

Britain & Ireland's Walling Treasures: North Wales Slate Industry

Throughout the nineteenth century North Wales dominated world slate production. Several hundred quarries operated at one time or another. They all needed buildings to carry out their work, but beyond that they had to move the slate around the quarry, down hillsides, across country. The raw material for building the structures to enable this was the slate waste they had in abundance and boy did they build. Most quarries had retaining walls of some description, fairly impressive remains of 2 metre plus walls are relatively commonplace, 3 metre walls abound, but just as the size of quarries varies so do their structures. Production was dominated by the “mega-quarries” of Penrhyn (Bethesda) and Dinorwic (Llanberis) covering hundreds of acres of hillside, producing many tens of thousands of tonnes of finished product a year. Mega quarries, meg-production, and mega walls.



This tiered retaining wall is the “Australia Terrace” located high up in Dinorwic. Clearly visible from the A4086 alongside Llyn Peris over a mile away, a crude estimate suggests it is over 12m high. Constructed to create a large working area dominated by the ‘Australia Mill’, over 100m long and still populated by its 36 rusting circular saw tables (in use until 1969). At the other end of Dinorwic in the Vivian Quarry, (just behind the National Slate Museum), is another impressive retaining wall terrace built around 1880. It has a stepped profile and at its maximum it is almost the same height as Australia although not as long.

The terrace again creates a working area, with a series of hand trimming and dressing sheds. Remains of these sheds known as *waliau* (singular *wal*), can be found on many of the old quarry sites. They are so named because they were originally a simple wall offering limited protection from the elements, side walls were a major advance and roofs the ultimate luxury.

Just below the retaining wall is a reconstructed working incline. Inclines were sloping walls used to lower slate from higher up in quarries either to workshops or to exit levels. The first one was built in Dinorwic in the late 18th century.

Dinorwic has several sets of inclines. The one below is part of the ‘A series’. Waste tipping now means it is a retaining wall, the impressive ‘tunnel’ going nowhere.



It is difficult to know how to measure these inclines as they merge with the slate heaps - this one I would guess is at least 11m high, at the merger point.

Disposing of Slate waste was a perennial problem at many quarries. In Gorseddau, Cwm Ystraddlyn near Porthmadog, it led to the creation of the famous overhanging wall. Built around 1860 it is just under 100m long and almost exactly 4m high. The top overhangs the base by 1.5m. Situated at the base of a waste heap it protected the exit tramway from waste heap spillage. Ground conditions and lack of space suggest its construction was a more viable alternative than moving the tramway.



Getting back to inclines, and Dinorwic. Less than 100m east of the A incline is an amazing apparently buttressed incline almost 12m high. Part of the “B series” the two buttresses are in fact the side walls of a loading platform. Each projects about 10m out from the base of the incline just to widen its flat top by 3 or 4 metres. A massive free standing structure it has to be seen to be believed. It is however outshone by the “Pyramids”, of Dorothea Quarry in the Nantlle Valley, one of the larger quarries though not quite on the Dinorwic scale.

Dorothea has two of these huge structures each combining inclines, and loading platforms/work areas. Pyramid C (it served quarry area C) is relatively modern, having been completed in 1913 and operational for only about 30 years, was built on top of an older 1880s incline (another can still be seen in the photo below). The end is over 11m high and supported the headgear for



an aerial incline/ropeway into the pit below (out of picture left). Much of the blocky and angular slate used (flatter slate is favoured for most structures), is cracking and faults developing. Pyramid “B” was constructed from flatter slate (1880s) and has experienced a couple of major eruptions of its faces. Unlike “C” it was originally built independent of any other structure and its face was lime mortared, which I suspect might be at the root of its problems as much of the mortar has weathered away. Both are grade II listed buildings although here have been moves to demolish them from developers and officials - on Health and Safety grounds, whilst archive photos of Pyramid B suggest it has not deteriorated much in 30 years it is certain that neither will spontaneously recover.

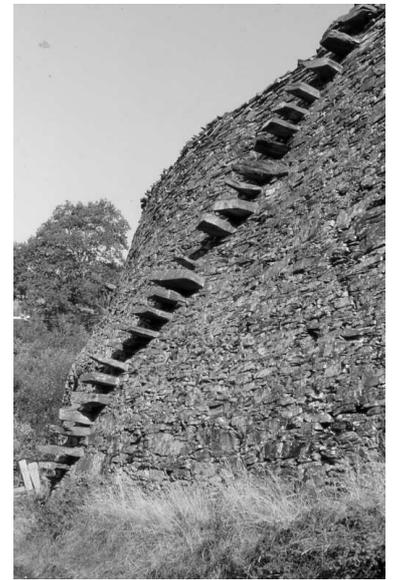
General decay is not the only problem facing quarry structures. Back in Dinorwic the lower sections of both the B and C series inclines have been lost to a pump storage electricity generating scheme.



This incline C3, (C1 has gone, C2 is equally spectacular and truncated) is at least 10m above ground at its highest point, but the level of the winding house is in region of 15-16m above relative ground level.

The other “mega-quarry”, Penrhyn, had many similar structures to Dinorwic. However it continues in production and the practice of mass bulk working and creation of roadways has destroyed a great deal, bringing me to what is perhaps the whole *raison d’être* of this series. I doubt that any of us knows or truly appreciates the whole range of stone structures big and small around us, and nothing lasts forever. Who knows what we have lost before anyone bothered to tell us it existed? For me this is encapsulated by the remarkable cantilevered steps in a retaining wall at Abercwmeiddaw, Corris near Machynlleth.

Generally these quarry structures are old, unmaintained, and endangered, either as a result of entropy or active destruction through redevelopment or landscaping and/or safety concerns.



In the late 1980s I was staying in Corris on a contract when I saw an archive photo of these steps in use. I thought 'I must go and see if I can find those'. Ever since, every few years when I've passed Corris, I've thought 'I really must get around to seeing those steps'. In the late 1990s the steps were landscaped. What you never had, you never missed... I don't think so. I'm indebted to Alun John Richards for this photo.

Not every stone structure relating to the quarry industry is necessarily in a quarry, there are amongst other things slate quays and of course the tramways and railways. A mile or so east of Penrhyn Station on the Ffestiniog Railway is ‘Cei Mawr’. A railway embankment bridging a valley, it is effectively a dry stone wall with a railway on top. The embankment is just less than 19m high only slightly narrower at its base and almost 5m wide on top. It's also 100m long. Originally built in the first half of the nineteenth century it was extensively buttressed in the late 1880s. Probably the tallest dry stone wall in Britain it has transported hundreds of thousands of tonnes of slate, and more latterly steam engines and passengers. If it ever had to be replaced, cost apart, it would most likely be with a steel girder bridge as by modern standard dry stone is obviously not going to be strong enough to withstand such loads.

Beyond the gargantuan, there are many smaller structures of note, arches, steps, pillars, towers, passages and much more, including buildings galore, and not always lime mortared. All in all too much to fit in here, so for this and other treasures I've created <http://myweb.tiscali.co.uk/wallingwonderland>. For more on slate quarrying in general visit David Sallery's www.penmorfa.com/Slate/. Alun John Richards “Gazetteer of Slate Quarrying in Wales” (Llygad Gwalch, 2007) is an indispensable guide to the quarries and remains. Thanks to Dr Gwynfor Jones, David and Alun for their help in the preparation of this article.
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