



NEWSLETTER No. 34 - AUGUST 1982.

# The Black Country Geological Society

## Editorial.

The height of the summer holiday season coincides with the arrival of information about evening classes which begin in the autumn. Although this causes the uneasy feeling that time does indeed fly, it is of considerable interest and especially so this year.

Among the many geology courses detailed in the newsletter, is one on the use of the polarising microscope with thin rock sections. Such courses are rare, as many members have found whenever they have tried to locate one. This course will be run by Rob Ixer, who has done so much for the society over the years. Because of the equipment involved, it will be necessary to go to Birmingham University for the course.

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## Next Meeting.

September 13th. "Meteorites - building blocks for planets." Lecture by Dr. John Ashworth of Aston University.

September 20th. Informal meeting.

September 26th. Field trip to the Central Pennine Basin. Leader Peter Whitehead. Meet 11 am. in Edale village car park.

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Meetings are held in the Allied Centre, Green Man Entry, Tower Street, Dudley, behind the Malt Shovel pub. Indoor meetings will commence at 8 pm. with coffee and biscuits from 7.15 pm. Field meetings will commence from outside the Allied Centre. Non-members welcome.

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

*Chairman*  
A. Cutler B.Sc., M.C.A.M.,  
Dip.M., M.Inst.M.

*Vice Chairman*  
P. G. Oliver B.Sc., Ph.D.,  
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F.I.E.E., M.I. Mech.E.

*Field Secretary*  
Anne Harrison B.Sc., M.B.,  
Ch. B., F.F.A.R.C.S.

Remaining 1982 programme.

October 4th. Informal meeting.

October 10th. Joint field trip with Shropshire Geological Society to sites of interest in Shropshire.

November. To be arranged.

December 6th. "Glacial deposits." Lecture by Mr. Edward Francis of Keele University.

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Landscape Evolution of the Midlands.

Lecture by Dr. G. Warwick.  
May 10th 1982.

This lecture helped to bring geomorphology back into the geological realm, from which it seems to have become excluded in this country. In the U.S.A. and elsewhere, landscape study has always been accepted as an integral part of geology.

Dr. Warwick first described the solid rock foundation on which the scenery is based. In the Midlands, several coalfield horsts are separated by expanses of Trias. The faulting is too ancient to have influenced the present drainage system.

The pre-glacial landscape can be reconstructed from former river courses, deposits and planation surfaces. There is evidence that many early rivers, including the proto-Trent, flowed eastward across Britain. In the Black Country the alignment of several cols suggests former east flowing streams. It was once believed that these were consequent streams draining an emergent surface of Cretaceous rocks, but now it is doubted whether they could be so old. There are few Tertiary deposits in the area, the nearest being isolated pockets in Derbyshire

and North Wales. Planation surfaces and river terraces have been related to fluctuating sea levels in the Plio-Pleistocene. Overall, sea levels have fallen, perhaps as a result of ocean widening and plate tectonic events.

The ice ages had important effects on the Midlands landscape. The total number of glaciations is unknown, but the earliest till found in this area is from the Anglian. The ice sheet extended south and caused several diversions of the Thames.

Following this was the Wolstonian glaciation, named after the type area at Wolston near Coventry. Two important drainage modifications date from this time, the diversion of the Trent by ice in the Vale of Belvoir, and the formation of the Avon by the draining westward of Lake Harrison. This former pro-glacial lake is known from deposits, shoreline benches and overflow channels in the Jurassic scarp.

Much erosion took place before the final glaciation, the Devensian, whose type area is Four Ashes near Wolverhampton. Ice only reached a little further south than this into the Midlands. A large pro-glacial Lake Lapworth was once thought to have existed in Shropshire, but many of the deposits are coarse and may have a subglacial origin. However the diversion of a river into the Severn catchment at Ironbridge undoubtedly took place at this time. Also it is likely that the middle Severn was shifted westward to the present course through the Wyre Forest coalfield. The rejuvenation of the Severn and its tributary the Stour, has given the southern Black Country its considerable relief.

A minor re-advance of ice was

responsible for the Ellesmere moraine, visible today as hummocky, kettle holed scenery in north Shropshire. At the same time, periglacial conditions caused ice wedges near Wolverhampton.

Since the departure of the Glaciers sea levels have risen, silting up rivers such as the Severn in its lower reaches. Fossils demonstrate the gradual return of flora and fauna to the region, not least Homo Sapiens. Dr. Warwick ended his most interesting talk by reminding us that Man is now the most destructive geomorphological agent.

Nigel Bradley.

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#### Field Trip to Dolgellau.

April 23rd to 25th 1982.

The society held its fifth weekend field trip at Dolgellau and innovations included our taking up residence at the Youth Hostel, and an invitation to the Shropshire society to join us. The turn out was a big one. Interests in common, the sharing of wash basin plugs and washing up soon united the group. The weekend was ably and enthusiastically led by the Warden Graham Hall, and the very high standard of this series of weekend field trips was maintained.

We studied the Ordovician igneous rocks and the sedimentary succession which they affected.

On Saturday morning, north of Llanellfyd, we saw the dyke swarms associated with deep crustal fractures, and then along the Afon Ganlan,

waterfalls caused by sill intrusions.

South of Tan-y-grisiau we visited a microgranite pluton, emplaced at shallow depth and thus having lost its steam, being fine grained as a result of dry crystallisation. Associated with it was a quartz gabbro dyke.

From the car park at Ffestiniog hydro-electric power station we walked to see the effects of igneous intrusion on the mudstones. In a very short distance the metamorphic grade increased markedly.

In the afternoon Mr. Hall indulged his passion for disappearing underground. We attempted to follow him, some more enthusiastically than others, into the slate mines. The slate has two cleavage planes in the Ffestiniog area, one of which nearly parallels the bedding of the Ordovician mudstones of the Harlech Dome, and it is used to produce high quality roofing slates. The second plane is steeply orientated axial plane cleavage, and is used to break large slabs from the quarry face. The dipping slate is worked from chambers until the backwall is 50-60 feet high. After this new chambers are constructed below or alongside. Mr. Hall demonstrated this by taking us down three or four chambers, and much industrial archaeology was encountered en route.

The day ended with a visit to Capel Hermon, where large quantities of copper have been emplaced from hydrothermal fluids rising from magma chambers in the late stages of crystallisation. The copper pyrite is largely decomposed to malachite. Rio Tinto Zinc have been refused permission to mine here.

On Sunday we went down the Prince Edward Gold Mine, north east of Trawsfynydd. It was dark and wet and set in an exposed hillside. Gold, copper and lead were carried by superheated steam and emplaced along north-south lines during the Caledonian orogeny. Deposition of the gold appears to be associated

with pyrite in the rocks, the gold being precipitated where pyrite and hence reducing conditions were present.

In contrast, the afternoon was spent above ground on the Panorama Walk above Barmouth. We saw Cambrian turbidite deposits, the result of slumping in the downfaulted Welsh trough. The Lower Cambrian at Barmouth received deposits from the Anglesey area and hence received proximal turbidites. The Upper Cambrian source area was Bristol and the south east Midlands, and so the area received distal turbidites.

The units of turbidites were:

E Clay  
D Siltstone  
C Cross laminated sands  
B Parallel laminated sands  
A Coarse grits.

The Upper Cambrian showed alternating D and E units, each pair representing one turbidity flow. The Lower Cambrian showed interesting combinations of A, B and C units, with an occasional D.

Our grateful thanks go to Mr. Hall for explaining things so lucidly and answering all our questions. We left feeling that the area was so rich that a second visit would be well worthwhile.

Kate Ashcroft.

#### Evening Courses 1982-83.

- 1) Birmingham University Dept. of Extramural Studies, P.O. Box 363, Birmingham B15 2TT. (Advance enrolment to this address preferred)
  - a) Petrography - an Introduction to Rocks under the Microscope.

R.A. Ixer, Ph D. C.Eng. MLMM.  
20 Meetings. Wed. 7.30 pm.  
Geology Dept, Birmingham  
University (NOT Aston)  
6th Oct. £14.

The course provides a thorough training in the use of the microscope, identification of optical properties in polarised light, the identification of the major rock forming minerals, identification of rocks and textures. Microscopes and thin sections are provided.

- b) Geological History of the Midlands. D.J. Gobbett Ph D.  
10 meetings. Thur. 7.30 pm.  
Geology Dept. Birmingham  
University. Oct. 7th. Plus  
5 field trips. £14.

- c) Introduction to Geomorphology.

Mary Cochrane BSc MA.  
20 meetings. Tues. 7.30 pm.  
Jan. 25th Museum and Art  
Gallery, St. James Road,  
Dudley. £14.

- 2) Bilston College of Further Education, Westfield Road, Bilston, Wolverhampton WV14 6ER.

O and A level course, Thurs.  
6.30 - 9 pm. Enrolment 7th  
and 8th Sept. O level after  
1 year, A level after 2 years.

- 3) W.E.A. 9 Digbeth, Birmingham, B5 6BH.

Geological Structure of the Earth. John Armitage.

- a) Cannock Chase Technical College, 20 meetings, Tues. Sept. 21st. (no time given)
- b) Tamworth, Moorgate County Junior School. 24 meetings, Friday 24th Sept.
- c) Erdington, Fentham Centre, 11 meetings, Mon. Jan. ? 1983.
- d) Wolverhampton Polytechnic. 20 meetings, Wed. Oct. 6th.
- e) Geology and Man. 11 meetings Erdington, Mon. Sept. 20th.

- 4) Sutton Coldfield College  
of Further Education.  
(Kate Ashcroft's classes)  
Geology O level. Thur. 7-9 pm.  
Geology A level. Tues. 7-9 pm.  
Enrolment 6th, 7th, 8th Sept.

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Committee Dates:-

General - Sept. 6th and Nov. 8th.  
Conservation - Sept. 27th.  
Nov. 22nd.

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Charmouth Inquiry.

A byelaw to prohibit fossil collecting in areas of Charmouth, Black Ven and Stonebarrow was proposed by West Dorset Borough Council, and was debated in April.

After the inquiry, informal discussion between geologists and local inhabitants revealed that much future trouble could be avoided if collectors and geologists would keep clear of just a short stretch of cliffs with houses above (only a small part of the coast discussed at the inquiry). The stretch is the 350 metres from the seafront car park at Charmouth westwards to just beyond the first mudflow at Raffey's Ledge and Higher Sea Lane, grid 361931. The mudflow is at a marked re-entrant in the cliff. Collectors and party leaders could help by strictly avoiding this and thereby improving relations with local people.

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Geological Guided Walks.

Doulton's Claypit. Aug. 1st.  
and Sept. 5th. 3 pm. Meet at  
car park, Mushroom Green, Chain  
shop in operation.

Cotwall End. Sedgley. Aug. 8th  
and Sept. 12th. (date correction)  
3 pm. Meet at car park at  
corner of Catholic Lane and  
Cotwall End Road.

Wrens Nest. Aug. 15th and Sept.  
19th. 3 pm. Meet at King Arthur  
pub. Priory Rd. Dudley.

Advertisement.

Limestone Burning. I have recently become interested in kilns producing lime, and would be grateful for any information about books, maps, photographs and archive materials.

John Easter,  
27, Fairlawn Drive,  
Kingswinford,  
West Midlands, DY6 9PG.  
Tel. Kingswinford 4916.

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British Association Programme.

University of Liverpool, Sept. 5-10.  
Tues. 7th - Geology and Government.  
Wed. 8th - Fossil Record and  
Evolution.  
Thur. 9th - The amateur in  
geology.  
Fri. 10th - Geology of the  
seaways of Liverpool.  
Further details from:-

Dr. L. Halstead, Dept. of  
Geology, Reading University,  
RG6 2AB.

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Hon. Secretary.  
Paul Shilston,  
16, St. Nicholas Gardens,  
Kings Norton,  
Birmingham B38 8TW.  
Tel. 021-549-3603.

Programme Secretary,  
Anne Harrison,  
15, Duncombe Grove,  
Harborne,  
Birmingham B16.  
Tel. 021-429-1818.

Editor,  
Sheila Pitts,  
17, The Pear Orchard,  
Northway Farm,  
Tewkesbury,  
Glos. GL20 8RG.

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