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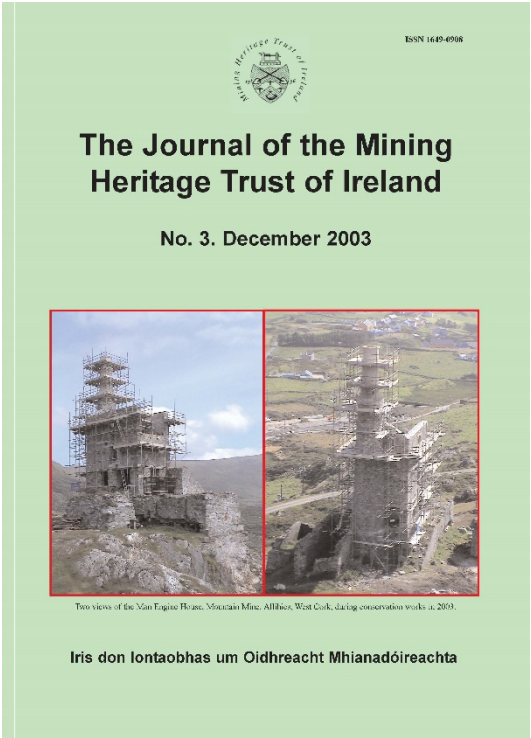


SILVERMINES ENGINE HOUSES

Kenneth Brown

Abstract: The engine houses at the Silvermines complex are described and interpretedbased on the extant remains. *Journal of the Mining Heritage Trust of Ireland*, **3**, 2003, 63-64.

There had been over 650 years of sporadic mining at Silvermines before the General Mining Company of Ireland took over the area in 1845. There is much reportage of the company's affairs through the 1850s but most of it relates to the contentious behaviour of its officers. That story is told elsewhere (Cowman 1988). In July 1853 it was reported that two 30 inch engines were to be immediately erected without saying which mine (MJ 1853, p. 421). Five months later the company decided that buying the two engines from Cornwall was too costly, so the use of waterpower was to be extended instead involving the construction of two new reservoirs to cope with the dry months of the year (MJ 1853, p.772). Water power seemed to be adequate for most mining purposes at that stage, the exception being crushing.

BALLYGOWAN - CRUSHING ENGINE

In May 1854 Capt. Hambly of the General Mining Company of Ireland purchased a 24 inch steam engine "with adjuncts" in Cornwall for £780, but the crusher had still to be purchased (MJ 1854, p. 328). This would have been a second-hand engine and was almost certainly the one that occupies the narrow engine house beside the later calamine mill.

The engine began to operate a crusher from December 1854 (MJ 1854, p. 832). However, it may not always have been in this location as there is also mention of such an engine in Gortnadyne operating a crusher (MJ 1854, p. 376 & 463). Zinc was discovered in the gossan in 1859 but it took two years of investigation (including sending an engineer to Belgium to see how it was processed there) before a plan was formulated (MJ 1859, p. 857: 1860, p.825). By June of 1861 all was nearly ready including engine house and calciners. The cost is given at only £184, much too cheap for the purchase of a new engine (MJ 1861, p. 92 and 364). The likelihood therefore is that the Gurtnadyne engine was moved in 1861 to its present location at Ballygowan.

This rotary engine was all enclosed in its house. It had about a four-foot stroke and would be the same size as the winding engine currently preserved at Levant Mine, Cornwall. Levant originally had four whim engines of about this size but gradually sold them off leaving this one survivor. It could have been one of these that Capt. Hambly had bought in 1854, perhaps the one advertised for sale in December 1852.

The loading in the house having been stripped out, there is no way of verifying the engine diameter. A high-level opening in the west wall, however, shows where the trunnion cross-beam or entablature were supported. The east wall has survived to a lesser height and the front wall has gone almost completely while the rear wall was partly demolished some years ago when the stack (which was integral with it) was blown-up on quasi-safety grounds. The boiler house on the east side has totally disappeared. The engine would undoubtedly been double acting.

There is only a narrow walk-way between the west wall of the engine house and the east wall of the large rectangular mill. The wall openings have been refilled, such as where the drive shaft had passed through. At one stage it would have been used to drive a small longitudinal or "table engine" to power surface machinery, including "calominers", reverbatory furnaces. Small brick arches down along the west wall of the calamine mill support this.

BALLYGAHAN ROTATIVE PUMPING ENGINE

No record has been found concerning the building of this but enough has survived to reconstruct its appearance, as it is reasonably complete except for the boiler house. It faces north and is aligned with the engine shaft about 40 yards in front, surrounded by low burrows. A deep flywheel slot on the bob wall proves that the engine was rotative. Presumably it worked pump rods in the shaft via a short run of flat rods and an angle-bob over the shaft.

In-house measurements indicate a cylinder of about 28 inches diameter (the bedstone is present but displaced) and the piston stroke was of seven to seven and a half feet. Outdoor measurements of the flywheel slot indicates a flywheel diameter of 30 feet, to accommodate which the outdoors stroke would have to be at least ten feet (the most likely stroke combination is 7 ft. in, 10 ft out). The highly unusual feature of leaving the outdoors part of the beam much longer than the indoors is similar to the 36 inch stamps engine at Wheal Jenkin in East Cornwall.

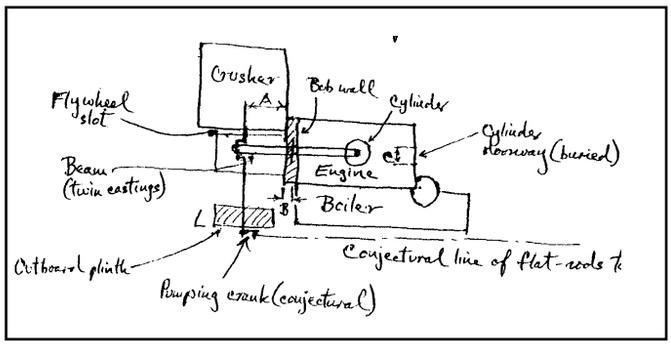
The ultra-large flywheel and longer outdoor stroke are probably due to the engine being single acting (taking steam on top of the piston only) which would have required a heavy connecting rod between the nose of the beam and the crankpin to perform the "outdoor" stroke. Lack of evidence of big trunnion tie-bolts in the bob wall (normal in a double-acting rotary engine) supports this contention. The condenser was probably outside the house.

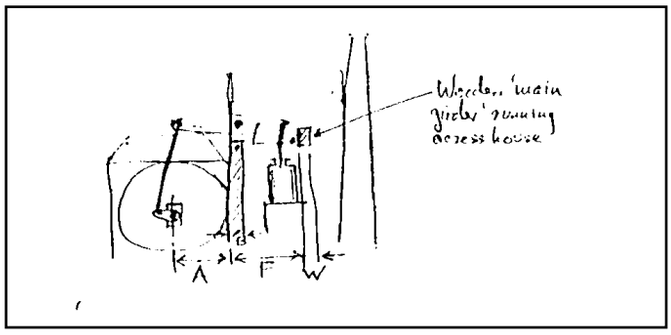
The 1907 and earlier OS maps show that the boiler house stood on the west side, corresponding to the position of the stack on the south west corner of the engine house and that there was a walled coal-yard. These features have now disappeared. Remains of the crankshaft loading show that the engine was probably single-functional and used only for pumping as there is evidence of masonry work on the east side of the crank only. Its possible date is post 1861.

SHALLEE (EAST) - ROTATIVE CRUSHING AND PUMPING ENGINE

Again there is no account of when this was erected but it was probably in the 1860s to replace a 50 foot waterwheel (MJ 1854, p. 376). Evidence from the building itself suggests a dual use. There is a crankpit in the masonry crankshaft loading and four bearing bolts indicating that there was a shaft drive from each side of the cranks. One of these would have been used to drive the crusher and the other hypothetically to pump. However, the 1907 OS map of the area shows the engine shaft out of line to the south east. Nevertheless, it could have been pumped using flat-rods and an angle bob.

The engine itself would probably have been double-acting (taking steam at both top and bottom of cylinder). This would be confirmed if long trunnion anchor bobs are found built into the bob-wall. The accompanying sketches are conjectural diagrams of how this engine might have operated.





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