



THE BLACK COUNTRY GEOLOGICAL SOCIETY

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The Geology of the Charnwood Forest Area
Field Meeting - Sunday 16th April
Leader: Dr R King (Leicester University)

The Society is very grateful to Dr King for leading this field trip. Although Leicestershire is not a great distance from the Black Country, the geology of Charnwood Forest was very unfamiliar to many of our members.

The ever changing theories of Charnian stratigraphy were vividly explained by Dr King, however the latest suggestions are that the rocks should be examined for what they are, and not, why they are arranged in this totally confused array.

The first location was Newhurst Quarry situated just south of the junction between the A512 and the M1 (grid ref. SK 485180). Here the Newhurst Syenite, a coarse grained intermediate igneous rock, was being quarried for roadstone. Many different minerals and rock types were found and identified. The main features of this quarry were, the two sets of mineral vein intrusions indicating the different orogenic movements to which the area had been subjected, a faulted contact between the syenite and the Blackbrook beds showing massive overfolding and drag folds associated with the movement of the fault. We were also shown copper rich mineralization in open veins, a result of hypogene enrichment. It was interesting to note that all these mineral veins were restricted to the igneous rocks and came to an abrupt end at the junction with the Charnian rocks of sedimentary/fragmental origin.

From the top of the quarry the distinct unconformity with the Triassic, Keuper marls, was easily seen. On examination of these rocks pseudomorphs of halite were found and also large slabs with ripple marks. Apparently Amphibian foot prints have also been found at this location. (We all looked hard, but couldn't find any!)

After drinking our lunch we went to the second location at Charnwood Lodge. Here we saw 'bomb' rocks, these are thought to have come from deep in volcanic vents, where bubbling gases in the molten magma have produced a pneumatolitic porphyritic acid andesite, or dacite.

The last location was Bradgate Park, the main attractions being *Charnia masoni* and *Charniodiscus concentricus*, Britain's oldest fossils. The highlight of the day was the walls of the toilet at Bradgate Park, where the freshly cut facing stones showed practically the full sequence of the Charnian rocks. The tour of the outcrops in Bradgate Park provided us with the rest of the sequence.

The last two locations were non-hammer sites and the rocks displayed were sometimes extremely difficult to see because of the algal growths and weathered surfaces.

As a society involved in conservation, we should take careful note of this type of situation, and ensure that conservation does not lead to total preservation with the result of a site losing its geological features. (GRAHAM HICKMAN)

Thursday 11th May, 1978.

Lecture - G. Davies B.Sc., M.Sc., F.G.S.
Hydrogeologist with West Midlands County Council

This was an excellent lecture on the techniques of hydrogeology used in the search for water supplies. Underground water supplies must be found either near to areas of demand or where there is a ready made conduit to the market such as a natural river.

Drilling techniques use either a cylindrical shell auger drill or a diamond or rotary rig. Drilling enables structure contours and sections of the aquifer, the water bearing rock, to be drawn. The boreholes can then be used to determine the height of the water table and thus to produce hydraulic contours. These are usually subdued reflections of the relief. The dimensions of the aquifer must be established and rainfall and evaporation data for the source area are collected to determine the recharge rate of the water source.

Geophysical methods of survey are also used. Instruments used include gravimeters, seismic geophones which measure the speed at which shock waves pass through the rock layers and the most useful of all, electrical resistivity meters, which measure the rate at which electrical currents pass through the rocks. The resistivity meters are adjusted to vary the depth at which the current passes. By these methods the position of strata beneath the surface can be worked out and in addition the resistivity meter indicates the position of the water table and possibly the salinity of the water as salt water is an excellent conductor of electricity. The results of such a survey need to be confirmed by borehole testing.

The chemistry of the water has to be researched. Water quality varies with depth and down the hydraulic gradient total dissolved solids are calculated. Water can be dated by carbon isotopes and surprise was expressed at the age, 30,000 - 40,000 years, of fossil water supplies from the Bunter Pebble Beds.

The permeability of the aquifer is tested, usually by pumping water up at a known rate and establishing the shape of the cone of the depressed water table which results. The shape of the cone is observed from wells in a straight line away from the pump well. Pumping can raise the interface between usable and saline water as is shown by some resistivity surveys around small pumping stations in Shropshire. The sources of salinity appear to be the Keele Beds and Keuper Marls.

Many of these tests were used in a survey to establish boreholes from which water can be added to the River Severn during dry spells.

It is most salutary to be reminded, in such a clear manner, of the practical applications of geology. (K.A.)

Geological Excursion to Burrington Combe Leader - A.K.Fear, June 18th

This proved to be an excellent trip, for the weather as well as the geology. The latter was extremely interesting and the party was able to see:-

1. A good section in the Carboniferous limestone series from D, to K beds and some of the underlying O.R.S.
2. The Trias conglomerate lying unconformably on the Carboniferous limestone.
3. Various features of limestone areas generally such as caves, swallets, and underground drainage.

Burrington Combe is a deep gorge cut into the north side of the Blackdown pericline by streams now running underground. The limestone dips at about 60°N and in a traverse up the Combe of about $\frac{3}{4}$ mile we saw about 3000 feet of strata. The strike of the beds is EW across the Combe but at the top of the Combe the road turns sharply to the east and runs along the strike of the Z beds.

The Blackdown pericline is one of four making up the Mendip Hills. In the core of the pericline the O.R.S. comes to the surface and gives rise to upland heath. The top of the Blackdown is the highest point of Mendip being 1068 feet above O.D. As we walked from the Carboniferous limestone to the sandy peaty soil overlying the O.R.S. we saw a change in the flora although some of the soils overlying the Carboniferous are sandy due to material transported during the Ice Age, from the summit.

One of the periclinal further to the east exposes Silurian in its core. The Silurian here contains an andesite which is quarried for roadstone.

The rumour that the first breakdown of the coach outside 'The Swan' at Worcester was planned is being strongly denied by the Committee.

Nature Conservation Liaison Group - Meeting on 24th June

The Society was again represented when the topic of conservation within the West Midlands County was discussed further.

The following is taken from the minutes of the meeting:-

12. Concluding the discussion the Chairman said that there was a clear desire for improved liaison and that the Trusts seemed to be accepted as the logical focus for this. Policy making required a forum for discussion and there appeared to be four possibilities:

- a. That a separate West Midlands Trust be set up.
- b. That the Trusts proposals for a Birmingham consortium with informal liaison in other Districts be adopted as a starting point.
- c. That the Trusts consortium proposals be extended to cover the whole of the County so that Societies would have a representative over the whole area.
- d. That informal discussion meetings be held regularly to discuss policy with those taking part taking the thoughts of the meetings back to their parent bodies.

The meeting felt that proposal 12c was the most desirable one to pursue. The Trust representatives were asked to reconsider their proposals in the light of this and to produce a paper on the subject which would be circulated to all bodies for comment. The Trusts were asked to look carefully at the resource implications and to keep NCC informed on this aspect.

14. Under AOB

a. The Chairman drew attention to a letter from Dr Seddon of the Birmingham City Museums and Art Gallery in which he offered to consider a possible role for the Natural History Dept as a central receiving station for West Midlands conurbation records. He would have preliminary discussions with Dr Seddon and keep organisations informed.

b. Dr Oliver had brought with him copies of a list of sites of geological interest which the Black Country Geological Society felt might have additional biological interest. This list was available to any organisation in the hope that the sites might be more fully investigated.

October 15th. Field trip to Welsh Borders. Leader Dr P Toghill of Birmingham University. Coach from Dudley Library at 8.45 a.m. Bring packed lunch.

November 17th. Social evening at the 'Old Mill', Windmill Street, Upper Gornal. 8.00 p.m. - 12.00 p.m. Good food and company. Tickets £2.00 from Hon. Sec., please book in advance.

December 7th. Various aspects of Black Country Mining. The Friends of the Black Country Museum Mining Group. Dudley Library 7.45 p.m. Tea and biscuits 7.15 p.m.

**FOCUS ON WILDLIFE
CONSERVATION YOUTH GROUP**

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ANYONE INTERESTED?

Programme for 1979

January 18th. A study of the local geological maps with particular reference to igneous intrusions. Dudley Library 7.45 p.m. Tea and biscuits 7.15 p.m.

January 21st. 'Igneous Intrusions in the Black Country' - A field trip to a number of localities. Meet at Dudley Library at 9.00 a.m. Bring a packed lunch.

February 15th. Lecture. Possibly dealing with one or more aspects of palaeontology.

March 15th. Annual General Meeting/Film Night and sherry.

April 5th. A general discussion about Pleistocene geology with particular reference to the next field trip.

April 8th. A field trip to look at the Pleistocene deposits of part of the Midlands.

May 10th. A meeting to discuss the geology of the Dorset area.

May 18th, 19th, 20th. Weekend field trip to Dorset.

June 10th. Igneous Rocks of the Peak District Field trip. Leader Dr R Ixer of Aston University.

Remaining Programme for 1978

September 21st. 'The Geological Re-survey of Telford New Town' by R Hamblin of the Institute of Geological Sciences. Dudley Library 7.45 p.m. Tea and biscuits 7.15pm

July 12th. A discussion relating to the progress made to date on the matter of conservation of geological sites in the Black Country.

July 15th. Sites for Conservation. A field trip to those localities in the Black Country, that the Society is particularly interested in.

September 13th or 20th. Lecture on Mineralisation.

October 11th. Geological maps relating to next field trip.

October 14th. Field trip to the Roaches and Goldsitch Moss. Some practical field mapping thrown in for those interested. Leader Peter Whitehead.

November 16th. Social Evening.

December 13th. Members Night. 'The Geology of the Dumfries Area' by Graham Hickman.

Non-members welcome at all meetings.

Bookbox

The Society now has a bookbox which is available at each meeting. There is a good selection of books, newsletters and journals (including Q.J.G.S.). Please make full use of these borrowing arrangements.

Conservation Programme

Peter Parkes has set up a programme of Sunday morning and evening visits, in order to assess the importance of exposures within the area. More people are required, more information is needed about sites. Peter Parkes, 393 Wren's Nest Road, Dudley.

Dudley Museum Geological Collection

Several members have carried out preliminary sorting and identification of this collection on Saturday mornings during the last three months. The decaying specimens have been removed, and labels rewritten for those specimens whose labels are becoming faded and illegible.

The collection should never have been allowed to reach this state of chaos, and it is hoped that a Geological Curator will be appointed in the near future.

The Society's influence is being expressed through Graham Hickman, who is being employed by Dudley Council for a period of six weeks to assess the situation and accelerate the restoration process.

Before any more detailed work on the collection takes place The Geology Curators Group of the Museums' Association is to be contacted again.

Brief Notes

1. Thanks are due to Graham Hickman and Peter Whitehead for leading excellent discussions which preceded the field trips to Charnwood and Mendips.
2. The following have supplied lists of sites to Peter Parkes. Keep up the good work.

Members Sheila Pitts
Peter Whitehead
Douglas Warren
Alan Cutler
John Gollidge
Peter Parkes

Non-members Darlaston Comprehensive School
Birmingham University (Mrs Joachim)
Foley College
Lanchester Polytechnic
Bilston College of Further Education
Coventry College of Further Education
Birmingham University (Dr Strachan)
Solihull Technical College

3. The Society has made comments to the County Planner concerning the Aldridge/Brownhills and Sandwell Wedge Local Plans. The County has expressed appreciation for these comments. We are now working on those sites contained within the area covered by the Green Belt Plan.
4. Geological maps are now available for hire as well as helmets and hammers.

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