NEWSLETTER NO. 108
DECEMBER 1994

The Black Country Geological Society

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.

Leaders provide their services on a purely voluntary basis and may not be professionally qualified in this capacity.

The Society does not provide hard hats for use of members or visitors at field meetings. It is your responsibility to provide your own hard hat and other safety equipment (such as safety boots and goggles/glasses) and to use it when you feel it is necessary or when a site owner makes it a condition of entry.

Hammering is seldom necessary. It is the responsibility of the hammerer to ensure that other people are at a safe distance before doing so.

FUTURE PROGRAMME

Lecture meetings are held in the Banquet Room (Dudley Suite) at the Ward Arms Hotel, Birmingham Road, Dudley. Phone: (0384) 458070. 7.30 p.m. for 8 o'clock start.

TUESDAY 6TH DECEMBER. Lapworth Geological Lecture organised by Birmingham University, School of Earth Sciences.

> "Groundwater circulation and diagenesis in carbonate platforms - field evidence from the Blue Holes of the Bahamas"

By Dr. Peter Smart (University of Bristol). 5.30 p.m. in the Large Hills lecture Theatre, School of Earth Sciences, Edgbaston, Birmingham. Preceded by coffee in the Lapworth Museum at 5.00 p.m.

MONDAY 16TH JANUARY 1995. Lecture: Tales of teeth and tails - the origin of fish". By Dr. Paul Smith (Birmingham University).

The development of fish in palaeozoic times represented a major step forward in evolution, as they were the first creatures to be vertebrates. Like their invertebrate predecessors, the fish lived in water - there were no land creatures at this time - and so fish fossils are relatively common in the fossil record. This means that much is known about their origin and development, and Dr. Paul Smith's lecture will describe some of these first primitive fish. Eventually they were to evolve into one of the most important invertebrate groups - but that is another story .....

DR. PAUL SMITH is Curator of the Lapworth Geology Museum at Birmingham University and is also on the academic staff of the School of Earth Sciences. He is a BCGS member.

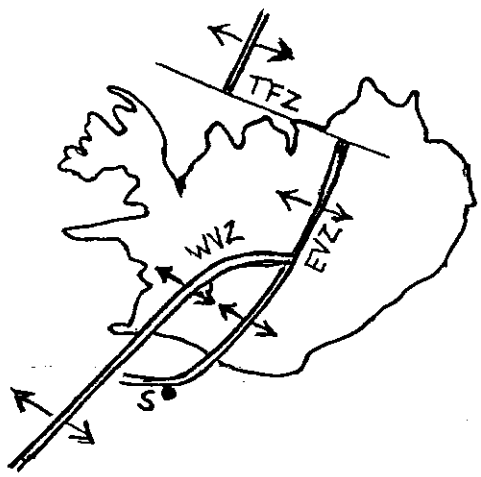
MONDAY 20TH FEBRUARY. 7.45 p.m. ANNUAL GENERAL MEETING (see notice in this newsletter). All posts of officials and committee members are up for election. Any nominations for election should be given to the Secretary or can be declared at the AGM.

Followed at 8.00 p.m. (approx) by a lecture "Icelandic cocktail - fire and brimstone with ice" by Alf Cole (Society Member).

ALF COLE writes: "Much of Iceland (which is NOT an arctic country) comprises arid plateaux which are 100 +/- 200 metres above sea-level. These extensive areas of lava flows - much still covered by ice caps - are broken only by occasional valleys carved by rivers and glaciers, or are uplifted as volcanic cones.

The world's oldest democracy is one of the newest land areas. It straddles the Mid Atlantic Ridge; no rocks are older than 16 million years, some are less than 10 years old and still warm.

Large areas of Iceland have been built up within the last 1 million years, and 10% of the surface is covered by lavas less than 10,000 years old. About 200 volcanoes have been active since glacial times; indeed there have been over 30 separate eruptions this century, some of the most recent providing exciting evidence of the ongoing rift process. One rather special feature is the rift lines of craters occupying fissures rows produced by widening movements across the Mid Atlantic Ridge; these cause the North-South splitting across the country due to dilation."



EVZ : east volcanic zone
WVZ : west volcanic zone
TFZ : Tjörnes fracture zone
S : Surtsey

ALF COLE, who is a Society member, trained as an inorganic chemist and worked at, among other places, Wolverhampton Polytechnic and Sandwell College. His interest in geology is as a hobby; he has an OU degree in geology and is Secretary of the Open University, West Midlands branch.

SATURDAY 25TH FEBRUARY 10.00 a.m. - 5.00 p.m.)
SATURDAY 11TH MARCH 10.00 a.m. - 5.00 p.m.) second and third day schools of the series of 3 linked day schools "The Midlands through Geological Time" run by the University of Birmingham.
Details and booking: School of Continuing Studies, University of Birmingham, Edgbaston, Birmingham B15 2TT. phone: (0121) 414 5606/7/8.

MONDAY 20TH MARCH. *(Please note change of date)*
Lecture: "Mining and mineral exploration in Russia" by Clyde Leys (RTZ Mining & Exploration Ltd)

The RTZ Group is one of the world's major mining and mineral combines, with interests worldwide in iron ore, copper, lead, zinc and precious metals. This activity requires a continuous programme of exploration for new sites, and for development of existing ones.

This lecture will describe exploration and evaluation techniques used by the company and will be illustrated by examples of prospecting in Russia.

CLYDE LEYS is a geologist with RTZ's Mining and Exploration Company and has worked for them in many parts of the world.

THURSDAY 27TH APRIL (N.B. THURSDAY) 27TH APRIL. Joint lecture meeting with the West Midlands Branch of the Geological Society. At the Ward Arms Hotel. The timing of this meeting will be HALF AN HOUR EARLIER than usual - 7.00 p.m. for 7.30 p.m. start.

Lecture: Mineral exploration and the environment - studies in the Pacific and the Andes" by Professor H. Colley (Oxford Brookes University).

SUNDAY 14TH MAY. Field meeting to Horton-in-Ribbledale, Yorkshire, organised by The Geological Society of London (Yorkshire Group). BCGS members are invited to attend but must book a place by contacting the Secretary (Ian Prior) at Sheffield on 01142 551480.

MONDAY 15TH MAY. Lecture: The origin and use of semi-precious stones" by Barry Taylor (Society member).

EDITORIAL

It has been suggested that we might arrange a Geological entertainment and a group of members have been considering material which could be used. If anyone has ideas of items which might be suitable, please let me know. Suggestions for musical items with geological interest would be especially pleasing. Anyone wishing to get involved is more than welcome.

Loosely connected with this scheme, I have been searching for poems of geologoical interest and finding some gems.

Milton and Dante have descriptions which vividly portray geological scenes. Tennyson, concisely, puts into poetic language the ideas expressed more tentatively in Lyell's "Principles of Geology". Matthew Arnold and W.H. Auden have written poems inspired by Geology.

There is a great wealth of comic poems, many from Victorian times. I've been sent comic poems on Trilobites, Dinosaurs, Geological recipes and Mineralogists. Norman Nicholson produced a lovely series of poems on the rocks of the Lake District, my favourite on the rocks of my home village, the Coniston Flags, and Hugh MacDiarmidd produced disturbing poems using rocks as metaphors. I'm not surprised that Geology inspires so much poetry, though my non geological friends are amazed.

If you have contributions, I should be delighted to receive them.

Have a Happy Christmas!

REPORTS

Field excursion to the Bridgnorth area. Sunday 2nd October. Leader Dr. David Thompson of Keele University.

Nineteen enthusiasts including a seven year old boy joined Dr. Thompson to investigate the Kinnerton-Bridgnorth sandstone formations and the overlying Kidderminster Conglomerate formations at various outcrops around Bridgnorth.

On assembly at the road cutting near Worfe Bridge (SO 732 958) the group was asked to orientate themselves and then to identify the rock types present. After some thought it was agreed that there were three types i.e. sandstone, conglomerate and possibly a light pebbly sandstone. We were encouraged to concentrate on looking for structures and features since these rocks had been subjected to oxidising conditions and there are no fossils. Indeed it was the oxidising conditions, during which haematite was formed, that resulted in the characteristic red colour we see now.

Having identified the rock types, the junction characteristics were considered. An angular unconformity was seen which appeared corrugated rather than planar from evidence of conglomerate infill. The aeolian Bridgnorth sandstone showed strong evidence of cross bedding.

To the south of Worfe Bridge a larger cutting showed bed thinning. Examination was by sight only from the opposite side of the road. The conglomerate appeared thicker here due to it being in the form of a lens. The conglomerate was traced across the face of the cutting to a point where it disappeared at a fault. A brave Dr. Thompson crossed the road dodging motorists to point out the location, angle and direction of the fault.

We were reminded of the conditions under which these Permo-Triassic rocks were formed, at a time when according to plate tectonic theory, this part of the crust was between 10 and 20 degrees north of the equator and desert conditions prevailed. The thickness of the deposits is due to the formation of a large sinking basin as a result of plate stretching and thermal relaxation. The features would have been similar to those existing in desert basins today - crescentic and linear dunes, barchanoid ridge dunes and 'draas'. The effect of the wind in producing these can result in distinct units: avalanche structures which are reverse graded; grain fall units (gravity fed) and wind ripple (pin stripe) laminations formed by side winds.

The presence of a pebble bed here showed evidence of flood waters and this stream flow deposit, we were told, could have come from the Channel or Northern France.

Moving to Bridgnorth town centre the group was taken on a tour of the base of Castle Hill. At the Station Road exposure (SO 717 928) we were shown evidence of pin-stripe lamination in part of a slip faced 'draa' in the lower part of the Bridgnorth sandstones.

In the landscaped gardens (SO 717 928) where hermit caves can be seen, large scale trough cross beds were in evidence; the thickness of cross bed sets being 5-10m. Dr. Thompson believed the rocks here to be part of a barchanoid transverse ridge curving round from the cave houses to the east.

En-route up the hill past the Cliff Railway the Bridgnorth Sandstone Formation is again exposed and has a dip 10 degrees to the East.

Examples of pin-stripe wind ripple lamination can be seen in inter-dune (flat bedded) sand. About half way up the steep, stepped path Dr. Thompson showed us a bi-modal deposit which is inversely sorted. In answer to a question at this location Dr. Thompson suggested that to understand the effect seen here we should try slowly tipping a mixture of brown and white sugar out of a bowl! With that as food for thought we paused for lunch.

At the first of the afternoon locations, a road cutting on the A442 (SO 739 902) we were given the definition of a 'draa' i.e. a complex dune structure more than 30 metres, up to 200 or 300 metres high with slip faces of the order of 50m, over which smaller dunes migrated. We were then told that the exposure opposite was (according to Steele 1983) an example of a draa.

Proceeding to the next road cutting on the A454 (SO 727 935) the group descended a hill and examined both sides of the cutting. There was a slip faced draa with one very large-scale cross bed set, some 20m thick. Retracing our steps back uphill we went on to discover an outcrop of Kidderminster Conglomerate. Once again the features of the exposure were analysed and one by one answers to the questions set were forthcoming from party members, including one from my son, Richard, who promptly and correctly described the section as matrix based.

Pebble shapes ranged from round to sub-angular and some were thought to be Carboniferous mudstone. Evidence of limestone pebbles suggested this to be a Bridgnorth tributary deposit and indicative of stream flow filling. Above the pebbles are more sandstone beds but the presence of occasional large pebbles indicated that these too are fluvial.

There was just time to round off the day with a walk to the Hermitage rock houses where the Bridgnorth Sandstone Formation has been extensively excavated leaving an impressive overhanging roof of Kidderminster Conglomerate Formation. There is evidence here to suggest that these are the remains of a transverse dune.

Every one departed much the wiser, Dr. Thompson having maintained interest throughout the day despite long spells of rain and unexpectedly busy traffic at the roadside sections!

ADRIAN V. WYATT

Monday 24th October. The Geology of the Isle of Man

Dr. Trevor Ford, author of the recently published Geological Association's guide to the Isle of Man, provided a detailed account of the little known geology of this island.

The bulk of the island is of Manx 'Slate' of Cambrian or Ordovician age described by Lamplugh in 1903. The Manx Slate has been divided into eleven stratigraphical units folded into a N.W. - S.E. syncline but more recent studies, using acritarchs for dating, wreck earlier interpretations. Simpson identified four lithologies from flaggy siltstones, banded pelites to slump breccias which collectively gave rise to 8000 metres of sediment from a source in the Midlands. At this time Iapetus was a great ocean, so assuming the Iapetus suture lies to the north of the Isle of Man, the material must have has a southerly source. The structure remains uninterpreted. Repeating lithologies

may be a result of strike faulting and this interpretation would reduce the thickness of sediments. Zones in the rock show metamorphism of biotite and garnet grade. Dr. Ford interprets the Manx Slates as a westerly continuation of the Skiddaw Slates.

Hundreds of badly weathered lamprophyre (ultrabasic) dykes cross the Manx Slates. A number of Caledonian intrusions occur. The deeply weathered Foxdale granite intrudes the Manx Slate and is cut by pegmatities with huge feldspar and mica crystals. An intrusion of gabbro is poorly exposed.

Mineral veins pass from the 'slate' into the granite. The Foxdale mine had copper while elsewhere lead and zinc were obtained. Water was pumped from great depths below sea-level. The mines closed in 1929.

The Peel Sandstone is of Old Red Sandstone facies, a red sandstone with breccia and conglomerate strands. The conglomerate contains rhyolite and angular Silurian fossil limestone clasts, obviously of local origin, presumably from the North West Irish Sea. Mudstone clasts indicate a riverine environment. The cornstones represent a fossil soil, presumably reflecting dry conditions.

The Carboniferous of Castletown has volcanics near its base. The basal conglomerates rest on the Manx Slates. A river environment is indicated. From the limestone we saw slides of spectacular mega-ripples, bryozoan colonies and chert nodules and huge Caninia corals, one, three foot eleven inches long. Mud mounds are probably remnants of reef limestones but some have been overturned. Black shale bands are also present.

Associated with the Carboniferous are dykes, volcanic breccias, pillow and ropy lavas, columnar basalt, coarse agglomerate and tuffs interbedded with thin black limestones.

Castletown and Ronaldsway have olivine dolerite dykes of Tertiary age. Under the northern plain boreholes have revealed coal. St. Bees Sandstone and Mercian Mudstones are also present, these rocks yielding gas in the Irish Sea.

The north is dominated by Pleistocene. Striated rocks and a trail of erratics from the Foxdale granite indicate ice movement from north to south. Glacial retreat left vast layers of boulder clay, moraines and outwash deposits. Ice dammed lakes are filled with outwash and have varved clays in which stags' antlers have been found.

Dr. Ford wetted our appetite for more information about this little known geological area.

KATE ASHCROFT

REVIEW

A Colour Atlas of Rocks and Minerals in Thin Section
W.S. Mackenzie and A.E. Adams
Manson Publishing (Soft cover edition is £14-95)

This new book is written by the authors who wrote the successful, larger "Atlas" series, with which many Earth Science undergraduates are familiar. While the "Atlas" series dealt with individual fields in separate books, this publication covers all the main fields in a pleasing, coherent manner. The authors assume little knowledge of areas such as crystallography.

The book is subdivided into five sections. The first part - "Optical Mineralogy" - is introduced with a simple discussion of the subject and then goes on to deal with mineral optical properties and what a student should know in order to identify and describe minerals under the microscope. The remaining four parts are each devoted to "Minerals", "Igneous Rocks", "Sedimentary Rocks" and "Metamorphic Rocks". All are coherently discussed and profusely illustrated with photomicrographs. Two pages are devoted to each rock species with the description / explanation on one page and the photographs on the facing page. Two views of each thin-section is given - one under crossed polars and the other in plane polarized light.

Within each section, rock nomenclature is clearly explained, e.g. the Dunham method of limestone classification. Especially pleasing was the discussion of how plagioclase feldspars are identified using extinction angles, in the "Minerals" section.

All the photomicrographs are of sections held within the teaching collections of the Earth Science Department at Manchester University. Therefore, the slides are not "prime examples" which grace so many mineralogical textbooks. The student should not have too much difficulty in comparing them with sections he/she meets in "real life". The authors, in their introduction, hope that, in addition to undergraduates, the book will appeal to amateur geologists / mineralogists. This hope is well founded since the language is simple enough to entertain the amateur and yet technical enough to please the student professional.

GILES SMITHSON

The publishers offer us a discount of 20% on orders of 5 or more copies, provided that we sell the books at their full retail price. (It's a most attractive book - Ed.)

NEWS IN BRIEF

1. ESTA CONFERENCE 1994

Birmingham University hosted the 1994 annual course and conference for teachers of earth sciences run by ESTA (Earth Science Teachers Association) in September. Several BCGS members played an active part in the function - Dr. Derek Gobbett was co-chairman of the organising committee and led a field meeting to Wren's Nest.

David Gossage lectured on 'The search for oil and gas', Graham Worton ran a field workshop at Bowmans Harbour land reclamation project, Wednesfield, and Paul Shilston gave a talk 'Building stones of Birmingham city centre', afterwards leading a guided walk in the city looking at the stones.

2. 'GEOLOGY ON YOUR DOORSTEP' SYMPOSIUM

Alan Cutler (our chairman) will present a paper at a symposium being staged jointly by English Nature and the University of Greenwich at the University's Wapping campus in London. The symposium is titled "GEOLOGY ON YOUR DOORSTEP - EARTH SCIENCE CONSERVATION IN URBAN AREAS" and will be held on 18th January 1995.

His paper, "The Black Country experience", will describe the efforts of Society members and others in identifying and conserving local geological sites in the Black Country.

Also, the organisers liked the Society's stand at the recent Dudley Rock & Fossil Fair which featured 'buildings and building stnes' and have asked us to repeat the display at their symposium in London.

3. 'GEOLOGY TODAY' MAGAZINE

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 20% discount on the annual subscription to GEOLOGY TODAY, making our subscriptions for 1995 £22.80. When making or renewing their subscriptions, members should indicate that they are BCGS members.

4. UNIVERSITY OF NOTTINGHAM

Details and booking:
Sarah Poyzer
University of Nottingham, Dept of Adult Education
14-22 Shakespeare Street
Nottingham NG1 4FJ
phone: 0115 951 6513

(a) Geology west of the Malverns. Residential weekend 9-11th June 1995. Based at Weston-under-Penyard. £98.

(b) Geological tour of South Western USA. 3 weeks. July/August 1995. £1680.

(c) Geology of South-West Scotland. Residential 3 and a half day course. 15-19th September 1995. £185.

(d) Geology and scenery in Norway. 15 day course July/August 1996. Details and costings available later.

5. CONCERT

Saturday 21st January 1995 at 8.00 p.m. Gordon Giltrap (Society member) will be performing in a concert at the Midlands Arts Centre, Cannon Hill Park, Birmingham. Tickets £5-50. Tel: 021 440 3838.

Editor

Kate Ashcroft
48 Worcester Lane
Sutton Coldfield
B75 5NB

Tel: 021 308 6783

Secretary

Paul Shilston
16 St. Nicolas Gardens
Kings Norton
Birmingham
B38 8TW

Tel: 021 459 3603

BLACK COUNTRY GEOLOGICAL SOCIETY

NOTICE IS HEREBY GIVEN that the twentieth annual general meeting will be held at 7.45pm on Monday 20th February 1995 at Ward Arms Hotel, Birmingham Road, Dudley.

AGENDA

1. Apologies for absence.
2. Minutes of the AGM held on 21st February 1994.
3. Statement of accounts and Treasurer's report.
4. Chairman's annual report.
5. Election of officers and committee.
   (a) chairman. (d) treasurer.
   (b) vice-chairman. (e) three committee members.
   (c) secretary. (f) hon. auditor.
6. Any other business.

The retiring officers and committee members are :

Chairman: Alan Cutler Vice-chairman: Graham Worton
Secretary: Paul Shilston Treasurer: Judith Shilston

Committee members: Sue Fairclough Chris Jowitt Peter Smith
Hon. auditor: Mr. G. Hubbard ACA.

ALL POSTS OF OFFICIALS AND COMMITTEE MEMBERS are up for annual election.

NOMINATIONS for any of the posts of society officials or committee members should be sent to the Secretary or can be declared at the AGM