



The Black Country Geological Society

Meetings are held at The Saracen's Head, Stone St., Dudley.
7.30 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 insurance to the level which you feel appropriate. Schools and other bodies should arrange their own insurance as a matter of course.

Forthcoming Meetings:

Monday: 26th February: 7.45 p.m. Annual General Meeting followed by illustrated talk "Geology and Wildlife in Kenya" by Sheila Pitts. Sheila was in Kenya in December, 1988, when she visited the Rift Valley, the Southern National Parks, Mombasa and the Indian Ocean Reef.

Sheila is a founder member of the society, and has already given talks to the society on her visits to Argentina, the Antarctic and New Zealand.

Monday: 26th March: Lecture "Geology and Mineralogy of the Caldbeck Fells in Cumbria" by Dr. R. J. King.

The Caldbeck Fells are in the northern Lake District, and have always attracted geologists. Although near to Skiddaw, they are composed of Borrowdale Volcanics while nearby Carrock Fell has a plutonic igneous complex with a series of gabbroic rocks and acid granophyres. Numerous minor intrusions occur and the complex is famous for its abundant mineralization including veins of wolframite, the tungsten ore.

Dr. King is Curator of the John Moore Museum, Kesbury and was formerly with the national museum of Wales. He is a well-known authority on minerals and many members will be following his series of articles in GEOLOGY TODAY "Minerals Explained".

Sunday: 29th April: Field meeting "Geology at the northern end of Cannock Chase", Leader Fred Imm of Geologists Association, North Staffs Group. Meet 10.45 a.m. on the KWIK SAVE car park adjacent to the Wild Wood pub at Grid Ref: SJ94652085. This is located just off the A34 Cannock-Stafford Road, on the left about $\frac{1}{2}$ mile after entering the Stafford boundary.

Write-up supplied by Fred Imm:

Cannock Chase is a fault-bounded anticline with gentle dips all round its perimeters. We will be looking firstly at the extreme geographical and historical limits of the Chase, where the Hopton Fault forms the boundary.

On Radford Bank and the Wildwood Ring Road, we will pass over the Hopton Fault from Sherwood Sandstone Group pebble beds and sandstone, on to an outcrop of the Stafford Halite formation in the Mercia Mudstone Group.

On Cannock Chase we will examine sections of pebble beds in the Cannock Chase formation, and consider effects of glaciation in the area.

Lunch will be taken at Milford where there are a cafe, toilets and picnic tables.

Weekend field meeting - 11th-13th May: Based at Eunstanton, Norfolk, to study the coast of North Norfolk, in particular cretaceous and quaternary deposits, with related coastal features. Arranged jointly with University of London.
FURTHER DETAILS AND BOOKING FORM WITH THIS NEWSLETTER.

EDITOR
Julian B.Sc., M.C.A.M.
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Monday: 14th May: Lecture "The Birmingham West Geological Mapping Project" given by the British Geological Survey team who are carrying out the survey:-

Dr. John Powell - project leader
Dr. Brian Glover
Dr. Colin Waters.

The BGS is currently carrying out a revision survey of the Black Country. This lecture will outline the aims of the project and describe the methods used, in particular computers for data storage and for the production of geological maps. Then it will cover new ideas and information already produced by this survey, relating to Etruria Marl in the Barrow Hill area, the Rowley Regis dolerite, and late Carboniferous and early Permian rocks generally.

June: Evening field meeting to local opencast coal site.

Please note - SATURDAY; 21st July: Field meeting to Malvern Hills. Leader Dr. David Bullard. Meet 10 a.m. at British Camp car park (grid ref: 762403) on the A449 Malvern-Ledbury Rd.

Sunday: 23rd September: Field meeting to Dovedale, Derbyshire. Leader Dr. Paul Bridges of Derbyshire College of Higher Education.

Monday: 15th October: Lecture "Silurian RED beds - a geologist's view of the USSR" by Dr. David Siviter of Leicester University.

Early November: Field meeting to Black Country sites. Leaders the British Geological Survey team.

Monday: 19th November: Lecture "The Hornsleasow dinosaur excavation and sieving project" by Roger Vaughan of Bath Museum.

Friday: 30th November: 15th anniversary dinner with speaker. At the University Centre, Birmingham University.

EDITORIAL:

May I suggest two items of reading matter for the new year. Firstly a subscription to the excellent GEOLOGY TODAY which is looking for an increased circulation and thoroughly deserves to

achieve it. As a result it is on offer to BCGS members at a reduced rate - 20% discount on the 1990 subscription, making it £15.25 instead of £19.00. It is also being offered free to all schools and colleges offering geology at A level for a limited period. The details of this offer are enclosed on a sheet in this newsletter.

Congratulations to BCGS member and treasurer Judith Shilston on winning second prize in GEOLOGY TODAY'S photo competition with her photograph of the crater of Vulcano. Are there any other members who could give Judith some tough competition next year?! Details later in the newsletter.

My second item for the 1990's is "Turning Up The Heat" by Fred Pearce. This excellent, up-to-date, account of the various strands of global warming and related environmental causes and problems makes interesting reading for geologists and highlights the important and often leading role being played by research geologists in this field. The atmosphere is proving such a complex system that even the most sophisticated computer-mathematical models cannot begin to give accurate or reliable predictions of the nature or pace of climatic change and hence attention is being focussed upon possible similar rapid changes in the geological record such as dinosaur extinction. This book will keep one interest from cover to cover and it is not all doom and gloom as suggestions are made as to how mans ingenuity can get us out of this mess. Published by Paladin at £4.99 it is described as the first hand book of the Greenhouse Age and is written by New Scientist editor Fred Pearce.

A final point for this month - museum entry charges. It came as no surprise to see the 40% reduction in attendance after the introduction of charges at a certain well-known London Museum and the consequent review of the policy. Lets hope that adequate subsidies can be forthcoming so that major museums can become, as often originally intended, open to all, regardless of ability to pay. In the present situation both the public and the museum are losers.

Sunday 29th October. Field Meeting at The Ercall, Wrekin Area, Shropshire.

It was a windy, chilly, late autumn morning, but with eighteen people the meeting was very well attended, being led by Dr. Alan Wright of Birmingham University - a geologist closely acquainted with this district.

The Ercall is a hill forming a north-eastward prolongation of the Precambrian Uriconian volcanics of The Wrekin. It is bordered on the north-west by downfaulted, drift-covered, soft red beds of the barren Upper Coal

Measurers; and by outcropping Cambrian and Carboniferous strata to the south-east.

Dr. Wright explained that the best radiometric age dating of the large Precambrian granophyre body in the middle of The Ercall gives an age of 560 million years, (+ or - 2 m.y.). This sets an age of somewhat less than 560 m.y. for the overlying fossiliferous Lower Cambrian sedimentary rocks, which rest directly and unconformably on both the granophyre and the Uriconian volcanics. On the world scene this dating is significant, because lowest Cambrian has in several other countries been measured at 575 m.y. or even older. Will The Ercall prove to be the definitive time-setting locality for this highly important stratigraphic boundary?

We had the pleasure of seeing a well-exposed unconformable contact of Lower Cambrian conglomerate resting on granophyre and were thus convinced that the granophyre is not a post-Cambrian intrusion, as some geologists have believed hitherto.

In various other quarries in The Ercall we examined flow-banded rhyolite lavas, tuffs, agglomerates and occasional basalt dykes, most spectacularly at Forest Glen. These hard, resistant rocks are typical of the Uriconian volcanics. Passing stratigraphically upwards into the overlying Cambrian sediments we saw several metres of basal conglomerates, consisting of cobbles, pebbles and grit derived from the Uriconian. Thin clay layers in the conglomerates have yielded acritarchs, which are microfossils of uncertain affinity but which nevertheless establish the age of this sequence as Lower Cambrian (Atdabanian).

Above the conglomerates come 25 metres or so of very hard, thickly-bedded, grey quartzites, showing here and there some ripple mark patterns on the 40° dipping bedding planes. The quartzites, locally known as the Wrekin Quartzite Formation, are followed above by softer, argillaceous sandstones named Comley Sandstone after the famous locality near Church Stretton, where they yielded good Lower Cambrian faunas. Fossils eluded our group at this point at The Ercall. After walking a few hundred metres over less well exposed ground of the upper Comley Sandstone and the over-

lying Shineton Shales, we reached a shallow cutting where fossil collectors were more fortunate. Fragments of the net-like (dendroid) graptolite *Dictyonema* indicated a rather high position in the Shineton Shales, dated here as Upper Cambrian.

The Shineton Shales might exceed 1,000 m. in total thickness, and slightly above our *Dictyonema* locality they are intruded, between nearly vertically-dipping bedding planes, by an 80 m. thick body of medium-crystalline, igneous rock made up of pink feldspars and dark ferromagnesian minerals. It is called a camptonite and belongs to the curious family of hypabyssal igneous rocks known as lamprophyres. The original shape of Maddocks Hill has been drastically changed by the removal of a great tonnage of the camptonite for road stone.

Rain came heavily in the final half hour of our day, but too late to spoil what was a first-class geological field meeting.

David Gossage:

Gold, Silver and Precious Metals of the British Isles: Lecture by Dr. Rob Ixer, Birmingham School of Earth Science, 4th December, 1989:

Rob is an old friend of the Society, and his interest in the precious metals and their histories made for a colourful talk from Romans to cowboys campfires mine discoveries to the complex exploration and markets of today's precious metals industry. Rob began his tour of the important precious metal sites of the U.K. by reviewing the metals and the places at which they have traditionally been produced. We learned that silver was and is mainly produced as a by-product of lead-zinc-copper mining operations, such as those of past centuries in the Peak District, the Mendips and the Pennines, with small amounts derived from Anglesey and the Welsh Borders.

Gold in contrast, is usually worked in its 'native' form as nuggets or grains in river sediments or other 'placer' deposits and also in gold-quartz mineral veins. Placer type gold has traditionally been a product in the Lead Hills area of Scotland and in Wales, where the 'Mother Lode' is quartz-gold veins which cut into the Welsh hills.

Other precious metals including platinum group metals (platinums, osmium, nithenium, palladium, irridium and rhodium) are not produced in Britain although minor deposits may exist.

EXPLORATION and MARKETS:

Discussing gold, silver and platinum, in turn, we learned that Britain is on the verge of a

new gold rush, with mining companies currently investing in exploration of the Scottish Dalradian rocks. Rob predicted that within a few years Britain would be among the top twenty gold producing countries of the world. The mining companies have found gold 'anomalies' and are in search of the Mother Lode. Rob himself has been involved in some interesting work in this field looking at the shape of gold grains which can show how far the gold grain has been transported from its source. The water-contact of the grain appears to purify the gold by stripping out other metals and there is currently a controversy about the formation of gold nuggets. Following the discussion about the goings-on-in-gold in Britain, Rob returned to his favourite subject - Silver and in particular a particularly delicate and appealing group of silver minerals known as the 'Ruby Silvers'. Lavishly illustrated with slides displaying the appearance of the minerals under the reflected light microscope, we learned of how Rob discovered with Chris Stanley the first occurrence of silver in the ores of the northern Pennines. They had been testing a hypothesis put forward by the eminent Sir Kingsley Dunham to the effect that there was no chance of silver minerals being found or exploited in this area. Rob finished the lecture with a summary of opportunities for the exploitation of platinum and its associated metals in the U.K. Platinum is found in association with ultrabasic igneous rocks, thrust to the surface during collisions of continents in plate tectonics. In the Shetland Isles such rocks can be found although it seems unlikely that an economical mine would ever be opened in such a remote spot, and while the metals markets are so closely controlled by other countries. One of the pleasures of Rob's talks are the sidetracks that he travels whilst following the main thread, and most people would have found something appealing, be it what the Romans did, which metals to invest in or where they might go panning for gold, and IF any of our members should happen to discover a 'Ruby Silver' mineral that doesn't have a name, Rob Ixer would love to hear from you.

Graham Worton:

Geology and Black Country World:

Members will be familiar with the name "Black Country World" through its frequent mention in the local press, but probably only have the vaguest notion of what it actually is. Ever since Bradford and Beamish began selling the idea of local heritage in the early seventies (albeit in a highly romanticised way) everyone has jumped onto the bandwagon. Dudley is no exception, in fact it is now one of the most active protagonists, with two council departments - Economic Development and Leisure Services deeply involved in promoting the borough, through tourist trails, promotional leaflets and large stands at national holiday and leisure fairs.

Black Country World is the focal point for Dudley's Heritage strategy. Basically it is the umbrella organisation for the four visitor attractions on Castle Hill - the zoo, castle, Black Country Museum and Dudley Canal Trust. Over £6 million has been invested in developing all of these sites mainly through the building of new, exciting exhibits. In the long term it is hoped that visitors will be able to travel between attractions on a miniature mono-rail link, although each will retain its own identity. A hotel and conference centre is also planned in the coming years.

What is so exciting about Black Country World is that Geology is the lynchpin of the entire project. Castle Hill is riddled with limestone mines and quarries. Many of the latter were converted to create unique pens for the zoo animals - notably the polar bears. The Singing Cavern experience re-creates life inside a limestone mine. The Black Country Museum reconstructs local life in the early 20th century, when the economic fabric of the area was based entirely on the exploitation of local resources - coal, fireclay, limestone and ironstone. Even the castle is constructed of local limestone and owes its prominent position to forces which folded up the Wenlock Limestone strata during Devonian times. The new exhibits will further emphasise these geological links. Towards the end of 1989 a walk-through mining experience was opened at the Black Country Museum. This depicts a typical late 19th century Black Country coal mine on the 30 foot or 'Thick Coal', and is set to become the museum's most popular exhibit.

The Canal Trust had also taken up the geological theme. A new tunnel linking Castle Mill basin to the Singing Cavern via Little Tess cavern will house a new audio-visual display on the formation and mining of the Wenlock Limestone, featuring illustrations of many of the fossils in Dudley Museum. The most exciting project is the new zoo

exhibit, the Geochrom (from the Greek 'Geo' (earth) 'chro' (an abbreviation of 'chromos' (time)), and 'm' (matrix)) a quite revolutionary concept which combines live zoo exhibits with spectacular museum-type displays, akin to those of the Epcott Centre at Disneyworld.

The theme of the Geochrom is the story of life on Earth - seen specifically from Dudley's point of view. This is being done by re-creating in a very theatrical way, the various palaeo-environments experienced locally over the past 420 million years (tropical seas, coal forest, deserts, temperate forest, glacial etc.) complete with the flora and fauna of the time, and then in adjacent display areas to create the modern equivalents of these ancient environments, using the zoo animals. Artificial rock faces containing fossils will emphasise the ecological and morphological links between past and present life forms.

By adopting this approach, the evolution of life on earth can be demonstrated, showing very pointiently the processes of extinction, fossilization and survival. Phase 1 of the Geochrom opens at the end of March. It is a tropical house containing creatures as diverse as butterflies and crocodiles. The adjacent exhibition area contains reconstructions of Silurian and Carboniferous Dudley and has a strong ecological message. As Dudley's geologist 'on site', Black Country World has given me a tremendous opportunity to stretch my creative muscles in a way that other museum geologists can only dream of doing. However, it leaves the future of the Geology gallery in Dudley Museum up in the air - it is unlikely that the council would be prepared to invest considerable sums in making major changes when so much time and energy is being invested on Castle Hill. In the meantime, therefore, changes in these displays are taking place only at a gradual pace. Finally may I recommend a visit to Black Country World over the Easter holidays - I'm sure you'll come away very proud of your geological heritage.

Colin Reid:

CONSERVATION ACTIVITY

The Black Country Geological Society has always been involved in conservation of geological sites, identifying sites important for their geology, and giving warnings when sites are threatened by development. Currently the four Black Country local authorities - Dudley, Sandwell, Walsall and Wolverhampton - are conducting a nature conservation and land use survey for deciding future strategy. Called the Black Country Nature Conservation Strategy - Unitary Development Plan, the survey is being organised by the Urban Wildlife Group, and the society providing the geological input. The aim is to identify and list important nature conservation sites (including geological sites) in the Black Country. Society members Alan Cutler, Peter Smith and Graham Worton have been identifying and describing locally important geological sites for inclusion in the survey. While the BCGS already had considerable knowledge of sites in the Dudley area, less was known about the other areas, and so this has entailed a considerable amount of work. The deadline for completion of the initial stage, that of identifying sites, was December 1989, and the next stage, of describing sites in more detail, has now begun. If any member would like to help in this work, they should get in touch with Alan Cutler.

NIGEL BRADLEY'S SUCCESS:

Members will be pleased to learn that after 8 years of hard part-time study with the Open University, Nigel has successfully completed all parts of his OU science degree. Award of the degree will take place shortly. Our heartiest congratulations on a splendid achievement.

BCGS NEWS:

1. Earth Science Conservation - journal published by the Nature Conservancy Council. A new format, magazine-style layout, full-colour front cover and greater emphasis on topical articles and features from more contributors with diverse backgrounds. Available from Earth Science Division, Nature Conservancy Council, Northminster House, Peterborough, PE1 1UA. Tel: (0733) 40345.

2. A one-day school - "Black Country Industry and the Industrial Revolution", Sat. 10th March, 1990 at Faculty of Arts, University of Birmingham. Fee £14.00 including lunch and refreshments. Contact School of Continuing Studies, University of Birmingham, PO Box 363, Birmingham B15 2TT. Tel: 021 414 5607/6/8)

3. "Geological Conservation Review" - a major new geological series. The culmination of 12 years research and critical analysis covering the most important parts of the British Isles geological heritage. 50 volumes will be published. The first is entitled "Quaternary of Wales" - describing the rocks and landforms of Welsh quaternary and is available from Nature Conservancy Council, Northminster House, Peterborough PE1 1UA at £27.00 (post free). Apply to Dept. G.C.R.F, Publications at the above address.

4. "Birmingham Green Guide" - compiled and published by Birmingham Friends of the Earth. This guide contains all the latest information on environmentally friendly products for home, garden, food-stuffs; places, problems, recycling, education and health. A must for an ecologically aware citizen. Available from Birmingham Green Guide, c/o Friends of the Earth, 54 Allison St., Digbeth, Birmingham B5 5TH. Price £4.95, + £1.00 for postage and packing. Cheques made payable to Birmingham Green Guide.

5. "The Nature of Worcestershire" - a limited edition of the wildlife and natural history of the old county of Worcestershire edited by G. H. Green and Brett Westwood for the Worcestershire Nature Conservation Trust. Published by Baracuda books Ltd. By prior reservation at £13.95 plus £2.00 postage and packing. Un-numbered copies at £17.95 after publication.

6. Bristol University Study Tours:-

- a) Geology of Carmarthen 20th/22nd April, 1990. £25.00 by J.C.W. Cope, B.Sc., Ph.D., D.Sc., F.G.S.
- b) Geology of Cyprus 28th April/12th May, 1990. Staying in Nicosia and Paphos. Reg Bradshaw M.S.C., Ph.D. and P.G.Hardy, B.Sc., Ph.D.
- c) Geology on the Isle of Skye. 23.6.'90. for 1 week. Fee £60. Leader P. G. Hardy, B.Sc., Ph.D.
- d) Field Geology in Ribblesdale 2nd/3rd June, 1990. £25. Leader T. Barklem, H.Sc., F.R.G.S., F.G.S.
- e) Les Musees Geologiques de Paris: A weekend visit to some collections in Paris. Leader Reg Bradshaw. 29th March-1st April, 1990. Fee details on application.
- f) Santorini. 6th-20th Sept., 1990. Fee £475. Leaders M. Aston, B.A., F.S.A. M.I.F.A., and P. G. Hardy.

g) Gold: Dayschool on a Saturday in July, 1990 at Ogafan Gold Mine, South Wales, Leader M. Armitage, H.Sc.

All enquiries for the above to Department of Continuing Education, Wills Memorial Building, Queens Road, Bristol BS8 1HR. Tel: Bristol (0272) 303622.

7. Trigon Mineral Services Ltd. supply specimens, provide tuition on mineralogy and gemology, organise field trips, exhibitions, lectures and informal talks, and specialise in British and Scandinavian minerals. This is a new company jointly run by Spencer Mather Gwyn Green and Mark Jackson at 10 Strickland Court, Grenville Drive, Smethwick, Birmingham, B66 1JS. Tel: 021 565 5051.

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FROM THE PAPERS:

P.T.O.

Geology Today Geological Photography Competition, 1989



CONGRATULATIONS to JUDITH SHILSTON for winning second prize in this competition. The prize was presented by Professor Alec Smith at a ceremony at the Natural History Museum, London, on December 1st.

Judith's photo shows the crater of VULCANO, off the coast of Sicily, complete with sulphur deposits and fumaroles, with the Mediterranean in the distance.

The photo will appear on the front cover of GEOLOGY TODAY, Jan/Feb 1990 issue.

geology today

GEOLOGY TODAY is a lively magazine for both amateur and professional geologists. As a result of our contacts at this event, the publishers have offered members of the BCGS a 20% discount on the subscription to the magazine.

The annual subscription is therefore £15.25 post free, instead of £19.00

The enclosed leaflet describes GEOLOGY TODAY and includes an order form. When ordering, BCGS members should indicate that they are members and qualify for the reduced rate.