

The Wynne Slate Quarry

**The**  
**WYNNE**  
**SLATE QUARRY**

**Glyn Ceiriog**

**J. G Isherwood**

## The Wynne Slate Quarry

### NOTE:

The following text and descriptions were all written in 1984 when the Wynne quarry was open to the Public as a Museum and the James's , the owners of the Museum asked me to produce a booklet on the quarry for them.

However, circumstances changed, and the initial draft, much edited, became the basis of their guidebook "Chwarel Wynne – A Short History" although its contents were not as extensive as my original intentions. Changes in regulations about school trips, insurance, health & safety concerns etc., which have now become well known became significant and the museum closed its doors.

I have therefore left the text exactly as it was, as though the Museum and the Public workings were still open.

At least one local historian who saw the draft criticised it for giving a Ffestiniog perspective and for some errors, mainly over the remarks about Pentre Dwr, but did not bother to send me any corrections – I have therefore left it as it was, which is basically as the stories were told to me by the James's plus my own additional research. I have also retained the imperial measurements throughout.

Having now seen the 1996 version of the guidebook, it would seem that the tour as described in the last chapter was subsequently extended along the B floor eastwards by some three chambers before parties retraced their route westwards. However, as I did not see the tour in this form, I have left that aspect of the text unaltered as well.

Pending the definitive account of the Ceiriog Valley Mines and Quarries by John Milner, which should correct my account, this will have to stand until the deeper work is available.

Graham Isherwood  
Telford June 2006

The Wynne Slate Quarry  
**CONTENTS**

- 0. Introduction**
- 1. The Ceiriog Valley**
- 2. The Slate at Wynne**
- 3. Working the Slate**
- 4. Underground Working**
- 5. History and Development**
- 6. Wynne Today – On the Surface**
- 7. Wynne Today – Underground**

## 8. INTRODUCTION

### WYNNE SLATE QUARRY

The Wynne Slate Quarry at Glynceiriog, in the old County of Denbigh, now part of Clwyd, has no great or particular claim to fame. Unlike the Dorothea Quarry of the Nantlle Valley or the Penrhyn Quarry of Bethesda, the Dinorwic Quarry of Llanberis or the Oakeley Quarries of Blaenau Ffestiniog, it was not the largest of its type. Unlike the Cilgwyn Quarry of Nantlle, it did not claim Roman origins. It did not have an unsavoury reputation, as did the Cwmorthin Quarry of Ffestiniog. It did not have notorious living conditions as did the Rhosydd Quarry and even its rock was not of the best quality

Despite all these claims to mediocrity, it is an interesting quarry! Interesting because it is almost totally forgotten, along with its sister quarry the Cambrian, higher up the hill behind it. Its waste tips sprayed with peat and seeded have almost vanished from view under the ensuing grass, ferns and trees. Here unlike almost anywhere else in North Wales, nature has visually triumphed over the ravages of industrial man. Oak and elm grow where once the rock echoed to hammer and chisel. Birds sing and chatter where there was once only the crack and rumble of exploding powder and falling rock.

The Wynne Quarry was last worked in 1928; it is over fifty years, therefore, since men tramped up the quarry footpaths to their labours. Now there are less than a handful still alive who can remember it's working. In the interim it had become a place for adventurous and perhaps foolhardy children to venture for a dare, a place to be frightened away from by tales of the "Ghost of Wynne Quarry".

However Wynne was not entirely forgotten: brief mention of it, and a little of its spasmodic history was mentioned in David Llewellyn Davies' book on the Glyn Valley Tramway and again in James Boyd's book "Narrow Gauge Railways in Mid Wales" both in connection with the Glyn Valley Tramway which carried it's products.

A little more detail was also given in D.L.Davies' booklet on the history of the Ceiriog Valley published for the Ceiriog Memorial Institute. Now long out of print, what few copies remain have become treasured possessions. By and large though, the scale, extent and the details of the underground workings of the Wynne and indeed the Cambrian Quarries have not been made easily available to the public.

However, in 1978, the Wynne Quarry site was bought from the daughter of one of old owners and directors by Brian and Angela James, who had already been living in Glynceiriog for a number of years, with a view to opening the quarry site and grounds to the public as a tourist attraction, along the lines of the successful ventures elsewhere in North Wales. The work involved was considerable. The Underground Workings had to be inspected, the most suitable for the public decided upon and made safe. Lighting had to be installed, pathways and secure steps constructed, the approval of the Department of Health and Safety obtained and a thousand and one other things done before "The Lost Caverns of Chwarel Wynne" opened to the public for the first time.

This, then, is a first attempt to redress the balance, to describe what is known so far of the History of "Chwarel Wynne", its methods of working and production and to describe some of the under ground workings.

### The Wynne Slate Quarry

Unfortunately, very few photographs or records survive of the Wynne Quarry itself. or indeed. of it's sister and later parent, the Cambrian. and any additional information which readers might be able to provide would be warmly welcomed by both author and the James' alike.

In conclusion I should like to thank the James' publicly both for asking me to write this booklet, and for providing the facilities to become thoroughly acquainted with a Slate Mine, which, until a few months ago. I knew virtually nothing about.

J. Graham Isherwood,  
Bolton,  
Lancashire.  
June 1984.

The Wynne Slate Quarry  
**CHAPTER ONE**  
**THE CEIRIOG VALLEY**

Most visitors to North Wales from the Midlands reach the ancient principality by means of Telford's Great Road, the modern A5. North West from Shrewsbury it runs, a border town once the scene of repeated battles; between the invading "saeson" and the indomitable "cymro". First the road follows the Severn, and then it skirts to the North and forsakes it as the river performs a wide turn towards the South and Welshpool

At Gobowen the road approaches the Welsh foothills and turns directly northwards soon the gentle rise and fall of the route is interrupted by the descent of a major watercourse, crossed on high well above the level of the road by the stately march of parallel viaducts. One for each of the two forms of bulk transport, now almost replaced by the modern road and motor lorry. The elder of the two is the Chirk Aqueduct of the old Shropshire Union Canal second only in size to it's sister aqueduct the famous one across the Dee gorge at Fron Cysyllte, some three miles to the North. The younger viaduct is that of the former Great Western Railway, now British Rail, carrying that company's main line between Shrewsbury, Wrexham and Chester.

This is the valley of the River Ceiriog above which stands of Chirk it's narrow streets threaded by the A5 on its way north to Fron, the Vale of Llangollen and. ultimately the mountains of Gwynedd Now the river valley is shereley pastoral, but once it was a microcosm of Welsh Industry with woollen mills; the "Pandy" and "Felin" whose titles have become place names, lime kilns and quarries, granite, silica and china clay quarries and that most Welsh of Welsh industries, slate quarrying.

The Ceiriog rises on the southeastern slopes of the 2071 ft. high Moel Fferna, some 3 miles south east of Corwen, as the Ceiriog Ddu "Black Ceiriog." From it's source the infant river flows south east some four miles roughly parallel to the Berwyn Mountains of which Moel Fferna is the most westerly "peak", before reaching the village of Llanarmon Dyffryn Ceiriog. At this point the river has dropped nearly a thousand feet from its source at about 1800 ft. above sea level. Here at the village that takes it's name both from the river valley and from a monk who toured Wales many centuries ago, the river turns northward in a great semi-circle for some four miles through Tregeiriog and Pandy, the valley narrowing all the while until at Llansaintffraid Glynceiriog, usually contracted simply to Glynceiriog or even just "Glyn," it is flowing due North having fallen from height of 875 feet above sea level at Llanarmon to only 575 ft. at Glyn.

Here the valley widens again to its more usual width of about 300 yards and turns towards the south-east again for about one and a half miles to Dolywern, where the course becomes north east again for 2 miles to Herber. Until now on either side the hills have risen immediately at the edge of the meadowland of valley floor, rising steeply in rounded slopes well covered in trees to flat and bare summits, although of recent date even these are under assault from the relentless march of the evergreen plantations of the Forestry Commission.

Beyond Herber, the river turns south east for the last time, running along the southern edge of Chirk Park for the next three miles until it passes beneath the twin viaducts, gradually turning east and then north east to it's confluence with the Dee about 3 miles east of Fron Cysyllte and two and a half miles from the viaducts. Here the river is only about 130 ft. above sea level, having traveled about 17 miles on the journey from Moel Fferna to the Dee.

## The Wynne Slate Quarry

Glynceiriog, the village of the Wynne and the Cambrian Quarries, is centered now close by the river, the original church from which it gets its name, dedicated to Saint Bridget or Freida, of Ireland, being higher up to the north on a particularly steep by-road which leads over an eastward spur of the Berwyns to Llantysilio and Llangollen. The Parish of Glynceiriog, despite the rise and fall of its industrial significance at different times past, has shown a more or less continuous growth in population from 1807, when, it was a mere 464, until 1951 when it reached 961, the peak year topping the 1000 mark being 1921. Since then, however, a considerable decline has set in, to the gain of Chirk Parish

The language of the valley was once almost entirely Welsh, but this too has declined steadily, in 1961, 620 people in Glyn were described as being bi-lingual while a further 24 spoke only Welsh, now the figures are much less and the visitor is far more likely to hear English spoken on Glyn's streets than "Cymraeg," a situation markedly different from that in Blaenau Ffestiniog, once the hub of Welsh Slate Mining, where one is unlikely to hear English spoken, unless a trainload of tourists has arrived!

The Wynne Slate Quarry  
**CHAPTER TWO**  
**THE SLATE AT WYNNE**

The slate rock quarried at Glynceiriog was laid down during the geological epoch known as the Silurian thus making it younger by many millions of years than the Ordovician Slate of the Ffestiniog area and even younger still than the ancient Cambrian Slate of the Penrhyn Dinorwic and Nantlle areas.

Welsh Slate was formed from the particles of sand, mud and dust, which were deposited in the primeval seas, which covered Wales in the far distant geological past. The seas rose and sank and the beds of deposited detritus were alternately raised and lowered, buried and folded, subjected to tremendous pressure from mountain building forces to intense heat from the earth's plutonian fires and from the more direct effects of volcanism. The effect of all these being, first of all, to align the tiny particles of mica and silica along the lines of the deposited beds, forming loose, easily fractured rocks like mudstones and shales. Some beds were subject to greater indignities when forces at an angle to the beds forced the particles into new alignments along which they would easily split or cleave thus forming slate.

Since the older the rock the longer it had been subject to these metamorphic processes, it is perhaps not surprising that the oldest slates of all, the Cambrian Slate is by far the hardest and densest. The Ordovician is next in the sequence, followed by the Silurian, the softest and least dense of all. This and the presence of other minerals in the original material, which went to make up the slate rock, especially Magnesium compounds, affected its qualities for roofing.

Within each age of slate, of course, there are wide variations in quality and in the type of slate produced, as well as in colour. The Cambrian rocks produced slate of an astonishing variety of colours. Among them being purple ("red"), green, blue, grey and white while the Ordovician slates varied between a "lead-like" grey to a deep blue, the Silurian, however, being basically a slightly blue-grey.

The thickness of the beds of slate varied greatly also, the Cambrian beds being many hundreds of feet thick, consisting of "Veins" of the various colours. These outcropped on the sides of the mountain Elidir Fawr at Dinorwic and Penrhyn and in the bottom of a valley at Nantlle. These caused the slate quarries there to adopt methods of terracing and sinking deep pits on the veins in the open in order to excavate the rock, dumping the waste on the surrounding ground. The Ordovician rock in the Ffestiniog district, however, dipped steeply beneath the mountainsides, the possible expense of removing all but the initial overburden soon forced the quarries there to resort to minimal the slate, leaving huge pillars or walls of rock unworked to support the overhanging roof. Here too the slate rock was divided into recognizable veins, each readily identifiable by the men who worked them for their characteristics.

What then of Glynceiriog? Here too the slate outcropped on the side of the hills, and here too it was found to dip at an angle beneath those same hillsides. It is hardly surprising, then to learn that in the district initial workings took the form of open quarries, pit and gallery workings on the line of the outcrops, mining being adopted when the depth of overburden proved too great for removal.

Throughout the Glynceiriog slate beds in both the Wynne and the Cambrian Quarries, the dip of the beds was fairly uniform at 15 degrees, with the cleavage plane being only slightly steeper at 25

## The Wynne Slate Quarry

degrees. For comparison, the Ffestiniog mines had a typical dip of 35 to 40 degrees, while the cleavage plane could be as much as 50 or 60 degrees to the horizontal.

There seems to have been only one recognizable "vein" of slate at Glynceiriog, sandwiched between a deep layer of slaty shale or "bastard slate" and a layer of "grey stone." This "vein" of about 90-100 feet in vertical thickness, was divided up into a number of individual beds some workable slate, some not, varying both in quality and location. Each bed had a particular title associated with it, usually giving some idea of the sort or quality of the rock in the bed.

From top to bottom, the beds named and worked at Wynne and the Cambrian were:

**The Crumbly Beds:** these were 6 ft. and 4 ft. thick respectively and thought to be poor rock, they were probably removed as waste.

**The Dirty Beds;** there were three of these 4 ft. 3 ft. and 3 ft. thick. These may have been workable. the name referring to either their colour or the thin layers between the beds.

**The Big Spar Bed or Rhesog Bed** was 4 ft. thick. Spar rock was usually to be avoided as it was much broken up by loose quartzite making it structurally weak - certainly not a workable slate!

**The Big Bed** was 13 ft. thick quite the thickest bed in the vein. This seems likely to have been good rock and worked in most chambers, particularly in the western section of Wynne.

**The Seven Feet Bed;** as its name suggests was 7 ft. thick. it is also thought to have been good rock.

**The Scribe bed** 6 ft. thick lay next below. Traditionally in the slate mines a "scribe" was a line of weakness in the rock which caused it to give way under pressure into thin sharp cracks which looked as though they had been drawn with a pen or knife, hence the name. This is thought to have been a poor layer of rock liable to fracture into awkward shaped pieces - not good rock.

**The Apple Bed:** was also 6 ft. thick. This may have been so named because the rock came in lumps rather than in sheets, although it may also refer to good rock as in the phrase "the apple of one's eye."

**The Ribbon Bed** came next, only 3 ft. thick. This is also an ambiguous title, suggesting that the rock may have been very finely cleaved, like ribbons.

**The Hard Bed** was 4ft. thick, perhaps more suitable for slab work than roofing slate, or perhaps not slate at all.

**The Rhiwiog Beds** were three in number: 4 ft., 5 ft. 6 in., and 6 ft. thick respectively and are thought to have been good slate. At this point their imagination ran out and the next beds were named more prosaically:

**The Yard Bed** as it's name suggests was 3 ft. thick.

**Jo's Bed** was 3 ft. thick.

**The Nine Foot Bed** and the two **Four Foot Beds** completed the vein.

Unfortunately, insufficient documentation and personnel have survived to be able to identify these layers with certainty in Wynne itself, although a thorough exploration of the accessible workings has made an attempt possible. Thus plans and sections included here must be taken as provisional when labeling beds worked. In addition to the above, for the purpose of identification. the author has taken the liberty of inventing some names for readily identifiable features in the beds himself, and names such as the "the Thick White Band" and "the Three Yellow Bands" are purely his own invention.

The Wynne Slate Quarry  
**CHAPTER THREE**  
**WORKING THE SLATE**

The principle operations in producing roofing slates are straightforward. Firstly the rock has to be quarried from the vein, then split to a size suitable for transportation to a site at a safe distance from the quarrying operations. Here it is reduced again to manageable sized slabs, which can be split into thin sheets and trimmed or dressed to size and shape for roofing.

Until the middle of the 19th. century all the operations mentioned above were carried out by hand: Drilling holes for explosives was done by quarrymen known as rockmen using a long pointed rod or drill called a jumper or "jympar" in Welsh which was repeatedly lifted and dropped until a hole of the required depth was obtained. A five-foot hole driven in this way might take the whole of a working day to create. For deeper holes a larger version of the jumper called a "ladi" was used.

A plug of clay or paper was placed into the hole and a charge of gunpowder, black-powder, was poured into the hole from a powder-horn carried by the quarryman rather like those often shown in films of the American Frontier. Gunpowder was used in preference to high explosives such as gelignite or dynamite as it's gentle explosive force only cracked the rock rather than shattered it completely as did the high explosives which were used for driving tunnels and similar development work. A fuse originally made from a straw containing gunpowder and latterly a tape fuse was placed in the hole and then the whole sealed up with suitable packing usually clay or paper or rag the whole being tamped or stemmed into place with a rod. This was a critical operation, too tight and the explosion would be too violent and the rock might be damaged, too loose and the powder would burn rather than explode.

Many accidents were caused by sparks from the use of an iron stemmer, which struck sparks from the rock igniting the charge prematurely. In later times the Metalliferous Mines Regulations, which had effect on slate mines after a legal test case in 1875, insisted that the stemmer had to be made of brass or wood which would not spark.

One of Wynne's few major accidents was due to a premature explosion. At the end of a working day a rockman, who may have been in a hurry to get home, attempted to "stem" his charge with his iron drill. The charge exploded and blew the rock into him. Fortunately his workmates were able to get him out of the mine and to the doctor in the village in time, but he was permanently disfigured, the powder having burnt his face black and the explosion having crippled one side of his body. As a result he became a recluse in the village, a figure of fun and ridicule for the children. None the less it was said that the explosion saved his life, for he out-lived many of his contemporaries, who continued to work in the silicosis inducing dust and the rheumatism creating damp and cold of the mine.

Further splitting up of the rock was done by crowbar, by hammer and chisel and by the use of the plug and feathers or "plyg" in Welsh. This involved drilling a short hole in rock and inserting two wedge shaped irons, the "feathers" into the hole parallel to the direction of the split required. The wedge shaped plug was then hammered into the hole between the feathers, forcing them apart until the rock cracked along the chosen line. Choosing such a line required a good knowledge of the rock and it's various lines of weakness. One such property was pillaring, the ability of the slate to split in a plane roughly perpendicular to the planes of dip and cleavage. In the vein at Wynne the pillaring plane and the plane of dip also formed a slight angle to one another. This line of pillaring also

## The Wynne Slate Quarry

assisted the quarrymen in the formation of the underground workings.

Once the slabs had been reduced to a manageable size, usually about six feet long or so and as wide as could be obtained preferably between two and three feet, they were lifted onto simple wagons by a crude crane. This was made from three thick timbers formed into a tripod with a pulley at the apex and a hand operated winch drum between two of the legs. These were the cause of many accidents when the unbraked drums and load overcame the man causing the handle to flail round with consequent broken limbs, jaws and heads - usually fatally. Latterly the implementation of geared winches and then ratchet handles reduced the number of accidents from these causes. Until the introduction of the ratchets, the approved method of holding a load was to toss a loop of chain into the winch gearing.

Waste from the quarrying operations was loaded either onto similar wagons to the slabs, if it was large, or into steel sided wagons if it was small and removed to the tips by men known as clearers and tip men. The waste tips were usually arranged to spread out on either side of the quarry, hopefully over non-slate bearing ground. To avoid unduly damaging the slate rock by dropping it from the working face to the quarry floor, the open quarry was arranged as a series of terraces or galleries a convenient height apart, each having its own tramway and waste tip.

The wagons usually ran on the simplest of track, straight iron bar or bridge rail spiked to sleepers, with a gauge of around two feet. The wagon wheels were double flanged and loose on their axles, retained by a split pin, thus making exact gauge keeping unimportant. Tracks in the quarry and mine were essentially temporary things, being moved as the working face moved, sometimes buried by falling rock, but easily repaired, replaced or re-laid to suit the situation. Except where permanence or safety was important, junctions consisted of lift-over blades, which clipped over the "main line" rails, to provide the "points," wagons being "bumped" over the junction. Tracks were laid wherever possible to be in favour of the load, the empties being pushed back against the gradient. Movement of the wagons within the quarry was either by horse, or by man-power, in which case the men doing the work were referred to as hauliers.

Final breaking up of the slabs to a workable size for slatemaking, as the ultimate splitting was known, was initially a repeat of the use of plug and feathers, to crack the slabs along the pillaring line. The blocks were also split along the cleavage plane into slabs about 3 inches thick using a short broad bladed chisel. These slabs were dealt with by the slatemaker seated on a low stool. He rested the slab against his thigh and split the slab progressively using a thin splitting chisel and iron bound wooden mallet until the slab was reduced to the thinnest slates possible, usually 1/6 to 1/8 of an inch thick depending on the quality of the rock. These were passed to a second man, the dresser, who was seated on a low bench next to a fixed metal edge, the trafil. He placed one side of the slate along the trafil and trimmed it straight by using a long knife. By turning the slate round he could thus form the familiar rectangular shape. To assist in the formation of regular sizes, he marked the rough slate after trimming the first side with a notched dressing gauge, which allowed a range of fixed sizes to be produced.

Until the 1860's and 70's most of this work was done in the open, or in small huts known as waliau, which the slatemakers and dressers made for themselves on the edge of the tips where the waste could be disposed of easily. However from the 1850's onwards, mechanical slate saws and effective mechanical dressing machines became available and "production line" methods were evolved to process the slates in long sheds known as dressing mills.

## The Wynne Slate Quarry

In a typical "mill" of the 1880's slate blocks from the workings would enter the mill by a tramway along one wall and were then tipped, slid or maneuvered sideways off the wagons onto soft raised ground alongside the tramway where they could be split into the 3 inch slabs of yore. However, here the similarity with the old methods ended, for the slabs were then loaded onto the flat beds of the saw tables, which dominated the middle of the mill. These ran across the width of the mill driven from a line shaft in the roof by leather belting. The shaft was driven by either waterpower or steam, depending on the mill and the finances of the company. The saw table bed looked rather like a large cheese board with a rectangular grid of holes cut in it into which wooden or iron pegs could be driven to secure the slabs. The bed was split into two by a central slot in which the iron saw blade revolved. Suitable gearing moved both saw and bed, forcing the slabs into the rotating blade. As can be imagined the blades soon became blunt and frequently required sharpening, despite the installation of tanks of water in which they could revolve for cooling. It's main advantage was that it enabled the production of large slabs without the danger or an inexperienced splitting cracking it awry and reducing the size of slates that could be produced by it, for the larger the slate the more valuable it was. This method of sawing to size was taken a stage further by the use of diamond saw, but neither the Wynne nor the Cambrian ever saw them.

From the saws the freshly cut slabs, now with a flat end were passed to the slatemaker and then the dresser, whose task had been simplified by the mechanical dresser. The most common form of this, patented by W.G. Greaves of the Llechwedd Quarry in Ffestiniog, looked like an upside down lawn mower, and had originally been adapted from an agricultural chaff cutter. It consisted of a fixed blade, with a notched gauge attached to it at right angles. The rough slate was placed on this and struck by a moving curved blade which rotated just clear of the fixed blade. It was said that a good dresser was able to dress a slate square to size in just four strokes of the blade, turning the slate through a right angle for each stroke, never missing a pass of the blade!

Waste from the dressing operation fell beneath the dresser to be shoveled away. In some mills a special low-level tramway was arranged beneath the dresser so that the waste fell into the wagon. As can be imagined, the work of the mill produced prodigious quantities of waste, all of which had to be removed and thrown over the tips. Mill waste is still easy to distinguish by the fine thin nature of the shards produced compared to the rough blocks of mining waste.

At the end of the day, or when the dressers bench was full, the dressed slates of each Size would be counted, marked up on an accounting slate in precise copperplate writing made with a sharpened nail, and then transferred to an area outside the mill known as the stacking yard. Here the slates of each size could be stored in rows for selection and dispatch, each section of the yard belonging to a particular team of dresser and slatemaker.

The Wynne Slate Quarry  
**CHAPTER FOUR**  
**UNDERGROUND WORKING**

The methods used for working the slate below the hillsides at the Wynne and the Cambrian Quarries was similar to and possibly an adaptation of the methods used in the Ffestiniog district, allowing for the differences in the nature of the rock.

Initially a level tunnel or adit was driven in from the quarry face or hillside until it reached a recognizable layer of rock, usually that overlying the slate vein. In the Cambrian this may have been the Rhesog or the Big Spar while in the Wynne several different layers appear to have been used. From this point levels or Galleries, as they were apparently known at Wynn, the term being carried over from the open quarry, would be driven in either direction following the run of the Vein roughly East and West from the adit. These would be arranged to slope down towards the adit and the adit to slope downwards from the surface to facilitate the drainage of the inevitable water. Along these galleries roughly every twenty to twenty four feet a section of rock would be removed about twenty feet wide under the chosen roof layer to form the starting space for a chamber. This opening of the chamber gave room in which to work, clear of the main access tramway that ran along the gallery, and also exposed the face or forebreast of the chamber to view so that it could be worked.

It was the responsibility of the miners to drive the tunnels and galleries and to open the chambers for work as well as carrying out any operations from time to time which required the use of high explosives, but once a chamber was opened it was passed into the hands of the rockmen who would work it. In point of fact chambers, known as bargains were let to the rockmen on a special day each month, known as the letting day, when the management and the men would agree on the particular quality of the rock in the chamber and hence the likely value of the slates to be obtained from it. Between them, using their experience of the rock, they would "bargain" for a particular rate for working the chamber, known as poundage. The rockmen were usually formed into a team of two, in partnership with another pair of men in the mill above who would make the slates from the slabs produced by their partners in the chamber below ground. However, there were many variations on this idea and it would seem that a mixture of both "bargain" and "day-wages" or "tonnage" systems were employed at Wynne and the Cambrian.

In a new chamber, the rockmen's first task was to unroof the slate by removing the layers immediately under the roof in order to give a working space. It was also common to drive an inclined shaft up immediately under the roof to the gallery above, or to the surface, in order to provide ventilation. This roofing-shaft could be driven along the centre line of the chamber or along either wall, in Wynne all positions seem to have been used, although that along the eastern side of a chamber was most favored.

Once this working space was formed, the rockmen could begin to extract slabs from the rock. One peculiarity of the Wynne and Cambrian quarry workings as a result of the very shallow dip and the formation of the "beds" was the extracting of the slates by their beds, rather than in a single continuous operation.

To extract a slab involved creating a free-side, apparently called a "loose side" in the Wynne, and a free-bottom. This meant that some of the rock had to be removed to gain access to the cleavage plane of the rock, and to the thickness of the bed. By drilling a hole along the pillaring line and a second along the cleavage plane, two small charges of gunpowder would suffice to crack a slab free

## The Wynne Slate Quarry

from the parent vein and allow it to slide down to the foot of the chamber where it could be subdivided into a size which could easily be transported through the levels to the surface and the mill.

In the huge mines of Ffestiniog, the cleavage plane was usually the most important line of weakness in the rock, the vein splitting most easily in that direction, but in the Wynne the intersections between the beds were just as important. They limited the maximum length of slab that could be produced to the diagonal thickness of the bed along the cleavage plane. There were other problems too. There were "pevels", or slip planes in the rock similar to fault lines, usually, but not necessarily, at a steep angle to the dip of the beds, along which the rock was already fractured and would be liable to break away. Here and there were intrusive veins or "whinstone dykes", layers of once molten rock which had forced their way through the slate beds in some volcanic epoch, the heat spoiling the slate on either side of the dyke. They could be useful too, forming a homogenous and solid roof in some chambers. At Wynne and in the Cambrian the effect of the type of rock and its numerous faults raised the ratio of waste to finished slate to the figure of 30:1, perhaps the highest of all the slate quarrying districts.

As each bed was worked forward, it uncovered the bed below it, allowing it to be worked in turn, thus the forebreast or working face of the chamber consisted of a number of steps or "benches", each as deep as the particular bed removed. These benches not only sloped from the forebreast towards the opened or northern end of the chamber, but due to the pillaring line not being parallel to the line of dip, they also sloped down from the west side of the chamber to the east, giving a definite slant to the roof making the west wall higher than the east.

Eventually the floor of the chamber would be extended so far towards the south that it reached the bottom of the slate vein, or the lowest bed of workable quality. When this happened the chamber was said to be exhausted. However, by this time the total height of the working face would have reached 70 feet or more, an impractical distance to lower slabs, especially slabs of so friable a nature as the Wynne slate! For this reason each floor of the mine was established at about 20 to 30 feet below the previous floor, reducing the height the slabs had to be lowered. However, this introduced problems of its own, for as each chamber was worked forward, it eventually would cut away the working floor of the chamber in line with it on the floor above. In the steeply dipping veins of Ffestiniog this was circumvented by the construction of timber bridges and rock ledges to support the main tramways. In the Wynne quarry, neither method seems to have been used, the development being such that it was possible to abandon each floor as the next one below it worked it away.

Finally, in the later stages of the mines' life, when all the available rock was exhausted, the cost of "sinking" to a new floor was too high or the limits of good rock had been reached, then the solid walls which had been left between the chambers to support the roof might prove a tempting source of known quality slate. The good beds could be extracted from the sides of existing chambers, leaving "cupboards" in the sides of the walls. If the wall was strong enough a hole might be worked right through it, the wall then becoming a true "pillar". There was a natural limit to the extent to which this "pillar-robbing" could be carried out, and such work had to be done with great care, the site chosen with an eye to the strength of wall and roof. A single mistake could prove fatal, bringing down rock on the men or worse still causing the roof to give way.

An alternative was to follow the good beds down into the floor of the chamber, forming an open quarry in miniature. Such workings were known as "sinks". The slabs were lifted out of the sink by a

## The Wynne Slate Quarry

suitable block and tackle slung from a chain hung across the chamber from convenient anchoring point, such as an abandoned level or from "rock-bolts." These were similar to the plug and feathers, but much larger and not intended to be removed, the wedging action locking the iron pin into the parent rock.

The problem with sinks, and with lower floors accessed only by inclined planes was, of course, drainage. Water would find its way in somehow and had to be dealt with. The usual remedy was to arrange the tunnels and levels wherever possible to divert water to adits and away from the chambers, but this was not possible once the chambers had worked away the floors above them. On the lowest floors and in the sinks, pumps were an inevitable requirement and until the advent of electric motors and compressed air, pumps worked by steam supplied from the winding engine's boilers on the surface were the only succour.

The miners and rockmen were not alone underground, of course, there were the clearers who trammed the rubbish and slab wagons along the levels, there were the platelayers who laid the tramways and looked after the inclines

Mention was made above of the methods of payment used and although little has survived at Wynne relating to payment, an interesting letter relating to the Cambrian in 1928 has survived, detailing a suggested new payments scheme and thereby revealing the methods in use at that time, which can have been but little different from Wynne, as the two quarries were effectively under the same control.

In this period, the Cambrian quarry was considered to be on a paying basis when employing 115 men and producing 2 tons per man-month at a wages cost of £6 per ton. This was broken down as follows:

|                                                    |                                    |
|----------------------------------------------------|------------------------------------|
| Development charges (miners, including explosives) |                                    |
| average                                            | 12s. 3 ¾ d. per ton of made slates |
| Clearing Rubbish (laborer's),                      | 12s. 4½ d.                         |
| Winches. Inclines & Tips,                          | 10s. 11¾ d.                        |
| Clearing Mill Rubbish                              | 2s. 7d.                            |
| Loaders                                            | 4s. 7 ½ d.                         |
| Managers & Office Staff_                           | 2s. 11d.                           |
| Miscellaneous                                      | 13s. 4½ d.                         |

This left some £3 0s. 10½ d. to be shared amongst the rockmen, slatemakers and apprentices. There were 28 rockmen, 14 slatemakers, dressers and 5 apprentices.

The apprentices pay is the easiest to understand, being 1s.0d. per day plus 30s.0d. poundage on slates made by rubbing, that is, making slates from the waste blocks, usually the men, often the apprentices' relations would seek to boost their kin's pay by giving them a good block to work on **Rubbishers were** paid various rates, 4 getting 6s.7d. per day, three got 7s.7d. per day, three more 8s.7d. and the remainder got 9s.1d. per day, though why there was this variation is not explained. No figures are given for the rockmen although it is made clear that the men had to pay for candles and gunpowder out of their own pockets, this being reckoned to cost about 6d. per man per day. The slatemakers were paid 9s.1d per day plus a figure based on the value of the slates they had made – known as the "slatemakers' bill," this figure being about 1/3 the value of the slates.

### The Wynne Slate Quarry

The new system proposed was to break up the link between rockmen and mill men, making the slabs sent up common to any slatemaker, the rockmen then being paid on a fixed wage of 10s.10d. per day up to on all production above the 2 ton per man-month break even figure. The slatemakers were to be paid 9s.1d. per day plus a percentage based on production value up to a maximum of 1s.9d. per day. The idea of putting the slatemakers on a tonnage basis was dismissed as it might lead to weight being their only consideration, whereas thinner, lighter slates had the highest value. The advantages claimed for the system were that there would not be the delays at the end of the month when all the complexities of the bargains and letting and production accounts for each team had to be sorted out, the management would be relieved of the letting day - a fraught time for all and the company would not have to pay for dead work such as cutting the loose sides.

There were disadvantages, and they were recognized. The individual could not work expertly all the various beds and if there were complaints from customers it would have been impossible to identify the problem chamber.

The scheme was similar to many put forward in other quarries in the same period, most failed, it being found that the long established bargain system remained the most effective for getting the best from the men. At the Votty Quarry, in Ffestiniog, the bargain system was abandoned for a number of years causing a dip in output and an overall loss, but once the bargain system was re-instated the quarry promptly began to make a profit again.

The Wynne Slate Quarry  
**CHAPTER FIVE**  
**HISTORY AND DEVELOPMENT**

That slate has been quarried and slates produced in the valley of the Ceiriog for many centuries is certain. In the records of Chirk Castle, the seat of the Middletons, are to be found references as far back as 1329 to: “stones to be Quarried to the same use 14s..“ (for the repair of the roof of the rooms beyond the castle gate.) .

*“by the same tallage to wit for every thousand 3s.6d.*

*“And in carriage of the said stones from the Quarry to the castle 6s.8d.by the same tallage to wit for every thousand 2s.8d and in one two-headed axe breaking the stones in the Quarry 6d. by the same tallage.”*

*“And again for repairing the roof of the great bakery.*

*“And in one thousand three hundred stones to be Quarried 5s.3d. to wit for one thousand 4s.2d.*

*And in carriage of the same 2s.*

*“For repairing the Chapel of the Lord in the village of Chirk.*

*“one thousand stones to be Quarried 4s.6d.”*

More specifically still in the reign of Henry VIII:

*“Slaters:*

*Item. Payed to John, Slater ffor gettingyng of 4 thousand of slate stones at the Quarre price the thousand 2s.6d. - 10s.0d.*

*Item. Payed to Hoell ap Res ffor gettingyng of a thousand and a half of slate stones lyke price -.3s .9d.“*

The exact source of the slates is unknown, but from the 1500's onwards there were several small quarries on the slate outcrops working spasmodically as required by demand. In common with many other areas the slate quarrying was a part time activity carried out by the local farmers and forresters both with, and no doubt occasionally without the consent of the landlord.

The Wynne Quarry gets its name from Sir Edward Wynne of New Hall who is thought to have worked the quarry in the middle of the eighteenth century, hence the date of 1750 in the Glyn Slate Quarries Company emblem now used by Glyn Quarry Enterprises.

Thus by the time of the "boom" of slate quarrying the 1850's there appear to have been several sites in the valley: Wynne itself, just above the village of Llansaintffraid Glynceiriog, Ty Draw on the opposite hillside, Chwarel Isaf and Chwarel Uchaf higher up along the same outcrop as Wynne and others even smaller elsewhere.

The first real quarrying enterprise came into the district in 1857 with the forming of the Cambrian Slate Company to work one of the small quarries near Chwarel Uchaf. This company employed one Henry Dennis as its consulting engineer, one of the quarry pits being named after him. He had come to the district from his home in Bodmin, Cornwall in 1852 when he was 27 to supervise the construction of the Moel y Fan, Oernant & Clogau Tramway to the terminus of the Ellesmere Canal west of Llangollen, the quarries named being situated on and above the famous "Horseshoe Pass" at the end of the "Vale of Clwyd." The tramway was 5 miles long and of 3 foot gauge.

He went into partnership with his brother in Ruabon in 1857 as surveyors and mining engineers. It seems likely that Dennis had some financial stake in the Cambrian. Certainly as the 19th. century wore on his name became involved in several ventures in both Denbighshire and nearby Shropshire,

## The Wynne Slate Quarry

the Snailbeach mines near Minsterley and the Ruabon Brick and Pipeworks being but two of them.

The Cambrian Quarry Company expected an estimated annual output of 4000 tons of finished slate and to that end spent a reputed £22000 on installing quarry tramways of roughly 2 foot gauge, an inclined plane, a "water engine," weighing machines and other buildings. However, there was one drawback: the quarry was at the far end of a valley with only very rough road transport for its output, unlike the other quarries of North Wales who, on the whole, by this time had obtained tramway communication with shipping ports on the coast or with the slowly spreading railway network.

For the next fifteen years or so the quarry company became involved, usually with Henry Dennis in the forefront, in trying to obtain better road or rail communication with the world beyond the valley. A turnpike road was constructed from Bronygarth to Glynceiriog in 1860, being completed by 1863, the Cambrian Slate Company contributing half of the £10000 cost. Tollgates were set up at Chirk, Heber and Glyn itself. This was not, however, enough for the Cambrian to compete effectively and thus proposals were put forward in 1866 for a standard gauge railway the "Ellesmere and Glyn Valley Railway," and then in 1869 for a narrow gauge tramway. These both failed, and it was only after the passing of the Street Tramways Act in 1870 that success was attained. In 1870 the Glyn Valley Tramway Act was passed by Parliament. The newly formed Glyn Valley Tramway Company agreed to pay the Turnpike £150 per year as a minimum rent for a route alongside the road.

The tramway ran from Glyn, its terminus being in front of the "New Inn", this becoming the "Glyn Valley Hotel" in later days, to the Shropshire Union Canal at Gledrid, near Trehowell. This lay to the south of the Ceiriog and Chirk and created a major difficulty for the company. The last part of the journey from the Ceiriog at Pontfaen to Gledrid was uphill! The cost of the tramway was estimated at £10000 and as some difficulty was found in raising this amount locally which included an estimate of £560 per mile and no less than £2237 for a 1/2 mile inclined plane at 1 in 8 to connect with the Cambrian Quarries, the Shropshire Union Canal agreed to contribute half of the cost. This was not, of course, altruism, behind the S.U.C. was the London and North Western Railway, ever ready to take a poke into Great Western Railway territory if it could. In any case the S.U.C. agreed to operate the tramway on behalf of the Tramway Company.

Henry Dennis was appointed engineer to the new concern in May 1872 and construction began under his supervision in June of the same year, being completed and opened in April 1873, the gauge being 2 feet 4 and a half inches. The tolls were established as:

- 3d. /ton mile for coal, lime, slate, stone, wood, materials etc.
- 4d. /ton mile for coke, bricks, tiles, manure, iron etc.
- 5d. /ton mile for flour, grain, sugar, earthenware, light castings, etc..
- 6d. /ton mile for fish, manufactured goods, wool and other wares.

By 1876 the open quarry pits which comprised the Cambrian Company's workings were four in number, being called, in order from east to west: "Martin's Quarry" which was the largest, "Townshend's Quarry," "Dennis's Quarry," and "McEwan's Quarry." By this time all four were connected by an underground level, simplifying the task of drainage and the transport of both waste and slabs, as required.

However, competition in the slate trade was possibly at its fiercest in this period and the Cambrian Quarries were handicapped not only by their means of transport, but also by the quality of their slate rock which could hardly bear comparison even with the poorest produced by the huge mines and

## The Wynne Slate Quarry

quarries of Caernarfonshire and the highly mechanized mines of the Ffestiniog district. Not surprisingly therefore, from the mid-1870's onwards, the S.U.C. became increasingly concerned as the Cambrian Co.'s slates began to pile up unsold on the wharves at Calverley, their interchange point with the L.&N.W. Railway, and although the demand for slate was high, the traffic from the slate quarries over the tramway they were working began to decline.

Matters came to a head in 1881, the Cambrian Slate Company went into liquidation, owing the S.U.C. £74 in unpaid dues. Many of their slates remained unsold, occupying space on the various canal wharves. Fed up with the whole situation the S.U.C. effectively sold back operation of the Glyn Valley Tramway to the Tramway Company for £2000 on the 31<sup>st</sup>. August 1881, over £7000 having been lost in the 8 years they had been working the tramway.

Clearly something had to be done, with the Cambrian closed, only up goods and down granite from the recently opened quarries at Hendre above Glyn in the Ceiriog valley seemed to offer any salvation. Various proposals were made to operate the tramway by steam or somehow replace the crippling climb up to the canal from Pontfaen, but nothing came of it for several years.

About this time the Wynne Quarry enters the scene, or rather re-enters it, for it is reputed to have opened in 1873 when a tramway was built, but it closed with the Cambrian in 1881. However, be that as it may, about 1883 it began to be worked on a larger scale than formerly by the Pant Glas Slate Co. which was owned by George Rooper, a solicitor of Nascott House, Watford. The company also-operated a quarry at Pentre Dwr, near Llangollen and apparantly within a short time, the whole population of Pentre Dwr was transferred to Glyn to work in the quarries there, abandoning the old village, which became a ghost town, and annoying the inhabitants of Glyn, who did not take kindly to their arrival.

In 1884, to assist with the expansion of Wynne, the quarry was connected to the Glyn Valley Tramway at the foot of the Cambrian Incline by an incline of their own. This rose at nearly 1 in 3 for 150 yards to the main dressing floor of the quarry. It was probably around this time that the hand dressing operations were replaced by a small dressing mill on the dressing floor, powered by a 30 foot overshot waterwheel at its western end. The workings themselves were almost entirely in the open, forming steep sided terraces on the side of the hill, most of which became hidden from view by the waste, which was tipped in front of it.

In March 1886, George Rooper, together with his brother, Francis Edward Rooper, who lived locally at New Hall, took up a lease of the Cambrian Quarries from Edward Harper and Sir Theodore Martin, who owned the ground rights and who had written a biography of the Prince Consort. The brothers formed a partnership, and formed a new "Cambrian Slate Co." with a capital of £50,000.

In the meantime, Sir Henry Dennis, as he had become, obtained a new Glyn Valley Tramway Act of 1885, which allowed the G.V.T. not only to go over to steam traction, but also to abandon the climb to the canal at Gledrid in favour of a slightly less steep climb to the canal and Great Western Railway at Chirk Station, by some strange coincidence the new Chairman of the G.V.T., just happened to be one Sir Theodore Martin!

Conversion took place over 1887-1888 and brought an end to the Turnpike tolls, which the tramway had had to pay up till then. This greatly speeded transport and made the Glyn slate more competitive in price, if not in quality.

## The Wynne Slate Quarry

Quality obviously concerned the Roopers and with an output of 975 tens from Wynne alone at a value of £1.500, they were concerned to find or make a reputation for their slate. To that end F.E. Rooper wrote to one E. Evans, later surveyor to the Llangollen District Lighting Board in 1886 regarding the durability of roofs covered in Glyn slate. He replied as follows:

*"The Aber-Gwern slate will last about 70 years. St. John's Church in Abbey Street Llangollen was roofed with it 30 years ago and is perfect now. The Welsh Wesleyan Chapel, Llangollen was covered with slate from the same vein and is very Good now, they have been on since 1840."*

*"The Wynne Slate was used for roofing Pontfadog Church in 1846 and is perfect now. The Queen Inn, Glyn was roofed in 1837, forty-nine years ago with the Wynne Slate. It will require re-roofing in about 3 years hence."*

*"The Cambrian Slate is not calculated to last quite as long as the Wynne Slate."*

In 1888 Evans replied to a similar inquiry as follows:

*"In accordance with your request. I beg to state that the following houses in the Glyn District have to the best of my knowledge and belief been roofed with slates from your quarries 60 years and upwards viz.:"*

*"Adwydefyn. built by Thos. Thomas."*

*"E.N.Jones' House. Garth. built by Edw. Hughes."*

*"Chapel House. built by Dd. Davies."*

*"Penybont Houses. built by Jno. Hughes."*

*"And the following 50 years and upwards viz.:"*

*"Sun Inn. Garth. built by E.O.Jones."*

*"Cefn Issa, built by Dd. Davies."*

*"Coed y Glyn, built by Dd. Davies."*

*"Jno. Williams' House, built by O.Williams."*

*"Richd.Jones's House, built by H. Hughes."*

*"Queen Inn."*

*"It is my opinion that the slates obtained from the underlying deep beds in your quarries will last 50 to 60 years if Good timber is used and the pitch of the roof be not too flat. In many cases the slates have lasted much longer. In former times a Great many slates were obtained from the surface and of course they will not last as long."*

The Cambrian Quarries had begun some underground operations in the late 1860's and had continued them thereafter, but it would seem that the Wynne did not begin mining its slate until 1888 or 1889 when an adit was driven North into the quarry face to test the thickness of the vein beneath the hillside. The adit was driven slightly uphill to allow it to be self draining and it was apparently begun from an existing part of the quarry known as "Gallery A" - the name being continued in use to describe the underground level. This floor was at the same height as the main dressing or "mill floor".

When the 'top' of the vein was reached, levels were driven East and West from the adit and chambers opened. Only two chambers were begun to the east of the adit, but the western level proved the most productive, and by the late 1890's no less than 11 chambers were opened west of the adit. Such was the pace of development that by only 1890 the first two chambers on either side of the adit had been exhausted and worked virtually to the surface leaving only a few feet of rock between the original quarry face and the underground void, this thin barrier being pierced only by narrow ventilation holes, the remains of the roofing shafts used to open the chambers.

## The Wynne Slate Quarry

In the light of what little evidence remains of the numbering system used by the Wynne Quarry for its underground workings, it would seem that it was based on these original workings, the Easternmost chamber being No.1, and the westernmost No.13. This nomenclature has therefore been adopted. However, the more conventional terms "Floor A" etc. has been adopted instead of the idiomatic "Gallery A". Production during this period averaged about 1200 tons, most, if not all of which came from the underground workings.

A major change took place in 1891 when, by a combination of sales and assignments, George Rooper sold his lease of Wynne, but not Bronydd, and the partnership assigned their lease of the Cambrian to a new partnership consisting of George Rooper, Francis Edward Rooper, Sir Theodore Martin and Edward Harper, thus neatly obviating any future problems over royalties

The following year, the Glyn Slate Co. Ltd. was formed with a capital of £20,000, the new partners now becoming the directors of the company. Effectively the new company had purchased all the plant and buildings at Wynne together with all the plant and buildings at the Cambrian. However, the remainder of the Wynne leased land, which included several terraces in Glyn and some separate houses, were sold by public auction. Most of these, including Nascott Terrace and Watford Terrace, both named after the Roopers' home were occupied by quarrymen and their families.

Output at both Wynne and the Cambrian began to rise, as did the number of men employed, particularly at the Cambrian, perhaps reaping the benefit of methods tried out at Wynne. The Cambrian only produced 60 tons of slate in 1890 with about 10 men, but by 1900 this had risen to over 2000 tons with about 100 men employed both on the surface and underground.

Wynne's output also increased, but to a lesser degree, varying typically between 1400 and 2000 tons. As the last decade of the 19th. century wore on, a new adit was driven in 1893 or 1894 from the lowest floor of the open quarry known as gallery B to the west of the chambers worked on floor A. This new floor was about 30 feet below A floor and again a main level was driven to the West from the end of the adit to enable the old A floor chambers, by then worked out, to be reworked from below, thus working the full thickness of the vein. This of course would have cut off the more westerly workings on A floor by removing the floor beneath the main western A floor level, so to maintain communication, and at the same time allow the B floor to work the old chambers, a new short adit was driven in from the outside into chamber No.4 and a diagonal level driven through wall 4 into the next chamber, No.5.

By 1895 the advance of B floor had made even this insufficient and a new level had to be driven, this time from the inside towards the surface. This was begun in chamber No.8 and driven eastwards beneath chamber No.7 to the open quarry Gallery A. Even this can have had only a short life, for by 1898 the last chambers on floor A were worked out!

The slabs and waste from the B Gallery in the open quarry had been raised to the A Gallery by a short steam powered incline worked by a Marshall engine. It is not clear from existing evidence whether the boiler and engine were mounted on Gallery A originally and later moved to the next floor up from A where the Quarry Office had been built, known as the "Office floor", or if this was always their position, it is possible that the engine was on floor A while the boiler and water tanks were on the Office floor.

## The Wynne Slate Quarry

At this period, the top of the incline was the centre of tramway operations inside the quarry. In early days the slabs and waste had gone directly to the dressing floor and tips at the same level. but at some stage, possibly to increase tipping space, the tramways between quarry and dressing floor had been slabbed around and tipped over at the level of the Office Floor. From the head of the incline one tunnel led on a curve towards the mill, emerging to the south of it, near the smithy, while the other, presumably for waste bypassed the mill to go direct to the tip. However, by the 1890's the mill tip was desperately short of room and was encroaching on the village. For this reason the waste seems to have been abandoned and a water balance incline constructed up the north eastern end of the quarry, possibly on the site of an earlier gravity incline used for lowering rock. This new incline raised the waste to a high level, greatly increasing the tipping space available.

A third, deep, floor was begun in 1898 or 1899 by sinking an inclined shaft below the first chamber, No.1 East, on B floor as a continuation of the B incline. The OS maps suggest that a separate incline served this, the original still serving the B floor Adit. The new floor, dubbed "Gallery C", was again about 30 feet below floor B. From the foot of the incline shaft a long level was driven to the North and East and West levels opened from it. At the same period B floor was extended to the east of the B adit where four chambers were opened viz.:2 East to 5 East and worked virtually to the surface. Work still continued to the West on B floor where the last vestiges of the A floor workings were cut through by 1900.

By 1905 nine chambers had been opened on C floor, and the B chambers east of the B adit were being worked from C floor, the B level having been worked away in them, much as had the A floor been worked away from B floor. In an attempt to speed up production of good slate on B floor, a number of chambers on B were reworked by excavating "sinks" or miniature quarries in the floors of the chambers. At least one wall was also worked through. At this time the incline had two tracks, one serving C floor, and a second serving B floor.

Around 1903-4 the company installed a water turbine constructed by the famous makers, Gilbert Gilkes of Kendal. This was used initially to operate a generator to drive the mine pumps and also to supply electricity to the Quarry and village for lighting at times when the quarry did not need the power. The head to the turbine was supplied from an old Quarry shaft, above the main quarry, which had had an adit driven into the bottom of it. This was blocked with a wall and suitable pipes and valves were installed. The 3 inch pipe ran from the foot of foot of the shaft along one of the old quarry galleries dubbed "Gallery 3" at the level of the high tip. The pipe passed down the side of the water balance incline, then down the main incline to floor B where it was installed in the incline chamber.

About this period, the B ad it was abandoned and a diagonal level driven through wall 1 East from the incline chamber into chamber 1 on floor B. This allowed chamber 1 East to be worked forward from C floor, and the incline tracks re-aligned closer to one another to give a double track entrance to chamber 1, the northern track serving C floor, the southern B floor via the cross-level.

The lighting to the village was apparently part of George Rooper s desire to be something of a public benefactor. He is reputed to have ploughed the profits he made from the quarries back into the village. Starting up the "Glyn Electric Light & Water Supply Co." in 1904 as part of the Quarry's enterprise. the water being piped along the hillside to the old shaft and from there to three small filter beds just above the mill, pipes from there feeding the village. This continued until the public supply was installed in the 1950's. He had first begun to supply water to the village in 1893 when the

## The Wynne Slate Quarry

original pipes were laid with the council's permission.

18 houses in the village were lit with electricity by the turbine, albeit somewhat poorly. One elderly resident in particular remembered that the light from the electric bulbs was so poor that if someone wanted to do some fine sewing, then the electric lamp was turned off and an oil lamp used! The lighting was critical too. Again there are memories of all the lights suddenly being extinguished and some unlucky person having to go up to the mine to restore the fuse

George Rooper lived at Bronydd for most of his life, the house being extended on several occasions. He introduced Peacocks to the quarries, carrying on the tradition of Sir Edward Wynne, and the present owners have continued the tradition.

The directors of the Company in 1901 were George Rooper, Francis Edward Rooper, John Duthy, the Hon. George Edwyn Hill-Trevor and John Dyson Moore, the Secretary being Edward Foulkes. F.E. Rooper was also a director of the Glyn Granite Co.

By about 1900, even the high level tip had covered all the space available for it and as the Local Council refused to permit any further expansion of the mill tip, the quarry had to resort to back-filling both the old open quarry, which had been given up and those chambers which had been exhausted. Initially the decision appears to have been made to abandon the A floor tramway in the open. This involved bringing the winding gear up to the office floor, if it was not there already, and the construction of a new short Gravity incline from the Office floor down to the mill, next to the old tunnel. Once this was done, the old A floor was tipped over. This allowed short levels to be driven from the new ground into the tops of the old A and B chambers Nos. 4,6,7,8 and 9 for tipping.

By 1904 or so, the tipping was sufficiently advanced to allow a short incline to be constructed down the tip in chamber 7 open to the quarry, allowing the slabs from the western B floor workings to be hauled up to the chamber floor. This allowed the tramway on B from chamber 1 to chamber No.7 to be abandoned, allowing chamber No.2 on C floor to be worked forward. The turbine to be moved into the narrow level in wall 1 East where the electrical equipment was better protected. In chamber No.4 a stairway was built from the Office floor down to floor B, clear of the incline, as required by the Metalliferous Mines Regulations.

In the western chambers themselves, the smaller waste was not removed, but packed at the sides of the chambers, leaving a central walled cutting for the tramway. The packing was about 7-8 feet deep when work eventually stopped.

By 1908 C floor stretched from chamber No.5 (undeveloped) with rather more done in No.4 and No.3. Chamber No.2 had been worked forward below floor B and then had been worked the wall into chamber No.1 Chamber 1 on C floor had been worked forward as far as a dyke which passed almost vertically down by the B floor tramway level.

About 1908 or 1909 Wynne seems virtually to have ceased working, although the last entry in the official statistics does not occur until 1911 when 12 men were employed. Most of the men had been transferred to the Cambrian. This coincided with a general consolidation and re-organization within the various companies with which the Roopers had been involved. Debentures which had been issued in previous years were redeemed, some from even as far as Australia

### The Wynne Slate Quarry

In 1910 the old Glyn Granite Co. and the Glyn Slab Co. were amalgamated into a new concern. "The Glyn Quarries Limited," a company limited by shares. The articles of association of the new company referred to its various purposes as:

*To purchase, take upon lease, or otherwise acquire any interest, rights, privileges in any slate, slab, or stone quarries, or lands containing or supposed to contain slate, slabs, stone or minerals of any description, in the County of Denbigh or elsewhere*

*To carry on business as Quarry And Mine Masters and Slate, Slab, Stone and Mineral Merchants, and to buy, sell, get, work, shape, hew, carve, polish, crush and prepare for market or use, slate, slab, stones and minerals of all kinds.*

*To purchase, take on lease, or otherwise acquire, any quarries, mines, mining or quarrying rights, and Metalliferous or other land in the county of Denbigh, or elsewhere, and any interest therein, and any licenses, authorities, water or other rights: and to explore, work. Exercise, develop, and turn to account the same.*

*To search for, dig, quarry, mine, work, prepare for market, manufacture and sell, and make profit of the slate, slabs, stone, clay, minerals and other substances, which may be discovered in any of the quarries, mines, or lands of the Company: and to develop, improve, and layout for building any part of the lands of the Company, and to manufacture and carry on the business of manufacturers of all articles and things made of slate, slabs, stone, clay, minerals and such other substances as aforesaid: and to carry on any quarrying, mining or metallurgical operations which may seem conducive to any of the Company's objects.*

*To buy, sell, manufacture and deal in slate, stone, minerals, plants, machinery, implements, conveniences, provisions, and things capable of being used in connection with quarrying and mining operations, or required by workmen and others employed by the Company*

*To supply the village of Llansantffraid-Glyn-Ceirioq and the neighborhood thereof with electricity and/or with water and to carry on the business of an electrical Light Company and/or of a Water Company in all its branches*

That seems to have covered just about everything

The subscribers to the new company were given as :

F.E. Rooper, Glyn. Ruabon. Gentleman

E.U. Foulkes, Glyn. Ruabon, Accountant.

C.G. Haswell, 94 Foregate St., Chester. Chartered Accountant.

E. Gardner, Northgate House. Chester, Solicitor.

The capital of the new company was set at £20,000 in 3,195 Preference Shares of £1 and 16,805 Ordinary Shares of £1.

The First World War, as might be expected had no effect on the closed Wynne. However, the Cambrian suffered a reduction in both manpower and sales. By 1918 the company had a debit on their trading balance of more than £4,000. Four of their men had been killed in the war and 3 wounded, one had obtained the Military Cross. The directors had changed too. F.E. Rooper and E.

### The Wynne Slate Quarry

Gardner remained, as did E. Foulkes, the Secretary, but new blood was there too in the form of John Taylor of Heathercliffe House, Helsby, and his son Captain Alan C. Taylor of Gresford. The Manager of the Cambrian was T.P. Crosland, a cousin of Alan C. Taylor's and a member of the same Crosland family now famous for a Diary! Soon after this time Captain Taylor moved into Bronydd with his wife, who led a somewhat difficult life as her husband had a habit of visiting antique shops and auctions and buying things. Indeed so much did he buy that his wife had to virtually lock him at home to keep him from buying things. On his death she toured antique shops for hundreds of miles round Glyn finding that they had stored things he had bought and not dared bring home

By 1919 the directors annual reports stated that if men could be obtained, it was hoped to re-commence operations at Wynne. However, the following year it was reported that the skilled men could not be found. By then the debit had reached nearly £5,000. By one means or other, most of this was written off and the company's capital value effectively reduced by cutting the value of its shares to 10/- from £1! Part of the saving was reckoned to be obtained from the "rents of Wynne & Cambrian Quarries given up - £700/-." Just how the Cambrian was given up together with the Wynne, which had not worked since 1911 was not stated. By these means and others, the Company showed a profit for 1921 of £380. Sales were not moving, however, and a stock of £510 worth of slates in 1918 had risen to over £2,000 worth in 1920.

Things began to change in 1921, with over £2,000 being spent at the Cambrian on a new suction gas plant and an Ingersoll-Rand air compressor. In 1922 a dividend of 5% was paid on all the shares. Wynne was re-awakened from its long sleep in late 1922 and by July 1923 £169 had been spent on plant, wages of £25/13/1d. being paid out. Presumably this was just to bring the plant into working order. Work was begun in earnest over the next twelve months, wages for Wynne rising to £2000, a further £532 being spent on plant and machinery. An air compressor driven by a heavy oil engine was installed in the same shed as the winding engine. The year was fairly successful. Wynne sold £1166 worth of slates and had a further £394 worth in stock by comparison the Cambrian had sold £26033 worth and had a stock of £1775 worth in the same period. Despite the expense of working Wynne, which made a loss, the Company overall made a profit of nearly £3000 and a 5% dividend was paid.

The financial year 1924-25 was even more successful, of £4647 and expenditure on plant at Wynne of £509. The loss in working Wynne was only £1263, the Cambrian's profit being £4780. Wynne sales accounted for £4639 with £449 stock, the Cambrian had sold £26802 and held stocks of £1709.

Work was first resumed on C floor in 1924, chamber 3 being worked forward as far as the B floor level, then a tunnel was driven beneath chamber 4 on B to join the sink which had been begun in that chamber before the war. This was extended sideways into the walls of the chamber on either side, a hole being cut clear through wall 4 into chamber 5 to join the sink there into one large working area. Once this was done, the stairway from the Office floor down chamber 4 was extended down into the new workings, thus giving direct access to the C floor for the men.

The following year the main C floor level was extended westwards continuing until October 1927, but only three small chambers were opened, one, No.9, providing ventilation to the level by means of a narrow roofing shaft up to the B floor level. Rather more successful was some work in the East, where two new chambers, No.6 east and No.7 east were opened and worked until 1927. In 1926 work also began on a far westward exploration, a continuation of the main B floor level. This continued until January 1928 when the whole enterprise was given up. Only two small chambers

### The Wynne Slate Quarry

were worked on the extension, Nos. 26 and 27 near the end of the level, another No.21, was started but not proceeded with. The driving of the level was done with compressed air and Climax rock drills, the air being supplied down iron pipes held on the tunnel wall with brackets, which still remain. The first trial tunnel on the line of chamber 19, driven in 1926 was subsequently walled off and used as an air reservoir. The compressed air was a mixed blessing, it allowed increased work, but it also increased the amount of silicosis inducing dust in the air. Waste from these workings was taken along the B level and apparently tipped into the sinks in chambers 4 and 5, the stairway being cut back to floor B once again. Waste was also taken up a short hand or air operated incline in chamber 12 up to the remains of A floor where it was tipped from the level into chambers 11, 12, and 13.

The western exploration is most curious in that the chambers immediately to the east of the extension were worked for many years, while no chambers of comparable size were opened from the extension level. It is interesting to speculate if the real reason for the westward extension was actually to provide a drainage adit for the Cambrian Quarry rather than to work the Wynne Slate. It may be, of course, merely that with the rise in labour costs, the price of opening new chambers, compared to the rewards from the slate contained in them, was not worth while. In which case, why was the level driven at all? In view of the decidedly interesting financial arrangements employed by the company, perhaps the re-opening of Wynne in the 1920's was an attempt to drive a non-paying drainage level under the guise of exploration, the cost not being related to the separate Cambrian Quarry, but carefully arranged to show Wynne as a loss.

Not surprisingly in 1925, with a total credit balance of £5,607, a dividend of 15% was declared. 1926 was much a repeat with a credit balance of £5,217 producing a 10% dividend. At Wynne the expenditure continued, £447 being spent on plant, an additional £111 being spent on a "catchpit and Engine house". This is thought to have been for the installation of a Crossley engine to work the mill in place of the old water wheel. This was not removed, but stayed on site until 1953 when it was scrapped. The engine was placed next to the joiners at the opposite end of the mill to the wheel.

Tragedy befell Wynne in 1926 when the mine foreman, Isaac Evans, who was highly unpopular and suspected of cheating the men of their due wages, was found drowned in the flooded sink in chamber 3 on B floor, which acted as a sump. He had gone into the mine early, as was his wont, to perform an "inspection" before the men went down. The men arrived at the mine and waited for him, but as he did not appear, went to work on their own. However, he was still missing much later, and after ascertaining that he had indeed left for the mine as usual, a thorough search was made and his body found. The eventual inquest came to the conclusion that he had gone to check the level of water in the sump, slipped and fell in. The weight of his wet clothes and the slippery rock prevented him climbing out. As can be imagined, tales afterwards grew of his ghost haunting the mine, though no-one has been able to substantiate this!

The working loss on Wynne was only £14 in 1925-6 but this rose again to £681 in 1927, this being attributed in the accounts to wages, yet the Cambrian accounts show no corresponding increase. The Cambrian was still working well and a dividend of 10% was announced. The state of Wynne's finances, combined with an increasing stock of unsold slate and the apparent failure of the exploration levels on floors B and C to find any worthwhile slate led once again to the closure of Wynne in 1928, the men were once again transferred to the Cambrian and the machinery was allowed to decay. The lower floors were flooded and were used as reserve water supply for the village, the water being extracted by a series of siphons. A use for Wynne was found during the

## The Wynne Slate Quarry

Second World War, when the quarry was used as an air-raid shelter!

Output in this last period of Wynne's life had never been high, about 170 tons being produced in 1923-4, 520 tons in 1924-5, 540 tons in 1925-6 and 616 tons for 1926-7, the comparable figures for the Cambrian being 2736, 2794, 2772 and 2653 tons respectively.

The Glyn Valley Tramway itself was the next to go, it had struggled through the First World War and even the General Strike, but when the Hendre Granite quarry began to send its produce by road, the writing was on the wall, the last train ran in 1933, and the whole line was effectively closed by 1935. One part remained in use for a time, the Cambrian Incline. As this was virtually the sole access to the Cambrian, the Glyn Quarries Co. bought up the incline site and machinery and operated it themselves. They also bought some of the G.V.T wagons to work on it. However, without the G.V.T. at its foot even the incline was of limited use and so the road to the quarry was improved and eventually Great Western Railway Lorries found their way there to pick up the slates. The Great Western had reached Glyn at last.

To bring the story of the Cambrian to its close, no dividend was produced again, despite a credit balance in excess of £5,000, until 1934 when 5% was distributed, this was repeated in 1936 and 1937 but after this the trend was downwards and by 1946 the balance was £8,824 in debit. Despite this situation, hopes were expressed for the effects of the new housing program, the whole quarries production being cleared each month, heavy stocks of damp course slates were disposed of entirely. However, it was only a last fling, the continued cost of production, higher wages, a band of poor rock and the contributions to new sickness and holiday pay schemes all contributed to the debit.

The final straw came in March 1947. In a letter to the Ministry of works, the Secretary of the Company put it this way:

“Referring to the discussions and correspondence concerning this Quarry's position, we have to inform you that notice has been given to the men that it will be closed down this week-end.”

“You are aware of the long standing difficulties which have been hampering progress and the atrocious weather of recent months has done nothing to improve things, however, what really precipitated the closure was this.”

"Last Wednesday week, following a terrific blizzard, we had to put the men off. Some of them got work shoveling snow for the local Council, and the arrangement was made that last Monday we would have a dozen men clearing at the Quarry ready for a General start on Tuesday."

"This was carried out, but twelve of the snow clearers for the Council refused to return to their work at the Quarry. With a Quarter of the personnel taking this stand, there was nothing left but for us to give notice of closing."

The next twelve months were spent untangling and sorting out the complex legal position of the quarries and the Cambrian Plant and Buildings were finally sold by auction on the 14th. July 1948

Bronydd House at Wynne was occupied by Elizabeth Taylor, the daughter of Captain A.C. Taylor, who continued to live there afterwards. The mill machinery and the wheel were only scrapped in 1953. The mill wheel proved particularly awkward and had to be cut up on site. The lorry brought in to remove it came to grief in the mill yard when its wheel sank into the old mill race beneath the track and had to be dug out. The Council concreted the road up to the mill site and the house so that a tanker could spray the tips with a mixture of liquid peat, grass and other seeds.



The Wynne Slate Quarry  
**CHAPTER SIX**  
**WYNNE TODAY – ON THE SURFACE**

**Chirk - Glynceiriog**

Most visitors to Wynne approach Glynceiriog along the B4500 from Chirk, following, for the most part, the route of the old Glyn Valley Tramway alongside the road. This joins the B4500 just to the west of Chirk itself where a tree filled cutting curves in from the north, bringing in the later tramway route from Chirk Station (G.W.R.) along the edge of the Chirk castle Estate. The road and tramway descend together, the tramway to the right of the road, but separated from it by a low wall and diverse gradients.

The valley floor is reached at Pontfaen and here after a short distance the tramway swung across the road to regain its old course from Gledrid on the left hand side of the road. At Pontfaen a long siding trailed along the old course back towards the bridge and long trains were divided with its aid before being worked up the steep bank to Chirk.

From Pontfaen onwards the tramway course is discernible as a broad verge along the left hand side of the road, although continuous road improvements have made it less distinct than in former times.

At Pontfadog on the right hand side of the road, almost opposite the bridge, is one of the old waiting rooms of the tramway, now locked up. Shortly before Dolywern, the tramway strikes away from the road to cross the Ceiriog on a girder bridge of its own, now part of the Leonard Cheshire Home there, by this means avoiding what is even today an extremely abrupt turn in the road to cross the river.

From Dolywern to Glyn the tramway route once again runs on the left of the road, with a hedge or fence separating them from the river which both cross about half a mile outside the village. The road is straight from then on, past a relatively new estate and about 100 yards short of the village cross-roads, there was once a junction.

A builders yard now occupies the site of Glynceiriog Station Yard, the old Engine shed is now a garage and store, the Station building itself a private residence. From the junction, the leftmost track curved away on the level through the yard and Station, across a minor road, then through the coal yard and on up the valley to the granite and silica quarries which were its later life-blood. The other branch carried on up and along the road up to the cross-roads in front of the “New Inn” now the “Glyn Valley Hotel.” Then there was another junction. One branch terminated at the “old” coal yard, opposite the hotel, now the site of the public conveniences. This was the site of the original tramway from Gledrid.

The other branch curved sharply to pass up a minor road immediately to the north of the hotel. Here, occupying the whole of the road, was a loop, which served firstly the Cambrian Incline and latterly the Wynne Incline as well. Here too there were two sidings acting as a wharf for the Wynne. Plans show that access to the Police Station was by a gated crossing while a bridge over the sharply curving tracks at the foot of the Wynne Incline gave access to a pathway alongside the incline. All the tramway lines within the village were worked by horses, the track being too light and tightly curved for the tramway locomotives.

**The Wynne Incline.**

The Incline between the quarry and the G.V.T. was typical of the type of gravity incline used in most

## The Wynne Slate Quarry

of the quarries of North Wales, although, as might be expected, it had its own unique features.

The incline had two tracks about six feet apart between centres. At the foot these leveled out and came together with a set of points, a second set of points controlling entry to the storage loop and sidings. At the top or "head" of the incline was the "Drumhouse," this contained a large wooden lagged drum, about 5 to 6 feet in diameter and about 8 to 10 feet long, controlled by a band brake acting on a brake rim in the centre or at one end. This was operated by a long brake lever which was on the eastern side of the drum, where a high slab built platform allowed the brakes man, who operated the incline, a clear view of the top of the incline, the "Crimp" where the gradient changed and the foot of the incline. The upper part of the Wynne incline was so steep, however indeed the whole incline had a "catenary" shape, that wagons climbing the upper portion were almost invisible until they reached the top.

At the crimp the tracks became level and came together at a set of points. Normally the track from these would have passed beneath the drum to a loop behind it, a slight down gradient from the crimp assisting the momentum of wagons and to prevent a runaway down the incline. However the Wynne drumhouse was built partially into the hillside of old waste behind it and so a track through the drumhouse was not possible. Instead a track ran from the crimp points under the drum where a second set of points or a turntable allowed the wagon to be pushed out to the east to a loop and from there to the mill.

Two steel wire ropes were wound around the drum, one clockwise and the other anti-clockwise so that as one was wound on the other was paid out. Operation of this type of incline was as follows: A loaded wagon would be run under the drum at the top of the incline from the loop and then pushed out towards the crimp so that whichever cable end was at the top could be attached to its rear. Meanwhile at the foot of the incline, a similar operation would be taking place with the returning empties on the other track. When the bottom wagon was ready, usually signalled by the men at the foot turning their backs on the wagon and walking away, the loaded wagon would be pushed carefully over the crimp to hang "tight on the wire" with the brake held on. The points would be re-set behind the wagon, ready for the empty and then the brake would be gradually released until by the visible movement of the wagon at the foot the brakeman would know that all was well.

It was then a matter of experience to allow the wagons to run or "crewl" under the careful control of the brake until the appearance of the full wagon towards the foot, or the tautness of the rising cable indicated the empties were approaching the crimp. Here was the skill, for over cautious braking might "hang" the wagon on the crimp, requiring tedious hand hauling to get it onto the level, too tardy braking could cause the wagon to be jerked up off the track into the drum, or overrun into the drumhouse wall. The happy medium was best!

Once on the level the wagon was uncoupled from the incline cable and pushed away to the loop and the operation repeated until all the wagons had been "crewled."

The Cambrian Incline, 925 yards long, was worked on a slightly different principle. In the 1920's usually six to nine loaded wagons were sent down daily in "runs" of 3 wagons at a time. The incline was so long that the men at the foot raised a white marker when the empties were ready, the brakesman keeping his eyes on them by means of a pair of binoculars! The Cambrian Incline was owned and maintained by the Glyn Valley Tramway, but operated by the quarry, while the Wynne Incline was their own.

## The Wynne Slate Quarry

Today the Wynne Incline, like most of the site, is almost invisible among the trees. Just beyond its foot is the main car park for the museum, known as Plas Owen, after the modern hotel a little higher up. From the car park, steps lead up to the minor road to the Cambrian Quarries. A little further along the road a gate permits entry to the Wynne Quarry grounds by a diagonal pathway which leads up to the Drumhouse. This was once the main access route to the quarry, along which George Rooper drove his pony and trap. Erosion on the one side and encroachment by the hillside on the other have now much reduced the path's former width.

At the drumhouse, a second diagonal but private pathway leads a reverse course up to Bronydd, once Rooper's house and that of the present owners.

### **The Mill Site**

Beyond the drumhouse, the path, which was once the tramway track, passes round the side of the hill, to the main dressing floor and mill site. Looking at the hillside now, one can hardly imagine that it was once bare rock waste from the quarry! Even the mill area, once bustling with activity is now a well-graveled car park amongst the trees for visitors who have entered the quarry grounds along a steep curving roadway from the village street. This was the successor to the old route mentioned above. It had been a footway into the quarry almost since the beginning, but had only been made into a usable roadway in the 1920's. Even then it was only a rough track, the present concrete surfacing was laid in the 1950's to allow lorries to reach the various levels for tree planting.

Virtually all of the Mill floor consists of waste, tipped out over the hillside from much earlier quarrying. Here were once blacksmiths and fitters shops, long since vanished, as have the earlier dressing arrangements. Even the dressing mill which gave its name to the area has virtually disappeared, only the end wall surviving to give shelter to a rustic seat for visitors.

The mill was typical of the smaller type built in Denbighshire, but again had its own peculiar features. The mill was about 95 feet long and 45 feet wide. At the northern end was the 30 foot diameter iron water wheel of between 3 ft. and 6 ft. breast. It was of the overshot type, the water being carried to the top by a wooden launder perched on high stone pillars. The wheel was supported by both the end wall of the mill and a stub wall about 5 ft. high on the opposite side of the 12 feet deep wheel pit. The tailrace passed away from the pit under the tip, but its exact course is unknown. The drive to the line shafting in the mill was taken off the wheel by a ring gear and spur where the facility was available for latching the wheel in position, presumably to stop the wheel "running way" in a high wind as had happened at some exposed mill sites in Wales. The roof was a conventional gable, with four large glazed windows in the southern side slating.

Slabs reached the mill from the quarry via a tunnel, now collapsed and fenced off but still visible by the side of the bed of the gravity incline that replaced it, bringing slabs down from the Office Floor. The tracks from the reception loop of the incline, or a passing loop from the tunnel, combined and entered the mill by a door in the south eastern corner, just clear of the wheel pit. The door was 5 ft. 3 in. square and is now used to seal the old tunnel. From the door, the track ran the full length of the mill, just inside the eastern wall. This wall was strengthened on the outside by a number of slab buttresses, presumably to prevent the wall leaning over due to ground settlement. This was an ever present problem with heavy mills built on waste tips.

Inside the mill it is thought that the saws were arranged transversely, perhaps not more than 6 or 8

## The Wynne Slate Quarry

altogether. The dressers were arranged along the northern wall, which was pierced by several large window like openings which had a large slab across the middle like a shelf. Apparently the slates produced were stacked on this shelf to be transferred onto wagons standing on a tramway outside the northern wall of the mill in a narrow cutting between the wall and the hillside beyond. These wagons were run along the tramway clear of the northern end of the mill and then reversed back into the stacking yard on the southern side of the mill. Here the wagons were unloaded and the slates stored according to their sizes and the slatemakers who had produced them. Orders could then be made up from the stocks as required, loaded into Glyn Valley Tramway wagons and despatched along the quarry tramway to the incline and thence to the Tramway proper.

At the northern end of the mill was a 20 ft. extension nearly the full width of the mill which originally housed the carpenters shop and latterly housed the Crossley oil engine which drove the mill after the wheel was abandoned, while just beyond it was a weighbridge on the tramway and its associated weigh house.

### **The Office Floor.**

Behind and just above the mill site, the present road access to Bronydd and the footpath to the Museum slants up the hill side to the Office Floor

The first buildings to meet the eye here are clustered around the drumhouse of the incline which connected the Mill floor and the Office floor. "Office Cottage," once the quarry office now much improved and a private residence stands on one side, while on the other are the remains of the old filter beds for the village water supply, now being converted to more pleasant use. The road layout here roughly follows that of the old tramway from the drumhouse into the quarry proper, the trees, grass and peacock cages effectively hiding the fact that all the land that can be seen as far as the quarry face is made ground, formed by tipping waste into the old open quarry. A well-painted narrow gauge diesel locomotive and a sign indicate that a low roofed building is the Museum. This was once the "power-house" housing the steam winding engine and later the air compressor and it's attendant oil engine. One of the quarrymen, Hugh Hughes, remembers that only too well. On one occasion he was plumping oil into the tank but had forgotten to open the pressure relief valve on the tank 50 that when the pressure became too high the handle flew back and broke his arm!

Now the building houses a considerable display of old equipment from the Wynne, Cambrian and other slate quarries, together with historical photographs of the district etc. There is also a shop and the essential modern conveniences, a luxury undreamt of in the days of the quarrymen.

### **The Inclines**

From the grassy lawn in front of the museum can be seen the remains of the slanting incline, now rather obscured by both tipping and trees, which led into the mine and the dark opening at its foot. This incline had two tracks, one originally serving Gallery B in the open and which was extended underground to serve the same floor. The other track was added at a later date to serve the wholly underground floor C. Each track had both its own wire rope and its own winding drum. These were driven by a common shaft from a single winding engine, either drum being driven by the shaft through a simple dog clutch, braking of the drums being through a friction band as in the case of the gravity incline. Operation essentially consisted of winding up loaded wagons with the drum clutched in, and allowing empties to run back down by gravity on a "loose" drum the motion being controlled by the brake.

## The Wynne Slate Quarry

Not immediately visible to the visitor, and rather inaccessible also, are the remains of an equally important incline, that was used to raise the waste from the Quarry to the high level tip. This originally worked from Gallery A of the open quarry up to what might be called "Gallery 3." Now all that remains is the steeply sloping bed of the incline, behind the peacock cages, and the combined drumhouse and weigh house at the head of the incline on the tip.

This incline was of a type known as a "Water Balance Incline." This had two parallel tracks of a suitable gauge on which ran carriages, the tracks being at a fixed angle, unconnected with the ordinary track. There were two distinct types of water balance known as the "single-acting" and "double-acting" types from their modes of operation. The single-acting type had a water tank carriage on one track and a carriage for wagons on the other track. The carriages were connected together by wire ropes in a similar manner to a gravity incline, the ropes being wound round a drum at the top. The carriages were designed so that the weight of the wagon carriage with an empty wagon was greater than the empty water tank carriage, while the weight of the tank carriage full of water was greater than the weight of the wagon carriage plus a full wagon of waste.

To raise a load of waste, the water tank carriage had to be at the top of the incline and the wagon carriage at the bottom. With the system held by the drum brake and possibly by fixed catches, a wagon of waste could be run onto the wagon carriage from a specially constructed "dock" at the foot. The catches could then be released and water run into the water tank carriage from a pipe until the weights were slightly overbalanced. The brake would then be released and as the water tank carriage descended it would haul up the wagon carriage on the parallel track. When the carriages reached the ends of their tracks, the loaded wagon could be run off and the water released from the tank carriage. Often this was done automatically, the tank having a valve operated by a catch in the "dock"

A double acting incline was similar, except that each track carried a combined tank and wagon carriage, the tank being either over, or more usually, under the wagon platform. The advantage of this type was that an empty wagon could be lowered and a full one raised by each movement of the incline, while a single acting type required two movements to carry out the same operation.

Above the drumhouse is an old open quarry and possibly the remains of an incline used to connect it to the tip floor. While from the drumhouse the remains of one of the open quarry galleries runs round the quarry face like a shelf, crossing a gap by means of a deep timber bridge carrying the turbine and supply pipes, to the foot of a deep shaft from the surface above the quarry face and which was used as a header supply for the turbine, the bottom of the shaft being sealed by a brick wall.

From the drumhouse a track, now much overgrown, led to the quarry magazine or powder house well removed from the quarry itself. Regrettably it is now a ruin.

**CHAPTER SEVEN**

**WYNNE TODAY - UNDERGROUND**

From the Museum, two paths lead westward, one going up hill over the old waste now covered by fern, plant and tree to return eventually to Plas Owen. The other remains on the level, passing through a gate, with close by it a slab bearing the legend "Chwarel Wynne, Agorau 1750, Wedi 1928". Beyond the gate the path leads on roughly parallel to the quarry face on the trackbed of the old tramway. Between the path and the rock face can be seen the remains of the tramways and the collapsed entrances used towards the end of the quarry's life to tip waste into the worked out chambers below.

After a few dozen yards, the path passes one fenced opening about 20 feet square in the quarry face. Its interior disappearing into the shadowed darkness. This is the surface end of chamber No.6, some 300 feet in length, stretching from this rectangular aperture on the Office floor down some 60 feet or so to the stygian gloom of floor B. Unlikely as it may seem from the outside, this chamber forms the emergency access from the quarry, should some unforeseen accident close the main Entrance ..

Chamber No.6 is fenced and gated, but the main path leads ahead, through a second gate into the surface end of chamber No.7. The way directly ahead is blocked by the solid rock wall of the chamber reaching up to the smooth roof above. Water drips continually from the rock above, freezing in the depths of winter into long spectacular icicles. A glance at the walls of the chamber, illuminated by the daylight, is sufficient for the visitor to see clearly both the stratified nature of the slate beds and the low angle of dip of the vein, drawing the eye into the depths.

A little further and on the verge of the daylight and the artificial illumination of the workings are several low sheds. Here the underground guides pause to allow eyes to adjust and also to explain with the aid of a large diagram the basic idea of the workings with its various floors and chambers. Here too is the switchgear for the present underground lighting, illuminating the chambers in a way which the old miners could scarcely have imagined as they worked in the great vastness of their chambers illuminated only by the flickering light of a tallow dip. In one of the sheds stands part of the old electrical gear of the mine; the water turbine which once stood in a chamber at the foot of the incline and drove a generator to power both quarry and village lighting.

Beyond the Pelton wheel turbine is a fence which marks the end of the old tipped waste in this chamber from which the modern slab staircase descends, parallel to the roof which is now only ten feet or so above the floor, having been dropping gradually downward as the visitors have walked into the chamber. The stairs follow the right or eastern wall down into the chamber, following the route of an incline once used to raise rock from the workings to the office floor. Beyond the twenty four feet thickness of the wall and invisible is the parallel working of chamber No.6 dipping in almost exactly the same way.

A short distance below the tip end the steps debouch onto a narrow landing. Here the angle of the roof changes abruptly and then after a short stretch reverts to its original angle, the steeper slope denoting the dip of the cleavage plane at about 25 degrees to the horizontal. Just below the landing a level emerges from the left hand wall. This is the remains of the original access route or main level on floor A abandoned as long ago as the 1900's and then blocked off and used as a "Caban" or mess-room by the underground workers for whom it was too long a journey to come out onto the surface for their mid-day meal. A bench and table have been placed in it to re-create part of the old

## The Wynne Slate Quarry

atmosphere. Strangely, when the level was being cleaned out and the lighting installed not only hundreds of old tallow candle ends were discovered but also a vast number of empty beer bottles

Descending the stairway once again the visitor passes the corresponding A floor level in the eastern wall, giving a glimpse through the wall of the illuminated chamber No. 6 beyond. The steps are steeper now, leaving the roof high above as the floor of the chamber is reached close by the raw rock of the western wall, where sharp eyes may spot some of the tell-tale "bands" separating the various beds of rock which were worked in the chamber. Here too the complex combination of slopes and slants in the beds is revealed.

To the right is a low wall, separating the pathway from a narrow water channel carrying the drainage from the surface deeper into the workings. On the wall are literally hundreds of rusted saw files, found during the inspection and safety work before the public were allowed into the workings. It can only be surmised that someone hid them down the mine when the place closed, hoping to recover them and sell them at a later date. Now they are useless for anything. A little further on and straightforward progress is at an end as the roof has reached the floor, the pathway joining the main east west level of B floor, the middle of the 3 floors of the mine and the lowest open to the public.

The level to the east is gated, a notice proclaiming that it is the emergency exit, while beyond it are the lights in chamber no.6 and beyond them the dark level continues to the east, eventually arriving at the foot of the incline shaft seen from the museum.

The level west is open and it is this route which is taken by the visitors, passing through the almost rectangular passage in the rock wall, the smooth walls and roof giving mute testimony to the natural habits of the rock.

Beyond the passage is chamber No.8 where a tableau depicts rockmen in the process of erecting a tripod crane used to lift slabs onto the tramway wagons. The main lights in this chamber can be dimmed, leaving only small bulbs to simulate the effect of the candlelight, which was the only illumination for the rockmen. Beyond them, dimly lit can be seen the edge of the waste, tipped into the chamber from the office floor in the 1900's when tipping space became unavailable outside. Vividly illuminated on the chamber floor is a blood coloured pool, water stained by iron compounds in the rock.

The B floor level does not continue straight on here, but instead turns to the north for some yards before turning west again under a new roofing bed and emerging into chamber no.9. In this chamber the floor of the chamber has been built up in the past with small waste to save haulage. This has now been converted into a viewing platform, accessed by a short flight of steps. The tableau in this chamber depicts several rockmen at work again with a crane. It took a five year old child to point out the anachronism of one of the men wearing a modern safety helmet, when all they had in the past were folded newspapers under their caps!

Above the tableau, clearly illuminated by the modern floodlights can be seen one of the beds of rock which were worked. The bed above it has been worked higher up into the roof, leaving a bridge of rock over the Chamber.

Back on the public level, the pathway is partially obstructed by a low wall built out from the junction of roof and floor. Inside is a narrow dark shaft to the extreme end of the C floor workings 30 feet

## The Wynne Slate Quarry

below. Water from the west of B floor, conducted along a narrow channel by the wall, flows continually down this artificial drain. This shaft was once the cause of great concern to some W.I. visitors who after being told of the tale of the "ghost" of Wynne, heard scraping and grunting sounds coming from the shaft. A flickering flame appeared above a muddy long bearded face. A long body heaved itself out of the narrow shaft and walked away unconcerned and silent from the chamber. The exploring potholer totally unaware of the utter shock he and his carbide lamp had just delivered!

Through the next wall, and then the way ahead is blocked again by a gate. This is the western limit of the public section, beyond it lie the last few chambers of the B floor workings and the long exploration level driven in the 1920's. Just beyond the gate, posed in the level, is the tableau of a quarryman pushing a wagon through the narrow confines of the tunnel. Horses were often used for shunting the tramways in the village, but not underground in Wynne.

The last chamber open to the public No.10 is not immediately visible from the level, the roof here is poor and to support it a dry slab wall has been built up between the chamber roof and floor. A narrow "doorway" through this leads to the chamber proper - and what a chamber! Unlike the others seen so far, No.10 has not been tipped into to any appreciable extent and so both the great length and volume of this subterranean cavern can be appreciated, giving some idea of what the quarry must have been like in its heyday.

The pathway leads between the rising sheer walls of rock, below the dark eye holes of the abandoned A floor levels, past ochre blotches on the walls, to where the floor of the chamber is obscured by jumbled piles of slate and rock. Here a new stairway has been constructed up beside the eastern wall to a viewing platform on the Office floor 60 feet or so above. By and indeed in, the opposite wall is a tableau of figures depicting men working on a "cupboard" where a good bed of slate was extracted from the wall without removing the overlying layers. A particularly dangerous proceeding for the newspaper protected heads of the rockmen.

From just below the viewing platform, itself located on a lofty open space where the wall between chambers 9 and 10 has been worked away, can be seen a second tableau showing a rockman at the very end of the chamber on floor A. where the working face of the chamber came to an end.

Beyond the platform the path runs along the top of the waste tipped into chamber 9 from the office floor, past a pair of figures depicting George Rooper, one of the owners known as "the Worm" by his Welsh work force, and Isaac Evans, the mine foreman found drowned in the sump in 1926.

The last chamber is entered via a severely iron stained level where a minor tableau depicts waste being tipped to back-fill the chamber. There is also a close view of the old working face of the chamber where the method of reaching one bed from another by a ladder is clearly seen. The path then leads through another short level to regain chamber No. 7 close by the entrance.

It only remains to retrace ones steps to the Museum, perhaps pondering as one does so the conditions and demands which led men to work in the damp and cold of the mine, and which in many cases doomed them to an early grave. Nevertheless it was work, and there was the comradeship of hardship and hard work shared, making the Caban an institution in its own right. We should not forget the Welsh Quarrymen, for without them there would have been many a house and factory in the rest of Britain which would have had a different and probably less durable roof. We owe them a debt we can never repay, except by honouring their memory.

# The Wynne Slate Quarry