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AGM Issue

**Annual General Meeting,
10.30 am to 12.30 am, Sat 22nd January ,
Llanrhos, Llandudno,
at Fugro Robertson Ltd
(as Robertson Research is now called)**

Details of how to reach the offices are included in this newsletter (phone security on 01492 581811 for directions if you get lost).

This North Wales-based company is the largest petroleum geological consultancy on Earth.

Photos by Arthur Hudson :



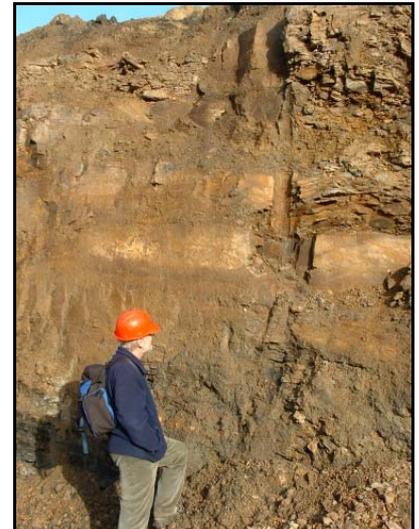
After touring Bangor University's Prince Madog oceanographic research vessel, members show off their sea legs and nautical stances.

After the AGM, we plan to take advantage of this unique opportunity to look at some of the work being undertaken worldwide in oil and gas exploration, and also in oil/gas field development.

We also will bring along some of the rock, slag and fossil material from the Brymbo steel works visit, and there will be the option of a local field trip in the afternoon (bring a packed lunch).

AGM committee election update: We are pleased to be able to announce that Jonathan Wilkins has withdrawn his promise to resign. If there are no new nominations, the members of the committee are also happy to continue in post as far as is practicable (Susan may be leaving the area during the year) and hope also to co-opt volunteers (press-gangs will not be used) to help extend our capabilities.

**Hope to see you
there!**



Will Jones examines a Carboniferous table leg (or perhaps a plant fossil ?) at Brymbo steel works—see inside for more details.



BRYMBO STEELWORKS

Jonathan Wilkins puts a recent field trip into context

The depths of Winter have been enlightened recently by a fine couple of hastily arranged outdoor meetings of a rather unusual nature: two “geological rescue” visits to what may turn out to be the last open-cast mine in the Welsh North-east coalfield. The trips allowed for the collection of information and specimens with which we hope to build a display for the forthcoming Wrexham Science Festival. Now read on for the background.....



A 1907 view of the railway station in The Lodge village. The huge slag banks, and varied topography of the area can easily be appreciated. The 1950's road tunnel had its entrance near here. The village was de-populated and access closed as a consequence of subsidence and further expansion and today it is completely engulfed by the extension of the site.



A view of the site looking south-east after demolition had commenced, in about 1994. Today, all the buildings have gone, except the office and canteen block (oval). The road tunnel led from beneath the canteen and diagonally across the site. The smooth fields, upper right, are the site of the earlier opencast mine workings and of Brymbo Hall, which was derelict. The present open cut (adjacent photo) lies beneath the northern end of the central sheds (circle).

The Industrial Revolution may not have started here, but the area of North-East Wales encompassing Oswestry, Ruabon, Wrexham and Mold was rapidly developed when it was realised that the coal, iron-ores and limestones of the Carboniferous were locally abundant and easily won. A key figure in this development was John “Iron-mad” Wilkinson whose father, Isaac, was a foundryman in Cumbria. As a child John learned his father’s trade of casting hot, fluid iron in moulds. The family purchased the Bersham Ironworks from the Lloyd family in 1753 and lived at Plas Grono, Erddig.

The ironworks had been worked by coal with poor results but Abraham Darby of Ironbridge perfected the use of coal over charcoal and this was subsequently used at Bersham. In 1762 John and his brother William took over the ailing ironworks and turned it into a highly profitable business. In 1774, he took out a patent for the boring of cannon and is said to have supplied cannon for both sides in the American War of Independence. He also produced most of the cylinders for the famous Boulton and Watt steam engines. He was a shareholder in the Ellesmere Canal and reopened the Minera lead mines and others near Mold.

In 1792 he bought the Brymbo Estate where he set up blast furnaces. He served as High Sheriff of Denbighshire in 1799 and died at Brymbo Hall on 14th July 1808, but is buried in Cumbria in an iron coffin. He was brother-in-law to the scientist Joseph Priestley. His estate was disputed when he died and much of his fortune went in litigation between his nephew Thomas Jones and his mistress and 4 children. The Bersham works were derelict within 20 years. The Brymbo works were bought out of Chancery in 1841 and a new limited company was formed by John Robertson, an engineer who first came to Wales in 1842 to survey mineral properties at Brymbo.

So impressed were the financiers by his reports about the coal, limestone and iron ores of the area that they offered him the opportunity to revive the Brymbo Iron Works. To



The site today, with Carboniferous bedrock forming the lower cliff line, the pale structures/debris (box) are remains of the road tunnel, everything else is works debris.

improve haulage between the works and the quarries he promoted the laying of the North Wales Mineral Railway (later acquired by Great Western).

In addition to his primary enterprises, Robertson had other commercial interests as founder partner of Beyer, Peacock & Company, the Manchester locomotive builders: Chairman of the Vale of Llangollen, Corwen, Bala and Wirral railway companies, and finally, Chairman of Minera Lime Works near Wrexham and Ruabon Coal and Coke Company. He went a step further in 1884 when, after the Bessemer process revolutionised steel production, he founded Brymbo Steel Works, which were in production until 1990 under the banner of United Engineering Steels. The company had a wide portfolio, including ironstone mines in Oxfordshire, from whence trains would bring the ore for smelting.

The works site has continued to develop over the years, claiming more land and engulfing the entire village of Lodge in the 1950's (the village railway station is seen in the 1907 picture). To ensure access, a tunnel leading along the line of the old road to Wrexham was created by cut-and-cover, but even this was finally overwhelmed by further expansion in the 1960's. In its heyday Brymbo steelworks employed more than 2,500 people and was the last steelmaking plant in North Wales when it closed in 1990 ago with the loss of 1,200 jobs. The rolling mills and blast furnaces were dismantled and sold to China.

In October 2003, work began on a £20 million project to reclaim the 240-acre former steelworks site. After years of delay the massive public finance project will prepare the site for 450 new homes and an industrial and office complex which could provide between 750 and 1,000 new jobs. Up to 65 workers are now approximately half-way through preparing the site for building the 450 new homes, 500,000 sq ft of factory and office space, and a new road which will link Brymbo with Tanyfron and the road network leading to Wrexham A483 bypass. There are also plans in the second phase to develop a heritage centre. Although the site is being cleared, Wilkinson's original blast furnace is being saved, along with other nearby buildings including the pattern-maker's workshop

So – what of the geology, and what could be seen? Follow me back 300 million years, to the equator and to a time when mosses and ferns ruled the world. Huge rivers drained the eroding continents, with the Caledonian mountain chain to the West and the Hercynian mountain chain rising to the South. Massive deltas enclosing huge swamps were covered with a dense forest of horsetails and club mosses. Thick layers of fallen

vegetation built up in stagnant, anoxic water and occasional flooding brought thick layers of fine silt to blanket and choke the growing plants – whose skeletons stood dead in the water until they were finally felled by decay and overwhelmed by more silt-laden water. Imperceptible changes in the landscape caused the river channels to migrate, burying the forest in a thick sand, and after imperceptible ages the whole area was rent by earthquakes as the Hercynian mountains reared ever closer.....CUT!

Well, that is how we found it, and I make no apology for melodrama because it is a shock to scramble up a scree of plant fossils, and to realise that one is standing in what was once a dense thicket of horsetails, each up to 20cm in diameter and up to 4 metres in height.

Minerals, including coal, have been won from the site for hundreds of years, and there are the remains of several collieries nearby. Now that the landscape has been laid bare, the geology is readily appreciated. The West of the site is high ground occupied by the Cefn Rock, a sandstone well-known in the area as a building stone. Moving East, the Brymbo Fault is encountered, which has let down the Cefn Rock so that it is adjacent to underlying siltstones and the first coal seam – the “2 Yard”.

Below this is a fine silt with abundant upright stems of *Calamites* and large numbers of siderite nodules, frequently bearing the remains of stems and cones of *Lepidostrobus*. Trunks of *Lepidodendron* up to 50cm in diameter are found as loose, circular discs or internal moulds in the siltstones. Below this is the “Crank” coal, which appears to have a seatearth beneath it representing a fossil soil horizon. Abundant nodules with *Lepidostrobus* and *Lepidodendron* were found here, but the best bark impressions were accidentally left behind. Others could only be captured on camera.



BRYMBO STEELWORKS (cont.)

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Carrying on down, the lowest seam to be excavated is the "Brassy" seam, beneath which are thick mudstones. The mudstones were disappointing for fossils, because although they are thickly populated with leafy, carbonaceous detritus, they appear barren of fossiliferous nodules or larger plant remains.

The engineering aspects of the site are also spectacular, and it must be noted that the opportunity to walk through the remains of the famous tunnel, once more open to daylight, is also welcome. I wish that I had even once been able to visit Brymbo Steelworks when it was working.

It is at such a time that one envies also the opportunities presented to dedicated specialists such as David Davies of Glamorgan, who spent a lifetime studying the fossil

plants of South Wales collieries. In open-cast workings the opportunities are surely greater, because all the strata are removed systematically, but one has to earn a living (and it won't be from selling *Calamites* on Ebay). Further visits may be possible at short notice if interesting features emerge as the excavation moves to its close in February.

No small thanks are due to Colin Davies for giving of his time so generously, and to Parkhill Estates Ltd for permitting access to the site. Photographs are from the collections of Wrexham County Borough Council and the National Library of Wales. If you are on the web, search for "brymbo+steelworks" and delight in what you will find.

Reference:

Bassett, M. & Edwards, D., Fossil Plants from Wales, 1982, National Museum of Wales.



Robertson Research (Fugro-Robertson) is a few hundred metres south of Llanrhos (up a tree-lined drive on the west side of the B5115)

NORTH WALES GEOLOGY DIARY:

AGM,

10.30 am to 12.30 am, Sat 22nd
January, Llanrhos, Llandudno, at
Fugro Robertson Ltd

(here)

**March 19th Sat, NEWI
Wrexham, 9.00 am,
Wrexham Science Fair,** This
year our stand will be called "**Ice
and Fire**", giving us the
opportunity to demonstrate
materials pertinent to the Ice Age
and to Steel Manufacture at
Brymbo. Please do contact us if
you have any samples/photos etc.
you think could help.