# CHARNIA



Flashback to 10 years ago at Cleeve Hill: we are scheduled to revisit on August 13th

## The newsletter of the Geology Section (C) of the Leicester Literary & Philosophical Society

# May 2011

## www.charnia.org.uk

#### **Editorial May 2011**

The hot topic of the moment is of course the events in Japan. How can certain factions, as I have read, describe geology as a subsidiary science, or worse, a leisure study? WE all know that geology is fundamental to how this world of ours works, and how much evidence do our detractors need following this awesome (used here in its proper sense, not the current nonsensical application to anything remotely eventful) demonstration of the immense forces innate to the planet? Could it be that the (relative) plethora of geologically-themed TV programmes has in some way reduced geology to the status of mere window dressing, via the frequently tinsel'y and shallow presentation? Probably that is a little harsh, because purely as entertainment these programmes can be very diverting, but you like me may sometimes find yourself squirming with embarrassment as another glib cover-all phrase escapes the presenter's lips. Maybe if the presenters, many of whom are respected and more than capable scientists, were left alone to script the programmes themselves, we'd see an improvement. Where is the new David Attenborough going to come from I wonder?



Part of the Saturday Seminar audience

Photo Bruce Smith

I hope you enjoyed the winter programme of lectures. I thought it was superb, and the size of the audiences was most encouraging. We finished as ever (AGM notwithstanding) with the Saturday Seminar which I was obliged to miss, having a long-standing commitment on that day, but all reports suggest it was up to our usual standard. Having seen some of the talks already arranged for next winter's programme, I can tell you we are in for some splendid lectures. The summer programme of course is now in full swing and perhaps if we'd had a crystal ball we might have arranged some in April, which was quite amazing weather-wise. The Lake District weekend in early June is rather more ambitious than most of our weekends away and promises to be a great trip, and perhaps there might still be a place available if you ask the Field Secretary nicely (and very quickly!).

Andrew Swift

#### **Field Report**

#### Natural History Museum (Mineralogy), South Kensington, London Saturday 9<sup>th</sup> April 2011

On Saturday 9<sup>th</sup> April 2011 the Section visited the Natural History Museum, South Kensington, London for a 'behind the scenes' tour hosted by Alan Hart. Alan has worked at the Museum both as man and boy and he proved to be a generous and entertaining host.

Fifteen members began their tour in the main mineral gallery in which, like the proverbial iceberg, the specimens on display are a mere fraction of those in the drawers below the display cases. With a rattle of keys a grey crystalline silver ore from Siberia appeared. This is a photo-sensitive mineral that, as Alan showed us, is red in its original form.

Bring on more Siberian crystals! The next was a breathtaking topaz kept in a tailor-made 'hood' lined with velvet. Alan explained how, although currently transparent with a beige/brown hue, exposure to sunlight would turn it blue.

At the far end of this gallery is a vault complete with customary heavy gauge steel door. Immediately on entering your eye is drawn to the egg sized yellow Cora Diamond - possibly for sale, Alan asked us to estimate its value! Adjacent to this was a pyramid of cut diamonds, mounted on pins, some fluorescent; the Aurora Diamonds illustrate the sheer diversity of diamond colours. Flashy though these are, possibly the most intriguing specimens are the 'fluorite boxes'. Quite what subsequent diagenetic process has occurred is a matter of contention. Basically, minerals form around a large crystal of fluorite that then dissolves leaving the box. The process continues with secondary growth of crystals, sometimes calcite, within the box.



The NHM party plus host Alan Hart

photo Dave Hayward

From the vault we went through a 'secret' door, past a cat sized model nugget of gold (at least, I think it was a model!) and entered a room full of mahogany cabinets; the Russell Collection. An avid and able, both financially and intellectually, collector, Russell assembled a collection of the best specimens. Green crystalline fluorite jostled with the most fragile pyrite 'ladies slippers'.

On this level is a further collection; the Ashcroft Swiss Mineral; Curators take note this must be the most meticulously catalogued example. The location of each specimen is noted on a photograph (only 12 such 'plates' could be carried on an expedition) and accompanied by precise field notes and diagrams. His work was mainly centred in the Alps on sites now covered with chalets and sky slopes!

Also on this floor are the recent acquisitions, mainly acquired at the Tucson and Munich Mineral Fairs. Alan explained that the good stuff is always 'under the table' and a 'museum discount' is asked for and negotiated. What was heart warming was that the collection is still expanding. New acquisitions include a pink spinel crystal (50 pence piece shape and size) and a 'star' rutile from Brazil (this appeared to have been worked in gold by a jeweller); both very beautiful.



A drawerful of goodies

photo Dave Hayward

The basement was a treasure trove of a different kind; a corridor of staff photos with one member present between the years 1911 and 1961 and never making it to the hallowed front row. Further along this corridor are the collections that pay homage to the great men of the past; the collection from the Scott's attempt on the North Pole and other trays from the Beagle.

For some members the highlight was to be found in the next anteroom and the 'meteorite challenge'. Could we identify the meteorites from a tray of rocks? Personally I couldn't but fortunately a fellow member Mr John Webster picked out the correct specimen without hesitation. Examples of all types of meteorites could be handled and examined. The most intriguing meteorite however was the one covered in Chinese characters and Alan is to send more details about the origin of the meteorite and the meaning of the inscriptions.

The tour ended at 12.30pm and members enjoyed lunch before touring the public galleries or spending the afternoon sightseeing.

Helen Jones

Date	Venue	Leader	Further details
May 14th	Pode Hole	Bill Learoyd	Confirmed
Weekend Excursion Fri 3 <sup>rd</sup> – Sun 5 <sup>th</sup> June	Lake District	Mike Pettersen Leicester University	Confirmed
Monday June 20 <sup>th</sup> (evening) 6.15pm	Bradgate and Swithland. Meet at Hunt's Hill car park	John Carney	Confirmed
July 9th	Welton -le-Wold	Helen Gamble Lincs Wildlife Trust	Confirmed
August 13th	Cleeve Hill	Joe Angseesing	TBC
September 24th	Must Farm, nr Peterborough	Cliff Nicklin	Confirmed
October 8th	Scunthorpe area and Museum	T BC	TBC

#### Summer Programme 2011

Please contact the Field Secretary Helen Jones for further information and to book your place on each trip.

#### South Midlands Mining and Minerals Institute J. C. Boyle Travelling Scholarship

Applications are invited for the above scholarship commencing around 1<sup>st</sup> September 2012.

This is a grant to assist young scientists or engineers, under 35 years, as part of their studies or C.P.D. to make visits to activities associated with

mineral or geological exploration, the investigation of tunnelling, mining and mineral processing or conferences associated with these activities. Study period would be expected to be about two weeks. The award may be used to supplement longer periods of study. All arrangements would be the responsibility of the applicant.

Recipients will be selected by the Trustees whose decision will be final. Membership of the I. M. M. M. would be an advantage but not essential. Applications should take the form of a synopsis (500 - 1000 words), with objective of the visit, suggested itinerary and draft costing, together with a brief C.V. of the applicant.

An award winner will be required to submit a written report giving brief details of travels and results to the Trustees, with the possibility of presenting a paper to the Institute.

Applications should be made to: Mr B. Ward, Honorary Secretary, South Midlands Mining and Minerals Institute, 64 Barbara Avenue, Kirby Muxloe, Leicester, LE9 2HD, before 30<sup>th</sup> October 2011.

J.H. Dickinson President S. M. M. M. I.

#### On the trail of large glacial erratics in and near Leicestershire

Glacial erratics were discovered as far back as the 18th century where they were found in the Swiss Alps, where Louis Roldolfe Agassiz noted many perched blocks away from the normal outcrops. In 1837 he proposed his glacial theory, that they had been carried by glaciers and redeposited in new places. Previously it was believed that they had been laid down by the Biblical Flood. Agassiz came to England in 1840 and persuaded Professor William Buckland at Oxford that there was evidence of past glaciation in this country. Charles Lyell was also persuaded to accept the new theory. Agassiz then coined the term: les blocs des erratiques, the word erratic being taken from the Latin verb errare meaning to wander.

The earliest known record of erratics in this county was made by James Plant in 1856, when he described the presence of "syenite" blocks in drift in the Shoulder of Mutton railway cutting just off the Hinckley Road in Leicester.

The most famous and largest well-known erratic is the Humber Stone (SK 623071) which was originally thought to have come from the Humber. It is, however, a block of biotite-rich Mountsorrel granite weighing about 20 tons, from that hill situated 3 miles north of Leicester city centre. The stone is now

partially buried in an enclosure, just adjacent to the ring road (A563) but it used to stand 6 ft high, isolated in a field. It is known also as the Hoston, Hellstone or Holy Stone and may have been used for sacrificial ritual rites in early days. It is also said to put a curse on anyone who tries to move it. When the present ring road was excavated, other large boulders were unearthed, but these have since disappeared.

The glacial deposits are represented by the Oadby Till overlying the Thrussington Till. The former was laid down by glaciers coming from the north-east and the latter by glaciers coming from the north-west. The eastern limit of the Thrussington Till is a line running north-south east of Leicester. The river terraces of the Soar and Wreake also show reworked pebbles of various rock types.

During a literature search and in the field, a number of interesting sightings and references have been found.

Probably the most common rock type is the distinctive Mountsorrel Granite. Many boulders of this have been recorded in and around Leicester, for example in front of Knighton Fields House, Crown Hills House Evington, (the Horstone) and in a garden off Aylestone Road which is situated on the second river terrace of the Soar. Here, associated with the granites are pieces of Mercia Mudstone and Carboniferous Sandstone; in Welford Road Cemetery where a number of boulders have been retrieved from grave excavations, in the nearby Cattle Market excavations, adjacent to the railway line at Kirby Muxloe and in the Washstones at Knighton.

Conglomerates and sandstones are also relatively common and one of the most famous is the "Buttock" or Fertility Stone outside the old smithy at Hoby which is situated on the Birstall Gravels on the west side of the river Wreake (SK 660174). It was first recorded in 1875 and consists of layers of conglomerate and sandstone possibly of Permo-Triassic age with a deep fissure across it, parallel with the bedding. It was probably used as a mounting stone for riders at the forge.

A "mounting" stone of similar lithology can be seen outside Botts' Cottage in Great Glen, it is reputed to have been transported by horse and cart from the River Sence about 70 yards away by Mr. Botts who was a short, tubby man and needed it to get up on his horse (SP 653949). There is a third conglomerate outside Ingarsby Hall, north of the A47 at Houghton-on-the-Hill (SK 685055).

Pinkish-brown sandstones of Permo-Triassic age are seen at Ingarsby, Queniborough and Garendon near Shepshed. Outside the old Bavarian gateway (designed by William Railton in 1838) of Garendon Hall was placed a sandstone boulder excavated when the M1 was built nearby (SK 501202), according to local knowledge.

Jurassic limestones, sandstones and ironstones are also quite common as erratics, especially on the eastern side of the county. The sandstones are often coarse-grained and cemented with calcite. In the centre of Nevill Holt near Medbourne there is a boulder of hematite-stained coarse-grained sandstone of probable Jurassic age (SP 815937). Boulders of coarse-grained sandstones are also found in Carlton Curlieu and on the Thurnby footpath - these sandstones were probably excavated from nearby gravel pits.

One large boulder of Carboniferous Limestone has been found under the bridge on the Gartree footpath and it bears a bench mark (of 117m) (SP 683992). Other igneous rocks, apart from Mountsorrel Granite, are less important. However a large boulder of basalt possibly from the Whin Sill, was discovered in the water garden at Baggrave Hall (SK 699091). It was thought by the locals to be a meteorite and is also known as the "Witch Stone".

Two dolerite boulders known as "Bluestones" are visible at Rearsby and Gaddesby (SK 648145 and SK 688133) and were reputed to have been used by the Wesley brothers for preaching. The one at Rearsby has pyrite crystals, but their place of origin is difficult to discern.

Charnian rocks, mainly coarse breccias and agglomerates have been found, they are rare on the eastern side of the county but are more common on the western side, being near Charnwood Forest.

The Mowsley Stone (SP 648874) is an ashy agglomerate which marks the boundary between Mowsley and Theddingworth parishes.

The second Charnian stone is the Moody Bush (Mowde or Moot) Stone which stands in a field about a quarter of a mile south of The Ridgeway which runs between Syston and South Croxton. The origin of the stone is enigmatic, however it is an angular, rectangular, upright stone of agglomerate and has the word "Moot" carved on it. This suggests it was placed there to mark a meeting place or "Moot" for local people in the past and is therefore probably not a glacial erratic, but a good example of an upright Menhir or "long man" stone.

The latest interesting discovery of a metamorphic erratic was by Rod Branson who found it in a stream bed south of Leicester Airfield (SK 652005) near the lost village of Great Stretton. The Co-operative farm, on whose land it is, excavated it and placed it adjacent to the footpath.

On petrological examination by John Faithfull and Andy Saunders it is believed to be a metabasite of the green schist facies possibly from the Dalradian Series at Loch Fyne in south-west Scotland, or from Norway. It has crystals of amphibolite, chlorite, clinozoisite, talc, leucoxene and scarce albite and apatite.

Porphyritic greenstone (andesite) erratics from the Bardon Hill volcanic complex have been found in a wide area to the south and west of Bardon Hill. In 1874 J. Plant described a section of the 30 foot deep mineral railway line cutting at Hugglescote (SK 425122) near Coalville, which is about two miles from Bardon Hill. The cutting exposed greenstone boulders, some of which were large, i.e. 5 foot across and weighing 10 tons or more, along with other smaller boulders. A number of these large ones were taken to the grounds of Leicester Museum in New Walk (Boynton 2002, p.29), but they have long since disappeared. These greenstone erratics from Bardon Hill have been found as far south as Coventry. One was also found measuring 5ft. x 4ft. x 1.5ft. in the grounds of Gopsall Hall (now demolished) at Shackerstone in west Leicestershire. This was described in the BAAS report for 1875.

Outside the county there are other large erratics also worthy of note. The first is of Croft Monzonite measuring 5 feet wide and weighing 4 tons, at King's Farm, Finham, south of Coventry (SP 326744). It is now an SSSI site and recorded in Warwickshire County Museum archives. The second is a boulder of porphyritic granite from Scotland called the Judith Stone (after William the Conqueror's daughter). It is situated on farmland marking the boundary between Marston Trussell and East Farndon parishes in Northamptonshire, only a short distance from the county boundary with Leicestershire (SP 712860).

The third record (1885) is of a number of very large glacial rafts in southwest Lincolnshire. These were recorded when the London to Edinburgh railway line cutting was excavated at Stoke Tunnel south of Grantham (SK 9528). The rafts consisted of local marlstone.

At Castle Bytham (SK 985183) a raft of the same rock 100 yards long and 12 feet thick was discovered and at Swayfield (SK 995228) a block of cornbrash 200 yards in diameter was described. The railway is not accessible.

#### Conclusions

Many large boulders have long since disappeared. Some have been buried to avoid the plough, some have been transported a short distance for use as mounting stones, meeting places or preaching "pulpits". Now many stones are bought from garden centres for decoration on drives and in gardens. Others have been moved by flood waters away from glaciers and redeposited in gravels which often form cappings on hills or on river terraces and are mixed with cobbles and pebbles of varying sizes and compositions.

Geographical location in Leicestershire is of some importance for the erratic distribution. For example, Jurassic sandstones, ironstones and limestones are more common on the eastern side of the county while there are more Charnian erratics on the west side.

All large boulders are not therefore true glacial erratics, but local historical knowledge has often been very helpful in deciphering the origins of some of them.

#### Acknowledgements

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FIG. 11.

Section through the Cutting and Tunnel, South-west of Great Ponton, on the Great Northern Railway.



FIG. 12.





(Copied, by permission, from the original MS. drawing by Professor Morris.)

13

#### **Captions and Pictures**

1. The Humber Stone - a weathered biotite - Mountsorrel granite.

2. The Buttock Stone, Hoby. Sandstone and conglomerate.

3. Conglomerate outside Mr. Bott's cottage at Great Glen.

4. Sandstone in front of gate house to Garendon Abbey, Shepshed, excavated from the M1 in 1963.

5. Hematite - stained, calcite-cemented coarse sandstone at Nevill Holt near Medbourne.

6. Sandstone outside Ingarsby Hall, north of Houghton-on-the-Hill.

7. Basalt in Baggrave Hall water garden (originally found in a field about half a mile away).

8. Coarse ashy agglomerate marking Mowsley and Theddingworth parish boundaries.

9. Bluestone at Rearsby (a pyritised dolerite).

10. Great Stretton metabasite erratic.

11. Judith Stone between Marston Trussell and East Farndon, Northants. Porphyritic granite from Scotland.

12. Kings Hill, Finham nr. Coventry. Monzonite.

13. Section at Stoke Tunnel near Grantham to show glacial rafts. Reproduced with the permission of the British Geological Survey. NERC all rights reserved.

Helen Boynton

#### Winter Programme 2011

As a sneak preview, here is what we have so far for the Winter Programme for 2011. A full programme will appear in the September 2011 Charnia.

All meetings held at 7.30pm in Lecture Theatre 3, Ken Edwards Building, on the main University of Leicester campus, except where stated. Refreshments served from 7.00pm. Details: Chairman Mark Evans, New Walk Museum, 0116 225 4904

Wednesday October 5<sup>th</sup> Dr Dave Unwin, University of Leicester. Theme: pterosaurs

Wednesday October 19<sup>th</sup> Professor Roger Mason, London. Contact metamorphism in Charnwood, the Lake District and China Wednesday November 2<sup>nd</sup> Dr Matt Friedman, University of Oxford. Theme: fossil fish

Wednesday November 16<sup>th</sup> TBC

Monday November 28<sup>th</sup> Parent Body Lecture, New Walk Museum. Dr Kenneth McNamara, University of Cambridge. The star-crossed stone: the archaeology, mythology and folklore of fossil sea urchins

#### Wednesday November 30<sup>th</sup>

Professor Nick Petford, University of Northampton. Theme: volcanology

#### Wednesday December 14<sup>th</sup>

Christmas Meeting, New Walk Museum



Stop press – Pode Hole 14.5.11 pictures just in

photo Dave Hayward





Two views of the Saturday Seminar on March 19

photos Bruce Smith





Two more shots from the NHM visit

photos Dave Hayward

### Officers and Committee 2011 – 2012

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Field Secretary: Helen Jones, Ashlawn, Forest Drive, Kirby Muxloe. LEICESTER LE9 2EA 0116 2392872 helenjonesx@hotmail.com

**'Charnia' Editor**: Andrew Swift, 208 Milligan Road, Aylestone. LEICESTER LE2 8FD 0116 2833127 swifta@digit-image.co.uk

Publicity Officer: Dr Joanne Norris, 208 Milligan Road, Aylestone. LEICESTER LE2 8FD 0116 2833127 j.e.norris@ntlworld.com

Webmaster: David Hayward, 12 St Helens Close, LEICESTER LE4 0GR (designate) 0116 2622350 david.hayward8@btopenworld.com

Student Representative: David Cavell dec16@le.ac.uk

Committee: Dennis Gamble, Julie Harrald

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