

CHARNIA



Bradgate Park June 20th

photo Roger Latham

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

September 2011

www.charnia.org.uk

Editorial September 2011

Welcome back, I hope you all had a splendid summer, I hear that in the Midlands at least it was the driest January to August since 1976, yet I don't recall that the sun shone much or that it was particularly hot. Might just be me getting old. Whatever, we now have an excellent programme of talks to keep us going through the long winter. The first one is on October 5th, so make a note in your diary.



Sir David Attenborough during his speech

Many of you will be aware that a newly fitted out Dinosaur Gallery at New Walk Museum has been in the pipeline for several years, and also I know that we have badly missed not being able to hold our one or two meetings a year there for a while. The excellent news is that the new gallery is now up and running, with a grand opening on September 2nd. I was lucky enough to be invited, together with some other officers and many others of the great and good, to hear Sir David Attenborough (no less) and Leicester's new Mayor give what sounded to me like genuinely felt speeches before formally opening the gallery by the traditional cutting of a ribbon. Sir David might be now in his mid-80's but he remains as charismatic as ever and was quickly besieged by autograph and photo seekers after the ceremony. And a word for

our Chairman Mark Evans, who as senior curator at the Museum has borne the brunt of the creation of the new gallery and must have been delighted by the response to what is a fabulous series of displays which are a great addition to Leicester's portfolio of attractions. Mark also held his own on the platform amongst the glitterati of other speakers.



Mark Evans on the podium

It was a great pleasure to see that new Charnwood fossil material is on display, especially two jaw-dropping casts of bedding planes covered with wonderfully preserved fossils, not only the familiar *Charnia* species but also other forms. If you see one thing when you visit the gallery, make sure it is these casts. And to put the icing on the cake, the main protagonists involved in the discovery and subsequent elucidation of the *Charnia* story, were present – discoverer Roger Mason with his companion on that great day Richard Allen, Trevor Ford, Helen Boynton and Tina Negus. A super night!

One last thing, we had high hopes of a long weekend to Scotland to go gold-hunting next year, but regrettably, the geologist who offered to lead and set up the trip has withdrawn, leaving us high and dry. So maybe not next year, but certainly such a trip or something equally exciting is still in the forefront of our minds for some stage in the future.

Andrew Swift

Winter Programme 2011 – 12

All talks are held in Lecture Theatre 3, Ken Edwards Building on the main Leicester University campus, except where stated. Refreshments served from 7.00pm
Details: Mark Evans. New Walk Museum, 0116 2254904

2011

Wednesday October 5th

Dr Daniel J. Smith (Geology Dept., Leicester University). **Finding Solomon's Gold**

Wednesday October 19th

Professor Roger Mason (London). **Contact metamorphism in Charnwood, the Lake District and China**

Wednesday November 2nd

Dr Matt Friedman (Earth Sciences Dept., Oxford University). Theme: fossil fish

Wednesday November 16th

Dr Tom Argles (Open University). **What are mountains made of? A Himalayan perspective**

Monday November 28th

Parent Body Lecture, New Walk Museum, Leicester

Dr Kenneth McNamara (Earth Sciences Dept., Cambridge University). **The star-crossed stone: the archaeology, mythology and folklore of fossil sea urchins**

Wednesday November 30th

Professor Nick Petford (Vice Chancellor, Northampton University). **Ash, planes and volcanoes**

Wednesday December 14th

Christmas Meeting, New Walk Museum. In the NEW Dinosaur Gallery

2012

Wednesday January 11th

Dr David M. Unwin (Museum Studies Dept., Leicester University). Theme: Pterosaurs

Wednesday January 25th

Professor Robert Cywinski (School of Applied Sciences, Huddersfield University). **Towards an alternative nuclear future**

Wednesday February 8th

Dr Joe Angseesing (Gloucester). Theme: Brachiopods

Wednesday February 22nd

Member's Evening, New Walk Museum

Wednesday March 7th

Ian Brown (LaFarge Ltd). **Quarrying at Mountsorrel**

Wednesday March 17th

Annual Saturday Seminar, University of Leicester. Theme: Geodetectives

Wednesday March 21st

Annual General Meeting and Chairman's Address
Mark Evans (Senior Curator, New Walk Museum)

Winter Programme Abstracts

Wednesday October 5th

Finding Solomon's Gold

Dr Daniel J. Smith (Department of Geology, University of Leicester)

Global economic woes have seen markets and banks wobble, teeter and fall. Investors have turned to a more reliable (they hope!) place to put their money – into gold. It has bucked the recession, with a price rising to nearly \$2000 per ounce, and demand for the shiny stuff has seen a boom in the mining industry since the major global credit crunch. Unfortunately, gold is not easy to find. It has a low crustal abundance, and even fabulously wealthy geological deposits are hard to find, and it appears, the big deposits are getting harder to find. Exploration success rates have declined since a peak in the mid-1980s, and cost per discovery has risen.

The drive to find “new gold” is encouraging companies to look into new areas in an attempt to discover something bigger and cheaper to mine. The Solomon Islands – long fabled for the King's never-discovered wealth – are one such exploration frontier. The nation is a volcanic arc with a complex geological history, and its closest neighbour Papua New Guinea has world-class gold and copper deposits.

My colleagues and I research volcanic systems within the Solomon Islands, to better understand the geology of the islands, to help provide input into hazard (volcanic eruption, earthquake, tsunami) mitigation, and to understand

how copper and gold deposits might form there. The basic building blocks of gold deposits are there: volcanoes with hydrothermal systems active for long periods of time, altering the rocks and transporting metals around. The complex tectonics – not one but two subduction zones sandwiching the islands – have been important to Papua New Guinea's mineral wealth, so it is logical to assume the Solomons have a geological treasure trove hidden beneath the surface too. My research has identified some tools which may be useful to exploration geologists in the region. The tops of potentially gold-forming volcanic systems may be crowned with relatively mundane travertine deposits, but their chemistry can be used to unravel the history of the system beneath, and provide a window into the formation (or not!) of precious metal deposits at depth.



Wednesday October 19th

Contact metamorphism in Charnwood, the Lake District and China

Professor Roger Mason (London)

Metamorphic rocks can be divided into contact metamorphic rocks, dynamic metamorphic rocks and regional metamorphic rocks. In contact metamorphism the source of the heat is hot magma that has risen from deeper levels within the Earth to form igneous intrusions. The traditional field classification has been neglected during the last 50 years because research has concentrated on experimental methods that provide numerical estimates of metamorphic temperatures and pressures. There is general agreement that influx of heat causes the temperatures of rocks to rise to a peak and then fall, and peak temperature the most important control on the minerals of metamorphic rocks. Composition of percolating fluids is also important and geochemical studies can measure it. Studies of the contact aureole of the Fangshan intrusive complex at Zhoukoudian (Choukoutian) near Beijing reveal complex sequences of mineral growth, reflecting temperature rise and fall and fluid composition changes during contact metamorphism. The classic British contact aureoles of the Cliffe Hill diorite in Charnwood Forest and the Skiddaw granite in the Lake District should also be re-evaluated.

Wednesday November 16th

What are mountains made of? A Himalayan perspective

Dr Tom Argles (Open University)

The Himalaya are commonly held up as the prime example of a collisional mountain belt, and the more they are studied, the more complexity is revealed. This talk will take the materials of the mountain belt as a starting point for delving into current theories on the processes that have formed and re-shaped the Himalaya.

(Dr Tom Argles is a Senior Lecturer at the Open University, who has worked on various mountain belts in the last two decades, but primarily the Himalaya. Currently enjoying a break in research funding, he is trying to make sense of all the data he collected during field seasons in Pakistan, India, Bhutan and Tibet, and is dabbling in GIS (not nearly as wholesome as it sounds).)

Monday November 28th

The star-crossed stone: the archaeology, mythology and folklore of fossil sea urchins

Dr Kenneth McNamara (Director, Sedgwick Museum, Earth Sciences Dept., Cambridge University)



Illustrations from Dr McNamara's talk

On a March day in 1887 the skeletons of a young woman and a child were found on top of a windswept hill in southern England where they had lain in their shallow grave for about 4,000 years. Little would be remembered today about this discovery were it not for one very strange feature of the burial. Nestling close to the very fragile bones were hundreds of fossil sea urchins, each emblazoned by a five-pointed star.

Since that day archaeologists have excavated many graves that contain fossil sea urchins. Such discoveries, along with the recovery of fossil urchins from many other types of archaeological excavations throughout much of Europe, the Near East and northern Africa, have revealed that people have been collecting fossil urchins for an extraordinarily long period of time. Just what did these prehistoric collectors make of them? Sports of the devil? Gifts from the gods? Why did they bother to collect them? And more importantly, what drove them to so often bury them with their dead?

In this talk I will try and answer these questions and explore what Norse mythology tell us about the Vikings' association of fossil urchins with hand axes; why another species of human 400,000 years ago made a hand axe with a fossil urchin in it; why the lives of a Roman Emperor and an ancient Egyptian priest were both touched by fossil urchins; why, 10,000 years ago, people in the eastern Mediterranean region apparently viewed these fossils as fertility symbols; what prompted a Mediaeval church-builder in England to frame a window with a collection of fossil urchins; and why today we are still fascinated by five-pointed stars.

Wednesday November 30th

Ash, planes and volcanoes

Professor Nick Petford (Vice Chancellor, Northampton University)



Nick Petford in Iceland

The April 2010 eruption of Eyjafjallajökull volcano, Iceland, caught world travellers off guard. The aviation industry was worst hit, losing millions of dollars in revenue and insurance claims. But geologists have long known

about the threats of Icelandic volcanoes with 'form' and that future eruptions were inevitable. This talk will explore the reasons why Iceland has volcanoes, how they form, the hazards they pose, and will assess the future impact of a much larger eruption on western Europe.

Field Trip Reports

all by Helen Jones

Pode Hole, Saturday May 14th 2011

A blustery day found eight members on the A47 at Thorney to visit Pode Hole. The name of this quarry had always intrigued me so it was an absolute delight to finally visit it. We met our leader Bill Learoyd assisted by Cliff Nicklin, the quarry manager Mick and his team of three.



The Pode Hole Group

photo Dave Hayward

After a brief introduction Bill led us to the far end of the quarry to look at three facies known as PH-1 to PH-3 that are the subject of a number of academic papers, primarily because of the way they illustrate key features of

glaciation and associated climate change. The deposits illustrated changing energy levels within the fluvial environment with gravel beds typically deposited by braided rivers interspersed with sands and silts. These beds represent some 100, 000 years of deposition; PH-1 Mid Devensian and PH-3 representing conditions of about 38, 000 years and the last cold spell. This is probably the near maximum extent of the glaciers and associated outflows and drainage channels typical of waxing and waning glaciers. We also observed ice wedge casts. Other data from plant microfossils and beetle records support these climatic fluctuations. Crucially the local drainage of the Nene and Welland basins was significantly disrupted and is still the subject of research.



Rhino skull

photo Dave Hayward

Members were lucky enough to find coral, bones and teeth including those of mammoth. The meeting concluded in the quarry offices where Mick showed us a Rhino skull, ammonites (*Peltoceras athletica*), corals and a coquina of belemnites, all beautifully preserved and mounted. The vote of thanks was given and the meeting adjourned at around 3.30 pm.

Lake District Weekend, Friday June 3rd – Saturday June 5th

A trip to the Lake District has been under discussion for years and long awaited, so our weekend there in June was eagerly anticipated and well supported by an attendance of 24 members. Professor Mike Petterson from Leicester University Geology Department was our leader and began proceedings with a presentation on the geology we would see over the weekend in the gardens of the Lutwidge Arms in Holmrook on the Friday evening. Mike explained that much of the geology was mapped as late as 1990, partly in response to the needs of NIREX and in an endeavour to find a suitable site to store nuclear waste. A sociable evening followed in which members shared their experiences of the drive up and an afternoon spent either on the Ravenglass and Eskdale Railway or at Coniston Water.



Nothing like a nice steam train ride on a fine day, in Eskdale

On Saturday morning we drove along the shore of Wastwater and stopped approximately midway to look at the fault on the opposing bank, observing the fault contact between older basaltic andesite and the younger basalt of the Borrowdale Volcanic Group. We then examined the basalt boulders on the

lake shore which were, in the main, conglomerates showing the reworking of the original material in what have been violent episodes. We stood in the shadow of the Scafell caldera, the highest point in England at 978 metres, and adjacent to the deepest lake in England. We examined the rock as we climbed up from the lake shore, beginning by noting the high silica content of the basalt exposed by the lake (up to 50% silica). The climb was through some 100m of lava representing the volcanic history of the area.



We went to some VERY scenic places, this is Wasdale

We climbed adjacent to a dyke that members were encouraged to examine as it cut through the lava, and to identify the exposed pinkish rock. After much discussion it was decided that it was a rhyolite intrusion possibly associated with intrusions in neighbouring Ennerdale. Once the climbing was over we were able to turn and look back at the valley towards the coast; a truly glaciated landscape littered with roche moutonnees and drumlins in a characteristic 'U' shaped valley.

The day ended with a semi-formal dinner at the Lutwidge where the food was excellent and the field secretary, Helen Jones toasted the Society and absent friends.

Sunday found us at St Bees Head examining the characteristic St Bees sandstone, a member of the Sherwood Sandstone Formation. An initial study of the rock indicated that it was poorly cemented and permeable. It is this latter characteristic which makes it a reservoir for gas, with the main reservoirs being exploited offshore. Closer inspection and considerable discussion followed. How was the sandstone formed? Slowly a scenario emerged suggesting an analogy with the Mississippi delta; the flaky rounded grains and rip-up clasts interspersed with silts suggested a volatile regime which alternated from a high to low energy environments, with much reworking. The cross bedding, and dewatering structures were possibly the result of tectonic shaking and liquefaction, as you would find in a seismically active/volcanic zone.



The last day at St Bees

Looking across the Bay from St Bees Head it became apparent that the coastline is linear at this point with faulting perpendicular to the coastline

cutting inland in a NW/SE direction. We also observed the valley of a misfit river, and superficial glacial deposits some 20 metres or so thick. This material was characteristically poorly sorted but showed bands of coarser material. Sand martins had exploited the sandier parts of the diamictite to excavate their nesting burrows.

The weekend concluded at lunchtime and the vote of thanks was given on behalf of the Society to Professor Petterson. Many members stayed on to take lunch in the beachside café.

Bradgate Park, Monday 20th June evening



Bradgate attracted our largest attendance for many years

This was our traditional mid-summer's evening event and a very large group of 37 members and guests turned out for it. The weather forecast inspired hope and indeed, weather-wise, the evening started well. Our leader John Carney of the BGS gave us a brief introduction adjacent to the 'wailing wall' of the toilet block above Hunt's Hill car park.. John pointed out the chemical

composition of the silica-rich granite blocks and, after close inspection, we moved on to the outcrops below Old John Tower.



It became very bleak later, but we had a great outing

John helped us imagine the scene in Precambrian times by suggesting that we were at the distal point of a lava flow from the volcano which is now Bardon Hill standing some 245m above sea level. Subsequent folding and faulting have brought the two sites much closer; in Precambrian times the distance between the volcano and us would have been much greater. Next we looked at the lamination within the rock, possibly representing ash layers or deep water fine grain deposition of some kind. Subsequent dewatering and degassing events have led to contortion of the beds and then, in some cases, folding and faulting have fractured the rock and given rise to clasts which have then been recemented. These rocks dip to the south but strike north east-south west and are known as the Sliding Stones Formation, and outcrop at many points through the park. We followed these outcrops along strike until what appeared to be a fault, picked out topographically as a valley and the

Sliding Stones Formation is offset by some 100m. Again the Sliding Stones offer some intricate evidence of dewatering/degassing and folding and faulting on a relatively small scale.

The weather began to deteriorate and waterproofs were donned as we moved to Bradgate House to look at the South Charnwood Diorite. As the evening came to an end we defied the gloom and drizzle to examine the fossil localities. This was very well received as these fossils are amongst the oldest in the world and they belong to Leicestershire! Field Secretary Helen Jones thanked the leader for what was an excellent and informative evening and the excursion ended at approximately 9.30 pm. We walked back through the gloaming and made it to our cars shortly before a series of torrential downpours descended. Good timing!

Welton-le-Wold, Saturday 9th July 2011



The party pauses to examine a large erratic boulder photo Dave Hayward

On Saturday 9th July six members and friends met in the disused quarry owned by Simon who was soon on hand to introduce himself. He explained

that he was carrying out a 'Fox Run' so it would be helpful if we could dodge the bullets! Our leader Helen Gamble of the Lincolnshire Wildlife Trust then gave us some of the geological background to the area, namely that this is the maximum easterly extent of the ice sheets and glaciers. To this end we first visited 'Erratics Corner' and examined boulders of granite and chalk, the former clearly showing striations caused by the ice movement. We then moved on to examine the quarry face noting the outflow gravels and ice wedges.



The party at the conclusion of the excursion

photo Dave Hayward

Crossing the infill, now a meadow, we had ample time to examine a variety of orchids including a Speckled Southern Marsh. Indeed, the surrounding meadow and woodland were buzzing with insect life and loud with birdsong. I nearly stepped on a nesting pheasant! Lunch was taken at the local pub and beer was sampled as well as excellent coffee.

We then went across the road to further examine the remains of what must have been terminal moraine and outflow activity. Here some fossils were found, mainly of marine origin, but generally pickings were sparse. We spent some time discussing what the finds told us about the direction of ice flow.

At the conclusion of the trip the Field Secretary thanked Helen and said how much we appreciated her stepping in to lead us when John Aram was incapacitated. Members returned to their cars and the meeting was adjourned at around 3.45.

Must Farm, Whittlesey, Saturday 16th July

Saturday 16th July found us in Must Farm Quarry under the leadership of Cliff Nicklin, by kind permission of Hanson Brick. The Company representative explained that Hanson are in the process of rationalising their operations and this may be our last opportunity to visit. This was a joint visit with members of Stamford Geological Society, all well kitted out for the weather and for carting significant finds out of the quarry.



The rain cannot be seen, but it was hell in there!

photo Joanne Norris

The rain started gently as we walked through the Oxford Clay, the forecast had been grim and sure enough when we reached the bottom of the pit the heavens opened. When are waterproofs not waterproof? However we are made of sterner stuff - at least before midday we are! Finds, although not plentiful, consisted of pleiosaur teeth, scales and bone. Invertebrates included

gastropods, *Gryphaea*, ammonites including *Kosmoceras* and various brachiopods.

The water began to trickle down the back of my neck and my waterproof trousers failed so I ate my lunch in the hope of becoming re-enthused but alas time was called just after midday and a brief but drenched thank you was said to Cliff and Hanson.

Postscript. Subsequently, Cliff generously invited us to a second visit on Saturday 3rd September, when the weather was much kinder!

Cleeve Hill, Saturday 13th August

On an overcast but warm day just four members assembled in the layby close to the Rising Sun (where we later parked as patrons) and were introduced to our leader Joe Angseesing who presently led us up the small lane adjacent to the Rising Sun. Taking the right hand fork we surveyed the panoramic views of Cheltenham looking towards the Malvern Hills and the Forest of Dean.



One of the innumerable small quarries on Cleeve Hill

photo Dave Hayward

Our first stop was the southern end of the main South Scarp to examine the Lower Freestone and Pea Grit of the Lower Inferior Oolite; with pisoids and

oids evident in the latter. We backtracked north along the scarp to an outcrop of Cleeve Hill Oolite, this is an orange coloured sediment unique to Cleeve Hill and equivalent to the coral beds elsewhere. Some good finds were made here including a fist-sized symmetrical echinoid by myself and the bivalve *Osteomya sp.* and bryozoan *Diastopora sp.* Next stop was Castle Rock where the Oolite Marl is faulted against the Lower Freestone moving up through the series of the Lower Inferior Oolite of the Middle Jurassic. Finds here included the brachiopods *Stiphrothyris*, *Plectothyris fimbria* and the bivalve *Gresslya abducta*. Lunch was taken at the Rising Sun where we had panoramic views of the Severn valley.



Joe Angeseing points out an interesting feature

photo Dave Hayward

After lunch we set out again this time eastwards across the golf course towards the small Old Bell Pit where the Harford Sands meet the Lower Trigon Grits, the basal bed of the Middle Inferior Oolite. These old sand quarries are fossiliferous and many finds were made including the eponymous trigonia and the bivalves *Pholadomya fidicula*, *P. lirata*, *Pleuromya subelongata*, *P. uniformis*.

Whiteways Quarry was my favourite, with a fault beautifully picked out by the different coloured lithologies. Many fabulous examples were collected here with the specimens just sitting either in the base of the quarry or in the walls loose and beautifully preserved. The two adjacent quarries Pot and Rolling Bank move the strata of the Middle Inferior Oolite; the Gryphite Grit, Notgrove Freestone and Bourgetia Beds in Pot Quarry up into the Phillipsiana Beds, Upper Trigon Grit and Clypeus Grit exposed in Rolling Bank Quarry. Whilst, for collectors this meant scaling some quite steep walls the specimens were worth it, although at one time I thought Dennis Gamble would slip onto Mike Howe and both slide into Joe! It was entertaining to watch whilst I ate my tea. Finds here were good and included the annelid *Sarcinella socialis* and the bivalve *Gresslya abducta* in Pot Quarry and in Rolling Bank Quarry the brachiopod *Monsardithyris buckmania* and the bivalves *Homomya sp.* and *Pleuromya uniformis*.

All of us enjoyed the entertaining and informative company of Joe and I thanked him. Joe has agreed to speak during the winter programme, so watch this space.

An early geological map of part of Charnwood Forest

by Dennis Gamble and Trevor Ford

During salvage of part of the teaching collections of the defunct Geology Department of Wigan Mining & Technical College a hand-drawn and hand-coloured geological map of the northwestern corner of Charnwood Forest came to light and is reproduced here as a matter of historical record.

The area was mapped by Drs Bernard Stracey and Frederick Bennett before World War I. There is a pencilled note in the margin "from Dr Bennett January 1917", presumably dating from when he donated it to the Wigan Mining College but it is not known why he did so. A much reduced black and white version was published in the report of a 1911 excursion in the Proceedings of the Geologists' Association. The coloured map is 45 x 41 cm whilst the reduced version is only 12 x 10 cm.

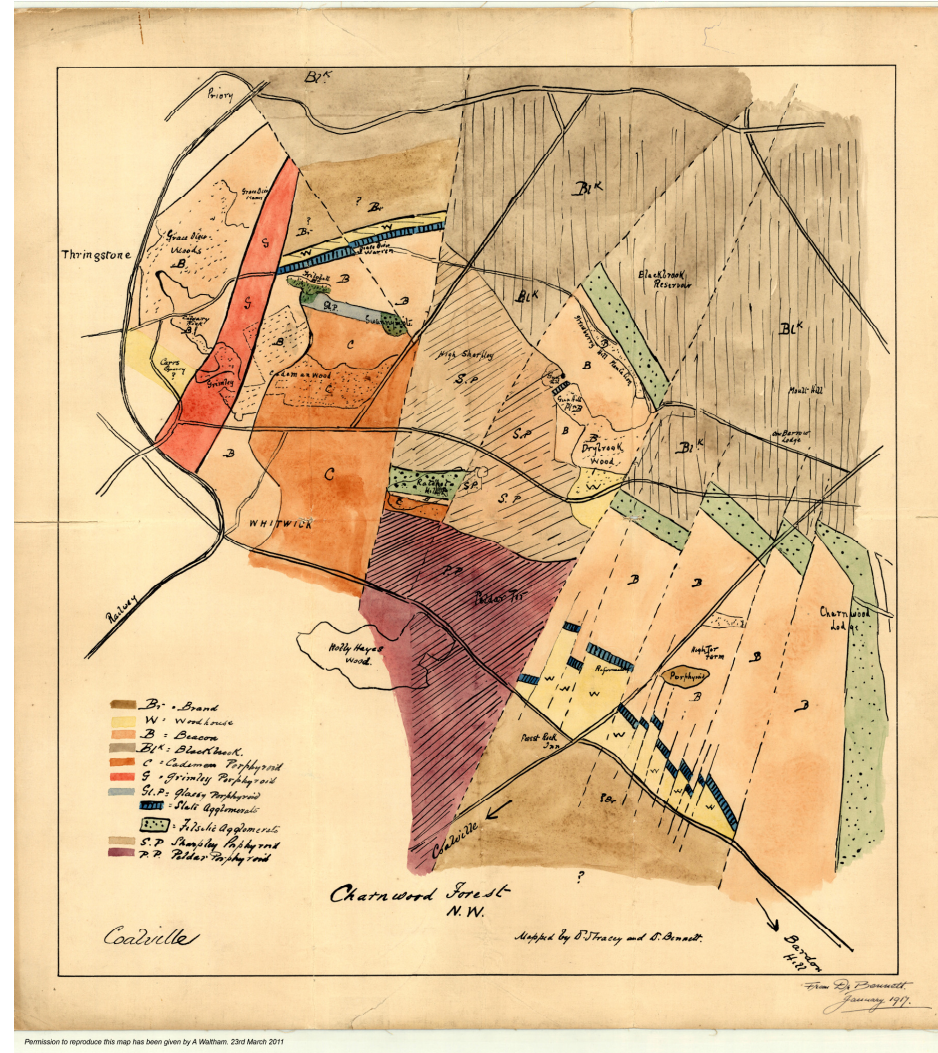
Drs Stracey and Bennett may thus be deduced to have done their mapping before 1911. Watts had mapped Charnwood a few years earlier, c. 1896-1900; he gave a short account of the geology in the Geologists' Association Jubilee Volume of 1910 (enlarged but not fully updated in his book of 1947). However, Stracey & Bennett's details of the geology differ considerably from Watts' map in that the shape of the outcrops is different and there are many

more faults, particularly in the Warren Hills area. The Whitwick Quarry is not shown on Stracey & Bennett's map; only a small Carrs Quarry appears near Thringstone, within an outcrop of hornfelsed Woodhouse Beds. Though not depicted on the map, the Peldar Tor quarry is mentioned in the GA excursion report, which is mainly concerned with the petrology and origin of the igneous rocks, then described as various types of "porphyroid". The GA members seem to have been uncertain as to whether they were extrusive lavas or intrusive sills or both. Watts (1910) thought that the porphyroids had been intruded into agglomerates with resultant mixing. Bonney (1915) regarded the porphyroids as pyroclastic flow breccias, i.e. extrusive. Bennett, together with Lowe, Gregory and Jones, provided a somewhat different map of the whole of Charnwood Forest in 1928. Re-mapping by the British Geological Survey in the late 20th century indicated that Bardon Hill consisted of andesites and dacites, variably massive or intensely brecciated, sometimes porphyritic, interpreted as volcanic domes emplaced at a shallow depth (Worssam & Old, 1988). The volcanic processes resulting in a similar complex near Whitwick were described by Carney (2000). The current Bardon Quarry is just off the southern edge of Stracey & Bennett's map and was not visited on the GA's 1911 excursion. Both complexes are depicted on the Charnwood Forest Special Sheet (Ambrose et al. 2007).

Though shown on the Stracey & Bennett map, the faults were barely mentioned in their GA excursion report. Local offsetting of the Slate Agglomerate by close-set faults was deduced from dislocations along the outcrop along the Warren Hill but other faults were concealed by Triassic and Pleistocene deposits and were inferred by mis-alignments between outcrops of distinctive rock types.

Stracey and Bennett were both medical men and geology was their hobby: they are not known to have had any formal training in the subject. Stracey (1874-1944) was born in Edinburgh and was in Leicester by 1899. His speciality was in psychiatry and he published on the subject as early as 1901. He was also known as "the shell man" and contributed to the Journal of Molluscan Studies. He lived at 16 New Walk. During World War I he was surgeon Lieutenant in the 5th Northern General Hospital, later the Field Johnson Building of the University of Leicester. As his name does not appear in any post 1918 literature he may have left the area. He died in Switzerland in 1944, presumably isolated there during World War II. Bennett (1862-1930) was born in Leicester and was a leading medical practitioner and surgeon in the city, living on Regent Road. Amongst the founders of the University of Leicester, his name is perpetuated in the Bennett Building and

Chair of Geology. Bennett *et al.* published their own map in 1928. Both Stracey and Bennett made numerous thin sections of Charnwood rocks and some of these were donated to Leicester City Museum where they remain to this day.



The map

Stracey and Bennett published other notes on Charnwood geology, some jointly (1906-7) and some independently. Both their mapping and Watts' was

done long before the development of the modern Bardon Quarry which would have thrown light on the interpretation of the geology.

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In the heart of Bradgate Park in June

photo Roger Latham



The party looks across to the face at Welton le Wold in July

photo Dave Hayward

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