

The Slate Quarries of North Wales



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THE NATIONAL LIBRARY OF WALES



Slate dressing at Llechwedd Quarry

People have been quarrying for slate in Wales since Roman times. The Roman fort, Segontium, near Caernarfon shows evidence of slate from the local area being used there. During the Industrial Revolution there was an increase in the demand for slate, and the slate quarries of north Wales, like the south Wales mining valleys, became an attraction for thousands of people looking for work.

Areas such as Corris, Blaenau Ffestiniog, Nantlle and Bethesda saw a dramatic increase in population and new communities were created for the quarrymen and their families.



Lord Penmachno, 'father of all quarry workers' c.1875

THE OWNERS

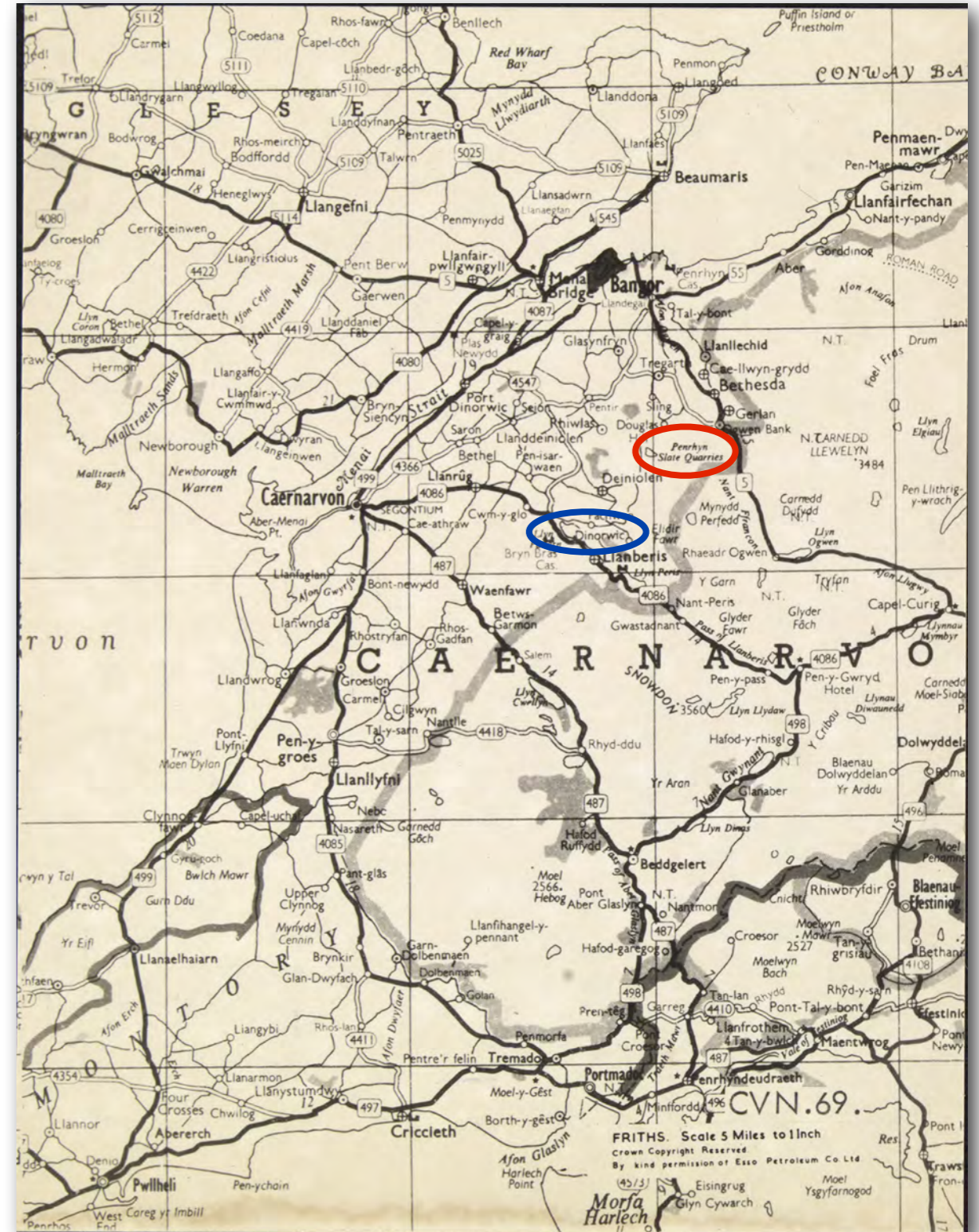


Workers at Cae'r Nant Quarry, Llithfaen, c.1885

Quarries in Wales produced more than 4 from every 5 slates produced in Britain at the end of the nineteenth century. Caernarvonshire was the county with the highest slate production in Wales.

By the beginning of the 20th century two quarries had developed to become the most important quarries in the world. These were the **Penrhyn Quarry** and the **Dinorwig Quarry**.

	POPULATION 1801	POPULATION 1911
GLAMORGANSHIRE	71,000	1,130,000
CAERNARVONSHIRE	41,500	142,000
BRECONSHIRE	32,000	56,000



IN 1898 THE SLATE INDUSTRY IN WALES REACHED ITS PEAK WITH A WORKFORCE OF 17,000 MEN PRODUCING 485,000 TONNES OF SLATE

THE OWNERS

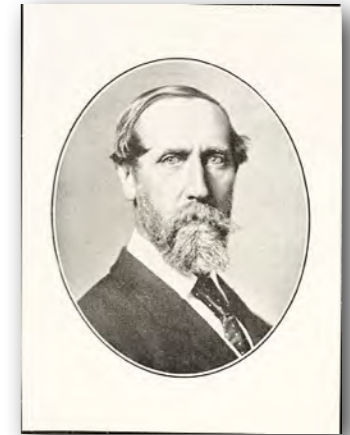
Penrhyn Quarry

The Penrhyn Slate Mine near Bethesda was owned by Lord Penrhyn. Richard Pennant had inherited the Penrhyn estate at the end of the 18th century and by the mid 19th century Penrhyn Castle had been transformed by the wealth generated from the slate industry.

Richard Pennant bought the small slate quarries on the Penrhyn estate and combined them to create the Penrhyn Quarry.

This is George Sholto Gordon Douglas-Pennant (1836-1907), the second Lord Penrhyn and the owner of the slate mine during the Penrhyn Strike, 1900-03.

He inherited the Penrhyn estate in 1866 which included 27,000 acres of land. The family also owned cotton plantations in Jamaica.



The estate was inherited by Edward Gordon Douglas Pennant (1800 - 1886) , who was a key figure in developing the quarry into becoming one of the largest quarries in the world.

These major landowners became wealthy because of the rent paid to them by the tenants on their estate, and even more so from the slate produced from the quarries on their estate.



Penrhyn Castle

THE OWNERS

Penrhyn Quarry



BY 1881 PENRHYN QUARRY HAD A WORKFORCE APPROACHING 3,000 AND WAS PRODUCING NEARLY 112,000 TONNES OF SLATE A YEAR.

The Penrhyn Quarry developed quickly with the building of a railway at the beginning of the 19th century to transport slate from the quarry to Porth Penrhyn. This port was purpose built during the 1790s to transport slate.

Production at the quarry declined during the 20th century, especially after the Penrhyn Strike, 1900-03.



The village of Bethesda with the Penrhyn Quarry in the background. Many of the villages were named after the chapels built in the villages surrounding the quarries, such as Carmel, Bethesda and Nasareth.



The McAlpine Company bought the quarry in 1964, and today it is owned by Welsh Slate Limited.

THE OWNERS



Thomas Assheton Smith
(1752-1828)

The workforce of quarrymen increased from 200 in 1820 to 800 in 1826, with the quarry producing 20,000 tonnes of slate annually by that time. Assheton Smith built a road from Dinorwig to Felinheli, so that slates could be exported from the new Port Dinorwig. The road was further developed when a railway was built on it by his son, Thomas Smith (1776 - 1858).

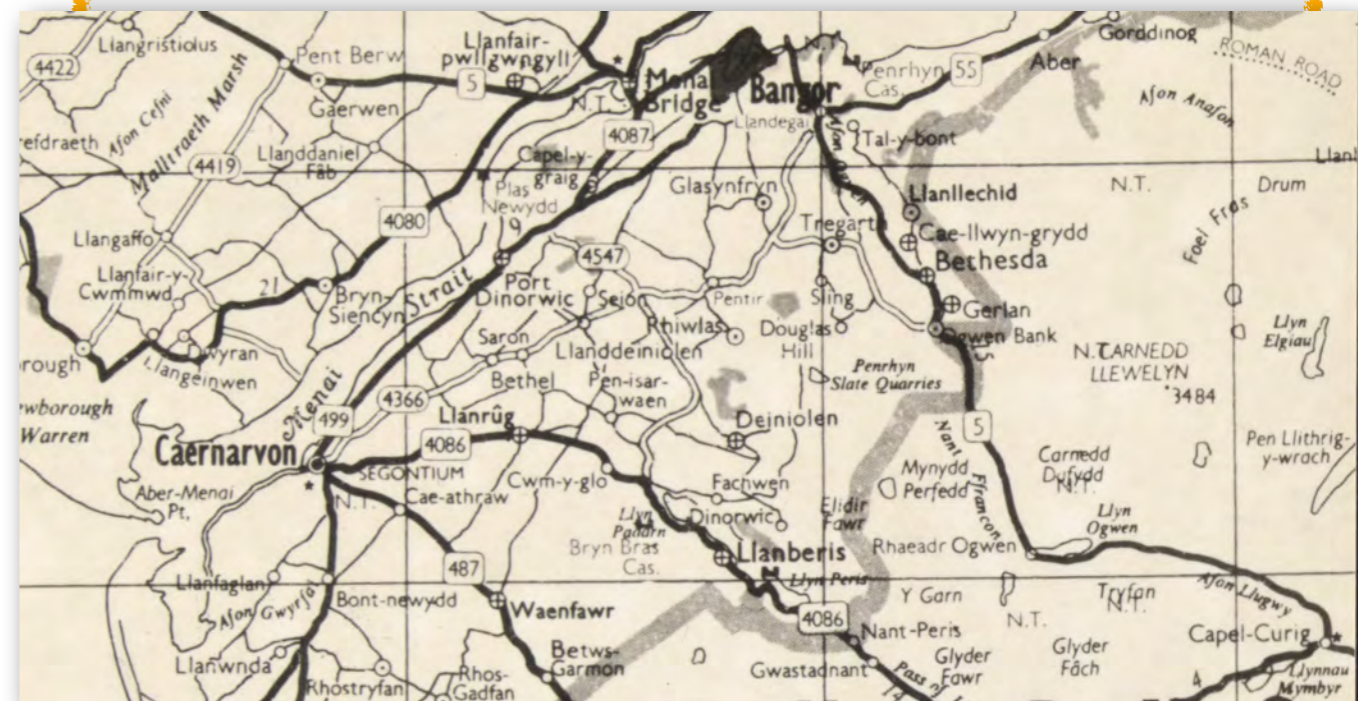
By the beginning of the 20th century Dinorwig had reached its peak productivity with more than 3,000 men working in the quarry.

Dinorwig Quarry was closed in 1969 and nearly 400 workers were made redundant.

Dinorwig Quarry

The quarry came into the possession of the Assheton Smith family when Thomas Assheton Smith, originally from Chester, inherited the Dinorwig Quarry in 1809 as part of the Faenol Estate, as well as other estates in Caernarvonshire and Anglesey.

He took the opportunity to make his fortune out of the valuable resources within his estate and used his wealth to create a company to manage the quarry, with himself as director.



WHY WAS THERE A DEMAND FOR SLATE?

The expanding slate industry in Caernarvonshire was important in meeting the increasing demands for slate materials during the 19th and beginning of the 20th century.

The growth of industrial towns like Sheffield in the north of England, and the industrial valleys of south Wales during the Industrial Revolution, created a demand for slate products like tiles for housing, foundries and the new factories being built.

There was also a demand for household products, and writing slates for schools.



The life of the quarryman was difficult for different reasons:

- His apprenticeship lasted 5 years
- He was employed on a monthly contract
- He had to pay for his own tools, hammers, rope, chisels and even the cost of the explosives he used. He also had to pay for the upkeep of his tools.
- If he lived far from his workplace the quarryman would stay during the week in stone barracks owned by the quarry.



Oakley Quarry, Blaenau Ffestiniog



The quarrymen of Pen y Bont, Oakley Quarry, Blaenau Ffestiniog

WHY WAS THERE A DEMAND FOR SLATE?

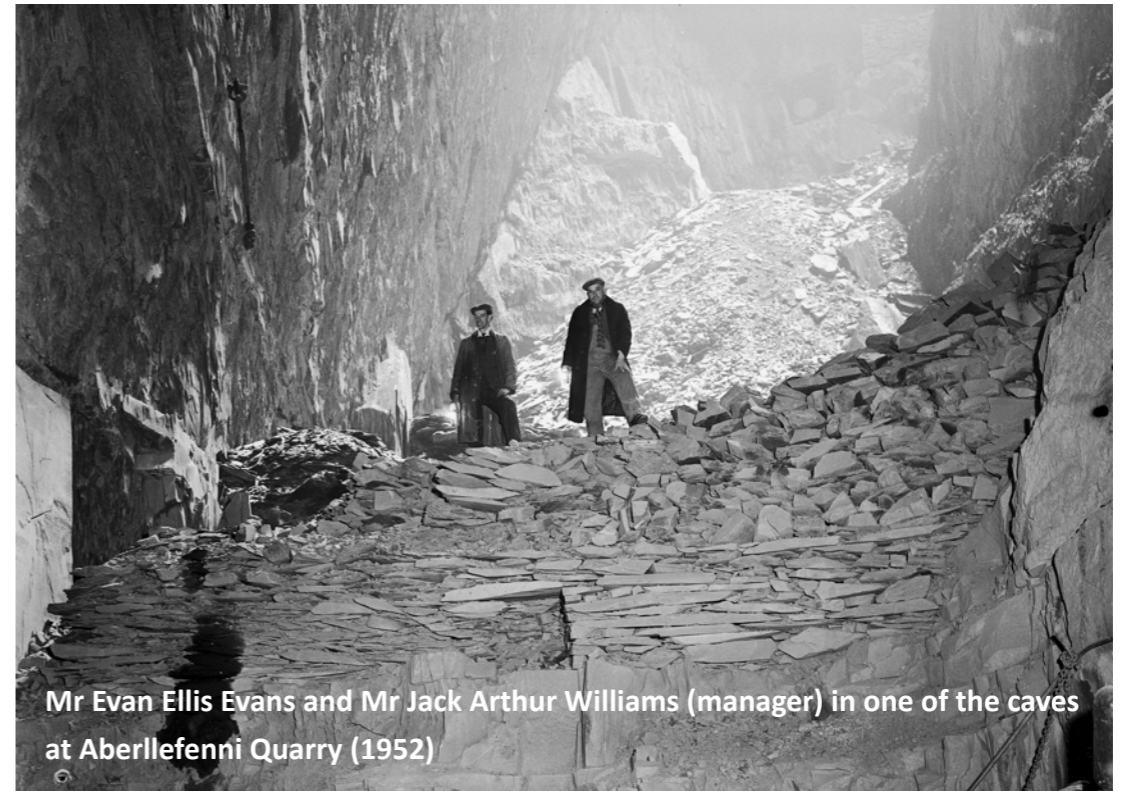
There were two types of quarries:

Open quarries: where the rockface above ground was worked, for example, at Penrhyn and Dinorwig.

Underground quarries: such as Llechwedd and Oakley quarries, Blaenau Ffestiniog.

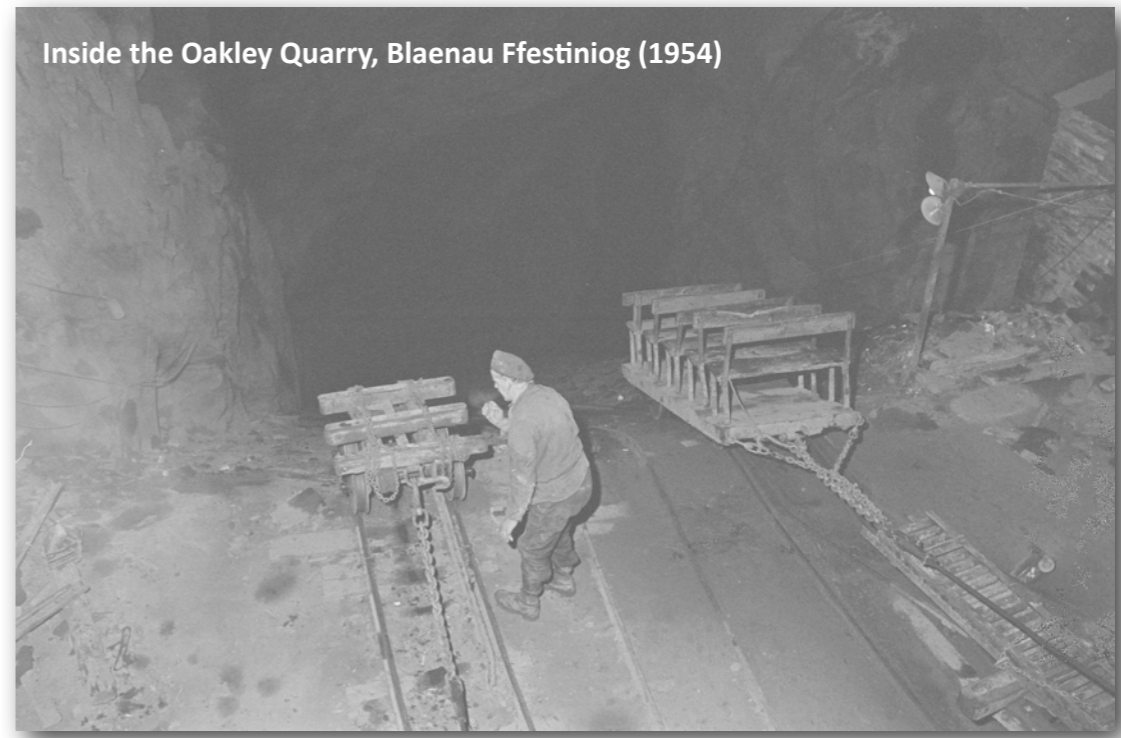
At one time, Llechwedd Quarry in Blaenau Ffestiniog was the second largest quarry in the world. The quarry had 25 miles of tunnels which reached a depth of 900 feet. Its slate was exported to five different continents.

Llechwedd Quarry



Mr Evan Ellis Evans and Mr Jack Arthur Williams (manager) in one of the caves at Aberllefenni Quarry (1952)

Inside the Oakley Quarry, Blaenau Ffestiniog (1954)



WORK IN A QUARRY



Working the rockface

The quarrymen worked in gangs of between 4 and 8 men, with each member of the gang having different responsibilities.

Creigwyr: drilled holes in the rock and placed explosives in them to break the rock. Before the pneumatic drill was used this difficult work was done by hand and was especially dangerous when dynamite was used.

Holltwyr and **Naddwyr:** broke the rock stone or block and prepared it to be split and dressed as a slate.

Loeswyr: moved slate waste to the rubble heaps.



Breaking the slate slab



Splitting the slate with a hammer and chisel

WORK IN A QUARRY



Penrhyn Quarry

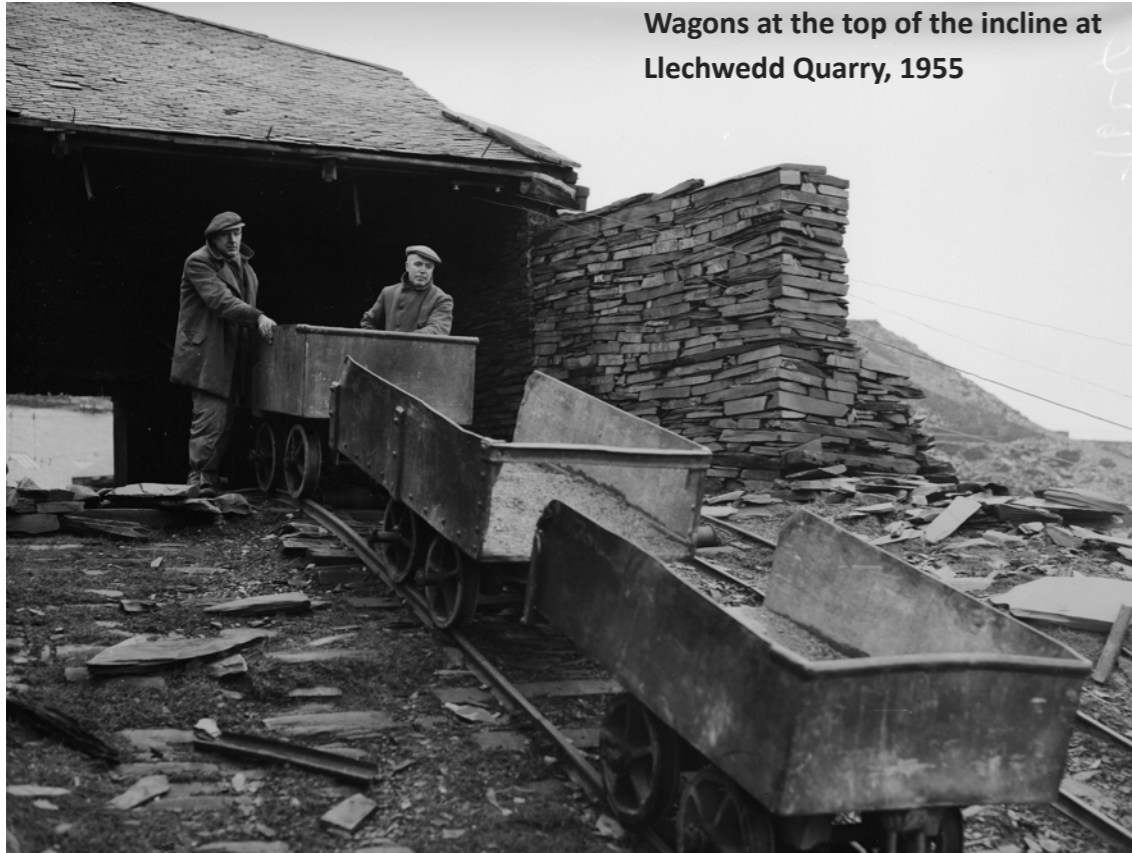


The galleries at the Penrhyn Quarry

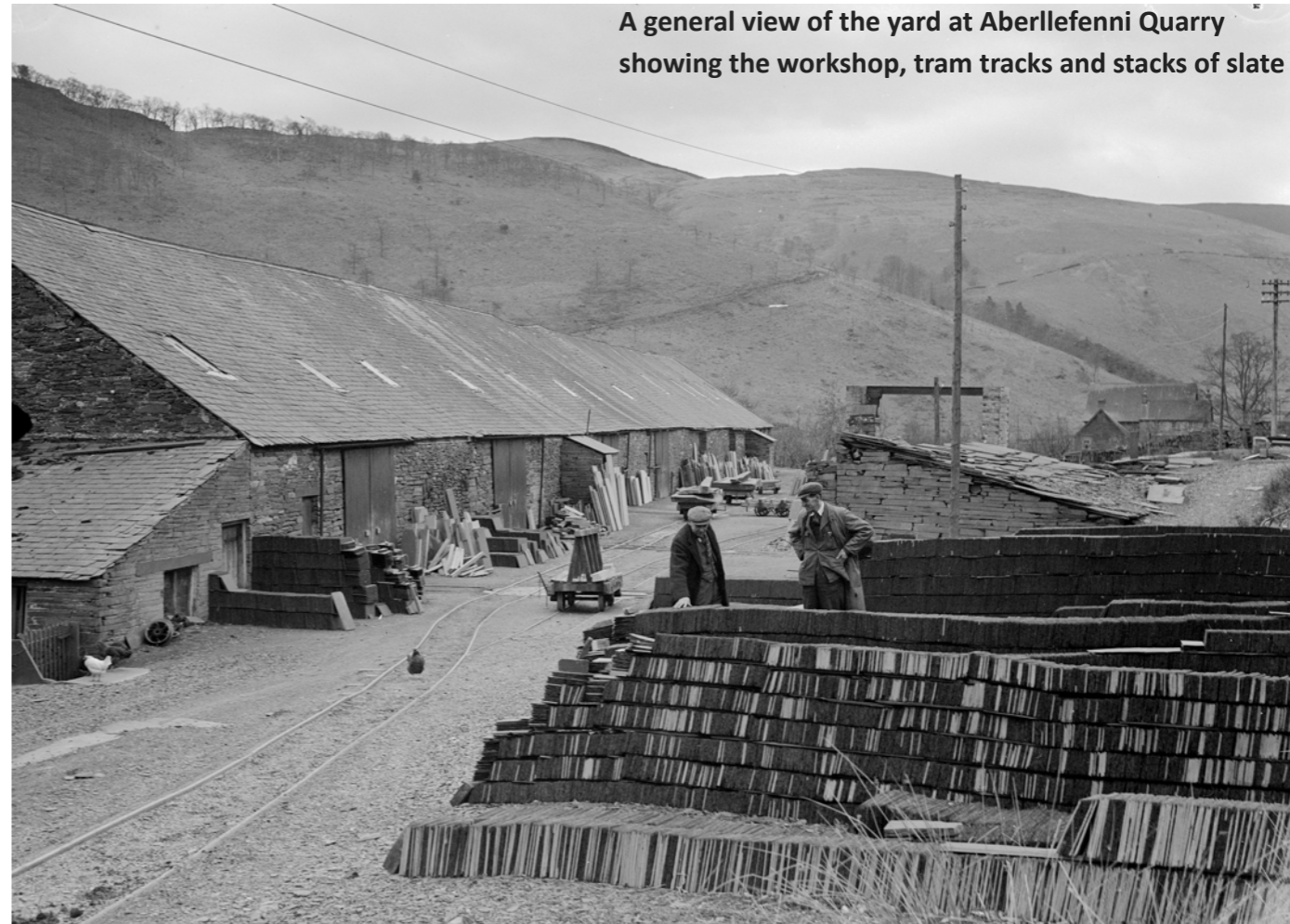
Y Fargen (the Bargain): Each gang would negotiate with the quarry supervisor how much they would get paid for the specific area of rock that they would be working on for the following month. The agreement struck would be called *y Fargen*, and it was usually agreed on the first Monday of each month.

The quarrymen would work on rock formed into galleries or *ponciau* that could be as high as 80ft in the larger quarries. Gangs of quarrymen would work on the *ponc*.

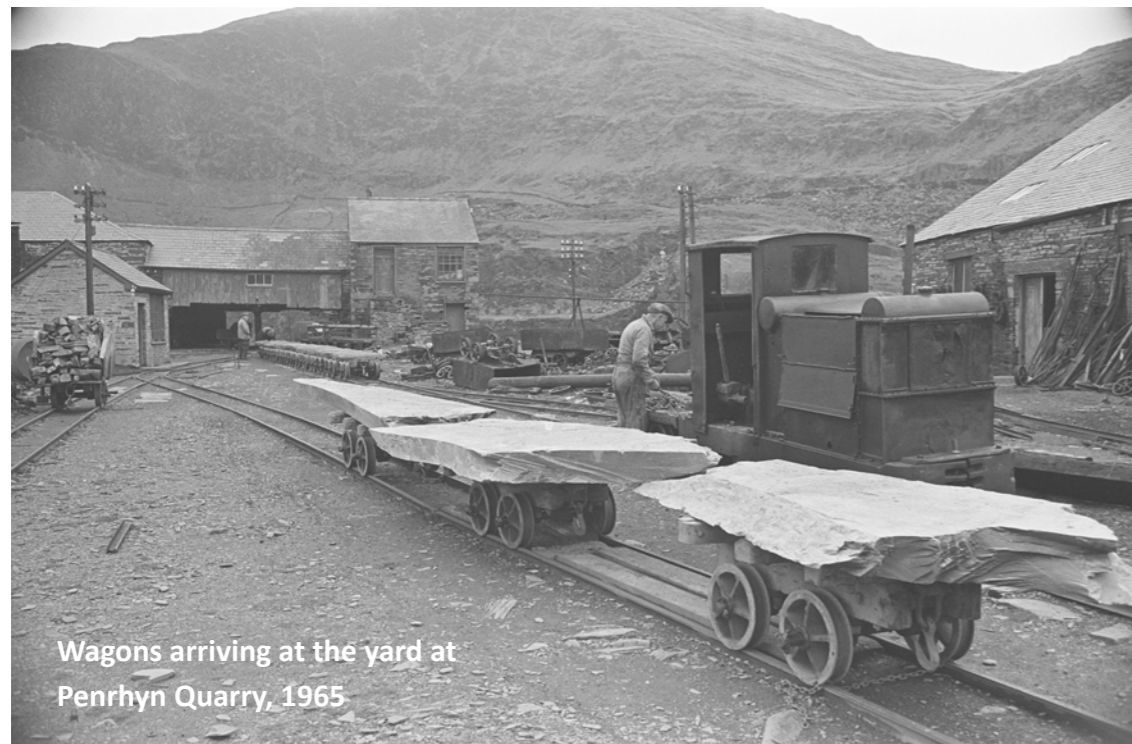
WORK IN A QUARRY



Wagons at the top of the incline at
Llechwedd Quarry, 1955



A general view of the yard at Aberllefenni Quarry
showing the workshop, tram tracks and stacks of slate



Wagons arriving at the yard at
Penrhyn Quarry, 1965

Wagons or trams would be used to transport slate down and up the incline in open and underground quarries.

The empty tram would be pulled up or down the incline by the weight of a tram that was loaded with slate.

WORK IN A QUARRY

Health and safety notice at the Oakley Quarry, Blaenau Ffestiniog, 1969

K. INCLINE

Rheolau er iawn lywodraethiad yr Incline pan y codir y Gweithwyr:-

1. Ni chaniateir i neb gael ei godi pan y byddo Sled neu Wagen ar y Trunk.

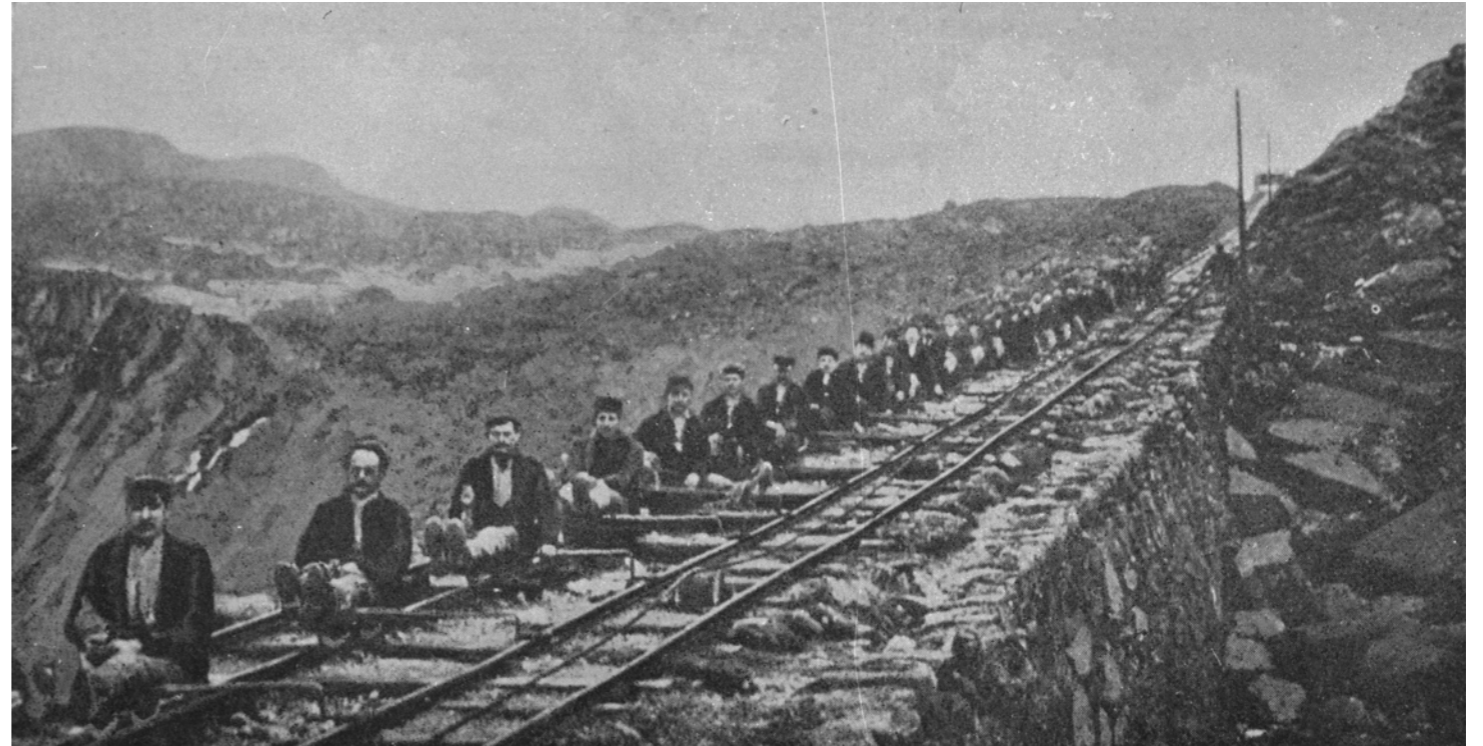
2. Ni chaniateir i neb ond y gofalwr i roddi yr arwydd gofynnol.

3. Ni chaniateir i fwy na 16' ddod i fynu ar unwaith.

4. Ni chaniateir i neb i ddod i fynu oddieithr pan fydd y Trunk wedi ei amgau (fenced) yn ddiogel.

5. Ni chaniateir i neb fyned i na gadael y Trunk pan fyddo yn symud

Goruchwyliwr



The *car gwyllt* (wild car) was a device that slid down the incline rails and was used by the quarrymen to return from the top of the quarry.

A photograph of a former quarryman, John Vaughan Jones driving the *car gwyllt* down the tracks on the incline at the Craig Ddu Quarry (1959).

WORK IN A QUARRY



One of the *rybelwyr bach*, or apprentice, at the Llechwedd Quarry, Blaenau Ffestiniog.

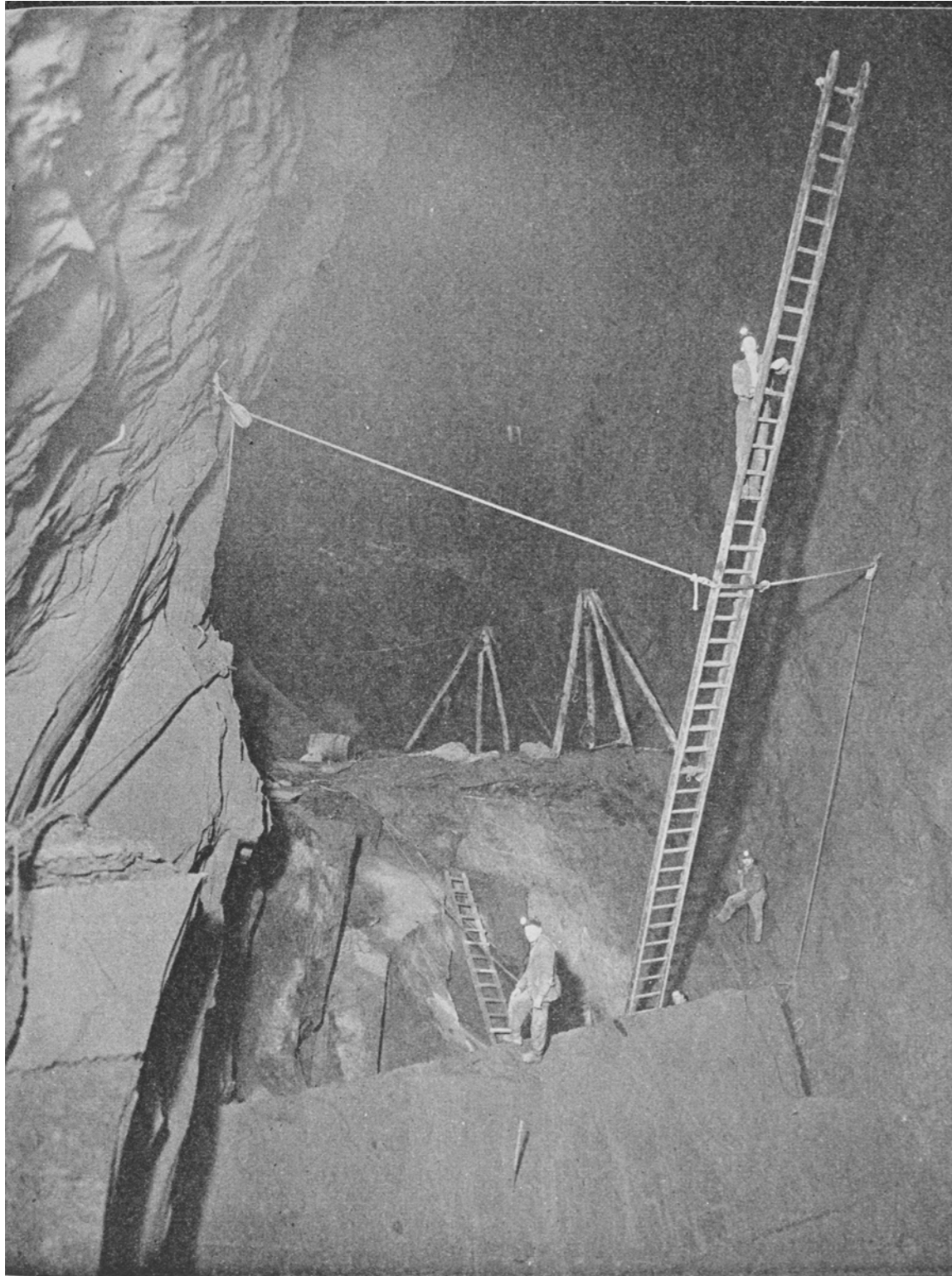


Four new apprentices receiving instructions from a foreman at the Oakley Quarry, Blaenau Ffestiniog.



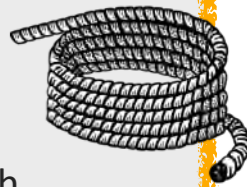
Photograph showing the smithy at Blodwel Quarry, in 1954. Amongst the other jobs in a slate quarry there were carpenters, sawyers, stonemasons, engineers and loaders.

DANGERS AT WORK



Oakley Quarry, Blaenau Ffestiniog

The quarrymen faced numerous dangers in their daily work at the quarry. These included coping with scaling heights, and having to rely on a rope to hold them for hours while they were working on the rock (ponc). These situations caused regular accidents and deaths.

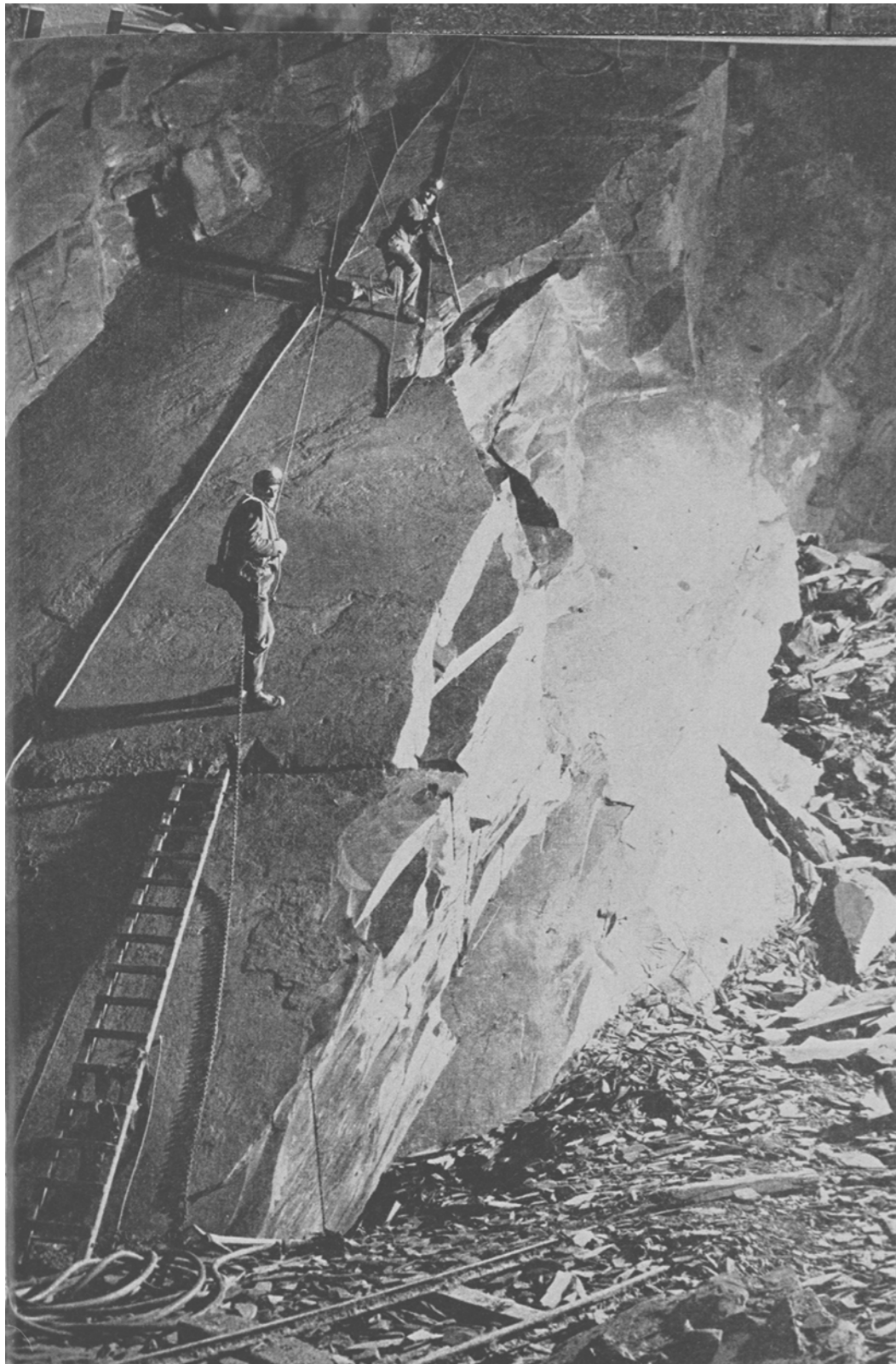


Other dangers included handling explosives and coping with the dust of the slate as it was chiselled. A common disease caused by the dust was *silicosis*, which was especially prevalent among quarrymen who split and dressed the slate.

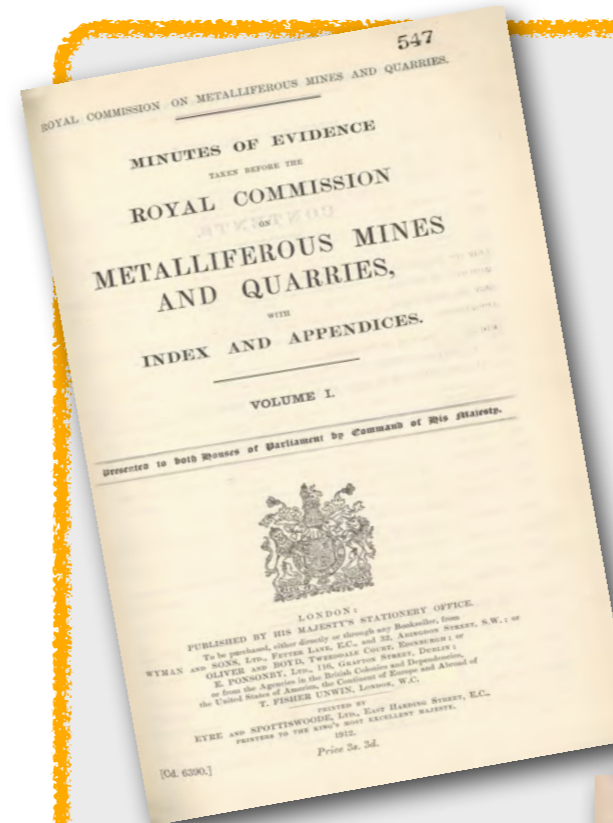


The Dinorwig Quarry at Llanberis

DANGERS AT WORK



Oakley Quarry, Blaenau Ffestiniog



This evidence was given in 1910 as part of a Royal Commission Enquiry by the Government on mines and quarries in Scotland, the north of England and north Wales.

The report was published in 1912.

Coal mines had been inspected since the 1850s, and William Gladstone's Liberal Government decided that the slate mines should also be inspected.

Like other industries such as iron, steel and coal, this task would be carried out by Government Inspectors.



3148. (*Mr. Jones.*) You have heard the evidence given by Mr. Roberts. Do you agree with it?—Yes.

3149. Would you like to add anything else?—I should like to say a word or two about our deepest galleries. The gallery in which I work is 36 yards in height, and the rope which I use cost 18s. and in some other galleries from that to 21s. I am now going to say a word about blasting. The horn gives the warning for the man to run away. Every man who has got a shot to fire must remain there to fire until the second horn goes off three minutes after the first, and when the second horn goes off all the men fire at the same time. In a deep gallery I am compelled to climb perhaps 20 yards high with a rope after firing a shot, whereas the man who fires shots in the gallery above me fired at the same time, and we all have to retire to the same place.

3150. (*Mr. Lewney.*) What is the distance between the gallery above and your gallery?—36 yards. He might have a hole somewhere between the bottom and the top.

3151. It is a dangerous method of working?

3152. (*Mr. Redmayne.*) So that you may receive part of the charge of the other man's shot?—Yes. That man's shot might go off before I am out of the way.

3153. (*Mr. Greaves.*) Have you a suggestion for that?—Yes, making the galleries smaller.

3154. (*Mr. Ainsworth.*) Smaller?—Lower.

Evidence of quarrymen at Dinorwig Quarry

DANGERS AT WORK

3035. Have you known men who seemed to have suffered from the work and become incapacitated through their lungs being affected?—Yes, the slate dressers. That is sure to be so.

3036. You think that the dust does do harm? Some kinds of dust do not seem to do men harm, and some kinds certainly do harm. We want to know where to put the slate dust, whether it is harmful or not, and that is why I am asking you?—I should say that slate dust would be harmful to the lungs.

3037. You suggest as one means of preventing the dust that the floors should be kept damp?—Yes.

3038. You think a good deal of dust is stirred off the floor in walking about and moving about the shed?—Yes, and the wind disturbing it as well, when the place is not closed up.

3039. Do you think that would stop most of the dust in these sheds?—Yes.

3040. (*Mr. Greaves to Mr. Williams.*) You said one cause of the number of accidents was men had to hurry over their work to make wages?—To earn money.

3041. Can you suggest any other means of letting or contracting or paying which would get over the necessity of the men hurrying?—No, I cannot.

Evidence from quarrymen who worked at the Llechwedd and Oakley Quarries, Blaenau Ffestiniog.



Oakley Quarry, Blaenau Ffestiniog.



3063. The inspection by the quarry officials is good apparently?—Yes.

3064. Do they inspect every working place every day once in the day?—They come through every day, and sometimes they call our attention to dangerous things, and we call their attention to dangerous things.

3065. You think the owner ought to provide the workmen with a rope at their cost?—I believe it would be advantageous.

3066. How much does a man's rope cost him in the year?—They vary very much. If they get damaged, they will last but a very short time.

3067. About how much do you mean?—10s. or 15s.

3068. 10s. or 15s. a rope?—Yes.

3069. How many of those would a man wear out in the year?—A new rope, if taken care of, will last 12 or 18 months.

3070. Do they use chains instead of ropes?—No.

3071. Why do not they use steel chains?—They are dangerous, and hurt them.

Evidence of quarrymen at the Dinorwig Quarry.

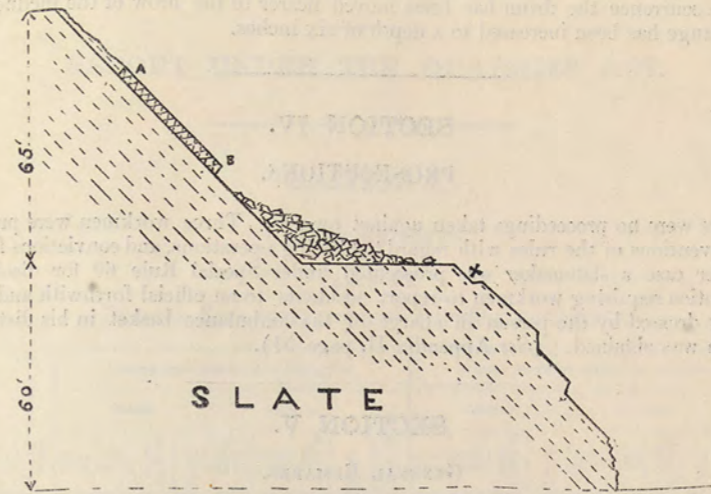
DANGERS AT WORK



An explosion in a quarry

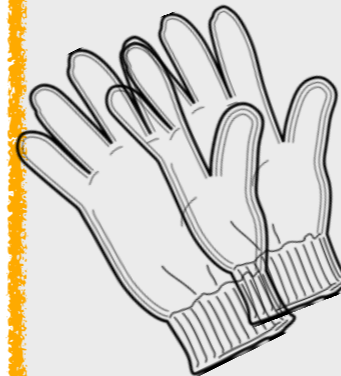
A description by an inspector of an accident that had occurred at the Oakley Quarry on one of the open galleries.

A large slab measuring 12 yards long by 9 yards wide and 1 yard thick (see A, B on sketch), unexpectedly gave way; a piece of it went over the edge of the gallery



and struck deceased, who was employed on the working face at X, causing him to fall a distance of 55 feet. He died of his injuries on the morrow. If it is necessary to leave layers of rock of this kind they should be pegged or otherwise made secure.

Evidence given by quarrymen at the Oakley Quarry, Blaenau Ffestiniog.



2967. Do accidents happen in the part where you are employed?—Yes.

2968. A good many of them?—Not very many.

2969. What are they chiefly?—Cuts on the hands.

2970. Could you wear gloves?—No.

2971. Why not?—We could not handle the tools with gloves.

2972. Hedgers and ditchers who cut the hedges use them. They cut the hedges in Wales, do they not?—Yes.

2973. If a hedger can wear a pair of gloves and handle the shears, why cannot a slate quarrier handle the slate?—I do not think a man can take hold of a hammer and chisel with gloves and handle the tools as well as he can handle shears.

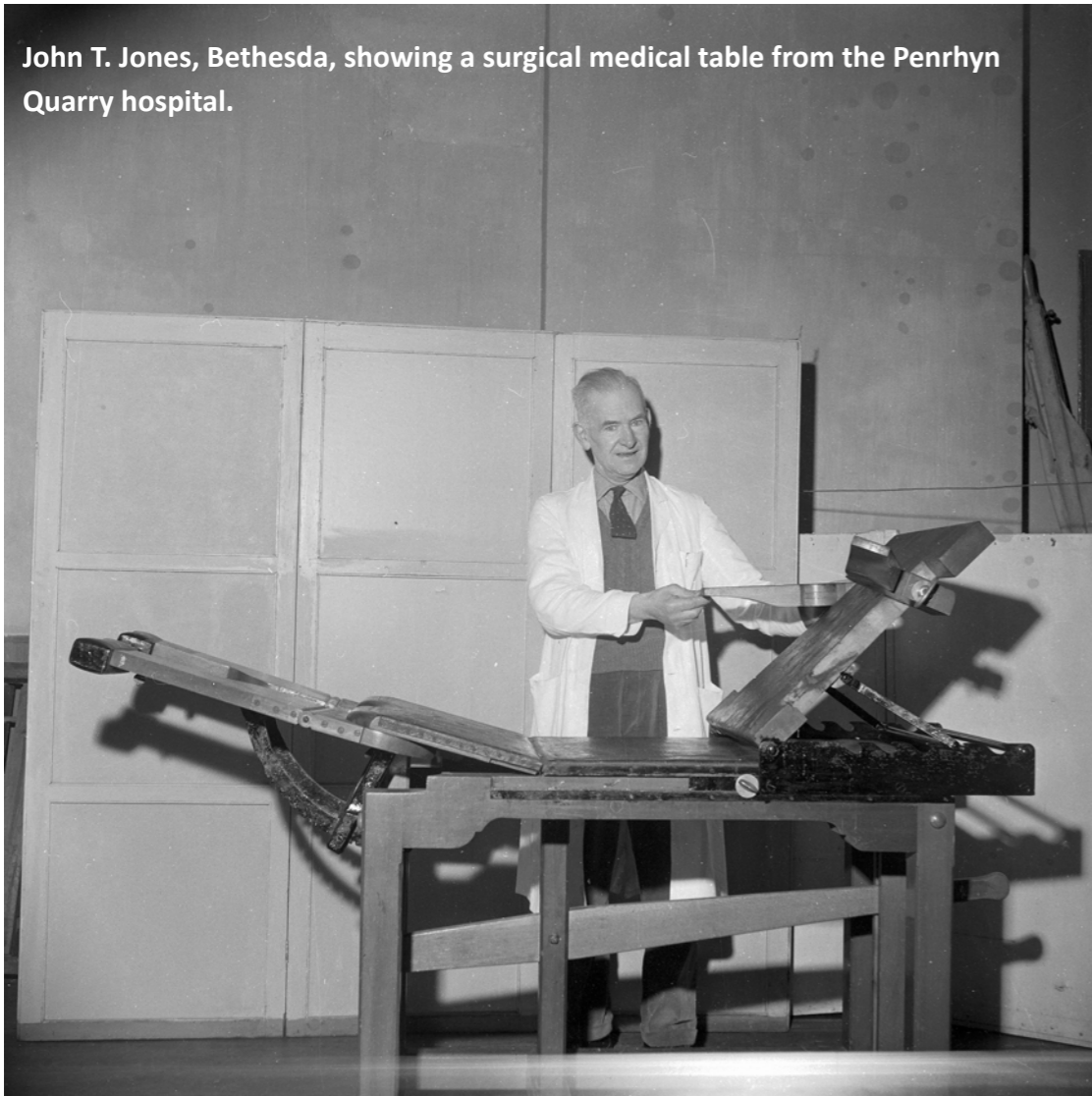
DANGERS AT WORK

A horn sounding across the whole quarry was a sign that a serious accident had occurred.



The quarries at Penrhyn and Dinorwig had hospitals nearby so that quarrymen who had suffered an injury could be treated quickly, and so that they could return to work as soon as possible.

John T. Jones, Bethesda, showing a surgical medical table from the Penrhyn Quarry hospital.



Dusty conditions as seen here at the Oakley Slate Mine, Blaenau Ffestiniog, 1969 were commonplace in the daily working life of the quarryman.

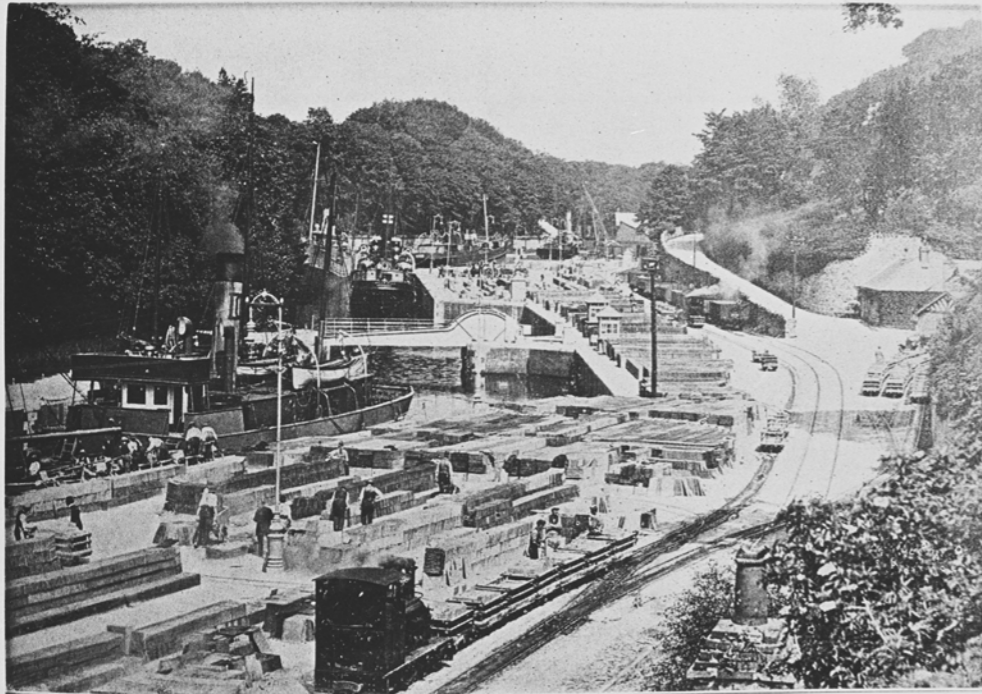


The Illustrated Usk Observer and Raglan Herald, September 16, 1865

Terrible Fatality in a Slate Quarry.—An accident of a very appalling nature, which threw a gloom over the busy locality of Ffestiniog, occurred on Friday in a slate quarry belonging to Mr. Morgan Lloyd, barrister-at-law. Four young brothers were working a level mine into the heart of the rock by means of blasting, when, through some inexplicable cause, a hole exploded while being rammed home by one of the brothers. Two of the young men, who, it appears stood close by heedlessly witnessing the operation, were instantaneously hurled into eternity, whilst the operator mysteriously escaped with severe, but not mortal, injuries. Fortunately the young brother had just previously made his exit from the scene of destruction.

EXPORTING SLATE

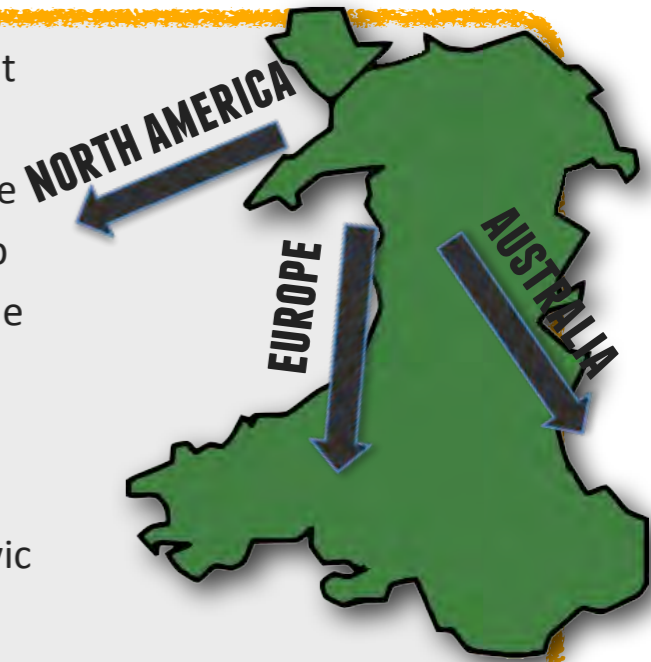
The quarry railway line between Llanberis and Felinheli



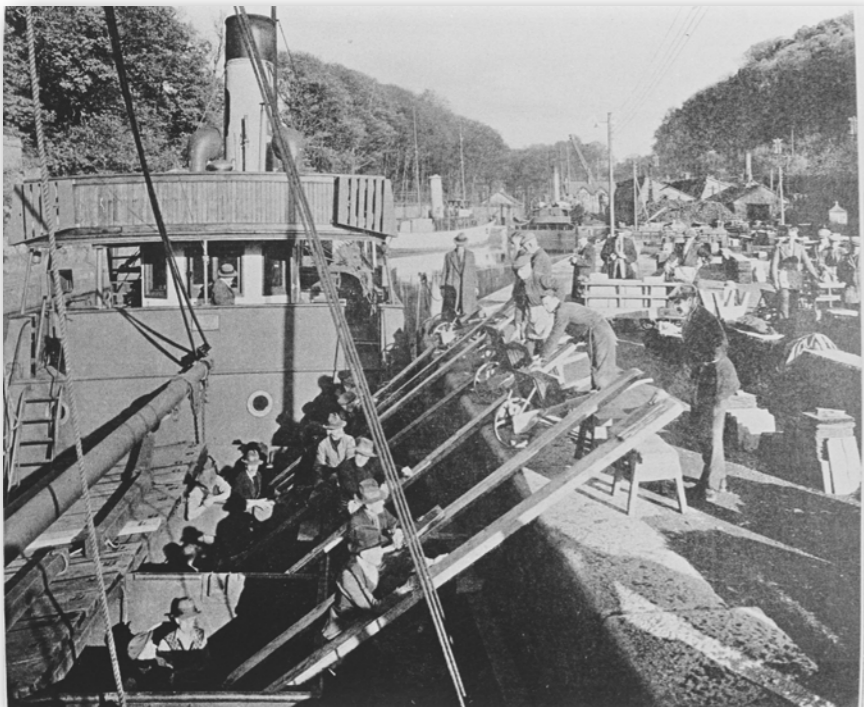
VIEW OF A PORTION OF PORT DINORWIC QUAY WHERE THE SLATES ARE LOADED BY VESSELS AND RAIL.

It was important for the quarry owners that the slate could be transported easily and exported overseas. Many owners therefore invested in building railway systems to help with the journey on land, and promoted the building of new ports for transportation overseas.

This is how Porth Penrhyn and Port Dinorwic came into existence.



Loading the slate in the port



THE
PENRHYN QUARRY
CRISIS.
—
SOLDIERS CALLED OUT.
—
MASS MEETING OF THE MEN.
—
THE QUARRY CLOSED.
—
MAGISTERIAL PROCEEDINGS.

Some reasons for the decline of the slate industry during the 20th century

- Less demand overseas for Welsh slate.
- Cheaper tiles from Spain and Canada being exported to Britain
- The Penrhyn Strike of 1900-03 damaged the slate industry in Wales in the long term.

By the beginning of the 1970s only 20,000 tonnes of slate was being produced by the industry in Wales.