



# The Black Country Geological Society

## Editorial:

Members will probably be taking their friends on the guided walks soon, especially those to the Wren's Nest which are very popular. This issue will help to keep us up-to-date.

The Society has been fortunate in securing the agreement of Mr. Alan J. R. Evans to producing a regular contribution to the newsletter on the problems arising from the limestone workings in Dudley.

Mr. Evans was Director of Engineering Services to the Metropolitan Borough of Dudley from 1974 until earlier this year. He then became a consultant to the Authority upon limestone workings. He has obtained approval of the Council to supplying this information. For this the Society are indebted to the Council and we appreciate their policy of disseminating as much information as is practical. We look forward with interest to further accounts of progress.

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## Next Meetings:

Monday 25th June: Evening field trip to the Lickey Hills. Leader Paul Shilston. Meet in the car park, Lickey Hills Golf Course, Old Birmingham Rd., 7 p.m. Grid Ref: 996759.

Sunday 1st July: Field trip to Charnwood Forest. Leader John Armitage. Meet 11 a.m. outside the "Queen's Head" (a Marston House), Markfield, Leicestershire. The village is situated just off the A50 trunk road between Leicester and Coalville.

Monday 23rd July: Informal meeting to classify rocks and fossils.

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Meetings are held in the Allied Centre, Green Man Entry, Tower Street, Dudley, behind the Malt Shovel pub. Indoor meetings commence at 8 p.m. with coffee and biscuits (no charge) from 7.15 p.m. Field meetings will commence from outside the Allied Centre unless otherwise arranged. Those who would like lifts, please contact Nigel Bradley.

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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.

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

*Vice Chairman*  
P. G. Oliver B.Sc., Ph.D.,  
F.G.S.

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M.I.Geol., F.G.S.

*Hon. Secretary*  
P. D. Shilston M.A., C.Eng.,  
F.I.E.E., M.I. Mech.E.

*Field Secretary*  
N.G. Bradley

Remaining programmes for 1984:

Monday Sept., 17th.  
Informal meeting.

Sunday Sept., 23rd.  
Joint field trip to Ludlow and Leintwardine, with the Shropshire Geological Society, leader Professor W. Dean.

Monday Oct., 15th.  
Lecture by Dr. Ian Fairchild of Birmingham University. "The Balmy Shores and Icy Wastes of the Precambrian."

Monday Nov., 12th.  
Informal meeting and talk on borehole drilling by Maitland Woods.

Saturday Nov., 17th.  
The BCGS borehole will be sunk. At lunchtime there will be a social with buffet at the Park Inn, Woodsetton.

Monday Dec., 3rd.  
Lecture by Professor A. Hallam of Birmingham University. "Mass Extinctions in the Fossil Record."

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S.O.S! VOLUNTEERS! YOUR SOCIETY NEEDS YOU!

Will someone with access to photocopying facilities, who can copy the newsletter for a while, please contact Hilery Logan 021-355-1737 or any committee member.

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October 17th 1983. Italian Volcanoes. Talk by Adrian Collings.

The talk was divided into two parts. The first part considered

recent eruptive activity on Mount Etna. The second part illustrated volcanic activity and features of the Eolian or Lipari Islands off Northern Sicily. The volcanic activity in Southern Italy and Sicily is caused by a zone of crustal weakness resulting from the complex jostling of crustal fragments in the Mediterranean area. In places basaltic magma is erupted to the surface from the underlying mantle, as at Etna and Stromboli, and in other places, crustal melting has resulted in rhyolitic magma erupting as on Lipari. Mount Etna is a large volcano with a height of about 3340 m. and 19 km. radius, and is one of the most active volcanoes in the world.

Recent activity has shown a crude cycle, with the magma column beneath the central crater becoming stagnant during the 1940's and 1950's, and solidifying during the 1960's. A new magma column became established in the late 1960's and has led to the formation of the Bocca Nuova. While the magma column beneath the central crater was relatively inactive, the north east crater took over and maintained a remarkably constant mode of activity for about five years. The new magma column has fed the spate of eruptions that have occurred since 1971. The eruptions are mainly from the conduit beneath the Bocca Nuova, migrating along radial fissures, and the 1983 eruption was part of this sequence of activity.

On the island of Lipari the rise of gas-rich viscous rhyolitic magma has caused explosive volcanism. The last gasp of each eruption is usually the rise of a very viscous dome of degassed lava. On Vulcano the results of explosive volcanism are very well seen. Hydrothermal activity occurs on both Lipari and Vulcano, resulting in some very colourful cliffs on Lipari and a fascinating area of mudpools and fumaroles on Vulcano. The crater of Vulcano steams spectacularly in places. On Stromboli, basaltic magma is erupted with spectacular results as gas builds up beneath a thin crust, and is ex-

posively liberated along with semi-incandescent blocks, every five to fifteen minutes.

Adrian Collings:

October 23rd, 1983. Joint field meeting with the Shropshire Geological Society to Black Country sites.

Leader Alan Cutler.

This field meeting visited two sites, the Hurst opencast in Brierley Hill and the Wordsley Ridge.

The Hurst site is being worked chiefly to make the area suitable for industrial building. There has been coal mining on the site for well over 100 years, resulting in much disturbance to the ground, at least 120 mineshafts are known on the site! There are also mine adits, galleries, and collapsed structures. The area is being systematically excavated and then refilled and compacted by machine to give a stabilised site. Opencast coal mining is a by-product of this activity, as the site is crossed by the Thick Coal, and the Upper and Lower Heathen Coals. The Thick Coal, 9-10m. thick in this area, had been partially mined in the past, but substantial exposures could still be seen, dipping at some 18° W. Below this, the Upper Heathen Coal (1m. thick and of good quality) was exposed, underlain by the Lower Heathen coal (0.8m. thick and of poorer quality).

A few fossils were seen, probably of freshwater mussels, as well as traces of tree roots below the coal seams.

A point of interest was the large number of pit-props and roof supports unearthed in this excavation, showing where mining had taken place in the last century.

Our thanks are due to Mr. Dave Patterson of Johnson, Poole and Bloomer, mining engineers, for showing us round this site.

The Wordsley Ridge area showed a different set of exposures, being mainly Triassic. The area is interesting in that it is crossed by the Western Boundary Fault, the N-S fault which virtually fixes the western limit of the Black Country. At this point the fault has two parallel branches about 500m. apart so there are two abrupt changes of horizon. The strata seen, from west to east were:-

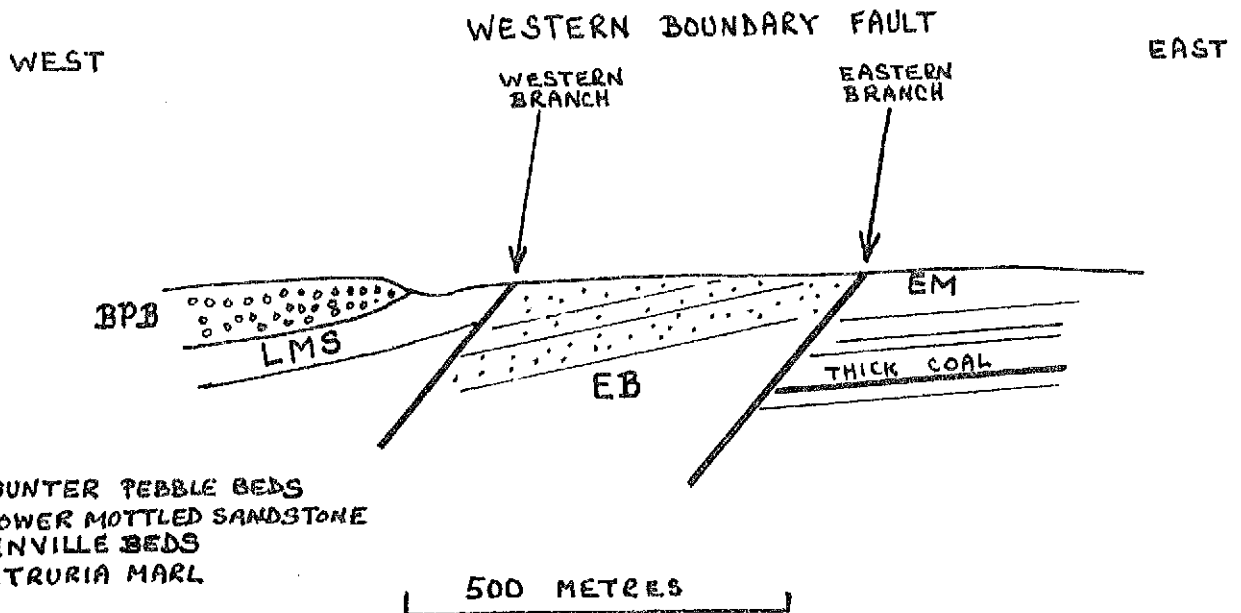
West: Bunter Pebble Beds / Fault  
Lower Mottled sandstone / Fault  
Eville Beds / Fault  
Etruria marls: East.

Starting at the western side, an exposure along the Brierley Hill Rd. showed a fine section of Bunter Pebble Beds. The basal conglomerate consists of well rounded pebbles, mostly of quartzite, transported from the area of northern France by flash floods in a desert environment.

Below this, the Lower Mottled Sandstone is an aeolian deposit representing fossilised sand dunes formed in a desert by a prevailing wind from the east.

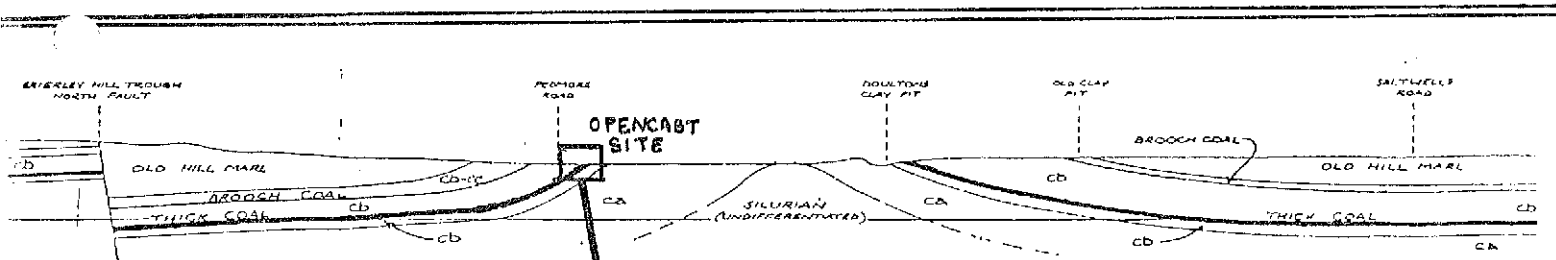
After crossing the western branch of the Western Boundary Fault, the Eville Beds were exposed beside the footpath. These occur as a breccia containing angular pebbles mostly of igneous origin, considered to have formed in an arid climate as scree deposits. Eville Beds are normally classified as at the top of the Carboniferous.

Still travelling eastwards, the eastern branch of the fault was crossed and we were now clearly among Coal Measures strata. An

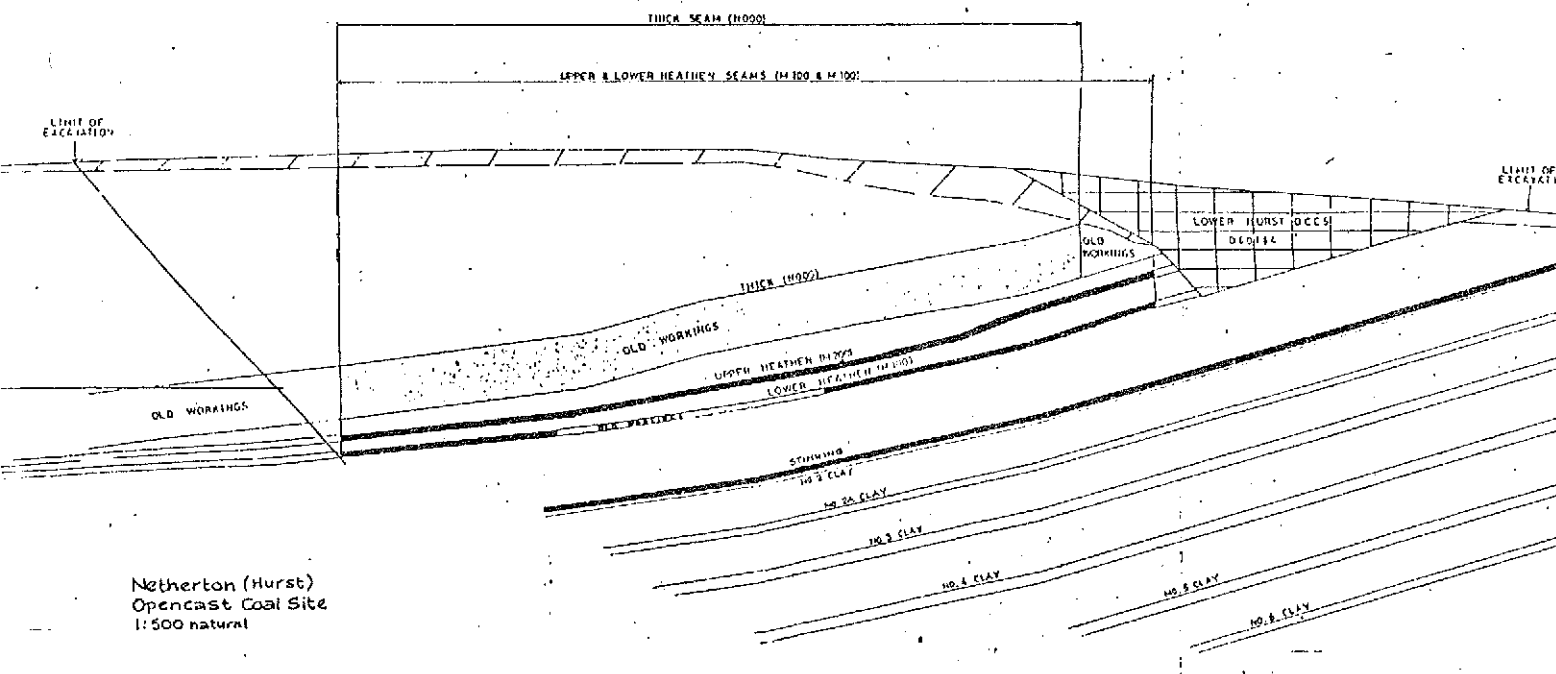


- BPB - BUNTER PEBBLE BEDS
- LMS - LOWER MOTTLED SANDSTONE
- EB - ENVILLE BEDS
- EM - ETRURIA MARL

SECTION ACROSS WORDSLEY RIDGE



SECTION ACROSS NETHERTON ANTICLINE.



Netherton (Hurst)  
Opencast Coal Site  
1:500 natural

HURST OPENCAST SITE.

exposure of Etruria Marl (Upper Coal Measures) was seen alongside the footpath. The Etruria Marl Series comprises red and mottled marls and sandstones, and is a "red bed" deposit formed in land-locked basins following a general uplift of the land surface, after swampy conditions during the formation of coal deposits. So in the short distance of a kilometre we covered several geological conditions and traversed two sizeable faults - a complete geological tour in miniature.

Paul Shilston:

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Dudley Limestone Workings.  
Progress Report.

In 1981 the Department of the Environment and the Local Authorities involved commissioned Ove Arup and Partners, Consulting Engineers, to assess the problems associated with limestone workings, consider remedial measures and recommend priorities. The Consultants' final report and the report of the steering committee "Policy Considerations Arising from the Study of Limestone Workings" were published on the 21st July last. Copies are available for inspection at Local Authority offices. With 100% Derelict Land Grant from the Department of the Environment, Dudley has embarked on a number of remedial and investigatory schemes. Following the formation of a crown hole in 1981, infilling of the Shirts Mill Cavern by the hydraulic

stowage of sand was carried out during the first three months of this year. Roof stabilisation works at the entrance to Singing Cavern have recently commenced in association with the construction of a new canal tunnel to this cavern from "The Well" on the existing Dudley Canal Tunnel.

Perhaps the most important projects, however, are at the Dudley Sports Centre where a new 5 ft. diameter shaft has been sunk into workings and a passenger hoist installed therein. This is a necessary preliminary to the execution of a full-scale trial of infilling these pillar and stall workings by the injection of "rock-paste" comprising a mixture of graded colliery or similar waste materials and of a consistency of concrete. This will be pumped into the workings through overground pipelines and through boreholes. This trial is programmed to commence in July next and will provide important information regarding the general suitability of this technique to situations where infilling of the workings is the appropriate remedy.

In support of this trial a considerable range of scientific studies and observations are already in hand by the Local Authority and its Consultants (Ove Arup and Partners), together with the Department of the Environment, through the Building Research Establishment and the British Geological Survey.

Investigatory boreholes are now being sunk in the area of the Guest Hospital, Black Country Museum and Castle Mill Road, and proposals are well advanced for the installation of ground monitoring stations at a number of sites, and preliminary studies on other areas underlain by workings are proceeding. 19.4.84.

Alan J. R. Evans:

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Letters to the Editor:

62 Red Hill,  
Stourbridge.

Dear Sheila,

I have enclosed a reprint about the dinosaur exhibition in York Museum. It seems to be an exhibition of unusually high standard.

Is there any chance of the Society organising a summer trip to the exhibition? It would be more sociable than some of us going separately.

Secondly, I wondered if members with children were aware of the existence of the Junior Fossils Club, which meets in Dudley Museum twice a month. The club is aimed at 8-13 year olds and is run by professionals. My younger son is thoroughly enjoying it.

Thirdly, on page 3 of the April newsletter there is a review of a Department of the Environment booklet about the study of the limestone workings of the West Midlands. A copy was available for inspection at the January meeting, and it was interesting and well illustrated.

Quite the sort of booklet members would like to acquire, especially as it costs only £1.50. Apparently this is one of several published by the Department of the Environment on geological themes. Would it be possible for the Society to acquire copies for sale?

There is a regional office of the Department in Edgbaston. By-the-way, the review in the newsletter was excellent, but there was no statement on price and availability.

Having roused our interest, you leave us suspended! One expects such information,

especially if the Society does not intend to make a bulk purchase for resale to members.

Kind regards,

John Colledge:

Many thanks indeed, John. Will do better! Editor.

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4 Birchfield Av.,  
Tettenhall.

Dear Mr. Woods,

I would like to thank you for all the information concerning the Society's activities that you have sent me. However, I am sorry to inform you that I can no longer remain a member of the Society. I shall shortly be moving away from the Midlands, and I hope later to take up a posting abroad.

I would like to take this opportunity to thank you again, and I do hope that the Society will continue to flourish.

Yours sincerely,

24th March.

S.E.Whatmore.

Sue joined as a student member in 1980. Editor.

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From the Papers:

Opening up the Caves of old Glory:

A huge, full-page article from the Express and Star simply will not fit on our pages, and it is a pity to reduce it. Please look on the Society's noticeboard.

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One week geology course:

WHEN major art exhibitions are mounted in London, there is a tremendous coming together of art treasures. Such events in the natural sciences are exceedingly rare. This exhibition is, however, just such an occasion. Here are on view some of the most startling treasures, such as the hip of a dinosaur fractured during life and subsequently healed, a huge dinosaur dropping, a dinosaur brain, dinosaur skin and much, much more.

For anyone with a dinosaurophile child or relative, or even a passing interest oneself, then a visit to York is a must this year. In the years ahead you will never be able to live with the shame of not having grasped this opportunity. What the Yorkshire Museum has put on display is undoubtedly the finest exhibition relating to dinosaurs anywhere in the world. I have visited dinosaur exhibitions in museums in North America, Europe, the Soviet Union and China but none gives the rich fare of what can be found in York.

After being awed by the dimensions of dinosaur skeletons, the young visitor is thirsty for more information. In the Natural History Museum in London's South Kensington you will see several fine skeletons. *Diplodocus* and *Triceratops* in particular, but for real solid information on dinosaurs you will be searching in vain.

There are bays that take you through some simple-minded exercises explaining cladistics but never a stomach stone, let alone a dinosaur dropping. There is no natural history to sully the purity of constructing and testing cladograms to "communicate concepts of science".

The visitor can, of course, always buy Alan Charig's excellent book (*A New Look at Dinosaurs*, BM(NH), £3.95) which will tell them what they came to the museum to see.

Charig is the Natural History Museum's own dinosaur expert; curiously, he was not involved with setting up its own dinosaur exhibition. That was the responsibility of the Public Services Department, but

## Dinosaurs are to be enjoyed

Beverly Halstead tasted the rich fare of the new dinosaur exhibition at the Yorkshire Museum. Open until 28 October, *A New Look at Dinosaurs* is good news for all dinosaurophiles

it was always evident what sort of exhibition Alan wanted. Now in York we can see it for ourselves.

The idea of a dinosaur exhibition in York was the brain-

were lovingly brought out into the light and transported across the Watford Gap into the tender care of the Northern barbarians.

The flow of the exhibition is



Five metres of Iguanodon skeleton (left) and a "dinosaur jungle"

child of Barbara Pyrah, the keeper in geology; whether it got off the ground was dependent on getting sufficient loans of material to supplement the museum's own collections. Dr Michael Eagar of the Manchester Museum had been quick off the mark when the Natural History Museum dismantled its dinosaur gallery, and he borrowed the complete mounted *Iguanodon* from South Kensington. This has now been

moved across the Pennines to form the centrepiece of the Yorkshire show. With the approach to the Natural History Museum for loans, Dr H. M. Ball, keeper of palaeontology and a staunch believer in museums primarily being concerned with displaying specimens, and Dr Alan Charig were delighted to help. The Yorkshire Museum people were astounded by the response: they would inquire about borrowing specimen  $x$  and Alan would

immediately suggest  $x$ ,  $y$  and  $z$  and a few dozen more besides. The museum's treasures, hidden away from the public gaze by the Public Services Department,

based closely on Alan's book, which serves as the catalogue of the exhibition. The exhibition itself starts off with explaining what dinosaurs are and how they are preserved, as well as a bit about geological time and the past geography of the Earth. This leads to the mounted *Iguanodon* and the classification of dinosaurs, a good old family tree of reptiles not a cladogram in sight. Then into a gallery dealing with the Saurischia carnivorous theropods and the mighty sauropods (and some smaller ones) and a fascinating array on dinosaurs as living animals, with the sort of fossils it is hard to believe really

exist. Here one turns to meet the herbivorous Ornithischia, armour-plated, dome-headed, duck-billed, parrot dinosaurs and horned dinosaurs, then into a "dinosaur jungle" of plants: living fossils and fossil fossils, with appropriate background sound effects. There is a gallery devoted to the history of the discovery of dinosaurs, which includes finds made in the past few years in Britain from the Surrey "Superclaws" to the "Leicester-pod". Finally, before emerging into the dinosaur bookshop, one is regaled by theories of extinction and human exploitation of dinosaurs for both commercial and political purposes. There is a light touch throughout—dinosaurs are to be enjoyed.

The organisation of the exhi-

bition was masterminded by Barbara Pyrah and the keeper of natural history, Paul Howard. A year ago Chris Johnson-Green, a designer of 20 years' experience in interior design, graphics, education and latterly in museums, was brought in. His stated aim was "satisfying all, children and adults, with a natural enthusiasm for dinosaurs, right across the board, by putting across different levels of information so that people could pull out what

they need. There is a basic simple level presented with the objects themselves as the starting points, but there is more information at depth provided." Chris has succeeded admirably in what he set out to do.

There are some small touches that are worth commenting upon: Paul Howard noticed children sitting on the floor

around *Diplodocus* in the Natural History Museum, resting their paper on the rim of the skeleton's podium while trying to draw or make notes. In York, the large skeleton is surrounded by a sloping panel where books and papers can be propped up, and with a rim to stop pencils rolling onto the floor.

Here is what a museum exhibition should be about. It has been put together by people that have fallen in love with these giants of the past. Yorkshire was content to allow the dinosaurs to tell their own story; the result is an exhibition of unimpeachable scholarship, which provides something of interest and enjoyment at any and every age. As a palaeontologist, it is gratifying to see Alan Charig's approach vindicated by such a dazzlingly brilliant exhibition. As a Lancastrian, I am delighted to be able to give due honour to our old rivals across the Pennines. As a Northerner, I am proud that the North has so convincingly exposed the trendy nonsense that has recently infected one of our most revered national institutions, not by calling them but actually showing them how things should be done, by bloody well doing it.

Sometime between now and October make certain you go to York: it is the best thing on dinosaurs you are ever likely to see.

*A New Look at Dinosaurs* is open until 28 October at Yorkshire Museum, Museum Gardens, York YO1 2DR, 1000-1700 (1300-1700 Sundays). School parties welcome by prior arrangement. Tel 0904-29745.



Geology in the West of England  
The Warden, Urchfont Manor,  
Devizes, Wilts. SN10 4RG.  
July 21-27. Fee not stated.

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East Midlands Geological  
Society.

July 8th. Trip in canal barge  
on Dudley canal. For spare  
seats contact Mrs. M. Wright,  
311 Mansfield Rd., Nottingham  
NG5 8JL. Tel: 267442.

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Committee dates:

July 9th )  
Sept 10th )  
Nov. 19th ) at Park Inn.

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Welcome to new Members:-

R. H. Perrin, Stourbridge.  
Doreen Thomas, Stourbridge.

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Hon. Sec.,

Paul Shilston,  
16 St. Nicolas Gardens,  
Kings Norton,  
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Field Sec.,

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Tel: 021-429-8833.

Editor:

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

Cotwall End Geology Trail Project:

Next meetings:

24th June, 1st July, 15th  
July, 12th August. All at 10.00 a.m.  
Nature Centre Car Park.

17th June should be the final recce -  
looking at Gornal Grit and the  
Silurian of Turners Hill. The last  
meeting yielded two new exposures in  
Sedgley (Aymestry) limestone. Also  
found were two interesting pieces in  
the scree with what appeared to be  
bone or carbonaceous material in the  
matrix. *Pachythea*, the primitive  
'Old Red' plant, has been positively  
identified in one of the samples,  
which we now presume was derived from  
the Ludlow Bone Bed or more probably,  
higher in the sequence nearer the top  
of Turners Hill.

Extra help is urgently needed in the  
clearance of the many outcrops in the  
valley and making reference col-  
lections for the Nature Centre and  
Dudley Museum.

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Since this newsletter was drafted  
the S.O.S. regarding the photocopying  
of the newsletter has become a  
matter of some urgency. This issue has  
had to be produced commercially.

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## FORUM

## Geology and Mr Scargill

Derek Ager digs beneath the surface of Britain's current coal mine dispute

ARTHUR SCARGILL is very clever. If you listen to him carefully, he always says the same thing—it is something about Britain producing the cheapest deep-mined coal in Europe (or does he say the world?). The critical phrase is “deep-mined”. The implication is that there is something particularly worthy about the present depth of burial of the coal seams, which is an accident of geological history. Whether or not they are the cheapest of that kind I do not know, but that is not the problem. The problem is that Britain is competing with coals that are *not* deeply buried and which can be exploited much more cheaply. Of course the coal has to be buried fairly deeply at some time in its history to transform the original plant debris into coals of reasonable rank. For this reason, the geologically young Tertiary *Braunkohlen* of Germany and Hungary, which are a mere 25 to 50 million years old, do not compare in quality with the Carboniferous coals of Britain, which are respectably mature at 300 to 320 million years. The Tertiary coals are flat-lying and easily worked opencast, but they are suitable only to make into briquettes for fuel. They are not so far removed from modern peat which is still forming in the bogs of Ireland.

Mesozoic coals, such as those in the foothills of the Rockies, are a little better, round about the 100 million year mark, but they still cannot compete with the Palaeozoic coals. Thus the little mining town of Canmore, near Banff in Alberta, founded on Cretaceous coal, was once prosperous enough to have its own opera house but is now a half-deserted shadow of its former self. What Scargill has to worry about are the Carboniferous and Permian coals of the geologically stable regions of the world. Thus the unmoved shields of the Soviet Union carry more than 60 per cent of the world's coal reserves. Britain is now importing coal from Poland on the rigid East European Platform. Then there is the old southern continent of Gondwanaland. That “super-continent” consisted of the present continents of South America, Africa, Australia and Antarctica in the southern hemisphere, together with the Indian subcontinent, which has now finished up north of the equator. In all, these fragments of the former super-continent (which began to break up during Mesozoic times) there are extensive coal



Pithead pontiff with a parish below

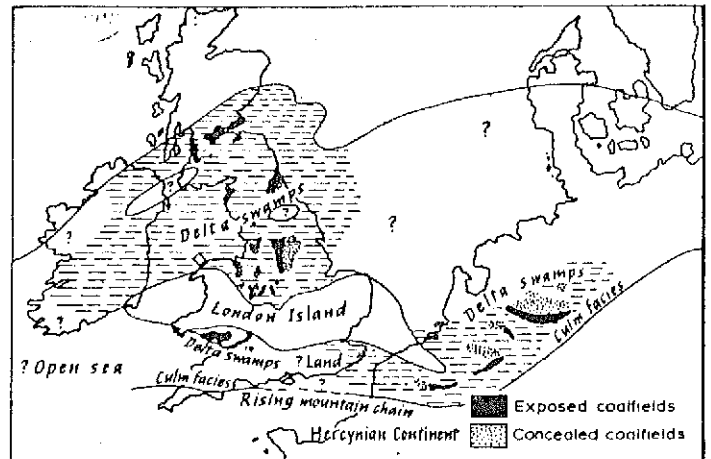
deposits of late Palaeozoic age. Thus the Ecca Series of southern Africa is of early Permian age and provides valuable coalfields such as the Wankie Coalfield of Zimbabwe. South America has similar coalfields with the fossilised remains of similar plants as does icy Antarctica, which even has valuable high-grade anthracites that are never likely to be worked with present technology.

However, we are now dealing with an ancient stable continent that later broke up. Its fragments may have drifted about the Earth's surface, but for the most part they were not involved in the violent coming together of plates that produced the great mountain chains. So the ancient deposits of bogs and deltas on each fragment remained uncontorted. Also, for the most part they moved as exposed land masses, suffering erosion which removed their cover. They were not hidden by later marine sediments. So we finish up with thick flat-lying coal seams that are not far below the present surface.

In Queensland, for

example, the seams can be worked easily with giant excavators. Four hundred men can produce about 4 million tonnes of good coal every year—that is about 10 000 tonnes per man. For comparison, we may consider the South Wales coalfield, which may be regarded as the “type” coalfield of Britain, and was directly responsible for my city, my university and ultimately my job. Here the seams are deep, they are thin and they are confused by folds and faults. Here some 23 000 hard-working miners produce about 7.6 million tonnes of coal per annum, which works out at about 330 tonnes per man. How can Britain possibly compete? Apart from the industry and bravery of the miners, there is nothing specially commendable about coal that has been extracted under such difficult and dangerous conditions. It is not better coal because it occurs in disturbed strata. Our local jester, Max Boyce, sings that “the pithead baths are a super-market now”. When I hear this I say quietly to myself (and feel a traitor for doing so) “and a good thing too”.

Of course, it is tragic when an industry dies with the disruption of local history, local traditions and worst of all, local lives. But it is part of a continuing evolutionary pattern that in this case (as in so many others) is directly related to local geology. Coal has been mined in the Tawe and Neath valleys since the 13th century, but it was the clay ironstone seams of the Coal Measures that were most important in the early days of the industrial revolution in



Northwest Europe during Coal Measure times. Exposed coalfields are shown black, and concealed coalfields stippled