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NANT Y MWYN MINE, LLANDOVERY, DYFED

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SYNOPSIS

Whilst being the largest base metal producer in South Wales, the Nant y Mwyn Mine near Llandovery has, previously, only been briefly commented upon. It is undoubtedly a site which has been exploited spasmodically since ancient times but this appears not to have been noticed by contemporary reporters. The most notable features of the mine are the two, late 18th century, "Boat Levels" and the late 19th century Engine house and Chimneystack erected at the Angred Shaft. In addition to these obvious features, it is possible to trace the remains of a canal wharf, 19th and 20th century dressing plants, the 18th century manager's residence and an extensive system of hushes.

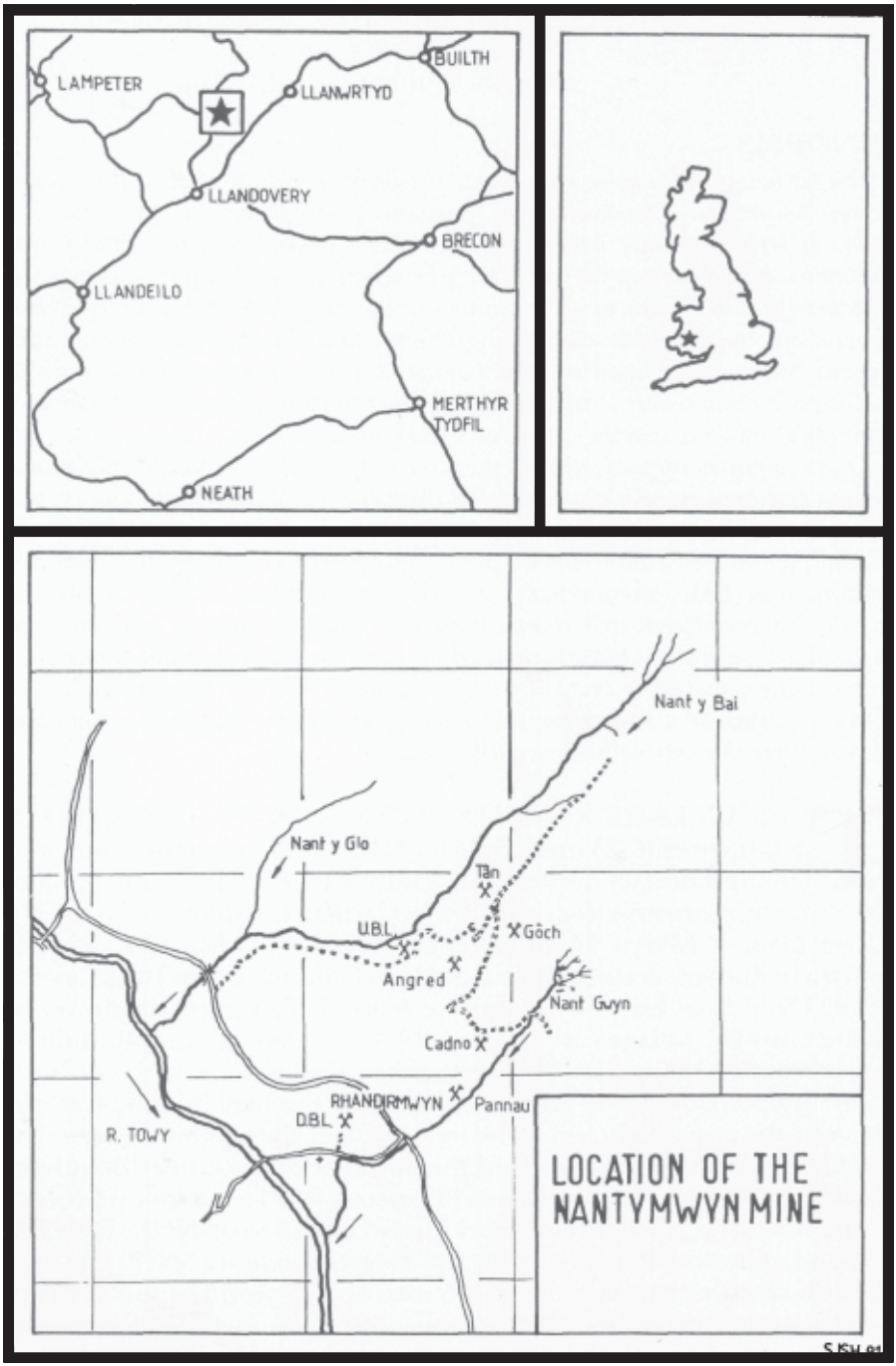
Due to a puffed up promotion of the mine in the 1920s, a considerable amount of time and expense was devoted to clearing out the old workings and erecting new plant. The reality was only exposed when the promoter died and a resampling showed sub economic grades and tonnages. When the mine was abandoned in 1932, *the company directed that all entrances were to be sealed up; the command was undertaken with such vigilance that it has since been impossible to gain access to the main workings and most of the subsidiary ones.*

It is quite remarkable that, despite having been intensively afforested, traces of every period of working are still readily identifiable and form a delightful excursion for the mining history enthusiast.

The village of Rhandirmwyn is located ten Kilometres (6.23 miles) north of the market town of Llandovery in the Dinefwr District of South East Dyfed. Until the local government reorganisation, this lay in Carmarthenshire. The Nant y Mwyn Mine is geographically divided into two sites which are known as the Upper Boat Level and the Deep Boat Level. The Deep Boat Level workings are centred 500 metres south west of Rhandirmwyn village at NGR. SN. 781-434. at an altitude of approximately 137 metres (450 feet) above sea level.

The Upper Boat Level workings are more extensive and lie scattered between the stream known as Nant y Bai and the mountain known as Pen Cerrig Mwyn. The NGR. of the portal of the Upper Boat Level lies at SN. 784-446. at an altitude of185 metres (608 feet) above sea level.

The northern most surface working is Level Tan at NGR. SN. 789-449. and approximately 265 metres (870 feet) above sea level. The mine plans show its elevation to be at 246 metres (809 feet) but this is clearly a typographic error and 246 metres (869 feet) is probably its true elevation.


LAMPETER
BUILTH
LLANWRTYD
LLANDOVERY
BRECON
LLANDEILO
MERTHYR TYDFIL
NEATH
Nant y Bai
Nant y Glo
Tân
UBL
Gôch
Angred
Nant Gwyn
Cadno
RHANDIRMWYN
Pannau
DBL
R. TOWY
LOCATION OF THE NANTYMWYN MINE

The most westerly part of the mine is the toe of the development dump from the Upper Boat Level at NGR. SN. 780-447.

It is also worth noting that some hush gutters run in a north-westerley direction under the Level Goch and Level Tan dumps and must therefore pre-date these developments. The leat and dam must have been located to the north, or northeast, of Pen Cerrig-mwyn and it seems more likely that the source of the hushing water was N ant Gwyn rather than Nant y Bai. The hush gutters are definitely pre 17th century and may be the strongest indicators of the Nant y Mwyn Mine having been examined by the Romans in the late first, or early second century. Excavation of the dam sluicegate and carbon dating of the timbers would provide a conclusive date of construction.

There was certainly a Roman Gold Mine at Pumpsaint, 15 kilometres (9½ miles) west of Nant y Mwyn. The Roman road known as Sarn Ddu heads north out of Llandovery, the Roman town of Alabum, towards Nant y Mwyn and several antiquaries have hypothesised that there was contemporary exploitation of minerals. The construction of Alabum is probably no earlier than 70 A.D. and occupation seems to have lasted until about 160 A.D.

“Peter the German” was instructed by Henry VIII Mining Commissioners to undertake a survey of mines of iron, copper and lead. In 1530 he noted that the medieval lead mine at Rhandirmwyn was still working though was not as valued as in earlier times due to a number of other Welsh lead mines coming into production. A contemporary reference in The Black Book of St Davids mentions a lead mine near Llandovery being active in 1530 and paying a royalty of 1/11th. These are the earliest positive references to the Nant y Mwyn Mine.

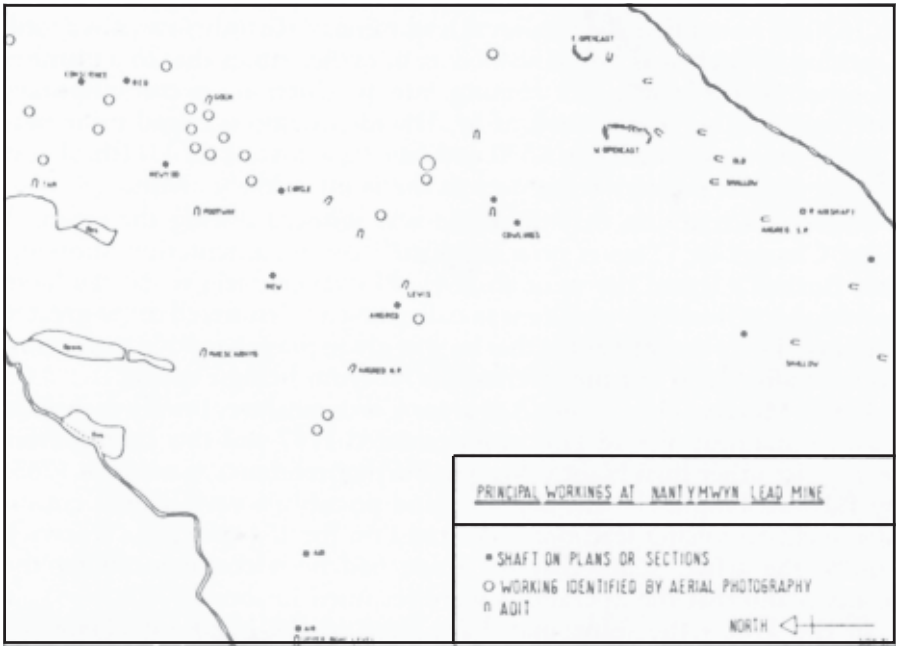
There is a tradition that the mine was worked during the reign of King Charles 1st. This is now supported by documentation showing that Bushell’s leased the mine in 1641. However, little work can have been done as Bushell’s empire was collapsing as Cromwell drew greater support. There are inferences that he was given the prerogative to develop the area after 1636 but the reference is far from being explicit.

Lewis Morris, The Crown Agent for Cardiganshire, briefly mentions a lead mine near Y strad Ffin in notes dated 1747 and this cannot refer to any site other than Nant y Mwyn. Further reference is made in 1763, by Edward Hughes – his nephew (and possibly a very distant cousin of mine!), to raising lead ore at Ystrad Ffin for 15/- per ton. Warwick Smith, the artist, states that the mine had been commenced by the Romans and that the operations were resumed in about 1742.

In the 1760’s the mine may have been in the hands of Chauncey Townsend as John Smith is recorded as being the manager. Townsend was involved in

several of the Cardiganshire mines at this time and was closely associated with the running of The Earl of Powys's Mines. He would therefore have been an acquaintance of Robert Shore, manager and engineer at The Ecton Copper Mines, who was also associated with Powys. Townsend withdrew from mining shortly after 1770 and most of his mines passed to Bonsall, a few continued to be managed by Smith but control of Nant y Mwyn had passed to a rather harsh Cornishman named John Rolley by 1780. When Rolley arrived there were several miles of tunnels driven thus confirming that it was already a long established mine. The ownership of the mine prior to 1775 has not been researched and it is quite possible that it may have been Crown or Ecclesiastical property.

Curiously, a great advocate of boat levels was Robert Shore of Ecton Copper Mine who also had interests in some Cardiganshire mines in the 1770's and '80s. It would seem likely that the Nant y Mwyn Upper Boat Level was commenced in the early 1770's and completed by 1780. Circumstances also suggest that Shore may have designed and supervised the driving of the Upper Boat Level.



The most easterly part of the upper workings are those around William Shaft at NGR. SN. 793-449. which is now obscured by the coniferous plantation. It is also the highest part of the mine at approximately 365 metres (1200 feet) above sea level.

The southern part of the upper workings follow a series of secondary lodes across the crest of Pen Cerrig Mwyn from the Angred Shaft at NGR. SN. 788-443. to Level Pannau at NGR. SN. 787-438.

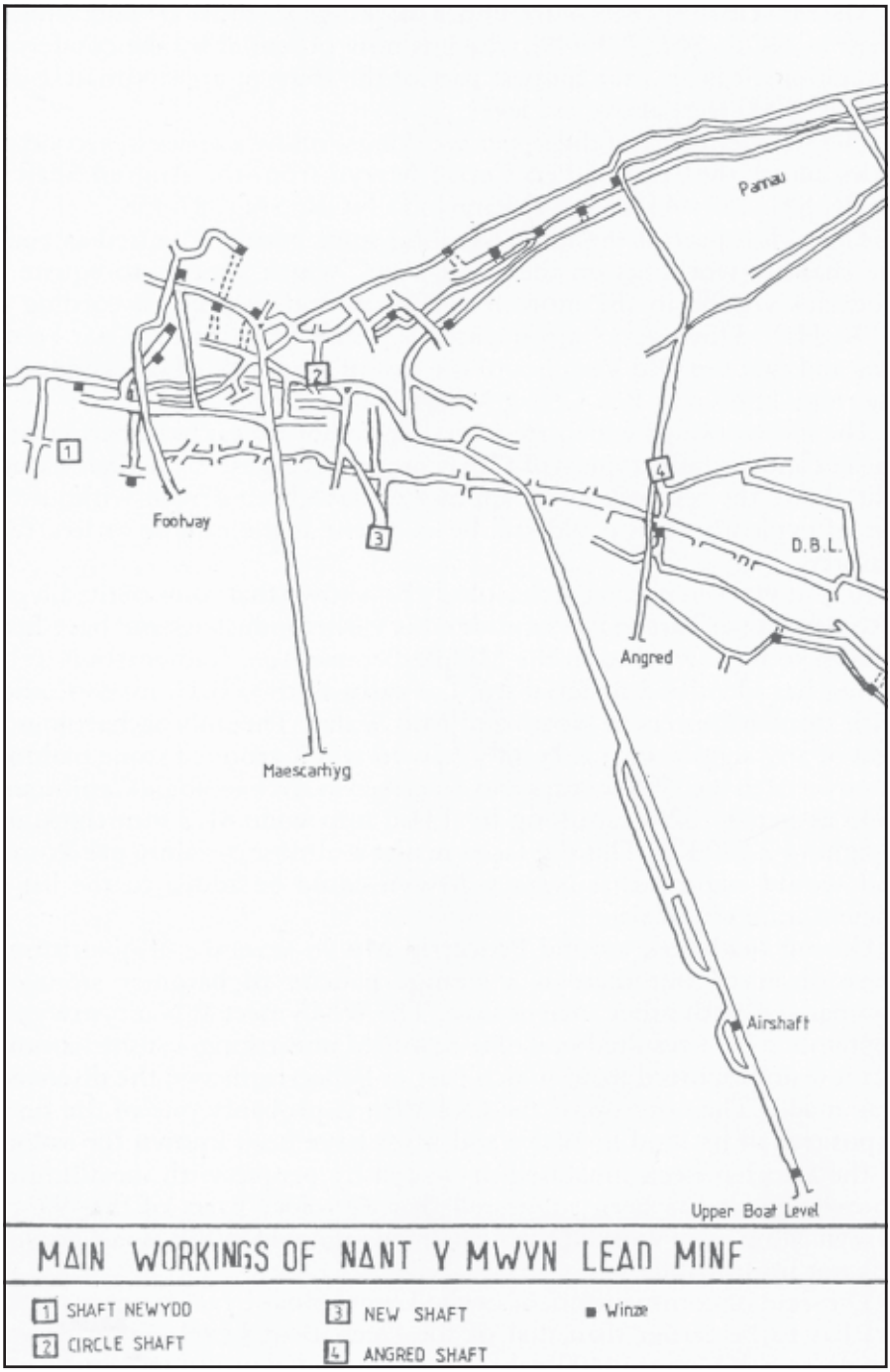
The oldest part of the mine has long since been recognised as being the shallow workings on the "Old Vein" which appears to equate to Roderick's Lode in the more recent plans and sections, according to G.W. Hall. However, I am inclined to think that this may not be the case and that the Old Vein lies to the east of Rode rick's Lode and forms the ridge known as Pen Cerrig Mwyn.

The old workings which are accessible do not appear to be particularly ancient and are quite typical of 17th century driveages. A small un-named adit above the Shallow Level appears to have been driven without the use of explosives but could still be as recent as the middle or late 18th century.

Recent work in mining archaeology has shown that some of the alleged "Roman Mines" are in fact considerably earlier industries and have been proven to have worked in the Middle Bronze Age. Radiocarbon (C14) dating has identified material from as early as 1800 B.C. in association with stone hammers in North and Mid Wales. The only archaeological find of any significance at Nant y Mwyn was a grooved stone hammer discovered in the 19th century and described in *Archaeologia Cambrensis* 1943 as being 152.4 mm long by 134.6 mm wide 81.2 mm thick and weighing 2.720 Kg. This flat faced mallet is almost certainly pre Roman and would suggest that Nant y Mwyn could be added to the list of ancient mines in Wales.

During fieldwork around Pencerrig Mwyn several grit quernstones were observed but there is a strange paucity of hammer stones in comparison with other ancient sites. The WMS meet at Nantymwyn in September 1991 resulted in Colin Armfield unearthing a stone hammer but it is not reported from which part of Pencerrigmwyn the discovery was made. The outcrop of the Old Vein is probably one of the finest exposures of its kind in Wales and must have been known for as long as the area has been inhabited or visited by people with metallurgical knowledge. It has been suggested that the older parts of the Nant y Mwyn Mine were worked by the Romans and whilst this is not proven, it is not improbable.

The date of commencement of the Upper Boat Level is not recorded but has to be earlier than that of the Deep Boat Level (1785). It was driven as a 365 metre (400 yard) cross cut and assuming a similar rate of driving, about six


Pamau
1
2
3
4
Footway
D.B.L.
Angred
Maescarhyg
Airshaft
Upper Boat Level
MAIN WORKINGS OF NANT Y MWYN LEAD MINE
1 SHAFT NEWYDD
2 CIRCLE SHAFT
3 NEW SHAFT
4 ANGRED SHAFT
Winze

years would be a reasonable estimate for its completion. Boat Levels were popular at this time with other examples being the Worsley Boat Level in 1759, Hillcarr Sough in 1766, Ecton in 1767, the Speedwell and the Holywell Boat Levels in 1774. The Boat Level at Pennerly, in Shropshire, appears to have also been commenced in about 1780 and Grassington in 1796.

The Cawdor Estate accounts for Nant y Mwyn commence in 1775 and show that 910 tons of concentrates were sold in that year thus suggesting that the mine was already fairly well developed.

Many secondary references suggest that this was the year in which the mine commenced working but this is clearly not the case.

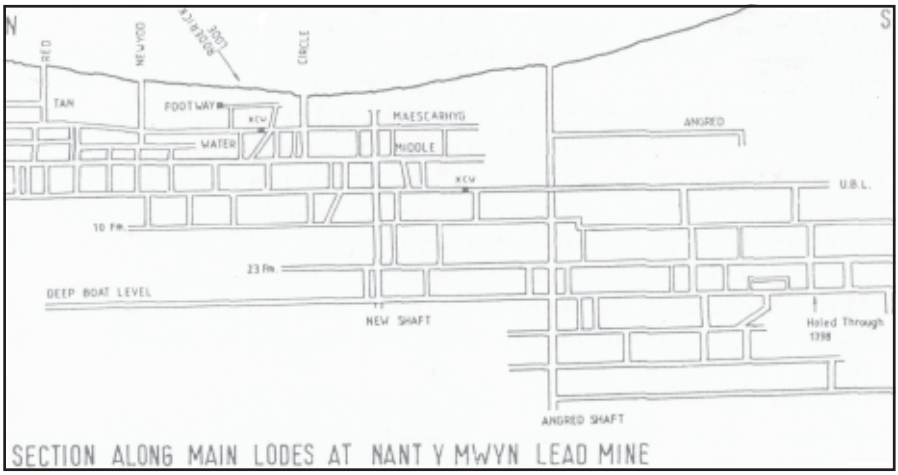
Logically, the Maescarhyg Level is earlier than the Upper Boat Level and Level Tan is older still. I am inclined to think that the former may have been commenced circa 1750 whilst the latter may have been commenced at the time of Bushell involvement, i.e. 1632-1642.

By 1785, the lodes were of sufficient importance to justify the commencement of the Deep Boat Level. Under the supervision of John Rolley, this took 13 years to drive 730 metres (800 yards) into an old sump, some 54 metres (180 feet = 30 fathoms) below the Upper Boat Level.

John "Warwick" Smith visited the area on the 13th August 1792 and the mouth of the Upper Boat Level inspired him to paint the watercolour "The Interior of the Mining Parts of Carreg Mowyn where Lead Ore is principally carried in boats through narrow level communications branching from the mines. The boats used in this subterraneous navigation are narrow, sharp at each end and of about five tons – one man brings out several of these, sometimes using a paddle, sometimes grappling with the rock with his hands, but their favourite method is, by laying down on their backs with their feet against the roof-forcing the boats along – the buildings are adapted for a stamping and a corn mill for the miners."

This is now preserved in the National Library of Wales at Aberystwyth (PD9311) along with another print, painted on the same day and entitled "A General view of Nant y Mowyn with the hills rich in lead above it. The Towey in its early course extends through this valley to Llandovery in the Vale of Towey, Carreg y Mowen has long since been famed for its store of lead – the mines were worked by the Romans – Its present workings have been continued since the year 1742 and now belong to Lord Cawdor. The White House under Carreg Mowyn was long the residence of Mr Rolley, the active & experienced agent of these mines".

Rolley died in 1805 and his interests passed to Joel (R.B.) Williams, another Cornishman. Nant y Mwyn was not as successful during this period and

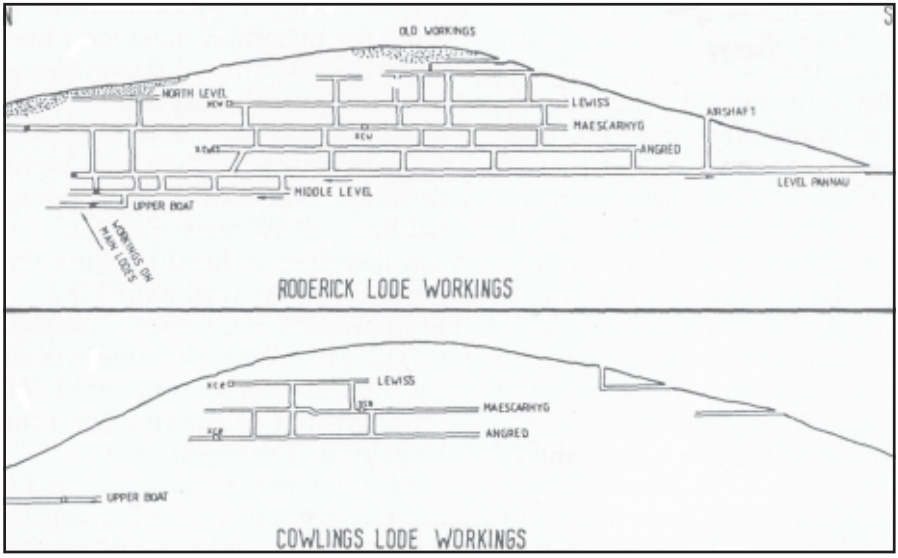


SECTION ALONG MAIN LODES AT NANT Y MWYN LEAD MINE

production had now fallen to between 300 and 500 tons of lead concentrates per annum.

A good description of the mine is given in 1815 by the Reverend Walter Davies – "Gwallter Fechain" in bardic circles. He was informed that the mine had been opened some 60 years previously (1765) and had yielded considerable profit. In about 1790, 400 persons were employed at the mine and although the mine was far from being exhausted, there were very few people employed at the time of his visit. He was led to believe that the mine, at this time, had raised an average of 900 to 1200 tons of lead ore per quarter though the Cawdor Estate Records only credit about 1200 tons per annum. An adit, which served as a canal, entered the western side of the hill and was driven to a shaft where, after an ascent of 70 feet, it communicated with an adit (probably Level Pannau) that came to surface on the eastern side of the hill, a total distance of about one mile. Curiously, Davies does not mention the existence of a second Boat Level. It is also worth noting that Davies records the fact that lead ore was then selling for £10 per ton and zinc blende for £9 per ton whilst only a few years previously lead ore was worth four times as much as the "blackjack".

A contemporary development which was noted by Lloyd in the "History of Carmarthenshire" was that the old lead smelting furnaces in Carmarthen town, built by Earl Cawdor in the late 1770's, had been replaced by more efficient ones in Llanelli. These were basically the same components which had been re-erected near to a cheap supply of fuel. Like the old furnaces, they too were owned by Earl Cawdor but after some thirty five years of successful production, they were purchased by the works manager Charles Nevill.



Nevill took one of the Williams family of Gwennap along with a Mr Sims and founded the firm of Sims, Williams & Nevill who dominated the Welsh lead smelting trade throughout the last half of the 19th century. It must also be borne in mind, that in 1815 the value of lead ore had fallen significantly over the past ten years and combined with the escalating cost of despatching panniers of ore by mule train, the labour force had been reduced from about four hundred persons in the late 1790's to 160 men and forty women in an attempt to reduce costs.

The Cawdor records show that employment in 1814 had been reduced to 93 men and 20 women and there were proposals to reduce this number ever further. However, this state of affairs was short lived and it is reported that by 1823 there where 105 persons engaged in carrying the concentrates to Carmarthen.

This is a rather dubious statistic as the mine only produced about 500 tons in that year; it should be noted that of these 105 persons, 100 were principally engaged in farming but could be enticed to work as carters on account of the good rates of pay.

G.W. Hall reports that there was originally a smelting works on site at approximately NGR. SN. 7864-4482 on the south bank of Nant y Bai almost opposite White Hall and near to the portal of the Maescarhyg Level. Presumably, this pre dates the time when the ore was carried to Carmarthen for smelting and refining which commenced prior to 1780.

During fieldwork, this area was examined for any traces of the furnaces or lead slag but none were observed and the operation must have been both small and short lived. However, David Bick has discovered lead slag in the dumps below the Upper Boat Level and it may transpire that the works were attached to the Stamp Mill and may have been later converted to a corn mill. Another possibility is that White Hall Uchaf may, originally, have been the smelt house. The latter two buildings both show signs of having substantial flues many years ago, these are not shown in the 1792 paintings. I am therefore inclined to think that the smelter may only have been active from about 1760 until 1780.

Joel Williams was dismissed around 1823 and Earl Cawdor undertook the management of the mine for some years but found that this was not as good a business proposition as he had originally anticipated. He therefore decided that a more lucrative method of running the mine would be to issue a lease and take a royalty on the production.

In about 1818, Hugh Williams of Machynlleth formed a partnership with John Pugh (later Pughe) of Aberdyfi to consolidate the Esgairgaled and Llechwedd Ddu Mines into the single working of Dylife. Sometime around 1825 they undertook to manage the Nant y Mwyn Mine with other partners being taken into the Company. References have been seen to Ellis, Pugh & Co., but this is undoubtedly the same company. In 1830, Messrs Williams, Pugh & Co. were forced to suspend the work on account of the low prices which prevailed and in 1832 they surrendered their lease to the Earl Cawdor.

A new lease was granted to The Williams Brothers of Scorrier House at Gwennap in Cornwall as early as 1832 according to some sources, but 1836 according to others. Michael & William Williams took many leases in Mid Wales in 1825 but a recession in the metal trade forced them to relinquish the majority of these in 1832. By 1836, their holdings in Cardiganshire were minimal and they disposed of most of their mines to the firm of John Taylor & Son. The output of Nant y Mwyn was usually two or three hundred tons per annum during the early 1830's but took a turn for the better after 1836, for this reason I am inclined to believe that they commenced their tenancy in that year.

Roderick Murchison, one of the founders of the science of geology, visited the workings at "Nant y Moen" in 1833 and later published the findings in his volume entitled "The Silurian System" first printed in 1839. He states that the workings are carried on upon three principal veins called The Master, The Red and The Comet. However, the text is generally rather nondescript and contributes very little to the knowledge of the site.

The 33 fathom level below the Deep Boat Level, on the Principal & Middle Lodes, had been developed prior to November 1850 according to a section drawn by Abraham Rolf, the Mine Agent. The mine was never sunk any

deeper and all of the concentrates produced between 1850 and 1930 were derived from driving existing levels into the established ore shoots.

Abraham Rolf appears to have been Earl Cawdor's agent as the Mineral Statistics record that, in the 1860's and 70's, the Nant y Mwyn Company was owned by W. & J. M. Williams and that their agent was John Harris. Fresh impetus was added to the Nant y Mwyn Mine in 1865 as the cost of shipping the concentrates to Llanelli was reduced by the completion of the railway line to Llandovery.

The mine plans and sections were again updated on the 10th of January 1879 by Abraham Rolf but they also show post 1880 developments and were finally updated by The Sulphide Corporation in 1931-1932. Consequently, it is very difficult to ascribe dates to certain developments.

These undated revisions falsely suggest that the Angred Shaft was sunk at least ten years earlier than is the case. I strongly suspect that the Footway, which is shown on the 1850 plan, was not driven until about 1916 and maybe as late as 1920. When the Sulphide Corporation took over the mine, they used these plans but found them so inaccurate as to be unusable for mining purposes. Stopes were more extensive than indicated, old workings had not been marked, levels had been driven further than was suggested and it would appear that the plan was not as regularly revised as had been previously suggested. On several occasions, Joe Nile found old workings where there was supposed to be good ore and the huge unworked reserves that were supposed to lie above the Deep Boat Level were reduced to 15,000 tons of >11% combined Pb + Zn, and 166,000 tons of >4% at the time of closure.

The Angred Shaft was one of the last major developments at Nant y Mwyn and post dates 1887 when the first of the large scale Ordnance Survey maps were being surveyed.

This shaft was sunk under the superintendence of Captain Joseph Argall, who managed the mine throughout the 1890's until the Williams Brothers relinquished their lease in 1900.

During this last decade of working, the mine continued to employ about 90 persons despite the low price of lead having closed the majority of other mines in the area. From what records have been seen of this period, it would appear that the mine was in a most dreadful condition and many of the stopes were running into the levels.

The shaft was eventually sunk to a depth of 113 fathoms (678 feet = 206.65 metres) below its collar and connected to the Deep Boat Level at 75 fathoms (450 feet = 137.16 metres). Its deepest point is therefore 38 fathoms below the DBL, which would have allowed a reasonable sized sump below the 33 or 35 fathom level.

Nant y Mwyn was not noted as a particularly wet mine but would still have required a certain amount of pumping to keep the 10, 20 & 30 fathom levels on Pugh's Branch free of water. There were also levels at 11,24 and 35 fathoms on the Principal Lode which would have required a separate set of pumps in order to keep them de-watered. There is no doubt that a phenomenal amount of water cascaded down from the old workings but this was easily drained out of the Deep Boat Level. Prior to the sinking of the Angred Shaft, pumping below the Deep Boat Level would have been a difficult and complex task unless the bottom 35 fathoms of the shaft had been sunk at an earlier date and the 1890s sinking was only from the surface to the Deep Boat Level. There would certainly have been sufficient water available to turn a subterranean waterwheel located above the Deep Boat Level.

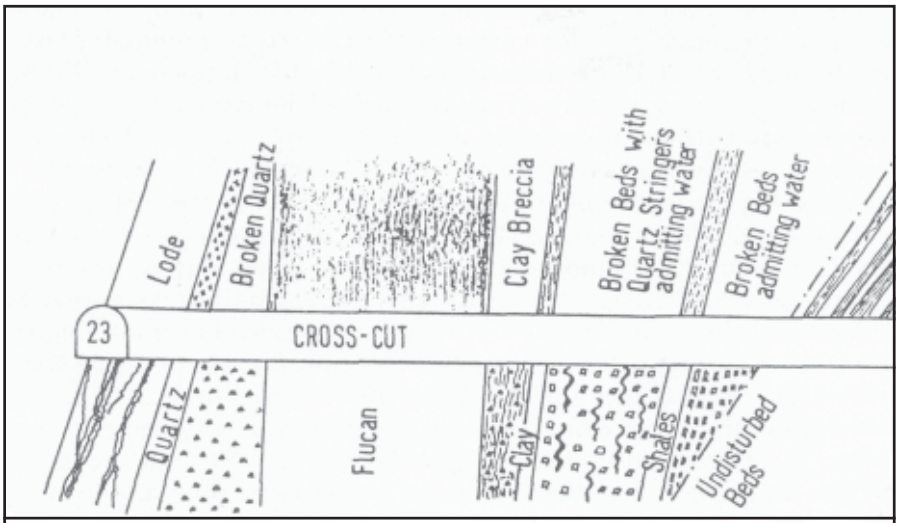
It is difficult to comprehend why the expensive luxury of a beam engine was expended on the Angred Shaft. The volume of water and ore certainly did not justify such expenditure where there was a deep adit and a readily available supply of water to turn wheels. The engine, and attendant buildings, must have been constructed in the late 1880s or early '90s and cannot have worked for any great length of time. The 1904 Ordnance map shows that it had been removed by that date and old reports confirm that the whole of the plant along with the engine and boilers were sold when the Williamses relinquished their lease in 1900. Some of the older inhabitants of the area were able to confirm that the machinery had certainly been removed well before 1920. Inhabitants of Rhandirmwyn village are quoted by W.J. Lewis in *"Lead Mining in Wales"* as having informed him that:-

"The high cost of coal was one of the reasons for the failure of the Nant y Mwyn Mine in the late 1920s."

This is obviously not true and illustrates how old miners stories can eventually become accepted as being factual. I would certainly accept this as a reason for abandonment by the Williamses in 1900 though.

An unconfirmed possibility is that the Williamses and Argall were well aware that there may have been another orebody underlying the one which had sustained the mine for the previous centuries and that the Angred Shaft was originally to have been sunk to a depth of about 335 metres (1100 feet) below its collar (6.19). If this was the case, it was an ill timed project as the value of lead was at its lowest for a century whilst mining and materials costs had continued to rise.

It must also be considered that Argall knew of the deteriorating situation underground and was also aware that if the Deep Boat Level became blocked by a fall of ground the mine would be lost through drowning. The Angred Shaft may have been an attempt to salvage this situation.



Section of 23fm Cross-Cut showing the West Lode and the Flucan

Another shaft which was sunk at the same time as Angred was the Airshaft, also known as Jones's or the Coaling Shaft. It was sunk vertically for 84 feet (25.60 metres) and connected to the Deep Boat Level as an offset on the eastern wall at a distance of 726 feet (221.28 metres) from the portal. Its purpose was mainly as a coal chute from the surface into the barges. From here the coal was taken below ground to the Angred Shaft and hauled to the surface.

Following the abandonment in 1900, all production ceased until 1915 despite a lease having been issued to a Mr O. Davies. According to an old inhabitant, Octavius Davies, proprietor of the Rhandirmwyn Stores tinkered about the mine at about this time. Some underground trials took place in 1907-'08 and again in 1911 with up to seven men being employed during this period.

At some time between about 1890 and 1914 the Deep Boat Level was drained and fitted with a more conventional tramway and waggons for the purpose of hauling the ore to the surface. This move was probably undertaken by Argall rather than under the apparently financially restricted regime of Davies.

Captain Jospeh Argall, the former manager of the mine during the 1890's, took the lease of Nant y Mwyn in the January of 1914. Between 1900 and 1914 he had spent many years in mining camps across Canada. By the end of the July of the same year he had assembled a mining venture of which he sold 51% to The Nantymwyn Mine Limited for £3100.

One of the most prominent mining men of the period was Phillip Argall of Denver, Colorado, and part of Joseph Argall's reputation may have been based on his genealogy rather than his competence. Phillip Argall's speciality was mineral separation and he is credited with the invention of a patent mineral jig and several types of ore drying and roasting kilns. It is not known if these two men were of the same family.

The Nantymwyn Mine Limited partly financed its operations from 1914 until 1926 by working lead ore on a limited basis and sometimes only raising quartzitic sandstone. I was told by an ex-employee that the quartzite was worked in a long cross cut to the east a short distance from the portal of the Deep Boat Level. I am more inclined to think that the source of this material was from the working known as "Fire Brick Cross Cut" driven east off the Deep Boat Level some 200 metres southwest of the Angred Shaft. Due to the government subsidy on mine labour, there were up to 33 persons employed by 1919 but the end of the War destroyed the initiative and the labour force dwindled away to none in 1921.

The work being undertaken by the Nantymwyn Co. was briefly noted by The Department for the Development of Mineral Resources in the United Kingdom, but they received no financial or advisory assistance in developing the unworked reserves. Their activities were also noted by the Board of Trade Committee into the Non Ferrous Mining Industry in 1920 but it is obvious from both reports that the scale of the operation was inconsequential and the amount of space devoted to the Nant y Mwyn Mine is absolutely minimal.

In May 1926, the share capital of the company was increased to £12,000 by selling 50% of The Nantymwyn Mine Limited to The Sulphide Corporation Ltd. of Australia for 6,000 £1.00 shares.

The Sulphide Corporation attempted to raise a further £50,000 by issuing debentures in 1927. On the 2nd of March 1929 they commenced the construction of a new flotation mill and power plant along with the sinking of the "New Shaft" a month or so later. This was to allow access from the mill area down to the Deep Boat Level. The old crushing plant which was located at the Deep Boat Level was dismantled and moved to the new mill site, by the New Shaft, in mid 1929. The sinking was very rapid, the whole 118.26 metres (388 feet) being completed by the 8th of June that year.

As the annual report for 1929 accounts for only 68.5 metres (225 feet) of sinking it must be presumed that the New Shaft utilised some 50 metres (163 feet) of old workings. From their plans it can be seen that the bottom 33 metres (108 feet) of the New Shaft ran through old stopes from above the 23 fathom level and into the Deep Boat Level. Up to 80 men were employed in this period of re-development. By this time, the Deep Boat Level had been

drained and fitted with a more conventional tramway with ponies being used to pull trains of waggons.

Captain Argall died on the 30th of November 1929 and had been replaced by Joe Nile – also Cornish and a graduate of the Camborne School of Mines – a month previously.

Joe Nile also had an interesting pedigree which is worth mentioning briefly. After graduating from the CSM he appears to have worked at several of the premier Cornish tin mines and was manager of the Grenville Mine circa 1920. He married a daughter of William Thomas, his old Principal at the School of Mines, now a consulting engineer and manager of the Tincroft Mine. The Thomas family were also associated with the Dolcoath Mine for many years. Nile was therefore a brother in law to Captain R.R. Nancarrow of the Lisburne Mines who had also married another of Thomas's daughters.

When he applied for the post of manager at Nant y Mwyn one of his referees. was Captain Josiah Paull, manager of the South Crofty Mine. Argall, Nile, Thomas, Nancarrow and Paull all appeared as witnesses before the Board of Trade Committee to investigate and report upon the Non Ferrous Mining Industry in 1920. With such a background, it would have been embarrassing and difficult to have awarded the post to any person other than Joe Nile. Despite him being a first class mining man he never used the title of Captain.

Locals also recall Captain Thomas Michell (formerly of Cwmystwyth) and Captain Lewis dying sometime in the 1920's, both being quite elderly and having managed the mine before Argall i.e. prior to 1890.

At the time of Argall's death and on into Captain Nile's era, the late Jack Wills on was involved with supervising the drilling of several diamond drill holes underground in the sole of the 23 fathom level near the New Shaft. This was done at about the same time as Willson was working on delineating the ore body at Pumpsaint. He later proved to be of great assistance to the Larke's Committee in 1942, in their decision that the old mine could not be bought into production rapidly to assist with the war effort. Willson also suggested that some surface drilling might show strike extensions to the north of the old mine and would be of far more use than fossicking through old workings looking for unworked blocks.

Joe Nile soon obtained a more realistic view of the mine and provided regular reports for the directors. Many of these have been preserved and contain some very useful contemporary reports. After Argall's death, the Sulphide Corporation destroyed all his records as they had been proven to contain falsified information. One block of ground which Argall had sampled was supposed to contain about 17% zinc but when Nile put it through the mill the yield was only 5%.

Full scale milling started in the June of 1930 but ceased on the 18th of October due to very disappointing recoveries, 50 men were also laid off on the same day. The depressed prices of lead and zinc placed much of the ore which had so far been encountered at below the economic cut off grade. The Corporation's activity was then restricted to resampling the workings and clearing some of the old levels. The annual reports show that 816 metres (2680 feet) of old levels had been cleared out and rehabilitated during 1930.

By the late 1920's the old stopes were becoming very unstable which resulted in three fatal accidents and in a further incident, five men were trapped for three days before being released. An accident in the 19th century is known to have resulted in one man being entombed by a fall from which he was never recovered.

It appears that no work was done below the Deep Boat Level after 1900 when the Williamses relinquished their lease and sold the plant. This was due to a combination of several factors:-

A) The water escaping from the Upper Boat Level was finding its way down into the lower workings and sometimes exceeded the capacity of the Deep Boat Level. This would have inundated the shaft and the bottom workings.

B) The pumps had become too costly to run due to the high price of coal and the low price of lead.

C) Captain Argall had experienced problems with the DBL in the 1890's and is known to have installed a dam whilst a drift was driven to bypass 300 metres of stopes on the back of Pugh's Branch to the southwest of Angred Shaft but the details regarding its exact function are not well recorded. He further increased the make of water in the DBL by driving a new 100 metre drift to service and drain the Angred Shaft.

Captain Nile suspended all development work within the old mine and turned his attention to clearing the Deep Boat Level. This commenced as a low key development in January 1931 when a fall in Theophillus's Rise started to be removed. On the 17th of January an outburst took place which washed about 300 cubic metres of debris over 35 metres (120 feet) down the level. It then took a month to clear this out and move forward another 12 metres (40 feet) through the fall on Ebean Harris's Pitch after which the level was found to be open as far as Ebean Thomas's Cross Cut, 733 metres (2400 feet) from the portal.

In his reports after May, Nile mentions continual problems with roof falls and water. By the October of that year he had reopened enough of the level to allow some exploratory cross cutting to commence which later disclosed some tonnages of ore. By November 1931, Nile had succeeded in effecting

a communication with the bottom of the New Shaft but was still being plagued by sand and slime being washed in from the old workings. According to the annual reports, the work in 1931 was largely confined to the Deep Boat Level in which 806 metres (2647 feet) had now been cleared out, and a further 21 metres (70 feet) of new development work had been undertaken.

All work ceased abruptly on the 30th November 1932 after it had been demonstrated that the metal values were rather poor in the Deep Boat Level. As a last ditch attempt a rise was put up to the 23 fathom level and some encouraging values were reported initially. This resulted in a flurry of activity in the 23 fm. level around the New Shaft but much of the ground had run and working conditions were dangerous. Forced ventilation had to be introduced into the level and a door was erected in the DBL to further assist the air flow.

Joe Nile's reports of this period illustrate the perilous nature of his task and he makes continual reference to scrambling through partly collapsed stopes and wading through chest deep mud in the quest for decent ore grades. It must also be remembered that he was a considerably younger man than Argall and one can only presume that Argall had not managed to gain access to many parts of the mine on account of the sheer stamina involved.

Despite great efforts, only about half of the workings on the 23 fathom level were cleared out and the sample values showed that the block of ore was not as rich as had been anticipated. Brief attention was also paid to the older parts of the mine and Upper Boat Level where some ancient stulls were replaced before they failed and added the burden of extra water descending to the Deep Boat Level.

A new lode, containing barytes was reported to outcrop 250 metres east of the compressor house and another previously unknown lead - zinc lode was reported lying close to it. However, they had used their budget completely and it was decided that it was not justified to inject further capital into the Nantymwyn Mine.

A receiver was appointed to liquidate the assets of The Nantymwyn Mine Ltd. late in 1932 the plant was then dismantled and shipped to South Africa in 1933 or 1934. The Company was finally wound up in 1937. Many of the miners then found employment in developing and working the Roman Deep Mine at Pumpsaint but Joe Nile returned to Cornwall with his family.

In 1942 Thomas Eastwood, the Assistant Director of the Geological Survey prepared a report on the Nantymwyn Mine for the Larke's Committee and the Non Ferrous Minerals Supply Department. In Eastwoods own words, he was being "agitated" by Moelwyn Hughes M.P., and many of the ex miners,

to re-open the mine as part of the wartime proposals to increase the domestic supply of base metals. A thorough job was made of reviewing the available records and plans but this did not lead to any further development.

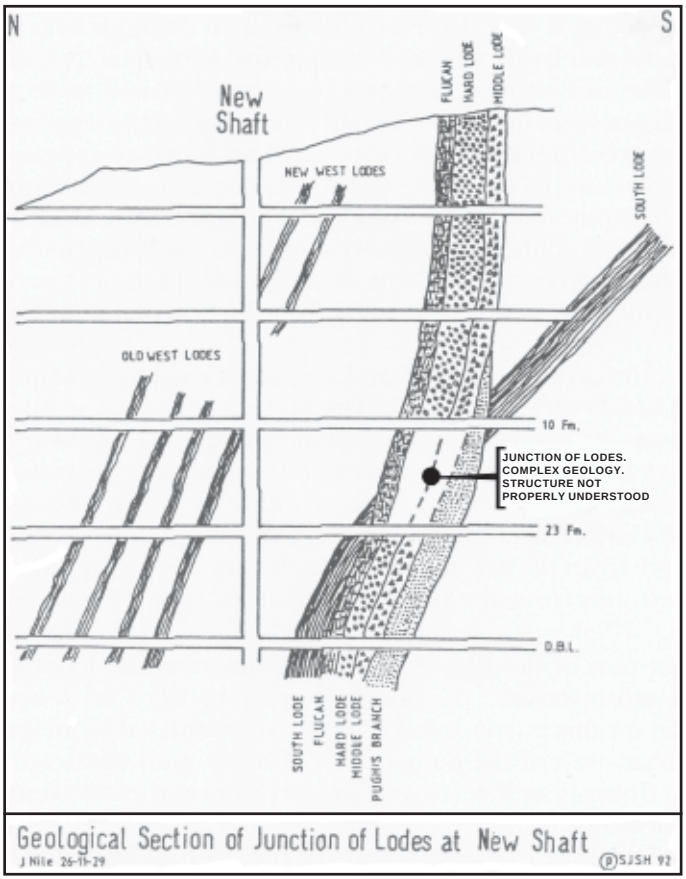
The Economic Forestry Group purchased the mine and surrounding area from The Earl Cawdor circa 1966. The greater part of Pen Cerrig Mwyn was then deeply ploughed which destroyed many of the old dump profiles. In addition, some of the larger development dumps, particularly those from the Boat Levels, were carried away for construction purposes.

In about 1969 the remains of the development dumps from the Deep Boat Level were carried away for the construction of the nearby Briane Dam. The contractor carried away the whole of this 2.5 hectare dump, containing maybe 250,000 tonnes of rock, and restored the area to low grade agricultural land.

Considering the former extent of these workings, it is remarkable how little is now accessible. The records of the Sulphide Corporation show that when they abandoned the site in 1932, Joe Nile ordered that all the mine entrances should be blocked up. Also it is probable that there are parts of the mine which have been inaccessible for many centuries. The 1870 survey ignores all the previous work on the Old Vein and the South Lode; in my opinion, these plans may show as little as 50% of the workings. These conclusions were also made by Joe Nile when the mine was active and conditions must have worsened considerably in the half century that the mine has been closed.

The Angred Shaft is easily located as a subsidence cone on the western end of the old chimney stack. Some subsidence is known to have taken place prior to 1942. The name Angred is taken from a neighbouring homestead of Anghred (Disbelief), this shaft is sometimes incorrectly called Angharad or Angred's Shaft. The Shaft was sunk after the development of the Angred Level which was commenced from a point about 280 metres east of the homestead and ran through glacial till before striking rockhead. This area was later covered by the Sulphide Corporation's tailings and a conifer plantation in the mid 1960's. The eastern end of the Angred Level communicates with the Roderick Lode and appears to have eventually broken out to surface near the Nant Gwyn stream. Lewis's Level follows a similar course and also appears to break out to the surface below the Shallow Level (Cadno).

The Upper Boat Level has its portal on the southern bank of Nant y Bai. Most of the area has been buried by later dumping. Water emerges from the crown of the cross cut and only in times of drought is there sufficient air space to permit entry. An air shaft a few metres from the mouth, has been filled with soil which now completely blocks the passageway. This was tunnelled through in the mid 1960s but another shaft in a similar condition



Geological section of the lodes at New Shaft, as sketched by Joe Nile very shortly after being appointed mine manager in 1929.

was met with at about 100 metres from the portal and the project was abandoned.

It is reputed that some of the small iron barges used to remove the ore have been abandoned in this adit but I am unable to confirm this. Only two plans of this adit are known to exist, one shows a single cross cut whilst the other shows two passing loops driven parallel to the main cross cut. There is certainly the probability that passing loops were constructed as it would have been difficult to maintain an un-interrupted flow of traffic without such devices in a narrow tunnel.

The Footway is another feature which can easily be missed and is the heavily lagged structure in the batter above the hairpin bend in the road by the concrete mill foundations. Due to the nature of the timbering, there can be

no doubt that it was driven some distance through heavy overburden. The portal was badly smashed during road making activities in the mid 1960s. The area above the portal has been flattened with a bulldozer and this excessive ground pressure may have caused the lagging to burst a few metres in from the present entrance. This footway appears to have been in regular use in the early 1930s and is clearly visible on contemporary photographs. Why the Sulphide Corporation should have continued to use this level is not immediately apparent, I suspect that it provided a safer means of egress for the New Shaft than could be obtained through the Maescarhyg Level which seems to have been abandoned by this time.

Level Tan lies within fairly thick woodland across the road from some extensive dumps of hand cobbed material. The highest of the reservoirs which still holds water lies on the same horizon. The portal has badly slumped and appears to have been a simple construction of two stone walls with some poles across the top. This working is likely to date from the 17th century and could be of archaeological interest. The origin of its name may derive from the use of fire setting during its construction or possibly that the fumes from the mine may have escaped by way of this level.

Despite the greater part of the 19th and 20th century mine site having been destroyed by afforestation, the southern part of the Old Vein outcrop is too barren for this purpose and remains in. a remarkably intact condition. The combination of the huge quartz outcrop with opencasts and ancient dressing floors is well worthy of preservation and excavation as an undisturbed medieval mine.

At the Deep Boat Level site, the reclamation of the land has been quite successful with the mill and dumps having been removed for hard-core after which the site has been re-seeded and is now used as a campsite and low grade agricultural land. The portal is visible in the garden of the houses known as “The Dry”. However, it has slumped baldy and the masonry lining through the overburden is obviously damaged. Between 1887 and 1900, two shafts were sunk to communicate with the Deep Boat Level. One was apparently used to improve the ventilation but the purpose of sinking a shaft within 60 metres of the portal is difficult to explain logically. I suspect that this shaft may have been sunk to repair the stonework where it joined the rock. The level is reputed to be 10 feet square (3.05 metres) and has been driven as a drift through the grit beds. From its portal it has been driven northeast in an almost straight line for 620 metres before swerving to the east where the first of the stopes are encountered. Its furthest point from the portal is below Level Goch, a distance of 1200 metres. There are very few cross cuts driven off this drift, within the ore shoot a short cross cut was

driven southwest to cut through Pugh's and Tank's Branches. Between the portal and the Airshaft, a 120 metre long cross cut named "The Drift of Pannau" has been driven east for no apparent purpose, it is reputed that this was the source of the quartzite but I am more inclined to think that its purpose was purely exploratory.

The portal of the Shallow Level (Cadno) lies some twenty metres south of a forest track which allows particularly easy access to this open adit. It appears to have been closed up after the Sulphide Corporation withdrew circa 1932 but was dug open by the late Bruce Foster in 1962-63. As its name was not known it was christened Level Cadno on account
of foxes being regularly seen in the vicinity. This name continued to be used by the Cwmbran Caving Club from 1966 onwards during their exploration of the accessible workings. The South Cardiganshire Mining Club also called this adit Level Cadno in the late 1970s when further abortive attempts were being made to gain access to the Principal Lode workings.

The position of the portal of Level Pannau can be taken approximately as being in the centre of a slump on the western bank of Nant Gwyn stream, on the same horizon as the mine dumps to the Northeast of Panau Street at the northern end of Rhandirmwyn village. The original spelling appears to have been with a single "N" whilst another variation, shown on the sections, is Panny. The adit is amongst the simpler workings on this site and is restricted to a meandering drift along the Roderick Lode with a rise to the Angred Level and other levels.

Another rise was put up on the back of the adit to communicate with the surface some 150 metres northeast of the portal, the function of this rise appears to have been partly to explore the value of the Roderick Lode and also to improve the ventilation. The sections show workings below Level Pannau which are not shown on the plans. These are of little consequence and appear to drain by way of cross cuts to the Upper Boat Level on Principal Lode. These sub levels below Level Pannau appear to have been the route described by Davies in 1815 as he passed through the mountain.

Most of the surface workings between Conscience Shaft and Top Level have been so badly damaged as to be uninterpretable with any degree of accuracy. The large dump above the Footway may be the development rock from Level Goch. With the other dumps, their profiles have been so significantly altered that it is difficult to judge if they are derived from adits or shafts.

There are also scores of ancient hush gutters which run across the site to the north and east of the Angred Shaft. The 20th century workings and later afforestation have damaged these but not to the extent of making them uninterpretable, except within the forest.

There are probably the remains of various mills and a canal wharf buried under the dumps near the mouth of the Upper Boat Level on the southern bank of Nant y Bai. The remains were fairly intact according to the 1946 aerial photographs which supports the Ordnance Survey in showing that this complex is likely to be more extensive than portrayed by Warwick Smith in 1792. The 1884 Ordnance Plans show a group of 13 buildings in this area but it seems that the crushing mill and wharf had been altered prior to their abandonment in 1900. I suspect that the three southern most buildings are of some antiquity and may date from the commencement of the adit in the 18th century and that these are the original stamping mill, smithy and smelting works. The embankment which runs to the south east of these buildings may have been a furnace flue and the walls to the north may be part of the canal wharf as illustrated in 1792.

It does not seem that the Sulphide Corporation undertook much work in this area except for removing some of their development rock by way of the Upper Boat Level. Reports firstly mention falls and diversion of water which suggests that the adit was completely impassable but later reports refer to replacing stulls. Eastwood appears to have been able to enter this part of the mine in order to conduct a brief survey in 1942, by 1946 the portal had started to slump but continued to discharge water. My discussions with the late Bruce Foster revealed that the portal had completely collapsed by 1963 and that the water level lay above the crown.

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John Hine of Coleford for copies of the 1876 version of the mine plan and section and assistance rendered in examining the old workings.

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Mrs Mary Jones of The Dray, Rhandirmwyn for odds and ends of oral information which was of great use in tying up loose odds and ends regarding Octavius Davies, Captain Argall & Joe Nile.

John Parker of Cwmbran Caving Club and the Cave Diving Group who tried on several occasions to get into old workings with Alun Nutt and others.

Letters & Manuscript Notes of Lewis Morris and his family in various collections at The National Library of Wales.

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