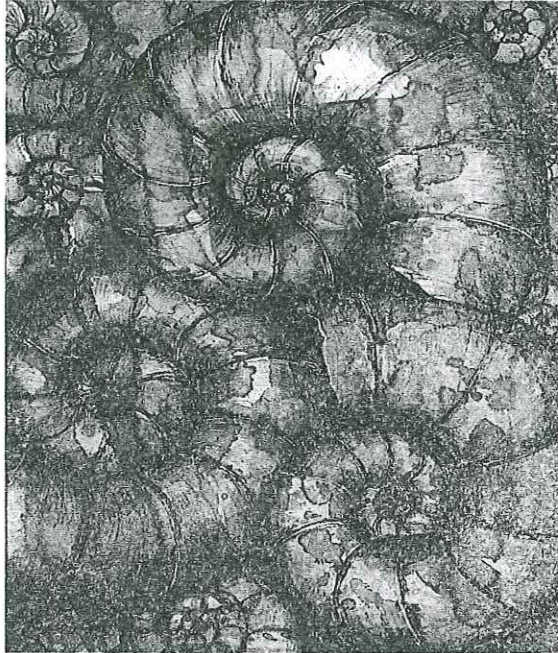


CHARNIA

NEW YEAR 2006



LEICESTER LITERARY & PHILOSOPHICAL SOCIETY

**THE NEWSLETTER OF
SECTION C (GEOLOGY)**

Website: www.charnia.org.uk

Leicester Literary and Philosophical Society, Section C (Geology)

Winter Programme, 2005-2006

All held at 7.30pm in Lecture Theatre 3, Ken Edwards Building, on the main University of Leicester campus, except where stated.
Details: Chairman Mark Evans, 0116 225 4904, Mark.Evans@Leicester.gov.uk

2005

Wednesday October 5th

Dr Liam Herringshaw (University of Birmingham): Weirdoes of the Wenlock Limestone.

Wednesday October 19th

Dr David Pyle (University of Cambridge): Volcanism in the Earth System: Past, Present and Future

Wednesday November 2nd

Prof. Dick Aldridge (University of Leicester). Theme: Recent discoveries from Chengjiang and South Africa.

Wednesday November 16th

Dr Conall Mac Niocaill (University of Oxford). The Neoproterozoic Glacial World: defrosting some of the myths.

Wednesday November 30th

Dr Adrian Wood (Coventry University). A Pliocene world as seen through the eye of an ostracod.

Monday December 5th

Parent Body Lecture, New Walk Museum, Leicester
Prof. Bill Maguire (University College, London). Surviving Armageddon: solutions for a threatened planet.

Wednesday December 14th

Christmas Meeting, New Walk Museum, Leicester.

2006

Wednesday January 11th

Dr. John Nudds (University of Manchester). Exceptional fossils from southern Germany.

Wednesday January 25th

Prof. Jack Meadows (University of Loughborough). The Barwell meteorite: 40 years on.

Wednesday February 8th

Members Evening, New Walk Museum, Leicester.

Wednesday February 22nd

Dr Murray Gray (Queen Mary, University of London). Geodiversity: an important new concept for the earth sciences?

Wednesday March 8th

Dr Jenny Clack (University of Cambridge). Evolution of the four-legged fish - new views of an early tetrapod icon.

Saturday March 11th

Annual Saturday School, Ken Edwards Building, University of Leicester, 9.30 am - 5.00 pm
Theme: Aspects of Leicestershire Geology.

Wednesday March 22nd

Annual General Meeting, and Chairman's Address
Mark Evans (New Walk Museum, Leicester). The Great Sea Dragons: plesiosaurs of the Early Jurassic

CHARNIA - SPRING EDITORIAL 2006

Leonardo da Vinci wrote '*Experience does not ever err; it is only your judgment that errs in promising itself results which are not caused by your experiments.*' Sage words and proto-scientific method if you like, harking back five centuries. So, the Renaissance progressed with ever-greater challenges to superstition, folklore and blind, unthinking faith. This, in spite of the persecution of free-thinkers, doubters and sceptics.

So, where's this polemic going, as if you hadn't already guessed? Creationism? Close! This has re-emerged in the guise of 'Intelligent Design' or 'ID' which hardly deserves the appellation of 'quasi-science' - at best a negative argument and not even an alternative theory for evolution, as claimed by its proponents. In 1996 Pope John Paul II appeared to say that the Roman Catholic Church accepted neo-Darwinism by stating that it was '*more than just a hypothesis*'. I say 'appear' because the 2004 International Theological Commission, headed by Pope Benedict XVI, stated that '*An unguided evolutionary process - one that falls outside the bounds of divine providence - simply cannot exist.*' At his installation, Benedict XVI said that "*We are not some casual and meaningless product of evolution.*"

The Roman Catholic Archbishop of Vienna, Christoph Schonborn, made this statement last June: '*Now at the beginning of the 21st century, faced with scientific claims like neo-Darwinism invented to avoid the overwhelming evidence for purposed and design found in modern science, the Catholic Church will again defend human reason by proclaiming that the immanent design evident in nature is real. Scientific theories that try to explain away the appearance of design as the result of "chance and necessity" are not scientific at all, but, as John Paul put it, an abdication of human intelligence.*'

Jonathon Miller broadcast his three-part TV programme 'Brief History of Disbelief' in the Autumn of 2004. As far as I can recall, this did not create the ripples that Richard Dawkins' recent TV programme 'The Root of all Evil' is sending out. Dawkins in particular has set out to illuminate matters in a rational, questioning way. The outcome is a vehement response from ill-educated evangelical types of the Creationism/ID ilk. Here's a rather extreme example of such an irrational response: '*All things which now exist are sustained and ordered by God's providential care. However, a part of the spiritual creation, Satan and his angels, rebelled against God after the creation and are attempting to thwart His divine purposes in creation. As such, one who accepts creationism must conclude that any and all scientists and researchers who continue to study natural history and evolutionary biology are of the Devil.*' So there you have it - sense vs. nonsense.

You could be forgiven for thinking that the Renaissance had finally arrived in the Southern US when in 1925 John Scopes was the subject of a show-

trial for teaching evolutionary theory, contravening the Tennessee Anti-evolution Statute – known as the Butler Act. (The Butler Act was finally repealed in 1967 when a dismissed teacher challenged the Act as a violation of the First Amendment – the Right to Free Speech.) Not so, fundamentalists have been beavering away and it took another legal landmark in the US to establish scientific process as truth. I am referring to the *Kitzmiller v Dover Area School District* case, presided over by Judge John E. Jones III just before Christmas. His judgment stated that it was unconstitutional for the Pennsylvania School District to treat the dogma of Intelligent Design as an alternative to evolution as taught in high school science lessons. However, this will not be the last word on the matter in the US because ID has powerful adherents – George Bush for one. It is interesting to note that there have been no wealthy corporate sponsors for the Darwin Exhibition at the American Museum of Natural History in New York (which runs until the end of this May) – the \$3 million cost being met by charities and private individuals. You could be forgiven that the tide is turning against biblical literalism; it took eleven courageous and rational parents to take on the Dover District Board. Only 26% of Americans accept the theory and science of Darwinian natural selection. 66% favour the teaching of Creationism/ID in conjunction with the science of natural selection and 38% think that evolutionary theory should not be taught in schools at all. Renaissance? What Renaissance? Judge Jones summed up by saying that "*The goal of the Intelligent Design movement is not to encourage critical thought, but to foment a revolution which would supplant evolutionary theory with Intelligent Design.*" Since his judgment a school board in California has approved a 'philosophy' course embracing ID – that is, not science and not religion either. This too is being challenged by a group of parents, no doubt worried by irrational 'education' and imposed dogma poisoning their children's minds. One of the eleven parents, who has a doctorate in geology and is a scientist at JPL, said of the ID 'philosophy' course "*I believe this class undermines the sound scientific principles taught in Frazier Mountain High School's biology curriculum and is structured in a way that deprives my children of the opportunity to be presented with an objective education that would aid the development of their critical thinking skills.*" Well put. I think.

Meanwhile, an overwhelming mountain of evidence supporting Darwin's original hypothesis accumulates. Interestingly, Sudhir Kumar and his team at Arizona State University, using molecular clock methodology, have determined the human-chimpanzee ancestor split to have taken place between five and seven million years ago. 'Intelligent' design maintains that the Earth and all its immutable plant and animal life were created a mere ten thousand years ago.

From this point onwards this editorial piece will jump about, though I assure you all the points raised are connected. Remember the discovery of 'Toumai' aka *Sahelanthropus tchadensis*, or better still TM 266-01-60-1, four years ago? Reconstruction of the cranium by discoverer Michel Brunet and his team at the University of Poitiers reveals morphological features

that are definitely hominid but has features common to both chimpanzee ancestors and *Australopithecus*. 'Toumai' is estimated to be between six and seven million years old – roughly the point at which the human-chimpanzee split occurred.

Another spectacular find relating to our ancestry, occurred nearer home. I refer to the flint hand axe discovered in 2000 at Pakenham on the Suffolk coast. This object had been dated at 500,000 years old but two local amateur geologists, Paul Durbidge and Bob Mutch, knew that animal bone fossils from this locality were older than this. In 2001 they found flint flakes in association with deposits dated at 700,000 years. This evidence is important since it predates Boxgrove Man (*H. heidelbergensis*) by 200,000 years. No human remains from the Ipswichian Cromer Forest bed at Pakefield have been discovered – yet. Chris Stringer of the Natural History Museum is of the opinion that these early European hominins were predecessors of *H. heidelbergensis*, or another form, *H. antecessor*.

In southern Mexico a fossil trail of what look very much like human footprints have been discovered. News enough but these footprints have been dated as 40,000 years old. This complicates the picture of the first human habitation in the Americas, which has been placed much later. The human footprints, if that is what they are, predate the oldest evidence of humans on that continent by 25,000 years. It may well turn out that the picture of the Bering Strait migrations of 15,000 years ago will have to be revised.

In fact, this is the beauty of scientific method; you form a hypothesis based on observations and then repeatedly and rigorously test that hypothesis and then perhaps new evidence springs to light and the process is repeated, and so on in search of concrete truth. In this way scientific method thrives on failure, just as surely as it thrives on success and the world is modeled by constant re-evaluation of what we previously thought correct. The validity of scientific knowledge is based on provable facts and not in the faith of superstition or dodgy theology and as such can never give rise to bigotry. I don't think any of the ancient pre-Biblical Babylonian creation myths were put to scientific tests or peer-review processes. Severe bullying maintained the status quo in respect of drawing reasoning from incredulity and those who dared to question and raise evidence that such ideas were falsifiable were swiftly deleted from the gene pool; received wisdom prevailed over rational thought until the dawn of the Age of Enlightenment. It's evidently a very slow process for some...

All living organisms are shaped by their surroundings – and the changes occurring in these surroundings with the passage of time. If we carefully examine our own particular case you'll be left wondering why any 'Intelligent Designer' hadn't consigned this particular model to the scrap-bin for recycling. I refer to matters such as a quadrupedal mammal not quite adapting successfully to upright bipedal locomotion. Everything that was previously slung off a dorsal stiffening-rod now slops downwards in

response to gravity and herniation at weak points becomes problematic. Flexure of the stiffening-rod in the lumbar region presents problems too, as does the pelvic design. Too narrow a birth canal and worn-out lower limb joints attest to this. Nasal sinuses 'designed' to do anything but drain properly; morning sickness; prostates enlarging to restrict urinary drainage with vasa deferentia resembling Gordian knots, back-to-front wiring in our eyes to produce a blind-spot - the list is pretty long. Perfection indeed! In exactly whose image were we designed? Does this designer suffer from back-ache? I cannot claim any originality here; Richard Dawkins first raised these issues two decades ago in his book 'The Blind Watchmaker'. The sleeve notes of his book reads: '*To the eighteenth century theologian William Paley, the very complexity and apparent purposefulness of the living world was overwhelming evidence for the existence of God. In a famous comparison he argued that, just as a watch is too complicated, and too functional, to have sprung into existence by accident, so too must all living things - with their far greater complexity - be purposefully designed. Paley's case was made with passionate sincerity, and was informed by the best scholarship of his day, but it is totally wrong. The analogy between watch and living organism is false. There may be good reasons for belief in God, but the Argument from Design is not one of them.*' Dawkins' book sets out very rationally why 'ID' is a non-starter.

The born-again creationists have, of course, resurrected Paley (1743-1805) in support of ID. In 1829, the Eighth Earl of Bridgewater, Francis Henry Egerton, donated a thousand pounds sterling per chapter for the publication of the 'Bridgewater treatises'. This bequest was in support of 'The Power, Wisdom, and Goodness of God, as Manifested in the Creation'. Chapter Six was written by William Buckland DD and some years later a partial Chapter Nine was added by Charles Babbage. Egerton was an interesting character; a lifelong bachelor, he hosted dinner parties for dogs dressed in the fashion of the day. He never wore a pair of shoes twice and had the cast-offs arranged so that he could measure the passage of time. Another foible was to have the wings of game birds clipped so that he could shoot them with ease. The Bridgewater Treatises were published between 1833 and 1840. Egerton's genes were deleted in 1829. Chapter Four was written by Sir Charles Bell (of Bell's Palsy and Bell's Spasm, etc. fame) and was entitled '*The Hand, its Mechanism and Vital Endowments as evincing Design*'. No wonder that Darwin kept his 'blasphemous' ideas on ice for two decades and sat on the final manuscript of the 'Origin' for the best part of three years.

What gives ID its legs is nothing more than crassness and stupidity - and not as Cardinal Christoph Schoenborn put it: '*The Catholic Church, while leaving to science many details about the history of life on Earth, proclaims that by the light of reason the human intellect can readily and clearly discern purpose and design in the natural world.*' Judge John Jones III described ID as 'breathtaking inanity'.

Pursuing the theme that education is the key, Richard Fortey, Senior Palaeontologist at the NHM in London) wrote a piece recently for the New York Times. Fortey wrote: '*Human beings are never prepared for natural disasters. There is a kind of optimism built into our species that seems to prefer to live in the comfortable present rather than confront the possibility of destruction. It may happen, we seem to believe, but not now, and not to us.*' Fortey dwells mainly on the tsunami that devastated the Indian Ocean on the early morning of December 26th, 2004. He writes: '*To a geologist there is nothing remarkable about the seismic events that caused last year's tsunami. The inexorable 52-millimeter-a-year movement of the tectonic plate underlying the Indian Ocean, and its inevitable subduction off the western edge of Sumatra, is bound to entail periodic quakes, and some of these will set off tsunamis. Tension builds, and the earth's lithosphere briefly shrugs to remove an irritation.*' Also cited in the article is the October 8th Pakistan earthquake. Fortey continues: '*The fact that this is just one of thousands of earthquakes which have occurred during the elevation of the Himalayas offers scant comfort. The Indian subcontinent continues its inexorable progress northwards, butting into Asia. The grandest mountain range on earth is the result; everything else is "collateral damage."* But the magisterial scale of the tectonics offers no consolation for the suffering on the ground. The time-scale is our conceptual problem. Tectonic events happen on a scale of hundreds to millions of years. Most humans find it hard to think beyond the life spans of their grandchildren. There is a psychological fault line between the human and the natural calibration of the world. Incomprehension fosters a kind of rose-tinted amnesia.'

This incomprehension applies equally to the processes behind the evolution of living organisms. Before the tsunami, tethered elephants broke free and made their way to higher ground. Some of the Andaman Islanders also knew how to avoid the rising water because of oral tradition. Richard Fortey added: '*One of the saddest things about the tsunami was the incomprehension of the meaning of that withdrawal of the sea that preceded the big wave: a 10-year-old British girl saved many lives because she happened to have learned about such harbingers of disaster in the schoolroom. If we've lost instinctive knowledge, education must be the key.*'

In this edition of 'Charnia' you'll find poetry relevant to the tsunami and also an article by retired surgeon Jim Dempster on the people who influenced Charles Darwin, plus information about forthcoming talks and what promises to be another cracking Saturday School. Book early and avoid disappointment! Mundane housekeeping matters are (1) a reminder to ensure that your subscriptions are up to date and (2) that Section 'C' Committee nominations are invited, including the post of 'Charnia' Editor. So, if you have a flair for desk-top publishing, here's your chance. Front-cover design of this issue courtesy of local artist Jo Sheppard. (http://www.josheppard.co.uk/gallery_75.htm)

GS

Roger Newman

We received the sad news of the death of Section member Roger Newman on April 18th after a long battle with cancer, very bravely borne. Roger will be remembered by many members as an enthusiastic participant in the Section's affairs and a conscientious committee member, until changing work circumstances caused him to give up his committee responsibilities in the late 1990's. That change also resulted in Roger being otherwise engaged for most of the Sections' programmed talks and events, but he always attended wherever possible. In recent years, when illness restricted him and kept him away from our meetings (much to his chagrin), he maintained contact with us by regular letters to the Secretary, which always contained ample evidence of his will to carry on regardless of the problems which beset him. He will be remembered by members chiefly for his dry and gentle sense of humour and his love of stimulating conversation. A very intelligent and enquiring man, he took an interest in many aspects of the world around him, especially the scenery and natural history of the UK and his beloved Scotland. That interest was reflected in several articles published in our newsletter Charnia, which always featured Roger's unique outlook on the world. The questions in Roger's quizzes, often compiled for the Christmas Meeting, were renowned for their witty twist, and required a probing mind to answer!

Graham Stocks represented the Section at the funeral, and our sincere condolences were passed on to Roger's widow Maisie.

Andrew Swift



The following article has been written for 'Charnia' by Jim Dempster, author of 'The Illustrious Hunter and the Darwins', ISBN 1-85776-907-4, Book Guild Publishing, Sussex.

If the influence of Intelligent Design is to be halted scientists, especially Darwinists, will have to be honest with the public. As the battle goes at the moment it is ID v Darwinian evolution. But Darwinian evolution has itself some supernaturalism and also some gross errors and so, modern scientific discoveries should be used to defend evolution. Scientists are engaged in working out the details of how life got from long chains of nucleic acid to self-replicating molecules and then single-celled organisms and the role of RNA in replication. ID has contributed nothing to this research.

It should be made abundantly clear that Darwinian evolution is obsolete. The Theory does not reflect the known reality. No one has proclaimed this more than the devoted Darwinist, the late Stephen Jay Gould. He was aware that his message was not accepted by Darwinists and even complained that there was 'a conspiracy of silence'. How many Darwinists in this country are involved in a conspiracy of silence?

It should also be realised that a citation analysis of On the Origin of Species places in second place - The Creator; six or seven times. Designer or Creator - what is the difference? Intelligent Design, the Creator, the invisible hand are not new concepts and all involve supernatural forces in the end.

The only statement about catastrophes and mass extinctions Darwin made in 'On the Origin of Species' is the following - "*The old notion of all the inhabitants of the earth having been swept away at successive periods by catastrophes, is very generally given up, even by geologists, as Elie de Baumont, Murchison, Barrande, etc whose general view would naturally lead them to this conclusion.*" ('Origin of Species' Chap. 10, page 317 - Facsimile of the first edition.) Darwin knew that the ammonites had suddenly disappeared at the end of the Cretaceous when the dinosaurs also became extinct. Darwin was bent on ignoring Cuvier and nowhere in the Origin did Darwin link Cuvier with catastrophes and mass extinctions. It is up to ID to explain the catastrophes and mass extinctions.

The 'old notion' is a dumbing down of Cuvier's brilliant discoveries of six major catastrophes and mass extinctions in the past history of the earth. It was Charles Lyell, following Lamarck, who had not one word to say about catastrophes and mass extinctions in his seminal Principles of Geology 1831-33. The actual cause of the mass extinctions is still to be agreed. But Cuvier claimed that there were multiple miraculous creations. So, Cuvier introduced the supernatural to explain his researches. Cuvier noticed that each species appeared in the rocks fully formed and this is the most important problem evolutionists have to solve if it can be solved. Darwinian evolution will not aid in the solution. It is this lack of intermediates that anti-evolutionists are quick to claim as anti-evolutionary. Darwin admitted that the lack of intermediates was a problem for evolutionary theory.

Although Lamarckism was banned in England because it was too atheistic, Lyell had made a special study of Lamarckism in volume 2 of the Principles of Geology. Lyell was very pious and could not accept catastrophes, but neither did Lamarck. In 1863 Lyell wrote Darwin to tell him that he now realised there was no difference between Darwinism and Lamarckism. ('Life and Letters of Charles Darwin' by F. Darwin for Darwin's reply). Lamarckian evolution (Phil. Zool. 1st part. Chap. 3 - Flammarion Edition, Paris) had become Darwinian evolution.

Darwin introduced 'evolution' for the first time in the 6th edition of the Origin Chap. 7. The three statements are all Lamarckian. Darwin popularised Lamarckism and this was the academic teaching from the time of the publications of his mentor, Charles Lyell, until 1980 when catastrophes and mass extinctions were accepted by most scientists. The same scientists still adhere to Darwinian evolution. *I venture to suggest they are not aware of what is in the Origin or what Lyell wrote in his last edition of the Principles of Geology in 1875.*

In the 'Historical Sketch' prefixed to the 1872 6th Edition of the Origin, Darwin admitted that Patrick Matthew in 'Naval Timber and Arboriculture' (1831) had developed an evolutionary theory similar to the one he was now promoting. But Darwin went on to state that Matthew believed that catastrophes and mass extinctions had actually happened. Matthew envisaged the aftermath of a major catastrophe would provide 'an open field for new diverging ramifications of life'. Such was the bias against catastrophism that Matthew was side-lined during the 19th and 20th centuries. Matthew's evolutionary paradigm is what is now the modern view - one creation, discontinuous evolution by natural selection, catastrophes, mass extinctions and leaps.

Darwin ended his statement on Matthew "*He saw clearly the full force of the principles of natural selection.*" In that same Historical Sketch of 1872 Darwin makes it clear that Lamarck's theory "*upholds the doctrine that all species, including man, are descended from other species. He first did the eminent service of arousing attention to the probability of all change in the organic, as well as the inorganic world, being the result of law, and not of miraculous interposition.*"

But, as already stated, Lamarck's theory has errors as well although part of his theory that the human is descended from previous species is acceptable.

W.J. Dempster

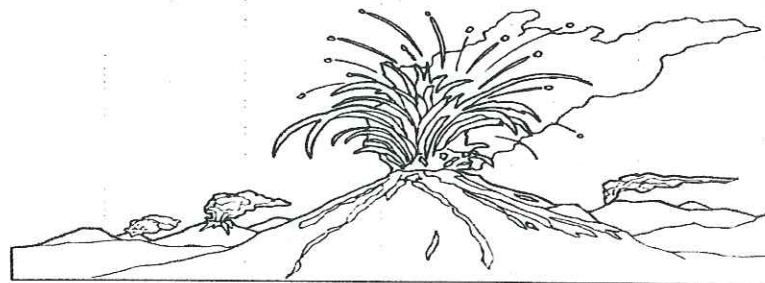


1816

FIRE, FLOOD, DROUGHT AND DEEP-FREEZE: THE TURBULENT GEOLOGICAL EVOLUTION OF LEICESTERSHIRE, RUTLAND AND SURROUNDING AREAS

Each year the Geology Section of the Leicester Literary & Philosophical Society convenes a full day Geology Seminar, open to all, which this year will take place on Saturday March 11th from 9.00 - 5.00 in the Ken Edwards Building on the Leicester University campus. The seminar has gained a reputation for tackling cutting edge topics currently under scrutiny in the science of Geology, and has consistently provided the best of geological discussion in the county. Which might be expected of a society celebrating its 156th anniversary this year, and as vibrant today as ever. This year sees the Geology Section coming much closer to home for its theme for the Seminar, to look specifically at local geology, which has seen significant advances in knowledge in recent years. The seminar is entitled 'Fire, flood, drought and deep-freeze: the turbulent geological evolution of Leicestershire, Rutland and surrounding areas' and it will comprise a chronological descriptive journey from the oldest rocks exposed in the area, over 600 million years old, to those laid down in the last few thousand years. The story of Leicestershire's geology is a fascinating one, and the rocks we see today represent the products of periods of fiery volcanic activity, inundations by several generations of seas, extreme drought and finally the effects of large ice sheets that covered the county. During these turbulent times, an array of strange creatures inhabited the seas and walked the land where Leicestershire and Rutland now stand, including the fabulous dinosaurs, the giant sea dragons the plesiosaurs and ichthyosaurs, and much later, elephants, hyenas and hippopotamus, all to be found today as fossils in the East Midlands. Also what might be described as the fossil that characterises Leicestershire, the enigmatic Charnia that can be found in Bradgate Park. This fossil and associated forms comprise the oldest suite of fossils in Britain, and are justifiably world famous.

All these topics and more will be discussed in 10 talks given by a group of distinguished speakers, including researchers from the British Geological Survey, the University of Leicester Geology Department and independent consultants. Everyone is welcome and the talks are aimed to appeal to the widest range of listeners. Tickets are £12 to include lunch and £6 without (plus 30p for return postage, if required), and can be obtained from Treasurer Eileen Johnson (01530 230476) or Secretary Joanne Norris (0116 2833127, e-mail: joanne.norris@ntu.ac.uk), from whom further information can be obtained. Cheques to LLPS, Geology Section (C).



Saturday School Programme

- 9.00 am Assemble
9.40 am Opening of meeting and welcome
Andrew Swift, Convenor
9.45 am The morning session will be chaired by Mark Evans
- Advances in understanding the Precambrian rocks of Charnwood Forest
Dr John N Carney, British Geological Survey
- 10.25 am Caledonian intrusions
Dr John N Carney
- 10.45 am Mineralisation
Gill Weightman, Weightman Associates
- 11.00 am Coffee break
- 11.20 am Lower Carboniferous
Dr Keith Ambrose, British Geological Survey
- 11.50 am Upper Carboniferous
Dr Neil Jones, British Geological Survey
- 12.20 pm Triassic rocks of Leicestershire
Dr Keith Ambrose
- 1.00 pm Lunch
2.15 pm The afternoon session will be chaired by Dr Roy Clements
- Uppermost Triassic (Rhaetian). A whiff of sea breeze.
Andrew Swift, Digitimage, Leicester
- 2.30 pm Jurassic rocks of the East Midlands
Professor John Hudson, Department of Geology, Leicester University
- 3.15 pm Coffee break
- 3.35 pm Quaternary ice age
Professor David Keen, School of Earth Sciences, Birmingham University
- 4.20 pm Holocene
Dr Jan Zalasiewicz, Department of Geology, Leicester University
- 4.40 pm Discussion and Closing Remarks



The Wave, by Hokusai.

Woodcut by Hokusai:
stunning power, majestic strength, perfect composition.
I do not criticise this masterpiece
with its intense colours, the water deep,
the motion captured at its climax,
the perched boat with its frightened mariners;
indeed, as a work of art, it is beyond any reproach.

The reality is different.

Brown swell, carrying debris, surges over the islands,
overwhelms the shores,
indiscriminately,
the water full of twisted trees, of broken humanity,
of blood and faeces.
The taxi driver taking tourists inland to see the elephants,
returned to find his home gone, his wife gone, his children
gone,
their bodies washed into the now placid ocean
to feed the ever-circling sharks.

Fear and apathy remain:
stunned
by this Christmas gift from an unstable earth,
the survivors huddle, without houses, families, work,
without clothing, medicines, electricity.
waiting for normality to return,
waiting for hand-outs from the distant nations, reclaiming their own dead,
their own part in this foreign tragedy.

Now statistics rule:
the earthquake measured on the Richter scale,
the thousands dead, the numbers unaccounted for,
the money raised, obscuring the simple facts
of ruined lives, of helplessness, of mankind's ultimate insignificance.

The word once belonged to oceanographers,
to geologists, to vulcanographers:
now we all know it:
tsunami.

Tina Negus

EXCEPTIONAL FOSSILS FROM GERMANY

Dr John Nudds, The University of Manchester

Germany is blessed with a number of sites that exhibit exceptional preservation of fossils, including rare cases of soft tissue preservation. These range in age from the Devonian, through the Jurassic, to the Eocene. The Devonian Hunsrück Slate of the Rhine and Mosel valleys contains exquisite invertebrates - mainly echinoids and arthropods - preserved in pyrite, while the Lower Jurassic Holzmaden Shale, exposed near Stuttgart, is famous for its large marine reptiles and fish, often with their skin and stomach contents preserved. The Upper Jurassic Solnhofen Limestone of Bavaria is world famous for one particular fossil - Archaeopteryx, the first known bird - but also includes a tiny dinosaur, plants, and beautiful insects such as dragonflies with their wing venation still preserved. Finally the World Heritage Site of Grube Messel represents an Eocene lake environment with wonderfully preserved frogs, snakes and turtles along with some of the early mammals. The lecture will include numerous illustrations from all these sites.

THE BARWELL METEORITE: 40 YEARS ON

Professor Jack Meadows, University of Loughborough

The interesting questions about the Barwell meteorite are how it compares with other meteorites, and what information about the solar system can be obtained from studying the fragments that were retrieved. Initial studies looked at the fall, itself, and at the likely orbit of the meteorite in space prior to the impact. These were subsequently supplemented by an examination of radioactivity induced in the meteorite as a result of its exposure to cosmic rays in space. Later still, detailed measurements were made of the age of the Barwell meteorite. These showed some discrepancies, which became a matter for debate. The 1950s had seen a renewed interest in the classification of meteorites, and the Barwell meteorite was rapidly identified as a member of a well-known group. However, a quarter of a century after its fall, it was recognised that the contents of the meteorite showed an unexpected discrepancy from the norm. It has been shown that this provides some insight into both the formation of meteorites and the early history of the solar system.

GEODIVERSITY: A NEW PARADIGM FOR THE EARTH SCIENCES

Dr Murray Gray, Queen Mary, University of London

Geodiversity can be defined as "the natural range of geological (rocks, minerals, fossils), geomorphological (land form, processes) and soil features. It includes their assemblages, relationships, properties, interpretations and systems" (Gray, 2004). It is the abiotic equivalent of biodiversity.

The new paradigm of geodiversity presents several advantages for the earth sciences:

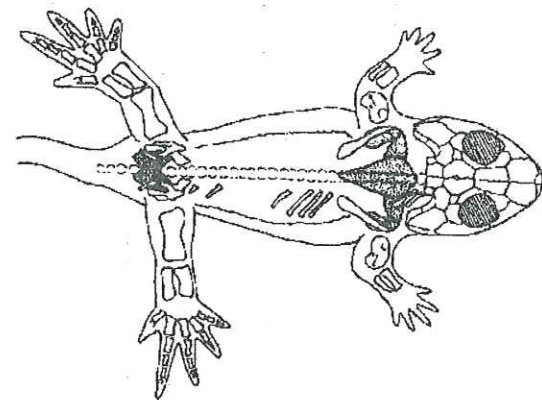
1. It gives us a strong basis for valuing abiotic nature, i.e. we should value its diversity;
2. It can help to promote the importance of the geosciences through the diversity of physical resources required to sustain a modern society;
3. It provides an abiotic equivalent of biodiversity and the basis for geoconservation, i.e. we should conserve the geodiversity of a country or region;
4. It can act as an integrating mechanism for the geosciences;
5. It can act as an integrating mechanism for nature conservation;
6. It can promote the role of the geosciences in integrated and sustainable land management.

Together, geodiversity and biodiversity represent the diversity of nature and deserve equal status, equal attention and equal resources.

EVOLUTION OF THE FOUR-LEGGED FISH: NEW VIEWS OF AN EARLY TETRAPOD ICON

Dr. Jenny Clack, University of Cambridge

Most people are aware of the notion that at some time in the past, a fish developed legs and crawled out of the water to walk on the land and thus evolved into a 'tetrapod'. For many decades, the only known representative of a tetrapod from such an early stage in evolution was the Devonian animal called *Ichthyostega*. It is featured as 'the oldest known amphibian' in many popular books on prehistoric animals. However, recent work on the fossils of this animal has shown that the traditional view of it is mistaken in many important respects. In fact, it was a highly specialized creature with many unique adaptations and sometimes bizarre morphology. This talk will explain how our ideas have changed over the past few years, and why.



**Leicester Literary and Philosophical Society
Geology Section (C)
Officers and Committee 2005-2006**

- | | |
|--|--|
| Life President: Bob King,
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