



NEWSLETTER NO. 96 DECEMBER 1992

Lecture meetings are held at the Saracens Head, Stone Street, Dudley, 7.30pm for 8 o'clock start

The Society does not provide personal accident cover for members or visitors on field trips. You are strongly advised to take out your own personal accident insurance to the level you feel appropriate. Schools and other bodies should arrange their own insurance as a matter of course.

The Black Country Geological Society

FUTURE PROGRAMME

MONDAY 7TH DECEMBER.

Lecture: "Lessons from the fossil record" by Dr. Alan Thomas of Birmingham University.

This lecture will describe not so much fossils themselves, but what fossils tell us about conditions at the time, and about the history and development of life throughout geological time. It will cover fossil preservation, including the preservation of soft-bodied fossils which is generating so much interest at the present time, and will outline the patterns of extinction and evolution as revealed by the study of fossils.

Alan Thomas is in the School of Earth Sciences at Birmingham University. He has made a special study of fossil preservation, and has worked on the remarkable soft-bodied fossils from the Burgess Shale in British Columbia, which are revealing a great deal about the development of the first primitive forms of life at the end of the Pre-Cambrian.

MONDAY 18TH JANUARY 1993.

Two half-lectures on a single theme:
Black Country Geology - The Other Legacy.

Joint presentation by Graham Worton (Johnson, Poole and Bloomer, Geotechnical Engineers) and Stuart Homer (Black Country Development Corporation).

The theme of this presentation will be the reclamation and restoration of land in the Black Country following centuries of use by industry and for mineral extraction.

Graham Worton will describe the detailed processes of investigation to establish the condition of a site - what pollutants are present, is the land stable or are there underground workings etc? Then he will cover the various actions that can be taken to make it safe and reclaim it - stabilising, digging out, burial, soil washing - and describe how these are carried out in practice.

Stuart Homer will deal with the overall picture, looking at the general use of land, dealing with planning issues, and covering the general land reclamation strategy - so that the BLACK COUNTRY BECOMES GREEN AGAIN!

Graham and Stuart are both members of this Society.

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MONDAY 22ND FEBRUARY 1993. 7.45p.m. ANNUAL GENERAL MEETING (see notice in this newsletter). All posts of officials and committee members are up for annual election. Any nominations for election should be given to the Secretary or can be declared at the AGM.

Followed by a talk "The Falkland Islands" by Sheila Pitts.

Sheila Pitts writes: "This illustrated talk is the story of an 18-day journey alone, several months ago, visiting most of the major islands. The islands are wild, beautiful and remote, with an equivalent population to The Scilly Isles in an area the size of Wales. The geology is well shown in the coastal scenery, but most of this is sat upon by penguins, other birds and wildlife, and the slides will show this."

Sheila is, of course, one of our own members. She is much-travelled, and has given several talks to the Society on her overseas trips, including ones on Argentina, New Zealand and Kenya, illustrated with slides and maps. Now we can look forward to hearing (and seeing) about the Falkland Islands.

MONDAY 29TH MARCH. Lecture: "The Geology and Mineralogy of Leicestershire" by Dr. Frank Ince (The Russell Society).

This lecture will describe some of Leicestershire's geology and in particular will deal more extensively with its mineralogy. Leicestershire has a surprising variety in its geology, and includes the geologically important Charnwood Forest in its area, so there is a wide range of mineral interest. Dr. Ince will also be bringing along a selection of mineral specimens (with labels!) for members to examine.

DR. INCE is a member of the Russell Society, which is the country's leading society specialising in topographical mineralogy. He will also be leading a field meeting for us in the summer to the same areas, so this lecture and the field meeting will complement each other.

SATURDAY 3RD APRIL. Guided visit to Lapworth Geology Museum, Birmingham University.
Presented by Dr. Paul Smith, Curator.

Meet 10.00 a.m. at Lapworth Geology Museum, School of Earth Sciences, University of Birmingham, Edgbaston, Birmingham. Use the entrance from the Campus Ring Road. DO NOT use the entrance near the Clock Tower as it may be locked on a Saturday morning.

The Lapworth Geology Museum at Birmingham University has been nominated by the Government as one of five national geology collections (the others are Cambridge, Oxford, Glasgow and Manchester). This was chiefly because of the excellence of its collection and as a result it has received extra funding for Museum staffing, and for storage and cataloguing facilities.

Dr. Paul Smith was appointed to the academic staff as Curator in 1990 to implement these developments. He will give Society members a guided tour of the collection, and will also bring out specimens not normally on display.

The visit will last about two hours.

MAY - Field meeting to be advised.

FRIDAY 11TH - SUNDAY 13TH JUNE. Birmingham University School of Continuing Studies weekend field meeting to Castleton, Derbyshire.
Leader: Dr. Derek Gobbett.

This weekend will study "tropical reefs and deltas" of the Carboniferous period. One day will be spent on the Carboniferous Limestone (limestone shoals and reefs, with the added interest of some volcanicity). The other day will be on the deltaic deposits of the Millstone Grit, which now outcrop as spectacular gritstone edges.

Accommodation at Peak National Park Centre, Losehill Hall, Castleton, Derbyshire. Cost (tuition and full board) £129.

This is NOT a BCGS event, but is organised by Birmingham University, School of Continuing Studies. It is led by Dr. Derek Gobbett, who is a Society member.

Details and bookings: The Enrolment Secretary,
 Residential Courses and Study Tours
 School of Continuing Studies
 University of Birmingham
 Edgbaston
 Birmingham B15 2TT
 'phone: (021) 414 5605.

MONDAY 14TH JUNE. Lecture: "The Grand Canyon" by Dr. Trevor Ford of Leicester University.

SUNDAY 18TH JULY. Field meeting to Clee Hills. Leader: David Gossage.

SATURDAY 17TH - SATURDAY 24TH JULY. International Conference on Geological and Landscape Conservation. At Malvern. The conference will offer lectures, discussion and poster sessions, and exhibitions by sponsors. Also a wide choice of field trips in England and Wales is planned.

Details from: Margaret Phillips, The Company, St. Johns Innovation Centre, Cowley Road, Cambridge CB4 4WS. 'phone: 0223 421124.

ADVANCE NOTICE

29TH AUGUST - 3RD SEPTEMBER. British Association for the Advancement of Science. 1993 meeting at Keele University.

EDITORIAL

1992 has been an exciting and successful year for the Society. The programme suggests there is much to look forward to in 1993. The last time we visited the Geology Museum at Birmingham University was a great success. If you have not been before, do not miss this opportunity to visit. It has a marvellous collection. Our programme contains armchair travels from the Falklands to North American deserts, and field trips locally and possibilities abroad. In addition, speaking personally, the Society is a great way of making friends.

To all friends old, new and those still to be met,
A Merry Christmas and a Happy New Year.

REPORTS

Field Excursion to the Church Stretton area.

On Sunday 20th September the Shropshire and Black Country Geological Societies assembled at the Church Stretton car park for a 10 o'clock kick off under the

able leadership of Dr. John Moseley. The weather improved as the day progressed.

The first port of call was the world famous Comley Quarry where Cobbold established an accurate Cambrian stratigraphy. The western face of the quarry is of Lower Comley sandstone, a green glauconitic sandstone with an easterly dip of about 70°. These Cambrian strata were laid down during a marine transgression from the west. They are shallow water marine sandstones and limestones containing trilobites. The presence of glauconite in the sandstone is indicative of a marine deposit.

Moving eastwards across the quarry there is an unconformity between the Lower Comley Limestone and the Upper Comley Series, the lower part of which is seen in this quarry. It is a dark phosphatic layer with calcite and Middle Cambrian trilobites.

We then proceeded in a easterly direction and uphill to Hoar Edge. Here there is the northern outcrop of Hoar Edge Grit, a coarse sandstone with well rounded sand grains, pebbly at the base, of the Caradocian or Upper Ordovician. It represents a transgressive sand deposit. Some specimens which demonstrated slickensides were collected.

We then proceeded by car to Hope Bowdler where a road-side plaque indicates a major unconformity. The Upper Ordovician Harnage Shales rest on the Precambrian Uriconian volcanics, i.e. the Precambrian Longmyndian, Cambrian and most of the Ordovician are missing.

A ten minute walk uphill brought us to an exposure of andesite of the Uriconian volcanic complex. Vesicles were seen, some of which contained amygdales in the dark grey andesite that turned brown on weathering. We then returned to Church Stretton for lunch.

Elizabeth Calcott.

After an extremely pleasant lunch stop, we dragged ourselves away from the local hostelry and headed uphill onto the edge of Long Mynd. Along the Burway Road and in a building site there is good exposure of the Stretton Shales. They are pelites probably abyssal in origin, but of more interest is their subsequent deformation.

In the lower part of the horizon the structures were limited to localised renulations and kink-bands but as we moved uphill in the younging direction the picture became more complex. Well-formed slaty cleavage was evident, as was vertical faulting, along with more intense kink-bands, often haphazard in orientation. Although there was much variation, the overall dip of bedding appeared to be approximately horizontal, and this intense deformation may well be a result of thrusting rather than slumping. Certainly the evidence observed at this site seemed to point towards a tectonic origin.

The building site also showed good examples of fault zones and fault breccia, in addition to an irregular intrusion of dolerite which had faulted contacts with the surrounding shales. Unfortunately this site will soon only be observed from someone's lounge window!

From this point a clear view of the valley could be seen and we were able to observe how the vegetation on the hillsides reflects the underlying geology.

Continuing uphill (only to go immediately downhill of course) we found ourselves enjoying the sunshine at an exposure of the Buxton Rock, a stratigraphic marker between the Stretton Shales below and the Burway Formation above. It was pointed out that because much of the rock is very similar in these sequences, horizons like this are of essential importance in correlation between sites.

It is a silicified rhyolitic dust tuff derived from the other side of the Church Stretton valley and settled through water. Other stratigraphic markers include conglomerates and further tuffs.

We then moved up into the Burway Formation itself, a turbidite sequence of shales and mudstones in which bedding plane slip was visible.

Aileen Healey.

Finally, we drove to the summit of the Long Mynd and saw the Stanbatch conglomerates with pebbles of Uriconian and metamorphic origin embedded in a purple sandstone. They are interpreted as flood plain deposits of a braided river. The pebbles showed some alignment in the plane of cleavage.

The drive down from the summit was spectacular. Our thanks go to the Shropshire Geological Society for organising such a good day and to Dr. Moseley for his exposition and excellent handout.

K. M. Ashcroft.

'Blue John Fluorspar' - Lecture by Dr. Trevor Ford on 12th October 1992.

Trevor Ford is well known to the B.C.G.S. for his several previous talks and for his caustic wit, much evident on this occasion.

The mineral fluorite (calcium fluoride) is widespread but the variety Blue John with its attractive blue and white banding is known only from the vicinity of Treak Cliff near Castleton in Derbyshire. A limestone reef was uplifted in Carboniferous times opening up fissures and boulders of fallen material accumulated against its slope. The resulting voids became sites of mineralisation from hydrothermal fluids when the reef was later deeply buried. As well as infilling voids fluorspar evidently replaced limestone on the edges of boulders since patches of unaltered limestone and fossils can be found within Blue John. The last mineral to be precipitated was often calcite, typically found at the centre of veins surrounded by fluorspar.

The cause of the colour banding has been much debated. Organic matter has been suggested since crushing Blue John will liberate a small quantity of bitumen. No per banding can be produced in colourless fluorite by irradiating it (the same effect occurs in common salt), and it is now believed that the passage of light is disturbed by dislocation of the cubic crystals by radiation. Nearby shales contain uranium and could have contributed this in addition to hydrocarbons to a migrating mineral-rich fluid. Slow crystallisation would have resulted in the trapping of plentiful Uranium-bearing hydrocarbons and a darker colour while a faster rate would give a lighter colour, hence the banding is due to varying rates of precipitation. Fluid inclusions show the liquid to have been slightly saline with a temperature of 70-80 degrees C. This suggests a depth of burial of 2 - 3km.

Mining was carried out by inserting wooden wedges which swelled in moisture and dislodged the Blue John without causing excessive damage along cleavages planes. It was heated and impregnated with resin before being turned on a lathe or ground with carborundum and polished to create the desired ornament. Large vases were built up in several sections pinned together.

Tradition has it that the Romans used Blue John. However there is no evidence for it having been worked in Britain before the eighteenth century. Documents suggest that Roman pieces came from the region that is now southern Iran. Trevor Ford has been writing to Iran for twenty years to see if there is a source there but so far there has been no reply. Reputed specimens at Pompeii

have turned out, on examination, to be amethyst. So the earliest reliable date is 1750 when Matthew Boulton is known to have used it in vases. Some of these were sent to France for gilding and it is possible that the French description 'bleu et jeune' became anglicised to 'Blue John'. It became a fashionable material for fireplaces and ornaments in stately homes, notably Chatsworth House, but the largest collection is at Lauriston castle near Edinburgh. With the decline of gracious living demand from stately homes has fallen and the use of Blue John is now restricted to repairing of damaged vases and making small items of jewellery.

Nigel Bradley.

Sunday 18th October. Field Meeting to Hayhead Limestone Mine and Quarry and Barr Beacon

A very large party gathered at Hayhead Nature Trail to meet founder member, Peter Whitehead, who led us in search of old limestone quarries on a delightful autumn day. The inlier here provides the largest outcrop of Silurian rocks in the Black Country owing to the shallow dip of 8-9°. The rocks are of the western limb of a gentle fold whose central axis coincides with the Eastern Boundary fault. At Hayhead lies the base of the Wenlock Shale and underlying it the Barr or Woolhope Limestone.

It has been suggested that the Roman buildings at Wall have limestone from Walsall but most of the limestone workings date from the Industrial Revolution.

Following alongside the canal we found industrial remains which could be a furnace as there was furnace slag nearby. The limestone had many uses including stucco used by local builders. The remains of mine buildings could be seen, the shafts having led to the underlying Barr limestone. The bricks of an engine house with iron structures may have housed the steam engine which pumped water from the mine. Adrian Collings was able to provide details of findings of underground geology as a result of recent survey work and the visit provided ample scope for geological discussion.

As we walked east we moved on to the Barr limestone. We passed into a broad shallow trench following the strike of the limestone. The mature woodland was beautiful in the autumn sunshine. The top of the Barr limestone has a 30% limestone content and thus was suitable for cement. It has nodular lenses in mudstone. Much of the Barr limestone is shaly and thin bentonite clays, distal ash falls, showed up as persistent pale layers often attracting tree roots to pass horizontally along them in search of water. Adrian Collings confirmed that the bentonite layers could be used as marker horizons in correlation especially because of their distinctive electrical resistivity.

We came to the Eastern Boundary fault, a substantial fault system yet distinguishable only by change of soil and vegetation.

After the customary liquid lunch we admired the view from the top of Barr Beacon. Why must sparkling atmospheric conditions be accompanied by such chilly winds! We could see to Titterstone and Brown Clee and Wenlock Edge.

In Pinfold Lane Quarry we admired the sedimentary structures of the Barr Beacon Beds, cross bedded from the south, gravel beds with angular pebbles, chocolate coloured mud beds and sands with inclusions of mud pebbles indicating flash floods and rapid deposition. The overlying Kidderminster Conglomerate results, it was suggested, from torrential occasional flooding rather than a continuous river flow.

These Permo-Triassic deposits were laid down in a continental interior and rest on Upper Coal Measures.

Our thanks go to Peter Whitehead who provided, as always, a stimulating day promoting much discussion.

K.M. Ashcroft.

ITEMS IN BRIEF

1. 'Dinosaur Mania', an exciting exhibition of Dinosaurs in Popular Culture is on show at Dudley Museum from 21st November until 6th February 1993. It features memorabilia, interactive displays and lots of bones! and there is a film! Not to be missed.

2. Lapidary Publications, 84 High Street, Broadstairs, Kent CT10 1JJ, 0843 82256 are offering a 25% discount before Christmas on a list, held by BCGS, of low priced publications on gems and lapidary.

3. Do you have difficulty identifying the commoner Lower Carboniferous coral genera? Help is at hand. Murray Mitchell has produced a key and guide. It is an off print from the North West Geologist, published by the Manchester Geological Association. Send £2.20 to Graham Miller, Oaklee, Diglee Road, Turners Vale via Stockport, SK12 7PW and make cheques out to the M.G.A.

4. GEOLOGY TODAY

GEOLOGY TODAY is a lively geological magazine for amateurs and professionals with a wide range of articles, news and other items.

BCGS members have a 15% discount on the annual subscription to Geology Today, making their subscription for 1993 £21.20. When making or renewing their subscription members should indicate that they are BCGS members.

5. Field Studies Council - overseas tours 1993

Details: Field Studies Council Overseas
Montford Bridge, Shrewsbury SY4 1HW.
'phone: 0743 850164.

- (a) Canary Islands, scenery and wildlife. 3-13 Jan. 1993. £890.
- (b) Azores, scenery and wildlife, 19 May - 5 June 1993. £1650.
- (c) Iceland, scenery and wildlife. 26 June - 10 July 1993. £1320.

6. Field Studies Council

Details: Rhyd-y-Creuau, The Drapers Field Centre,
Bettws-y-Coed, Gwynedd, N. Wales, LL24 0HB.
'phone: 0690 710494.

Geology, scenery, archaeology and natural history tour of Arran, Scotland, 17-24 April 1993. £346.

3. University of Bristol - Study Tours 1993

Details: Dr. P.G. Hardy, Dept for Continuing Education,
Wills Memorial Building, Queens Road, Bristol BS8 1HR.

- (a) Geology of Cyprus, 27 April - 11 May 1993. £750.
- (b) Pompeii and Herculaneum, Italy, 17-24 May 1993. £640.
- (c) Geology of Arran, Scotland. 12-18 June 1993. £95. accommodation NOT included.
- (d) Geology and archaeology in South-West USA, 12-26 Sept. 1993. £1500.
- (e) Santorini, living with a volcano, 5-19 October 1993. £550.

7. Congratulations to Peter Whitehead on the publication by Oxford University Press of his Co-ordinated Science Students Book "The Earth" for Key Stage 4 Earth Science.

3. Belated congratulations to our Treasurer, Judith Shilston, on being appointed a Justice of the Peace.

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