

As you walk from Bran point towards Ringstead there are low cliffs which mask the Corallian/Kimmeridge boundary with the Coral Bed, uppermost Corallian. It is reputed to be difficult to find but we didn't walk this far along anyway.

We returned to the Smugglers Inn by the cliff path which gave us very clear views to White Nothe to the east where we could make out the south-dipping Chalk and Upper Greensand lying unconformably on the north-dipping, Upper Jurassic. To the west we could see across the bay to Weymouth and the younger Jurassic rocks of the Isle of Portland.

We were very tired and rather hot by the time we finally reached the Smugglers Inn, where refreshments and a rest were urgently required. Alan had organised a very enjoyable and informative day. Thank you Alan!

Further details and annotated photos and diagrams can be found on Ian West's excellent website: [www.soton.ac.uk/~imw/osring.htm](http://www.soton.ac.uk/~imw/osring.htm)

*Photographs by Elizabeth Devon*

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*Bivalves (possibly Myophorella)*

*Trace fossils*

*(Photos L.D-H.)*

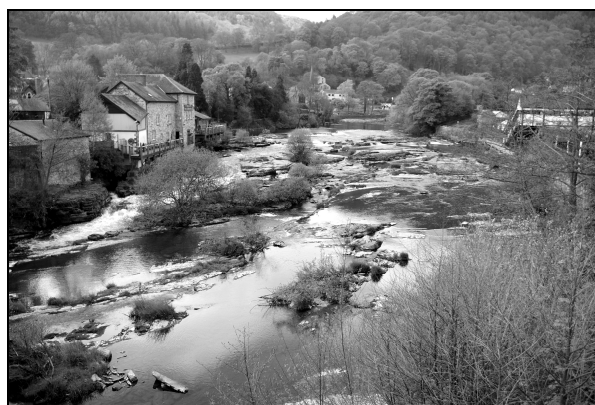


**AT OSMINGTON MILLS**

## STEAMING THROUGH SILURIA – a geological train journey

*Charles Hiscock*

For years geological guides have been available for many areas of the world. Some are simple explanations of a small locality while others have encompassed large areas and complex geology. There are many like our own "Bath in Stone" for towns and cities around the UK. A more recent addition to this long list is "Steaming through the Past – a geological rail trail for the Llangollen Valley" published by RIGS Wales with support of the Curry Fund of the Geologists' Association. It leads the traveller on a journey through the rocks of the Dee Valley from Llangollen to Corwen, seen from the carriage window on the Llangollen Railway. Having made the journey, which is very picturesque at any time of the year (check the timetable as trains do not run all the year, particularly in the winter) one can expand the interest by visiting the outcrops on foot, by car or using public transport.



*Silurian shales exposed in the river bed at Llangollen*

The trail starts in the town of Llangollen, where another leaflet is available for looking at the building stones in the town. Standing on the ancient bridge over the River Dee, built of Cefn Sandstone quarried from the Wrexham area, one can see Silurian shales exposed in the river bed. The shales were laid down in an extensive sea which covered an area now known as the Welsh

Basin. In the hills much of the shales were subjected to metamorphic processes, producing slates which have been worked in Wales for centuries. Looking upstream from the bridge, the station stands on the right hand side and entry is gained from the end of the bridge.



*Silurian shales up-river from the Dee Bridge*

To the north of Llangollen lies the impressive escarpment of Carboniferous limestone, Eglywyseg. The limestone was laid down when the sea was warm and shallow but the impressive scarp was sculptured first by glaciation and later by weathering over the last 5 million years or so.



*'City of Truro' with Eglywyseg scarp*

Footpaths can be followed along the scarp. It is the home of many plants and birds, particularly in spring and early summer. If one is really lucky, a Ring Ousel (a blackbird with a prominent 'dog collar') might be seen or heard up in the rocky cliff. A walk leaflet is available which leads one from the canal basin just above the station up to the edge of the limestone scarp through fields. It then follows the cliff roughly north and then strikes west, dropping down over a col between the scarp and the impressive hill on which stands Castell Dinas Bran. The hill was formed by the



*Castell Dinas Bran*

action of glaciers which eroded the surrounding rocks, leaving it in this wonderfully isolated position. The rocks and shales are not well exposed but do contain abundant brachiopods typical of the Silurian period. The castle is well worth the climb. The ditch and embankments surrounding the later walls date back to the Stone Age. It is known to have been occupied in the 8<sup>th</sup> century but the first documented evidence comes from the 12<sup>th</sup> century when the buildings were constructed. It was occupied for a few decades by the Princes of Powis Fadog then abandoned in 1277 after it was besieged by the forces of Edward 1<sup>st</sup>. There have been brief occupations since but the castle has been a ruin for most of the time since 1277. From Castell Dinas Bran a 360 degree view is obtained – Eglywyseg to the north-east, the Berwyn Hills from north around to south, westwards along the Dee valley and then east towards Wrexham and the Cheshire plain.



*Eglywyseg from Castell Dinas Bran*

The train leaves Llangollen in a cutting, working hard against the gradient as the line climbs the Dee valley. Soon the river becomes visible. Large

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meanders swing from side to side. At one point, the line crosses the river on a long bridge as it rises to the first stop, Berwyn Halt. The little station clings to the hillside, sandwiched between the A5 and the river. From there, one has lovely views of the river, Berwyn Bridge and the river bed, which is composed of well-worn Silurian shales. Looking back towards Llangollen slightly left of the railway line, Eglywyseg can be seen over the top of the nearer hills, although the view depends on how much leaf is on the trees beside the rail and river. At this point, the river has cut deep into the shales by up to 125 metres and, as one can see from the erosion on the far bank, still continues to do so.

The line continues to rise from Berwyn Halt but draws away from the river Dee which follows a wide meander around the north side of a spur of the Berwyn Hills while the train follows the line through the narrow 650 metre Berwyn tunnel. Leaving the windows open through the tunnel fills the train with smoke as the engine continues to work hard against the gradient! The tunnel passes through Silurian shales and the train comes out onto a long curve above the river plain. Here onwards to the western terminus, Carrog, the valley is wide and very agricultural, almost entirely stocked with sheep. We visited in April and the greens of the fields and trees presented a lovely patchwork, with young lambs skipping, running and resting everywhere while spring flowers – primroses, bluebells, cowslips, red campion and a few early wild garlic bloomed in the hedges and banks. Up the steep hill, bounding the valley floor were large patches of gorse adding its brilliant yellow to the scene. Although the slopes up from the valley are mostly grass, there are many places where quarrying and mining have been carried out in the past. On the top of the hills heather, whortleberry and moorland grass can support little else than sheep and, in April, the cooler temperatures had held back growth so the trees were still bare.

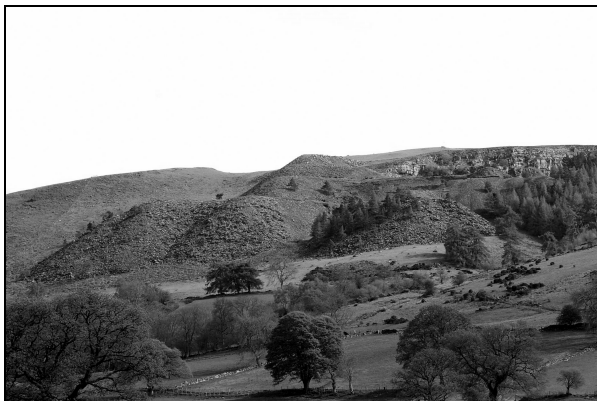
The line runs from Berwyn tunnel gently downhill to Glandyfrdwy. North of the station, over the River Dee, a large quarry from where slates had been worked can be seen. Largely covered by

gorse in full bloom, the best face of the quarry was obscured by the equipment of contractors working on the road, making a photo not worthwhile. However, just east of the station, behind the children's playfield, a low embankment of shale blocks and grass climbs south away from the line towards the hills. It is a remnant of the Nant y Pandy Tramway which climbed up a narrow valley high up into the Berwyn Hills to Deeside and Moel Fferna Slab Quarries, which opened well back in the 19<sup>th</sup> century. The opening of the railway in 1865 meant that transport of the slates became very easy, enabling expansion of the quarrying business. In 1900, 200 men were employed in the two quarries but by 1915, only 3 men were left. The Pandy quarry finally closed in 1923 but Moel Fferna remained open, using the tramway until 1950. It finally closed in 1960. The tramway fell 1200 ft in 3.5 miles and opened when the quarries started, with the trucks hauled up to the sites by horses each day. At the end of the day's work, the full trucks were free-wheeled down the tramway with quarrymen sitting on top of the slates and one on the bumper, operating a handbrake. At the bottom of the tramway, some distance from the railway, the trucks were then winched down a steep incline to the sidings at the station. Surprisingly, in spite of many accidents, only one man died. An attractive walk follows the old tramway up to the quarries and can be done easily in 2 – 3 hours provided one takes note of the train times back to Llangollen!

The railway goes on from Glandyfrdwy, closely following the river which itself follows the course of the glacier that ground out the valley in the Ice Ages. 18000 years ago, a thick ice sheet covered Wales and when temperatures rose, the ice was restricted to the glaciers in the valleys, of which the Dee was one. The current western terminus of the line is at Carrog although the trackbed is being prepared to extend to Corwen, about 4 miles further westwards. Close to Carrog is Owain Glyndwr's Mound. This is thought to be his castle from where he defied the English until he was defeated in 1408. Looking from Carrog station in a southwest direction high on the hills one can see the impressive remains of the huge Penarth slate

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quarry. It was this quarry and others that made the building of the railway in 1865 a profitable venture. Although now disused, Penarth Quarry is an important geological site because of the Silurian plant fossils that are found in the slates.



*Penarth Quarry near Corwen*

The train journey takes around 35 minutes from Llangollen to Carrog but it passes through Silurian rocks 420 million years old with Carboniferous rocks 340 million years old visible from the train. The last few miles run along the wide valley bottom over sediments laid down in the Tertiary and Quaternary periods, only a few thousand to a few million years old. The scenery is wonderful at any time of year but the spring and late autumn are recommended. The walking is good but presents some challenges particularly on the Berwyn Way. Gentler walking can be achieved on the towpath of the Llangollen Canal with its 200 ft high span of the river Dee at Pontycysyllte, although crossing in high winds can be a scary experience. Other attractions in the area include the Horseshoe Falls just upstream from Berwyn where a weir holds back the river and diverts water into the canal. Just west of Corwen, up the A494 towards Ruthin is the little 17<sup>th</sup> century Rug Chapel. Plain on the outside, it is richly decorated on the inside with a beautifully carved roof, a panelling frieze that runs the length of the church and a wall painting of a skeleton.

The trail leaflets are available from the Tourist Office in Llangollen as well as timetables of the Llangollen Railway [www.llangollenrailway.co.uk](http://www.llangollenrailway.co.uk)

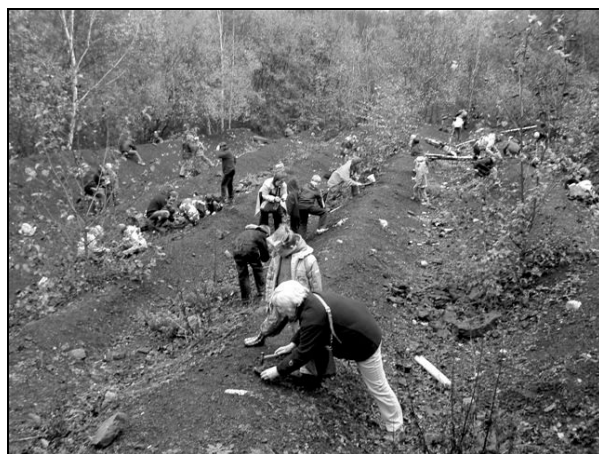
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*Photographs by Charles Hiscock*

## WRITHLINGTON '08

*John Parkins*

The fossil hunt organised by Radstock Museum is now a well established part of Bath & NES Somerset's Heritage Week, and a very popular part at that! The '08 event was no exception. Although departure time from the museum was 1.30, children and accompanying adults were arriving much earlier. As in previous years, the age range was wide, from four to eleven. A free car park near the museum is most welcome and the walk to the site along a disused Railway, now a cycle track, is a pleasure in itself. Finds covered the more common types of Upper Carboniferous Flora and every child had something to take home. Beyond this, the event gave the children a chance to interact with the environment in an immediate way. They were, in my opinion, experiencing true education. To see both adults and children also interacting with each other in the way that they did was a personal pleasure. This event deserves the fullest support. In this respect, the site now needs a thorough refreshing. At present finds are more sparse than previously and I can foresee a time when many children will finish the day disappointed. This would be a great loss, as anyone who has seen the enthusiasm and the wonder that the children express will know.



*Fossil hunting in the Writhlington batch*