

Digging Back in Time: An Adit Clearance Project at Polgooth, Cornwall

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Abstract

There are many projects which are undertaken to explore old mines throughout the country, but there are not that many which start from an invitation by the grandson of the mine owner to clear and reopen an adit behind his home, the stamps engine house. This is a summary of one such project undertaken by members of the Cornwall Mining and Caving Club.

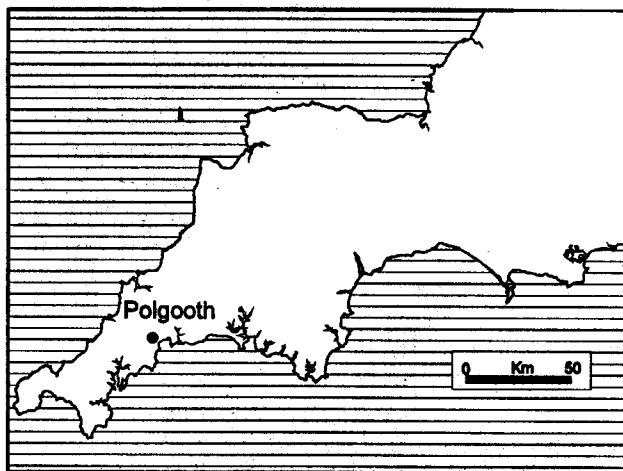


Fig. 1. Polgooth. Location.

INTRODUCTION

The site in question, known as Sweets Garage, lies in the eastern hill behind the stamps engine house, in Polgooth, near St. Austell on the edge of the china clay country (SW 999505). From the old maps of the mine which date back to the 1850s, there is a maze of workings to be found both under this hill and under much of the village. The present owner of the site, Mr Brendan Sweet and his family live in the restored Stamps engine house, whilst his garage, where he runs a business, used to be the mine stables. On the wooded hill, behind the engine house, known locally as the Eastern Hill, can be found the remains of another engine house, and several shafts, many of which have been filled. Another mining group first began excavation over ten years ago, but gave up, believing the project may have been beyond them. After being introduced to Brendan Sweet, the Cornwall Mining and Caving Club began excavation of the entrance to the first adit in February 1995.

HISTORY

The earliest known records for Polgooth are dated 1590 (Hamilton Jenkin 1979, 5), and like other mines in Cornwall it was made up of a collection of smaller setts. A.K. Hamilton Jenkin, writes at length about this area in his classic work, *Mines and Miners of Cornwall Vol. 14*. He mentions an unpublished document concerning a list of 'Tyn works in Mulvera Ball' belonging to Peter Edgcumbe in 1593, named 'St. Margarets', 'Wheal an Crane', 'St. Martyns', 'Poldice', 'Van Vean' and 'Boskellyn'. At this time also the mine had its own smelter or as they put it, 'Blowing Mylls'. By 1720 the mine was large enough a concern for the Cornish historian Tonkin, to describe it as 'The richest work this day in England

or, I believe that ever was in this kingdom...' (Tonkin MSS). Output from the mine must have been quite high to afford the erection of an atmospheric engine around the year 1727 (Rolt *et al* 1977). Designed by Newcomen, and erected by the celebrated engineer Joseph Hornblower, this was one of only three in the county at this time. Although the primary output of this mine was Tin, a certain amount of copper was also produced. This was separated, probably by hand, and shipped off to Bristol to be smelted. Probably the best description of the mine was given by the Reverend W.G. Maton, about 1790:

Polgooth, one of the richest and largest mines in the county, if not the world, situated about two miles south west from St. Austell. There are no less than fifty shafts, twenty six are still in use, with as many whims. The main vein of ore which is about six feet thick runs from east to west and dips to the north at about six feet in the fathom. Towards the east it divides into two branches and there is another which cuts the former nearly at a right angle, and consequently runs north and south, dipping to the east. The exact extent of this mine has not been ascertained but it has afforded tin in the full length of a mile. The depth of the engine shaft is about 110 fathoms and this machine draws up, at each stroke, a column of water 30 feet in height and 15 inches in diameter. The ore is disseminated through a matrix of caple, accompanied with yellow cupreous pyrites. It is of the vitreous kind, but rarely found in crystals, the colour for the most part greyish brown. The country rock is chiefly a greyish killas, but there is an elvan crosscourse which drives the vein of tin several feet out of the directly line (Maton 1797, 155)

In 1807 the mine returned a clear profit of £100,000. A tidy sum for any mine at that time. Between 1815 & 1835 Polgooth returned 642 tons of copper ore and by 1837 was the third largest producer of tin in the county (Hamilton Jenkin 1979, 10).

Like other tin mines, they were always at the mercy of the fluctuating price of tin metal. Just a glance through the employment figures shows a history of rapid growth followed by years of gradual decline, unlike some of the less wealthy concerns that went broke overnight for the sake of a few shillings on the ton. In 1838 the mine then under new ownership of Captain John Taylor, was employing 202 people (Collins 1912). The following year the price of tin metal dropped to £72 per ton and the mine closed. Three years later it was up and running again (Hamilton Jenkin 1979), the new company having cleared and repaired over four miles of adits,

and employing up to 500 people on the mine! Such are the fortunes of mining. In 1861 there was only 100 people left working at Polgooth. Some small parcels of ore were produced between 1882 & 1894, the last returns being made in the 1920s by a local Tributer (Hamilton Jenkin 1979, 11-12). This was, we believe, Brendan's Grandfather, and he ran the water stamps on the site with a throughput of about 12 tons a day, giving a recovery of 2lbs of black tin per day on average. The material was brought from the burrows and the large open cut on the side of the hill just below the golf course.

DIGGING

As is common, in small adit clearance operations such as the one at Polgooth, most of the effort has been through the use of man-power, rather than powered machines. A dedicated group of workers have spent many hours manually digging, loading and tramping waste material in addition to several large construction projects.

The only mechanical assistance that has been afforded to the project to date, is the semi-permanent loan of a four-wheel drive 2 tonne dumper, which has been the main source of waste removal from the digging area to a disposal site, some three hundred metres away, which would have been too far for hand tramping with barrows. When the rock around the adit portal became too dangerous to work beneath, the excavation method changed from a simple cutting, into a cut and cover tunnel. After a large slope failure, forepoling was employed along with close setting, which was used until breaking through into the tunnel proper occurred.

BREAKTHROUGH

Breakthrough into open passage occurred in July 1995. This revealed a drive(level) of approximately 100m in length.

After a distance of about 30m from the entrance, a large pile of fallen material almost blocks the tunnel. It appears that there is a filled shaft at this point. After 40m, there are two passages which cross the tunnel at about 60 degrees to the tunnel axis. The left hand tunnel is 5m long to a face. The right hand tunnel at this stage is completely backfilled. At the end of the main tunnel, there appears to be the remains of a chute which has collapsed leaving a very large pile of rock.

Throughout the length of the tunnel there are the remains of miners clog prints in the dry mud along with barrow tracks, the remains of sleepers and marks left by the rails. It appears that the sleepers were the last objects to be removed from the tunnel since the barrow tracks do not cross the pits left by the sleepers.

On the walls for the first 40m of tunnel there are pick marks, along with deep scratches made by the railbound waggons.

RECENT DEVELOPMENTS

Since the initial breakthrough there have been several notable high points. The first occurred in September 1995, when the final backfill from the first shaft was removed. A temporary wooden deck was placed at the top to prevent any unwanted objects from falling down this shaft.

Inspection of the shaft, revealed a backfilled drive which was cleared, a wooden chute being constructed to aid mucking from a distance of 7m above the floor of the main drive. There were high hopes that this drive would lead into a large area of workings, but after a couple of weeks of clearing material, this initial optimism, faded with the discovery only of a small filled chamber.

Early in October, more digging in the filled chamber revealed a small passage leading to two further small worked out chambers. The rock in these was not of the best condition. During the second week in October, a working party cleared the right hand entrance off the main drive. In clearing this, a large run of ground occurred and resulted in a large rectangular hole appearing in the base of the chamber. This could only be one thing - another shaft.

Over the next couple of months material was mucked from this shaft and drawn out through the entrance on the main drive. At this stage the team were very optimistic about the time it would take to clear the shaft which had been completely filled to surface. However, our problems were just about to start. The first of these was that there was no sign of the shaft on the surface. From an underground survey the position of the shaft was plotted on the surface and digging began. Eventually after several visits and plenty of digging on the surface, a hole 4.5m deep and 2.5m in diameter had been achieved.

This left a plug of ground 7m in thickness which was blocking the shaft. A scaffold pole was driven into the bottom of the deepening hole from surface and this confirmed the position of the centre of the shaft, the pole being visible from below. Since the material could not be removed from the base of the plug from below, the only way it could be removed was from the surface until some other method could be devised. As luck would have it, it was very wet over the Christmas period, and upon the first visit in the New Year, the plug of ground had fallen away, leaving a clean shaft to the surface and a large amount of material to be mucked out from the main drive level.

As of the 18th February 1996, this shaft is now clear of backfill material from the main drive level to the surface a distance of 23m. This leaves a perfectly rectangular shaft approximately 2.5m by 1.2m in section.

FINDS

Various artefacts have come to light as a result of the excavation at Polgooth, including several pickheads, recovered during the initial clearance of the adit entrance. At present more artefacts have been recovered during the clearance of the first shaft than that of the second. In clearing the first shaft, the entire complement of elvan collar stones has been recovered. Some of these are large, approximately 100kg. Littered in amongst these were several jockey wheels about 300mm in diameter belonging to the inclined railway which ran from the stamps engine house to the top of the hill. A cutting belonging to this still remains. A large amount of chain with links 300mm long was one of the last items to be recovered from the backfill in this shaft.

At present the second shaft has revealed very little in the way of artefacts. The walls of this shaft have been cut by hand picks as there are marks everywhere. A roller was recovered during the final phase of clearing, which it is believed came from the inclined railway. It is about 350mm in length.

FUTURE PROSPECTS

From the size of this second shaft, it appears that its purpose may have been as a ladderway. Since there are only two known entrances at present into this shaft, it is thought that there will be other levels, below the present main drive level. This section of the shaft is still filled and its clearance is the next major project to be tackled. When the weather improves, the group will be constructing two permanent concrete collars and caps for the two shafts which have been reopened.

ACKNOWLEDGEMENTS

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