

SINCE the final closure of the Dinorwic Slate Quarries in 1969 (*RM* March, 1970), several events, including the opening of the Llanberis Lake Railway and Quarrying Museum, and the restoration of the 4 ft.-gauge locomotive *Fire Queen* at Penrhyn Castle, have brought the former railway systems of this vast concern into greater prominence. It is thus timely to record the early history, little of which was known with any certainty until the recent release of the company records from Receiver-ship.

Quarrying at Dinorwic was started at a relatively late date, considering that the workings were to become, as at neighbouring Penrhyn, one of the largest of their type in the world. Not until 1788 was organised working started, at which time Penrhyn had been operating for

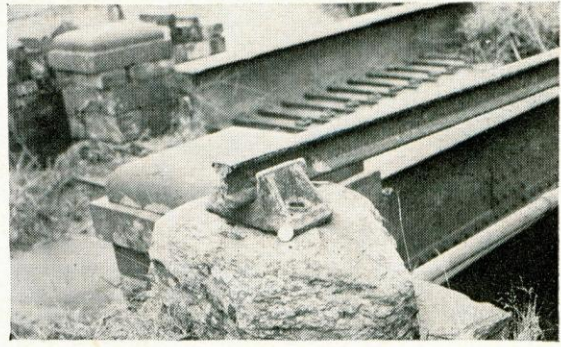


Photo: K. A. Jaggars
Original Padarn Railway rail, chair and stone sleeper block (replaced in the 1880s) serving, in 1973, as a footbridge handrail near Cwm-y-Glo. The Padarn Railway used the bridge in the background

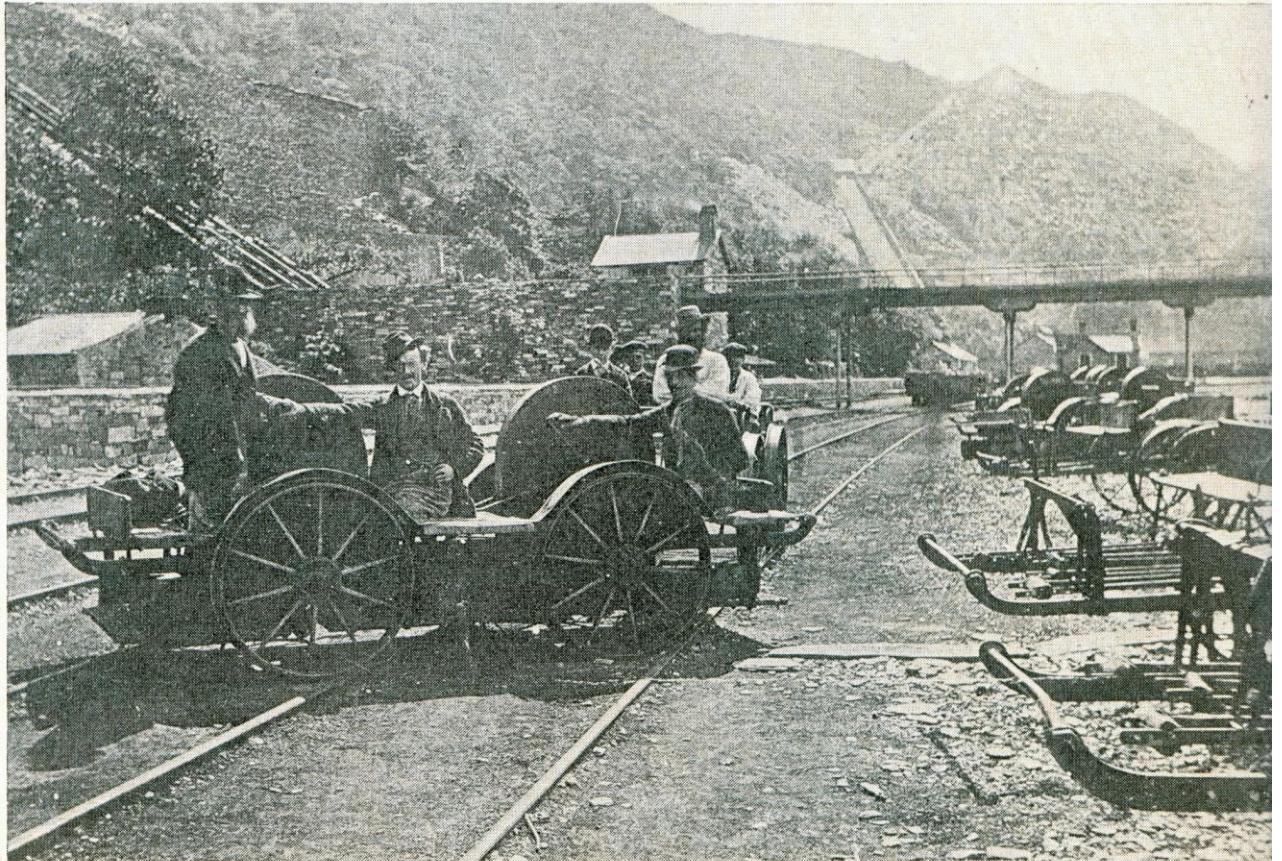
SLATES FROM LLANBERIS—Part one

K. A. JAGGERS

QUARRY TO QUAYSIDE BY PLATEWAY AND THE PADARN RAILWAY

Manhandling "velocipedes" at Llanberis in the early 1890s. In the foreground, a hand-cranked machine is being manoeuvred onto the railway; behind it is one of the foot-pedalled variety

Photo: Caernarvonshire County Record Office

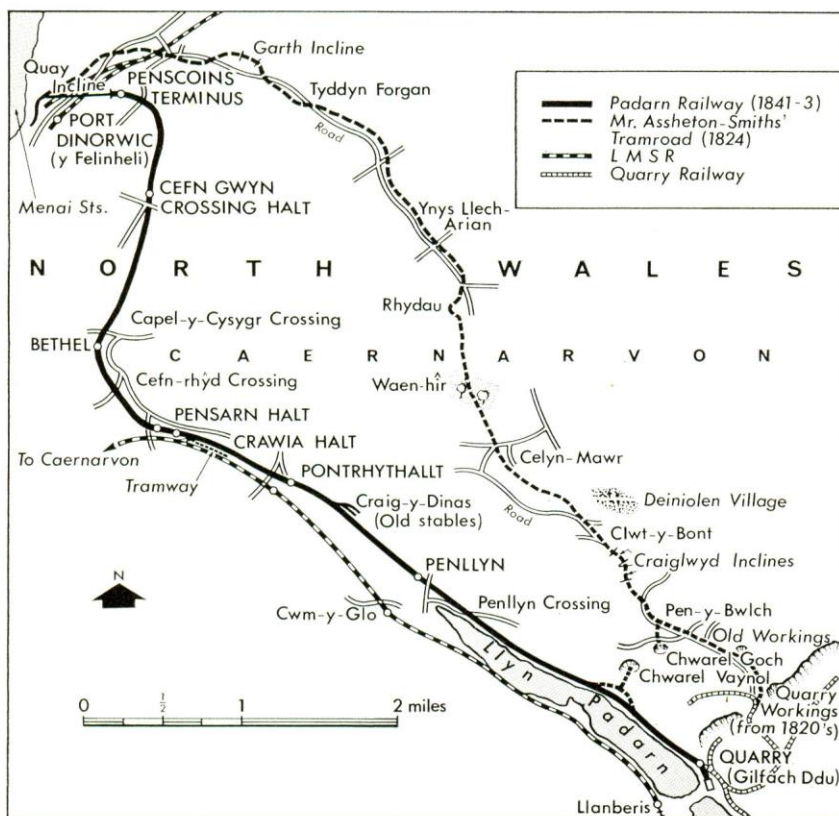


more than 200 years. At this time Dinorwic slates were taken away by boat from "Cei Newydd", the New Quay, down the length of Llyn Padarn, and transferred to pack-horses for the journey thence to the port of Caernarvon.

By the early 1820s, carts had replaced the boats, but the iron rims of their wheels caused excessive damage to the roads, and the company had to find almost as much money again in repair bills as it was paying the carriers—as contractors—for moving the slates; another solution was sought by the local landowner, Thomas Assheton-Smith, who had meantime acquired the sole rights to the quarrying operations.

Although Lord Penrhyn had pioneered the use of "rail-roads" in North Wales by constructing a tramway from his quarries at Bethesda to Port Penrhyn in 1801, this enterprise was beset with difficulties from the start—mainly centred round the use of an oval rail section—and these probably deterred others from following the example. By the 1820s, however, the Penrhyn Railway had been relaid in rail of a more conventional section and was proving entirely satisfactory; a number of other lines were being constructed in the area.

Courses of the Dinorwic Tramroad (abandoned 1843) and its successor, the Padarn Railway, from Llanberis to the sea at Port Dinorwic



To carry the slates from Dinorwic, a 2 ft.-gauge tramroad was thus laid down to the sea at Aber-y-Pwll (Port Dinorwic) by Mr. Assheton-Smith from July 1824, at a cost of £9,000, plus extras for miscellaneous works, stables, cottages, and so on along the line of railway. Contractors were engaged to work the trains from the start in October 1825, and about 1,200 tons of slate were conveyed each month, at a cost of around £200, compared to the outlay of £300, plus maintenance costs of £250, for transport by road. A contemporary report stated: "The wagons on the rail-way hold about a ton. Several are fastened together and drawn by two or three horses with perfect ease". Taking into account the operational difficulties of the seven-mile single-track horse-worked line, including as it did three lengthy rope-worked inclined planes, this was a remarkable achievement.

The route of the tramway is shown on the map, and more than half of the course is easily traceable to this day, although parts are disappearing under new road works and one section was obliterated as early as 1850 by the construction of the Bangor & Caernarvon Railway, itself recently closed.

Quarrying activity up to 1824 had been mainly concentrated around the area now known as Dinorwic Village, and it is here that the tramway terminated, some 630 ft. above the lakes at Llanberis.

Following closely the present road, the main stables at Pen-y-Bwlch are passed, and an inclined trackway beyond marks the probable course of a branch to the Chwarel Goch (Red Quarry). The approach to the head of the first incline is now by a farm track, raised on slate embankment above the undulating terrain; the house near the incline-head still bears the name "Pen - yr - Incline". Craiglwyd Upper and Lower Inclines are connected by a short section turning the line from north to west, and lower the level of the line some 360 ft. to cross the river at Clwt-y-Bont, where further stables and a horsetrough are to be found.

Trackwork on this section appears latterly to have been



Photo: courtesy Caernarvonshire County Record Office
Dinorwic Quarry Workshops, Llanberis, in the 1880s. The 4 ft.-gauge Padarn Railway terminus is in the left foreground, with the quarry beyond. The workshops (centre) are now being developed by the National Museum of Wales

T-section rail, supported by chairs on slate cross-sleepers, many of which are still in place. This seems to have replaced an earlier form consisting of iron "sills" with shaped ends for the rails, resting on plain granite blocks, with the centre section lowered and gravelled over to form the horse-path. Some granite blocks may be found *in situ* at Celyn Mawr, reached by a long section over the fields from Clwt-y-Bont, bordered by a high stone wall, and odd pieces of cast sill, presumably discarded when found broken, can still be picked up along the route.

Shortly a farmhouse is reached, perhaps once connected with the railway, but now the front gate opens curiously onto a field, while the lane comes to the back door. Over the main Llanberis to Bangor road, the tramway course is in places indistinct, until it rejoins the road beyond Rhydau, following this closely for some 1½ miles, sometimes on an embankment where the road dips, and crossing a stream on a separate bridge to the (1877) road one.

At the head of the descent through Nant-y-Garth, the tramway course switches from one side of the road to the other and back, to avoid the land of an owner who dissented to the Assheton-Smith cause in 1824. (The majority of the route was on the land of the latter.) A farm track, where more stone sleepers are to be seen,

leads to the head of the Garth Incline, and further stables. At the incline-foot Forestry Commission land is entered, then the road is rejoined as far as the section obliterated by the standard-gauge line. Beyond, the line tunnelled under the main Bangor-Caernarvon road by the church (one portal can still be entered), and so beside the river for the final stretch to the port, itself enlarged and equipped through the foresight of Assheton-Smith's son, "Tom Smith", in 1828.

This original tramroad rapidly became inadequate to deal with the output from the quarry, not primarily because of lack of capacity, but the fact that new quarrying developed on the lower slopes of Elidir Fawr, towards the shores of Llyn Peris, and required the upward transport of the finished slates to the original tramway terminus. Surveys for a new line were carried out by the Spooners of Portmadoc, but included lengthy tunnels or inclines; the scheme eventually proceeded with took the form of a completely new route, initially following the shore of Llyn Padarn from the bottom of the quarry workings. This line was always known as the Padarn Railway, from the time construction started in February 1841 (although often then spelt "Padern" in error, and subsequently rendered as "Dinorwic Quarries Railway" or "Padarn & Dinorwic Railway" on various maps: I have seen "LMS—Padarn & Dinorwic Section").

Constructed mainly by labour from the quarries under "Tom Smith's" supervision, the line was six miles five furlongs in length, and 4 ft. gauge. Rail chairs were fastened by tree-nails to stone blocks, with longitudinal slate

"sleepers" at joints, carrying two chairs and providing support for the rail ends. No transverse gauge-holding device appears to have been used. Points were laid out on huge slate slabs each carrying several chairs. Examples of all these components may be found readily along the route today, embodied in the walls of buildings, boundary fences, stream bridges, and so on.

The Padarn Railway was opened for traffic on March 3, 1843, and both lines were in use simultaneously until the closing of the 1824 tramroad in July of that year. No great increase in traffic occurred, but the convenience of the new quarry terminus was presumably immediately apparent. The new line was horse-worked by the original contractors under the same agreement as for the tramroad, but the wagons used were somewhat novel for the period, being those which each carried four loaded narrow-gauge slate trucks, right up to the closure the lines in 1961.

Although neighbouring lines operated successfully with horse traction for many years (Penrhyn until 1877, part of the Nantlle even as late as 1965), "Tom Smith's" fascination for the power of steam began to manifest itself in the 1840s, firstly with a series of very successful and pioneering steam yachts built to his design by Robert Napier of Glasgow, and later in the form of a stationary engine installed in the quarry mills for slate sawing and planing in February 1848. Steam also was to come to the Padarn Railway, as from November 1847 we find men being paid for "altering the curves of the railway"; in August 1848 the first locomotive, the long wheelbase 0-4-0 *Fire Queen*, was delivered from Alfred Horlock & Company, of

Northfleet, London, at a cost of £1,200. Conveyed by sea from Gravesend to Caernarvon partly dismantled, it was taken up to the quarry by teams of horses, along the cart-road.

The second, identical locomotive followed by similar means the next month, and was named *Jenny Lind*, in like vein to many other locomotives, ships and other assorted graceful iron-works of that period, after the Swedish opera singer contemporarily entralling British audiences. The origin of the name *Fire Queen* is a little less obvious. Also carried by no less than three of "Tom Smith's" steam yachts, the clue lies in his supposed answer to Queen Victoria's query of the name: "An' it please your Majesty, I had a yacht called the *Fire-King* which was superior to any I had before; this is superior to that, and I call her *Fire Queen*."(!)

Problems were no doubt encountered with the peculiar mechanics of these machines (one can visualise the addition of many new words to the Welsh vocabulary), and it is not until December 1849 that we find them put to work, the contractors having been dismissed and a man employed "for attending to the turn-out of the railway at the top of the incline, on the arrival of the locomotive engine". Thereafter, however, they proved extremely popular in service despite frequent cases of bending of the long coupling rods, eccentrics shifting on their sheaves, and

Pushing loaded 2 ft.-gauge slate wagons manually onto a 4 ft.-gauge transporter wagon in 1956. This area now forms the terminus of the Llanberis Lake Railway, with the checkers' office, behind the wagons, used as a booking hall. The quarry workshops are in the right background

Photo: H. C. Casserley



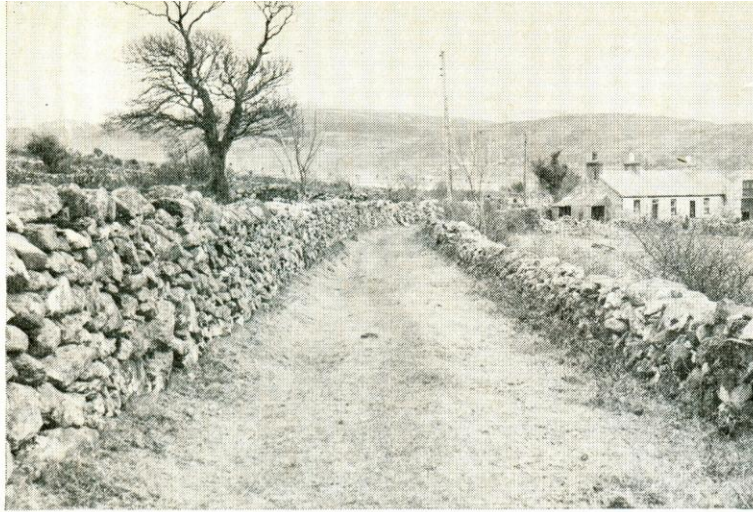


Photo: K. A. Jagers

Remains of the Dinorwic Tramroad at Celyn Mawr in January 1973. Though abandoned in 1843, the course of the line is well defined

other mishaps attributed to the lack of brakes on the engine. Their peculiar appearance, caused by the long wheelbase, probably resulted from the need to spread the weight of the engine on the light track, over which they worked for their whole lives: only with the introduction of large Hunslet tank engines in the 1880s was wholesale replacement of the original stone-block track found necessary.

From the outset, workmen travelled on the Padarn Railway by means of foot-operated contrivances seating eight persons, called by the contemporary press "velocipedes". There were 30 of these, paid for, maintained and painted by the teams of men, who travelled daily from their homes along the line to the quarry; on arrival they were manhandled from the track and stowed in lines alongside. The cars bore distinctive names, changed frequently after accidents or when passing to new owners, and must have been a remarkable sight as they followed each other along the line. Accidents due to racing—speeds of 40 m.p.h. are asserted on occasion—were frequent, but not until 1893 was any regulation brought in governing the use of these machines, the original 30 having been supplemented by at least 22 hand-cranked specimens in the 1860s.

Needless to say, the owners of the quarry, officials and guests, travelled by means of a special carriage "with as much glass about it as could enable those within to see the most of the view", built in August 1845, which awaited the arrival of the party from the Assheton-Smith residence at the Vænol, summoned by the raising of a flag-signal on the house which was visible from the terminus above Port Dinorwic. The carriage was similar in style to that which replaced it in 1895 (now at Penrhyn Castle), and may explain the antiquarian appearance of the latter, if some components and furnishings were reused.

Two men responsible for the development of the quarries from the earliest days to the prosperity of the 1860 era died in this latter period. Thomas Assheton-Smith, squire of Vænol, and

owner of the whole enterprise, was succeeded in his estate by a second cousin, George William Duff, who assumed the name Assheton-Smith; and Griffith Ellis, manager since 1815, whose friendship and popularity with management and men alike was demonstrated by the funeral procession of 4,000 quarrymen and their families, was succeeded by W. W. Vivian. Both of these men were to contribute to the remarkable development and modernisation of the railway from 1880–1900, coinciding with the boom years of the slate trade, but first turned their hand to the provision of steam locomotive power in the quarries, following its successful application to the neighbouring Festiniog and Talyllyn narrow-gauge lines.

Whether or not they were influenced in their choice by the introduction of the light vertical-boiler quarry locomotive by the nearby ship-building firm of De Winton, Caernarvon, is not clear, but the first locomotive was certainly pioneer of a long line supplied by Hunslet of Leeds, being an 0-4-0 saddle-tank, works no. 51, and named *Dinorwic*. It worked from 1870 on the bottom level of the quarry, beside Llyn Peris, bringing slates from the foot of the various inclines and from the cutting sheds, through the tunnel under the manager's house to the interchange with the Padarn Railway.

Four locomotives of somewhat obscure origin were obtained in the seventies, named *Harriet*, *Peris*, *Victoria* and *Wellington* in that order, and which one is tempted to suspect were De Wintons (although they may have been assembled in the quarry workshops); however, only *Harriet* and *Wellington* survived until the 1890s, and in 1892 *Harriet* was rebuilt, including new wheels obtained not, like much quarry material at the time, from De Winton, but from Hunslet. Even these two disappeared from the scene soon afterwards, replaced by the ubiquitous Hunslet saddle-tanks.

The years from 1880 to 1900, in which the company pursued a remarkably modernistic policy in both improvements to the system and preservation of the past, to form a railway with an image worthy of many a larger concern, will be described in a second part to this article.

(To be continued)