

## RESULTS OF INVESTIGATIONS AT VAN MINE, FAN, LLANIDLOES.

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26th July 1992.

### INVESTIGATION OF THE INDUSTRIAL ARCHAEOLOGY OF VAN MINE.

Most of numbers used in this report are those used to identify the features in David Bick's report of the 5th March 1991. Discoveries made during the present works are appended with letters e.g.; 12 & 12a, 19 & 19a, 31 - 31a - 31b - 31c Etc.

To the north of the road from Van Terrace to Van School and Manledd Uchaf are the remains of the primary crushing mill, sawmill, mouth of the main adit Etc. The extent and purpose of most of these remains are readily identifiable but, as they lie on private property, they were not included in the present study. However, these features are worthy of some additional commentary.

The remains in this area being :-

Feature No. 1 - Tramway from primary ore bins below the No. 45 Main Adit. This was probably constructed in the late 1860's when the value of the lode was realised. It does not lead directly from the No. 45 main adit, but from the No. 44 surge bin. From here the tramway originally lead to the No. 3 or No. 4 Crusher House but in later years was redirected over the road by way of the Nos. 6 & 7 stone piers to the No. 10 ore bin above the new crushing plant. The tramway was in use throughout the productive life of the mine, i.e. 1866 to 1921.

Feature No. 2 - Retaining Wall, to prevent soil movement onto the course of the No. 1 Tramway from the No. 44 Surge Bin to the crushing plants.

Building No. 3 - Engine & Boilerhouse. Probably erected between 1866 and '68 to run the primary crushing plant in times of drought. This feature is clearly depicted in the illustration of the mine presented in Montgomeryshire Collections Vol. V and also in the photograph of circa 1890. It would appear to be the first of the thirteen steam engines which were erected at the Van Mine. In the photograph taken circa 1904, the chimney had been demolished though the buildings remain intact and appear to be in the same condition in the circa 1914 photograph. By 1925, the greater part of the complex had been largely demolished and the chimney removed, this probably took place circa 1916 when the new plant was comissioned.

Building No. 4 - Wheelpit & Crusherhouse. Constructed in the latter part of 1866 to accomodate the 50 foot Mary Emma waterwheel from the Bagillt Foundry. Prior the the erection of the Blencowe Consols Engine late in 1875 or early '76, the Mary Emma wheel also operated the pumps in the No. 51 Old Engine Shaft and later at the No. 47 Seaham's Shaft by means of a line of flat rods, these are visible in the engraving of the mine circa 1870.

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Building No. 5 - Enginehouse for Sawmill. Probably built circa 1871 or '722. It does not feature in the early engraving of the mine but is shown on the 1886 Ordnance plan and a detailed view is available in the circa 1890 photograph. It was unchanged in the circa 1904 and 1914 photographs but is derelict in the photograph taken circa 1925, at which time part of it it was evidently being used as a cart house but the chimney stack had been demolished. It was in a similar condition in 1938 but was evidently demolished shortly afterwards.

Feature No. 41 - Culvert. This carried the water flowing from the No. 45 Main Adit, the overflow from the No. 42 reservoir and the stream which was culverted under the No. 46 Incline to Seaham's Shaft.

Feature No. 42 - Pond. To hold water flowing along the leat from Top Pool to the No. 4 Mary Emma waterwheel, and probably to supply the dressing floors. The supply appears to have been supplemented by the stream which runs into the area from the north.

Building No. 43 - Long Shed. Which was apparently used for the carpenters shop but there is no evidence to confirm this. The greater part of the building is still standing but has been slightly shortened after the south gable end fell out. Ironically, this was one of the first buildings to be erected on the site and is now the only intact building with the exception of the offices and houses.

Feature No. 44 - Loading Bay ( Surge Bin ). To hold ore trammed out of the No. 45 Main Adit and used to feed the crushing plants by way of the No. 1 tramway.

Site of No. 44a - Site of a Steam Engine & Boiler probably to drive an Air Compressor. This was erected prior to 1886 and survived unchanged until 1938, it is visible in all of the photographs of the site taken prior to this date. As with the other enginehouses, an octagonal brick chimney was erected, in this case on the eastern wall.

Feature No. 45 - Main Adit. Commenced about 1850 and then suspended in 1852. Recommenced late in 1862 or '63 by Captain William Williams and finally cut the lode in August 1865. It remained in use until the mine was abandoned and was accessible until about 1947 when an effort was made to prevent children exploring it. In 1967 water, about 1.25 metres deep, was impounded behind a soil dam. In the late 1970's a hole was cut through the crown to divert the stream. Access is unfortunately no longer possible.

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Above the portal was mounted a stone plaque bearing the following inscription :-

The Van Mining Company Limited  
Incorporated February 1869

T. C. Munday Esqre. Chairman

William Pace Esqre.  
Julius Alington Esqre. Directors.  
F. L. Slous Esqre.

W. J. Lavington Esqre. Secretary.

Capt. Wm. Williams. Manager.

The stone plaque was removed by D. Morgan Rees in May 1967 and now lies in The National Museum of Wales in Cardiff. A tramway laid along this adit which terminated at the No. 44 Surge Bin.

Above the No. 45 Main Adit lies another area of important remains which are defined as :-

Feature No. 46 - Incline from Seaham's Shaft. Originally used to carry coal and supplies up the hillside. The lower terminus was located about five metres north of the No. 45 Main Adit. There are many details of this,

and the other inclines which are not easy to explain. The No.13 Railway Tunnel is aligned with the lower terminus as if, at one time, it was intended to haul the main gauge coal waggons up the hillside to prevent double handling. However, in a photograph taken circa 1904, and another of 1938, it is quite obvious that the gauge of the incline is about 24 inches. It is reputed amongst the older inhabitants that the coal was unloaded near the mouth of the tunnel and carted to the base of the incline and, in later years, that the incline was abandoned with the coal being carted by road to Seaham's Shaft. It is also reputed that at one time the coal was carried up the adit, in tram waggons, and wound up the shaft to the surface. Both the 1886 and 1901 Ordnance plans shows a single track incline running up the hillside with a balance incline ( No. 52 ) running down the hillside to the west. However; the photograph of the main incline taken in 1904, and another taken in 1938, shows that there was a double track on the incline from Seaham's Shaft thus suggesting that the No. 46 incline was self acting, maybe on the water balance system. The No. 52 balance incline to the west apparently ran a truck, weighed with cast iron, up and down a single track to balance the load whilst lifting lengths of rising mains and pumps in Seaham's Shaft.

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I have also seen reference to there being a third incline which ran from Seaham's Shaft to a terminus above the No. 42 Pond to the west of the No. 45 Main Adit. The bed of this middle incline is shown on the 1886 Ordnance plan whilst on the 1901 edition it is marked as a footpath. In the photographs taken circa 1890, 1925 and 1938 the course of this middle incline is clearly visible as being substantially more than a footpath. In a very detailed photograph of the Enginehouse at Seaham's Shaft taken in 1938, the head of this incline is clearly visible as being aligned with the southern leg of the 90 foot pump shears. This leg is bifurcated near its base and fitted with a small sheave for a capstan rope and I am of the opinion that at one time the middle incline served as a balance to ease the load on the capstan instead of the No. 52 incline. However, it must also be remembered that the flat rods connecting the No. 4 Mary Emma waterwheel to the No. 51 Old Engine Shaft, and later the No. 47 Seaham's Shaft also followed this route from 1866 until 1875. This hardly explains the excellent condition of the obviously recently used, well paved, flat and straight route which is visible in the circa 1890 photograph.

Site of No. 47 - Seaham's Shaft, Which was the principal shaft of the Van Mine. The shaft was commenced in 1868 to replace the Old Engine Shaft and whilst it eventually reached a depth of 180 fathoms ( 330 metres ) the bottom level was the 120 fm. below adit with a sump of 30 fathoms below that. The shaft was open in 1938 according to photographic evidence and in 1967 I recall that the collar had failed leaving a crown hole of about 10 metres in diameter by about 7 metres deep. In the bottom of the crown the mouth of the shaft was visible, measuring about 2 x 3 metres.

Feature No. 49 - Chimney stack in yellow brick. Probably built in 1875 or '76 for the boilers which supplied the steam for the 70" Blencowe Consols Engine.

According to both editions of the 1:2500 Ordnance plans, the mouth of Seaham's Shaft lies 26 metres northeast of this feature. This is the only chimney on this site which is intact but its condition is deteriorating rapidly.

Feature No. 50 - Damaged chimney stack in yellow brick to serve the winding engine and boilerhouse which was located about 22 metres north of Seaham's Shaft. There are no remains of either the enginehouse or boilerhouse. The mouth of Seaham's Shaft lies 40 metres to the southeast of this chimney according to both the 1886 and 1901 Ordnance plans. The winding engine was orientated at 90 degrees to the pumping engine and ran two flat ropes, probably off independent drums. It is reputed that the winding engine was also purchased second hand and by 1921 was in such a badly worn state that the Mines Inspector refused to allow its continued use unless the brakes, piston rings and packings in the stuffing boxes were replaced.

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Feature No. 52 - Balance Incline. Located to the west of Seaham's Shaft. A waggon weighted with cast iron ran upon this track with a cable connected from the waggon, around a drum at the incline head, and back to Seaham's Shaft to ease the load on the capstan when lifting pumping gear. This is not apparent in the 1938 photograph of Seaham's.

Feature No. 53 - Tramway embankment for the conveyance of stone from the No. 57 Quarry to Seaham's Shaft. Its course is marked on the 1886 Ordnance plan but it appears to have been abandoned by 1901. It is not apparent in any of the old photographs of the site.

Feature No. 54 - Bridge abutments to carry the No. 53 tramway from the No. 57 Quarry, over the stream, to the No. 47 Seaham's Shaft to provide rock for backfilling stopes.

Feature No. 55 - Original discovery adit. Also called

Williams's Adit sometimes. Commenced in about 1852 and driven for about 250 fathoms ( 450 metres ) along the lode. Ten fathoms from the end of the heading, an air shaft has been put up about 15 fathoms to the surface. At 80 fathoms from the portal, a rise was put up to communicate with the No. 56 Shallow Adit and in 1862 a winze was sunk some 20 fathoms beyond the rise. After about 15 fathoms of sinking, promising ore was encountered but the miners were forced to abandon this on account of the influx of water and turned their attention to the No. 45 Main Adit. The No. 55 adit was reopened 1986, when Oncy Nathan was attempting to re-develop the mine, and found to be totally flooded. The timber lagging was replaced as part of the access agreement with Miss Mary Mills of Manledd who draws her water supply from here.

Feature No. 56 - Shallow Adit. Also commenced circa 1852 and driven as a drift along the lode for about 80 fathoms ( 145 metres ) before being abandoned. The mouth of the adit has been badly slumped for many years.

Feature No. 57 - Quarry. Probably commenced in the 1870's

possibly to provide building stone and later used to supply rock for backfilling stopes. The No. 53 tramway was originally used to carry this fill.

Feature No. 58 - Central or Hill Shaft. Also known as the No. 3 Shaft. Probably sunk in 1870 or '71 reputedly as a pass for taking backfill into the mine. However, neither of the Ordnance plans confirm that the tramway ever connected with this shaft. It is possible that the shaft alongside the tramway, referred to as the No. 2 Shaft in my report of 5th March 1991, was used as the pass and not the Central Shaft as previously suggested.

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The areas in which the investigations took place are known as the middle flooring and the halvans mill or lower floorings. This area has seen continual change of use since the development of the ore body after 1867 and this is particularly obvious in the halvans mill area. Generally, at least a metre of jig tailings have been deposited over the area since the mine was abandoned in the 1920's. Some of the movement of the tailings is due to natural erosion by wind and water but the most significant movement occurred in the early 1970's when the site was tidied up and the aluminium waste was buried.

Following extensive excavation, three groups of remains were identified :-

- (A) The Piers area.
- (B) The Tunnel area.
- (C) The Halvans Mill area.

In the Piers Area the following remains were identified :-

Structure No. 6 - Stone Piers. Six brick and masonry piers each measuring 1.850 x 0.610 metres and spaced approximately three metres apart. The northernmost pier stands 3.850 metres high. They were built during the very last phase of working, maybe 1914 or 1916, to carry ore from the main adit to the newly built No. 10 primary crusher plant. The original water powered No. 4 primary crushing plant appears to have been demolished some time before the construction of the new plant. The tramway is known to have survived until after 1930.

Structure No. 7 - Wide Stone Pier.  
Measuring 4.400 x 0.610 metres and standing 5.090 metres high.

From studying old photographs, it would appear that this pier formed part of the back wall of the new No. 10 crusher plant.

Structure No. 8 - Chimney Base. This must have served the mill engine in building No. 9. As with all of the other chimneys at Van Mine, the base is square with the upper part, now missing, being octagonal and topped with a fluted cast iron cap. The chimney base measures 2.060 x 2.310 metres and stands about four metres high including its stone plinth. The full height of the original structure is difficult

to judge from contemporary photographs - maybe 20 metres. It would appear that the chimney and # 9 enginehouse were built in the early 1870's, they appear on both the 1886 and 1901 Ordnance Survey plans , also in the photographs taken from about 1890 until 1925. Evidently the chimney was needlessly demolished in about 1948 to '50 as a source of cheap bricks for the community. There are sufficient yellow bricks in the immediate vicinity to consider a partial reconstruction.

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Building No. 9 -  
Foundations. This was the

Engine House &

discovery on the whole

most spectacular

site. A group of 20 large blocks of millstone grit have been carefully hewn and fitted together to form the foundations of a mill type beam engine driving a flywheel. This type of engine was a very popular prime mover in the 1850's and, as there are signs of the blocks having been re-erected, it is quite possible that the engine was purchased second hand in the early 1870's. The use of millstone grit suggests that the engine was of Northern origin, rather than Cornish, and it is notable that there were several manufacturers of these engines based in Birmingham. Easton, Amos & Co. of Birmingham are known to have produced a very similar type of engine at that time. Cut into the blocks are recesses for cranks, holes for tie rods, joist sockets for the floor; part of the base flange of the 30" cylinder and tie rods are visible as is the main 6" steam inlet. A further feature of all the blocks is that in the upper face is cut a slot, generally 7 x 3 cms., and at least 12 cms. deep; these are nothing to do with the engine and would have been cut into the rough blocks in the quarry to enable a lifting eye to be fixed into the blocks using inverted wedges which would tighten when lifted. It was expected that behind the No. 9 Enginehouse a flue would be uncovered leading into the No. 8 Chimney but this was not proven; excavation of the area to the north and west of the Enginehouse may reveal further details. At 30" bore, this engine was one of the more powerful in this style. In the centre of the block is a 750 mm. deep hot well which, during excavation, showed signs of being lagged with caulked planking. In the course of excavation the front wall and western side wall were uncovered which suggested that the overall dimensions of the enginehouse were six metres wide by nine metres long. The eastern wall may lie beneath the brick piers which have become separated from the No. 10 crusherhouse, this area was not investigated as it was not possible to remove the debris without a crane. In the 1890's, two similar buildings can be seen abutting the enginehouse to the west, these would appear to be a boilerhouse and coal bunker. By about 1914 the middle building appears to have either become derelict or had been demolished which would suggest that the boiler was accommodated in the westernmost building. It was not possible to cut a trench across this area but it can be seen that the site has not been disturbed at depth and it is therefore likely that the foundations remain. A further feature of the enginehouse which is discernable in the 1890's photograph is a line of flat rods running to a tee bob above the No. 29 Pit alongside the No. 30 Enginehouse behind the Halvans Mill. The purpose of these rods is not immediately apparent and it can be speculated that they operated a

recirculating pump. The rods are not visible in photographs of the mine taken in 1904 and afterwards. The No. 9 Enginehouse is visible in all photographs of the site until 1938 and appears to have been demolished shortly thereafter.

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Building No. 10 - Brick Pier with  
Concrete Base. This

is an elevated foundation block for the new crushing plant which was installed in 1914 to '16. The elevation of the flat topped concrete block suggests that a jaw crusher was placed below a coarse ore bin and discharged into a bin located at the foot of the final No. 7 pier. The walls of this lower bin are visible on two sides with a launder leading through the wall immediately behind the brick pier, but as gasworks waste has been dumped in the area it was decided not to excavate. Several brick piers have become detached from the block but could be re-erected or rebuilt without too much difficulty. This is absolutely necessary to prevent the collapse of the rest of the structure.

Alongside these remains lie :-

Feature No. 11 - Concrete Block. A  
particularly solid foundation with two  
rows of three small

studs set 1.10 metres apart. Its use is not apparent. Whilst this was not used as a temporary bench mark, it is worth noting that the surface of this block lies at 175.00 metres.

Structure No. 12 - Brick Wall, with two long tie rods which suggest that whatever piece of machinery was housed within the structure lay three metres above the top of the brickwork, at an elevation of about 178.80. In all of the old photographs of this part of the site a tall building, about 3.5 metres square, can be seen but its function is not apparent. The 1886 Ordnance plan shows this building as standing to the east of a dressing shed and the 1901 plan also shows a tramway running into the back of the structure. It is possible that the building may have been some kind of ore bin.

Site No. 12a - Site of Reservoir, To the northeast of the No. 12 building; on both Ordnance plans, a small reservoir is marked; in 1886 this measured about 10 x 16 metres but by 1901 it appears to have become silted up and was reduced to two smaller pools of 8 x 10 and 8 x 4 metres. It may have been used to impound water for use in the adjoining dressing sheds where the buddles were housed. There was no reason to excavate this area.

Features Nos. 11, 12 and 12a can not be said to be aesthetically attractive or representative of a typical style and their original purpose is uncertain, consequently they are of little value and hardly worthy of preservation.

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Within the Tunnel Area, the following features were either already apparent or were delineated by excavation :-

Feature No. 13 - Railway Tunnel, originally 28 metres in length but 10 metres has now collapsed. This is still the main feature of the mine and I believe it to be unique in British metalliferous mining practice; as such an attempt ought to be made to at least consolidate the existing remains or preferably to rebuild the damaged portion ( 13a ) and re-erect something akin to the original facade as depicted in contemporary photographs.

Feature No. 14 - Manholes, one open and two now sealed up with brickwork. All are offset to the west of the centreline and measure 90 x 90 cms. The open manhole is predominantly to blame for the present condition of the tunnel as it allows the influx of water and fines during rainstorms. Their original use appears to have been for loading the railway waggons with concentrates, probably from building No. 15. Since the abandonment of the tunnel about three metres of silt have accumulated on the floor giving the present structure the appearance of being much smaller than it is.

Building No. 15 - Building. Measuring about 5 x 8 metres internally, with a dividing wall. The most logical explanation of its useage was probably as a concentrate store. It is shown on the Ordnance maps of 1886 and 1901 and all of the photographs from 1890 to 1938.

Feature No. 16 - Walls. Upon excavation this feature was proven to be a brick lined cistern partly buried in jig tailings. A metre to the west, at a metre below the surface a launder filled with concentrates and tailings was found to be in situ. It is noteworthy that the inside of the launder was, in places, stained canary yellow with cadmium salts presumably derived from the zinc concentrate. Two samples showed the following content :-

Cd	Pb	Zn	pH
154 + 179 ppm	3.9 + 4.1 %	2.3 + 2.8 %	4.4 + 5.2

Feature No. 17 - Course of wet weather drainage gully.

Building No. 18 - Building. Measuring 10 x 16 metres with a hipped roof. It lies alongside the original facade of the railway tunnel, it appears in all the contemporary photographs up to 1938 and is shown on both the 1886 and 1901 Ordnance plans. Originally, the walls were of rubble filled double skin construction but the inner skin has now become detached and the remains are in a poor condition. Its use is not apparent.

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Building No. 19 - Machinery Foundations, within a building measuring 7 x 15 metres. The present foundations appear to date from about 1916 and are almost certainly for a large gas engine. Prior to this, the building housed a steam engine and in a photograph taken circa 1890 a

tall octagonal yellow brick chimneystack abutts the southern gable end. This chimneystack also appears in a photograph taken circa 1904. There are no present day indications of this stack and it would appear to have been demolished in about 1916.

Building No. 19a - Annexe to No. 19 enginehouse measuring 2.5 x 9.5 metres. Mostly filled with a mixture of tailings and masonry. The eastern wall of the annexe has a doorway into No. 19. The building was not excavated during the present study and its use remains unknown. Originally, this annexe formed part of the No. 20 boilerhouse according to the photographic documentation which is available. However, the Ordnance maps of 1886 and 1901 show this area as a gap between building No. 18 and buildings Nos. 19 and 20. This is in conflict with the photographic evidence and the evidence obtained during the present survey. It must therefore be concluded that what was originally a small unroofed area was covered over circa 1914 - '16. It may have originally been a coal bunker but this is not proven.

Feature No. 20 - Low Wall,  
which at one time was two

buildings alongside the No. 19 enginehouse. Presumably the nearest one being the boilerhouse and the furthest possibly being the coal store. Upon the removal of the steam engine and chimney from the No. 19 enginehouse, the coal store was converted to a tenement sometime prior to 1914. The building was then whitewashed and formed a very distinctive feature in the photographs taken circa 1914, 1925 and 1938. It is reputed to have been demolished in about 1939 or '40.

Feature No. 21 - Brick structure. Use not apparent. The building surrounding it appears to have been the coal shed for the No. 19 engine which was converted to a tenement prior to 1914.

Feature No. 22 - Walls, probably the  
small lean to shed

which was built alongside the coal shed after it had been converted into a tenement building. This was also whitewashed and forms a distinctive feature.

Feature No. 23 - Wall, most recently  
being part of the

tenement building. This 5 x 9 metre room was fitted with a cast iron range and a primitive sink, or urinal, in the corner. A 2" iron pipe leads from this low level cistern to the slime pits. Part of the floor is constructed of well laid yellow brick which is heavily worn in places.

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Feature No. 24 - Wall. Which was  
followed for nearly 30

metres until it became badly damaged near the right of way across the dumps. A definite gap of 40 cms. had been constructed in the middle for the No. 24b launder to pass into the No. 24a slime pits. According to the c. 1890 photograph, but not the 1886 or 1901 Ordnance plans, a building with plank walls ( similar to the Halvans Mill ) lay immediately to the north of the slime pits and it must be

presumed that the No. 24 Wall formed the footings. No remains of the wall, or internal structures, were found to remain.

Feature No. 24a - Walls, which upon excavation proved to be a series of slime pits in relatively good condition. One pit, 15 metres long, was completely excavated and five others were partly excavated. One other pit was observed but not excavated. It is a particularly large series of pits and are well floored with stone slabs. These pits are shown on the 1901 Ordnance plan but not the 1886 edition and, as they lie below ground level, they are difficult to identify in most of the photographs. According to the 1901 Ordnance plan, the overall width of these pits was about 18 metres. In the 1890 photograph, a launder box can be seen leading from the southern edge of the pits to the No. 32 Discharge Shaft.

Feature No. 24b - Launder. Presumably for the conveyance of the barren slimes pulp from the buddles to the slime pits. Its construction was of pitchpine planks and, in section, measured 22 cms. wide by 18 cms. deep. The launder was followed north in the hope that it would lead to the buddle pits but only a 10.70 metre length had been left in situ. The trench was continued along the same alignment but failed to delineate any other remains by the time it had reached the right of way and was therefore abandoned.

Feature No. 25 - Gasometer Base. A small gasometer for the storage of the producer gas stood on these foundations. This appears to have been 4 metres diameter by about 8 metres high.

Feature No. 26 - Scrubber Bases. The crude producer gas was cleansed of tar and phenols in three x six metre tall steel towers and a final scrubbing was undertaken in a fourth tower which appears to have stood about two and a half metres tall. All the scrubber towers were about one and a half metres in diameter and fitted with several inspection plates and a manhole.

Feature No. 27 - Foundation. Possibly for a pump to suck the gas out of the furnace and feed it under pressure through the scrubbers into the gasometer, dependant on the type of plant.

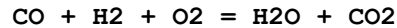
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Feature No. 27a - Gas Producer Furnace Base. Believed to have been erected in 1916 as an economy measure. Originally, the furnace stood about four metres high by two metres in diameter. The construction would have been of curved brick bound with steel sheet. The furnace was normally filled with either coke, or good quality anthracite, which is ignited prior to the furnace being sealed and blown with steam. The heat from this reaction was usually used to generate steam by placing the boiler within the furnace. The glowing carbon combines with and disassociates the steam into carbon monoxide

and hydrogen :-



This can be stored in a gasometer and when mixed with air forms a combustible product which can be used to run internal combustion engines.



The nitrogen content of the atmosphere plays no part in this reaction but, as it is aspirated with the cylinder charge, it does dilute the volume of the combustible mixture within the cylinder to less than 50 % which results in the reduction of the thermal efficiency to about 33 %.

Possibly as a wartime economy measure, the plant was only fitted with a single producer furnace. This was not normal practice as it resulted in engine stoppages whilst the producer furnace was undergoing maintenance and repairs. Also, the reaction is endothermic and the furnace must be blown with air periodically otherwise the temperature falls and the reaction ceases. Incorporating a large gasometer into the system can be used to overcome this problem but is no substitute for a double, or even triple, producer.

A plant of this size would have been capable of producing in excess of 200 B.H.P. A vital part of the plant which could not be traced by the present excavations, or by studying contemporary photographs, was the means by which the fuel was loaded into the furnace. It was common practice to build these furnaces alongside an elevated bunker but no such structure is known to have existed and it is difficult to imagine how the furnace was recharged after the fuel was spent. The plants also normally had a cat walk around the top of the furnace and scrubbers but none is apparent in the photograph. It is also curious that no pieces of burned furnace lining or spent fuel were found during the course of the excavations.

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The structures identified as numbers 25, 26, 27 & 27a are all part of the same plant and should not be dealt with as separate entities. I am familiar with two other gas plant remains in the locality, one at the Cwmystwyth Mine and another at the Bwlchglas Mine. The plant at the Loveden Mine was needlessly destroyed about ten years ago. The gas plant at Van is unique and some effort ought to be made to conserve the remains.

Feature No. 28 - Course of Railway. To the north of Afon Ceryst the topography is such that it was necessary to excavate a cutting in front of the portal of the No. 13 tunnel. Since the abandonment of the mine, this cutting has lost its original profile and I fully support David Bick's suggestion that it would be desirable to restore the cutting to its original form and replace the double track from the portal for about 100 or 120 metres. Whilst building No. 18

retained the western side of this cutting, the eastern side never had any method of preventing soil creep. It would be worth considering the construction of a stone wall between the course of the railway and the road to prevent a recurrence of this movement.

Feature No. 32 - Shaft. This is marked on both the 1886 and 1901 Ordnance Survey 1:2500 plans of the site. I agree with David Bick in that it is most unlikely to be a mine shaft and is probably a drain into a culvert. One such feature was identified during the present work ( No. 29a ) leading into the eastern culvert ( No. 33b ). The 1901 Ordnance plan shows the position of the No. 32 shaft as being 20 metres south of the slimes pit ( No. 24a ) and this does correspond with a feature visible in the c. 1890 and c. 1914 photograph. In the view of the mine taken circa 1890, a launder appears to carry the run off from the No. 24 Slime Pits into this shaft which is confirmed by the Ordnance plan of 1901. The site was not investigated during the present works on account of the considerable depth of jig tailings covering the area though its approximate position has been added to the features on the accompanying 1:100 plan of the area.

Feature No. 32a - Shaft. I am rather disturbed that in

the c. 1904 & 1914 photographs, a headframe is clearly visible about 10 metres to the south of the No. 20 Boilerhouse, very close to the position of the remains of the No. 25 gasometer. The area was not investigated as the possibility of the existence of a shaft did not materialise until this report was being produced; however, its approximate position is shown on the accompanying 1:100 plan.

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Feature No. 32b - Floor. To the south of the No. 24a Slimes Pit and No. 17 stream gully a wooden floor in abominable condition is exposed but was considered to be in too poor a condition to excavate.

Within the Halvans Mill, and surrounding area, the following remains were found :-

Structure No. 29 - Pit. Two rows of five iron rods set 1.20 metres apart were seen to protrude from ruinous masonry and when excavated were found to be tie rods for a construction originally thought to be a wheelpit - housing a wheel of approximately 30 feet ( 9.15 m ) by 2' 6" ( 75 cms ) breast. Further excavation showed the pit to be of such an unorthodox design that severe doubt exists as to whether this was in fact a waterwheel. In the photograph taken circa 1890, the site is hidden behind a trestle bridge leading into the Halvans Mill. The photographs taken c. 1904 and 1914 clearly show the bridge but not the pit. It is not possible to see a launder in any of the photographs. The bottom of the pit is partly culverted with brickwork through which two discharge chutes lead into the No. 33b eastern culvert. The water being discharged into the eastern culvert originates from this pit but, despite a thorough investigation, the culvert appears to terminate within the pit; However, without the complete excavation of the pit, it cannot be dismissed that there is

possibly a culvert running between the No. 32 discharge shaft into the No. 29 pit. It is also curious that the pit should have been backfilled with good grade boulders of zinc blende and, within such narrow walls, it was very difficult to remove these boulders. At the northern end of the pit, it was thought that the western end of the wall had been damaged but further investigation showed that a 1.80 metre wide recess had been constructed, in which was fitted a 2 foot ( 60 cm ) square baulk of pitchpine, at least three metres long. This was obviously contemporary with the rest of the structure as the eastern wall of the pit had been built around it. A very clear view of the surrounding area is available in the photograph of c. 1890. A feature which is located in the vicinity of the pit is that between the east side of the No. 30 Enginehouse and the west side of the No. 9 Enginehouse can be seen a cable running over dollies in the same manner as a pumping rod. Close study of the photograph shows that the cable does not reach the No. 30 Enginehouse but appears to be fixed to a tall upright post to which stays are affixed and appears to be a remarkably tall king post of a pumping bob. It is also quite possible that the pit housed some form of angle bob to operate some reciprocating machine such as a pump. The whole edifice is a curious construction which cannot be properly explained.

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Structure No. 29a - Manhole into the No. 33b eastern culvert which was the subject of a separate report submitted to yourselves on the 27th March 1991 a copy of which is appended. The manhole cover was found to lie only 45 cms below the surface, not 1.00 metre as previously indicated, which threw some doubt on the accuracy of the previous survey.

Feature No. 29b - Floor. Constructed of pitchpine planking butted together and showing moderate signs of wear. About 5 cms. of coal and slack, covered with about 40 cms. of jig tailings, were found to overlies this floor which may have served as a coal store at the time of closure. Manhole No. 29a underlies this floor and was covered with a substantial timber cap.

Building No. 30 - Enginehouse. Thought to house the Stamps Engine, but this was not confirmed by the present survey. Photographic documentation shows that the whole building had been very badly damaged by 1938 and the photographs of c. 1904 and 1914 show no conclusive signs of the engine being in situ. A very clear view of the building is available in the photograph of c. 1890 and whilst smoke is being emitted from the octagonal yellow brick stack on the western wall, there is no sign of the beam protruding through the bob wall on the southern side as would be expected of this type of engine. Stamps engines normally have a very large flywheel mounted in front of the enginehouse and are connected to the beam with a crank and rod. Again, there is no sign of any such mechanism in the photographs nor would there seem to be space for them according to the Ordnance plans of 1886 and 1901. Most photographs of the site show a building located immediately to the north of the Enginehouse and another, with a hipped roof, to the southwest. The most logical layout would be for the boiler to have been located in the northern building where coal could have been dumped down a chute from the track across the dumps, and for the stamps to be located in the

front, and to one side, of the Enginehouse. If the stamps mill was located in this building it cannot have consisted of many heads as the Ordnance maps show that the approximate external dimensions of the building were only 10 x 16 metres- possibly sufficient space for a 20 or 25 head battery. Both the stamp mill and boiler house are now so deeply buried under jig tailings that it was impossible to contemplate their excavation without heavy earthmoving equipment. The No. 30 Enginehouse may have had the front wall demolished in the 1930's and the remains are now difficult to interpret. Whilst it would appear to measure 14 x 10 metres, the original dimensions may have been as much as 14 x 14 metres. Around the building, the two side walls and the back wall were identifiable with absolute certainty. Photographs suggest that the eaves were between 18 and 20 metres above the floor and that the ridge of the roof lay at about 3 metres above the eaves.

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The front wall appears to have fallen out whilst the other walls have fallen inwardly; consequently, there are many tens of tons of masonry covering any surviving engine mountings, tie rods or hot wells. Only limited excavations could be undertaken within the remains and these were inconclusive. The general fabric of the remains was very poor lime mortar barely bonding slabs of shale together. Some brickwork was visible but no conclusion could be obtained as to what the structure represented.

Feature No. 31 - North Wall of Halvans Mill. This appears to have had at least a low masonry wall to retain the bottom of the planking but, where observed, the quality of both the stone and the lime mortar was very poor. The footings of this wall were laid in shallow trenches cut into soil. Generally, the footings are only sunk about 50 cms. into the ground and it is only this portion which remains. They appear to be in an unrestoreable condition due to the quality of the materials used.

Feature No. 31a - East Wall of Halvans Mill. This was of a most unusual construction and consisted of rough sawn pitchpine planks 15 to 20 cms. wide by 2 cms. thick which were butted together with a 5 x 1 cm. strip nailed over the joint to render them weatherproof. No foundations were used and the planks were simply placed in a shallow trench which was then backfilled to retain the structure. The base of this wall was exposed in several places and explained the strange overall appearance of the building in the photographs. According to local information, when the mine was abandoned the planking was broken loose and used to effect repairs on Van Terrace.

Feature No. 31b - Ground Beam Socket

. A more or less

parallel wall, to the East Wall of the Halvans Mill was found at 33 metres distant. A 9" ( 23 cms. ) square ground beam had been laid into a thin concrete pad and was probably used to retain the base of the West Wall of the Halvans Mill. Deep excavations were conducted to the west of the ground beam socket but no floor was found whilst to the east of the ground beam socket, patches of poor

concrete floor were found in a badly damaged condition. Its position equates to the probable position of the West Wall of the Halvans Mill but no explanation can be offered as to why it is not parallel. The floor and socket is so badly damaged that it is quite possible that the machinery may have been blasted off their foundations and this misaligned the socket in the two intersections which were obtained in trenches Nos. 8 & 9.

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Feature No. 31c - Internal Wall of Halvans Mill. A poorly constructed wall, running north - south, at 22 metres west of the No. 31a East Wall. This would appear to correspond with the photographic evidence as the east wall of the second bay of the Halvans Mill. The Halvans Mill was built as three identical bays and it is therefore assumed that another internal wall runs north - south at 11 metres west of the No. 31a East Wall of the Halvans Mill and that the external west wall of the Halvans Mill is 33 metres west of the No. 31a East Wall. The overall external dimensions of the Halvans Mill are therefore 38 metres by 33 metres giving coverage of 0.125 of a hectare or 0.3 of an acre. This more or less equates to the dimensions shown on the 1886 and 1901 Ordnance plans. This was the most disappointing area of the excavation and the remains were not only scant but badly damaged and not particularly indicative of the machinery which had been housed in the mill.

Feature No. 31d - Three Concrete  
Staunchions each with a 47 x 27 cm. wooden insert. Set 70 cms. into the ground. The purpose of these remains unknown, they are too light to have been used as machinery foundations and it is noteworthy that the easternmost staunchion is directly in line with the No. 31c internal wall of the Halvans Mill which does not continue this far north. Maybe wooden columns to support the roof were located on these staunchions.

Feature No. 31e - Launder. Constructed of pitchpine and of 25 x 18 cms. in external section, flowing northwards at 4 % with a vertical feeder at the southern end. Also at the southern end is another launder running into the main one from the west and joining it at 90 degrees. This obviously connected into the No. 33b Eastern Culvert but insufficient time was available to conduct a more thorough investigation. Further investigation would also have necessitated the destruction of the launder. At its northern end the launder was supported on a pitchpine lintel laid upon a poorly constructed masonry wall.

Feature No. 33 - South Wall of Halvans Mill, with the two culvert portals Nos. 33a & b. Whilst the wall is visible in the photographs of circa 1890 and 1914, no contemporary views show either of the culverts. As with the other walls of the Halvans Mill, it appears to have been a but jointed plank construction with a weatherproofing strip over the joints. No traces of the plank wall were seen and all that remains is the facade of the culverts.

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Feature No. 33a - Western Culvert. Built  
in 1870 / '71 and



the subject of a separate report submitted to yourselves in March 1991. The No. 33a culvert measures 1.40 metres wide by 1.65 metres to the crown and is accessible for 49.5 metres before failure of the crown near the No. 30 Enginehouse.

Feature No. 33b - Eastern Culvert. Also built about 1870

and the subject of the report submitted to yourselves in March 1991. This culvert measures 0.85 metres wide by 1.75 metres to the crown and runs into the base of the No. 29 Pit at 51 metres from the portal. A branch leads into the No. 29a manhole beyond which a smaller culvert leads into another pit which was too deep to excavate.

Area No. 33c - Abortive Trench, which was excavated to establish the southwestern corner of the Halvans Mill but, despite a widespread and deep excavation, failed to find any traces of either the No. 33 southern wall or the No. 31b western wall.

Feature No. 33d - Stone Floor. Constructed of rough slabs through which project two timbers. The floor is laid at 0.87 metres above the No. 31b concrete floor. This stone floor was badly damaged around the edges and far from being complete; its use was not apparent.

Feature No. 34 - Ceryst Culvert. Constructed between 1886 and 1890 when the surrounding area was required for dumping jig tailings. During the present works it was discovered that a previously unknown culvert ( No. 34a ) runs into the Ceryst within this culvert.

Feature No. 34a - Small Culvert, discovered whilst cutting trenches Nos. 8, 9 & 10. The purpose of the culvert is not known nor is its point of origin, though the stamp mill, immediately to the west of the No. 30 Enginehouse, appears to lie on its course. A point in favour of the culvert originating in the stamp mill is that it was almost completely filled with slimes rather than jig tailings. Unfortunately, due to the depth of jig tailings covering the northernmost end of this small culvert, it was not possible to reach any firm conclusion regarding its origin. It would appear to have been constructed prior to the No. 34 culvert and may very well date from 1871 or '72 when the Halvans Mill was built.

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To the south of the area of study are further features which are worthy of comment :-

Building No. 35 - Bridge, to carry the River Ceryst under the road and railway. The date of construction must be circa 1870 but it would appear to have been repaired and well maintained since then. The construction of the two arches is in keeping with the style of the mine buildings.

Building No. 36 - Mineral Separation Brine Plant later used as the Paintworks. No excavations were undertaken in this area. Sufficient of the foundations

remain to consider tidying up the area. The process which was used here, as far as I am aware, was unique and typically innovative of mineral processing technology at the turn of the century. The two main companies involved in updating mineral processing at this time were the Elmore Bros. and the Mineral Separation Co. Whilst the Elmore Bros. are well known for the innovative oil flotation process, their business floundered when the Mineral Separation Co. developed and patented far superior processes including froth flotation. This process continues to be the method by which most minerals are recovered and separated worldwide. At Van, the greater part of the mill losses were due to the inability to recover the sulphate and carbonates of lead - Anglesite and Cerrusite. In an attempt to reduce the losses, the Mineral Separation Co. designed a plant where the mill waste was boiled in a strong brine solution which, when decanted and cooled, precipitated crude lead chloride. However, the high consumption of power and reagents did not result in a competitively priced product for the production of metallic lead by the smelters. In consequence, it appears that the crude lead chloride was mixed with linseed oil and sold as paint until about 1939. The plant was housed in a corrugated iron building which can be clearly seen in a photograph taken in 1938. When the mine dumps were sold in 1950, the catalogue comments that they were suitable for paintmaking.

Feature No. 37 - Incline. For carrying the settled slime to the slimes dump. How this functioned is difficult to interpret. The feature is discernable on the 1938 photograph but not definition of detail is very poor. The greatest detail is given in the 1901 Ordnance map in which it would appear that this incline passes under the course of the railway and road via the No. 8 U.S. BA0?

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I do not think that the No. 37 Incline was connected to the main gauge railway line and there is no indication of a tramway linking the incline to the No. 33 Halvans Mill or the No. 24 Slimes Pit.

Feature No. 38 - Under Bridge, constructed of brick and almost certainly for carrying the No. 37 Incline under the railway and road as described above.

Feature No. 39 - Gradient Post. This simple post is of value in the general interpretation of the site and the Van Railway. The 1901 Ordnance plan does not show this feature but does show a sign post ( S.P. ) lying to the south of the railway and road about 110 metres to the east.

Feature No. 40 - Tailings Lagoons. Of little IA value but appears to be of some botanical wetland value whilst undoubtedly of an environmentally undesirable nature.

In a meeting with David Bick and Anne Chapman, of RM&L, on the 11th of June it was decided to adopt the following programme as my official brief :-

Halvans Mill; Allow two days to :-

- a) Establish if the four walls remain.
- b) Dig 3 or 4 pits to see if the floors are extant.
- c) Investigate No. 31d Concrete Staunchions.
- d) Investigate where No. 33b Eastern Culvert enters floors.

No. 30 Stamps Enginehouse; Allow one day to :-

- a) Establish the outline of the walls.
- b) Establish original internal and external floor levels.
- c) Establish position of the Bob wall.
- d) Excavate around iron tie rods.

Portal of Tunnel area; Allow three days to :-

- a) Investigate the extent of building No. 15
- b) Investigate the extent of building No. 16
- c) Investigate the extent of building No. 20
- d) Investigate the extent of building No. 21
- e) Investigate the extent of building No. 22
- f) Investigate the extent of building No. 23
- g) Investigate the extent of building No. 24

Piers area; Allow two days to :-

- a) Dig around No. 9 gritstone blocks.
- b) Dig around concrete blocks to the south of No. 9.
- c) Dig around No. 11 Concrete Block.
- d) Dig around No. 12 Brick Wall.

A further two days were allocated for further investigations in areas to be decided at my discretion; These were predominantly expended on :-

- a) The No. 25, 26, 27 & 27a Gasworks Area.

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Within the Halvans Mill area, ten trenches were excavated between the 11th and 15th of June 1992 to investigate the extent and condition of any surviving remains :-

Trench No. 1                      Dug along the south side of the No. 31 wall of the Halvans Mill, as far as the eastern

wall. The trench was then turned to delineate the No. 31a eastern wall. A poorly defined floor level was observed at 0.50 metres below the surface with undisturbed ground at 1.00 metres below the surface. The undisturbed ground appeared to have suffered a degree of sulphide cementing.

Trench No. 2  
south of the

Was commenced at nine metres

No. 29 Pit, and extended for five metres towards the western side wall of the pit. This uncovered the No. 29b floor and was then turned to delineate the width of the floor, the No. 29a Manhole, and the northern extension of the No. 31b east wall of the Halvans Mill.

Trench No. 3

Followed the eastern wall of the No. 29 pit and showed a layer of ash and clinker at 90 cms. below the surface which overlay orange clay at between 1.00 and 1.30 metres below the surface. The trench was then backfilled and the interior of the No. 29 pit was excavated as far as was possible. It was expected that the bottom of the pit would be filled with sediment but suprisingly, a brick culvert had been constructed which prevented further excavation. A 0.60 metre square baulk of pitchpine was found to span the pit at its northern end and this prevented a full excavation at the open end of the culvert.

Trench No. 4  
intention of finding

Was excavated with the

the foundations of the front wall of the No. 30 Enginehouse, but did not establish any such feature. A substancial ammount of masonry from the front wall appears to have fallen onto this area. After cutting through 1.60 metres of jig tailings, orange clay was encountered. The eastern wall of the No. 30 Enginehouse was also followed but, on account of the depth of the jig tailings, the clay horizon was not reached. It would also appear that the greater part of the eastern wall of the Enginehouse had collapsed into this area.

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Trench No. 5

May be considered as an extension of Trench No. 2 which commenced at four metres to the south and cut 7.25 metres of ground before being terminated. The top of the No. 31e launder was found at 1.00 metres below the surface, and was observed to be lying on orange clay. Whilst this appeared to be undisturbed ground, it must have been excavated in 1870 or '71 in order to construct the No. 33b culvert which underlies the launder. At the northern end of Trench No. 5 a low wall was uncovered.

Trench No. 6                    Was cut around the three No. 31d Concrete Staunchions to a depth of about a metre at which depth orange clay was encountered. The trench proved remarkably little.

Trench No. 7                    Was cut with the intention of proving the south western corner of the Halvans Mill ( 31b / 33 ) but despite an extensive search, in which a five metre square trench was sunk to a depth of nearly four metres ( ie. to about 167 m ), no such features were found. The trench did not manage to penetrate the jig tailings and reach the orange clay horizon. The extent of this trench is shown as feature No. 33c on the 1:100 plan which accompanies this report.

Trench No. 8                    Was a ten metre cut which exposed the west edge of a badly damaged concrete floor with a shallow socket for the No. 31b Ground Beam and the No. 31c Internal Wall of the Halvans Mill. At the western end of the trench, the jig tailings dump was seen to persist below the level of the concrete floor at 167.50 , whilst at the eastern end of the trench the floor had been completely destroyed near the No. 31c Internal Wall. To the east of the internal wall, orange clay lay at the same horizon as the concrete floor.

Trench No. 9                    Was cut parallel to Trench No. 8 at nine metres to the northwest. This also showed a similar sequence of structures to the previous trench. A further cut was taken after the discovery of the No. 34a Culvert to confirm its course and investigate if it passed under the concrete floors to the southeast.

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Trench No. 10                    Was cut parallel to Trench Nos. 8 & 9 at 15 metres to the northwest but, on account of the depth of jig tailings, did not commence in line with the two previous trenches. The only feature identified in this trench was the crown of a yellow brick culvert which lay at a level of 167.67 metres. Upon investigation, it was found to be almost filled with silt and totally impassable. The silt lay at a level of 167.30 metres. Again, the stratigraphy was jig tailings overlying orange clay; but it was shown in the trench section that clay which had been excavated from the course of the culvert had been packed over the structure when it was completed. As with Trench No. 5, this example shows that no reliance can be placed upon the assumption that firm orange clay is undisturbed ground.

The next area to be investigated commenced on the 16th of June

with the remains around the Portal of the Tunnel, the Piers area and finally the Gasworks area, which was completed on the 23rd of June 1992 :-

Trench No. 11            Was commenced alongside the No. 16 Cistern and then carried further west, deepened, and extended to the north and south to delineate the extent of the launder.

Trench No. 12            Was cut along the south side of the No. 24 wall where it was exposed in the bed of the No. 17 stream. The trench was continued for 26 metres in a westerly direction and then stopped so that the right of way was not interrupted. Apart from the wall, no other features were observed and the trench was therefore continued at a right angle where a break in the wall had been encountered. Within 2½ metres the end of a launder was uncovered. As with most of the other launders, it lay on apparently undisturbed orange clay. The trench was terminated at 23 metres north of the No. 24 wall but only delineated the launder.

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Trench No. 13            Was commenced from the front of the masonry blocks in the No. 9 Enginehouse and was terminated after about five metres having delineated the front and western walls. A deep pit was then excavated on the east side of the block but this failed to show the eastern wall of the enginehouse, one of the brick columns from the No. 10 Crusher foundation was pushed into this pit in an attempt to clear up the area. The area between the blocks and the No. 8 Chimney was then excavated, and finally the area between the blocks which housed the base of the cylinder, Etc. These remains were of such a spectacular nature, and had been so difficult to expose, that they were not completely buried when the site was re-instated.

Trench No. 14            Was initiated where the southern wall of the No. 24a Slime Pit was exposed in the bed of the No. 17 Stream gully. The trench was cut from west to east at the front of the wall before the internal part of the structure was excavated. The internal excavations would have taken several days to completely uncover the pits and it was therefore decided to only fully excavate the easternmost pit.

Trench No. 15            Was undertaken to establish the extent of the No. 12 Concrete Foundations and if there were any floors left in situ to the south. A two metre deep trench was excavated across the front of the foundation but yielded nothing.

Trench No. 16                      Was commenced to the south of the No. 12 brick wall and showed that there were two masonry walls abutting the ends of the wall with orange clay about 60 cms. below the surface. The masonry walls were followed south for about three metres but were found to have been totally demolished.

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Trench No. 17                      Was commenced to the east of the No. 23 building and followed the external wall. Work was then transferred to the inside of the building where it was discovered that the brick and concrete floor was largely intact, that a cast iron range had been fitted into the eastern wall and that a slate cistern had been fitted into the north eastern corner with a pipe laid from it to the adjoining slime pits. The walls of the No. 23 building had largely fallen inwards and in the time available it was impossible to clear out all of this masonry.

Trench No. 18                      Was a series of excavations and scraping operations to expose the remains of the Nos. 25, 26, 27 & 27a gasworks on the 23rd and 24th of June. The concrete floor was completely intact and undamaged with the tar pits and the remains of the scrubber bases. The sunken bowl shaped furnace base was completely filled with jig tailings and furnace linings which, when excavated, revealed it to be largely intact. Part of the No. 25 Gasometer base had become detached and was replaced. Following the exposure of the complex it was surveyed and photographed but not backfilled as it was felt to be (a) sufficiently durable to withstand the weather and (b) of a non hazzardous nature.

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#### Photographic Records

A complete photographic record was made of all of the excavations undertaken, and features uncovered, during the course of these works. These are detailed below. Some of the photographs almost duplicate, or mirror, other views whilst some depict features of very little value. Whilst all the photographs have been described, only those in bold type with underlined titles have been appended to this report.

A title board appears in each frame giving :-

- a) the trench number
- b) the photograph number
- c) the feature number or name
- d) the date
- e) a 30 centimetre scale.

These cross references are also quoted in the following list.

Photograph No. 1                      T1-P1-HM / 11-06-92. Butted & Lapped

Planks forming the East Wall of the Halvans Mill. Described as Feature No. 31a within the main text of this report, the frame also shows the corner of the No. 31 North Wall of thre Halvans Mill. Facing west.

- Photograph No. 2            T1-P2-HM / 11-06-92. Corner of No. 31 and No. 31a. Facing north.
- Photograph No. 3            T1-P3-HM / 11-06-92. Partly uncovered No. 29b planking floor. Fcaing east.
- Photograph No. 4            T1-P4-HM / 11-06-92. 9" square pitch pine posts in front of No. 30 Engine house. Facing north.
- Photograph No. 5            T1-P5-HM / 11-06-92. Exposed No. 29b planking floor, showing No. 29a manhole cover, slack & coal under jig tailings, and eastern end of floor by excavator. Facing east.
- Photograph No. 6            T1-P6-HM / 11-06-92. No. 29b flooring with dumps in background. Facing east.
- Photograph No. 7            T1-P7-HM / 11-06-92. General view of the Halvans Mill area, facing east.
- Photograph No. 8            T2-P8-HM / 12-06-92. No. 29a manhole exposed by lifting part of No. 29b flooring. Stonework of culvert is visible below flooring. View facing east.
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- Photograph No. 9            T2-P9-HM / 12-06-92. View into No. 29a manhole with cover lifted. Facing west
- Photograph No. 10           T3-P10-S / 12-06-92. East wall of No. 29 Pit showing tie rods, No. 30 Engine house and jig tailings dump in background. Facing west.
- Photograph No. 11           T3-P11-S / 12-06-92. East wall of No. 29 Pit. Facing northwest.
- Photograph No. 12           T3-P12-S / 12-06-92. East wall of No. 29 Pit. Facing south.
- Photograph No. 13           T3-P13-S / 12-06-92. General view of No. 29 Pit & area. Facing south.
- Photograph No. 14           T3-P14-S / 12-06-92. Partly excavated No. 29 Pit facing south. Showing both walls, tie rods, Trench No. 1 in middle distance withe the jig tailings dumps in the background.
- Photograph No. 15           T3-P15-#30 / 12-06-92. General view of No. 30 Enginehouse facing west and showing relationship to the No. 29 Pit in the foreground.
- Photograph No. 16           T4-P16-#30 / 12-06-92. East wall of the No. 30 Enginehouse.



Photograph No. 17            T4-P17-#30 / 12-06-92. Arched bricks from a window in the east wall of the No. 30 Enginehouse. Buckley Brick Co.

Photograph No. 18            T4-P18-#30 / 12-06-92. Arched bricks from a window in the east wall of the No. 30 Enginehouse. Buckley Brick Co.

Photograph No. 19            T4-P19-#30 / 12-06-92. Western end of front wall of No. 30 Enginehouse.

Photograph No. 20            T4-P20-#30 / 12-06-92. Eastern end of front wall of No. 30 Enginehouse showing possible base of brick well and a pit which was backfilled with cinders and partly burned coals. Facing north.

Photograph No. 21            T4-P21-#30 / 12-06-92. General view of the western wall of the No. 30 Enginehouse facing northwest.

Photograph No. 22            T5-P22-#31e / 15-06-92. North facing view of No. 31e launder in Trench No. 5 with Enginehouse No. 30 and Pit No. 29 in the background.

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Photograph No. 23            T5-P23-#31e / 15-06-92. South facing view of the No. 31e launder in Trench No. 5 with vertical chute in front of title board.

Photograph No. 24            T6-P24-#31d / 15-06-92. South facing view of the three No. 31d concrete staunchions after being exposed.

Photograph No. 25            T -P25-#33 / 15-06-92. East facing view of the No. 33 south wall of the Halvans Mill showing the facade of the Nos. 33 a & b culverts with the Afon Cerist in the foreground. Also in the middle foreground can be seen the No. 33d stone floor.

Photograph No. 26            T8-P26-#31b / 15-06-92. East facing view of the No. 31b ground beam socket with the damaged concrete flooring.

Photograph No. 27            T8-P26-#31b / 15-06-92. West facing view of the damaged concrete flooring with the No. 31b ground beam socket at its furthest end and the jig tailings dump in the background.

Photograph No. 28            T10-P28-#34a / 15-06-92. West facing view of the small culvert discovered in Trench No. 10 with the jig tailings dump in the background. Note the orange clay in the trench walls and how this has been used to cover the culvert.

Photograph No. 29            T9-P29-#31b / 16-06-92. East facing view of Trench No. 9 showing the concrete flooring with the No. 31b ground beam socket in the foreground.

Photograph No. 30            T9-P30-#31b / 16-06-92.    West facing view of Trench No. 9 showing the damaged concrete flooring with the No. 31b ground beam socket at the far end.

Photograph No. 31            T11-P31-#16 / 16-06-92.    West facing view of the launder alongside the No. 16 Brick Cistern.

Photograph No. 32            T11-P32-#16 / 16-06-92.    South facing view of launder alongside the No. 16 Brick Cistern in Trench No. 11.

Photograph No. 33            T11-P33-LM / 16-06-92. Brick Cistern. West facing view of the cistern with the launder lying in the trench behind the title board.

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Photograph No. 34            T12-P34-#24 / 16-06-92.    West facing end on view of the No. 24 Wall.

Photograph No. 35            T12-P35-#24 / 17-06-92.    North Facing view of the launder in Trench No. 12a leading north from the gap in the No. 24 wall visible in the foreground.

Photograph No. 36            T12-P36-LM / 17-06-92.    North facing view of the eastern (B) side of the No. 9 engine mountings showing both courses of blocks surrounded by jig tailings. Note pieces of brickwork columns from the No. 10 crusherhouse.

Photograph No. 37            T12-P37-#9 / 17-06-92.    North facing view of the front and western side wall of the No. 9 Enginehouse.

Photograph No. 38            T12-P38-#9 / 17-06-92.    East facing view of the west side wall of the No. 9 Enginehouse and the western (A) side of the top course of gritstone block forming the engine mountings. Note the cutaways to enable cranks to rotate and also the recess / joist sockets to hold the floor around the cylinder and over the hotwell.

Photograph No. 39            T12-P39-#9 / 17-06-92.    An elevated view, facing west, of the No. 9 Engine foundations showing work in progress on clearing out the cylinder and hotwell. The front and side walls are also visible.

Photograph No. 40            T12-P40-#9 / 17-06-92.    A similar view to P39 but taken after the gap between the blocks has been cleared out and brushed clean. Note that the base of the chimney, back wall and steam pipe are now exposed.

Photograph No. 41            T12-P41-#9 / 17-06-92.    An elevated view, facing south, of the engine foundations in which the steam pipe, cylinder base, hotwell and flywheel cutaway are clearly visible.

Photograph No. 42            T12-P42-#9 / 17-06-92. A north facing view of the foundation blocks showing details of the flywheel end. The title board is resting in the hotwell behind which, the base of the cylinder can be seen. The stub of the chimney and the masonry piers are visible in the background.

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Photograph No. 43            T14-P43-#24a / 19-06-92. Facing south, this view shows the extent of the easternmost pit whilst still in the course of excavation.

Photograph No. 44            T14-P44-SP / 20-06-92. A detailed view of the southeastern corner of the No. 24a Slime Pit showing the poor construction of the walls and the stone slab floor. Facing south.

Photograph No. 45            T14-P45-SP / 20-06-92. Facing to the southeast, this view shows three small excavations in different pits and the main excavation behind these. In the foreground, another pit can be seen in the No. 17 stream gully. The south wall can be seen passing under the jig tailings to the right hand side of the picture.

Photograph No. 46            T17-P46-#23 / 22-06-92. Facing west along the inside of the No. 23 building. The concrete edge to the brick floor and the interior whitewash are clearly visible.

Photograph No. 47            T17-P47-#23 / 22-06-92. Facing east towards the fireplace in building No. 23 with the curious construction laid in brick and slate over the concrete strip along the north wall.

Photograph No. 48            T18-P48-#25/27 / 23-06-92. Facing west along the concrete pad of the gasworks and showing detail of the brick octant built into the side of the furnace bowl. Beyond this lie the scrubber bases, collecting sumps and the gasometer.

Photograph No. 49            T18-P49-#25/27 / 23-06-92. Facing east into the centre of the furnace bowl showing detail of the ironwork, relationship of brickwork octant and the brick covered culvert running to the gasometer, seen here at the bottom of the frame.

Photograph No. 50            T18-P50-#25/27 / 23-06-92. A view of the gasometer base quadrants built from brick and concrete. The steps on the eight sides of the quadrant can be clearly seen in this southerley facing view.

Photograph No. 51            T18-P51-#25/27 / 23-06-92. Facing east along the concrete slab. The gasometer base can be seen in the foreground with the scrubber bases and the two sumps with the brick covered culvert running alongside the slab. The slimes dump is visible in the background.

- Photograph No. 52            T18-P52-#25/27 / 23-06-92. A south facing general view of the No. 25 / 27a gasworks with the gasometer in the foreground.
- Photograph No. 53            T18-P53-#25/27 / 23-06-92. Similar to P51 but taken from about a metre to the south. In this frame, details of the sumps are clearer, detail of colour is better but shadow poorer.
- Photograph No. 54            T18-P54-#25/27 / 23-06-92. A late in the afternoon view of the No. 27a furnace bowl. Taken at right angles to P49, ie. facing south, the relief is shown in better detail.

#### Historical Photographs.

A number of illustrations of the mine are available whilst it was at work, or shortly after it was abandoned. As these are of considerable importance in understanding the site, they have been reproduced.

Powys Archives have a photograph of the Mary Emma waterwheel, the crusherhouse and the flat rods leading to the old engine shaft circa 1867, of which I have been unable to obtain copies.

Print No. 55            Montgomeryshire Collections engraving of the Van Mine circa 1870 which also shows the complex of buildings surrounding the Mary Emma waterwheel with the flat rods leading to the old engine shaft. The launder carrying the leat to the wheel is also visible. The chimney, boilerhouse, No. 3 Enginehouse, Crusher house and waterwheel form an impressive spectacle to the left of centre. There is some development of the lower floors.

Photograph No. 56            Northwest facing view of the Van Mine taken circa 1890. This is probably the best known view of the mine with the Halvans Mill, Afon Cerist and various sidings in the foreground. An accompanying photocopy has been cross referenced with the numbers allocated to the buildings listed within this report.

Other features are shown as :-

- (B) Boiler House
- (C) Chimney
- (E) Elevator Tower
- (I) Incline or Footpath

- (L) Leat
- (O) Offices
- (P) Platform & Shear Legs
- (R) Rods from No. 9 to No. 29.
- (S) Stamp Mill
- (T) Trestle Bridge

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Photograph No. 57                      West facing view of the Van Mine circa 1904 showing a train in the foreground with the Halvans Mill to the extreme left of the frame. I am inclined to think that the date is somewhat later than that suggested, maybe even as late as 1913 - '14. The No. 30 Enginehouse can be seen behind the northeastern corner of the Halvans Mill and the roof of the boilerhouse (B) is also visible. Note that the trestle bridge no longer exists. The Chimneystack for the No. 3 Crusherhouse also appears to have been demolished by this time but not the boilerhouse. There are no signs that the Mary Emma is still in situ. Behind the train the dark form of a headframe (H) is just about distinguishable and can be confirmed by comparison with the No. 59 photograph taken in about 1914. Also protruding from behind the train is the No. 19 Chimneystack. The two chimneys at Seaham's Shaft - Nos. 49 & 50 appear plainly. The Nos. 5 & 44a Chimneystacks for the Sawmill and Compressor House are aligned and thus the former appears but the latter does not. The course of the No. 46 incline is apparent. Around the No. 13 Railway Portal buildings 18 & 19 are visible with the end of No. 15 protruding and building No. 12 rising above it.

Photograph No. 58                      Photograph of the Staff of Van Mine at the bottom terminus of the No. 46 incline. The double track of about 24 inches ( 60 cms. ) is clearly visible along with cable dollies (D), a signal wire (W) and what appears to be the stream culvert (C) on the right hand side.

Photograph No. 59                      North facing view of the Van Mine in about 1914 by O'Neill. A rather poor reproduction which clearly shows the three bays of the Halvans Mill in the foreground. The outline of the stamps mill (S) is just about discernable to the left of the No. 30 Enginehouse and the Trestle Bridge is obviously still in use. Building No. 20 has been converted to a tenement whilst No. 19 has lost its chimneystack. In front of these buildings, a headframe appears to have been erected but definition is very poor. The tall outline of No. 12 is very distinct whilst at the west end of this row of sheds the coalhouse alongside the No. 9 Enginehouse appears to have been demolished. The No. 44a Compressor House

is in good order but the neighbouring No. 5 Sawmill appears to have some roof damage. The poor quality of the print makes the shear legs at Seaham's Shaft indistinguishable from the Nos. 49 & 50 Chimneystacks. The No. 4 Mary Emma Waterwheel is not visible in this photograph.

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Photograph No. 60            A very clear view of the gasworks, taken circa 1925, in which detail of the plant's construction is visible. Note also that the eastern side of the railway line has been lifted and that spoil and timber lie across the lines near the portal. This is the only view in which the No. 6 Piers are clearly visible. Another feature which is only visible in this photograph is that along the western side of the No. 46 Incline, a pipe can be seen running towards Seaham's Shaft. This may very well have been a compressed air pipe from the No. 44a Compressor House. The extent of the damage to the roof of the No. 5 Sawmill Enginehouse is apparent and would seem to have been caused by fire. The area around the Wheelpit has been cleared of the No. 3 Crusherhouse and the accompanying Enginehouse with Chimney, which are shown in Photograph No. 59. A further feature which is only common to Photographs Nos. 60 and 62 is the " drag mark " which is visible from the base of the No. 40 Chimney across the fields to the west of the mine. In this view it can be seen that this track has a fence to either side of it and that the hedges have been dug out where they cross its route. This may have been created by dragging scrap boilers and other machinery from the site.

Photograph No. 61            A rather blurred view facing south from the head of the No. 45 Incline at Seaham's Shaft taken after light snow in 1938. Despite the poor quality many features are recognisable. This is the only known photograph to show the No. 36 building whilst in use as a paintworks; also, note the elevated tramway from the foot of the No. 46 Incline to the ore bin - this feature is also seen in Photograph No. 64. The roof of the No. 5 sawmill is badly damaged on the western end. The buildings surrounding the No. 13 Railway Tunnel Portal all appear to be standing, whilst only two chimneys remain. Firstly, the No. 8 Chimney between the No. 9 Enginehouse and the No. 10 Crusherhouse; and secondly, the No. 44a Compressor House, with its chimney, can be seen at the foot of the No. 46 Incline from Seaham's Shaft. The Boilerhouse for the No. 3 Engine lies in front of the No. 10 crusherhouse and the trestle bridge over the masonry piers can be seen running between them. The No. 30 Enginehouse appears to be the sole surviving relic of the Halvans Mill area and has either collapsed or been partly demolished by this time.

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Photograph No. 62            A rather dark general view of the mine taken after light snow in 1938 which shows the No. 30 Enginehouse in a partly demolished condition. The No. 9 Enginehouse, and the building to its west, are in reasonable condition but almost buried by tailings. The No. 8

Chimney, No. 10 Crusherhouse and No. 6 Piers Bridge lie in front of the old Boilerhouse. There has not been any great degree of change since Photograph No. 60 was taken. Note that the light covering of snow makes the " drag mark ", from Seaham's Shaft across the fields to the west of the mine, more apparent.

Photograph No. 63                    An excellent photograph, taken in the summer of 1938, of the Enginehouse at Seaham's Shaft for the Blencowe Consols beam engine. Note the pulley at the foot of the southern leg of the shears aligned with the head of the track. The marks of where the boilerhouse stood are visible and the top of the pump rod can be seen not to be connected to the nose of the beam. I therefore suspect that the Beam Engine had been taken for scrap shortly before the photograph was taken.

Photograph No. 64                    A view of a group of miners at the portal of the No. 45 Main Adit in the early 1920's with Captain Tom Miller standing on the right hand side. Note the plaque above the portal and the elevated tramway from the base of the incline to the ore bins.