CHARNIA

LEICESTER

LITERARY AND PHILOSOPHICAL

SOCIETY

THE NEWSLETTER OF

SECTION C (GEOLOGY)

AUTUMN 1996

Geology Section *(Leicester Lit & Phil)*

Winter Programme 1996/7

1996 ***Oct 2nd*** **Dr R (Bob) King *(President)* 'The Caldbeck Fells of Cumbria'**
Joint meeting with the Russell Society

Oct 16th **John Cooper (Booth Museum, Brighton) 'Some Geological & Historical Perspectives on Gideon Algernon Mantell (1790 - 1852) : Wizard of the Weald and Doctor of Dinosaurs'**

Oct 28th (Mon) Joint Parent Body Meeting at the New Walk Museum
Dr Peter Skelton (Open University) 'The Flatulent Cretaceous World'

Oct 30th **Dr Tony Waltham (Nottingham Trent Univ) 'Katmai and St Helens'**

Nov 13th **Dr Sarah Gabbott (Leicester Univ) 'Secrets of the Soom'**

Nov 16th (Sat) Joint Meeting with Yorks Geol Soc/EM Geol Soc (2 - 5 p.m.)
'Mudrocks: from sea floor to brick wall'

Nov 27th **Dr Kip Jeffrey (Leicester Univ) 'Gemstone Deposits'**

Dec 11th **Xmas Members Demonstration Meeting (BYO)**

1997 ***Jan 15th*** **Dr Gordon Chancellor (Peterborough Museum) 'Recent Vertebrate Fossil Finds from the Peterborough Area'**

Jan 29th **John Crossling (Warks Geol Conserv Soc) 'Geological Site Conservation in Warwickshire'**

Feb 12th **Members Evening (Slides)**

Feb 26th **Dr Peter Maguire (Leic Univ) 'Chicxulub - the end of an era'**

Mar 8th (Saturday School, Vaughan College)
'The Quaternary: old problems, new perspectives'

Mar 12th **A G M and Chairman's address 'Bringing Dinosaurs to Life'**

Unless otherwise stated, all meetings are at 7.30pm (7pm for coffee), and in the Geology Dept., University of Leicester

Katmai and St Helens

Oct 30th

Both these andesitic volcanoes, on the Pacific Ocean margin of North America, have produced dramatic and violent explosive eruptions within this century. Both are now quiet, but they provide some of the most dramatic sites for an itinerant geologist. The lecture illustrates the main features still to be seen of the blast zone and crater from 1980 at St Helens and the Valley of Ten Thousand Smokes and caldera from 1912 at Katmai.

Dr Tony Waltham is senior lecturer in engineering geology at Nottingham Trent University. He spends most of his vacation time travelling to distant lands which have anything of geological interest; these travels have included cave exploration and karst research (to places like China and Nepal), and guiding geological tours (to places like Alaska and Hawaii).

Joint YGS/EMGS/LLPS(C) Meeting
16th November 1996 The meeting will be held in Lecture Theate 1 in the Bennett Building.

John Crossling
Head of Curatorial Services and Keeper of Geology

Jan 29th

My talk will look at the work of the Warwickshire Geological Conservation Group, the sites that the Group has notified as RIGS, successes, failures and possible future developments.

As for myself, my title is Head of Curatorial Services and Keeper of Geology at Warwickshire Museum. I have held this post for eleven years and before that was keeper of Natural History at Derby Museum. I originate from Stockport, Cheshire. I had decided I wanted to work in Museums as a teenager and became interested in geology shortly afterwards. I did a geology degree at Derby College and took a post graduate certificate in Museum Studies at Leicester University. Along the way I developed a keen interest in the decorative use of stone - Blue John, Ashford Black Marble etc. whilst at Derby and in site conservation at Warwick. I am a great believer in breaking down the barriers between subject areas to demonstrate the inter-relationships.

AN IMPORTANT MESSAGE FROM YOUR COMMITTEE

Field trips

This last field season has seen a drastic falling-off of attendance by members of the section on field excursions. Attendances of 2, 3 and 6 (the maximum!) have left your field secretary, chairman and other committee members with very red faces and sometimes irate leaders to pacify. Leaders come (sometimes from distance) in their own valuable free time and behind the scenes there is considerable hard work involved in arranging and running these trips. This has so far been wasted. The last committee meeting saw a long and inconclusive discussion on the reasons for lack of support, and we felt our best course of action was to ask you directly what the problems are. Consequently, in the near future you will be receiving a brief questionnaire in which you can air your grievances and/or tell us what can be done to remedy the situation. It may be you have objections to the locations chosen, or perhaps the timings or publicity, but please do let us know by filling it in. For most people field excursions used to be one of their main reasons for joining a geological group, and we are very concerned as to their lack of popularity in Section C. Needless to say, the inevitable result of continued non-attendance will be suspension or possibly even longer term cancellation of field programmes.

Andrew Swift, on behalf of the Committee, 5/9/96

What's new at Bardon? by M.J. Le Bas

The sun shone that Sunday morning, 12th May, as eight participants gathered by the weighbridge at the entrance to Bardon Hill Quarry, Coalville and were made welcome by the quarry manager Kevin Lee. He conducted us, in a short convoy of three cars, down to the lowest level in the southwestern part of the quarry, showed us where a newly exposed horizon of coarse breccias occurred at the top of the less coarse-grained volcanic breccias and tuffs, pointed out how to get the cars and ourselves to the other side of the quarry (up that slope; between the stock piles; past the primary crusher; bear right and go a bit further), and wished us well. What a splendid and kindly introduction!

Previous writings had suggested that the coarse breccia here might be correlated with the Slate Agglomerate of Watts (= the Sliding Stones Slump Breccia), but it was seen to be quite different. It is a breccia of mixed dacitic rock types, some fine, some coarse, most angular, some rounded, some big and more small; i.e. a mixed bag of rock types such as might occur as fall-out close to the eruptive site of some violent volcanic explosion. On the far side, pristine porphyroids (=porphyritic dacites), flow-banded dacites, dacites breccias and tuffs, some with what was interpreted to be water-lain graded bedding, whiled away the time until hunger drove us to The Birch Tree. But the bars there were submerged by beefy folk in red and white strip; apparently Stoke City were playing Leicester that afternoon, however food and sustenance were obtained.

After driving two separate and circuitous routes [we got lost], the party miraculously regrouped at Cademan Wood. We saw lots of epidote in very porous and feldspar-rich dacitic tuffs. The possible bedding in these cleaved and well size-sorted tuffs was discussed, but the depth of lichen on the outcrops and an agreed disinclination to hammer the outcrops forced a retreat.

Next stop was Spring Hill where we scrambled uphill through the woods to the west of Peldar Tor Quarry. In the woods, the outcrops were of a well size-sorted crystal lithic tuffs with fragments no bigger than 1 cm across. On emerging from the woods, there lay Peldar Tor Quarry at our feet - a most impressive and precipitous hole in the ground with a deep Triassic wadi at its northern end. Boulders marking the perimeter of the quarry provided excellent examples of the Peldar Tor porphyroid; they were indistinguishable from the dacites seen that morning in Bardon, except that many included autoliths of a pinker porphyritic dacite.

The Warren Hills were the last stop of the day. Fine-grained and well-sorted crystal tuffs with doubtful bedding (water-lain?) were seen in the crags to the southwest, but on traversing northeast the tuffs first became coarser, then

changed to massive porphyritic dacite traversed by fine-grained dark material, the whole being interpreted to represent the outer parts of a dacite dome (the High Tor dome) that had spalled off but not completely detached blocks 30-40 cm across inbetween which fine tuffs had settled. A further 200 m to the NE and we were on breccias with huge (half metre) blocks, akin to the 'bomb rocks' of Charnwood Lodge which could be seen in the distance only 500 m away. Hours could have been spent looking at the variety of tuff and breccias types present on these hills, but we did speculate on how they might have been related to volcanic caldera-forming processes close by.

A collection made at Bardon of apparently water-lain sediments will be exhibited at the next Members Evening, and members may be interested to read about the Bardon-Whitwick volcano in the Trans. Leic. Lit. Phil. Soc. for 1996.

Notice of Special General Meeting

The committee have called a Special General Meeting at 7.30 p.m. on **Wednesday October 2nd 1996.** ***This will be a short meeting before the talk by our President, Bob King, to consider the following:***

The committee have nominated Andrew Swift for the position of Vice-chairman ***(at present vacant).***

SECRETS OF THE SOOM

By Sarah Gabbott

The Soom Shale is a black mudstone of Upper Ordovician age which outcrops in the Cape Province of South Africa. It preserves not only the hard parts of organisms, for example shells, but in addition the soft tissues from several taxa. Soft tissue preservation yields a wealth of information about ancient organisms that could simply not be obtained from their hard tissue remains alone. The soft tissues of organisms decay very quickly upon death and are lost unless they are replaced and replicated by minerals. Calcium phosphate is the most common mineral that replaces soft tissues; e.g. in the famous Cretaceous Santana Formation from Brazil. However, in the Soom Shale the soft tissues have been replaced by clay minerals and this mode of preservation is unique.

Sea scorpions (eurypterids), conodonts (the earliest vertebrates) and many enigmatic, Burgess Shale-like fossils occur in the Soom Shale with their soft parts intact. In some cases the level of preservation is so exceptional that muscle fibres, fibrils and subcellular structures can be observed. The shelly fossils from the Soom Shale are no less interesting. Brachiopods are always found colonizing orthocones (primitive straight-conched cephalopods) and this indicates that bottom water conditions were on the whole inimical to benthic life.

In the last field season a foot long enigmatic fossil was discovered from the Soom Shale. It seems to show characteristics of both arthropods and annelids. Indeed, this fossil may be like many of the Burgess Shale fossils that are so enigmatic that they are without a taxonomic home.

Dr. Sarah Gabbott
I graduated from Southampton University in 1992 with a BSc in Geology, after which I came to Leicester to study the palaeontology, sedimentology and geochemistry of the Soom Shale in South Africa at postgraduate level. I gained my doctorate in June this year and am now employed as a postdoctorate researcher at Leicester University. My main area of research is the Soom Shale. In all I have collected from the Soom Shale for 4.5 months. I returned from my last field season in late June.

LEICESTER LITERARY & PHILOSOPHICAL SOCIETY

GEOLOGY SECTION

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