

From the wailing wall to the pyramids: An overview of the dry stone structures of the North Wales Slate Industry.

Sean Adcock

Much of the United Kingdom's cultural heritage is inextricably linked to industry. In South Wales the development of the coal industry helped mould communities and landscapes, in North Wales the exploitation of slate played a similar role. Throughout the nineteenth century North Wales dominated world slate production and several hundred quarries operated at one time or another. The waste heaps of these quarries still pock mark the countryside providing an indelible reminder of the past.

Today most towns and villages in and around the quarrying areas contain terraces of distinctive, small, stone quarrymen's cottages, in some instances whole villages are still essentially ex-quarrymen's cottages. At Mynydd Llandegai near Bethesda two parallel rows of cottages were built for local quarrymen each with an acre of land creating a regular rectilinear pattern of fields bounded by dry stone walls and slate pillar fences, making a signal contribution to the landscape.

It is likely that this concept developed from the original development of 'Tyddynod' or smallholdings located alongside the quarries during their early development as workers eked out a subsistence living from quarry and land. This created a distinctive landscape within which today many of the cottages sit derelict within a patchwork of small fields with decaying networks of dry stone walls.

The need for quarry housing was notable within the quarries too and remains of lime mortared barracks – rows of houses used as weekday accommodation by those who lived too far away to walk to and from work on a daily basis – are relatively commonplace. In Rhiw Goch high above the already remote Penmachno slate workings the quarry even contained its own small village. Deserted in 1953 it still contains almost complete remains of houses, street, church, school, dry stone garden walls, sheds and even a dry stone post and rail fence.

All quarries required a range of buildings in order to carry out their work. These were inevitably built from the most convenient raw material – slate. Many quarries have the remains of some buildings, dry stone blast shelters with their thick walls have survived the ravages of time well, smaller dry stone buildings can occasionally be found sometimes strange and surprising, such as toilet blocks and even garderobes perched on walls alongside waste heaps.

Most quarries had retaining walls of some description, fairly impressive remains of 2 metre plus walls are relatively commonplace, 3 metre walls abound retaining slate waste, forming tramway embankments and creating terraces or platforms eking workspace from a hillside.

Occasionally other structures can be found, with the vast numbers of quarries giving rise to a diversity of remains. Examples include corbelled arches, voussoired arches, and lintelled passages through walls and inclines; canalised water races and launder pillars were built to get water to water wheels housed in stone pits or towers. At the National Slate Museum in Llanberis the largest (and still operating) water wheel on the British mainland is housed in a dry stone tower built in 1870 and over 8 metres high. The need to provide access to various levels has led to a plethora of steps, one set in Dinorwic is large and impressive enough (running for two hundred metres and climbing probably about half that), to be shown on the 1:25000 scale map.

Such remains only represent the tip of an iceberg as some quarries contain what must be amongst the most impressive wonders of the quarrying milieu.

Disposing of slate waste was a perennial problem at many quarries. In Gorseddau, Cwm Ystradlyn near Porthmadog, it led to the creation of the famous overhanging "Wailing" wall. An evocative label which appears to have only one reference¹ with no obvious explanation for the name. Built around 1860 it is just under 100 metres long and almost exactly 4 metres high, with the top overhanging the base by 1.5 metres (photo). The most popular theory for its design is that it is situated at the base of a waste heap thus protecting the exit tramway running immediately alongside it from waste spillage. Ground conditions and lack of space could well suggest that its construction was a more viable alternative than moving the tramway. As with most dry stone structures there is little hard evidence available. Little was recorded at the time and whilst we might marvel at them today, at the time they were very much seen merely as functional stone structures.

Slate 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, all of which had to be transported around the quarry.

Records suggest the first incline in Dinorwic was built at the end of the 18th Century; the remains of existing system probably date from the mid 19th century. These inclines are freestanding dry stone ramps, used to lower slate from higher up in quarries either to workshops or to exit levels. Whilst the extraction method spread across much of the industry the most impressive remains are still to be found within Dinorwic. There are 3 sets of inclines within the quarry

labelled from west to east A, B, C, respectively. A and C were more or less continuous runs from lakeside to the upper workings (9 and 10 pitches respectively). The B series was made up by a number of disconnected inclines found between A and C.

The lower sections of the A series run across the hillside masked by trees, they then climb the mountainside and midway up the series is one particularly impressive section. Originally a free standing incline

(shown) it now serves as retaining wall as the quarry ran out of space literally millions of tons of waste were dumped beyond it. The striking 'tunnel' now goes nowhere. It is difficult to know how to measure these inclines as they merge with the slate heaps - this one is at least 11 metres high, at the merger point.

Less than 100 metres east of the A incline is an amazing apparently buttressed incline almost 12 metres high. Part of the discontinuous "B series" the buttress is in fact the side wall of a loading platform

projecting about 10 metres out from the base of the incline just to widen its flat top by 3 or 4 metres, a huge amount of work to gain what would seem so little.

The lower sections of the C incline are particularly impressive; the lowest section has been truncated by development of a power station. The next section stands proud at least 10 metres above ground at its

highest point where it starts to merge with a waste heap. Its actual topmost point, complete with derelict wheelhouse, is in excess of 15 metres above relative ground level.

As elsewhere Dinorwic has its share of retaining walls, in its case on the grand scale. The "Australia Terrace" located high up in the quarry is clearly visible from the road alongside Llyn Peris almost 2 kilometres away, a rough estimate suggests it is over 12 metres high.



Constructed to create a large working area dominated by the lime mortared 'Australia Mill', which still stands over 100 metres long, roofless but still populated by its 36 rusting circular saw tables (in use until 1969). At the other end of Dinorwic in the attached Vivian Quarry, (just behind the Welsh National Slate Museum), there are a number of impressive retaining walls, each eking out a few square metres of work space from a vertiginous hillside. The most impressive of these has a stepped profile, built around 1880 it reaches to a height similar to 'Australia' although not as long it remains an

impressive sight. It creates a narrow working area, populated by a series of hand trimming and dressing sheds. Remains of these (usually) dry stone sheds, known in Welsh as “*walia*” (singular “*wal*” – interesting from a wallers’ perspective as it translates literally as wall), 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.

Massive structures were not confined to Dinorwic, at Dorothea Quarry in the Nantlle Valley, - one of the larger quarries though not on the Dinorwic scale; two ‘pyramids’ can be found. The name was one once used by the quarry management and Dr Gwynfor Jones, the local expert on the quarry and its history adopted it for his MA, and it has stuck locally. To my mind if an Egyptian parallel is to be drawn the pylons of Karnak and Luxor would perhaps be more appropriate, but pyramid is certainly more evocative.

Dorothea has two of these huge structures each combining inclines, and loading platforms/work areas and originally supporting the headgear for an aerial incline/ropeway into the pit below. Pyramid C (it served quarry area C) is relatively modern, completed in 1913 it operated only for about 30 years. Built on top of an older 1880s incline it abuts another, its end towering to around 11 metres (nearer 15 when adding the tiered retaining walls immediately below). Much of the blocky and angular slate used (flatter slate is favoured for most structures), is cracking and faults are developing. It seems likely that its relatively modern construction meant that only poorer waste material was used for its construction, perhaps the better quality material was seen as too valuable. Pyramid “B” is older (1880s) and constructed from flatter lime mortared slate. It has experienced a couple of major eruptions of its faces, perhaps the degradation of the lime mortar in such a



vast structure has destabilised it compared to pure dry stone.

Not every stone structure relating to the quarry industry is necessarily in a quarry, an infrastructure had to be developed to export the product and there are amongst other things slate quays and of tramways and railways, with retaining walls and embankments galore. 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. 100 metres long it is just less than 19 metres high only slightly narrower at its base and almost 5 metres wide on top. 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 a quarter of a million passengers a year. If it ever had to be replaced, cost apart, it would most likely be with a steel girder bridge as by modern standards dry stone is not going to be deemed strong enough to withstand such loads.

Fortunately it shows no signs of decline unlike most other structures. 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.

General decay is not the only problem facing quarry structures. In Dinorwic much survives because the quarry closed relatively recently (1969) so ‘natural’ decay is less advanced, however the lower sections

of both the B and C series inclines have been lost to the development of a pump storage electricity generating scheme. 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 of what was present. Many smaller quarries have undergone modern extraction/salvage processes which necessitate the destruction of much of what was left above ground.

How much has been lost before we realised it existed? A remarkable set of cantilevered steps in a retaining wall at Abercwmeiddaw, Corris near Machynlleth first came to my attention in the early 1980s. Every time I passed the area I determined to see them... next time. In the late 1990s the flight of some 25 projecting stones climbing a 10 metre retaining wall steps were landscaped as the wall was deemed unsafe. I never got to see more than photos and there does not appear to be an extant equivalent set. They were possibly the last remaining example of a striking and unique feature. Of historical and cultural import, should they have been destroyed purely because they were no longer deemed safe? Would Stonehenge be treated in the same way?

Many of the more impressive structures have some form of legal protection, some of the smaller ones because they are part of some wider designation protecting an area. The Dorothea pyramids are independently Scheduled Ancient Monuments of at least National importance, and arguably of World significance. They are aging, crumbling structures in an area with wide public access, both immediately adjacent to footpaths. As a result there have been moves from those with development interests and even council officials to demolish them on safety grounds. So far these have failed however they will not spontaneously recover and in the absence of any likelihood of remedial work it seems inevitable that one day they will be demolished, unless they collapse first.

There is a move to gain world heritage status for the North Wales Slate Industry. This is being centred on existing visitor attractions and only structures within these seem likely to be included within the proposed designation. Only a few of the most striking features

such as those within The Country Park alongside the National Slate Museum will be included, but this does not fill me with hope as currently protected walls, sheds, and the Anglesey barracks - the most extensive remains of their type, are being engulfed by trees in a relatively intensively managed area, whilst retaining walls sprout shrubs and timbers supporting slate roofs on sheds and wheelhouses are left to rot.

The slate industry moulded communities, created a culture and shaped the landscape. Much of the heritage they initially left has gone and a considerable amount of that which remains is hidden away, unknown or overlooked. In literature they merely form the backdrop to social or industrial history, their own intrinsic worth generally overlooked. They were walls and structures, functional unremarked upon piles of stone.

Disused and lacking maintenance for many years much is now falling into a state of disrepair. Whilst nothing lasts forever and we cannot halt the march of time or progress, structures, some of them unique, are being lost and often actively destroyed before their presence, let alone true worth has been widely recognised.

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