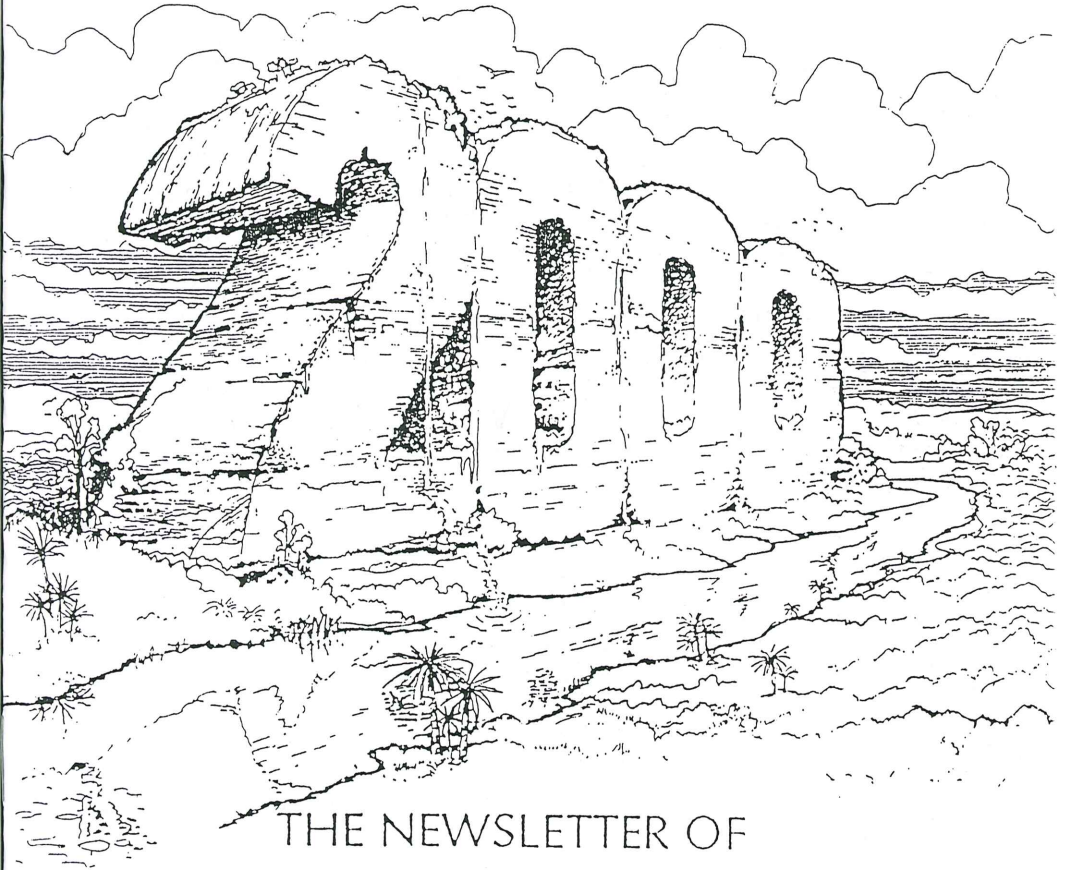


# CHARNIA

LEICESTER

LITERARY AND PHILOSOPHICAL  
SOCIETY



THE NEWSLETTER OF  
SECTION C (GEOLOGY)

Yet another season of truly excellent Section C Winter talks is now well under way as I write this during the run-up to Christmas. Not so much at the cutting edge as the bleeding edge was David Martill's interpretation of his happy Cretaceous hunting-ground in Brazil. Who else would think of popping over to Brazil for a weekend's fieldwork? Tiffany Barry's 'Volcanoes in Mongolia - What are they doing there?' was also a memorable evening's entertainment, particularly the recipe for boil-in-the-bag marmot. (If you missed that, ask someone who was there!) Charles Wellman's palynological findings in the Rhynie Cherts began with a serendipitous discovery in a wall being used as a picnic table. Here, just a small piece of rock went back to the lab, unlike Stan Woods who, on finding unique fossil remains in a similar location, buys the whole wall from the farmer! (Stan gave an unforgettable Parent Body lecture a few years ago.)

Unfortunately, I was unable to attend our 150th. Anniversary celebrations at the Museum, due to the arrival of my son, George William, who is now two months old. Andrew Swift's account of the event can be found further on in 'Charnia'. (I.e. the dinner, not the birth.)

On a general level, a geological digest of news updates: in October came news of two new species of prosauropod dinosaur from Madagascar - and not just dinosaurs but the earliest yet found, dating from around 230 MYA, before the break up of Pangaea. Another recent dinosaur discovery, this time from Niger, is *Jobaria tiguidensis*. J.t. is a long-necked species with spoon shaped teeth, fitting no known group. It was a giant, being in excess of 25 metres in length and walked the earth a mere 135 MYA.

Slightly nearer to the present, a distant relative of the marmot turned up in the Siberian permafrost - a 23000 year old woolly mammoth. The remains, entombed in a 22 ton block of ice, were flown to Khatanga where scientists are talking of cloning the beast with elephant cells and an elephant surrogate mother. On the subject of creating new life in the lab, I wonder what your thoughts are regarding the stripping down of a micro-organism to see what the smallest amount of genetic information is needed to sustain self-replicating life. The basis for this appears to be in the region of around 300 genes. Not quite what the press has been reporting with its 'Frankencell' headlines! However, it may help us to understand how the first cells lived. Maybe too the extremophile life forms, reported from the Poles, submarine smokers and volcanic hot springs, will give an insight into the increasingly likely possibility of extraterrestrial life in the Solar System.

It is a blow to science that the last two NASA shoe-string Mars probes have bitten the dust, or rather, that they didn't! Maybe it proves the point that if you buy cheap, you buy twice... Scientists have reported re-vitalised life forms (microscopic fungi and primitive bacteria) from their drilling project at Lake Vostok from deep underneath the South Polar ice cap. Bacteria from a depth of 3 600 metres seem to be as viable as bacteria extracted from Mammoth stomachs, ancient Egyptian mud bricks, or moss from deep permafrost. The difference here is that the polar examples are around half a million years old and not just a few thousand.

All the time, geologists and other scientists are finding the missing pages from the history of our planet: up until this year the earliest date for land-based life was 1.2 billion years ago. Now, it seems that iron-rich rocks in Botswana indicate that this figure should be pushed back to 2.3 billion years ago.

You may remember an earlier Editorial where the comment was made that months and months after the 1995 Kobe earthquake people were still living in makeshift shanty towns and that in Japan social services are very different from our own. Two years ago Italy suffered a rattling as a consequence of Africa's northern migration. The disturbance partially ruined the Basilica of St. Francis of Assisi, which you may remember seeing on T.V. news programmes. Eleven people were killed and forty thousand others were made homeless in

the Perugia region of mid-Italy. A huge effort was made to gather something like 300 000 pieces of Giotto and Cimabue frescoes picked up from the floor of the basilica. A massive restoration effort has largely repaired the C.13th ceiling frescos, yet there are still camps of refugees living in primitive conditions around Assisi - in Umbria, in Europe - and not by choice... Still on the subject of earthquakes, the Northern Anatolian Fault continued to produce tremors greater than Richter 7 well into November, with refugees refusing to take cover in anything more than tents. Earlier, in August, this fault caused the deaths of at least 16 000 people in Turkey. We build cities on major dislocations in the crust and we wonder why disasters happen. In October a Richter 7 event took place just 150 km from Los Angeles, although a month or so earlier Taiwan wasn't so lucky. There are something like 30 000 seismically active fractures in the Earth's crust and 10 largish seismic events per day, of which four hundred of these events are 'serious' every year. Looked at another way, earthquakes killed more than 20 000 people in 1999. Millennium doom-mongers will no doubt predict a worsening situation - not so, it's just that there are more of us scattered over the Earth's surface (to the tune of six billion, with a current net gain of around 100 million extra living bodies per year). Seen in this perspective, it is perhaps no wonder that natural disasters have claimed a total of 52 000 lives this year alone.

Correct perspective and scale are very important in geology. I read recently of a geologist who puzzled over a strange sedimentary formation. Standing among what appeared to be dune-like structures held no clues and it wasn't until he studied a high altitude aerial photograph of the study area that it became apparent that he'd been standing on a catastrophic glacial lake outflow deposit. Scale and perspective are all too important when considering palaeoclimates; your Section C committee (mainly John Martin) is busy planning next year's Saturday School, the topic of which is along the lines of global warming, past and present. This promises to be yet another very interesting and exciting symposium, with current trends appearing to indicate a warming phase. It is reported that 1999 has been the hottest year since records were first kept in this country in 1659. Indeed, as I write, we have nasturtiums and antirrhinums in flower in our garden. *Kerria japonica* is also in flower and blackbirds are showing signs of courtship behaviour. Large white caterpillars are still munching cabbages out in the vegetable patch and runner bean plants are still green and healthy. Normally, sharp late October/early November frosts curtail such biological activity. Can climate change take place over a short time, say a few tens of years? Research suggests that the sudden climatic fluctuations of the Pleistocene occurred over the space of just a few years. Our Saturday School should attract a wide audience - make sure you book your place in good time.

Two geologists of renown passed away recently: Sir Vivian Fuchs in November and Sir James Stubblefield in October. Sir Vivian is perhaps best remembered for his heroic surface crossing of the Antarctic in 1957. Fuchs' contribution to geology was the mapping of areas of the Rift Valley system of East Africa in the 1930s and similar geological mapping of the Falkland Islands Dependencies in the late 1940s. As a student, one of my favourite geological texts was Sir James Stubblefield's revision of Morley Davies' 'An Introduction to Palaeontology'. Stubblefield was a palaeontologist through and through and he received countless honours for his work. He was Director of the (as it was known then) Geological Survey from 1960 to 1966 and President of the London Geological Society from 1958 to 1960.

While visiting my local library recently I paused to use a computer terminal dedicated to Leicestershire County Council's

Wednesday February 23rd 2000

Jamaican palaeontology - some new discoveries  
from a well-known island

Professor Stephen K. Donovan  
Department of Palaeontology, The Natural History Museum,  
Cromwell Road, London, SW7 5BD

Jamaican geology has been studied since the 1820s. The rock record of the island spans the interval Lower Cretaceous - Quaternary. The most famous members of the fossil record are molluscs, particularly Upper Cretaceous rudists and the 600 species known from the Upper Pliocene Bowden shell bed. Although many specialist studies have been published on aspects of the fossil fauna, there are also notable gaps in our knowledge.

Although monographed in the 1920s-1930s, the known fossil echinoid fauna was strongly biased towards the Upper Cretaceous and Eocene. Since the late 1980s, studies on echinoids have concentrated on 'gaps' in the record by using new collections of complete and fragmentary specimens. An Upper Oligocene fauna is now quite well-known, the Miocene echinoids are being monographed and the Plio-Pleistocene fauna is now considered to have a similar diversity to the Eocene, measured in species/myr.

Jamaican fossil vertebrates are generally rare and almost unknown from some intervals. However, in the 19th century, the skull of the most primitive sea cow was described from the Eocene. Renewed research since 1989 has yielded an almost entire skeleton. This is the only sea cow with hind legs. An associated primitive rhinoceros is a fossil with important biogeographic implications.

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'Infolinx' service. Keying-in 'geology' I expected to see a screen dedicated to Lit & Phil Section C; surprisingly, what came up was a screenful of Stamford Geological Society information! Never mind, this deficit will be made up for very shortly. If you have access to the web you can locate 'Infolinx' at www.leics.gov.uk And that's annoying, isn't it? You can't begin a sentence with 'And' and you can't finish a sentence ending in a website with a full stop. I mention this website because the Section C committee recently discussed creating our own website and e-mail facility. Mick Steele is our in-house expert and we hope to utilise his skills since he more or less volunteered to be our webmaster. (Or did the rest of the committee take one step back?)

Your committee works very hard behind the scenes in order to provide the year's programme of events. None more so than your Field Secretary, Dennis Gamble. So far, he has finalised arrangements for a visit to the ironstone at Scunthorpe and the Oxford Clay at Stewartby. I understand that there are exciting possibilities at Ketton, with new beds exposed, and that Carboniferous Limestone will hopefully be somewhere in the Summer Field programme. The long weekend residential course will most likely be in South Wales, possibly taking in those rather nondescript and somewhat thinnish beds which mark the beginning of the Jurassic marine transgression!

One of our members, Pauline Dawn, has very kindly written a most interesting piece about John Muir. Those readers familiar with any of the O.U. Environmental courses will be aware of the contributions this individual made one hundred and fifty years ago. (John Muir, not Pauline!) David Martill has written a piece which ought to serve as an inspiration to any youngster who might wish to pursue Earth Sciences as a vocation. I will be contacting schools in the area to attract sixth formers in particular to become members of Section C. I found it depressing to learn that the Schools Lecture, organised by the Parent Body, has been so undersubscribed that it is to be open to the general public on a non-ticket basis. Is this a result of underfunding our schools, or the stifling effect of the dead hand of the National Curriculum? If you know any young people who would like to attend any of our meetings as guests, don't hesitate to bring them along. There's a nice line in David Martill's article: "I was the only person who skipped school to undertake academic pursuits." I know exactly what David had to put up with as a teenager - I used to skive school to visit the big art galleries and museums in London! Hopefully, we're not a dying breed...

Graham Stocks

Wednesday March 8th 2000

The earliest occupation of Britain: evidence from the Boxgrove excavations.

Matthew Pope  
Department of Archaeology, University College, London

For the past twenty years archaeological investigations at Boxgrove in Sussex have been providing new insights into the behaviour and ecology of Britain's earliest inhabitants. A multidisciplinary programme of analysis has been established to interpret the geology of the site and the extensive horizons of in-situ archaeology and faunal remains, which include three hominid fossils. This research has established that hominids were exploiting a series of diverse habitats within the Middle Pleistocene, utilising locally available flint to facilitate the butchery of large mammals.

At one particular locality a short episode of horse butchery was perfectly preserved within inter-tidal silts. The archaeology indicated that a small group of hominids produced handaxes at the site in order to butcher the animal. The methodical nature of the activity, the primacy of butchery marks over gnawing on the bones and a possible projectile wound on the horse's shoulder blade, suggest that the Boxgrove hominids may have been capable of hunting large mammals. Evidence such as this is beginning to transform our understanding of the capabilities of Middle Pleistocene hominids.

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PROGRAMME FOR THE REMAINDER OF THE 1999/2000  
INDOOR SEASON

Wednesday January 26th

Professor M. Aftab Khan (Department of Geology, Leicester University) - 'The Geophysics of Continental Rifts' (abstract in Autumn 1999 Charnia)

Wednesday February 9th

Members evening, to be held at the New Walk Museum

Wednesday February 23rd

Professor Stephen Donovan (Keeper of Palaeontology, The Natural History Museum, London) - 'Jamaican palaeontology - some new discoveries from a well-known island'

Saturday March 4th (whole day)

Saturday School, Vaughan College. 9.30 am - 5.00 pm.  
'Global Warming - nothing new under the sun? A symposium on climate changes past, present and future'

Wednesday March 8th

Matthew Pope (Department of Archaeology, University College, London) - 'The earliest occupation of Britain: evidence from the Boxgrove excavations'

Wednesday March 22nd

AGM and Chairman's address - Andrew Swift (Department of Geology, Leicester University) - 'Where we're going for our holidays - a review of the itinerary for the weekend excursion in June/July 2000 to the Penarth area, South Wales'

PROVISIONAL SUMMER EXCURSION PROGRAMME FOR  
2000

This is only a provisional list at present, but the localities will probably not change. A finalised list will appear in the next Charnia, which will come out before the first excursion. And, of course, notices of each excursion will be sent out to all members approximately one month prior to each trip.

Saturday May 20th

Jurassic of the Scunthorpe area. Leader Steve Thompson (Scunthorpe Museum)

Sunday June 11th (provisional)

Carboniferous of south Derbyshire. Leader to be announced

Friday June 30th - Sunday July 2nd

Mesozoic of the South Wales coast west of Penarth. Leader Andrew Swift

late July

Middle Jurassic of Ketton Quarry. Leader John Hudson (Geology Dept., Leicester University)

Sunday 20th August (provisional)

Oxford Clay of Stewartby quarries. Leader Chris Andrew (Bedford Museum)

early - mid September (provisional)

Carboniferous of Breedon quarries, or Bardon Hill Quarry. Leader to be announced

Saturday September 30th

The Natural History Museum, London

Wednesday March 22nd 2000

Where we're going for our holidays - a review of the itinerary for the weekend excursion in June/July 2000 to the Penarth area, South Wales

Andrew Swift

Department of Geology, University of Leicester, Leicester LE1 7RH

South Wales contains some of the most diverse and fascinating geology to be found anywhere in the British Isles. The area to the west of the town of Penarth has been chosen for this year's weekend excursion and during the course of two days we will concentrate mostly on the Mesozoic rocks so spectacularly exposed here. The area constitutes the type area of the Late Triassic Penarth Group, which records the progress of a major transgression via a wide range of rapidly changing facies which are beautifully exposed in the area of Lavernock Point and St Mary's Well Bay. The overlying Jurassic preserves the continuing progress of this transgression and the subsequent establishment of a stable marine system which persisted for many million years. Such a pattern mirrors that seen on the north Somerset coast to the south across the Severn estuary, yet only a few miles north west of Penarth, Triassic and Jurassic rocks undergo major changes in facies and thickness as they approach an old Carboniferous landmass which effected significant control on sedimentation until submerged sometime in the early Jurassic. Pre-Penarth Group Triassic rocks in proximity to this landmass consist of lacustrine fenestral carbonates, marginal sandstones, conglomerates and breccias, while further west Jurassic rocks comprise calcarenites and other marginal marine rocks.

SECTION C ACTIVITIES OCTOBER - DECEMBER 1999

THE LAPWORTH MUSEUM  
OCTOBER 2ND 1999

For the now customary late season museum visit we travelled down to the Lapworth Museum, which is attached to the Earth Sciences Department at Birmingham University. This is a long established and famous museum named after one of the great figures in Midlands geology, Sir Charles Lapworth. The museum was founded in 1880 and originally housed just 200 specimens, which have been steadily added to over the years to reach the present figure of over a quarter of a million specimens. The museum building was erected in the early 1900's and was used as an army hospital during the 1st World War. 15 members travelled down by car or train and were met by the museum's director, Dr Paul Smith. Dr Smith gave a short introductory talk, which was followed by two most enjoyable hours during which we were given free rein to study the exhibits and pick the director's brain.

The museum is particularly nicely laid out, light and airy (unlike many more which could be named!) and the surroundings promote a relaxed atmosphere. In the main exhibition room some wonderful displays of fossils and minerals were seen including some items that Dr Smith had set out specially. There were extensive collections of Silurian material, much of it from the limestones of Wren's Nest, Dudley, and Wenlock Edge, Shropshire. A case displaying some very fine examples of Silurian trilobites caught everyone's attention. Perhaps the highlight was the peep 'behind the scenes', when we were escorted upstairs to the storage and preparation area, which usually represents the most exciting area in any museum, and this one was no exception. Amongst the specimens was a treasure trove of old photographs and artefacts from the golden age of field geology in the last century when almost everything that was found seemed to be new and exciting. And those field outfits, especially those worn by the ladies! The Lapworth Museum is open to the public and a visit can be recommended to any members who could not attend this meeting.

Finally around 1 o' clock after thanking Dr Smith, we bid the museum a reluctant farewell and headed off for the fleshpots of Birmingham. Well, not quite, simply a nearby pub to grab some lunch and to celebrate the Chairman's birthday on the following day. After this pleasant interlude the party dispersed, some heading for the campus art gallery and others to the botanical gardens. All in all, an excellent day.

Dennis Gamble

### 150TH ANNIVERSARY CELEBRATIONS OCTOBER 30TH 1999

After many months of careful planning and many crossed fingers, the celebrations to mark Section C's 150th birthday proved to be a tremendous success. Forty eight members and guests attended the party which was held in the Victorian Gallery at New Walk Museum, a most appropriate venue. We were especially

pleased to see our Life President Bob King, and his wife, who had made the journey up from Tewkesbury. It was not hard to imagine, with a little effort, the original group which constituted the very first members of Section C, assembled in this very spot all those years ago, in their frock coats, high collars and whiskers! Looking around, I felt we more than matched their elegance on this evening. The sense of history and continuity seemed to be all around us, and we had good reason to be proud.

The programme began at 5 o' clock when we were treated to an excellent guest lecture by Dr Martin Brasier from the Earth Sciences Department at Oxford University, who skilfully integrated a local geological theme into his talk entitled "The Charnia fauna and Global Chaos in the late Precambrian". Whilst many of us are familiar with specific aspects of life before the Cambrian 'explosion', it was particularly rewarding to hear a comprehensive summary of the present state of knowledge of the fossils and environment during this fascinating period in earth history. At 6.15 we filed through into the 'Discovery Room' for a wine reception during which we enthusiastically sampled the wines on offer and enjoyed an hour's pleasant conversation. After this, with us all now nicely relaxed and in party mood, we moved back into the Victorian Gallery for the anniversary dinner. Restrictions on the preparation of food at the museum precluded a hot meal, but fears about the standard of a cold repast were quickly dispelled as the caterers produced an excellent spread. After dinner it was a pleasure to introduce Trevor Ford who regaled us with reminiscences about the times and characters of Section C. It was also a great pleasure for me to formally announce the committee's decision to make Trevor an honorary Vice-President, a fitting reward for nearly 50 years of service to Section C. Trevor's only regret was that he'd just paid his subscription for this year!

Finally, I cannot close without recording my thanks to John Martin and the staff at the museum, but especially I wish to thank my sub-committee team of Mark Evans and Doug Lazenbury, and also Joanne Norris, without whom this very successful and memorable celebration would never have taken place.

Andrew Swift

### CHRISTMAS MEETING DECEMBER 15TH 1999

Sometime back in 1999 I noted with some satisfaction that for the first time for several years Section C's Christmas meeting at New Walk Museum did not clash with other commitments, so I could actually attend this time. For a few years the meeting had perhaps not attracted the support we would have liked, but this year, after some fairly vigorous 'pushing' at meetings beforehand we got an excellent turn out in excess of 30. This gathering was not disappointed, and a first class evening was had by all. Much of the success was down to the noble

efforts of John Martin and Mark Evans at the museum, who set us up in the 'dinosaur' gallery in the midst of the festively clad exhibits and laid out tables for food, drink and displays. Mark was also responsible for putting together an excellent quiz featuring slides which were projected on a loop through the evening for people to beaver away at as and when they felt like it. Joanne Norris claimed the prize of a bottle of wine, but possibly may have had a tiny bit of help!

A few members set up displays of their interests, including Alan Baker on some fieldwork he'd undertaken in the Alps, and Nick Oliver brought along some well-preserved vertebrate fossils. Graham and Susannah Stocks brought along a very nice little exhibit, six-week old George, who proved you are never too young for geology. He had difficulty signing his membership application form, but I'm sure that will come in time. A slide show of the weekend excursion to the Isle of Wight and the day trip to Hicks Lodge opencast site attracted interest. Roger Newman sent along one of his special quizzes (for which thanks, Roger), which caused much brow-furrowing. But most of the activity, not surprisingly, centred around the table on which was laid out the excellent spread of food and drink which members generously donated. Some members, indeed, strayed little from this point the whole evening.

So the news is out, the Christmas meeting is alive and well, and we look forward to an even bigger turn out next year for what is surely the social high point of the Section's year.

Andrew Swift

### WEEKEND FIELD EXCURSION TO THE PENARTH AREA JUNE 30TH - JULY 2ND 2000

For our weekend field excursion this year we are visiting the classic area of the South Wales coast west of Penarth. The geology is justifiably famous and the coastal scenery superb. During the course of the weekend we will see exposures of the Late Triassic Penarth Group in its type area, and the overlying Jurassic, and possibly we will also visit some sections in the underlying Palaeozoic rocks. It is my intention to give a fuller account of the itinerary in my Chairman's address on March 22nd (see abstract in this Charnia), but at this stage I need to know numbers so that accommodation and logistics can be worked out. The past two years have seen two very successful trips and we aim to make this year's better than ever, so get those dates written in your diaries and let me have your names as soon as possible.

Andrew Swift

Gold digging, treasure hunting, exploring the Amazon - they have all been done and the chances of anyone making a fortune by going gold digging are now getting smaller all the time. This is largely because most of the easy gold has been found. Treasure hunting is an expensive business requiring sophisticated salvaging tackle, and exploring the Amazon is done these days by signing up for a package holiday to Rio with a couple of days in Manaus. Discovering rare and wonderful animals is all but done, those Victorian naturalists having got to Central Africa or elsewhere at least one hundred years before our generation. So, nothing more to discover, eh? Well, no! The biggest and fiercest animals are still being discovered at the rate of several per year over the last ten years. I mean dinosaurs of course.

When I was a wee lad I used to visit Leicester Museum and Art Gallery (I thought that the Art Gallery was so boring... and still do). In those days, say thirty five years ago, Leicester Museum had on display a prehistoric reptile known as the 'Barrow Kipper', or a plesiosaur to be a little (but not a lot) more technical. I would stare at this animal and dream that I too might discover a giant fossil reptile when I was out fossil collecting. Several years later I did just that - and thus became a palaeontologist. Quite why I wanted to be a palaeontologist I do not know. My Mum says it was when I found some fossils while on holiday at Llandudno, so I suppose it must have been some Carboniferous brachiopods or similar things that set me on my destiny.

For several years my friends and I would fight over small patches of ground on the abandoned railway embankment at Thurnby where an old bridge had been demolished. The sticky clay here was full of small fossils and we would delimit areas where we each have exclusive collecting rights. Our quarry was usually small ammonites and star-shaped ossicles of crinoids (sea-lilies). When I was allowed to cycle on the main road we would take up to Tilton-on-the-Hill and go collecting in the old railway cutting where the young David Attenborough also used to go fossil collecting. Perhaps that place does strange things to you because it certainly isn't normal to go around looking for the fossilized bones of dead animals. I mean, they're no good to anyone!

Searching for fossils satisfies a number of basic instincts. Perhaps the primitive desire to search out one's own food, now taken away from us by the proliferation of supermarkets, allows fossil collecting to be a substitute behaviour. The thought of something for free might also be a factor. There seem to be very few pursuits around today where you don't have to part with some of your hard-earned cash to pursue your hobby. Of course, with fossils there is the thought that you are the first person to see the object since it was alive all those millions of years ago. For me, it is always the thought that I will discover something new to science, or a fossil that will resolve a long-standing problem, perhaps like discovering a missing link showing that birds are indeed related to dinosaurs (although that particular missing link was discovered more than one hundred years ago).

So why exactly did I become a palaeontologist? After all, there are very few jobs in palaeontology, the pay is not good and to be honest, the world does not need terribly many palaeontologists - yet there are hundreds (if not thousands) of us! The world might not need our skills but it does want them. Palaeontologists bring back the life of the past and we tell wonderful stories of Worlds gone by - and our stories are true, or nearly so. Everyone seems to enjoy a good story and the more

believable it is the better. So, palaeontologists fulfil a cultural role in some respects. Perhaps we provide that link with a distant past that we have not recognised as being needed but in fact cling to it like we cling to our cultural history. Palaeontologists provide a natural security blanket linking us with our pre-human ancestry. I became a palaeontologist most of all because I like to discover things and am fascinated by animals and plants. I am especially in awe of the amazing diversity of life, both extinct and extant. I marvel at the size of sauropod dinosaurs and of flesh-eating marine reptiles such as *Liopleurodon*. However, I will never forget the day I discovered fossilized cells and learned that even sub-cellular organelles could be preserved.

Little did I ever realise how far one could go in palaeontology. Travel had always been an important part of my formative years. I regularly would skip school to go hitch-hiking and while out would collect fossils. I was the only person who skipped school to undertake academic pursuits. While my school chums were out stealing cars, I was collecting fossils from the red and white chalk cliffs at Hunstanton. Since I have become a professional palaeontologist I have travelled the world. Brazil is a regular destination while Africa, the Middle East, the United States and of course mainland Europe are visited fairly often.

One subject that I have been involved with recently was not an area I thought would have been the realm of a palaeontologist. For the last three years I have been working closely with the BBC helping to build up a picture of ancient Mesozoic life for the TV series *Walking with Dinosaurs*. Produced by Tim Haines, this series has a long history (230 million years to be precise). About three years ago Tim Haines had the brilliant idea to make a series of natural history programmes on dinosaurs, using state of the art animation, as seen in such films as *Jurassic Park* and *Titanic*. The trouble was, Tim had only a small budget to produce a pilot programme to hawk around the richer TV moguls in an attempt to raise the really serious money required for a six-part series. So, together we managed to find a time slot of the stratigraphic column in a part of the world that had all of the ingredients for a dramatic series. That part of the world was Peterborough in the Middle Jurassic. Out of this pilot programme featuring the theropod *Eustreptospondylus* and the pliosaur *Liopleurodon* came the programme *The Cruel Sea*. This programme brought me full circle, for Peterborough was the field area for my PhD on the fossil marine reptiles of the Oxford Clay. Today, the rich reptile hunting grounds of Peterborough are disappearing as the brick-making industry shrinks. Fossils can still be found there and anyone who wants to be a palaeontologist would certainly do well to spend a day in the Peterborough brick pits - it didn't do me any harm...

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 Readers may be interested in the following three titles, published as part of a series by the Palaeontological Association -

- (4) FOSSILS OF THE OXFORD CLAY by D.M.MARTILL & J.D.HUDSON.
- (5) FOSSILS OF THE SANTANA & CRATO FORMATIONS, BRAZIL by D.M.MARTILL.
- (9) FOSSILS OF THE RHAETIAN PENARTH GROUP edited by ANDREW SWIFT & D.M.M. RTILL.

(Ed.)

Following the Section C - Geology section 150th celebrations I fell to considering what was happening in the world in 1849. It was the year of the Californian gold rush which would have been more productive had not each prospector been allowed to "do his own thing", thereby wrecking the chances of those about him.

In fact the years in which Europeans spread across the United States of America were very wasteful. The continent was seen as a cornucopia ripe for the taking with unlimited timber, land, flora and fauna. Giant redwoods were dynamited, because they were too difficult to chop down, a process which destroyed more than 50 per cent of the timber. On the prairies the passenger pigeon, which flocked in thousands each evening, was brought to extinction in just over 50 years; the bison and the native Americans were almost destroyed.

Perhaps it was in Dunbar, where he was born in 1838, that John Muir began to reverence the natural world, as he scrambled around its ancient harbour, with its columnar basalts and pillow lavas, and the ancient castle on the volcanic plug.

With his parents and siblings John Muir emigrated to Wisconsin in 1849, and until 1860 he worked on the the farm. He learned to spend less time sleeping in order to learn maths, geography, literature and philosophy.

He constructed clocks and barometers, which he exhibited at the 1860 State Fair in Madison, where he went to work in a machine shop in return for instruction in mechanical drawing. He enrolled at the University of Wisconsin when he found out it admitted students for payment of one dollar per week. Muir spent three years studying chemistry, natural history and geology.

Meantime North and South were heading toward war. In March 1864 Congress passed the Enrollment (sic) Act requiring males of 18-45 years, who were American citizens or "aliens wishing to become such", to enrol for military service. Those who dodged the draft by leaving the country were said to have "steddaddled".



John and his brother Daniel "skedaddled" to Canada. John botanised around Niagara Falls, and later worked in a broom-making factory. After the war, he returned to work as a foreman-engineer in a carriage factory in Indianapolis, then the great Railway City of America, until his right eye was injured.

Muir set off with a friend to walk through Illinois to Wisconsin. On the way he observed in one 200-yard stretch in Illinois 200 flowering plants.

From Wisconsin he walked via Kentucky, the tip of North Carolina and Georgia to Florida, a distance of 1,000 miles. Thence he set off for New York intent on getting to South America. Having missed his boat, after a bout of malaria, he went to San Francisco.

The 30-year-old Muir chose the quickest route out of town, making for Yosemite and from the top of the Pacheco Pass he saw for the first time the Sierras, 100 miles away. For eight days Muir hiked, explored the falls, collected flowers, and saw his first sequoias. In all his travels John Muir was awed by the variety of flora and fauna in this new world, and appalled at the waste of natural resources by the hordes who gave no thought to replenishing what they so carelessly destroyed.

In 1869 John Muir explored the mountains, and in August made the first ascent of Cathedral Peak in Yosemite.

And so began his ten "Yosemite Years", during which he was visited by Ralph Waldo Emerson, who with Henry Thoreau was responsible for Yellowstone Park being made the world's first national park.

In 1870 he guided geologist Joseph Le Comte around Yosemite, and pointed out evidence of glacial action, supporting Agassiz's theories. The following year the New York Tribune published John Muir's first article about glaciers.

The next few years read like a "Boys' Own" adventure with the first ascent of the 13,000 ft Mt Ritter (1872), a solo climb of Mt Whitney and the first recorded ascent by the eastern route (1873), solo ascent of Mt Shasta (1874) and in 1879 his first Alaska trip, on which he discovered Glacier Bay and the feature now known as Muir Glacier.

Summer 1877 saw John Muir botanising with Sir Joseph Hooker and visiting friends in San Francisco. Dr John Strentzel had fled Poland in 1831. His American wife, Louisiana, wrote poetry. Their daughter Louie Wanda was an accomplished musician and intended to be a concert pianist, until she married John Muir in 1880.

Only a year after Yellowstone had become the first designated national park, the Yosemite region became part of a National Park, thanks to Muir's efforts and Mt Rainier became a National Park in 1899. Following further work by Muir, the Petrified Forest N.P. was set up in 1906; Grand Canyon NP and Muir Woods National Monument were established in 1908. (It was only in 1916 that Congress created the National Park Service and provided finance to run the parks.) The early national parks were seen as recreational areas that belonged to the nation, more tourist areas than wilderness areas.

At last in 1895 Muir was able to re-visit Dunbar and Edinburgh, moving on to London and much of Europe. A world-tour in 1903-4 included London, Paris, Russia, the Far East, India, Egypt, Ceylon, Australia, New Zealand, Malaya, Philippines, and Hawaii.

At home, Muir accompanied his daughter Helen to the Arizona Desert to strengthen her lungs after pneumonia. He was summoned home since his wife was gravely ill and a month later she died of lung cancer.

In the Petrified Forest he found that dealers were dynamiting the logs to sell the pieces. Muir threw himself into the fight to protect Petrified Forest and the Forest became a National Park.

John Muir continued to campaign to protect the wilderness areas of the USA until he died in Los Angeles in 1914.

The American National Parks were joined in 1974 by the John Muir Country Park, a protected area of unspoilt coastline around Dunbar. And in 1980, the John Muir birthplace opened to the public in Dunbar.

After his death Muir was elevated to the status of a Father of The American National Parks, along with Emerson, Thoreau and Audubon.

If you would like to know more about John Muir, "John Muir: From Scotland to the Sierra" by Frederick Turner, published by Canongate.

I am indebted to Dr Mike Taylor, formerly of Leicester Museum and now of the National Museum of Scotland, for his advice that "Dunbar is worth a visit". It opened up a whole new world for me. I can't help thinking the founding fathers of the Lit and Phil and Section C would be pleased to know that people are still striving to learn more about this amazing world in which we live.

PAULINE DAWN

Immediately after writing the Editorial, a yuletide cold snap shrivelled most of the remaining flowers in the garden. I wonder where our understanding of climatic processes would be if it were not for the contributions made by James Croll. Croll was born in 1821 in rural Scotland. He was largely self-taught and thirsted for knowledge while he toiled at menial tasks. In 1859 he fell on his feet, finding the perfect vocation. The position he secured was caretaker at the Andersonian College and Museum in Glasgow. Access to a scientific library and his address at work resulted in his theory on the ice ages being published in 1864. In 1867 Croll was appointed to the Geological Survey of Scotland and in 1867 he was elected as a Fellow of The Royal Society. Croll's big contribution? Not just that there were ice ages (that had been established by Jean de Charpentier at the turn of the nineteenth century) but that there were variations in the Earth's energy budget due to orbital perturbations, thus pipping Milankovitch to the post by more than half a century. See you at the Saturday school...

GS

# GLOBAL WARMING NOTHING NEW UNDER THE SUN



What are we doing to our planet? The predicted effects of global warming include crop failure, mass extinctions, drowning of major cities by sea-level rise, climatic instability with massive storms, water shortage wars, melting of the polar ice-caps and, in general, the end of civilisation or of life on Earth.

The climate is certainly changing. It always has: and what we know about climate change in the past is vital to our understanding of the likely causes and possible effects of climate change today. Most of the 'end of civilisation' predictions we hear about are in the broadcast and printed media, and much of the content is inspired speculation, motivated by political or commercial interests, and is intended to make an emotional appeal to its audience. The value of unbiased research by climate experts and earth scientists in the debate we *should* be having about global warming is inestimable.

This day symposium, of interest to everyone concerned about global warming as well as to geologists and climatologists, will bring to Leicester a group of experts in past, present and future climates. A

The Leicester Literary and Philosophical Society  
Geology Section C  
World Wide Web Page

Over the past few committee meetings, the discussions over the possibility of setting up a web site for Section C have been very interesting! The possibilities for a Web site are endless, and the benefits for the society are I believe, numerous.

The web site could act as a focus for the members who currently have access to the Web, and more importantly, be available for viewing by millions of people from all over the world.

The site will allow users to visit 'link sites' of palaeontological or geological interest around the globe.

The web 'pages' can be constructed using numerous applications, Microsoft's FrontPage and Word will be used for this site. The 'pages' are constructed with text and pictures rather like a magazine. The 'page' will display 'buttons' and icons that allow navigation to other 'pages' within the site, and I fully expect there to be contributions from members and interested parties from all over!

There will be an e-mail address for correspondence to the site, and the site will be constantly updated to include all new and interesting events from around the world of Geology!

We in the committee feel that the members should have their ideas put forward prior to any construction of the site. This will ensure that everyone feels that the site reflects what the society wants, by the people that make the society what it is, the members!

To discuss the above, I will be at the members evening on February 9<sup>th</sup> at the Museum, or conversely you can e-mail me at [mick.steele@nuttalls.co.uk](mailto:mick.steele@nuttalls.co.uk) or mail me at 7 Frewen Drive, Sapcote, Leics LE9 4LF with your views.

Hopefully, between us we can construct a site that we are all happy with, and I could present a 'sample' for everyone's perusal prior to going live.

Mick Steele



IN THE FIELD,  
'BE PREPARED!'

