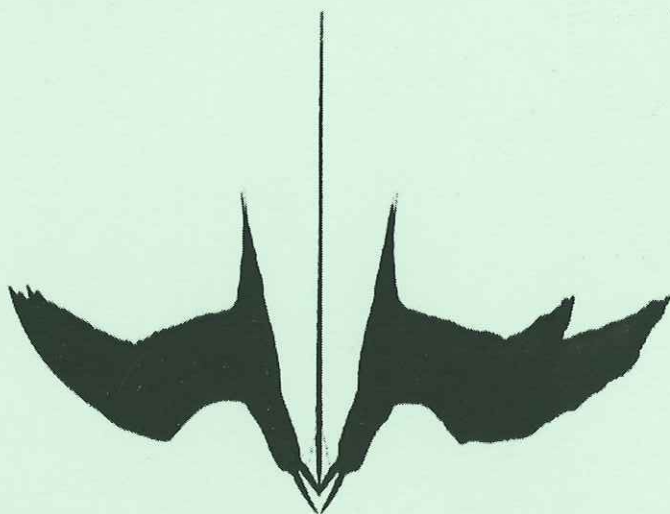


CHARNIA



LEICESTER LITERARY & PHILOSOPHICAL
SOCIETY : THE NEWSLETTER OF SECTION
C (GEOLOGY)

WINTER 2002/3 EDITION

CHRISTMAS EDITORIAL

...and New Year too! By the time you read this the celebrations will be past and our wishes for peace and goodwill among mankind will hopefully be fulfilled. As you may have gathered from previous editorials I am somewhat fixated on the history of the development of 'Darwinism' and its consequences. Professor Richard Keynes, a great-grandson of Charles Darwin, has written a splendid book, titled 'Fossils, Finches and Fuegians' (ISBN 0-00-710189-9, Harper-Collins 2002). Quite apart from being a superb read, one piece in particular struck a note for me:

'The untidy piles of fossils dumped by Charles on the spotless decks of the Beagle were wholly contrary to naval tradition, and as recalled long afterwards by his daughter Henrietta: My father used to describe how Wickham, the first Lieutenant - a very tidy man who liked to keep the decks so that you could eat your dinner off them - used to say 'If I had my way, all your damned mess would be chucked overboard, & you after it old Flycatcher' '

This, of course is a blokey thing: you know what happens when you bring prizes from the Oxford Clay home with you and clean them in the kitchen sink (or worse, in the bath) eh, chaps? In trying to understand more clearly what was happening around the time of Darwin's publication of the 'Origins' plenty of insight can be gained by researching T. H. Huxley's published work. There is an excellent website at:

<http://aleph0.clarku.edu/huxley/time>

This is a timeline of the works published by T.H.H. though it is far more than just a bibliography; clicking onto each title takes the reader to the text. One article, 'Science and Religion', published in 1859 is interesting, if only for the following extract:

'... of all the miserable superstitions which have ever tended to vex and enslave mankind, this notion of the antagonism of science and religion is the most mischievous. True science and true religion are twin-sisters, and the separation of either from the other is sure to prove the death of both. Science prospers exactly in proportion as it

is religious; and religion flourishes in exact proportion to the scientific depth and firmness of its basis.'

How true this remains even after 144 years since the article's publication - it could be argued that we've slipped backwards into a New Age mediaevalism in spite of being across the threshold of a new millennium.

Not being able to get to all of Section C's meetings can be very frustrating. One talk I especially would have liked to have heard was Paul Smith's 'Microvertebrates and Macroevolution - unravelling the origin and early evolution of vertebrates' (Nov. 20th). Unfortunately I could not attend that particular meeting. As a student I was fascinated by pickled specimens of sea-squirts and the lancelet, *Amphioxus* and their anatomy. How did chordates evolve? What were their precursors? Quite by chance a scientific journal has just published an article titled 'Targeted Comparative Sequencing Illuminates Vertebrate Evolution' (The Scientist, Vol.16, No.24, Dec. 2002). Researchers have aligned sections of genomes from many different species to find that there are common loci for conserved noncoding gene sequences. These sequences must have had a protein encoding function at some time in the past and the search is on to find exactly when. This will indicate precisely what evolved from what. At one of Section C's Saturday Schools, attendees learned how homeobox (hox) genes express basic vertebrate body plans. These particular genes have been traced back through all vertebrates as far as cartilaginous fishes. Current research really is supporting Aristotle's concept of the 'Great Chain of Being' and makes one wonder how close his thinking was to that of Darwin and his contemporaries over two thousand years later. There is one website worth visiting if you would like to know a little more about protochordate gene-sequencing:

http://www.miljolare.no/virtue/newsletter/01_06/sci-sars/more-info/group1.php

As a student, having been taught Ernst Haeckel's 'Ontogeny repeats Phylogeny' theory as a scientifically valid idea, it was somewhat difficult years later to 'unlearn' this when Haeckel's work was discredited. It turned out that he had doctored or 'enhanced' his illustrations of vertebrate embryos. Is this enough to discredit what might be a sound idea? Surely the genetic research outlined above reveals that an embryo might just be climbing its genetic tree during development? The same thing happened during my teaching career; Sir Cyril Burt had evidently 'tidied-up' the statistics supporting his work into what was then called 'backwardness'. His research figures were discredited but his work was basically sound.

Genetically, it appears that we humans might after all possess a 'homunculus' in our cell nuclei.

Things have come a long way since my undergraduate embryology lectures. I can still picture clearly one lecturer's graphic attempts to illustrate the folds and corrugations of early embryonic stages, aided by pleating a non too clean handkerchief to point out what were then called 'presumptive areas'. This brings me, in a roundabout way, to a man called Philip Henry Gosse. Gosse was a highly skilled naturalist, described as the Victorian David Attenborough, publishing first-class texts, mainly on marine zoology. He rejected the idea of gradual evolution and, being a member of the Plymouth Brethren Sect, accepted biblical dogma. Gosse's undoing was the publishing of his 'Omphalos: An Attempt to Untie the Geological Knot' in 1857. 'Omphalos' is the Greek for navel; specifically, did Adam have a navel? Did the first trees of creation come complete with growth rings? Did God put fossils in rocks to fool geologists? You get the picture - Gosse defended literal Old Testament creation by writing a book which was, frankly, utter rubbish. Further in this edition of 'Charnia' is an account of one aspect of the life of another otherwise brilliant observer of nature, William Buckland. Buckland too could not reconcile his theological faith with the evidence emerging from the rocks at his feet. The late 1850s and early 60s must have been a very interesting time to have lived in, should you be fortunate to have moved in palaeontological circles.

Is this anything to do with geology? Quite definitely it is if you want the Big Picture! Another very important meeting I was unable to attend was last week's (at the time of writing) Section C Christmas Social. One function of this meeting was to officially launch Section C's website, which I must say is excellent. Too many websites present 'busy' screens where it is hard to find what you're looking for amongst the confusion; Section C's website is exemplary as a well-designed and clearly understandable presentation. Congratulations to Dennis McVey for his hard work and the excellent quality of the website, and to Mick Steele for the initial setting-up of the domain. More from Andrew Swift and Dennis on this subject later... I have hesitated in making too many references to websites until recently. Not everyone has a web-connected computer, though we can all access this facility at a library or web café. Details of Section C have in fact been available on Leicestershire County Council's 'Infolinx' system for some years now. This can be accessed at this address:

http://www.infolinx.org/infolinx/infolinx.infolinx_reports.org_details?p_id=6352

Mainly for geologists of school-age is the American Kadie Johnson's Geology Website, though it would be of interest to anyone who is beginning to develop an interest in the subject. This can be accessed via this URL: <http://209.175.245.56/kjohnson/>

If you discover any websites of interest that you'd like to recommend to readers of 'Charnia', please send the details to us.

Another rapidly developing aspect of 'earth' science is extraterrestrial geology. I've been playing at 'crater spotting' on Mars and, at the time of writing, am waiting for an assessment from NASA as to how I've got on. If you want to have a go yourself, log-on to:

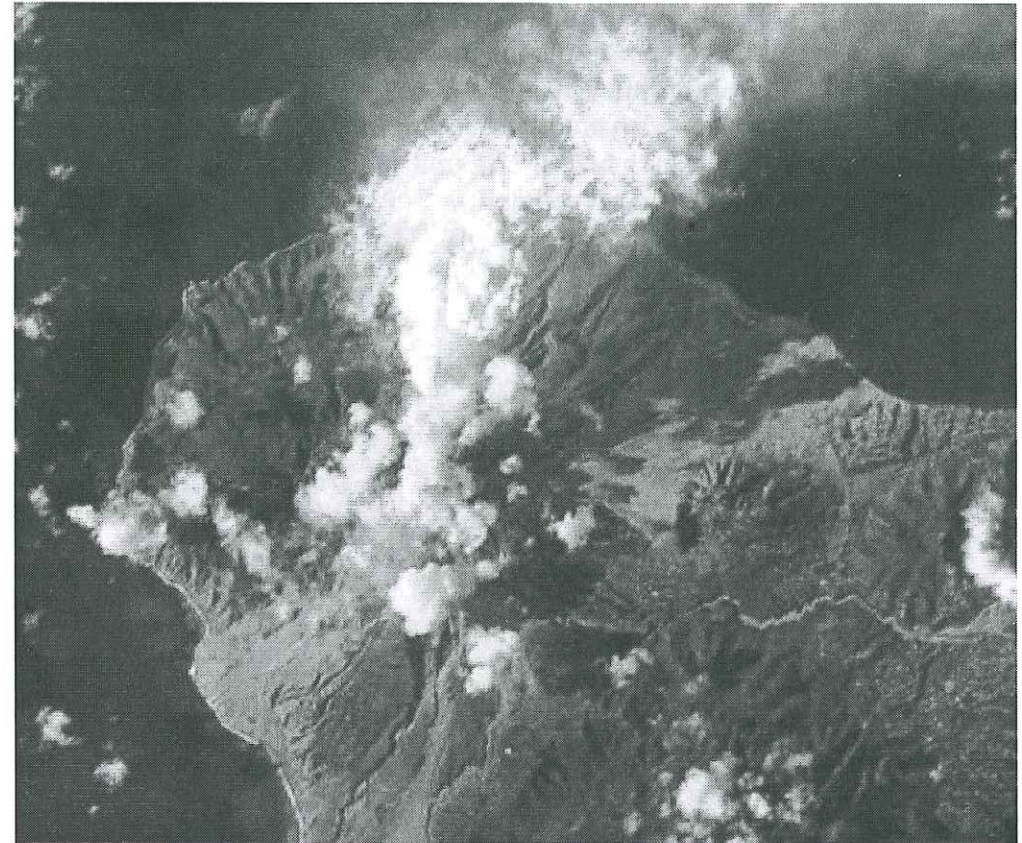
<http://clickworkers.arc.nasa.gov/top>

The truly astronomic amount of topographical information sent back to Earth by planetary orbiters and landers means that something like 80% of data doesn't get analysed. The Ames Research Corporation's answer is to use volunteers with home PCs. This is along the same lines that the SETI Project uses - the Search for Extra-Terrestrial Intelligence uses home computers, the four millionth volunteer having registered this Christmas. Like so much research, the interpretation of data relies on further funding. For Ames, funding from NASA didn't materialise, hence the search for trained volunteers. The surface features of Mars sent back in the last few years are really astounding. It does look as if water transportation has produced features like gullies and alluvial fans. What's happened to the water though? Another interpretation might be that these features are the result of mass-movements of very lightly consolidated powdery deposits, perhaps triggered by gravity, Mars-quakes and winds. Fluidised-bed furnaces produce interesting features in their sandy surfaces - has anyone out there considered this analogy to explain Martian topography? Have a look at some Martian images at:

<http://themis.la.asu.edu/>

Back in November 2002 scientists at Aberdeen University announced that they had discovered evidence of an asteroid impact on Earth which occurred 214 million years ago. This impact resulted in what might be called a layer of micro-tektites found in an inch-thick horizon of Late Triassic age, distributed across the United Kingdom. Two candidates for the shower of material are the Manicougan impact site in N.E. Canada and the Rochechouart crater in central France. The former seems most likely, though the two may be linked in the same way that the Shoemaker-Levy comet broke up prior to impacting Jupiter recently. Material relating to the Aberdeen team's findings will be exhibited at the Space Centre's Near Earth

Objects Information Centre here at Leicester. Last August, Britain's first impact crater was discovered, also by an Aberdeen team. The impact occurred some 60-65 million years ago. For a detailed description, readers are referred to The Geological Society's website article at: <http://www.geolsoc.org.uk/template.cfm?name=Silverpit>

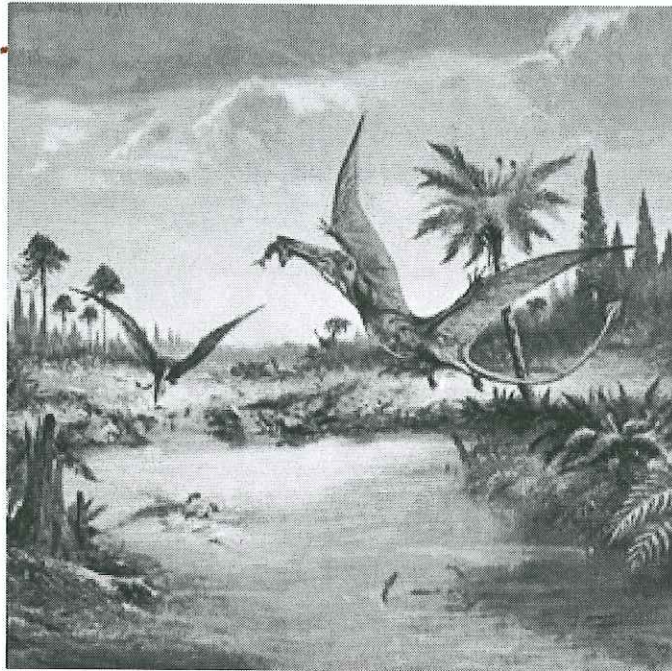


Aerial view of the Soufrière volcano in March 2002

Still on catastrophes - I was reading a travel article recently endorsing holidays in Montserrat. There is a choice of two family-run hotels on the island, plus a handful of guest houses. Part of the article read as follows: 'On a good night, from Jack Boy Hill in the east or Garibaldi Hill in the west, you can see the volcano glowing, trickles of amber running down its side.' Four days after the publication of this article Associated Press announced 'Volcano Forces Evacuation', Soufrière having been 'spewing

ash for a week' and people having been evacuated. If you're going on holiday, make sure your travel information is up to date!

Back in September last year a huge rush of ice and rock from a melting glacier advanced down the Karmadon Gorge in Russia, to the north of the Caucasus. The twenty mile trail of debris resulted in 95 people missing, with 17 immediately known to be engulfed. Some of these victims were an entire film crew, including a well-known (in Russia) film director and film star, thirty-one year old Sergei Bodrov. There must be a specific term for this type of rapid flow catastrophe - its not a lahar, it's not a jökulhlaup and it's not a tundra musquatch. Anyone who does know the correct terminology, please get in touch.



Pterosaurs and their world (artist J. Moravec)

If you turn the front-cover graphic through 90° it may become apparent that I haven't totally flipped. That is, the picture is not a Rorschach Test pattern but is of a member of the bird family Rhyncopidae or 'skimmers', of which there are only three species worldwide. Why this on Charnia's cover? A few years ago Dave Martill and I stood under a huge life-size model of the Pterosaur *Arambourgiana* in Leicester's New Walk Museum, discussing its possible mode of feeding. The idea that it was an analogue of a present

day Skimmer Bird was mooted and apparently there has been much discussion among palaeontologists as to whether these creatures pecked, stabbed or skimmed. A newly discovered species of Pterosaur, *Thalassadromeus sethi*, has been discovered in sediments from the 'Lost World' of the Araripe Plateau in Brazil. The reptile's remains are beautifully preserved, which include a very prominent head-crest, which seems to have served both as a vertical fin in the air, like an aeroplane's tail and possibly as a keel in the water, like a yacht. Thus, this pterosaur seems to have been a skimmer *and* a dipper. One of the researchers behind this story is John Maisey, Curator of Palaeontology at the American Museum of Natural History. Our own David Martill has described many exciting finds from the same deposits in Brazil, some of which he described in an illustrated talk to Section C and which are described more completely in the Palaeontological Society's publication Number 5, 'Fossils of the Santana and Crato Formations, Brazil'. It is an interesting exercise to simply enter the names of 'David Maisey' and 'D. M. Martill' into a web search-engine to see what comes up. You will have more than an evening's interesting reading ...

As always, if you have any relevant comments, queries or articles, no matter how short or long, you'd like to submit to 'Charnia', they will be more than welcome.

Graham Stocks

Remaining Indoor Lectures 2002/3

All held at 7.30pm in Lecture Theatre 10 (LT10) in the Geology Department, Leicester University, except where stated

Details: Chairman Andrew Swift, 0116 2523646, as48@le.ac.uk

Wednesday January 29th

Dr Rob A. Ixer (Unit of Earth Sciences, University of Birmingham) - 'Bronze Age mining under the (ore) microscope'

Wednesday February 12th

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

Monday February 24th

Parent Body Lecture, to be held at New Walk Museum, Leicester. Dr Julian E. Andrews (School of Environmental Sciences, University of East

Anglia) - 'New uses for old estuaries: recreating the Holocene Humber estuary'

Wednesday February 26th

Speaker and title to be announced. Contact Andrew Swift on 0116 2523646

Saturday March 1st (whole day)

Saturday School, **Vaughan College, Leicester**. 9.30 am - 5.00 pm. 'Climate and hominid evolution'. Six leading experts in hominid studies including Professor Chris Stringer and Professor Leslie Aiello will talk about the effects of climate and climate change on prehistoric human lineages.

Wednesday March 12th

Dr Alan Wright (Ashbourne, Derbyshire) - 'Problems in dating the English and Welsh Late Precambrian'

Wednesday March 26th

AGM and Chairman's address - Andrew Swift (Department of Geology, Leicester University) - Title to be announced

Parent Body talk Monday February 24th 2003

After some false starts and maneuvering we have finally confirmed a speaker for the Parent Body lecture this year. As you will see above we have secured the services of Dr Julian Andrews, a Leicester Geology Department old boy, to talk about the history of the Humber Estuary during the Holocene. It should be an excellent evening. Don't forget that all Section C members are welcome and indeed encouraged to attend this lecture at New Walk Museum. You don't have to be a Parent Body member.

Saturday School 2003

This year I have finally got my wish and have convened a Saturday School on hominids and human evolution, the title of which will be 'Climate and hominid evolution'. Six of the leading experts in the field will be speaking (see above). It will take place on March 1st at Vaughan College, who will handle all bookings and booking enquiries (0116 2517368, e-mail: lifelonglearning.vau@le.ac.uk). It will (hopefully!) be very popular, so I strongly advise all Section C members to book as early as possible. If

anyone wants me to e-mail them a copy of the programme, please let me know, and a booking form is enclosed with this Charnia.

Andrew Swift

Annual General Meeting

Please be aware of the AGM which is soon to take place on March 26th. You will receive voting papers, so if you wish to stand for office or propose anyone else, please do so and use your voice. Also, please come along if there's something critical you want to say, or even if you want to thank officers and committee for their hard work this year!

Abstracts for Indoor Programme talks

Abstract of talk scheduled for Wednesday January 29th 2003

Bronze Age Mining under the (ore) Microscope

Dr Rob. A. Ixer

Unit of Earth Sciences, University of Birmingham

Although Bronze Age metal artefacts are plentiful in the British Isles, it is only in the last twenty years that a handful of Bronze Age copper mines have been recognised and excavated, mainly from southwest Ireland and north and central Wales. Initial attempts to match (provenance) Bronze Age metal to these mines using trace element or stable isotope geochemistry have been compromised mainly by inappropriate mineralogical sampling using the so-called 'Magpie School of Ore Provenance' method.

Using the Early Bronze Age copper mine at Ross Island, Killarney and the later Bronze Age mine at the Great Orme, Llandudno as prime examples, the archaeological importance of understanding the geology and mineralization of these ancient copper mines including their ore parageneses, will be illustrated. The necessity and benefits of distinguishing between ore, potential ore and non-ore ('ore triage') will be stressed.

New stable lead isotope data from the British Isles on well-characterized ores will be used to assess the value and limitations of this popular technique for provenancing metal won in prehistory and historical times.

Abstract of Parent Body talk, Monday February 24th 2003

New uses for old estuaries: recreating the Holocene Humber Estuary

Dr Julian E Andrews

School of Environmental Sciences, University of East Anglia

The coastal zone is well known as a dynamic area of sediment erosion, deposition and storage on various timescales. Areas of sediment storage also store and metabolise components such as organic matter and nutrient elements from both natural and anthropogenic sources. For example, the coastal zone is a potentially important site of deposition and regeneration of organic carbon, although little is known about the specific role of this environment in the global carbon balance of the past, present or future.

This study, part of the wider Land Ocean Interaction Study, provides detailed regional scale, long term perspectives of material fluxes in the Humber estuary. Comparison of the sedimentation and storage terms for the palaeo-Humber with modern values highlights the impacts of reclamation and commercial / urban development in the estuary particularly in the last 300 years. The contrast between the natural and human-impacted estuary gives pointers toward how future management of temperate estuaries in developed countries might impact organic matter and nutrient storage and hence the biogeochemical metabolism of the estuarine and wider coastal zone.

Wednesday February 26th 2003

- Please note that the talk on this date by Dr Hollingworth has been postponed. It has been re-scheduled for October 8th 2003
- Another talk will be arranged for February 26th

Abstract of talk scheduled for Wednesday March 12th 2003

Problems in dating the English and Welsh Late Precambrian

Dr Alan E. Wright
Ashbourne, Derbyshire

Ages derived from tuffs in the British Late Precambrian by SHRIMP determinations on zircons raise almost as many problems as they solve. The 559.3 ± 2.0 Ma result for a tuff from the Beacon Hill Formation of the Charnian Supergroup is very similar to dates obtained for *Charnia* bearing horizons elsewhere in the world but the 566 ± 3 Ma determination for a tuff at Bardon Hill also in the Charnwood Forest area has abundant inherited grains at 590.6 ± 2.1 also. As this is similar to the 603Ma age of crosscutting Markfieldites at Nuneaton this does raise doubts about which age is the age of eruption. In the Welsh Border results are more clearcut. The 566.6 ± 2.9 Ma and 555.9 ± 3.5 Ma for a bentonite and a tuff in the Stretton Group of the Longmyndian finally gives a good age for the Longmyndian which equates it with the Uriconian, as more recent field based research had suggested, though the age for the higher tuff is again not as solid as one would like. Finally the ages of 604.7 ± 1.6 Ma for an ignimbrite of the Padarn Tuff of the Arfon Group, and 572.5 ± 1.2 Ma for tuffs within the Fachwen Formation of the Arfon Group confirm the contemporaneity of North Welsh volcanicity with that of the English Midlands but suggests that the Padarn area was very exotic to anywhere else during and after the second volcanic period. These new data show that the terranes of the Avalonian of England and Wales are comparable with those of eastern Canada and New England but that both many more age dates and also more detailed field work are still required to clarify the Avalonian.

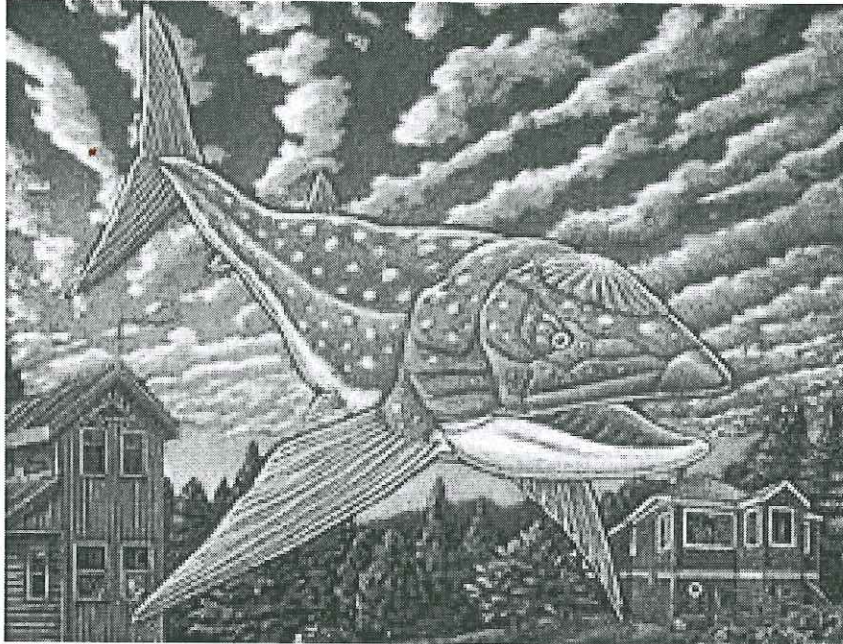
Summer Programme 2003

Thus far, Dennis Gamble has not finalised the programme for this year, but we can tell you that we have made a definite booking for June 20th – 22nd for the weekend field trip, which this year will visit Suffolk to study Plio-Pleistocene geology and fossils. Leaders will be Peter Long and Roger Dixon. It promises to be a great weekend, probably based in Aldeburgh, and is sure to be popular. Accommodation needs to be booked now, so if you want to go, let Dennis know on 0794 7725361 ASAP. We also have a definite commitment to visit Bradley Fen Quarry in the Oxford Clay at Whittlesea with Alan Dawn, and it also seems likely that we will visit Breedon on the Hill Quarry in the Carboniferous Limestone, but dates have yet to be decided for these ones. Around three more trips will be arranged and as soon as we have a programme we will post or e-mail it out to you. Please ring Dennis at any time for updates, or Andrew Swift on 0116 2523646.

'The Big Dig'

The story of the excavation of a gigantic *Leedsichthys* fish in Summer 2002

Leedsichthys is a large, filter feeding, bony fish of Callovian (Middle Jurassic) age, a member of family Pachicormidae. It was first discovered in the 1880's by Alfred Leeds and is now the subject of a PhD being undertaken by Jeff Liston from the Huntarian Museum in Glasgow.



This is a representation of what *Leedsichthys* is thought to have looked like. It probably did not have a huge limpet on its head and did not fly as this image suggests!!

At the beginning of July I was looking for something interesting to do in the long summer holidays ahead. Roy Clements, the Head Curator in the Geology Department at the University of Leicester, put me in touch with Dr David Martill from Portsmouth University who was helping to coordinate a dig to uncover and remove the remains of a very large *Leedsichthys problematicus* which had been discovered in the Oxford Clay the previous summer.

I soon found myself joining a team of experts and volunteers, led by Jeff, who were camping in a disused brick pit near Peterborough. I stayed with them for most of the next ten weeks, returning home occasionally for a bath

and to sleep in a proper bed. The facilities on site were very basic but we did have fresh water, a portaloo and access to showers. We ate well and even slept well when we got used to the freight trains rattling past in the early hours of the morning about 10 metres from the tents! We often had a campfire in the evening and when we needed to escape from the pit for a few hours we walked to the nearest pub about a mile away for a drink or two.....or more.



Just a few of the many large bones that we uncovered. One, towards the top of the picture, has already been jacketed in plaster

For most of the summer the weather was hot and sunny, the clay was dry and we were able to carefully remove it using hammers, chisels and trowels. When a bone was discovered we worked with dental tools to delicately remove the rest of the clay. It was slow work but our patience was rewarded as both pectoral fins and many bones from the gills and the skull were uncovered. It turned out that there were many more bones than anticipated, spread over a wide area and as a result the *Leedsichthys* was soon given the nickname Ariston because the bones went on, and on, and on!!

When a bone was uncovered it was mapped onto a large sheet of plastic, given a unique number and then lifted out of the ground. Small bones were very carefully removed from the clay, wrapped up in tissue paper and put in plastic bags. Each bag was then given the same number allocated to the bone on the plastic sheet. Large, and some very fragile bones were lifted in a different way. A deep trench was dug around the clay containing the bone. The bone and clay were then covered in tissue paper and plastic before being covered in a protective plaster jacket. Once the plaster had dried the whole thing was separated from the clay below, lifted and taken away to be stored somewhere dry. Some of the larger plaster jackets were very heavy and had to be removed by a large mechanical digger.



The site turned into a mud bath after a couple of days of rain

It did rain occasionally and when it did working conditions were less pleasant. The clay quickly turned to thick mud and the bones were much more tricky to excavate. We carried on though, mopping up the water with sponges as we worked and getting very muddy.

This dig was of great scientific importance as it was the first time that the remains of this 150 million year old fish had been mapped in the ground. It

was also the first time that some bones were seen, including the parasphenoid that I was very fortunate to discover.

The significance of this dig made it an excellent subject for a television programme called '*The Big Dig*' and we were filmed on several occasions during the summer. In November we all returned to the dig site for three days with a television crew to film the main scenes for the programme. Dr. Sarah Gabbott, a lecturer at the University of Leicester, was one of the presenters and a few other Geology students joined us as volunteers. It was a very interesting experience! Look out for it on Channel 4 later this year.



Me with Bill, another volunteer, and the parasphenoid that was being trenched ready for lifting

A dig like this does not happen very often so I was very fortunate to get the chance to participate in a second dig at the end of September. A student from Portsmouth University had found the remains of an *Ichthyosaur*, a marine reptile, in a cliff near the *Leedsichthys* dig site. So, for the last couple of weeks, I also helped him excavate and remove the bones of what turned out to be an almost complete skeleton about three metres in length.

The digs were both great fun but very hard work. They were, at times, physically demanding and often required a great deal of patience and

attention to detail but were extremely rewarding, particularly when something of great importance was discovered.

I had a fantastic summer, met many interesting people and made a lot of new friends. I have learned many new things about invertebrate palaeontology and have discovered that I have a great interest in vertebrate palaeontology. I have already been asked to work on the *Leedsichthys* dig again when it is reopened in the summer and I hope to have the opportunity to participate in many more digs in the future too.

Kay Hawkins

Section C Student Representative, Geology Department, University of Leicester.
Photographs taken by Jeff Liston

The Disposal and Dispersal of Buckland's Geological Collection

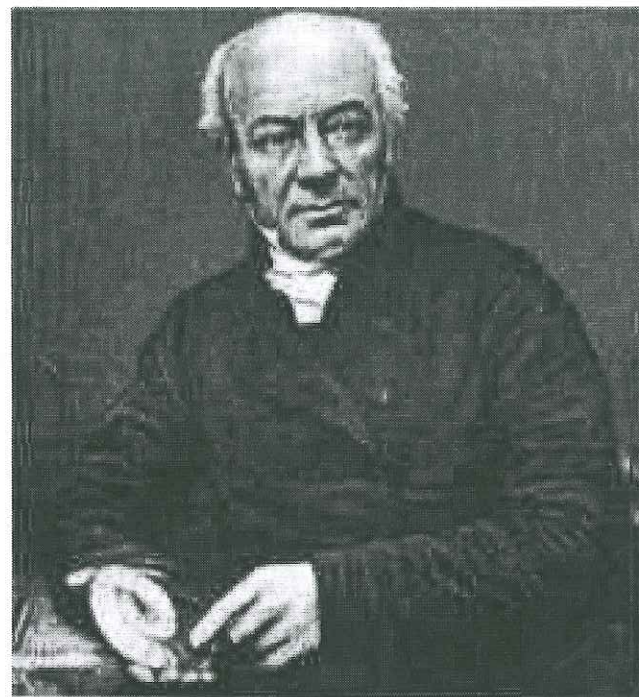
This article is based on the published recollection of Francis Trevelyan Buckland (1826-80) concerning the auction of his father's property, his father being the Reverend Dr. William Buckland, D.D., Dean of Westminster (1784-1856). William Buckland held positions in theology and geology at Oxford University. While contributing greatly to the understanding of Earth science Buckland could not let go of certain literal biblical accounts, notably evidence for the Great Flood, which clouded his scientific analysis. Interestingly, evidence is coming to light of a flood of Biblical proportions from the Mediterranean via the Bosphorus into the basin now occupied by the Black Sea, though that is another story.

'It is about three years ago, in 1857, that a sale took place at Stevens' Auction Rooms, in King Street, Covent Garden, of the private collection of minerals, fossils and curiosities collected by my father ...'

So begins FTB's account. Before worrying too much about what happened to WB's specimens, I'll put you out of your misery and tell readers that the greater part of the Buckland Collection was bequeathed to the University of Oxford. The interesting portion of WB's will reads as follows:

'I give and bequeath to the Vice-Chancellor of the University of Oxford, and his successors for the time being, for the use of my successors in the said University, as Readers in Geology for the time being, all my geological specimens, minerals, models, maps and geological charts, drawings, sections and engravings connected with geology, which shall be in the Clarendon at the time of my decease.'

...which leaves us wondering what actually went to auction. William Buckland's private collection at his home was, in his son's words, *'... transferred, in company with his scientific books, from the library and drawing room to the dismal, condemned cell of the Auctioneer. Specimens that had been gathered by the same hand, from the same place, hundreds of miles away from home, and which had lain side by side in the same drawer many a long year, and which had been lectured on, disputed about, and admired by crowds of the most learned of savants, including, in many instances, even the great Cuvier himself, were now to be ruthlessly torn from one another, destined never again to meet in their snug beds of cotton wool, and bedsteads of cardboard, canopied over by a gorgeous mansion of mahogany.'*



William Buckland circa 1830-40

Depressing to dwell on, but where did some of the prize specimens go? Were they snapped-up by public museums or did they go into others' private collections? One specimen was described thus by Buckland Junior: *'A fine museum specimen of Sulphate of Strontian, on native Sulphur from Sicily. It was a mass as large as, and about the shape of, a lady's good-sized work-*

box; and exhibited a natural miniature grotto extending three or four inches into the specimen, from the sides of which projected most beautiful needle-shaped crystals, in some parts nearly meeting at the centre, and all glittering and resplendent.'

There was also an impressive collection of 'Flours and Spars from Durham, Cumberland and Derbyshire' as well as some 'crystallised sandstone from Fontainebleau'. These were purchased by a Mr. Tennant of The Strand for the purpose of completing the Stowe Collection, reckoned to be the finest mineral collection in England in the late 1850s.

William Buckland's famed collection of Saurian coprolites also went under the hammer. These were the very specimens Buckland used to demonstrate the nature of the Saurian diet, part of which demonstrated cannibalism of infant Ichthyosaurs. Buckland also had a table made entirely out of coprolites, which was greatly admired by visitors, often unknowing of what they were actually admiring! Buckland junior wrote: *'I have seen in actual use ear-rings made of polished portions of coprolites (for they are as hard as marble); and while admiring the beauty of the wearer, have made out distinctly the scales and bones of the fish which once formed the dinner of a hideous lizard, but now hang pendulous from the ears of an unconscious belle, who had evidently never heard of such things as coprolites.'*

It was, in fact, William Buckland who drew attention to the fact that coprolite could be used as a valuable fertilizer. In the November 1849 issue of the Journal of the Royal Agricultural Society, Buckland had a paper 'On the causes of the General presence of Phosphates in the strata of the Earth and in all fertile soils; with observations on Pseudo-Coprolites and on the possibility of converting the contents of Sewers and Cesspools into manure' published. It's tempting to sink to scatological humour - let's just leave it at saying that William Buckland had a very fertile mind! In the RAS paper William Buckland wrote: *Professor Liebig five or six years ago invited the attention of agriculturalists to the possibility of applying to the same use as bone-dust and guano, the fossil bones and coprolites which occur together in certain beds of the Lias formation. This invitation took place not many months after I had the honour of conducting him to the well-known bone bed in the lower region of the Lias at the Aust Passage Cliffs, on the left bank of the Severn, near Bristol, where two beds of Lias (each from one to two feet thick) are densely loaded with dislocated bones, and teeth and scales of extinct reptiles and fishes, interspersed abundantly with coprolites derived from animals of many kinds which seem to have converted that region into*

the cloaca maxima of ancient Gloucestershire at the time of the commencement of the formation of the Lias'. Dr. Buckland had a sense of humour - the Cloaca Maxima was the main drain or sewer which served Classical Rome. Readers of this article are referred to an item in the February 2001 edition of 'Charnia' (pp15-16) which describes the coprolite mining in Cambridgeshire and Bedfordshire.

Another interesting part of Buckland's collection which went to auction was his collection of shells, both fossil and recent, which included ammonites. Most of these were gathered from Hordwell Cliff, Lyme Regis and various locations on the Isle of Wight. Several of the ammonites were sectioned longitudinally for comparison with similarly sectioned *Nautilus* shells. Dr. Buckland also had amassed an important collection of fossils from Stonesfield around Oxford. In this part of his collection there were numerous disarticulated *Pterodactyl* wing bones. Described by his son as the gem of the Stonesfield collection was the jaw of *Phascolotherium*, a small marsupial. Fortunately, this important piece of evidence of early mammalian history had been deposited in Oxford University's Museum prior to Dr. Buckland's death. It seems as if William Buckland never resolved the Biblical Great Flood accounts with the fossilized bones he and his contemporaries found. Maybe he hoped that the collection deposited with his old university would one day answer the theological questions he wrestled with throughout his lifetime. Had he remained fully sane in his twilight and had he been given a year or two more to live he might possibly have had an answer from Darwin's 'Origins', though most likely not the answer he would have wished for.

How much of Dr. William Buckland's auctioned private collection survives today? Are the more important specimens curated with their full provenance? Maybe reader feedback will provide answers in future issues of 'Charnia'.

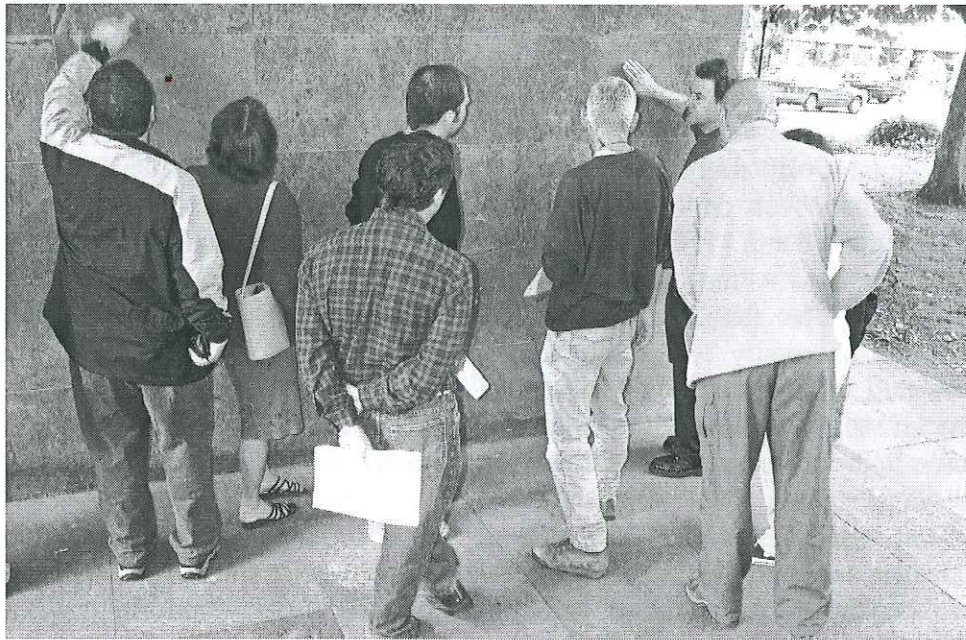
Graham Stocks

Excursion to Warwickshire, Saturday 28th September 2002

The Section C party met up at the Warwickshire Museum in Warwick town centre at 10.30 am, to see the displays of local geology. Warwickshire's 'solid' geology is similar in some respects to that of Leicestershire, ranging from late Precambrian to Middle Jurassic in age. Warwickshire's highlights include a fossiliferous Cambrian succession, a Caledonian intrusive suite,

well-developed Coal Measures, Permo-Triassic, Early Jurassic and Quaternary vertebrates.

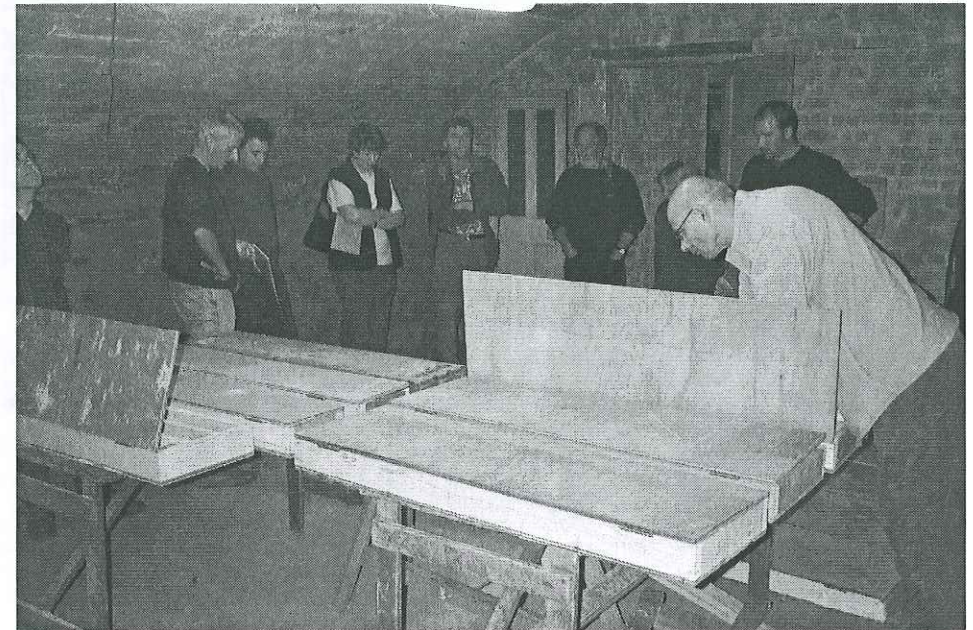
Members spent some time looking at examples of local rocks and fossils, including amphibian and reptile material from the Permo-Triassic sandstones of Kenilworth and Warwick. Mounted skeletons also attracted attention, notably a plesiosaur from the local early Jurassic Wilmcote Limestone. One display concerns the Rev. Peter Bellinger Brodie, Warwickshire Museum's honorary Keeper of Geology during the latter part of the nineteenth century. Brodie was an enthusiastic local collector and many of his specimens are featured in the display.



Studying the local Marlstone as used in office buildings in Warwick

After about an hour in the museum, the group was led to nearby premises currently housing the Museum's Field Services department. The basement is excavated in the early Triassic Bromsgrove Sandstone. This afforded the group an opportunity to view fresh faces of the local bedrock that display a range of sedimentary structures. The basement also houses a collection of cores from Judkins Quarry, northern Warwickshire, comprising fine to coarse-grained pyroclastic rocks of the late Precambrian Caldecote Volcanic Formation. These attracted some interest.

Following an early lunch, the party reassembled at Edgehill Quarry (SP 372468), on Edge Hill, 20 km south-east of Warwick. The Edge Hill escarpment is made up of a Pliensbachian (Lower Jurassic) marine succession, comprising (in ascending order) the Charmouth Mudstone, Dyrham Formation (formerly Middle Lias Silts and Clays) and Marlstone Rock Formation. The Marlstone is developed here as a fossiliferous chamosite-siderite oolite, weathering to limonite. It is quarried for building and ornamental stone ('Hornton Stone') and as a source of aggregate.



In the Museum Field Services's basement

The party entered the quarry and proceeded through a maze of abandoned workings and spoil tips. At the currently quarried south-western end, shallow pits revealed a belemnite-rich shelly mudstone (a good example of a 'belemnite battlefield') at the top of the Dyrham Formation. A little way above, the Marlstone's basal pebble bed forms the main quarry floor. This attracted much attention. The 'pebbles' are actually cobbles and slabs of shelly sandstone and ironstone derived from the underlying Dyrham Formation. The matrix is richly fossiliferous and members soon discovered specimens of the bilobate oyster *Gryphaea sportella*. An example of *Gryphaea gigantea* was also found. Several large pectinids were excavated,

including smooth-shelled *Entolium liasianum*. Many brachiopods were noted, including a few examples of *Spiriferina*.

Several metres of Marlstone are visible in the quarry faces. Here it is mainly limonitic, well jointed, and locally cross-bedded. Blue-green chamositic 'cores' were seen in places, as well as a few fossils including wood fragments. A dump of sawn Marlstone slabs on the quarry floor additionally revealed a variety of trace fossils.



The party in Edge Hill Quarry

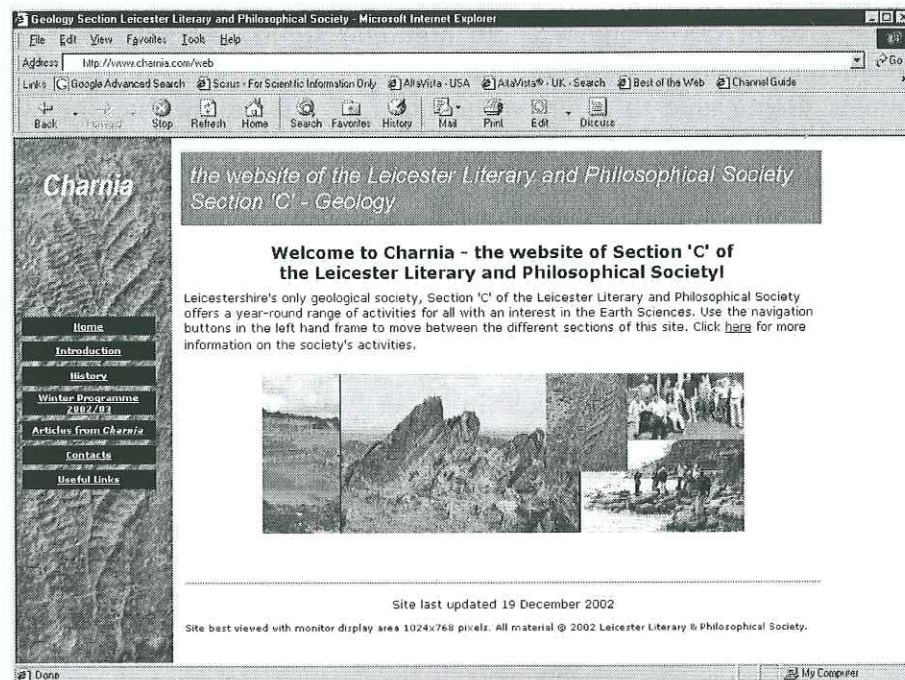
The party dispersed at approximately 16.30, following a vote of thanks for the excursion leader, Dr Jon Radley, the curator of the Museum.

Jon Radley
Warwickshire Museum

'Charnia' online – announcing the launch of Section C's website

The Leicester Literary and Philosophical Society belatedly made its debut in the world of electronic information provision on December 12 2002 as Section C's website went live on the Internet for the first time. An 'official

launch' followed a few days later on December 18 at the Christmas party, held at Leicester New Walk Museum, where members were able to use and explore an offline version projected onto a screen in the Dinosaur Gallery. It was very gratifying to see the site finally up and running after a series of minor technical problems and other lengthy delays had hindered completion of the project over the preceding two years.



Homepage of the 'Charnia' website

Following the naming of this newsletter, it was decided to also name the site 'Charnia' (the site URL is www.charnia.com/web), with an image of its namesake forming the background to the navigation frame on the left of the screen. As launched, the site is still relatively small, but adequately provides background information about the society, its history, details of the 2002/3 winter programme (with abstracts), contact details and a page of web links. With regular updates, the site should provide members with up to date information about the Section's activities as well as (hopefully!) raise awareness of the Geology Section generally and attract new members.

Further development of the site will take place during 2003, with details of the forthcoming Saturday School and Summer Field Programme being obvious essential additions. Extension of the site in other areas is being

considered – Andrew Swift has uncovered a wealth of information on the history of Section C, which taken together with historic material offered from other sources, could be developed into a valuable online resource. As an example of the quality of material that is available, have a look at the page on ‘the history of Section C’, where we have included a stunning photograph taken at a ‘Lit & Phil’ field meeting in Nottingham in 1882, provided by Mark Evans from Leicester Museum’s photographic archive. Another area of development could highlight significant palaeontological finds in the county – *Charnia* and the ‘Barrow Kipper’ being obvious examples. Being able to offer web content of this nature, the site would evolve from being merely an electronic noticeboard for the Section into an educational tool in its own right.

Finally, I would like to take this opportunity to thank all who have contributed to the project, especially Andrew Swift, who wrote the text for the ‘Introduction’ and ‘History’ pages and provided most of the photographs used in the site. Also to Mark Evans, for permission to reproduce Leicester Museum copyright material. As for the future, we would also like to encourage members to offer suggestions for further development of the site and, particularly, to offer digital images for inclusion in its pages.

So what are you waiting for? Aim your browser at www.charnia.com/web and have a look.

Dennis McVey



And finally don't forget the Saturday School!

Leicester Literary and Philosophical Society

Geology Section (C)

Officers and Committee 2002/2003

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

Life Vice-President: Trevor Ford OBE,
21 Elizabeth Drive,
Oadby.
LEICESTER LE2 4RD
0116 2715255

Chairman: Andrew Swift,
208 Milligan Road,
Aylestone.
LEICESTER LE2 8FD
0116 2523646 or 0116 2833127
e-mail: swifta51@hotmail.com

Vice-Chairman: Mark Evans,
Leicester Museum and Art Gallery,
New Walk,
LEICESTER LE1 6TD
0116 2473081
e-mail: evanm003@leicester.gov.uk

Secretary: Joanne E. Norris,
208 Milligan Road,
Aylestone.
LEICESTER LE2 8FD
0116 2833127 (after 6pm)
e-mail: norris_joanne@hotmail.com

Treasurer: Doug Lazenbury,
39 Station Road,
Countesthorpe.
LEICESTER LE8 5TA
0116 2776407

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: Vacant

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

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

Keith Smithson,
36 Coverside Road,
Great Glen.
LEICESTER LE8 9EA
0116 2592611
e-mail: keith@webleicester.co.uk

Andy Saunders,
Department of Geology,
University of Leicester,
University Road,
LEICESTER LE1 7RH
0116 2523923
e-mail: ads@le.ac.uk

Roy Clements,
Department of Geology,
University of Leicester,
University Road,
LEICESTER LE1 7RH
0116 2523800
e-mail: rgc@Leicester.ac.uk

Co-opted: Margaret East,
36 Brambling Way,
Oadby.
LEICESTER LE2 5PA
0116 2716252

Paul Monk,
2 Rennes Close,
ASHBY-DE-LA-ZOUCH.
Leics LE65 2YD
01530 411563
e-mail: paul.monk@virgin.net

Dennis McVey,
130 Carisbrooke Road,
Knighton.
LEICESTER LE2 3PE