CHARNIA

LEICESTER

LITERARY AND PHILOSOPHICAL

SOCIETY

THE NEWSLETTER OF

SECTION C (GEOLOGY)

SPRING 1994 EDITION

Committee profile - Doug Lazenbury, Treasurer.

We each come to geology by different routes: some via an awakening of childhood interest which later develops into a professional commitment; others through a chance encounter with an enthusiastic 'Bellamy' of rocks, minerals and fossils, or just through circumstance. My interest came largely through the latter route.

I am, by profession, a Town Planner. I came to Leicester in 1960 to work for the Leicestershire County Council Planning Department. Around 1963-4 the then Ministry of Town and Country planning introduced legislation requiring County Councils to carry out a survey of all derelict land in their areas, which also included many abandoned mineral workings. As a result of being involved with this survey I became interested in the old quarry sites, particularly the areas of old ironstone workings. It was here that I discovered my first fossils and became interested in geology.

Around 1969 the Ministry of Housing and Local government made County Councils the responsible authorities for controlling all mineral workings in their areas. as a result, Leicestershire County Council created a small team, of which I became a member, to advise on mineral planning and the control of all mineral workings. So, my interest in geology now became linked with my job. I needed to understand the geology of the sites with which we were concerned and at that time met Dr. Bob King, now the President of our Society, who was giving classes in basic geology. I subsequently joined the Lit & Phil Geology Section in 1970 and have been a keen and regular member ever since.

Although very much an amateur who finds that sometimes the technical elements of some of our Winter lectures can be over my head, I very much enjoy the Winter programme of talks and have, over the years, learned a great deal from them. I am also an enthusiastic field-tripper and hope to continue to be so for as long as I'm physically able.

I became Treasurer of Section C in 1990 and in that capacity I am always happy to receive your membership subscriptions and to welcome new members. I may be retired, but I'm not yet out to grass!

D.L. Feb'94

EDITORIAL

The predominant theme in this issue is 'people'. The Society was founded for and by ordinary people, whose aim was to make accessible to all what could previously be obtained by only a privileged few. That is, education, edification and enlightenment in subjects not normally found in the curriculum of an ordinary person's general education - and for a nominal sum.

This theme continues and our Society is open to all. For the next issue of 'Charnia' articles are invited from all-comers. It is also envisaged that correspondence of the 'question-and-answer' type of format be put to the panel of experts. Letters addressed to Graham Stocks, 63 Barrow Road, Quorn, Leics., LE12 8DH.

ALAN DAWN - a tribute by Roy Clements.

A former Chairman and Field Secretary of the Geology section of the Leicester Literary & Philosophical Society, Alan Dawn has been a member of this section for seventeen years. A native of Sheffield, Alan studied geography at Sheffield University.

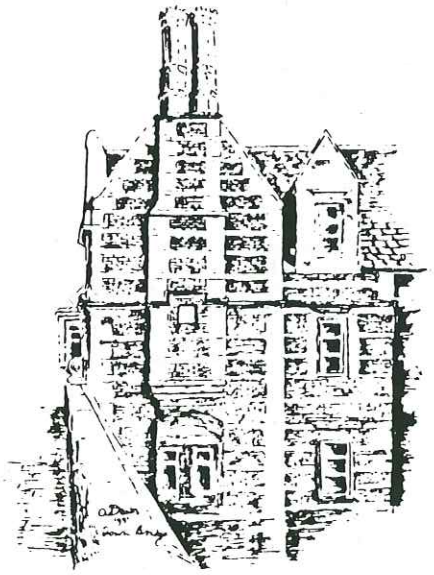
After graduating, Alan served for four years in destroyers of the Royal Navy during World War Two, chiefly in the North sea and the English Channel. After the end of the war in Europe, Alan spent some time in Australia and New Zealand, before demobilisation from the navy. Alan returned to teaching, first in Sheffield and later, in 1961, came to Stamford.

Alan's interest in geology was re-kindled about twenty-five years ago, while attending a series of WEA classes in the subject.

Alan has travelled widely in pursuit of geology, making three visits to the United States of America and Canada, three visits to Iceland, several to France, Germany, the Alps, the Pyrenees, the Auvergne, in addition to almost every geological location in the British Isles.

After retirement from teaching in 1982, Alan worked as a part-time WEA tutor in geology, lecturing in various locations in the East Midlands area, in addition to leading numerous field outings, for our own and other societies.

Working as a collector and conservator of material for Peterborough City Museum he has made a number of exciting finds of Jurassic marine reptiles. As a result of this work, Alan was elected Amateur Palaeontologist of the Year in 1990 by the Palaeontological Association.



Twelve years ago, aided and abetted by his wife, Pauline, he initiated the founding of the Stamford and District Geological Society, which now has a membership exceeding seventy individuals. More recently, Alan has received the Foulerton Award for 1994 by the Geologists' Association.

Now approaching the age of seventy-one, Alan admits to having to slow down a bit, though not abandoning geology! Away from geology, Alan has other interests, including cricket, which he has played as an amateur for many years, as well as gardening and angling. Alan also enjoys painting and drawing, some of the latter in evidence in the previous edition of Charnia.

RC March 1994.

Some Views From a New Member, by Roger Newman

I became a member of the Lit & Phil Geology Section in September, 1993, having seen a meeting advertised in the local press. Joining the Society posed no difficulty; there was no need to be proposed by existing members or anything like that - and thankfully, no examination of any kind - I had sat my last examination many years ago! Also, the subscription represented an exceptional bargain.

I have attended all of the meetings, braving snow and rain. I have found all lectures, without exception, to be of considerable interest to me and I was grateful for the previews, published in 'Charnia', which gave me a chance to orientate myself prior to each talk. I find that a great benefit of the talks is that I have access to the most recent developments in the subject from the people at the forefront of their profession.

I have no formal geological qualifications, though I have had a great interest in the subject since I was a boy, collecting at that time (as all of us probably did) stones from any beach I was fortunate enough to visit. Nothing much changes and I still collect much in the same way, though in a more selective fashion.

Recently, I paid a visit to the Natural History Museum in London. The gallery displaying British fossils made a profound impression on me, with the contents neatly classified by reference to period, helping souls like me whose knowledge of stratigraphy is not all that good. The Museum also has an excellent bookshop, which is a valuable source of reference - even if you decide not to buy anything!

During Autumn I spent a few days in the Lake District, staying at a remote spot in the west of the region near Ennerdale. For me, this was a return visit to that area, having managed to complete ascents of all of the Lake District peaks some years ago. When I had completed that task I turned my attention to Scottish peaks and I am now engaged in a similar venture. I began with the highest, Ben Nevis, visiting that summit on my fiftieth birthday in the June of 1988. I then proceeded to the second highest peak and have continued, in descending order of height, since then. My list runs to a total of 517 peaks, of which I have now completed the sixty-first highest, having walked around 700 miles since beginning this enterprise in 1988.

If nothing else, all this walking gives me time to reflect, which we all should do, being a branch of a Philosophical Society. My thoughts usually - and not unnaturally - turn to the last Ice Age and when the weather is bad, I wonder if it is about to return! The age of our planet is known, as is the age of the known Universe, and I wonder for how much longer their existence will run and just how the end, if there ever is one, will come about.

We ourselves can hardly matter in the greater scheme of the Universe, being insignificant creatures on a minor planet of a very average star, near to the edge of just one of many millions of galaxies. are we alone? I wish I knew. In the meantime, I look forward with eagerness to future meetings with my friends in the Geological Section of the Leicester Literary & Philosophical Society, where we will probably still have many more questions than answers...

RN, March 1994.

The trials of amateur fossil collecting, by Peter Blake

It wasn't many weeks after the birth of my daughter Krystelle that my wife, Helen, suggested that I spend some time in 'my' quarry. I'm not sure what the motive was or indeed if it was anything more than that I should go out and get some fresh air! By the way, I should explain that 'my' quarry is really owned and operated by the Portland Cement Company at Long Itchington, who very kindly allow me access.

During this particular visit, I was walking just below what the quarrymen refer to as Bed 23, when I saw what I presumed to be an ammonite. After extensive excavation I was surprised to expose a large quantity of Icthyosaur vertebrae. Carefully removing them *en masse* from the surrounding clay matrix I wrapped my prize carefully in newspaper. Feeling pleased, I reflected that this was not a bad find for a walk in the fresh air!

I should explain for the benefit of readers not acquainted with this quarry, that the bulk of the strata are Lower Jurassic Blue Lias clays and limestones, overlying the so-called White Lias in the very lowest part of the pit.

Walking back with my burden, this time across the top of Bed 23, I noticed three conspicuous lumps in the mud. Again, I presumed that I had ammonites and carted the material home. Imagine my surprise when, on washing the three lumps clean, Icthyosaur skull, thorax and what appeared to be a complete vertebral column were revealed! This was my best find yet and I felt quite elated. Perhaps this is understatement - I was over the Moon!

A few months later, I invited Colin Green to accompany me on a visit to Long Itchington. Hoping for a repeat performance, Colin and I searched for hours and found... nothing. Ah well, it goes like that sometimes.

Some weeks later, I invited Graham Stocks and Kingsley and Phoebe Lloyd to the quarry, hoping that it wasn't going to be a waste of time, like the last visit. On reflection, fossil hunting is never a waste of time, in that being out in the open is a wonderful thing in itself. Parking our cars near to the rotating kilns near to the pit entrance, Graham Stocks picked up a beautiful three-dimensional fossil fish head from ground the rest of the party had just walked over. In fact, Graham had to ask Kingsley if he wouldn't mind taking a step forward, so that the fossil ***Dapaedium*** could be removed from underfoot! This alone would have been satisfying as Find Of The Day, even though we had been standing on a shaly carpark and had not even entered the quarry. Not many minutes after descending to the quarry floor Graham shouted, "I've found another one!" Naturally, we all thought it was just his wry sense of humour working overtime but, there on Bed 146, was a beautifully preserved fish. Seconds later, Phoebe found another two equally beautiful specimens on the same stratum.

That day was quite extraordinary. I have not found a fish at Long Itchington either before or since that visit. I suppose you have to be in the right place at the right time... Is fossil hunting simply a matter of luck or is it a specialised skill where you have to 'get your eye in', or - more likely - both?

PB Feb'94

Civil engineering and palaeontology - a report on fossil finds along the east-west transect of the Leicester Western Bypass construction works, by Dennis Gamble.

Early in 1993, when I heard that contruction work had begun on the new M1 (Kirby Muxloe) - A46 (Syston) Link Road, I decided that it might well be worthwhile to investigate the cuttings. The first site I looked at was the stretch lying between Thurcaston Road and Anstey Lane. To me, this seemed to be the most promising area, because I had previously found quite a lot of fossil material on higher ground near to this section, when the Beaumont Leys Estate was under construction.

The ground in the region of Bennion Road and Astill Lodge Road is made up of clayey glacial material, largely derived from the Lias. The fossils from this site are largely ***Gryphaea arcuata, G. incurva, Cardinia listeri, Plagiostoma giganteum*** and the gastropod ***Pleurotomaria tuberculata.***

Walking over the excavated ground between Anstey Lane and Thurcaston Road, I found very little and proceeded towards the Great Central Railway between Birstall and Thurcaston. This proved a little more productive, but not much.

Eastwards, from the railway the new road descends in a cutting towards the A6, just north of Birstall at the Wanlip Road junction. The contractors are having to excavate quite a deep hole at this junction for the foundations of the elevated island that will take the A6 over the new link road. As the excavations got under way I could see that the ground here was completely different from the rest of the site. The section from the Thurcaston Road had revealed light brown clays with just the odd fossil, but here it was a dark blue-grey clay with large quantities of chalk and flint nodules. It appeared similar to glacial deposits I had noted at Beaumont Leys, but containing more chalk and appeared very similar to Oadby Till, which was derived from the Lias and chalk from a north-easterly direction. Indeed, the Lias could have come from as far away as Whitby and Scarborough, or as near as Barrow-on-Soar, or both. The chalk has probably come from the Cretaceous of East Lincolnshire, as indicated by the presence of the Belemnite ***Belemnitella mucronata.***

The earth excavated from the western side of the A6 has been dumped in layers on the opposite side of the A6, along the line of the road to Wanlip and Syston. Luckily, much of the material was spread out by the contractors in layers only a foot or so in thickness, which was then left to weather for two to three weeks. This had two advantages for me. First, it gave me plenty of opportunity to examine the material thoroughly and secondly, after plenty of rain in the early part of the year, much of the fossil material was washed clean and was therefore easy to see.

In contrast to the Cretaceous, the range of fossils representing the Jurassic is much more extensive, with examples from the Annelida, Brachiopoda, Bivalvia, Gastropoda, Ammonoidea, Belemnoidea, Crustacea and Reptilia. Some groups are super-abundant. For example, ***G. arcuata*** has made up approximately ninety per cent of the total fossil find. Others, such as the Crustacea, are present only as single specimens - in this case, a single fragment of a lobster limb.

The list of fossil finds from this extensive site is given overleaf:-

/contd.

Echinodermata
part of a spine

Brachiopoda
Calcirhynchia calcaria
Lobothyris punctata
Rhynconella sp.
Terebratula sp.

Gastropoda
Anonphallus

Ammoniodea
Schlotheimia
Arnioceras
Saxoceras
Promicroceras
Harpoceras
Echinoceras
Angoginaceras
Asteroceras
Dactylioceras
Hildoceras
Microderoceras
Stephanoceras
Cenoceras

Annelida
Worm tubes (2 spp.)

Bivalvia
Plagiostoma giganteum
Cardinia listeri
Cardinia sp.
Chlamys
Modiolus
Protocardia
Gryphaea arcuata
G. incurva
Entolium
Goniamya

Crinoidea
Pentacrinus

Coralia
Montlivaltia

Reptilia
one ichthyosaur vertebra

Belemnoidea
Passaloteuthis

Extra to this list are a number of specimens still in need of identification, mostly belonging to the Brachiopoda and Bivalvia.

I would like to thank Dr. Roy Clements and Mr. Peter Blake and acknowledge the help given to me in the identification of the specimens found.

LAST LOOK AT JUDKINS: 11-12 June, 1994, by Mike Le Bas.

Judkins Quarry, Nuneaton, is about to close and become a land-fill site, after decades of being a mecca for geologists and mineralogists. Why must it close? There is still plenty of hard rock there... The quarry can go no deeper, nor can it increase in width, being hemmed-in by houses, a road, a fault and a 'protected' hill (in fact, an old quarry tip heap that the locals got fond of!) Why all the drama? In the course of a century of quarrying, initially with several small pits scratching the former ridge, many igneous, sedimentary and some metamorphic rocks have been revealed, making it a spendid field site for students of geology.

The oldest rocks are Precambrian thick-bedded (dipping SW at approximately 20 degrees) dacitic crystal tuffs and debris flows, known as the Caldecote Volcanics, with rafts of finely bedded tuffs in places. The tuffs quite likely came from violent eruptions of a volcano sited in what is now Charnwood Forest, 25km distant. The tuffs are penetrated by three lots of igneous rocks: markfieldite, a potassic variety of diorite (petrographically identical to the markfieldites of Charnwood) containing zircon dated at 602 Ma; the much-altered 'Blue Hole' basaltic rocks; and a suite of possibly related altered basaltic dykes which can only be seen only after rain has washed the quarry faces free of dust. The dacites and markfieldites are subduction-related, but the petrological association of the basaltic rocks remains unknown, except that the dykes are cut by the markfieldite.

Overlying these igneous rocks is a thick sequence of bedded (dip SW at approximately 40 degrees) Hartshill Quartzites of supposed Cambrian age, but they contain no fossils. Keen eyes will spot sedimentary bottom structures, and even keener ones will trace the many thin sills of diorite cutting the quartzite. At the base is a famous conglomerate. Famous because it used to be considered *the* conglomerate which marked the base of Cambrian strata (not the way chronostratigraphy is worked out these days). The conglomerate is magnificent with a metre or two of pebbles and boulders, mostly of Caldecote Volcanics but a few of markfieldite (an important point in view of the current controversy over its age, referred to in the course of the Saturday Symposium 'Charnia Revisited', held at Vaughan College on February 26th. this year). The conglomerate is also famous for its low temperature (200-300 degrees centigrade) epidote-calcite mineralisation, with the vanadium minerals mottramite and vanadinite present, with barite, galena, sphalerite (zinc blende) and many copper minerals. On the NE rim of the quarry are Triassic red sandstones and marls of former desert lakes lying unconformably on the Cambrian and Precambrian rocks.

The conglomerate, mineral localities and most of the igneous intrusion rocks will be buried by the land-fill, but one line of the topmost outcrops at the western end is, or was, an SSSI site, and all may be lost.

This is the last opportunity to collect any of the rich variety of rocks and minerals for which Judkins has long been famed and to see the structures there - elucidated recently by the BGS whose sheet memoir of the area is about to be published. See you there...

MJL Feb'94.

Field Outing Programme for 1994

Wednesday, May 25th: An evening walk, following the Leicester Stone Trail, led by Mac Whitaker (author of 'Leicester's Building Stones') plus historical and general interest input from Liz Bellamy. Mac's booklet is available from Leicestershire Museums, price 50p. The practicalities of guiding a group around the town limit the size of the group, so you are asked to let Liz Bellamy know if you would like to join this trail. (Phone: 0455-209314) Meet at 6.30pm outside the General Post Office in Bishop Street, near the Town Hall Square.

Saturday/Sunday, June 11-12th: A last visit to Judkins Quarry at Nuneaton and possibly others in the vicinity. Also the chance of a wake for Judkins on the Saturday evening. Hammers, etc. welcome but head and eye protection is a must. Meet 10.00am on Quarry car park. limited numbers only on a first come, first served basis. Please arrange with John Colby, who will supply further details. (Tel: 0455-290271)

Sunday, July 24th: A visit to the Northcot Brick Company's quarry at Blockley, in Gloucestershire. Park in the company's main gateway (G.R: SP 182369, Sheet 144) assembling at 11.00am. Upper clays of the Lower Lias, yielding abundant ammonites, gastropods, bivalves, with crustaceans, etc. No one will go home disappointed with an empty bag! Further details from Peter Blake (Tel: 0788-550965). Packed lunch and drinks essential. Helmets and wellington boots (particularly the latter) are vital.

Saturday, August 13th: A walk to examine the geology and palaeontology in Bradgate Park, led by Helen Boynton. Following on from the 'Charnia Revisited' Symposium, held in February, fossils will be described *in situ*. The best known Precambrian fossils are at the Memorial Crag, where Dr.Boynton has made some additional discoveries. There are other palaeontological surprises elsewhere in the Park. Other outcrops will be visited which show slumped and overfolded beds, caused by the disturbance of plastic sediments on the Precambrian seafloor, presumably by seismic activity. There may be time to visit the new Heritage Centre in the Park, where geochronology is demonstrated by tree-ring growth and lifelike models of volcanoes explode and spew out lava! Children and well-behaved dogs are welcome. Do bring a picnic and we will stop at a convenient place en route to eat. Meet at Hunt's Hill Car Park (i.e. the Old John Car Park) at 2.15pm, concluding at around 5.30pm. Further details and other enquiries from Helen Boynton (Tel: 0533-706806).

September 3rd/4th or 10/11th: The Stamford Society are organising a trip to Long Itchington Quarry, led by Roy Clements. For further details and confirmation of date, contact Roy at the University (Tel: 0533-523933).

If you would like to lead a party in the 1995 season, or if you have ideas about interesting places to visit, please contact Peter Blake.

CHARNIA REVISITED - a résumé of the symposium, by Trevor Ford.

The Geology Section sponsored an all-day meeting at Vaughan College on Saturday, February 26th.,1994, taking the theme of a fresh look at the state of knowledge and problems raised by the Precambrian fossils in Charnwood Forest. Eight talks were presented on different aspects and some fifty-five participants also had a chance to see the original Charnia masoni close up, courtesy of Leicestershire Musuems.

John Moseley's revision of Charnian stratigraphy was presented by Dr.T.D.Ford, as John had 'flu. The absence of evidence of the basement on which the Charnian rests was noted and the contrast between volcanic arc and continental margin sediment styles was emphasized.

Dr.Helen Boynton described the various recently discovered simple and compound frondose organisms and compared them with similar forms from Newfoundland.

Dr.Ford described the many discoid fossils and discussed whether or not they represent jellyfish or holdfasts of fronds. Comparative forms from Newfoundland, Australia, Russia, Namibia and China were noted.

Dr.Chris Peat outlined the so far unsuccessful search for Precambrian microfossils in Charnian rocks and proposed different techniques which might be more successful.

Dr.Ben Bland gave an account of his discovery of trace fossils, apparently Teichichnus burrows, in gravestones made of Swithland slate. These suggest that the conventional view of the Charnian being all Precambrian may be wrong and thus a reassessment of the age of the Brand Group and the markfieldite intrusions may be necessary.

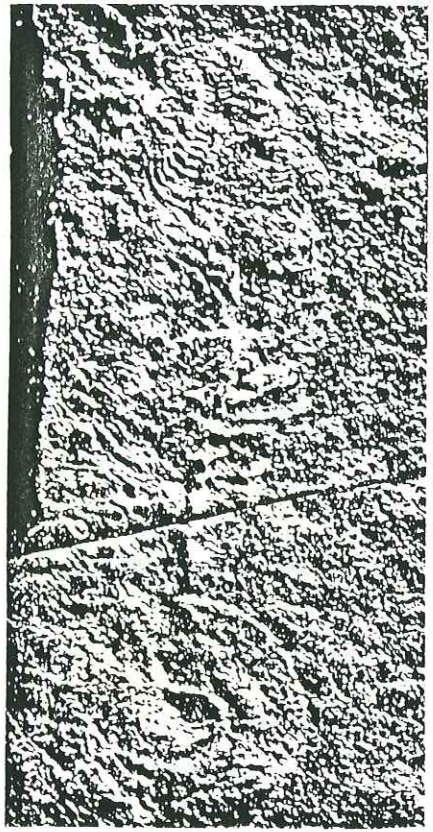
Dr.John Cope spoke about the discovery of discoid fossils like those of Charnwood in rocks near Carmarthen. This had necessitated a revision of the geological map there.

Dr.Martin Brasier took a wider view and discussed the age problem of the Charnian, in particular the Swithland Slates, in view of Dr.Bland's discovery. He also looked at the problem of the relationship of the Charnian fauna to that of the Cambrian and discussed Adolf Seilacher's view that Charnian fossils represented a totally extinct life-style.

By contrast, Dr.Simon Conway-Morris noted that at least some of the Charnian (Ediacaran) fauna survived into Middle Cambrian times and possibly later.

Extended abstracts and a longer commentary will appear in the Leicester Literary & Philosophical Society's Transactions later in the Summer.

TDF Mar'94

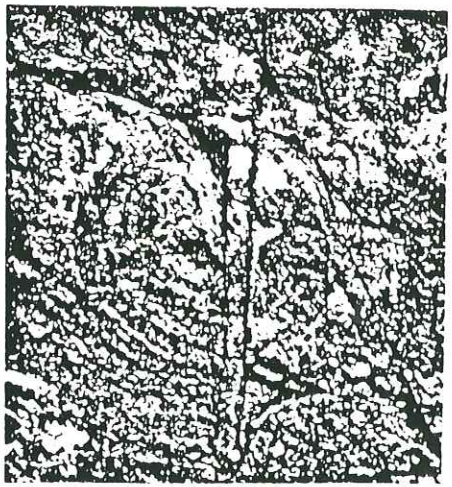


Charniodiscus concentricus with *Charnia masoni* frond attached. Woodhouse Beds, North Quarry, Hangingstones, Woodhouse Eaves.

Charniodiscus concentricus. Memorial Crag, Bradgate Park.

Pictures reproduced from 'The Pre-Cambrian Fossils of Charnwood Forest' by T.D.Ford (Trans. Leicester Lit & Phil Soc., Vol LVII 1963.)

Charniodiscus concentricus. Memorial Crag, Bradgate Park.



Charniodiscus concentricus. Memorial Crag, Bradgate Park.

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If you have received this issue of 'Charnia' as a complimentary copy and would like to find out more about the Society, please contact any of the above.

DEG