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## CARN DOCHAN, REGIONAL, GENERAL & ECONOMIC HISTORY.

by Simon J.S. Hughes

Carndochan Mine has been somewhat forgotten during recent years whilst the Clogau and Gwynfynydd Mines enjoyed a brief revival. During the 19th century reasonable amounts of gold were recovered from the lode. It is generally assumed that, as the mine lies in the “Dolgellau Gold Belt”, it worked free milling in a quartz reef, but this is not altogether true. Some free milling gold was certainly recovered from the reef, but the grades were inconsistent and prone to the patchiness which has hindered the recent operations at Clogau and Gwynfynydd. Appreciable grades of gold and silver are also present in galena shoots in the lode, the grades being both richer and more consistent than the free milling gold.

The lode is hosted by the Ordovician Nant Hir Mudstones, which are known to persist to about 400 metres below the bottom adit of the mine. No work appears to have been done below the deep adit, despite there being a high probability that the shoot is not impoverished by disruptive beds.

The area is steeped in a mixture of history and mythology and it would be easy to assume that the mine had been wrought since the first inhabitation, but this is clearly not so. Above the Carndochan Mine is a series of steep crags, known as Ffridd Helyg y Moch, crowned by the ruins of Carndochan castle. Immediately to the west of the castle is a low earthwork mound, known as Dochan’s Cairn, whilst 1<sup>3</sup>/<sub>4</sub> miles to the east are the remains of the first century Roman fort of Caer Gai.

Apparently, Dochan’s remains lie buried beneath the tumulus, but the *Black Book of Llandaf* cites Trican, Trichan, Turchan, Torchan, or Drichan as the name of the internee. Traditionally, he was the teacher of Brychan Brycheiniog, a fifth century king and saint of Irish descent, the founder of one of the three tribes of Wales and reputedly father of 24 sons, most of whom became Saints of the Celtic Church.<sup>1</sup> The blue glass bead discovered near the tumulus in the summer of 1923 would appear to date from this early period, but no date has ever been ascribed to the iron spearhead which was discovered in 1848.<sup>2</sup>

Cunedda Wledig flourished around 425 AD, i.e. immediately after the fall of Rome. It is notable that he had a British name whilst both his father, and grandfather, had Roman names. He also appears to have been under the direct command of Vortigern and may have been transferred from the untenable duty of repelling Pictish invaders from Cumbria and installed in North Wales to expel the Irish invaders i.e. Brychan’s descendants. Castell Carn Dochan was reputedly built by one of the descendants of Cunedda.<sup>3</sup>

It is probable that the stone castle was built in part over the remains of an earlier construction. The remains are unusual in this respect and also there does not appear to have been a gate, which has resulted in the hypothesis that the mode of entry must have been some form of drawbridge, or even a ladder as was common for Irish refuge

towers.<sup>4</sup> As far as I am able to ascertain, no archaeological examination has ever been conducted upon the castle or mound. William Hughes's History of Llanuwchllyn suggests that the castle was merely a refuge and that there was a neighbouring Llys which formed the residential quarters in times of peace.<sup>5</sup> This conveniently explains the relationship between Plas Madoc and Castell Carndochan. There are also suggestions that the castle is a Roman construction, but this is not proven, probably untrue, and attributable to confusion with Caer Gai. No archaeological evidence or explanation has ever been offered regarding the origin of the farm named "*Castell*" which lies halfway between Castell Carndochan and Plas Madog.

"*The King's Works in Wales*" compares Carndochan to the castles at Bere, Ewloe & Dinas Bran. References all suggest late 12th or early 13th century as the date of construction, but do not consider that the stone castle was built in two distinct phases. Rhirid Flaidd, Lord of Penllyn, was custodian of the castle under Edward I (1272-1307) and his family can be traced to the present day.<sup>6</sup> His own descent can be traced directly from Cunedda Wledig in the late fourth or early fifth century. There is no doubt that the tumulus predates the castle and I am inclined to think that the tumulus is a post Roman burial mound overlain by a later fortification.

Madog ab Iorwerth, grandson of Rhirid Flaidd, was apparently granted the Lordship of Penllyn, and thus the tenancy of Castell Carndochan, during the reign of Edward II (1307-1327). Madog ab Iorwerth died in 1315 and lies interred beneath an effigy in Pennant Church.<sup>7</sup> Plas Madog, two miles north of Llanuwchllyn, is traditionally supposed to have been his residence, whilst the farm of Madog, half a mile northwest of Llanuwchllyn, is also supposed to have been owned by him.<sup>8</sup>

Ieuan ab Gruffydd, grandson of Madog ab Iorwerth, was later recorded as being Constable of the castle. In Llanuchllyn church is a stone effigy of "*Y Gwr Carreg*", Ieuan ab Gruffydd ab Madog ab Iorwerth, who died in the year 1397. He flourished during the reign of Edward III (1327-1377) and was held in great esteem for enforcing English Law into North Wales. For this purpose he was granted a stipend and a company of archers.<sup>9</sup>

The great - great - great - grandson of Rhirid Flaidd (Robert ab Rhirid ab Dafydd ab Dafydd ab Madog) married into the Myddelton family of Chirk and, thereafter, the wolf became incorporated in their coat of arms. Apparently, wolves were kept at Chirk Castle until the mid 18th century and two lupine statues grace the main gates to the castle.<sup>10</sup>

The original breeding stock of wolves may very well have come from Rhirid's castle, though others were purchased at a later date, probably for bull baiting.<sup>11</sup>

A tale exists regarding the moors above Castell Carn Dochan upon which the ghostly "*Hell Hounds of Bala*" hunt down travellers who have lost their way, no doubt a folk memory from times when a wolf pack roamed the area. There is a similar tale regarding the "*Hell Hounds of Berwyn*".

In spite of this long history, there is absolutely no evidence to suggest that the Carndochan Mine was discovered before the late 1850s, and the Rev. W. Hughes's claim that "*the existence of gold was known within the parish in the time of the Ancient Britons*" cannot be substantiated. The 4¼ acre Roman fort at Caer Gai lies two miles east-north-east of the mine, but there have never been any suggestions that the garrison was involved in mining.<sup>12</sup>

The occupation of Caer Gai appears to have taken place in three phases, the first commencing circa 75-80 AD, and the final abandonment taking place between 120 and 130 AD. In 1885, in a field about 100 yards east of the fort, a stone was unearthed which bore the latin inscription:-

*"Julius, son of Gavero, erected this;  
a soldier of the Cohort of Nervii"*

Further finds at the time included the remains of a wooden shrine with an elaborately sculpted Bunter Sandstone pedestal, dedicated to Hercules. The Nervii Cohort is known to have been in Britain in the year 105 AD. A coin of Domitian (81-96 AD) was discovered slightly prior to 1885 and shards of Samian ware were also found, but there is no archaeological evidence for occupation later than 130 AD. The reference in *Annales Cambriae* in 656 AD to the recent abandonment of "*Gaii Campi*" must, therefore, refer to another location.

From Caer Gai, roads lead towards Brithdir, Chester and Tomen y Mur in Cwm Prysor. The route of the latter follows the river Lliw on its eastern bank past Dolhendre, Dolfudr, Buarth Meini and Blaen Lliw Isaf. Both Brithdir and Tomen y Mur appear to have been constructed and abandoned contemporarily with Caer Gai, thus reinforcing the dates of occupation as being circa 75 until 125 AD.

Two miles to the south-west, at Pont Rhyd Sarn, are two practice camps associated with Caer Gai fort. The name Caer Gai is supposed to stem from its being constructed by Caius, a Roman, but others attribute it to Cai, the foster brother of King Arthur. The archaeological evidence is more supportive of the relationship with Caius in the late first century rather than of the third or fourth centuries. Caius's name is also associated with the village of Caio, near the Roman goldmines at Pumpsaint.<sup>13</sup>

There are also Arthurian legends from the Llanuwchllyn area connected with Llyn Tegid (Bala Lake) and Afon Dyfyrdwy (river Dee), but these would all seem to have been concocted by 18th and 19th century Romantics and are easily dismissed. Cai is reputed to be the foster brother of King Arthur, but there is no evidence to support any occupation of Caer Gai at this late date.<sup>14</sup>

Gold Fever struck the Dolgellau area in 1843 and resulted in a flurry of exploration, but little production. In 1862/3, a 12 year old shepherd boy noticed gold in rocks scattered across the hillside, and a more vigilant search showed that these had even been built into walls. This precipitated the formation of a mining company, Roberts & Co., with Captain Jeremiah Williams as its local agent. Roberts & Co., almost

certainly Robert Roberts of the Clogau Mine, only worked the site in 1862 and 1863 by permission of the Glanllyn Estate, but without the consent of the Crown. This precipitated legal action by the Crown, but the proceedings have not yet been located. Roberts & Co. submitted proposals to Sir Watkin Wynn on a plan which is now preserved in the Dolgellau office of Gwynedd Archives.<sup>15</sup>

At about the same time, ie. circa 1864, a particularly fine specimen of crystalline gold was discovered to the west of the south end of Bala Lake, according to E.H. Davies, but the location is not divulged in his account.<sup>16</sup>

The Manchester based Carndochan Mining Company was formed in May 1863 with John Bright M.P. as chairman, Thomas Readwin as secretary, and Captain John Hughes as the local agent, but they ceased work in 1866. A shallow adit was driven into the lode, and the water from Nant Ty Coch was diverted to drive Britten and Mosheimer pans, which initially yielded from two to six ounces of gold per ton of quartz milled. Through the year, the company milled 1103 tons of quartz from which they recovered 747 ounces of gold, thus giving a yield of 0.67 ounces per ton. Encouraged by these results, the company then commissioned a larger mill in 1864, which was driven by a 50 foot waterwheel, driven by the waters of Afon Lliw. The mill broke the ore in an eight head stamp battery which was later enlarged to 20 heads. This was followed by Hungarian Britten and Mosheimer pans, with shaking bottles performing the amalgamation process. It would appear that the amalgam was then retorted and refined on site.<sup>17</sup>

In an address to the British Association in 1865, Robert Hunt mentions that Carndochan Mine had recently stamped 200 tons of quartz “*chosen indiscriminately from the lode*” which yielded 15 Dwts (23.32 grammes) of gold per ton.<sup>18</sup>

As the working penetrated below the gossan, the sulphide content of the lode increased and caused sickening of the mercury which caused unacceptable losses. In an attempt to counteract this phenomenon Readwin sought the assistance of the eminent scientist Mr, later Sir, William Crookes FRS, who partially solved the problem by developing the sodium amalgam process. This involves the explosive amalgamation of three per cent metallic sodium with hot mercury. As the amalgam cools, it crystallises and the powder can then be applied directly to copper plates or a small quantity added to the shaking bottles. Whilst the process was innovative in preventing sulphide sickening, it fell out of popularity with the general abandonment of amalgamation and the adoption of chlorination and cyanidation in the 1890s.<sup>19</sup>

Full scale works were abandoned in June 1866 and it was decided to wind down operations as the grade of the ore was falling off and the lode had been lost against a fault. A quartz reef was mistakenly followed after being intersected in a cross cut in 1868. This proved to be barren and the mine appears to have been run on a care, maintenance and limited development basis from 1866 until 1868.<sup>20</sup>



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Captain Jeremiah Williams died at Tyddyn yr Onnen, 600 yards south-east of the mine, on January 4th 1868 and his remains lie buried beneath a distinctly Masonic sandstone headstone in Llanuwchllyn churchyard.<sup>21</sup>

The mine was then revived by Captain John Parry of the Clogau & Figra Mines for the same company between 1869 and 1871. According to later reports, the grades had started to fall off badly and it “*cost one pound to produce 20/- worth of gold!*”, but this is not borne out by the mineral statistics which show that no milling whatsoever took place after 1866. A petition to wind up the company was issued in 1873 and the plant was sold in the following year.<sup>22</sup>

The Cambrian Archaeological Association visited the castle in the summer of 1885 and noted that the mine was abandoned. They were also told that “*had Sir Watkin been at Glanllyn, the members would have been welcome to see some trinkets made of the gold which had been taken in lieu of royalties*”.<sup>23</sup>

The Castell Carn Dochan Mine was revived in the early months of 1887 but it was not until 1889 that the company raised and milled 50 tons of ore which yielded 12½ ounces of gold, showing a grade of ¼ Tr. Oz. to the ton (7.620 grammes per tonne).<sup>24</sup>

The final phase of work began in 1894 and proceeded with some gusto until 1889, when the mine continued to operate on a small scale and produced “*a few ounces a week*”, but the rates and the grades are not recorded. The mill used a newly devised dry concentration process owing to a shortage of water, but its efficiency, quoted at 75-80 per cent, must be doubted as the tailing contains about 9 g/t of bullion. The grade of ore worked at this time is quoted as being about 10 Dwts of bullion per ton (15.24 g/t). The process was described in great detail on page 122 of the *Mining Journal* of February 2nd 1895. It is also worth noting that the apparent grade of the ore milled in 1895 suggests a mill efficiency of about 70 per cent or slightly less.<sup>25</sup>

From existing records, it would appear that after 1898 the company put all its efforts into driving the Deep Adit (No.4 Level) and, whilst it is supposed to have reached its goal in 1901, this cannot be so owing to the small volume of water being discharged. It is presumed that the cost of development consumed so much capital that the operations were reduced to a minimum and the company appears to have ceased work in 1904 or 1905.<sup>26</sup>

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The Mineral Statistics give the following output data:-

YEAR	QUARTZ		GOLD	GRADE
	(Tons)	(Oz.)	Troy Oz./Ton	Grammes/Tonne
1863	1103	747	0.677	21.400
1864	29	141	4.800	153.600
1865	1360	837	0.600	19.450
1866	<u>1768</u>	<u>529</u>	<u>0.290</u>	<u>9.454</u>
<b>Total</b>	4268	2254	0.528	16.166
1889	50	12½	0.250	7.620
1895	789	98	0.120	3.650
1896	1020	100	0.098	2.988
1897	475	112	0.235	4.987
1898	<u>354</u>	<u>83</u>	<u>0.234</u>	<u>7.164</u>
<b>Total</b>	2638	393	0.148	4.541
<b>TOTAL</b>	6956	2659½	0.382	11.704

The Glanllyn Estate forfeited its rights to the mine in 1947, when the site was offered to the Inland Revenue in lieu of death duties. The land and the mineral rights were then sold to the tenants in the early 1960s.

In 1980, the mine was leased to Patrick Cheetham, who briefly examined the site and concluded that it was worthy of further exploration, but failed to raise sufficient capital to commence such a project. When he surrendered his lease, it was taken up by Capital Resources, but little work was done. In 1988 an Irish company showed interest in funding further exploration, but Capital was loathe to relinquish its Crown Licence and the project was abandoned.

Research had now suggested that the bulk of the gold was contained within the galena and assays of galena recovered off the dumps showed consistently high grades. In addition, the ore also carried an appreciable quantity of silver. Free milling gold was also observed in specimens of sulphide-free quartz and as grains within stream sediments.

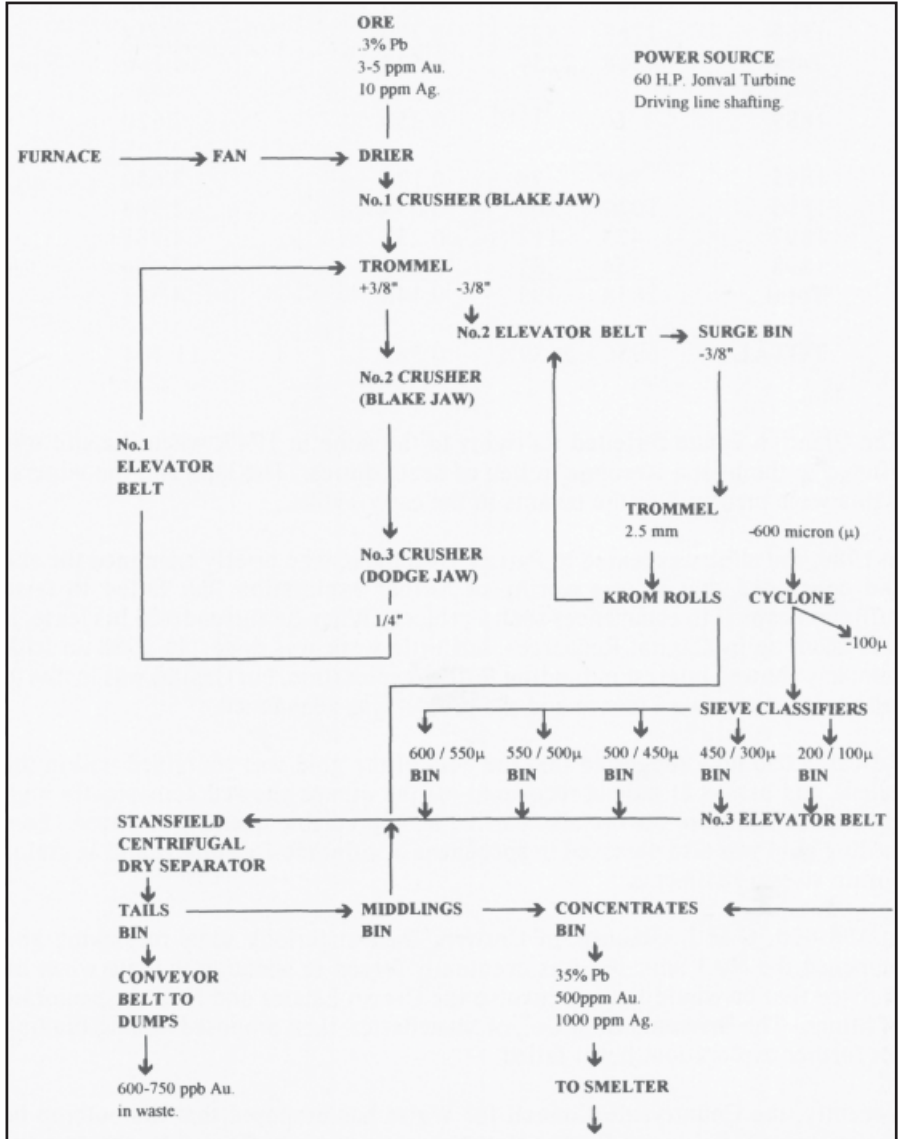
In 1989-90, G.M.J. Gibourg, of Corwen, then undertook some fossicking and reopened the No.3 adit, but was eventually forced to abandon the site when he realised that he would have to involve the Crown Estates and H.M. Inspectorate of Mines. The Britannia Gold Co., of Manchester, then proposed raising funding for further exploration, but it failed.

Recently, the Countryside Council for Wales has proposed that the outcrop be designated a S.S.S.I. and further statutory protection is afforded by the Ancient Monument and the Snowdonia National Park. Any further work which is done on this



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site will, therefore, have to be entirely underground and even then with great care and attention to the environment. It remains, however, necessary to prove that the lode still contains workable grades and tonnages along strike and at depth.



**FLWSHEET OF CARNDOCHAN MINE MILL IN 1895**

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