

North Wales Study Tour, May 2018

Ruth Andrews

Pictures by Ruth Andrews and Ashok Vaidya

First, lots of thanks to Andy Fish who not only arranged the visits and accommodation, but also did all of the driving. As you will see, it was a very varied and educational tour.

Pontcysyllte Aqueduct by Ashok Vaidya



This is the Pontcysyllte Aqueduct on the Llangollen Canal, 1000 feet in length, and supported by metal arches on 18 masonry piers as it crosses the deep valley of the river Dee. Designed by civil engineers Thomas Telford and William Jessop, it opened in 1805 and was used by commercial traffic up until it was formally closed in 1944.

The aqueduct survived and is now a thriving UNESCO World Heritage site popular with canal boaters and tourists alike.

Our group boarded a narrow boat from the aptly named “Jones the Boats” yard and spent a glorious hour cruising gently in warm sunshine across the aqueduct and back again. The bare facts do not prepare you for the surreal feeling of being on a boat, afloat on a strip of water barely wider than your craft, and looking over the edge to the valley floor over a hundred feet below.

With the edge of the cast iron trough just a few inches above the water level, and well below the freeboard of the boat it felt like being suspended in mid-air, flying – or should it be sailing – high above the verdant valley far below.

Ruth: I once walked across and that is not an experience I wish to repeat.



Ynys Y Pandy Slate Mill

Our first ‘wild’ visit was to the water-powered Ynys-y-Pandy slate saw mill of 1856, which is up a minor road beyond Portmadoc. (Andy is a very trusting driver and was relying on my map reading as the satnav coverage was inadequate.)



The mill was built around 1856 by Evan Jones of Garndolbenmaen and probably designed by the Scottish civil engineer Sir James Brunlees. It is ingeniously planned so that the natural slope of the site assisted the manufacturing process. A deep wheel pit inside the building accommodated a large overshot water wheel (26ft in diameter), and on the south side a long curving ramp brought branches of the tramway from Gorseddau Quarry into the mill at two different levels, serving the middle and upper floors.

The mill specialised in the production of slate slabs for floors, dairies, troughs, and urinals. In 1860 its heyday, it was producing over 2000 tons of finished slate goods per annum, but seven years later that was down to 25 tons per year, due to the poor quality of the quarried slate. The business struggled on but went into liquidation four years later in 1871. The building then provided a venue for the Eisteddfodau until the roof was removed around 1906.

Of Gorseddau Quarry, it has been said that everything was available on site to make a successful quarry apart from decent slate, and that it exemplifies how not to spend money on a slate quarry.

We then drove on to Bangor and checked in to Travelodge, our home for the next 3 nights.

Llynnon Windmill *by Ashok Vaidya*

On Friday, we ventured on to Anglesey, starting with a visit to Melin Llynnon, now owned by Anglesey County Council. Built in 1775-6 for a cost of £529 11s, or about £50,000 today, it ran until 1918 when a storm damaged the cap so that it could no longer turn. Then it could be operated only when the wind was from the south west (fortunately the prevailing direction).



It became increasingly dilapidated and finally a storm in 1954 ripped the cap off. Ideas to restore a windmill on Anglesey emerged soon after but it was not until 1978 that the Council purchased the mill and restored it to life again in 1984, at a cost of around £120,000.



The fully restored Llynnon windmill was particularly impressive on a bright sunny morning as we arrived. Our guide (*left in this group photo*) was a very enthusiastic and knowledgeable county council employee who escaped the office to show us round, a task he clearly relished.

It is now a popular tourist attraction with a thriving tea room and shop, which we patronised, of course. The mill is in first class condition and operates to show visitors how a flour mill works. These photos show the tentering gear for one of the 3 sets of stones, the stones floor, and the brake wheel and windshaft.



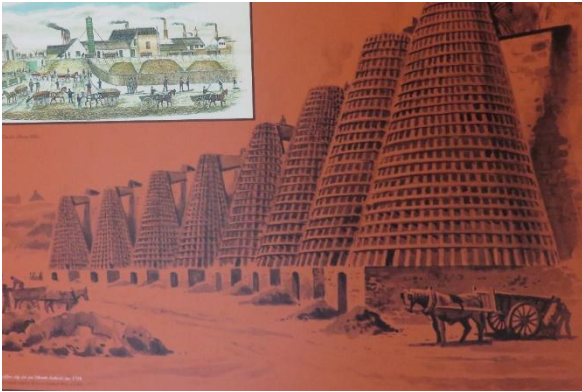
Ruth: It seems a pity that funding cuts may be going to make the windmill's future uncertain. It is the only restored windmill on Anglesey which at one time had some 50 windmills, including one which also had an integral water wheel (for calm days?).

Copper Kingdom

Next we drove to the tiny port of Amlwch to visit Copper Kingdom, the visitor centre for Mynydd Parys and its famous copper mine. The centre has been built inside one of the massive ore bins on the quayside.



Keith Andrews 2009



from the Copper Kingdom exhibition

It is very hard to believe that when the mine was in use the port had huge conical calcining kilns for extracting sulphur (a valuable by-product) as well as smelters, a lime kiln, and a prominent windmill. The port was once filled with the many ships used to bring in coal and ship out ore and copper.

After a snack lunch (we had had a large breakfast) we drove up the mountain to view the world famous opencast copper mine.

Parys Mountain

Some of us had visited here many years ago on an IA field trip. The windmill was used for pumping or to assist a steam engine; it was built in 1878 and had 5 sails.

A lake in the great opencast was drained in 2003, making a lot of the underground workings accessible, but spoiling the well-known view of the partly-flooded mine.



It was a glorious day and the sunshine picked out the amazing range of colours in the spoil heaps – caused by iron, not copper. The mine still causes a lot of mineral pollution and any standing water quickly becomes very acidic. 40% of the Irish Sea's heavy metal content derives from Mynydd Parys run-off. This sampling pond is full of minerals.



In 1988, Anglesey Mining Company opened a 300m shaft to the west of the old workings; its headgear is a local landmark but at present it is not in use.

Cochwillan Watermill

This is where Saturday's visit started. It is a well-preserved large estate corn mill situated on a loop of the Ogwen River. It retains good late 19th century detail in its external character. Inside is a virtually complete set of mill machinery, including stones and a drying kiln.



The current mill was built as a fulling mill, which was used to prepare cloth and operated as a home industry. In the late 18th century it started using diluted sulphuric acid as a detergent, which caused damage to the salmon and sea trout fishing, so the mill was closed and later bought by the Penrhyn estate and converted into a corn mill.

In 1901 it was taken over by a Mr John Hughes who bought pulleys and shafting to assist in working its 4 sets of stones.



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provided



Electric Mountain

Next we proceeded to Llanberis to visit Dinorwic Pumped Storage Hydroelectric Scheme (Electric Mountain), housed in the abandoned underground parts of Dinorwic slate quarry.

We donned hard hats and were transported underground by bus to see the six 300Mw GEC generators coupled to Francis-type reversible turbines, which pump water back to the top reservoir in times of low demand for electricity. Photos were not permitted and wearing hard hats to ride on a bus seemed a bit excessive!

The National Slate Museum

Back at the surface we explored the National Slate Museum which is housed in the Victorian workshops that once serviced and maintained the enormous Dinorwic slate quarry above it. The workshops catered for all the repair and maintenance work demanded by a quarry, which once employed well over 3000 men, before it closed in 1969.



Its outstanding attraction is the largest waterwheel in mainland Britain; it was constructed in 1870 by De Winton of Caernarfon and is 50ft 5in in diameter, 5ft 3in wide, and was built around a 12in axle. Ashok's photo with Alison alongside the axle, gives a good indication of its size. It still turns but probably freewheeling on tap water, and the power for the rest of the workshops is provided by a Pelton wheel, which took over from the waterwheel early in the 20th century.

As well as providing yet more food for some of us, the museum puts on a short introductory film *To Steal a Mountain*, and a short slate-splitting demonstration. The Victorian workshops are all open to the public, including a new pattern store area, housing the museum's collection of over 2000 wooden patterns used to build equipment for the quarry.

On a previous visit, several of us had explored Vivian Quarry, seen in the photo (right, behind the museum buildings), with its restored inclines and barracks (workers hostels), but it was a very serious uphill slog. More recently, Keith and I had found a way up to the higher quarry levels which was suitable for the minibus, where we could park near the 'Village tramway' which was used to transport the slate to the coast at Port Dinowic.



Dinorwic Quarries



We were able to stroll along the tramway into the heart of the historic working faces of the opencast part of the quarry, and photograph two rope-wound inclines. This one seems for to have been altered since it was in use for slate haulage. At its foot there is a derelict slate saw mill.



I was pleased to be able to photograph two ruined winding drums (*previous page*) further along the quarry. These used platforms attached to ropes to lower loaded wagons to the tramway level, and were presumably either self-acting or operated by water balance, although the one on the right with its clearly visible brake handle may have had a steam engine.

From this high vantage point there were glorious views of Snowdon across the valley. Note the line of the tramway on the left of the picture and part of the extensive waste heaps down the side of the mountain.

Our evening meal was at a small Italian restaurant next to the 'New Pier' (1896!) in Bangor.



The Great Orme Tramway

On Sunday we were facing a long drive home, but we started with a quick trip on the 1901 Great Orme Tramway, before driving south towards Llanymynech near Oswestry. The semi-wild cashmere goats are clearly very used to posing for photographs.



Llanymynech Lime Kilns

Llanymynech Heritage Area was set up in 2006–2009, with funding from both the Heritage Lottery Fund and English Heritage. Additional financial support also came from the Aggregates Levy Sustainability Fund and project partners, with the aim to conserve the site for visitors and educational purposes. The main feature is a well-preserved Hoffman kiln with its original square section chimney. The kiln closed in 1914 and was therefore only in production for about 20 years. It is not entirely clear how it operated, although it was intended to produce finer quality lime for industry than the adjacent traditional-style kiln. Hoffman kilns were more common in the brick industry.



As part of the project to convert the area to a heritage park, an archaeological investigation was carried out. Its main aim was to gather information about key features of the site, particularly the location of former tramways, turntable track-beds, and ground surfaces. We did not have time to fully explore the site before reluctantly leaving Wales.