Survey, Keyworth) - 'The role of clay minerals in recycling crustal rocks'

Wednesday February 9th

Members evening, to be held at the **New Walk Museum, Leicester**

Monday February 21st

Parent Body Lecture, to be held at **New Walk Museum, Leicester**. Professor Chris Stringer (Natural History Museum, London) - 'The Ancient Human Occupation of Britain (AHOB) Project'

Wednesday February 23rd

Dr Rosalind White (Leicester) - 'Volcanism, impact and mass extinctions: incredible or credible coincidences?'

Saturday March 5th (whole day)

Saturday School, **Ken Edwards Building, University of Leicester**. 9.30 am - 5.00 pm. Theme: Earth and Life Interactions.

Wednesday March 9th

Dr Simon Lewis (Queen Mary College, London) - 'Middle Pleistocene glaciations in the English Midlands'

Wednesday March 23rd

AGM and Chairman's Address - Andrew Swift (Department of Geology, Leicester University) - 'Eight years in the trenches - a Chairman's Tale'

Annual General Meeting March 23rd 2005

A reminder about the AGM on March 23rd. If you have any nominations for officers or committee, there is a form enclosed with this Charnia. This is your opportunity to suggest or propose changes you might like to see, remember that all officers and committee are subject to re-election and can be replaced by nominees put up and voted for by you. We would welcome new blood for any post. If you would like to serve the Section, all you need is a proposer and seconder.

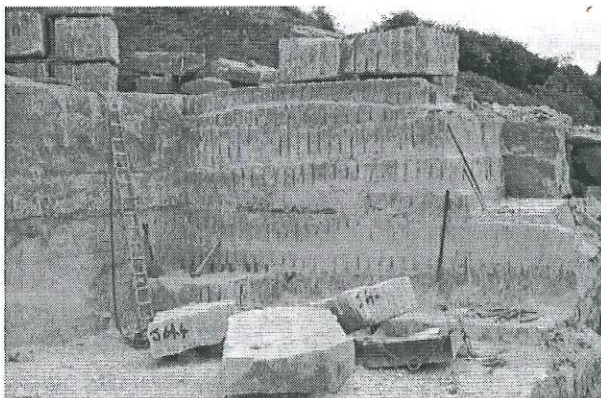
Abstracts of Winter Programme talks 2005

Abstract of talk scheduled for Wednesday January 12th

Building Stone Pathology

Barry J Hunt
Director, IBIS Ltd, London

This talk will cover a broad spectrum of construction problems where stone was involved but was not necessarily the culprit. The experiences narrated are world-wide and were garnered from almost 20 years of investigation. Many of the problems could have been avoided, often with only a modicum of advice, but considerable ignorance in the use of stone continues.



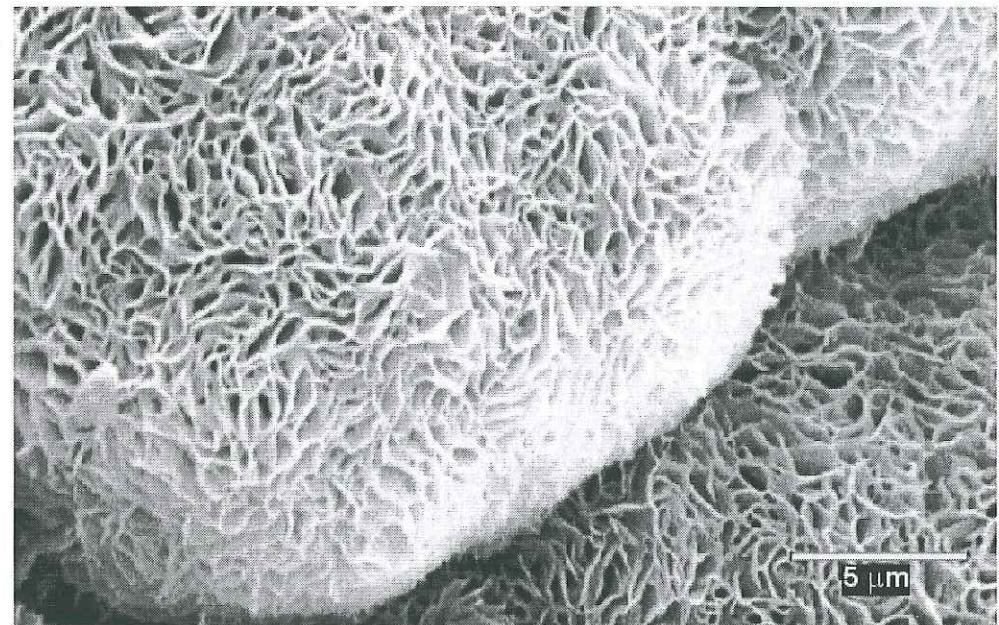
Where it all starts - stone extraction near Ancaster

Abstract of talk scheduled for Wednesday January 26th

The role of clay minerals in recycling crustal rocks

Professor Dick Merriman
British Geological Survey, Keyworth, Nottingham

The clay minerals in mud and soil coating the Earth's surface are part of a clay cycle that both degrades and regenerates rock in the crust. Clays generated by surface weathering and shallow diagenetic processes are transformed into mature clay mineral assemblages in sedimentary basins. During metamorphism, the release of alkali elements and boron from mature clay minerals generates magmas that are subsequently weathered and recycled, representing the magma-to-mud pathway of the clay cycle. Mudrock clay mineral assemblages and the *b* cell dimension of K-white mica can be used to infer the geotectonic settings of sedimentary basins. Element mobility resulting from very low-grade metamorphism of clay minerals in mudrocks appears to reflect the different geotectonic settings of Lower Palaeozoic basins in northern Britain.



SEM photomicrograph of Smectite (clay mineral) from Nevada

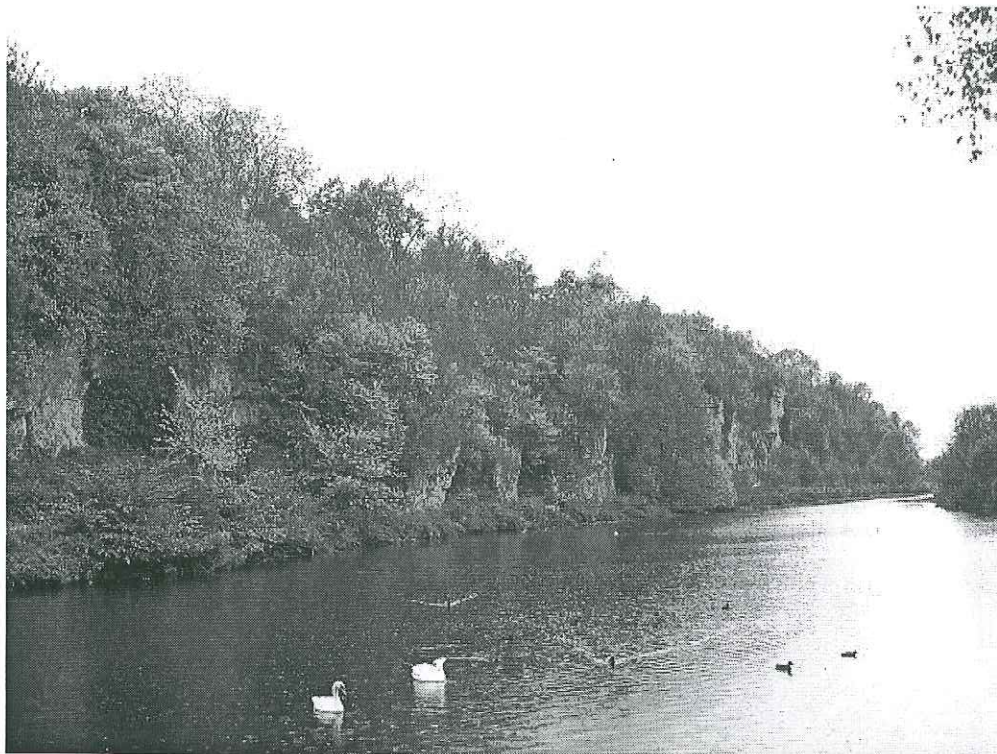
Abstract of Parent Body talk scheduled for Monday February 21st

The Ancient Human Occupation of Britain (AHOB) Project

Professor Chris Stringer

Palaeontology Dept., Natural History Museum, London

The Ancient Human Occupation of Britain research project, a five-year programme funded by the Leverhulme Trust for just over £1.2 million, began in October 2001, and is investigating the timing and nature of human occupation of the British Isles during the Quaternary. The project brings together a range of specialists, including archaeologists, palaeontologists, geomorphologists, stratigraphers, sedimentologists and isotope analysts from British universities and national museums.



Creswell Crags, Notts, where the most northerly Ice Age cave drawings have recently been discovered

The central purpose of the programme is to provide a detailed settlement history of Britain over at least a 500,000 year period, revealing aspects of the technology and behaviour of its Pleistocene inhabitants and exploring how and why these changed over time, reconstructing the environments in which they lived and the resources that these provided, and documenting the animals that shared their landscape. By taking this broad sweep in time within a single sub-region of Europe, it is hoped to identify patterns of human social organisation, behaviour, technology, economies, habitat preferences and landscape use, against the backdrop of frequent ice-advance, sea-level change and the effects of recurrent isolation from mainland Europe.

The project has identified seven principal research topics, each focusing on a major episode of this time period and each with its own set of specific research questions. Together, these will form a coherent chronological framework for understanding the ancient human occupation of Britain. The seven key research areas stretch from the nature and timing of the first occupation of Britain, more than 500,000 years ago, through to human recolonisation after the last glacial maximum, about 15,000 years ago.

The results of the research will be made available at different levels. Detailed research and site reports will be published as papers in academic journals, and more generalised information will appear in the media and popular publications, and on the project's website http://www.nhm.ac.uk/hosted_sites/ahob. An overview of the results is planned as an academic book at the end of the project to coincide with a major conference in 2006, and there will also be a popular book.

Abstract of talk scheduled for Wednesday February 23rd

Volcanism, impact and mass extinctions: incredible or credible coincidences?

**Dr Rosalind White
Leicester**

Massive continental volcanism and/or bolide impacts are considered by many authors to have caused three major mass extinction events during the last 300 million years: the end-Permian, end-Cretaceous and end-Triassic extinctions. However, re-evaluation of the frequency of bolide impacts and plume-related flood basalt provinces indicates that both types of event occur much more



Field party at Kent End Qry on May 15th 2004



In the June sunshine at Slip Inn Quarry June 13th 2004

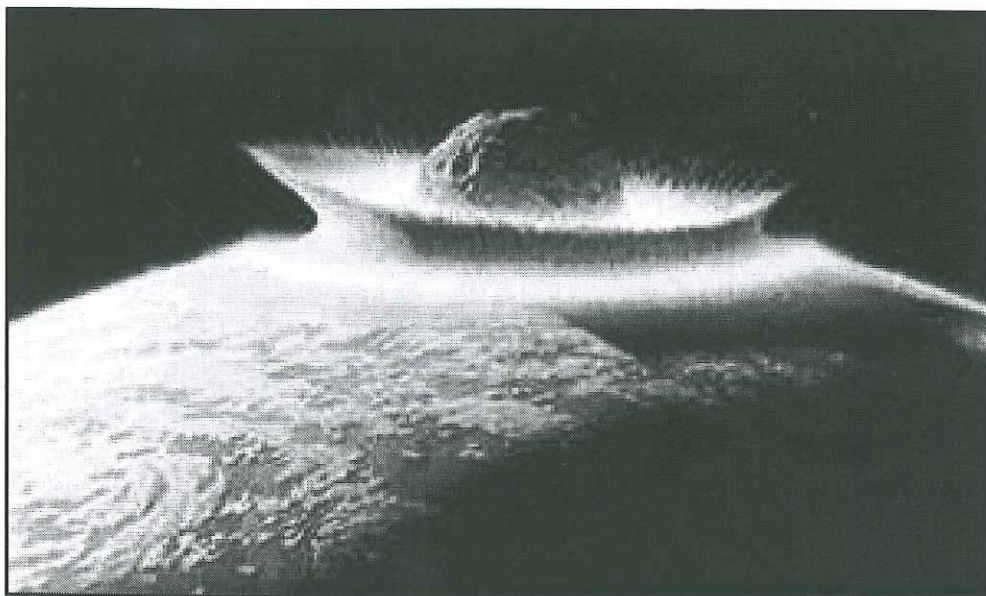


The 'Cooksonia Quarry' on the Builth weekend May 22nd 2004



Christmas Meeting, New Walk Museum December 15th 2004

frequently than mass extinctions, and so, *in isolation*, may not be responsible for the largest extinctions. Furthermore, the kill mechanisms associated with either flood basalts or impacts do not appear to be sufficiently powerful to cause worldwide collapse of ecosystems leading to the largest mass extinctions. Contemporaneous flood basalts *and* bolide impact may be prerequisites for the largest mass extinctions. I will present a statistical analysis of the probability of coincidence between volcanism and impact, and show that three random coincidences of these events in the last 300 m.y. are likely. No causal relationship between impact and volcanism is necessary. The lesser mass extinctions, on the other hand, may not require juxtaposition of two such catastrophic events; such coincidences occurring on more than three occasions during the last 300 m.y. become increasingly unlikely.



Insufficient on it's own?

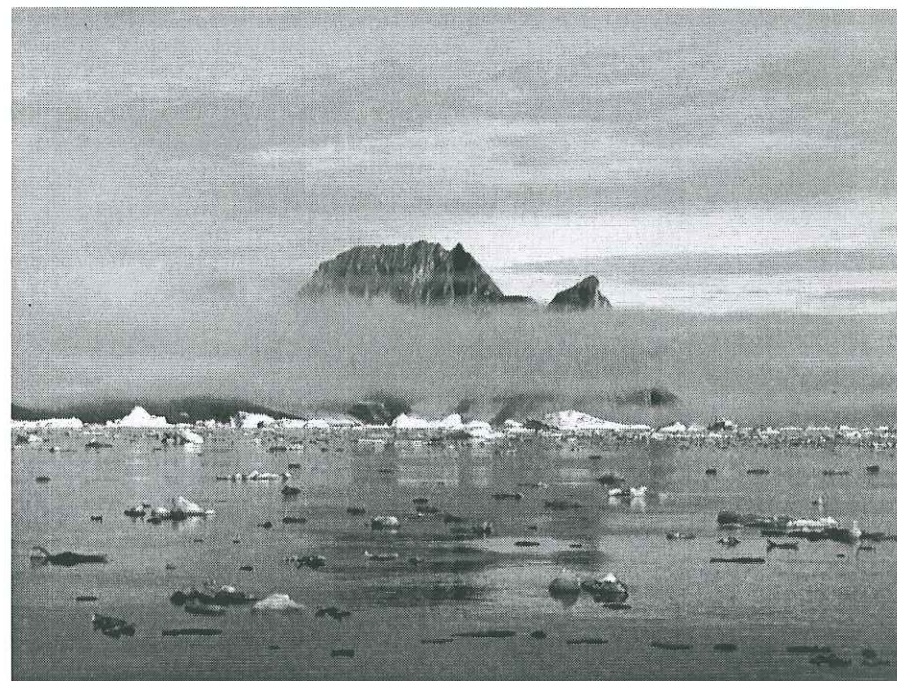
Abstract of talk scheduled for Wednesday March 9th 2005

Middle Pleistocene glaciations in the English Midlands

Dr Simon Lewis

**Department of Geography, Queen Mary College, University of London,
Mile End Road, London E1 4NS**

The glacial stratigraphy of the English Midlands remains problematic. New evidence from a number of key localities in the Birmingham area has enabled a glacial stratigraphy to be established. A chronology for these glacial episodes can also be suggested based on correlation with the fluvial sequences of the rivers Severn and Avon.



Charnwood during the Pleistocene?

Abstract of the Chairman's Address scheduled for Wednesday March 23rd 2005

Eight and a half years in the trenches – a Chairman's Tale

Andrew Swift

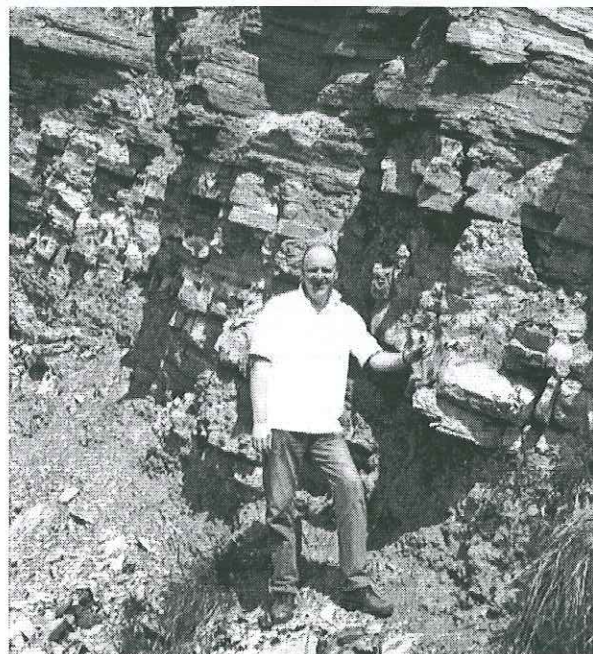
Palaeobiology Group, Department of Geology, University of Leicester

A light-hearted look back over eight years of directing the affairs of the Geology Section of the Leicester Literary & Philosophical Society, looking

particularly at the field excursions and other programmed and non-programmed events in the Section's calendars.



With preferred company, in preferred environment



And with my favourite rocks, the Penarth Group of the latest Triassic, at Lillstock in Somerset

Member's Evening, February 9th 2005

A reminder about the Member's Evening which will take place on February 9th at New Walk Museum, as usual. For those unfamiliar with the format, the idea is for volunteer members to give short 10-15 minutes presentations on particular aspects of geology which interest them and which they think will appeal to other members. We like to get up to 6 of these little talks, and they form the backbone of the evening. They can be illustrated with slides or overheads if desired or even presented as data projection talks. The other main attraction is displays of member's geological specimens or collections, and all are welcome to bring something in. But if you wish, you can simply be the audience; after all, the idea is for a relaxed social evening away from the constraints of a formal lecture.

Saturday School, Saturday March 5th 2005 **Ken Edwards Building, Leicester University campus**

The most important thing to note about the Saturday School this year is that for the first time we are running it alone, independent of the Institute of Lifelong Learning and Vaughan College. For several years we have considered this move, and have at last made it. We are sure it is a very positive step, and can only benefit the Section. We are at pains to stress that the participation of the public at large is still absolutely encouraged and is indeed crucial, and the publicity will reflect this resolve. The venue will be our newly established home in the Ken Edwards Building, but on this occasion we have booked a larger lecture theatre (for talks) and two seminar rooms (for breaks and lunch) to ensure that all have a comfortable environment in which to enjoy the six talks we have for you.

The theme is the past and present interaction between the planet Earth and the life which inhabits it. You will find a flyer enclosed with this Charnia which has full details and a booking form. The day will run from 9.30 – 5.30, and tickets will be £15.50 with a buffet lunch or £8.50 without. Please send money for tickets to the treasurer Eileen Johnson, Rosedean, Park Lane, Bagworth, Leicester LE67 1BB (01530 230476). Some tickets will be available in the Geology Department (see Andrew Swift) for those who find it easier to buy from there. A programme for the day is given below.

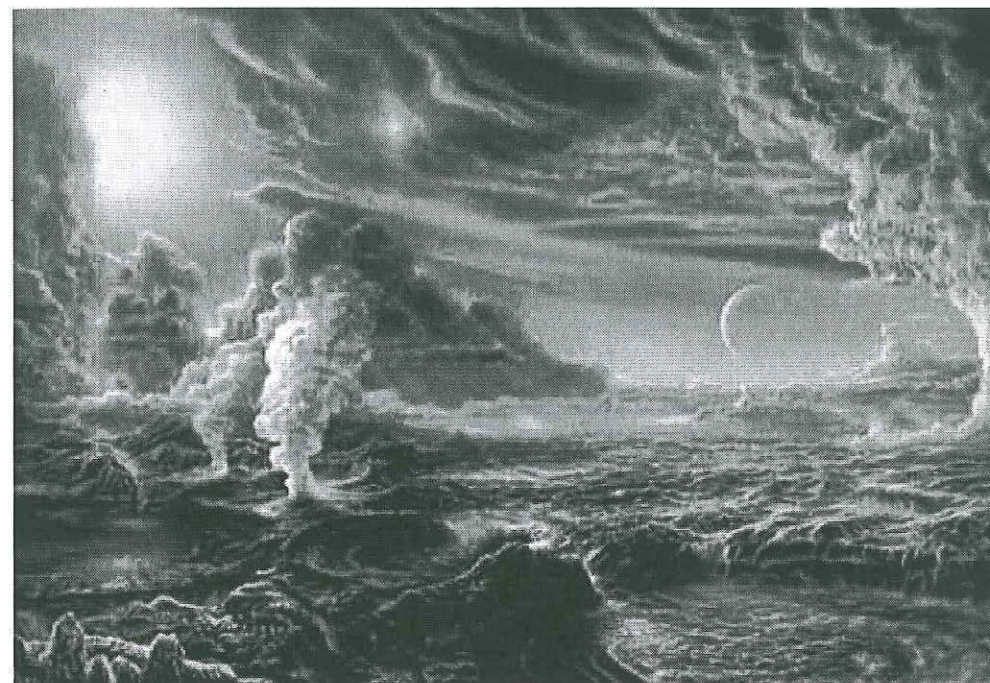
Earth history, evolution and climate change

Draft Programme

- 9-30 am** Assemble
- 10-00 am** **Opening of meeting and welcome**
Andrew Swift, Chairman, Geology Section, LLPS
- 10-05 am** **'Earth-like planets mostly aren't like this'**
Dr Nick Butterfield, University of Cambridge
- 10-50 am** Coffee
- 11-20 am** **Theme: evolution of organisms with carbonate skeletons and the Mesozoic carbon cycle**
Dr Peter Skelton, Open University
- 12-05 pm** **'Vegetation feedbacks and environmental change in the Palaeozoic; the making of the modern world'**
Professor Bob Spicer, Open University
- 12-50 pm** Lunch
- 2-00 pm** **'The End-Permian mass extinction: new evidence from Russia'**
Professor Mike Benton, University of Bristol
- 2-45 pm** **'The mountains of the Pacific Northwest: a wind break that caused northern hemisphere glaciation?'**
Dr. Gavin Foster, University of Bristol
- 3-30 pm** Tea
- 4.00 pm** **'The climate of the future - clues from the past'**
Drs Mark Williams and Alan Haywood (British Antarctic Survey, Cambridge)

4-45 pm Question and answer session and closing remarks

5-00 pm End



An impression of the early Earth, with oxygen-deficient atmosphere

Important change in the Section C year

Because we experience ongoing difficulty in collecting subscriptions on time, we have decided to recommend two important changes in the Section C year to the AGM on March 23rd. The first is to introduce a standing order scheme and the second is to run the subscription year from October 1st to September 30th, thereby collecting subscriptions from October 1st each year. One short term bonus for the membership will be that the months April to September 2005 will effectively be free. We will be sending out standing order forms around the middle of the year, to be effective from October, and ask for your goodwill in paying your subscriptions this way from now on.

The discovery of *Charnia*

By



Trevor Ford O.B.E.

Members who saw one of the earlier Alan Titchmarsh television programmes (October 6th) on The Natural History of the British Isles may recall that the local section at the end covered the rocks of Charnwood Forest and its Precambrian fossils and an interview with Roger Mason was included. He was one of the three schoolboy climbers who found the original specimen in 1957. After the programme was broadcast, Roger Mason received a communication from Mrs Tina Negus of Grantham who had found the fossil impression at least a year earlier when she was a 15 year old schoolgirl from Lincolnshire picking bilberries with her parents. With Roger's assistance, I have been able to contact Tina Negus and we had an interesting phone conversation. Apparently she made a drawing and showed it to her teachers, none of whom showed any interest: indeed she was told categorically that there were NO Precambrian fossils in Charnwood Forest or anywhere else. If only she had come to the University, she might have got a different answer and it might not have been named *Charnia masoni*. Later her teachers actively dissuaded her from taking up geology and she became a biologist.

It makes me wonder how many other people had seen the original *Charnia* and either failed to tell anyone or had their findings squashed. After all, the quarry had been worked at least a century earlier and was known to Victorian geologists as the "Ring Quarry" owing to what we now interpret as either jellyfish or holdfast impressions, but then regarded as inorganic "nodules", so there had been ample time for others to see the impression.

Even I was sceptical when Roger first came into the Geology Laboratory to report the discovery, but when he produced a "brass-rubbing" of *Charnia*, and

had it confirmed by his father whom I knew as a lecturer in the University. The three of us piled into the car and drove straight out to Woodhouse Eaves – and the rest is history!

A mystery remains – between my first and second visits, a week later, some person unknown had hammered the margins of the fossil, fortunately without doing too much damage. The marks can still be seen on the specimen in Leicester Museum. We have never found out who hammered it. The original was subsequently extracted with the aid of two quarrymen and a 4 cwt block was taken by lorry to the Museum. Later it was taken to a monument mason with a large rock saw for trimming gravestones. He brought the saw up to the block a bit too quickly and the saw blade shattered with bits going in all directions. The block also split luckily leaving *Charnia* on a much more manageable slab weighing about 60 lbs which can be seen in Leicester Museum today.

Tina Negus wrote a poem about her discovery, which she kindly agreed to be reproduced here.

The Fossil

Understanding geology as an orderly system, built
Up of alternating layers of clay and lime,
With gravelly sands and river silt,
The Charnwood volcanic hills
Exploded in my teenage brain,
Sweeping aside my hard-won knowledge
Of progressive deposition throughout time and space,
To be replaced with a new vocabulary;
Igneous dykes and sills; metamorphic; pyroclastic;
Magma, pumice, sedimentary ash; gabbro, granite, gneiss and schist;
The terms fell easily from the tongue
But left me unprepared
For the fantastic piles of these oldest blocks
Of hardened stone; the bedded sheets,
Once wind-blown dust, compressed, tilted, strong;
The rocks now used as a climber's training wall.
The Blue Liassic clays at home were full of early forms of life;
Lampshells, bivalves, belemnites;
With several kinds of curling ammonites, backbone of my childish hoard.
Precambrian rocks contain no fossils, or so the library books insisted,
And my teachers echoed this belief, yet, on an annual trip

In search of bilberries for jam and pies,
I came across an outcrop, polished, smoothed,
Containing imprints of some ancient leaf,
Fern-like, with a central stalk.
The fossil could not be removed: proof lay in a pencil tracing
To be kept until an open mind
Could explain the relic I'd unearthed, identify this puzzling find.

On our return another year, the metre square of stone was gone,
The drilling holes alone remained;
Evidence that something had been here before despite the constant assertion:
There are no fossils from Precambrian times.

My fossil now has been described and named:
Not in fact, a plant, as I once thought,
But a sort of coral-life,
Colonial sea-pen, rooted in the sands of time,
Related to the jellyfish today.
The discoverer, said to be a boy, a youth,
Someone, no doubt, had listened and believed,
When he said he'd found
A fossil from the Precambrian age.

Members with access to the American journal SCIENCE may like to know that the issue dated August 24th 2004 contains a report on a newly discovered locality in Newfoundland with Charnia fronds in 3D preservation. The author, Guy Narbonne, expresses doubts about the sea-pen interpretation but does not offer anything more convincing. A condensed version of Narbonne's report is available on:

[www.sciencexpress.org/15 July 2004/Page 1-10.1126/science.1099727](http://www.sciencexpress.org/15%20July%202004/Page%201-10.1126/science.1099727)

Programmes of other societies

LLPS Natural History Section. Wednesday evenings at 7.30 in the Council Room at New Walk Museum, except where stated

January 19th – 'For plants, for people, for the planet' (Jan Dawson)

February 2nd – Natural History forum. An expert team will answer questions.

February 16th – 'The other rain forest' (Jeff Best, Adult Education lecturer)
March 2nd – 'Disease – the role of insects in its spread' (Dr Ray Morris)
Monday March 7th – Joint Meeting with the Parent Body. 'Is Spring getting warmer?' (Dr Tim Sparks, Monks Wood Centre for Ecology and Hydrology)
March 16th – AGM, social evening and demo

East Midlands Geological Society. 6.30 pm in lecture theatre B3 of the Life Sciences (Biology) building, University of Nottingham, except where stated.
Contact: Beris Cox (bmcox@stanwold.freeserve.co.uk)

Saturday February 5th – President's Evening. 'Talking rocks' (Ian Thomas, National Stone Centre)

Saturday March 5th – AGM (6.00pm) followed by 'The dating game – one man's search for the age of the Earth' (Dr Cherry Lewis, University of Bristol)

Saturday April 23rd – 'A very big fish records the Jurassic climate' (Dr David Martill, University of Portsmouth)

Yorkshire Geological Society. Contact: Dr Trevor Morse, 19 Thorngate, Barnard Castle, Co. Durham, DL12 8QB, tel. 01833 638893, e-mail: tjm4@tutor.open.ac.uk

Saturday 22nd January. Univ of Leeds Rupert Beckett Lecture Theatre. 'England's north-west: new views on old rocks'. 4 talks by: Fred Dunning and Jack Soper, Jack Soper and Nigel Woodcock, Nigel Woodcock, Dick Merriman and Simon Kemp

Saturday 19th February. University of Sheffield. Joint meeting with the Sorby Society: Red-bed sediments

Saturday 19th March. BGS, Keyworth. Joint meeting with the East Midlands Geological Society: Recent BGS research

Stamford and District Geological Society. Contact: Pauline Dawn, 01780 764714. Meetings are held at Tinwell Village Hall at 7.30 (visitors £1.50)

Wednesday February 9th – "Out on a limb: evolution of the 'four-legged fish'" (Dr Jenny Clack, Dept of Zoology, University of Cambridge)

Wednesday March 9th – AGM and Member's Evening

Central Branch of the Russell Society. Meetings are usually held in the room K109, Manzoni Building, Loughborough University at 8.00 pm. Section member Neil Hubbard can give details (01509 414427)

Friday January 14th – ‘Recent research in northern England’ (Trevor Bridges)

Friday February 18th – ‘Nenthead revisited’ (Stephen Seymour-Smith)

Friday March 11th – Branch AGM, followed by slides of member’s overseas travels

Warwickshire Geological Conservation Group. Contact: Martyn Bradley, 01926 428835 Or Jon Radley 01926 412481. Meetings are held in St John’s Museum, Warwick at 7.30.

Wednesday January 19th – ‘A new perspective on the geology of NW Scotland’ (Clark Friend)

Wednesday February 16th – ‘Geology and landscape’ (Godfrey Armitage)

Wednesday March 16th – Member’s Evening. ‘The Appalachians’ (John Knight)

Summer Programme 2005

Dennis Gamble has mapped out a provisional programme for the summer of 2005, but at this stage we have to stress that it is subject to revision, both regarding localities and dates. Leaders will be announced later. Please contact Dennis (0794 7725361) in a few weeks for an update if required, but we will send out the final programme as a circular when we have it.

May – Griff Quarry, Warwickshire (Cambrian Stockingford Shales, Ordovician diorite sill, Coal Measures and Triassic)

June (evening) – visit to Barwell to commemorate the 40th anniversary this year of the meteorite fall. Walk around the main area of the fall followed by a meal in local pub.

June (weekend) – Weymouth/Swanage area. This will be our very popular weekend excursion, and we would like your expressions of interest ASAP

July – Quarries in the Castle Bytham/Clipsham area (Jurassic)

August – Wren’s Nest, Dudley (Wenlock Limestone, fossils)

September – Wolstonian (Pleistocene) of Warwickshire

Oxford University Museum

Leicester Literary and Philosophical Society
Geology Section (C)
Officers and Committee 2004-2005

Life President: Dr Bob King,
The Oak,
Longdon.
TEWKESBURY
Glos GL20 5SE

Life Vice-President: Dr Trevor Ford OBE,
21 Elizabeth Drive,
Oadby.
LEICESTER LE2 4RD
0116 2715265

Chairman: Andrew Swift,
208 Milligan Road,
Aylestone.
LEICESTER LE2 8FD
0116 2523646 or 0116 2833127
e-mail: as48@le.ac.uk

Vice-Chairman: Mark Evans,
Leicester Museum & Art Gallery,
New Walk,
LEICESTER LE1 6TD
0116 2254904
e-mail: evanm003@leicester.gov.uk

Secretary: Joanne E. Norris,
208 Milligan Road,
Aylestone.
LEICESTER LE2 8FD
0116 2833127 (after 6pm)
e-mail: joanne.norris@ntu.ac.uk

Treasurer: Eileen Johnson,
Rosedean,
Park Lane,
Bagworth
LEICESTER LE67 1BB
01530 230476

Field Secretary: Dennis Gamble,
43 Somerset Avenue,
LEICESTER
LE4 0JY
0794 7725361

'Charnia' Editor: Graham Stocks,
63 Barrow Road,
QUORN
Leics LE12 8DH
01509 415186
e-mail: graham.stocks@lineone.net

Publicity Officer: Dr Mark Purnell,
Department of Geology,
University of Leicester,
University Road,
LEICESTER LE1 7RH
0116 2523645
e-mail: map2@le.ac.uk

Student Representative: Kay Hawkins,
Department of Geology,
University of Leicester,
University Road,
LEICESTER LE1 7RH
e-mail: kh62@le.ac.uk

Committee: **Doug Lazenbury** (13 Hallcroft Avenue, Countesthorpe. Leicester LE8 5SL, 0116 2776407), **Dennis McVey** (130 Carisbrooke Road, Knighton. Leicester LE2 3PE), **Margaret East** (36 Brambling Way, Oadby. Leicester LE2 5PA, 0116 2716252) and **Helen Jones** (Ashlawn, Forest Drive, Kirby Muxloe. Leicester LE9 2EA, 0116 2392872)

Co-opted: **Dr Roy Clements** (Department of Geology, University of Leicester, University Road, Leicester LE1 7RH, 0116 2523800, e-mail: rgc@le.ac.uk) and **Robert Tripp** (12 Andrew Macdonald Close, Market Harborough. Leics LE16 7ED, 01622 673762, e-mail: rob.n@newford.u-net.com)