PONT CEUNANT GENERATING STATION

Frongoch was one of the largest and most productive mines in Ceredigion. The first lease for 21 years was granted by Lord Lisburne to a Philip Pugh on 30th May 1759. The mine was worked for the next 150 years by several of the leading companies and individuals in Welsh Metal mining. In later years it included the nearby Wemyss and West Frongoch Mines. The mine finally closed in June 1903.

Although there was a dump re-processing scheme during the first World War, when a 3000 yard long aerial ropeway was constructed from Frongoch to Gwaith Goch on the banks of the Ystwyth, where a new processing mill was built.

In November 1898 the mine was taken over by a Belgian company, who had a lease for 42 years. When the new company took over the mine, the machinery was powered by steam engines and water wheels. The company decided that to work the remaining low grade zinc ores productively, modern machinery powered by electricity had to be installed.

For this purpose a Generating Station, one of the first in Wales, was constructed 1¼ miles west of the mine in Cwm Newyddion. This was designed and built by an young Italian Engineer named Bernardino Nogara (who, later in his life became the head of the Vatican Bank)

The existing system of reservoirs and watercourses (known as leats), that previously powered the water wheels were reorganised; this involved the digging of a 3 mile long leat from the old Frongoch Pool to the header pond above the Generating Station, giving a 400 feet head of water. The water was fed to a Pelton Wheel which drove the 2300 volt AEG alternator. A 360 hp Willans & Robinson 6 cylinder steam engine delivering 140 psi, complete with a Babcock & Wilcox boiler was installed to power the alternator during times of drought and frost. The electricity produced was conveyed 1¼ miles to the mine by bare copper wires mounted on wooden poles.

The total cost of the project was £11,400 (in excess of £1.5 million in today's prices). In spite of all the investment the mine failed to run at a profit, mining ceased in December 1902; the processing mill continued to process material on the surface until June 1903, when the company went into liquidation. The equipment from the mine and the generating station was sold for a fraction of its cost by auction in April 1904.

Now, to jump forward 100 years.

The Welsh Mines Preservation Trust (Trust), had been concerned for many years that this historic building had become what can only be described as a local dump for rubbish and "white goods". In 2004, European Funding enabled Ceredigion County Council to establish their "Spirit of the Miners" project. Following discussions between the Trust and "Spirit of the Miners", we were able to design a project to clear all the dumped material within the building, deter future dumping and give the local community a building to be proud of.

In June 2007, with funding from the Spirit of the Miners, the Environment Agency and the landowner Mr Henry Williams, volunteers from the Trust, Ceredigion County Council along with Mr Williams and his family cleared all the dumped refuse from within the building. In addition to clearing the interior of the building we wanted to discourage future dumping, with this in mind a decorative grille was designed and installed across the entrance to the building alongside the road, along with an interpretation board explaining the history of the building. The theme of the grille was to illustrate the transition from water power to electrical power, which the building fulfilled.

Alongside the clean up operation, the history of the building and the machinery was researched. Thanks to Trust director Steve Oliver were fortunate to discover that an article had been published in the "Iron and Coal Trades Review" in September 1901, which provided an excellent description with photographs of the building and the equipment installed within.

Simon Hughes from Talybont provided us with a copy of an article (in Italian) written by Bernardino Nogara the designer of the building, in 1901. This was translated by Trust Director Robert Ireland and provided much detail of the operation of the Generating Station. Simon also supplied a copy of the Sale Catalogue from April 1904, listing everything that the mine owned in 1002 lots; from a Cornish Beam Engine and a 50 foot x 4 foot overshot waterwheel to 5 galvanised buckets and 34 knives and forks from the canteen. There were 73 lots from the Generating Station, including the Babcock & Wilcox boiler, the Willans & Robinson Steam Engine, the Pelton Wheel, the AEG Alternator, a 6 ton weighbridge, 62 creosoted poles fitted with lightening conductors, even a set of spanners 5/16 to 1 inch and two India Rubber Mats.

One interesting point is the note: "Buyers of Lots 280 to 339 will be required to make good any damage done to the building before they remove lots from the ground". This unfortunately never happened; the entire eastern wall was demolished to enable the machinery to be removed from the Generating Room and is now an increasing cause of concern to the long term stability of the rear of the building. The sale lasted 5 days, unfortunately no details of the purchasers or prices paid have been found.

Our research highlighted the fact that we were unable to find a floor plan, showing the internal layout of the Generating Station. With the blessing of Mr Williams we decided to carry out an archaeological investigation, in an attempt to find the "footprints" of the various pieces of machinery installed within the building. This work commenced in 2008. There are three "rooms" within the building; nearest the road is the Coal Store, the next room is the Boiler Room and at the rear of the building is the Generating Room, with offices above in the south western corner.

In April 2008 a weekend was organised to excavate the floor of the Generating Room, with the aim of locating what remained of the bases of the Pelton Wheel, Alternator and the Steam Engine. The excavation commenced at the western end of the building, where a flight of steps, the base of the Pelton Wheel, and the

water exit pipe were uncovered. Work then progressed across the building, the base of the AEG Alternator and the Willans & Robinson Steam Engine were revealed.

We returned in June 2008 to continue our investigations, on this occasion we concentrated our efforts in the Boiler Room, our aim being to expose the foundations of the Babcock & Wilcox Boiler. We exposed the Flue, Boiler Surround which had a sand bed in the middle and the water tank. Also discovered was one of the fire bricks from the boiler.

Careful measurements were taken and drawings are being prepared. We plan to return this spring to excavate the coal storeroom, when this is completed we will be publishing a booklet on our work and research.

The Trust thanks the Spirit of the Miners project, the Environment Agency and Mr & Mrs Williams for the help and support with this project.