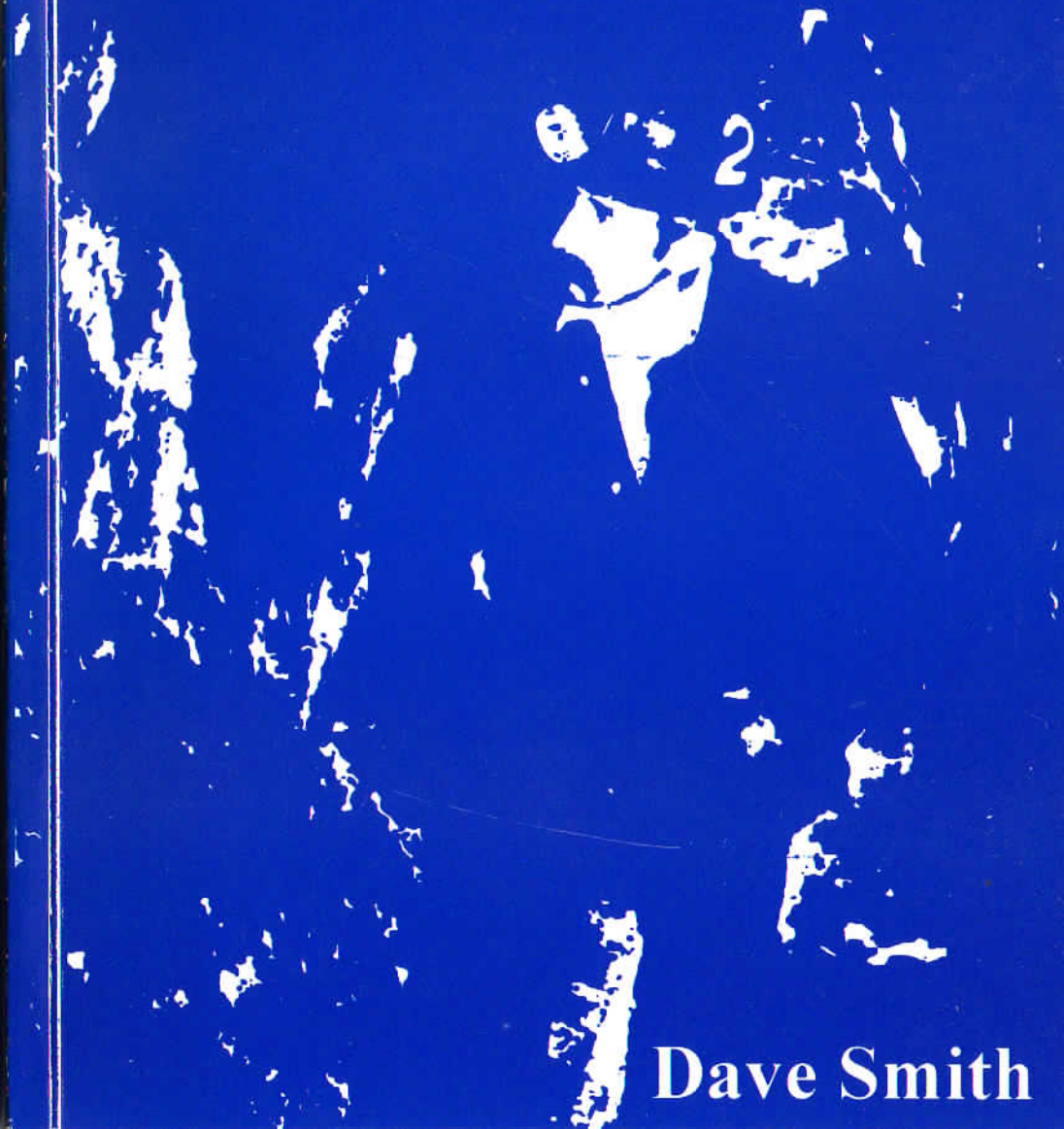
Project Gorland

The Re-digging



Dave Smith

To
Liz my dear wife.

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The Gorland Project.

The Re-digging.

Dave Smith.

Edited by
Martin Gale,
And
Martin Stolworthy.

Foreword

No book can truly be said to be the work of one man. Many factors contribute to the story and, although I have set the account down as it happened, the text has been re-typed by my charming friend Clare Gale then edited by Martin Gale and Martin Stolworthy. Martin Gale reproduced Roy Morton and John Watton's pictures, and the sketches were re-drawn by the talented pen of Mike Berry. To them, and the others who came underground with me and helped in this venture, and to Roger Eslick, who has taken over the co-ordination and maintenance of this project, I wish to dedicate this book.

Dave Smith

Warning

The author would like readers to note that exploring old underground mines is extremely dangerous and not to be attempted by the inexperienced as there are all kinds of hidden dangers. Bad air, bad ground, and rotting timbers underfoot are just a few dangers to look out for.

Never attempt to go underground with only a hand torch, no helmet and never, repeat never on your own.

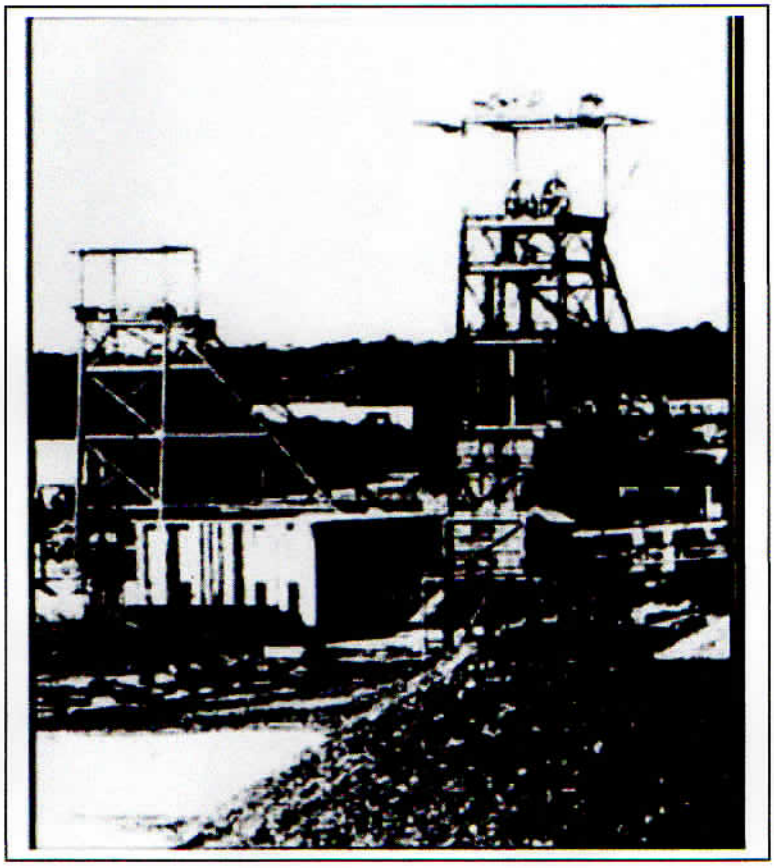
If you are contemplating an underground trip with someone, leave word where you are going and what time you are due out of the mine. This is important for obvious reasons. Stick to the plan and when you exit the mine let the people you told, know.

Most surface remains also have their own dangers. The old buildings, with their crumbling walls etc, and most importantly the old shafts, which often have undergrowth growing around their mouths, can be almost invisible. These shafts can be 1000 feet plus in depth so BEWARE. You have been warned.

About The Author

Dave Smith was born in West Ewell in Surrey and moved to Redruth Cornwall in 1946 just after the war. In 1969 Dave obtained employment at Consolidated Gold Fields, the company that ran Wheal Jane at that time. He was employed as a shaft sinker at No.2 shaft. The shaft was completed to a depth of 347 metres in June 1971. Dave was then transferred to other parts of the mine as a timberman.

Dave Smith (author, on left) using a Holman 303 Rock Drill with Air Leg. Phil Symons Collering the Steel. 3 level east, Wheal Jane Mine 1975



No2 & Clemo Shafts, Wheal Jane

After a few months he became a miner, was then promoted to leading miner by the management, and lead to further promotion to Chargehand after his skill and judgement with drilling, blasting, mucking and other activities were noted. It was now that Dave started his life long hobby of exploring old mine workings and collecting minerals.

With the closure of Wheal Jane in April 1978, Dave found himself out of work. Undaunted he packed his bags and went to Clonakilty in Southern Ireland where he gained a six-month work permit to refurbish the Ladyswell Barite Mine, working with the Cornish Mining Services.

In November 1978 he moved to Breidon Hill Quarry, which is situated at the top of Breidon Hill near Welshpool in Wales. The cost of running the giant Euclid dump trucks up and down the 1000 feet hill was too excessive and an idea of sinking an 850 feet shaft was thought up. This was done by digging out a 6 feet diameter shaft downwards. A dogleg was put in near the bottom. At the same time as the shaft was being sunk another team started digging a tunnel laying a conveyor belt from the crushing plant to the bottom of the shaft. The dogleg was put into the shaft for one simple reason, to stop the rocks smashing into the conveyor belt at the bottom.

Now all the quarrymen had to do was blast the rocks, load the trucks and drive the short level distance and dump the material down the shaft, to be loaded onto the conveyor and then on to the crushers. This saved the investors the large running costs of the Euclid trucks. Dave worked both in the shaft and the tunnel.

In August 1979 while he was working at the quarry Dave heard that Wheal Jane had been opened by Carnon Consolidated Tin Mines Ltd. He then returned to the mine working at his old position of chargehand.

I first had the good fortune to meet Dave via a mutual friend in 1983 and it was Dave that first introduced me to underground exploration and mineral collecting. This is something I will always be eternally grateful to him for.

A panoramic view of Wheal Jane Mine, sadly now closed

In 1985, with all the rumours flying around about the closure of Wheal Jane, Dave took redundancy and with an ex-miner from Pendarvis named Mike Cooper he was sub-contracted by the local council to cap old mine shafts. I know Dave hated doing this as he was sealing the mines he wanted to explore, but work was work and, if Dave hadn't done it, then somebody else would have.

Another hobby Dave was interested in was making clocks. A lasting memory for me was, when entering Dave's old house off north street, Redruth, that beautiful rhythmical tick tock, interrupted with the off bing bong of the chimes, truly satisfying whilst studying minerals. His workshop was remarkable; stacked to the rafters with tools and gadgets, whose usage's could only be guessed at .The one thing that has always amazed me is his knack of being able to overcome any problem he was faced with.

At the time of writing the capping jobs had finished and Dave had managed to get a job a Geevor, the recently closed tin mine at Trewellard near St.Just. He has been carrying out extensive work in the adit system and treatment works with the hope of opening Geevor to the public as a museum of mining history.

Martin Gale

Introduction

This book is not meant to be a historical Mining or Mineral book as there are already numerous works on these subjects available. This book is about one mine and the dedication of a few men who, over the years, risked life and limb against all odds re-opened a Cornish Copper Mine. It was a hobby, which became an obsession.

Visitors to Cornwall cannot have failed to see the ruinous engine houses scattered around the county. These engine houses belie the depth of the cavernous levels below ground, which had been worked by men since the 1500's.

Ask most people what type of mining Cornwall is famous for and they will probably say Tin mining. This is true in certain areas in the latter half of the 1800's such as St.Just, St.Ives and Wendron districts. However, it is Copper that dominated metalliferous mining in Cornwall.

Mining, as we know it, began in the 1500's by Sir William Cecil, acting on behalf of her Majesty Queen Elizabeth the First. Under Sir William Cecil's sponsorship, a German by the name of Daniel Hochsetter who had extensive mining knowledge, came to England. He brought with him approximately 320 German miners who were put to work near Keswick in Cumberland, now known as Cumbria.

In the 1580's the Mines Royal leased, for £300, the rights to mine in the relatively unexplored regions of Devon and Cornwall to a man called Thomas Smith. The German mining manager working under Mr.Smith was Ulrich Frosse. The mining site was Perran Sands near Perranporth. There was believed to be another mine in Illogan but no traces have ever been found.

Disposition of the principle ores in Devin and Cornball were from the top, Iron, Lead, Zinc, Copper, and at the bottom Tin. This explains why mines like Dolcoath and Tresavean mined Copper in the 18th century and the first half of the 19th century very successfully. Then in the latter half of the 19th century the Copper started to run out and they came across large deposits of deep tin. Other mines were not as fortunate as Dolcoath and Tresavean especially in the Copper district of Gwenapp.

The A393 to the southwest, the A390 to the north and the A39 to the east bound the Gwenapp district. The principal mines in this area were United mines, Great Consolidated mines, Poldice, Unity Wood and Wheal Jewel. It was in the United mines that the hot lode was encountered. At the deeper levels the miners would have to work in temperatures exceeding 110f or more. In these conditions the only way the miners could work was almost naked, and have cold water sprayed all over them to keep them cool. This would be unacceptable under today's standards.

A lasting memory of most of the old miners was the humid Copperous vapours rising up the 1200ft shaft. They descended on death defying ladders in almost pitch-black conditions to their various places of work. It was in the shafts that most of the accidents happened, either

by falling off the ladders, especially after they had finished their shift when with weary arms and legs they could slip with devastating results. Or a falling object dislodged by a careless miner above might hit them.

Tin was found in the Gwenapp area at the majority of the mines, but not in any great quantities, Poldice being one of the exceptions. It is known that they were mining shallow Tin in 1512 as there is a record stating that on the 28th of September at Exeter court two men were arguing about legalities over Tin rights in "Poldyth in Wenapp."

Tin was the main ore mined in the last two mines to work in this district; Mount Wellington which closed in 1978 and Wheal Jane which caused widespread pollution in the Carnon River and sparked off a public outcry when it closed in 1986. It was at Wheal Jane that the author worked on and off from the late 60's to 1985.

If you mention the mineral Chalcophylite, Clinoclase or Liroconite to any mineral collector and ask them for the location, their probable answer would be the one time Mecca for Cornish collecting,
Wheal Gorland.

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"We pass through Wheal Gorland once without peer,
for colours the rarest of very rich ore,
and beautiful minerals valued yet more."

A quote from History of Gwenapp by W.Frances (1845)

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The Wheal Gorland set is almost triangular and is surrounded by mines of various sizes including Wheal Jewel, Unity Wood, Poldice, and two small mines Wheals Muttrall and Pink that amalgamated with Wheal Gorland.

The mine was never a great economic success, mainly due to the sporadic abundance of the ore.

There are six main lodes at Wheal Gorland.

Davey's lode: (Copper lode) Thought to be the extension of Trefusis lode in Unity wood, outcropping S.E. of Paul's lode, 420 ft S.W. of Tolgullow hamlet and an equal distance S.E. from Pink Moor, is Davey's shaft; one of the main working shafts of Davey's lode. The shaft is vertical to deep adit for 48 fathoms and then on the underlie for a further 40 fathoms (1 fathom = 6 feet approx.) 375 ft S.W. by W. of Davey's shaft is Simm's shaft, vertical to the 40 fathoms below deep adit. There are various crosscuts between the two shafts.

Shallow adit is 28 fathoms down Davey's shaft. Stoping has taken place above shallow adit to 20 fathoms below adit level, between Davey's and Simm's shafts.

Robert's lode: (Copper lode) coursing E. 40o N. on west and E 40o on

the east, and underlying 30o N.W.
At 660 ft S.W of Davey's shaft is Robert's shaft. This is one of three main shafts on this lode. Robert's shaft is vertical to 60 fathoms and then on the underlie to 104 fathoms below surface.

Deep adit intersects the shaft at 48 fathoms and at 285 ft east of Robert's shaft is Collin's shaft vertical to 60 fathoms and then on the underlie to 114 fathoms below surface. 600 ft S.W. by W. of Robert's shaft is William's shaft, vertical to 55 fathoms and then on the underlie to 74 fathoms below surface, 20 ft east of Collin's shaft Robert's lode runs into hanging wall of Muttrall lode. There is major stoping from deep adit (48 fathoms) to 36 fathoms below, and to 30 fathoms either side of Robert's shaft. The stoping then continues from 36fms to 66fms and then level for 30fms S.W. of Roberts Shaft. It then turns east for 50fms towards Collins shaft.
Down Williams shaft on deep adit, at the 12 and 26fm levels below adit, there are small stopes on either side of the shaft.

3. Muttral lode: (Tin Lode) courses N.E. and underlies 30o N.W.
1050ft S.E. of Davey's shaft is Bawdens shaft, one of the three main shafts on this lode. It is vertical to 26fms and on the underlie to 132fms.
300ft S.W. of Bawdens shaft is Old Engine shaft, vertical to 26fms and on the underlie to 100fms.
549ft S.W. of Old Engine shaft is Muttral shaft which is vertical to 26fms and on the ubderlie to 46fms. Most of the stoping is around Muttral shaft at the 46fm level. It is in this area that most of the rare minerals were found.

4. Dennis's lode: (Copper lode) is served by Morcom's, Skinner's and Dennis's shafts.

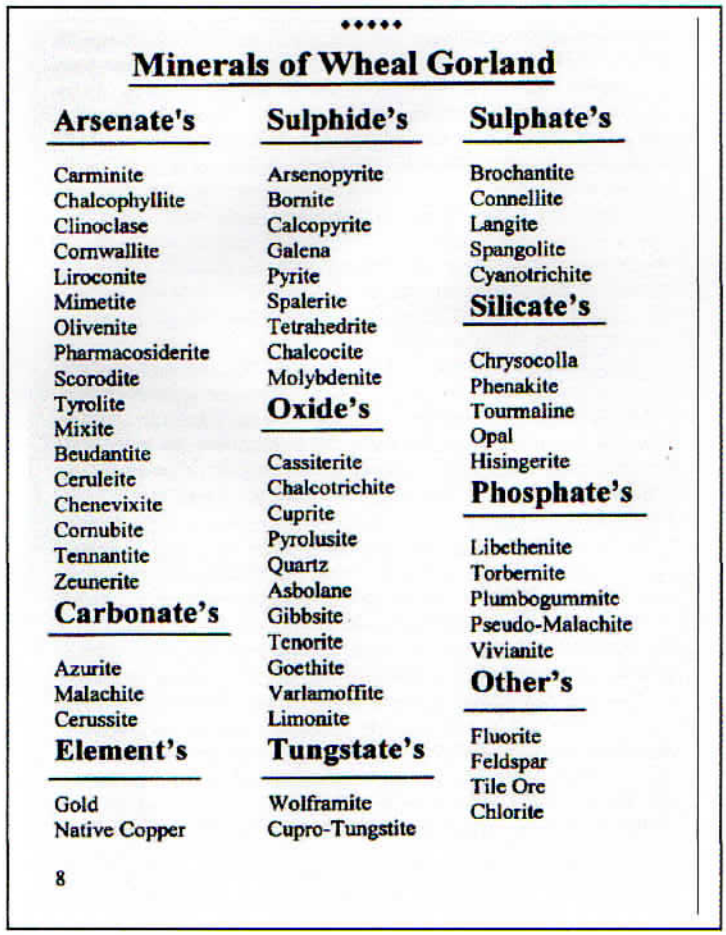
5. Greens lode: (Copper lode) is served by Skinner's and Greens shafts

6. Garby lode: (Tin lode) is served by Garby shaft.
There are also a few footway and airshafts, the best known is Davey's footway shaft. For more details on the various lodes see Dines pages 405 to 408.

The Geology of Wheal Gorland is as follows:
The country rock in which the mine is situated is the Carn Marth granite mass that is overlain to the east by Metamorphosed Killas.

As mentioned above, the main mineral lodes are Copper with associated Tin lodes. These mineral veins have been chemically weathered, and produced Gossan. This is the normal end product of oxidation and leaching of iron bearing Sulphide deposits exposed to the surface environment by erosion. The principle oxidation agent is atmospheric oxygen, and the leaching is accomplished by descending groundwater's of meteoric origin.
Sulphuric acid generated by oxidation of the Sulphides, particularly Pyrite, promotes the leaching process. In effect the upper section to surface of Copper Sulphide veins are oxidised and the valuable minerals dissolved out and re-deposited lower down the vein. This zone of weathering, or the supergene zone, is responsible for the formation of a more diverse range of minerals formed by oxidation of the primary Sulphides.

This Gossan formation was responsible for the poor return in investment in the early 1790's as Wheal was still in Gossan at a depth of 100fms. However the Gossan formation is also responsible for the mineral types found in wheal Gorland.
The minerals found in Gossan are either inert hypogene species like Quartz, which survive weathering, or newly formed oxidation products that are relatively stable under surface conditions. Zinc is easily leached out and Copper may be completely leached or persist in supergene minerals such as Malachite, Azurite and Chrysocolla. Lead strongly resists solution by the formation of not readily soluble minerals termed oxysalts.
Gold and Silver are quite inert and tend to be residually enriched in the Gossan, to an extent where the Gossan itself constitutes an ore.
Wheal Gorland exhibits all the characteristics of typical supergene activity and in the particular the Gossan lode, which in Wheal Gorland, was very bunchy in some places, but produced very rich stockworks of minerals in others, especially the Arsenates. Also Cuprite and Native Copper were found in this region of Wheal Gorland's lodes.



Minerals of Wheal Gorland

Arsenate's

Carminite
Chalcophyllite
Clinoclase
Cornwallite
Liroconite
Mimetite
Olivenite
Pharmacosiderite
Scorodite
Tyrolite
Mixite
Beudantite
Ceruleite
Chenevixite
Cornubite
Tennantite
Zeunerite

Carbonate's

Azurite
Malachite
Cerussite

Element's

Gold
Native Copper

Sulphide's

Arsenopyrite
Bornite
Calcopyrite
Galena
Pyrite
Spalerite
Tetrahedrite
Chalcocite
Molybdenite

Oxide's

Cassiterite
Chalcotrichite
Cuprite
Pyrolusite
Quartz
Asbolane
Gibbsite
Tenorite
Goethite
Varlamoffite
Limonite

Tungstate's

Wolframite
Cupro-Tungstite

Sulphate's

Brochantite
Connellite
Langite
Spangolite
Cyanotrichite

Silicate's

Chrysocolla
Phenakite
Tourmaline
Opal
Hisingerite

Phosphate's

Libethenite
Torbernite
Plumbogummite
Pseudo-Malachite
Vivianite

Other's

Fluorite
Feldspar
Tile Ore
Chlorite

8

WHEAL GORLAND

Anybody who collects mineral specimens, particularly Cornish ones, will

sooner or later come to hear to the Wheal Gorland mine
Although its' most recent fame has been due to the collapse of some of its' old workings which causes subsidence in various parts of St.Day. Its' main interest to collectors is the rare and valuable minerals which can be found within the mine. With this thought in mind a group of us, in the late 1970's got together to see if it was possible to gain entry to the old workings and collect any minerals we could find.

The original group consisted of five of us:

1. Richard Williams, a mineral expert from Tolgus Tin.

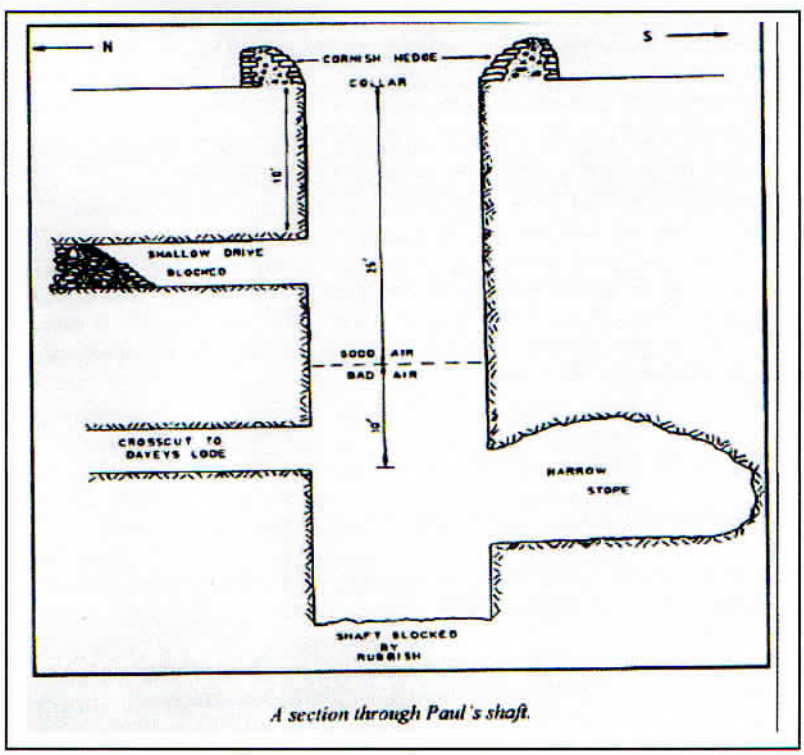
2. Bob Orchard, also from Tolgas Tin who looked after all the mechanical needs of the project.

3. Percy Bond, a prominent member of the Carn Brea mining society, without who's held we would have been greatly handicapped.

4. Mike Cooper, a miner from Pendarvis mine.

5. Finally, Dave Smith a miner from Wheal Jane mine, that's me folks.

Our initial task was to do a check at county records and the RIC library at Truro this revealed a set of plans for the complete mine. It appeared the mine consisted of several lodes (details of which can be found in Dines) but our interest centered on the Muttrall lode. It was located from the crossroads at the bottom of telegraph hill progressing westwards to St.Day village. It split into two sections at the top of the hill; one section going west under the village and the other going north-west under Wheal Gorland estate. None of the shafts of Muttrall lode shown on the plan were open to the surface.

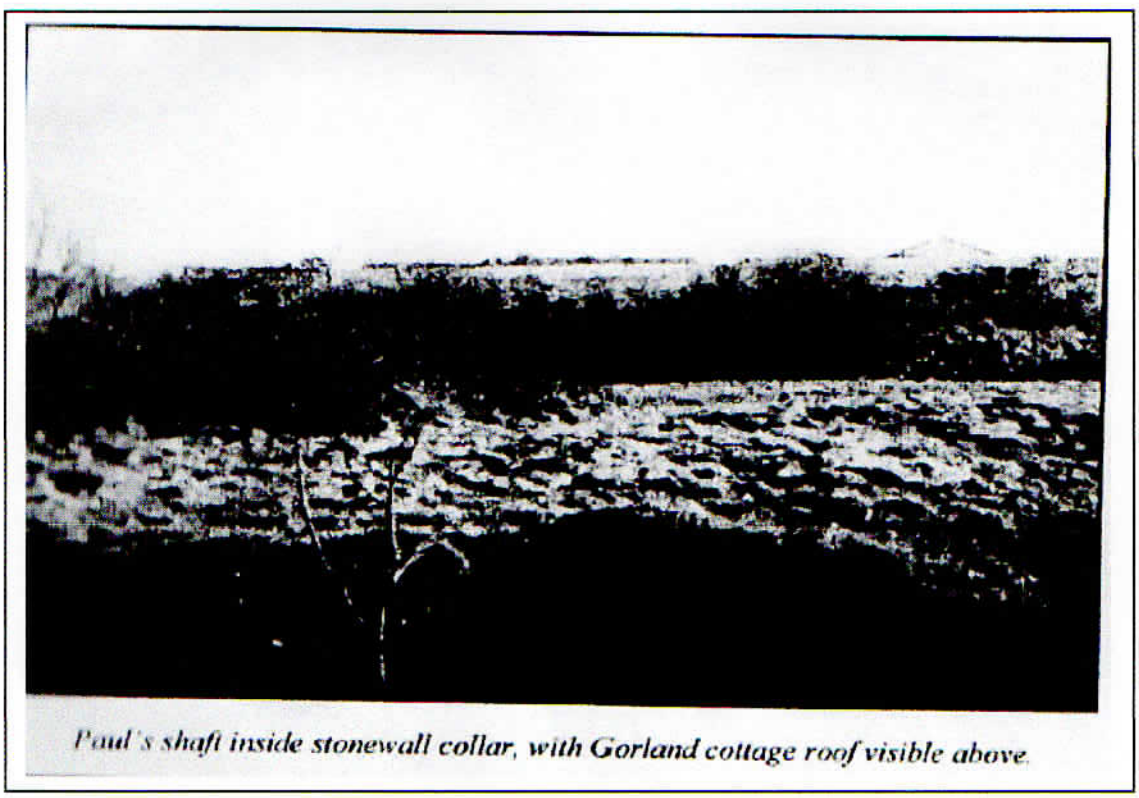


A section through Paul's shaft.

Davey's lode, which ran more or less parallel with Muttrall lode, seemed to offer the best chance of access as a crosscut was shown on the plan, which ran from Davey's lode to Muttrall lode.

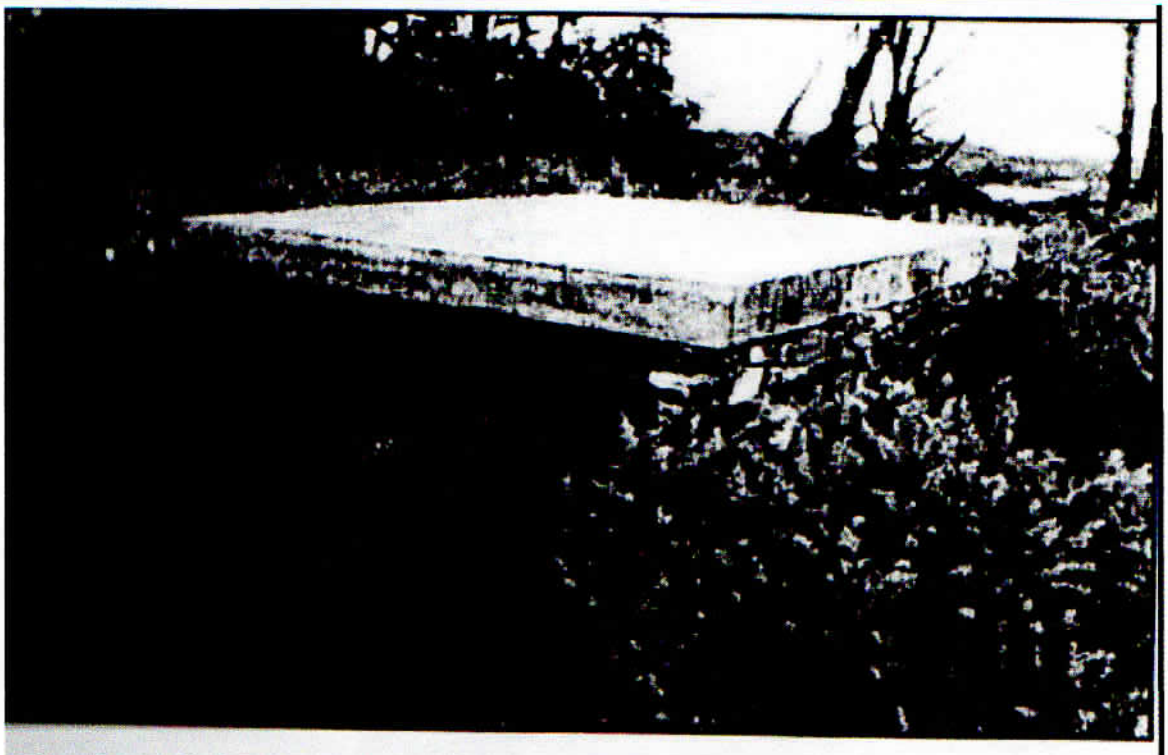
The first shaft we tried nearly turned out to be our last! A descent by lectron ladders was attempted at Paul's shaft just across the road from Pink Moors kennels to investigate a shallow shaft shown on the plan as having a crosscut to Davey's lode six fathoms from the surface. The crosscut was there all right but so was something else. About five fathoms down the oxygen level in the air dropped suddenly. This could have been caused by decomposing rubbish, that had been dumped down the shaft. I was lucky I had a safety rope to the surface and when I realised the oxygen level had dropped I shouted to the others on the surface to pull me up. If they weren't there I doubt if I would have been able to get out on my own.

Mike Cooper then made a careful descent down the shaft with a safety lamp and found that the difference between it going out and staying lit was only a matter of inches. To make things worse the entrance to the crosscut was clearly visible just below the bad air level.



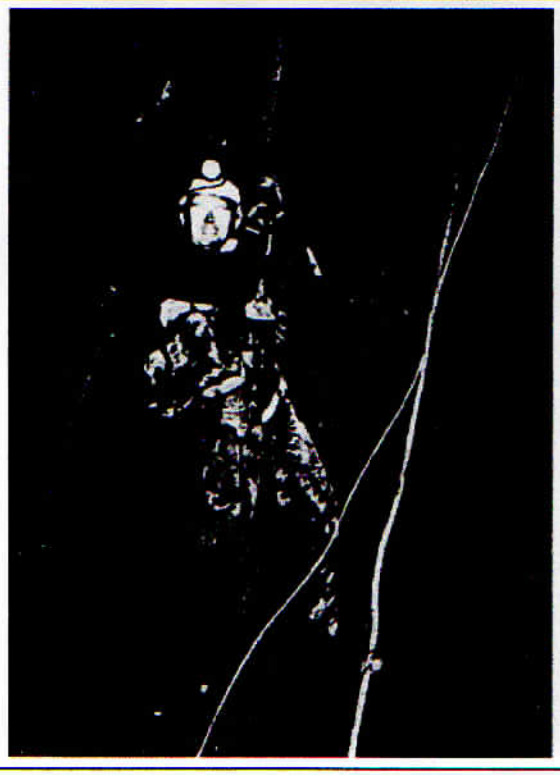
Paul's shaft inside stonewall collar, with Gorland cottage roof visible above.

The next attempt was made from Simm's shaft, which was situated just north Of Wheal Gorland estate. According to the plan this shaft intersected Davey's lode at 170 feet from the surface. Simm's shaft is a vertical shaft approximately 10-12 feet square which is cut clean through granite



Sim's shaft showing modern bat cage put in place over the shaft in 1995.

The length of the shaft was so long and we decided to use winch instead of the lectron ladders. The winch was hand operated worm drive effort adapted to bolt onto a Land Rover and the winding rope was adapted by Bob to hold about 200 feet of 1/4 inch rope. In order to do an uninterrupted descent the rope was run over a pulley tied to a tree branch, which was sticking out over the shaft.



Sims shaft:- one of our intrepid team of explorers about to land on shallow adit level.

The marks on the left are the drill steel holes after blasting by the old men.

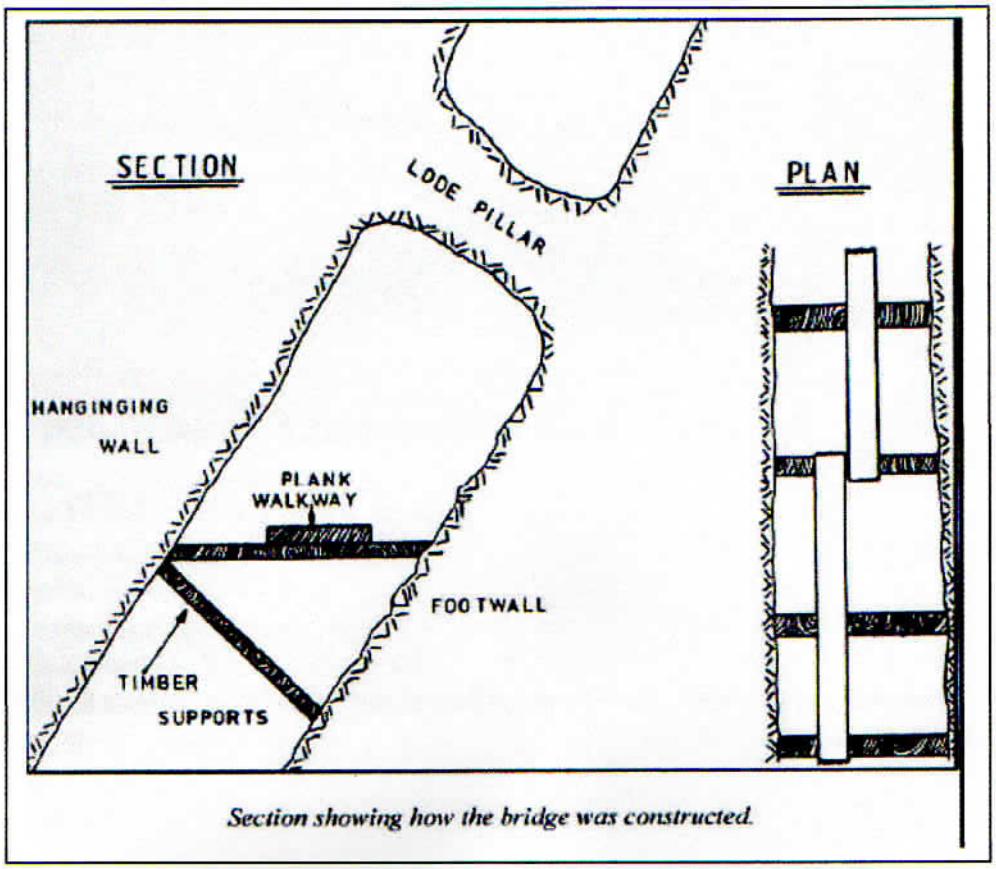
The lines on the right are our safety rope (Blue) and our communication wire.

After descending 160 feet we found a thirty feet drive, which led from the shaft to Davey's lode. Once we reached Davey's lode the drive went to left and right, on the right we found some stoping had been done above and the drive finished in a dead end. On the left stoping had been done above and below the drive and the angle of the lode was about 80o.

Although the floor was missing in some places we managed to bridge over the gaps and proceed for about 100 feet with no problems. The next 50 feet was open stope, above as far as we could see and below to water level which was about 90 feet down. The drive continued on level from the other side of the stope, which was about 6 feet wide from hanging wall to footwall. Despite the hazards entry was made to the first level.

The level off Sim's shaft *The bridge (see below)*

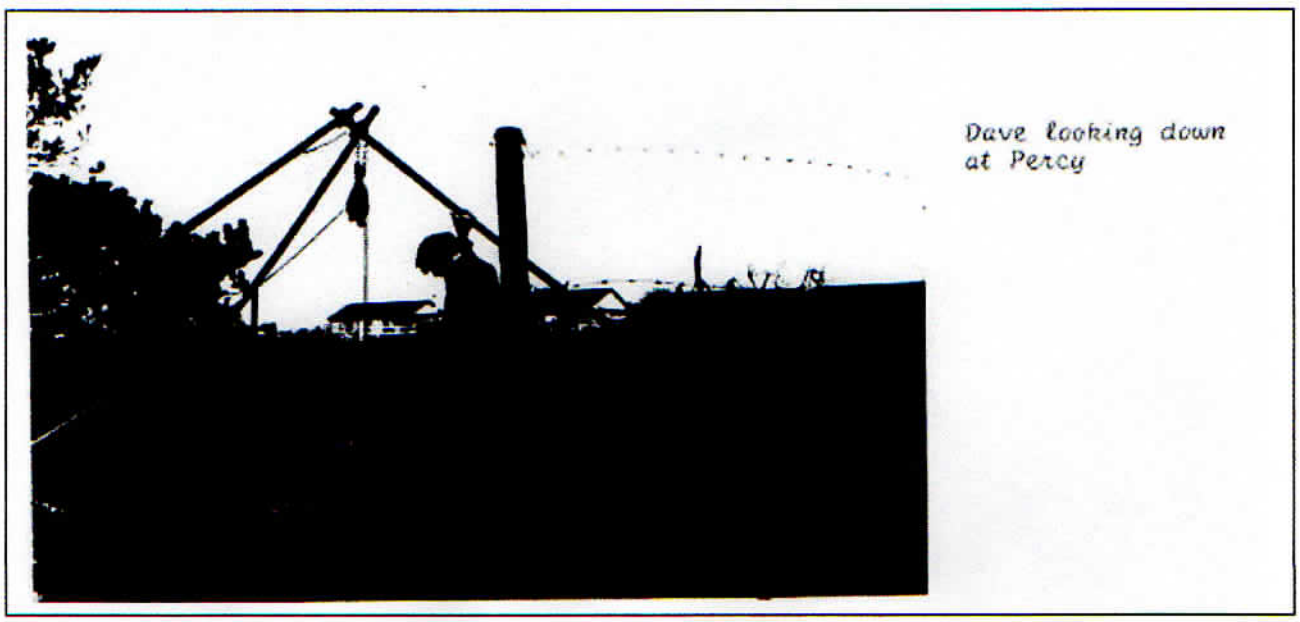
We found a drive, which led through to and across a stope. It then led on to Davey's footway shaft, which was open below and above the drive. By shining a light up the shaft it was possible to see a staging and part of a ladder. The drive continued past the shaft towards Muttrall lode but owing to lack of safety gear it was decided that no further exploration would take place at this time. We considered Davey's shaft too dangerous so we turned our attention to Davey's footway shaft, which was choked with rubbish at about 20 feet below the surface. We hoped, at the time, the rubbish was only a few yards deep but as we progressed we found this wasn't so.



Section showing how the bridge was constructed.

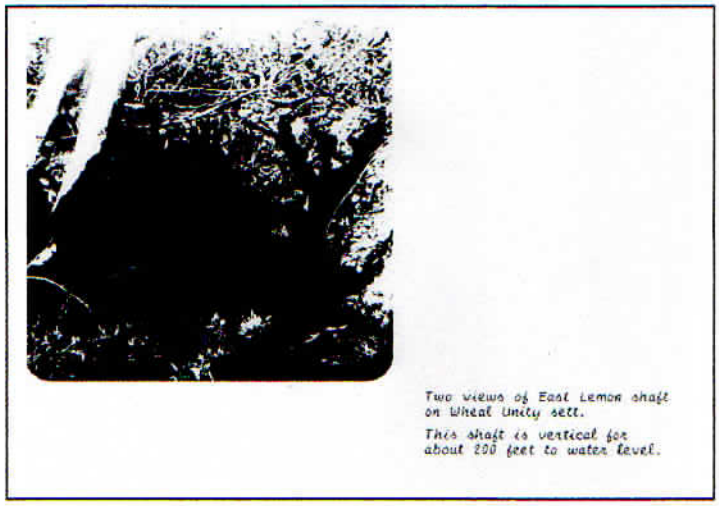
Daveys shaft (Now capped)

To clear the shaft we rigged a tripod of scaffold poles across the top then laid a telegraph pole across underneath. We then constructed a timber platform from the pole to the side of the shaft. We then made plans to build a winch powered by a small petrol engine for hoisting rubbish. However as this would take time a hand powered winch (actually an old mangle) was obtained from a local junk dealer. By using this gear the shaft was cleared for about 20 feet. We then set platforms and ladders in the shaft sides for access as we required and also erected a barbed wire fence.



Dave looking down at Percy

These operations finally stopped in February 1977 owing to adverse weather conditions. Shortly after this Mike and I decided, as an alternative, to try to gain access from East Lemon shaft on Unity sett. We investigated by lectron ladders and found two drives on the opposite side of the shaft. One at 30 feet on the south side and one at 60 feet on the north side. So that it would be easier to work we built a platform in the shaft on the 30 foot level.



Two views of East Lemon shaft on Wheal Unity sett.

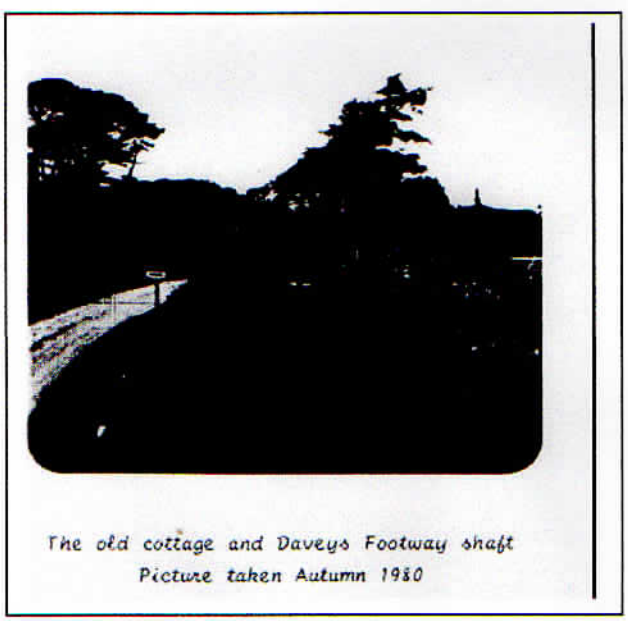
This shaft is vertical for about 200 feet to water level.

The drive on this level went east away from Gorland and west towards it. The eastwards drive was partly blocked with greenslime and ochre and didn't have much interest for us. To the west the drive was partially blocked with tailings and rubbish and this took some weeks to clear. However this was to no avail as the drive ended in a small shaft to the surface. We looked at the area and it seemed the field the shaft was set in was a tailing dam and the shaft acted as an overflow in conjunction with the drive.

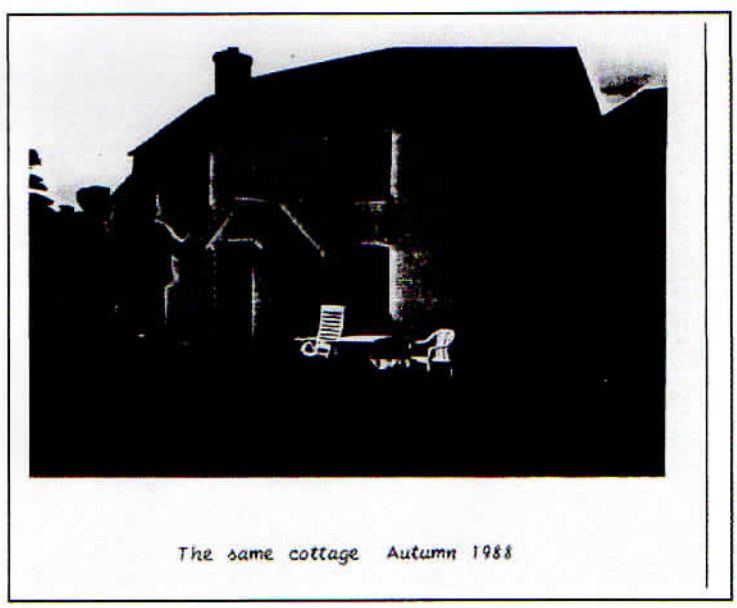
We then turned out attention to the 60 foot level and we constructed another platform and ladder ways to connecting the two platforms. The 60 foot level drive went eastwards away from Gorland but it had the advantage of being clear of any obstructions. I bypassed another shaft after about 60 feet and then split into four crossroads. We thought that the left hand fork, heading north, would intersect the Muttrall lode.

Unfortunately the drive was blocked with rubble under the line of the main road, which, owing to the downward run of the hill on the surface, was not far above. As clearing the blockage might have resulted in subsidence in the road it was decided to abandon this line of approach.

By this time a series of domestic and industrial incidents, which culminated in the closure of Wheal Jane mine, brought the whole venture to a stop for over a year. It wasn't until the autumn of 1979 that a fresh approach was attempted.



The old cottage and Daveys Footway shaft
Picture taken Autumn 1980



The same cottage Autumn 1988

The group this time consisted of Mike, Percy and myself with the addition of John Fisk, and experience mineworker and Bernie, a police officer with a keen interest in mine workings and minerals. As before we decided to run the project on the cost book system which meant no money being put up at the start but any expenditure was to be divided equally amongst all of us.

All that for this a bucket full of much about to be landed.

This shot was taken from the second platform.

We chose Davey's footway shaft for our access point and we started working on clearing it down to our bottom platform. It appeared that the local population had been using shaft for a rubbish dump.

As the shaft became deeper 45-50-55 feet we found it was obvious that our old mangle winder was going to be inadequate. Two men were needed to operate the wheels (one of which had the habit of coming off at odd times) plus one man had to haul in the winder rope and another was needed to land the bucket when it cleared the platform. Also, with a hand-operated winch we were limited to the amount of rubbish we could lift, the most being a 28lb snowcem drum full of muck. Therefore, a petrol-engined winch was built by certain people working in places that need not be named. It was powered by a small engine and it had a clutch with a three-speed gearbox with reduction gears to a winging drum. The cost of the winch was £10 and was divided amongst us all. A 1/4 inch steel cable was acquired which replaced our synthetic fibre winding rope.

In January 1980 severe storms swept the country and this affected our progress. Two trees near the shaft blew down across it damaging the barbed wire fence. We lost two weeks work due to these weather conditions.

In February we installed the winch, but it was giving us some problems with the carburettor. To speed up removing the muck we had a twenty-gallon drum, which filled up a wheelbarrow each hoist. However, what with the depth of the shaft, (some 60 feet), coupled with the weight of the bucket, (about 3cwt) was causing us some safety worries especially as at the moment landing the bucket meant hauling it over the handrail of the platform.

As can be seen the platform over the shaft is becoming very cramped.

For one week in February we didn't do any sinking as there was a lack of members so instead we enlarged the platform and installed a trapdoor for the bucked to come through and be landed. The following week we continued the sinking and proceeded very well. We went down nearly three feet deeper and a large void was evident under one corner of the floor but just as we were on the last bucket the headgear tripod collapsed.

A couple of days later Ted called round and fixed the carburettor on the winch and we had a new headgear on loan from Pendarves mine which was erected, after a struggle, and we continued sinking.

In March we continued sinking steadily although this was somewhat slowly owing to us finding increasing amounts of timber amongst the rubble in the shaft. Bernie left the group owing to a police posting to Ilfracombe. We all felt he was a good man and he was missed badly. However, Stephen filled his place. He was John's son and joined us just as there was a £7 call going out to all members to pay for the engine

and new carburettor.

Mike & Dave bolting the new headgear together watched admiringly by Bernie.

In April the weather got a bit warmer and we decided to take advantage of this by putting in an extra spell on Good Friday and Easter Sunday by sinking the shaft 4 feet deeper. The depth of the shaft was now 63 feet and the area at the bottom was about 6 by 4 feet. To speed things up we tried putting two men at the same time on the bottom. This wasn't a great success but we were then ready for a new platform and I cut the hitches on Easter Sunday hoping to fit them the following Saturday.

Full bucket about to be landed.

In May the sinking proceeded steadily with spaces and holes appearing in between the rubble and timbers. The old man who lives in the nearby cottage, and acted as caretaker over the whole project, had moved into an old people's bungalow. This resulted in some of the gear going missing namely a length of rope and a chain. We decided to store most of our remaining gear behind the barbed wire shaft fence.

In June we were determined that we were going to break through but one day we found a notice from a firm of estate agents pinned to the gate asking us to get in touch with them. We contacted the estate agents in the beginning of July and we spoke to a Mr.Fletcher. He wanted to know what we were doing in the area and we told him we were just a group who were interested in old mines and in particular, Wheal Gorland. Mr.Fletcher seemed quite agreeable to us continuing work on the shaft provided we kept in touch with him as the cottage and adjoining land were up for sale. As a precaution, as we could well be asked to leave the site, we decide to carry out some more investigation on Simm's shaft.

We knew from previous experience that the shaft was about 180 feet to the first level. Just down from the surface there was a ledge on each side of the shaft, which was just over a foot wide, and the width of the shaft at the top was about 11 feet across. The general plan was to erect a platform on the ledge 18 feet down and then from this hang a series of chain ladders for the remaining 150 feet.

Later on in June we had another setback, this time a serious one. When we arrived at the site we found that someone had stolen our winch engine. Although they had kindly left the gearbox and clutch, local searching and police inquiries drew a blank and we were really stuck without this piece of equipment.

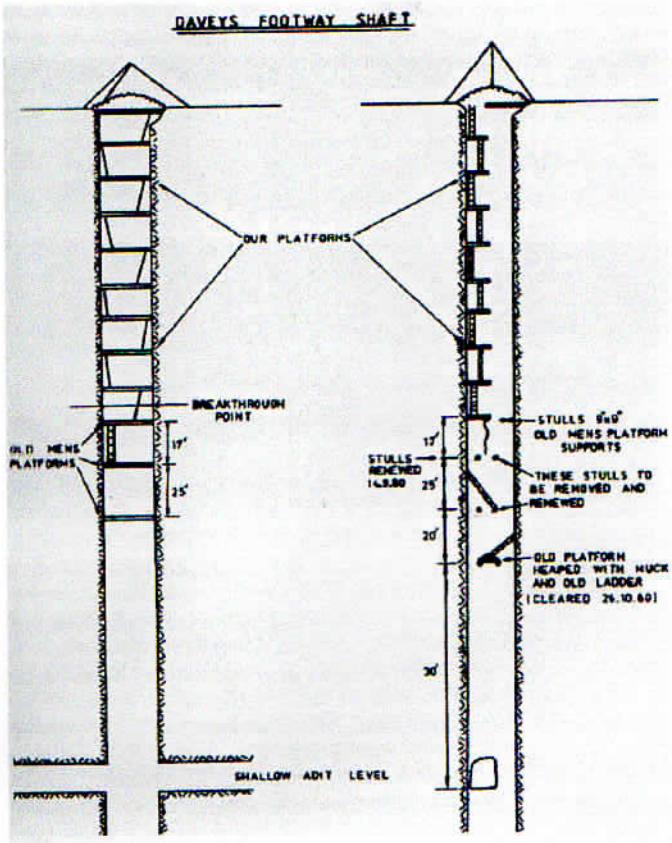
In July 1980 we started work again with a new engine for the winch, which was borrowed from Mike's lawn mower. Just to be on the safe side we unbolted it and took it with us at the end of the day. Fitting it to the winch was easier than expected and we even managed to put in a spell of sinking. However the bottom of the shaft is getting very cramped owing to a large amount of timber, which was sticking up, through the dirt, we needed another platform.

At the end of August Mike went down and noticed a small depression under the platform. We poked this with the pinchbar which caused it to fall away echoing down the shaft. Further excavations revealed a hole about 4 by 3 feet with a further pile of earth and timber about 15 feet below. When Mike cleared away the muck he was standing on it revealed a wooden platform, which was one of the old men's platforms, used to support the ladderways. The support timbers for this were massive nine by nine timbers and in fairly good condition but we renewed the planking as a safety precaution.

In September a new ladder was made to connect the platform with the others. We then slung a chain ladder from the support beams and Mike cleared the lower blockage revealing two more support beams about 15 feet below. Below that again two more supports were revealed with a massive wooden ladder resting on them. We now had to fix six ladders to connect up all the timberworks. We measured the total depth to the last complete platform and it was just less than 100 feet, according to our

calculations that left about 70 feet to dig.

Later in September we had our first meeting with Colin Davey's, the new site owner, and he seemed a most agreeable person with no objections to our strange Sunday morning occupations.



A section through Davey's footway shaft, the work completed by September 1980.

The main task now was to assure the safe working of the project. As the first set of old men's stulls seemed in fairly good condition we left them in place supporting our ladder. The second set was 17 feet below and they didn't look too good and we decided to renew them. This was done by hauling them out one at a time from the bottom platform while hanging onto the chain ladder and wedging them in. As an extra precaution we hung chains from the last two platforms to secure them together, with a pair of chains from the lower securing the new stulls. A couple of days later, in order to save time next Sunday, John and I came over and secured the ladders between the last two platforms.

At the end of September the plan was to hoist up the 20 feet ladder that was resting on the old men's stulls, which were 25 feet below our last platform. We them wanted to secure lectron ladders to our platform

stull and descend down to the first level for primary exploration. In reality it was somewhat different, we managed to link a hook on the end of a rope under one of the ladder rungs. Then Mike and I pulling from the two bottom platforms and four others pulling on the surface, we heaved it up a few feet then dropped it back. The weight of this must have been 1/2 ton. As lifting it in one piece was out of the question we decided to leave it in place for the time being and cut it into sections at a later date.

John and Mike went down to the first level right away and finished cleaning the side of the station ready for the ladderway, whilst I finished off the second intermediate platform. We then climbed down the chain ladder to the last of the old men's platforms situated just 30 feet above the first level.

This level was heaped with muck and old ladder parts, which were cleared off and slung down the shaft. At this point, for some reason, the shaft was cut away on one side for half its width forming a deep recess from just above the last platform down to the first level.

It was now November 1980 and a pair of hitches had been cut in the shaft walls at the same height as the floor on the first level by the old men. But the timber platform that fitted into them had long since rotted away, so we decided to build another. Therefore, a timber beam was lowered down to the first level and fitted into the hitches.

The rest of the morning was taken up by cutting hitches and fitting the ladders and platforms between the last two old men's platform we now had proper ladders down to within 30 feet of the first level. Whilst all this was going on, Mike took the opportunity to do some more exploration down the drive towards Robert's shaft. Apart from the blockage, mentioned previously, the drive was fairly clear except for some flooding in one section, which was about 3 feet deep. Robert's shaft itself was choked with debris and old ladders; it had been cut in bad ground and would have to be cleared through to gain access through to the Muttrall Lode.

We then acquired a large amount of timber from, of all places, a Guy Fawkes bonfire. If consisted of mainly 7 feet by 2 feet and 4 feet by 3 feet timbers along with some 1/4 and 1/2 tree trunks which are ideal for platforms. We then lowered down enough of the 7 feet by 2 feet timbers to deck across the shaft at the first level, nailing them to the beam we had placed in position last week. The last four planks on the north side of the shaft were placed loose in case we needed to hang lectron ladders from the beam in order to descend further down the shaft. A 16 foot ladder was then lowered down and placed in position on the first level for which I then cut hitches. I was then able to fit the last intermediate platform. We then needed just one more ladder about 12 feet long to complete the shaft ladderway.

The following week the last of the ladderways had been completed throughout the length of the shaft to the first level. Apart from putting in the last length of ladder we didn't do a great deal on this particular day as Colin and his brother wanted to come underground to see what the conditions were like. I think Colin was a bit worried about the size and position of Davey's stope in relation to his cottage next to Davey's shaft.

One interesting thing we noticed when showing Colin and his brother along the drive leading to Robert's shaft was a drive cut eastwards, which was backfilled, corresponding to a drive on the plan connecting to the deep adit. It may have been a misprint owing to the age of the plan. The blockage appeared to be caused by the collapse of a raise put up on a small lode off the drive.

A couple of days later Bernie came back to rejoin our team as he had been transferred to Callington in Cornwall. From here he was now able to journey down each week (duty permitting), what a keen chap!

It was now late November and the weather had been deteriorating now that winter had arrived. For the next week it rained steadily and the trickle of water running down the shaft on the first level had increased considerably. All this rain soaking into the ground on the surface was having its effect on the top of the shaft. Some days before a section from one side had broken away and slid down the shaft, fortunately, without doing any damage. Because of this our plan to lower the timber stacked on the surface platform down the shaft to the first level had to be postponed. We considered it unsafe because, to ensure the lowering of the timber down the shaft, it was necessary to put a man on the first, third and fourth platforms to guide it through the openings. Then with men loading and lowering timber on the top platform causing it to vibrate which could have set off another dirt slide endangering those men below.

We decided to try and take some photographs for the record of the station, drives and stope on the first level, but we didn't have much success. We had a problem with the lighting and to try and improve this we lowered down a 12 volt car battery and sealed beam headlamp unit. This proved to be a great help while it lasted which was about 10 minutes. After this the sealed beam unit developed a crack and burned out the filament. Then we tried taking pictures using flash only, again without much success, what with everyone talking, smoking and drinking tea, the air was thick with haze and the prints all came out fogged. However, we hoped all was not lost as, later in the week we met John Watton (the school of mines photographer) and arranged for him to come down the mine sometime in January 1981 and photograph everything of interest.

At the end of November the weather changed from mild and wet to clear and cold with heavy frosts at night. Therefore, we decided to go ahead with lowering the timber stock down the shaft to the first level. Now that Bernie had rejoined us we now had enough men to do this whilst Mike and I got busy underground.

The drive to Robert's shaft was our next objective. This measured about 5 feet by 3 feet and was fairly accessible for most of its length. The last 30 feet was flooded by about 3 feet. Not an insurmountable obstacle but was inconvenient for travelling through in Wellington boots. To overcome this problem we fixed stulls across the drive at the water level to support a timber walkway. Once this had been completed we were now in a position to tackle the main blockage of Robert's shaft.

At the beginning of December we found that about 350 feet from Davey's

footway shaft the country rock changed from hard grey to soft pink killas that decomposed on contact with air. This had happened at the blockage area, which caused us further problems, as we now had to erect setts to support the ground. We managed to erect the setts without too many problems piling broken rock from the blockage on the sides and top clearing the drive for a further 12 feet. This brought us to the blockage proper, which consisted of large rock slabs from the roof, mixed up with broken timber shafts and ladder sections. Two other things of interest we noticed were items of household rubbish. i.e. saucepans and tins etc. in amongst the rock and we could also hear running water underneath us down the shaft.

A week later in December we were tackling the problem of access to the Muttrall lode on two fronts by splitting the seven men on the project into two teams.

One team consisted of Percy, Bernie and one or other of the boys Derek and Steven. They were tackling Davey's lode end. The other team, Mike, John and me are working on the Robert's lode end.

On the Davey's lode end the short drive from Davey's footway shaft ended in a natural rock bridge or pillar which measured 8 feet wide and 2 to 3 feet thick. It was littered with large rocks, which we cleared off and slung down the stope.
All this rock heaving must have dislodged some timbering further down the stope as we noticed a patch of light coming from Davey's shaft side, about 70 feet below the pillar (probably a crosscut through to the shaft). According to the mine plan the deep adit cuts through the stope about 20 feet east of the pillar at 245 feet from the surface. That was 65 feet below our present level and looking back on our exploits on the stopes near Simm's shaft (also Davey's lode) the ladderway from the shallow adit level to the next level down was about 80 feet long. Allowing for our rather hit or miss efforts at measuring so far, I thought the deep adit was at the same depth as the light patch.

To try and get down to this level we wedged a timber stull across the drive and hung the chain ladder from this over the footwall of the stope. Unfortunately it was a bit short so we had to fix the rope ladder on the end and try again!

On the Robert's lode end we were tackling the rockfall at the end of the drive. Owing to the nature of the ground we erected close spaced timber setts to hold back the broken rock. Getting the timber down to the drive to where we needed it was a problem in itself as the drive was so narrow the only way was to drag it down behind us one piece at a time. Then we had to float it across each flooded section. Then it had to be cut to size and fitted into place. This was a somewhat tricky job as the area measured only 5 feet by 2 feet. In the end we only advanced about 3 feet in a week.

Over the past few weeks several changes had taken place on the surface area of the site as Colin got it ready for landscaping and building in the Spring. Most of the trees had been felled and the stumps had been grubbed up with a bulldozer and tipped down Davey's shaft along with tons of rock from the dumps. When all this cleaning up had been completed we plan to cap both Davey's shaft and Davey's footway shaft.

Davey's shaft was to be capped completely and Davey's footway was to be capped incorporating a manhole for access.

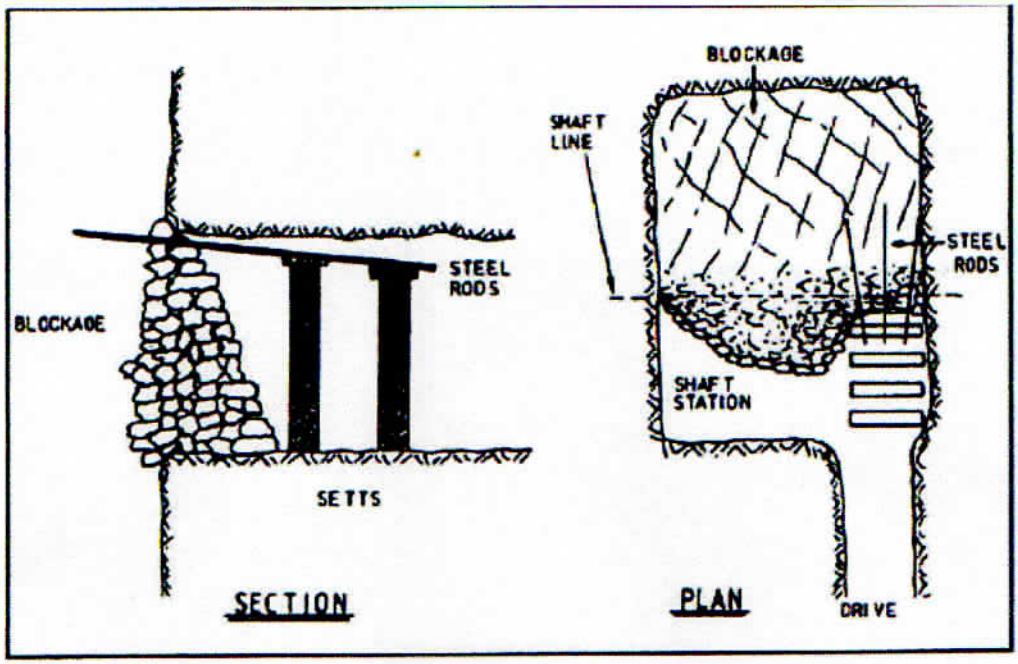
With this in mind we started the preparations to cap Davey's footway shaft. First of all we had to build a crash deck for heavy timbers to prevent stray rocks falling down the shaft when the collar is taken away. About 40 feet down the shaft the bottom section of the old men's collar was still in place hitched in solid rock and made an ideal place to fix our deck beams. The deck itself was made up from two lengths of telegraph pole, which were cut to fit the shaft width and decked over with 4 by 2 planking; that bonfire timber was certainly becoming handy. Once this had been completed the next step was to haul up the top two platforms and ladders, then lower all the remaining timber stock down to the deck for storing.

The next day was very sunny and bright, and was ideal conditions for working on the surface. Therefore we decided to dismantle the headgear tripod and the main landing platform. This was accomplished without incident with the tripod being stored away for future use and the timber decking was lowered down to the crash deck ready for use underground later.

On the Davey's lode side, Bernie and Percy continued to try and gain access to the deep adit. Bernie went down first on the right side of the rock bridge to another rock pillar 20 feet below. He then went down the footwall of the stope; unfortunately just below the pillar the stope angle seemed to steepen to 90o. As he was only using a rope it would have been very difficult for him to come back up so that side was left for a while. He then tried the left side of the rockbridge; a small ledge was cut on the footwall leading away to another rock pillar in which a dark opening was visible. We thought perhaps it was another drive but on investigation it turned out to be a hole throughout the pillar with another stope on the other side. These were the same stopes that we had met up with our investigation from Simm's shaft.

On the Robert's lode end progress was still very slow. Two large boulders had come down from the blockage last week and completely filled the drive. The only we could get rid of them was to cut them up with a hammer and chisel. This had now been done and another sett was erected. We were now up to the Shaftline. Getting the muck away from the face to dump it further down the drive had been giving us some problems. We were shovelling it down the drive to the flooded section to backfill it, this was getting further away each week, so to speed things up I made a small two wheeled wagon to hold 2-3 buckets of muck. It turned out to be a lot quicker but we would still have to lay down a timber track for the wagon to run on.

The water level in the drive to Robert's shaft had now risen to waist deep and we had to either wear waders or get wet feet. To try and remedy this we borrowed Percy's garden hose and filled it full of water and then plugged both ends; secured one end under water in the drive and hung the other end down Davey's footway shaft. The plugs were then removed and the water was left to siphon out.



A section showing how we cleared the blockage in the station at Roberts shaft.

In January 1981 we decide to leave Davey's lode and concentrate on Robert's lode side. The steel rods we had previously drove into the rockpile over the setts seemed to be doing their job and we advanced the drive another 3 feet still following the west wall of the shaft. The following week we were still advancing slowly keeping to the west wall of the shaft. We knew that Robert's shaft was blocked above us, probably to the surface. But we weren't sure how far below us the blockage extended. Mike volunteered to down Davey's stopes on the lectron ladders to try and find the deep adit and check back to Robert's shaft. The idea was to find out if it was blocked all the way down. Mike's investigations drew a blank but he did find traces of a drive which was evident in a series of pillars which extended east and west the backs of which were about 8 feet above the water level. There was still no sign of the deep adit.

The next week we were still searching for the deep adit and this time Mike was volunteered to go down Davey's footway shaft bellow the shallow adit level. We didn't hold out much hope of finding it as, on the mine plan, the deep adit was shown as going past the shaft about 30 feet to the east, but the shaft must have been sunk deeper than the shallow adit for a reason.

As it turned out we had no luck with our search. Davey's footway went down another 90 feet then it was blocked with rubbish. Most of which was what we had slung down from above when we broke through therefore if a crosscut to deep adit existed it must be below it. One point of interest we found was about 45 feet below shallow adit the country rock changed from grey shale to granite.

At the end of January we proceeded up the drive to Robert's shaft and the first thing we noticed that the water siphon system hadn't been a great success. Either the hose had blocked or the water level had dropped below the intake and stopped the siphon. If this had happened the water level would have built up in the drive again. Whatever had

happened we were sad to see the water level back up to the level it was when we started earlier. On the Robert's lode end we were still proceeding slowly but as far as I could calculate we were about half way across the shaft proper.

To try and alleviate the water problem in the drive John started to dig a drainage trench from Davey's footway shaft back towards Robert's shaft. This was quite effective and at the time showed what had been the cause of the rise in the water level. It appeared that the water pouring down Davey's footway shaft was running steadily down towards the flooded area thus keeping the level high.

On the Robert's shaft end we had also progressed slowly and my calculations were that we were now about 5 - 6 feet to the far end of the shaft. Hopefully the adit would be dead ahead. If it weren't then we'd have to chase the shaft wall round until we found it.

In the middle of February there had been some reduction in the depth of the water in Robert's shaft drive. It was now possible to walk along it in waders if care was taken. However, it was still too high except for the far end beyond the last blockage under the raise of boards on stulls. This was where I had put them in just above the water level and they were now nearly a foot above and the water level is lower than the flooded section further back. We still had to set some drainpipes through the blockage and hoped it would keep the water down.

In the end itself progress was still slow and there were large rocks which we had to cut up with hammers and chisels but it was now possible to see about 6 feet ahead from the face through the rocks although there was still no sign of the adit.

On the 1st of March we had a breakthrough. We found the adit from Robert's shaft to Robert's lode. It was only by chance I came across it; I was cutting through one of the large rocks of the blockage and a void appeared underneath the last piece to be sloping void ending in the tunnel entrance about 6-8 feet below the level of the drive we were working in. It was dead ahead of us and it was possible to see about 8 feet along the floor, this appeared to be dry and fairly level.

We were puzzled as to why the adit continued so much lower than the level we were working on. What we thought had happened was that the drive we had been working on was probably big enough to walk through, but owing to the rockfall blockage, we had been crawling on packed rubble through the shaft station area. When we reached the shaft proper we must have gone slightly uphill thus creating the difference in levels.

The following week we managed to gain access to the adit continuation after some difficulty in cutting through the last of the large rocks. It was difficult because the only way I could cut them up was by laying flat on the floor and using a hammer and chisel more or less at arm's length as the last rocks were about a couple of feet below the level of the floor of the drive.

After an hours work I had a hole just large enough to wriggle through, this led to a shaft station. Robert's shaft must have been a fairly busy one in its time to have a station cut on both sides. From the

station the adit led on with a slight curve to the left. At the point of the blockage another adit ran from south west of William's shaft to east of Collin's shaft and joined up with ours. If the roof had come in here it would not be too serious. What was a distinct and more worrying possibility was that stoping had taken place above and below the adit with the resulting blockage caused by the collapse of the same. If this was the case the blockage would be difficult, if not impossible, to shift.

Now that we had found the adit continuation we decided that we must do something about draining the water in the adit between Davey's footway and Robert's shaft. Therefore, we put down some 2" pipes from the water level at Robert's shaft back to the blockage that held back the water. This was a wet and dirty job as the decomposed rock turned to liquid mud as we started to dig a trench through. When we left, however, the water was flowing steadily away through the pipes we had laid. We hoped this would drop the water level enough for our needs.

In April we had still not been completely successful with our drainage system. The pipes had a tendency to become blocked with silt. To overcome this I made up a length of fairly stiff polythene piping with a pointed wooden plug fixed into one end. By using this as a drain rod we managed to clear the pipes repeating the operation as required.

The hole that we wriggled through into the station was our next job this week. Over the top of the hole was a large boulder, which was wedged between the main rockfall and the shaft wall. If we could cut this up it would make the opening large enough to crawl through. We managed to do this and the next job was to support the roof of the station as this was badly cracked and sounded hollow when tested with a bar. Three props were put in and boards were put in behind these to keep back the loose rock that we had piled in there from the blockage further on. Just past the station the adit wall on the left hand side was also cracked and hollow sounding. To support this we drove drill steels into the floor by the wall and then wedged them back to the wall at the top with short wood stulls.

The next job was to clear the blockage further down the adit. On investigation this turned out to be about 10 feet high caused by a collapse of the roof. We decided the quickest way to advance was to go up one side and down the other side. This would entail digging a hole down 5-6 feet until we found the continuation of the adit.

In the middle of April we had yet another setback. This time it seemed some idiot builder of Colin's who had dumped rubbish down Davey's shaft had managed to block it, at an unknown depth. Normally this wouldn't have mattered but Colin wanted to dump waste and building materials from the cottage site. We suspected the amount of Davey's shaft left may not be enough to take all this. As the cost of hauling the rubbish to the dump would be too expensive the only alternative was to dump it down our shaft.

A month later we had not made much progress toward Muttrall lode. All of our time had been taken up with work on Davey's and Davey's footway shafts. For the first three weeks in May we had been trying to clear the blockage in Davey's shaft.

As far as we could gather from Colin, a builder friend of his dumped a load of chairs from St.Day's school down it. Apparently, instead of slinging them down one or two at a time he tipped the whole lorry load down in one go causing the whole mass to jam in the shaft about 100 feet below. We couldn't see anything from the shallow adit level so we had to try and clear the jam from above. On top of everything else, by the time we found out about the blockage, more builders rubbish had been dumped on top of it.

We were now faced with a massive blockage of unknown depth about 60 feet from the top of the shaft. To eliminate the blockage we first tried rolling a couple of large boulders over the collar onto it in the futile hope of thumping it through. The result - NOTHING. The next alternative was to try and blast the blockage free. For the first attempt a stick of gel was put in the end of a ten foot length of inch plastic water pipe. This was then pushed down through the rubbish near the shaft wall. In order to direct the force of the blast into the blockage the same thing was repeated on the other side of the shaft. The two charges were wired up and fired simultaneously. Still NOTHING! For the next attempt we drove a fifteen foot scaffold pole into the blockage and then dropped half a dozen sticks down it. We then filled the rest of the pole with sand and fired again. Still no result.

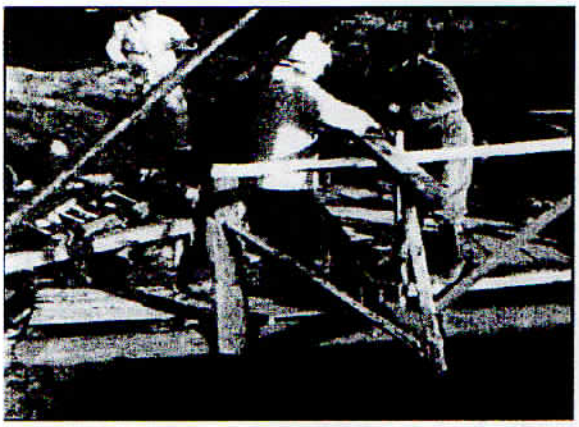
The final attempt was to drive a twenty foot length of two inch vitaulic water pipe into the blockage then dropped ten pounds of explosive down it and filled the rest with sand as before. We placed a sandbag on top just to be sure and fired again. We felt the concussion of the blast from where we fired on the surface, the blockage, however, remained intact!

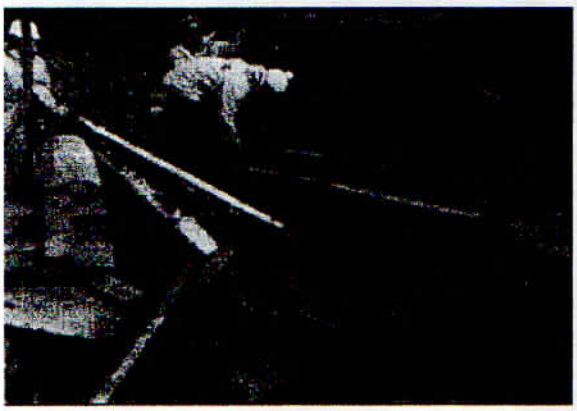
We then had a discussion with Colin about the further material that needed to be dumped, measured the volume of space in the two shafts from the blockage to the surface in Davey's and from our crash deck in Davey's footway.
It worked out, in theory, taking into account the hollows of ground surface to be filled the space left in the two shafts should be enough to take all the material to be dumped. Our next job was to then build a manway access from the crash deck to the surface in one corner of the shaft to allow us access underground.

In spite of all the problems there had been some encouraging signs. First, the air had always been clean in the end where we were working. There was a void going ahead of the line of our excavations and when we pushed a bar into it there were no signs of great resistance. We uncovered a length of timber in the bottom of our hole, which, judging by its size must have been a roof support for the adit. John lit up a cigarette in the end about an hour before we knocked off, walking back down the adit later we came to the patch of smoke way near the station so air was coming in from somewhere.

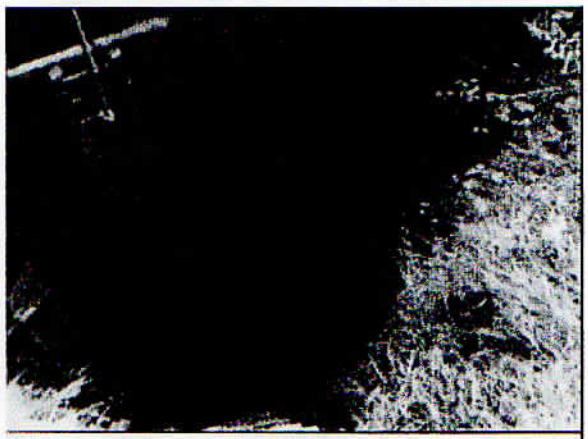
Owing to the strike in the cement industry the concrete for the shaft cap hadn't yet been delivered. So this week we were able to work on the face for the first time in weeks. First we drove 6 feet drill steels down into the pile on the sides of the shallow hole we had started. We then wedged wood stulls inside the top of the steels to stop them pushing in. We then started deepening it piling the broken rock to one side at the top of the hole. After we had deepened it to about 5 feet

another set of stulls were wedged in place to hold the bottoms of the steels.





Above: Clearing the headgear and platform.
Below: stowing the ladders etc, after removal from the shaft above crash deck



Above: The last ladder being hauled clear from the shaft.
Below: The manway well on it's way to completion.

In late June the shift was taken up with getting more timber and drill steels down the shaft and along the drive to the face. More steels were driven into the pile round the bottom of the hole and sinking the hole deeper was continued. Our main problem was disposing of all the broken rock. The area for stacking the muck is limited in the vicinity of the hole so the only alternative was going to be tip it down the ladderway, then pick it up again in buckets, drag it back down the drive and tip it in the station area of Robert's shaft. If this was filled up then we were going to have to haul it back to beyond Robert's shaft.

At the beginning of July the capping procedure on Davey's footway shaft had now been completed. Our manway access had been finished off with a concrete block complete with footrungs. All we had to do now was to fit a steel trapdoor with a stout padlock to keep out trespassers and unscrupulous mineral dealers.

In the end of the drive things were proceeding fairly well towards the Muttrall lode but disposing of the muck was getting to be a problem. The system was for one man to dig at the floor, load it in a bucket and pass it to the next man halfway up the side of the hole. He then passed it to the next man on top of the hole, then it was tipped down the

ladder into the drive where it was picked up and hauled back further down the drive and dumped where there was room. The amount of room was getting less and less as time went by. Now the station was nearly full and the drive floor had been covered nearly 6 inches deep.
At the face proper more timbers had come to light, as the hole got deeper the last lot were set on edge, they were obviously side supports of the original drive.

Up ahead the continuation of the drive didn't look too encouraging; it was still blocked solid with rubble for an unknown length ahead.

Later on in July our hole was now nearly 12 feet deep and the line of the old men's tunnel could be clearly seen. The setts had been uncovered enough for us to get under them. Up ahead the drive was blocked to the roof making a pile about 8 feet high. This would probably have to be traversed over the top to save shifting so much muck.

In August progress continued slowly along the line of the adit. From just in front of the wood sett we had gone about 4 feet on the muck pile and started advancing forward.

Due to circumstances beyond our control we had to postpone our venture for the next 9 months.

In April 1982 we recommenced our explorations. Now we planned to explore on Friday nights instead of Sunday mornings. The plan being that we could put in more hours in each session.

The main problem, as before, was the water in the crosscut. Despite all the repeated and varied efforts to drain it, the level still remained nearly waist high. So to try and overcome the problem once and for all we decided to put stulls in on the water level and plank across them, in the same way we did further down the drive at Robert's shaft end. Derek and I made a start late in April and we succeeded in planking in about 60 feet of the drive.

The first week in May we had a visit from a North Country pot-holing group who were very keen on exploring the whole area of the mine that was accessible. We explained that owing to lack of time we had not yet fully explored the drive leading in a northerly direction from the far side of Davey's shaft; they immediately volunteered to investigate this area for us. Their findings were interesting. Apparently the drive proceeded more or less straight in a northerly direction as shown on the plan. We found that water was running down the drive towards Davey's shaft and discharged into the shaft. At approximately 130 yards along there was a blockage consisting of timber and rocks, which could have been a collapsed chute. This point was as far as we had explored before.

One of our visitors had a wet suit on and volunteered to wriggle through a gap at the base of the blockage to explore beyond. On his return he told us that the drive continued on for a while then went right and left. The right hand side continued on out of sight and the left side carried on for a few feet to a hole full of water. Immediately above a raise on the shaft was visible; up the shaft could be seen some decking timbers about 80 feet above. On the floor of the

drive itself were a large number of dead flies; this could mean the surface may be just above the timbering. We planned to try, at a later date, to survey the drive to pinpoint the shaft on the surface as nothing was shown on the plan. The hole full of water was about 20 feet across and we needed to bridge it in order to proceed safely. Beyond this the drive proceeded on out of sight. We decided to explore this part of the drive at a later date.

The next week, after checking the plans and records of the mine we noted that nothing was shown on the north section of the mine past Davey's shaft apart from the shaft itself. The space between Wheal Pink and Wheal Clinton had been left blank. However, in one of the local history books, a mention was made of a shallow adit being cut on a quartz vein heading north and connecting to Wheal Clinton. A mention was also made of a deep adit being cut on a six-inch band of decomposed granite, coming in from Wheal Quick to Wheal Gorland and then onto Wheal Clinton. Bearing this information in mind we decided that exploration of the north drive might be worthwhile so we started clearing a way through.

On a closer inspection of the drive and its' blockage turned up some interesting points. The brick wall by Davey's shaft at the start of the drive had originally been nearly 2 feet thick and was soundly built on a steel plate 6" above the drive floor and recessed into the rock walls on each side of the drive some 6-7 inches. Whoever built the wall did so in a way to let the water from Wheal Pink area drain out and stop anyone going in; also, whoever broke through it did so from Davey's lode side. Right behind the wall was a large pile of rock spread out for some 10-20 feet along the drive floor. We thought this was originally piled up to the roof, behind the rockpile the drive was flooded about 2 feet deep.

In order to avoid the problems we had with water in the other drive we started clearing the rockpile so that the water could drain through away Davey's shaft. This was fairly successful and at the end the water level throughout the drive averaged about 6 inches. We then started on the blockage further up the drive. On close inspection we believed that it had also been deliberately put there as it was arranged as shown.

Six by six timbers had been laid on a pair of drystone walls built on each side of the drive thus leaving a space of about 18" by 12" to allow the water to drain through. The first thing we found when we started to clear the rubbish from the top of the timber was that it was not a collapsed chute or a pile of rubbish heaped in the drive but the bottom of the shaft.

As the work involved was going to be more involved than we originally thought, we were going to need more materials. We then laid drainpipes on the floor of the drive to carry away the water and started piling the muck on top of them. This was true muck! It was soaking wet mud and rocks mixed with lengths of timber, which was rotten and stank of Sulpurated Hydrogen as it was disturbed. Spiralling through the pile was done in the same way as described previously in Robert's shaft; using steel rods to support the roof and timber setts to keep the drive open.

It was now the middle of August and we had a breakthrough one day after six hours of work spread over three sessions. The width of the shaft was about 8 feet. On the far side a station had been cut measuring 8 feet by 10 feet; this was filled to within 3 feet of the roof with muck. On the far side (north) a stone wall had been built halfway up to the roof of the drive on heavy timbers placed on stones in the same arrangement as on the other side.

After making the setts safe at the end of the shaft drive section further support was needed to the drive wall where the granite had decomposed at the end of the station. This was completed and our exploration continued on.

As we had brought a tape measure with us we were able to measure the length of the drive. It continued in a northerly direction for another 130 yards then crosscut right and left on a small lode (previous to this there had been some small crosscuts on lode sections extending for a few feet each side of the drive).

The right hand drive extended on for 85 yards then stopped. Some lode was visible in the roof on the right but no stoping had been done here.

The left hand drive had a shaft alongside it, a pile of muck at the bottom with a ladder stump sticking out of it. This had been cut through with an axe (the marks could be clearly seen) and above this the shaft was clear for about 75 feet where it had been covered over with timbers. The remaining ladder had, presumably, been pulled to the surface.

Some 5 feet further on, the drive had been stoped out above and below. The stope below was full of water to an unknown depth. Some stulls and planks extended along the length of the stope just under the surface. Beyond this the drive appeared to continue on; to explore further, however, we were going to have to renew the timber.

In September, with the aid of a short ladder, access was gained to the stope above the drive. This was probably made by the tributor, as it was too small to have been worked by more than one man. It measured some 9 feet long, 7 feet high and barely 2 feet wide at its widest part down to less than a foot at the narrow (west) end.

We were curious to know the value of the lode so I took a sample from the face and had it assayed. The result was the sample was 6% tin and 2% Wolfram; perhaps this was the reason the drive had been deliberately blocked off.

The flooded stope ahead of us in the west drive was bridged across the same way, as we had previously to get across Davey's stope from Simm's shaft. The drive extended on more or less straight in a westerly direction following a narrow copper lode (which when checked, assayed at 4% copper). No stoping had been done above the drive but some narrow stopes were seen below some of which had been backfilled. In the distance a stope could be seen going down vertically for some 20 feet to water level. The floor of the far side was supported on wood stulls and if we were to explore further we were going to need more timber.

We were heading towards Wheal Clinton and its associated workings. We

decide before we would make any serious effort to explore we would have to see if there were any notable minerals in the area.

While this was going on, however, another section of our team had been doing some exploration on Davey's' stope itself in the hope that an alternative route might come to light leading to Muttrall lode. As, previously, we had not discovered below any trace of the deep adit we decided to try and make our way across the stope itself to see if the drive shown at the far end led to anything.

At some time in the past the shallow adit was driven northwards until it struck Davey's lode then drives (tunnels following the lode) were driven east and west. These were then stoped out above and below to remove the one bearing rock.

To stop the ground subsiding, over a large area pillars were left in place. These were areas of rock and lode about three yards thick dotted along the length of the sett. Davey's stope at the point where the rock bridge or pillar crossed it was about 75 yards wide on each side. The dip of the lode that was the angle from the vertical was about 85o, the hanging wall was fairly smooth and the footwall was ridged and stepped. The width of the stope between hangingwall and footwall was between 8 and 10 feet.

In a previous situation like this further west on Davey's lode we had managed to bridge across on timber frames and planks; this wasn't practical in this case as the stope was too wide and would have used up too much timber to say nothing of the awkwardness of trying to place frames in place. What we decided to do was to rig a support chain across the stope and traverse across on the footwall. We had no means of power supply to work machine tools so everything had to be done by hand the same as the old man working done the mine had to do.

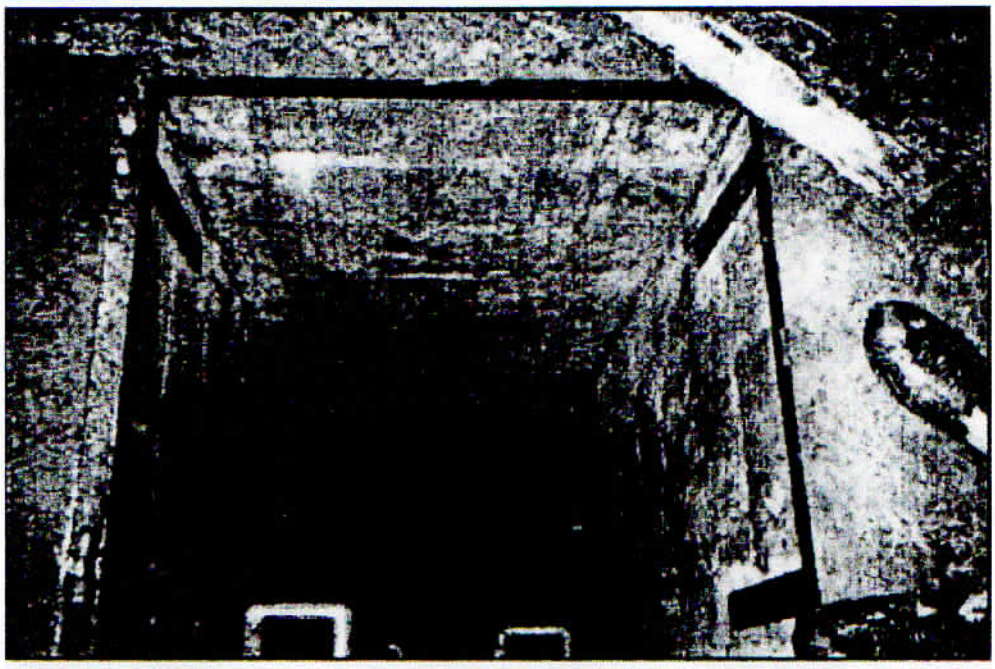
Due to unforeseen circumstances the exploration of Wheal Gorland was postponed for about six years. In fact several years past before we commenced working on the mine. Much had changed, the crew I had worked with had all gone their separate ways; one had passed away. Percy Bond, one of our keenest members sadly died in 1988. Sometimes I wondered if the elusive Muttrall lode would ever reveal its secrets, if any. At that moment it seemed elusive as the legendary pot of gold at the end of the rainbow.

However, being eternal optimists we still intended to try and gain access to the lode if we can.

The cottage had changed hands again, Mr.Davey's had moved on. The new owner was approached by two of our team, Geoff and myself. They seemed quite interested in the whole situation and even expressed desire to go underground to see the mine when we had made things safe.

That same evening we unlocked the steel trapdoor on the shaft top with some difficulty, as the lock was somewhat stiff and needed liberal sprayings with releasing oil before it finally turned. After checking the timbers down to the first platform I was surprised to find it was still in reasonably good shape. The timbers of the crash deck, however, looked in need of some support as the weight of all the muck on it was causing one of the telegraph beams to sag. Whilst Roy and Roger started

work cutting hitches in the shaft walls to take a support timber, Robbie and I went off to find something suitable.



Looking through the hatchway after the 1989 re-opening.

We returned shortly afterwards with an 8 foot length of 12" by 6" timber beam that seemed, at first glance, to resemble a railway sleeper. This was cut to size to fit the hitches cut 10 inches into the shaft walls and lowered down the shaft to be fitted into place.

After much heaving and straining, at one point nearly losing the beam down the shaft, we managed to get it into place and wedged tight. Timber blocks were then cut to size and packed in between the support beam and the telegraph pole beams.

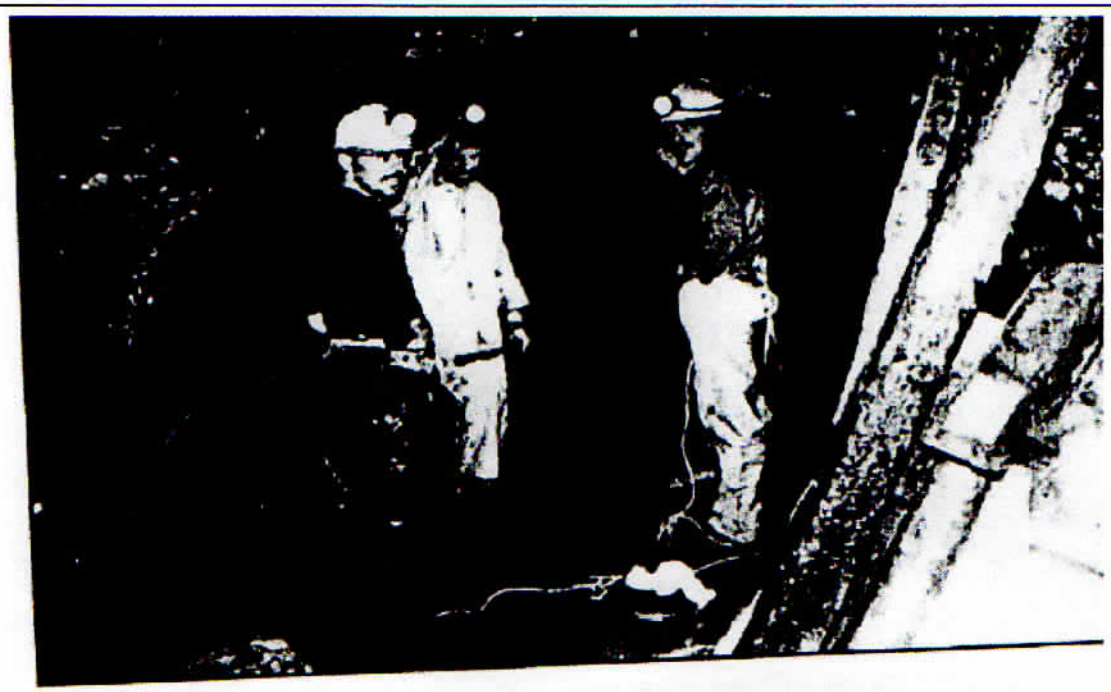
Now that the crash deck was reasonably safe we proceeded cautiously down the ladders checking each one as we went, again all seemed reasonable sound until at last we reached the shallow adit level. After checking the platform timbers on the shaft platform at this level we decided to replace one of the support beams as soon as possible; then when that had been made safe we planned to get someone down the shaft to see if the deep adit was accessible from it.

A brief check of the shallow adit level on the north side of the footway shaft Davey's stope and shaft showed nothing had changed; even my tools were in the same place as I had left them although they were now somewhat rusty. We decide to leave the flooded adit to the south and Muttrall lode until our next visit.

It was during this period of time that my good friends Martin Gale and Andrew Coster started to help whenever possible. Their handicap for not helping on a regular basis was they lived in Essex.

The group now consisted of Roger Eslick, Roy Morton, Robbie Chapman, Simon?, Phil Knight and Mike Berry.

In the first week in November 1989 our main objective was to get a timber beam down the shaft to repair the shallow adit level shaft platform and a get a further length of planking to bridge the gap between the last stull on the far side of Davey's stope and the drive that could be seen to continue from it. This was the drive with all the blue colours showing on the walls.

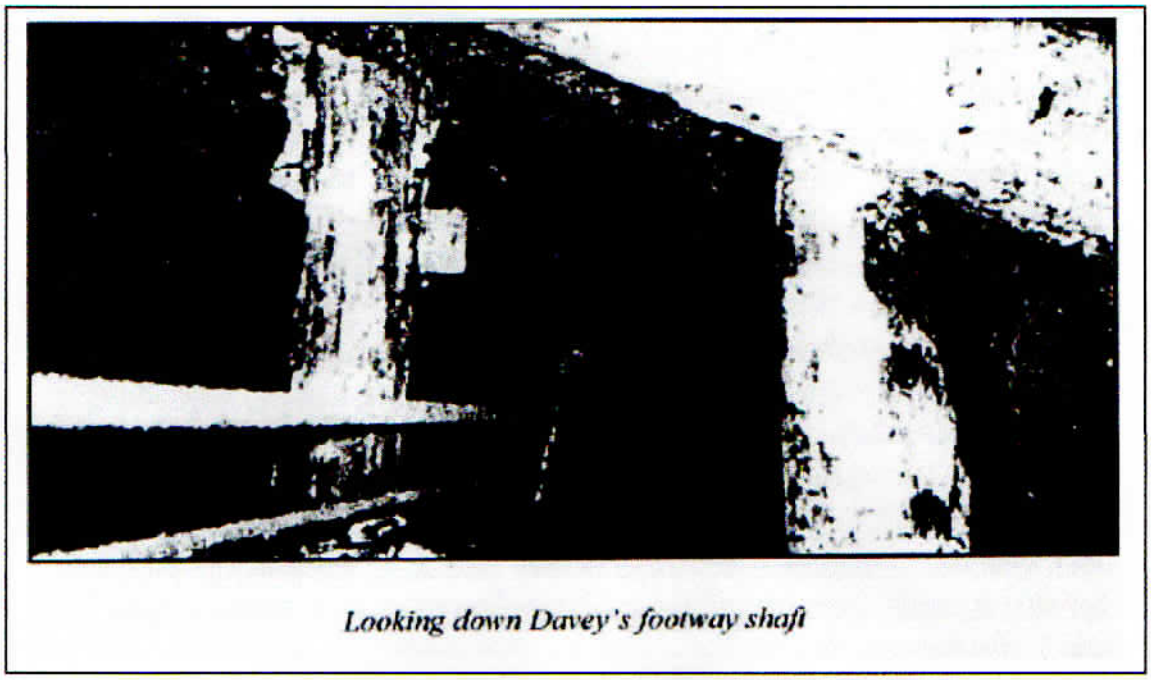


A group of posers at shallow adit station, Davey's footway shaft. Note shaft cap in the center, and the timber store on the right.

Now that the timbers were safely down we proceeded to transport the timber plank (a piece of 8 feet by 2 feet some 8 feet long) across the footwall of the stope to the far side. This was a somewhat hazardous operation to say the least. Once over the stulls the timber was heaved up into place and slid along the existing plank. Mike then climbed up onto the plank and pushed the new timber along into the end of the drive. The timbers were then nailed down to the stulls we were then able to gain access to the drive proper. To enable us to get up on the stulls, which were about 5 feet up from the ledge, I fitted a short length of ladder from the ledge to the first stull.

Apart from the proliferation of colours the drive was a bit of a disappointment and only went about 50 feet along the line of the lode and ending in a dead end. At the same time, however, owing to the waterfall from the upper parts of the stope having dried up we could see that another drive went in the same direction about 60 feet below. This was checked for access by tying a rope to the chain across the stope and climbing down to one of the lower pillars left exposed by the

falling water level throughout the mine (most likely due to the dry summer we had just had).



Looking down Davey's footway shaft

We decided access would be possible but some timbering would have to be done first. The replacement of the timber beam on the shaft platform we decided to leave until the next week. The remainder of our visit was taken up with a brief check down the south side of the adit towards Roberts' shaft and Muttrall lode.

Nothing had changed here, the water level, our ever-present enemy, was still as deep as ever. We were really going to have to do something about draining this if we were going to get anywhere. Further sets in Robert's shaft and station were still in place as were the timbers holding back the large muckpile on the other side.

In the middle of November 1989 further exploration of Davey's stope took place. By repositioning our rope we managed to descend some 60 feet below the shallow adit level and on to the rubbish pile on top of the pillar. We scrambled over the rubbish and managed to gain access to the drive.

Again we were doomed to disappointment as the drive only went in about 20 feet or so ending in a dead end. From the bottom of the rope though, the drive appeared to go west towards Simm's shaft but no exploration was done on it in this shift.

Back at the shaft the platform support beams were renewed, not before time either as the old beam was nearly rotted through; while we were getting it out it broke in half and fell down the shaft. The shaft was now ready for deeper exploration.

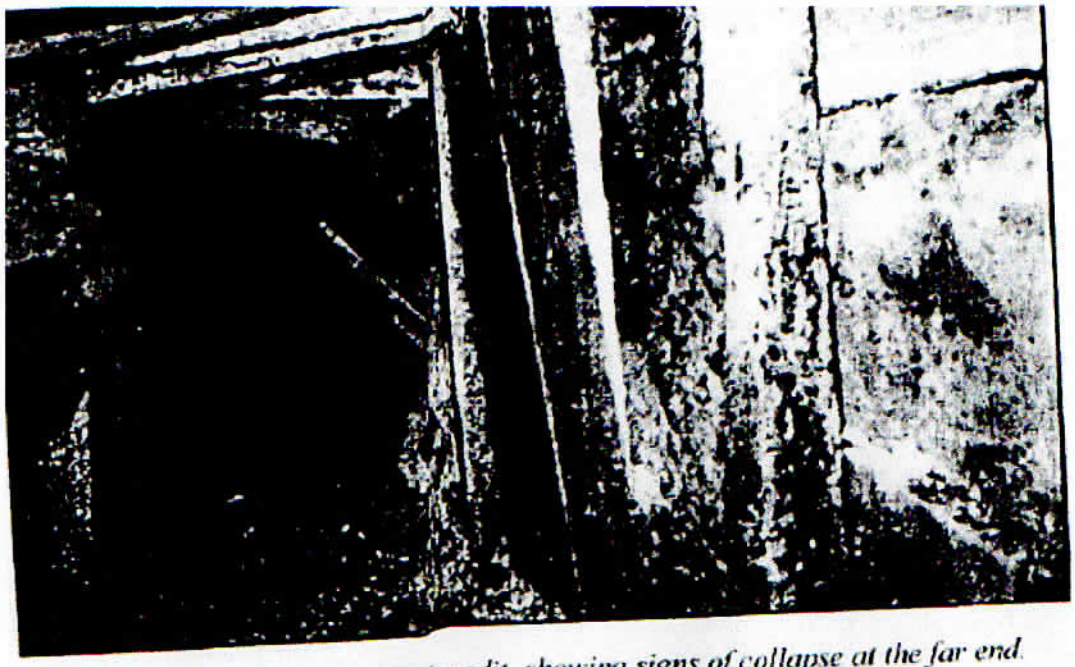
At the end of November we had a change of plan, as Mike couldn't make it on time so we had to postpone the exploration of the deeper section of the shaft until next week. Some repair work was needed on the timberwork in the shaft as one of the platform supports on the third old men's platform was showing signs of wear.

A slight mishap at the beginning of the session nearly resulted in more repair work than expected; to support the faulty platform member we used a round pole of treated timber which was 6 feet long and 6" thick. We lashed a rope sling around the pole on the surface and then lowered it down to the first platform with Roger going on ahead to guide it. Unfortunately as it went past the timbering above the platform the rope sling got caught up and slid off. From the surface it seemed as if Roger was sliding the rope off and transferring the timber to the first platform before tying it onto the main haulage rope. The next thing we heard was a series of booming crashes from down the shaft. This was followed by Rogers' apologetic face peering up and shouting up something about the timber having sort of slipped through his hands and gone down the shaft. Our helpful offers to throw him down the shaft after it for being so clumsy were tersely refused as we made our way down to check for damage. Dropping down the shaft like some sort of flying bomb the timber had gone straight through the first old men's platform, bounced off the shaft wall, hit the second platform breaking one of the planks and then jammed across the shaft just above the third platform. Ironically, this was the very platform we were going to repair with the timber. Anyway, it could have been worse and the broken decking was replaced without too much trouble and the platform support was installed.

In the meantime whilst I was doing the timberwork, Roy had installed a telephone at shallow adit level and at the first platform level. At the same time Roger and Phil went up the shallow adit to the north and checked things out as far as possible on the Wheal Clinton area. Nothing had changed since we had been there in 1982. However, we had constructed a timber bridge, which hopefully, we could put in place within the next few weeks. This would enable us to cross over the open flooded section.

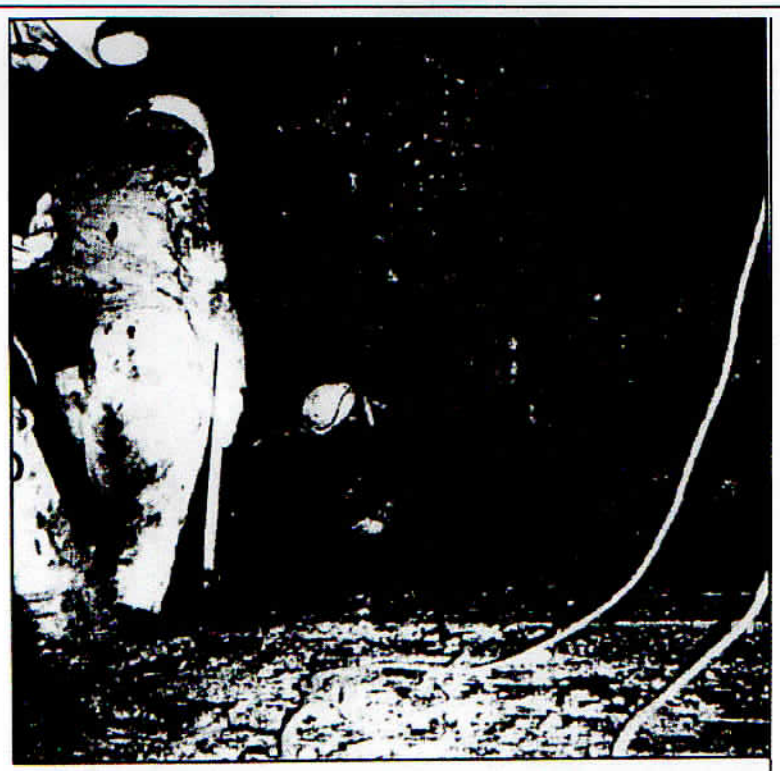
All this work, interesting though it is, wasn't getting us into Muttrall lode. However it must be remembered that there was a new team working on the project. This meant that different attitudes had to be considered along with the teams' unfamiliarity with the layout and contents of the mine.

The following week we made little progress. Mike turned up but didn't have the climbing gear as it was still being used by somebody else. The setts in the adit on the north side to Davey's shaft needed repairing, so while Phil and Roger worked on the south drive and Roberts' drive area (neither of them had seen this section before), Roy, Michael and I repaired the setts and checked out the north and west drives as far as we could. The timber crossings were still in place over the flooded stope but were missing from the second one and these would have to be repaired as soon as possible. Some subsidence had taken place in the far end of the west drive which had left rocks hung up overhead which, we decided, may have to be blasted free.



Setts in the north drive of shallow adit, showing signs of collapse at the far end.

At the beginning of December water, our ever-present enemy had beaten us again in our attempts to explore Davey's footway shaft on deep adit level. A couple of weeks previously we had looked down the shaft from the shallow adit level and saw the remains of a broken ladder resting on a pile of muck with what looked like a drive going off it. In this session we all rigged up with descenders, safety rope etc. and when we lifted the boards on the shallow adit level shaft platform we realised we were wasting our time. The water had risen 15 to 20 feet up the shaft and had completely covered the ladder and the muckpile.



Fitting an anchor board for a safety rope in shallow adit south drive, prior to attempting a descent of Davey's footway shaft, with abseil gear.

It was obvious that any future explorations would have to be done on the shallow adit level so the first thing which was going to have to be done was continue the stullroad over the flooded section to Roberts' shaft and carry on from there. As we hadn't brought any tools with us we finished off with further exploration of Davey's stope on the west side of the stope. Mike descended down toward the end of a drive we had previously seen. This was found to go along and then down to water. It was well mineralised with blue (Chrysocolla?) tin deposits in the hangingwall and there was Wolfram in quartz lying around on the drive floor. This was possibly left over from the mining activities in 1906 to 1909, a typical example picked up showed granite quartz contact.

Mike Berry cutting hitches, Davey's stope West Side.

In the beginning of January 1990 we installed a power cable down Davey's footway shaft and along the drive into Davey's stope. A small generator on the surface enabled us to run an electric hammer drill and a 500-watt halogen lamp (110 volt). This was a tremendous help to us when we were drilling rawbolt holes for chain and ladder supports, a two-inch hole now only took a minute to drill instead of ten minutes. The hand held halogen lamp lit up the stope area almost as bright as

day and this was going to be ideal for making a video of the mine, this being our latest idea.

Some further exploration of the west side of Davey's stope was carried out with the safety chain installed and bolted to the footwall in several places. At the far western end of the stope the lode petered out. Some Chrysocolla and Pharmacosiderite were found in the footwall. Down below the stope seemed to carry on towards Simm's shaft and the stoping section that I had explored back in 1979. We found that to get down to this point we were going to have to fix a chain ladder in place.

In the middle of January we made further explorations of Davey's stope. The West side safety chain was bolted down in several places and the power cable was carried across. We then fitted a dual plug, which enabled us to use the drill and have the light on at the same time. At the West end of the stope the lode went up and pinched out, below, however we could see a drive still leading West. Access to this would have to be obtained by dropping a chain ladder down through a hole in the floor next to the last pillar. So while Roger brought over the chain ladder I drilled a hole in the footwall and hammered in a big ring bolt. The ladder was attached to this and dropped through the hold ending some 4 feet above the footwall ledge below.

We then volunteered Roger to go down first and he managed to get off the ladder and onto the level without too much difficulty. I followed him down and found that we were on a wide stope floor at the end of a drive with two stulls, one each side of the ladder which we thought were ideally placed to put a landing bridge and to secure the bottom of the ladder to. Going up the drive we found an old flashbulb lying on the floor and we suddenly realised where we were. This was the drive east which was last explored in the 1970's from the stope off Simm's shaft. Sure enough at the end of the drive my stope walkway was still in place. We decided to re-open the section again and renewed the timbers. The access from Davey's footway shaft was now somewhat less hairy than coming down Simm's shaft.

At the end of January we managed to bridge across the two stulls at the bottom of the chain ladder using two lengths of 3 by 3 for the bearers and some 6 by 2 for the decking. This made it much easier to get off and on the ladder without giving a demented man on the flying trapeze exhibition. In preparation for further exploration we put in two ringbolts on the footwall side to take a descending rope and safety rope. Going along the drive westwards we then checked out the stull walkway. Mike, being the lightest, was volunteered to go out along it first to check the timbers for strength, a real brown trousers exercise even with a safety rope fitted. The timbers were in surprisingly good shape considering they had been there for the past 14 years, this was probably due to this section of the stope being fairly dry. However, one set of supports was showing signs of rot and these would have to be replaced when we could get some more timber. After Mike had reached the other side the safety rope was pulled tight and secured firmly in place at both end of the stullway. This meant that with our intrepid explorers hooking their safety harnesses over the safety rope, if one of the timbers did give way, they should be held back from plunging down the stope. We now had access to the whole west section of Davey's lode on the shallow adit level plus access to Simm's shaft if it was

needed.

The start of the stull walkway on the eastern end.

Further west the 80 foot ladder, first seen in 1976, was still in place. We decided to see if it was possible to make it safe for further use to enable us to explore the lower levels more thoroughly as in 1976 I'd only given it the briefest of checks.
We had some winter storms and torrential rain on the surface and this had been felt underground. A small spring was bubbling out of the near side of Davey's footway shaft just above the second old men's platform. This caused monsoon conditions on the shallow adit level and we were all soaked through by the time we had got down. Not much actual work

was completed in this particular session as Roy had managed to borrow a video camcorder from John the landowner. Most of the shift was taken up with trying it out in various sections of the mine with trial shots. These turned out quite well and we planned to make a more comprehensive video recording of the mine in the near future. For the technically minded we used a low light tape and a 110-volt quartz halogen lamp for illumination, which gave us good pictures from up to 50 feet away.

In February the bad storms on the surface were still raging and conditions underground were still very wet. So wet that we decided to postpone the making of our video documentary until the conditions improved.

The first job in this particular shift was to renew the rotted timber support of the stull walkway. This was accomplished without too much difficulty and we turned out attention to the vertical ladder down to the lower level. This was composed of four separate ladders, which were cleated together one on top of the other. The first two sections were fairly sound apart from the nails in the cleats, which had rusted through. These were renailed by Roger who then proceeded down slowly checking the ladders as he went by squeezing the stiles between his fingers. On the third section the stile on the left had rotted through in several places but the right hand stile was still sound enough to hold the rungs in place. This made the descent somewhat hazardous to say the least and this would have to be repaired before we could go any further by possibly reinforcing the rotten stile or making up new ladders.

Bottom of the old mens ladder, West Side Davey's stope, 80ft bellow shallow adit.

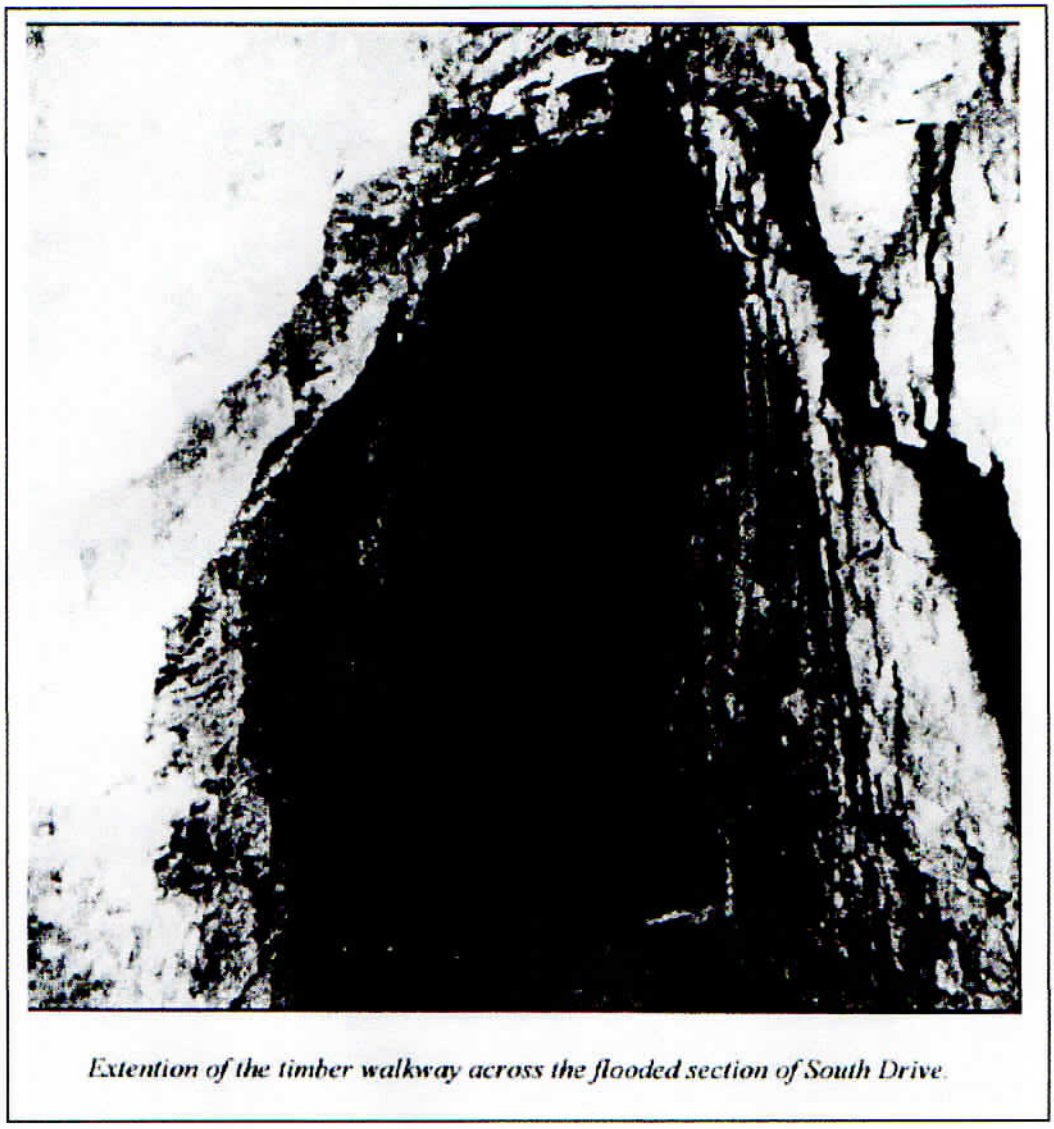
In the middle of February the time had come, so the Walrus said, to stop working on the Davey's lode section and start paying some attention to the south drive section. After all that it should have been the way to all the goodies, if things went according to plan.

The problem with the water was still with us as the drive was flooded waist deep in sections as before. Some of the problem was due to the water from Davey's shaft running into the end of the south drive and keeping the water level high. While Roy and I went ahead and started to extend the stull walkway across the flooded section, Phil and Roger cut the drainage channel into Davey's footway shaft two or three inches deeper thereby making a slope for the water to run into the shaft.

Phil enlarging the drainage channel, Davey's footway shaft end South Drive.

The following week we had continued to extend the stull walkway over the flooded section of the south drive and the water level seemed to

have dropped slightly, we hoped it was draining slowly through into Roberts' shaft. Roy and I went along the west section and took some photos of the work done to date right up as far as the western end of the lode.



Extention of the timber walkway across the flooded section of South Drive

The shift in the first week in March only consisted of two men, Roy and myself. All the others had other commitments, so, seeing as Roy hadn't seen as far as Roberts' shaft I took him up there and showed him the situation. Although the timbers I had put up to support the ground back in the 1970's were still in good shape, more supports were needed for safety. We put in two more sets in the station area on the north side of the shaft. On the south side a large crack had appeared on the side of the drive and this was going to have to be supported as soon as possible. The old drainage pipes I had put in to drain the water were all cleared through where possible, however, the section nearest the water needed renewing. Hopefully this would drop the water level some 9 to 12 inches.

In early April we were still working on trying to drop the water level

in the south drive albeit with limited success. Plastic drain pipes, which had been placed in the channel dug to drain the water into Davey's shaft, had helped to keep it open. However, the water was still too high for easy access; Martin from Essex came down to visit this week and said he might be able to pick up a 110 volt submersible pump. If we could use this in conjunction with our generator this might be the answer to our problems.

Later on in April the weather was better and we decided to make a start on the video. The next month we were ready to start filming as Roy and got hold of the camera from John and the generator from Phil. All the lads had their haircut and also washed behind their ears ready for the big T.V. appearance. The only problem was the generator refused to start. No amount of tinkering, cursing or kicking had any effect so we decide to call it a day and went off to the pub to console ourselves with liberal quantities of falling down water.

The following week, having been assured by Roy that the generator was working, we started filming taking shots of the shaft top and the timber platform on the 30 foot level. We then continued down the shaft to the old men's platform on the 75 foot level then once again the generator packed up. It seemed to me that this mine was somewhat reluctant to release its' secrets.

The next week we had more success in our filming with shots of the shaft and the east side of Davey's stope including the Chrysocolla drive all on record. We had some problems with the lighting on some shots but hopefully these will be overcome with more experience.

At the end of May we had to have a big clean up as the mine rescue team were coming down to look the mine over and see if they could carry out any practice sessions in the future. The rescue team arrived, all fifteen of them, and we took them all over the mine pointing out where Simm's shaft was underground as well as on the surface.

It was January 1991 and we had investigated Davey's stope section under the stull walkway towards the rockbridge. We then turned our attention to the section to the west of the bottom of the old men's ladder. One of the first things we had to do was to make the ladderway safe. The top section was in a reasonably secure state so we started to put in a more permanent ladder from the bottom by putting up short sections and stagings. After the two sections had been linked up we then turned our attention to the drive (presumed to be the middle adit) heading west. The blockage, which was presumed to be a collapsed chute, was wet and sloppy and consisted of large rocks mixed with gravelly mud. The method of getting through was the usual one of driving steels into the pile and then putting in wood setts.

At the beginning of February the ladderway had been completed and the rope ladder was pulled up out of the way. We continued working on tunnelling through the pile with some difficulty as the wet porridge of the blockage kept pouring through the sett timbers and we only advanced about 2 feet in this shift.

The following month the situation with the blockage seemed hopeless and we reluctantly decided to postpone operations here until the summer or

autumn when, hopefully, the weather would be dryer and the conditions would improve.

Putting in a new platform, to conect with the old mens ladder, Simon is on the left.

The problem was the wet muck was washing down all the time from the pile above. We could hear rocks moving above us every time we got a cave in at the face; to make matters worse on two occasions when the pile had stayed open long enough we could see the drive heading straight ahead for about 30 feet. As far as we could make out it either stops at a dead end or turns to the right.

Once again we were going to have to tackle the flooded drive to Muttrall lode via Roberts' lode. Various abortive attempts to drain and pump the drive clear of the water in the past had failed so we continued to extend the stull walkway over the flooded section.

At the beginning of May the flooded section of the shallow adit had, at last, been bridged and we proceeded along it in welly boots without getting wet through. Some care was needed in the first section and this was to be taken care of later. Now that access was a bit easier we started to put setts in the end section up the muck pile past Roberts' shaft. Extensive setting was needed here, as the ground was soft decomposed killas. Also, since our last visit here, the ladder up the pile had deteriorated and needed replacing.

By September 1990 the video recording of the mine now extended as far as Davey's shaft. The video camera was returned to John for the summer holidays and we hoped to borrow it again to extend our record. Another thing we noticed on the east side above the Chrysocolla drive more we could see more workings. To get to them we had to put a ladder against a footwall on the rockbridge, cleared a footwall ledge and then wedged a stout plank across from the hangingwall to the footwall. This was

used as a bridge and enabled us to get as far as the next pillar. From this pillar to the next one was about 20 feet and the floor was missing in between. Looking down we could see our timber walkway to the Chrysocolla drive about 20 feet below us. As the stope was only about 3 feet wide at this point I decided to get across the gap with a stull walkway. Having crossed the gap we found the workings ended in another small stope and most of the floor and walls were coated with Chrysocolla.

Extending the timber walkway over the flooded drive, towards Mutrall lode.

The author on the level below shallow adit. Davey's lode. Some good finds of Cuprite in this area, but the floor is very suspect, being largely "deads" on rotting stulls. The water level is some 70ft below with nothing in between.

One of our intrepid band using a rope ladder supplied by Martin Gale, note the safety line. The old men's ladder is in a bad state of repair in places.

Collecting minerals Chalcopyillite, Cuprite Connellite and Langite were found.

In January 1992 we decided that instead of trying to tunnel through the muckpile we would try and go over the top of the pile. This was achieved by careful digging and timbering and we eventually came to a small chamber the roof of which had a dyke of green killas heavily impregnated with mica. Ahead of us and slightly to the left there was a pile of decomposed grey white killas.

The following week we placed two setts under the green dyke and put lagging boards around them. The pile ahead was being mucked out and the broken rock was stacked against the lagging boards. By probing the pile upwards we cleared a space about 6 feet up however space to stack the muck was limited. If we didn't break through soon we were going to have to abandon the exploration of this end.

A Final Note From The Author

Old age, they say, comes to all of us in time. I'm no exception. It is, therefore, with some reluctance that I have to bring this book to a close. The project, however, to date, is still going strong under the auspices of Roger Eslick and his valiant bank of volunteers. The future intentions for the project are to put in some strong setts in the crosscut from Simm's shaft to Davey's lode drive in the collapsed decomposed section.

Near the end of the shallow adit heading west, there is a small stope with an awkward entrance. It is hoped to clear this to gain access to the stope, possibly to see if it links up with the crosscut shown on the plan, from Paul's shaft.

Now, back to the Muttrall Lode project. One of the main problems, as I have mentioned before, is the great difficulty of disposing the muck. With this in mind, a purchase has been made of some 200 yards of lightweight railway track in duralium from the Lappa Valley Railway who, fortunately for us, are renewing their track this year. It is proposed to lay this track from Davey's stope bridge along the drive across the corner of the footway shaft, right down to Muttrall Drive as far as Roberts shaft. This will be achieved by placing the tracks on stulls just above the water level. This will be a slow progress. The adit has then got to be mucked out down to the proper rock floor (some 3 to 4 feet). By doing this and breaking through to Roberts Shaft the water from the drive will then drain down and away. The track can then be re-laid on the rock floor.

The adit clearance can then be continued round Roberts Shaft resetting as they go, and on to the large muckpile at present blocking it. The muck should be tipped down Davey's stope, as it is the safest place to get rid of it. The plan is then to turn to the left instead of straight on and to pick up the branch of Collins lode, which is a branch of the Muttrall lode.

Meanwhile, back at Davey's stope the Wibbly Wobbly Walk has been decked over and re-stulled for safety. The access down to it is to be improved and further exploration at the middle adit is to be continued. Hopefully the new team will keep records of the work as it progresses and who knows, a further volume may come out of it.

Thank you for reading this and I hope you have enjoyed it.

Glossary of Mining Terms.

Adit Level: A horizontal drive or tunnel, (always above the water table) which joins the main pumping shaft to convey water out of the mine.
Larger mines could have up to three Adit levels; shallow, middle and deep Adit.
Shallow Adit would usually start in a valley and then, having been driven into the hillside, usually following the lode and connected with various shafts on the way. Either an engine or waterwheel then pumped the mine with a pump rod down the shaft. At the base of the shaft there would be a sump, and the water pushed up the rising main to the Adit and then out of the mine.
The deeper the mine the more costs on pumping so a deeper Adit would be driven hopefully intersecting various lodes on the way.

Air Shaft: A shaft sunk for ventilation; mostly narrow and often crooked.

Cap: To cover an unwanted shaft. In olden days this was done by laying thick boards across the shaft some 20ft below surface. It was then filled with rubble on top of the timber. Modern methods are done by concrete. Once a mine is capped it means the end of any kind of access to the mine, but only if all the shafts on the mine are done this way.

Cost Book: The Cost Book system is literally a book in which all of the adventurers' names are noted. If there is a call then money is paid to the purser, which is then noted in the book. The purser would also pay out the due's (profits), pro rata.

Country Rock: The area of ground, which the lode passes through. E.g. Granite, Killas, Greenstone etc.

Cross Cut: A level at right angles to the lode, often connecting two parallel drives.

Deads: Rubbish, rocks of no use to the mine; often left underground piled up to form walls which meant a saving in haulage costs for the mining company. Can also be called Attle.

Drive: There are two main types of drive. Firstly the lode drive, which follows the twists and turns of the lode often connected by crosscuts to a footwall drive. Secondly the footwall drive is the main tramming level or haulage drive. This drive follows the footwall.

Driving: Digging horizontally forming a drive or level.

Dumps: Piles of waste rock unwanted by the mines scattered mostly around the shafts.

Dyke: Area of fractured ground or very hard ground e.g. Elvin. Usually no minerals are found in these areas.

Electron Ladder: High-tech form of rope ladder. Rungs, six inches wide, are made out of duraluminim. Ropes are made out of 4mm stainless steel cable. Light but very strong.

Engine Shaft: The deepest shaft through which the water is pumped either to the adit or surface. Also called the pumping shaft.

Euclid Dump Truck: A tipper lorry but on a larger scale. Standing next to a tyre of one of these trucks and you would have to look upwards to see the top of the tyre. Mostly used on quarries and large-scale road building. These trucks, unlike normal lorries that work in miles per gallon, work in gallons per mile.

Fathom: Equal to approximately six feet, abbreviated to fm or fms.

Footwall: The ground that is under the lode, easily seen on a relatively horizontal lode, harder to define on a vertical lode.

Footway Shaft: This type of shaft would have ladders and platforms at equal distances apart so that the miners could descend or ascend in and out of the mine. In larger mines there would be more than one footway shaft, possibly with a man engine, a type of primitive lift.

Gossan: Is the normal end product of oxidation and leaching of Iron bearing sulphide deposit. The principle oxidising agent is atmospheric oxygen. Leaching is accomplished by descending groundwaters. A Gossan formation in a mine was usually responsible for a poor return for the investor in the various mines. However, to a mineral collector it is a gold mine for minerals.

Granite: A rock of the Igneous clan, composed of Quartz, Feldspar and Mica sometimes with associated Tourmaline.

Greenstone: A rock of the Igneous clan, composed of fine grained Hornblende and Feldspar, often highly charged with Iron Oxide. Can also include Chlorite.

Hangingwall: The ground over the lode. See Footwall.

Heading: End of a drive either prior to or after work is completed.

Hitches: Holes cut into the sides of shafts or stopes to allow stulls to be wedged in to the hitches which, when decked over with planks, created a platform in a shaft. A stope can be decked over to create a walkway or stullroad.

Killas: A term covering the majority of sedimentery rocks in Cornwall, including Shale and Slate.

Leading Miner: A miner that is the deputy to the charge hand who, in turn is in charge of a small group of men working as a group or pare, usually consisting of four miners.

Lode: A vein containing metallic ores, from about ¼ inch up to many feet wide. It was often the thickness of the lode as well as their richness that distinguished the truly great mines. The small thin lodes were, and still are, referred to as a string or stringer. In most mines there were more than one lode worked on at the same time, all under different mine Captains. The lode was the most important part of the mine. Sadly most mines would not make available the funds to carry out explorations to find new or develop existing lodes. Because of this many mines closed.

Old Mens' Platforms: These are platforms left in the mines by the previous workers. Very often these are old and therefore mostly rotten. These include stulls, supports, wooden walkways and bridges etc.

Old Mens' Workings: If a mine closes but is then later reopened, the new adventurers would call the workings by the previous workers, "Old Mens' Workings".

Ore: Metallic bearing rock. Chief ores for the following metals are Copper= Chalcopyrite. Tin = Cassiterite. Tungstan = Wolfram. Zinc = Sphalerite. Lead = Galena.

Platform: Modern name for Sollar or decking over a stull.

Sett: Either a lease stating boundaries of a mine or an underground timber framework consisting of two uprights with horizontal timber across the top. The framework was used for supporting the roofs in bad ground.

Shaft: A vertical tunnel used for hoisting, pumping, also entering or leaving the mine. Shafts are usually named after the adventurers, manager, captains, or their wives or daughters.

Shaftline: An imaginary line. When working from a shaft following a lode it used to become impractical to tram the ore back to the shaft so another shaft would be sunk on lode. This also provided ventilation inside the mine. The shaftline is the line between the shafts (of which there can be more than two).

Shaft Sinker: A man who digs a shaft.

Sollar: A platform at the end of a ladder set upon stulls or a working platform over a shaft.

Stockwork: A rich source of ore, usually thin lodes bunched together, can be very hard to work with and can also be worked open cast.

Stope: Once the ore has been removed, a manmade cavern is exposed. This is called a stope. Underhand stoping is digging below the level. Overhand stoping is digging above the level. Laying stulls as they dug enabled the miners to reach the workface.

Stoping: To dig on the lode creating a stope.

Stull: Large timbers supporting the hanging wall, sometimes called props. Also used to create walkways across stopes.

Stullroad: A walkway of planks laid across stulls usually bridging a stope. It can also be called a bridge or walkway.

Timberman: This is a man who works underground, setting and replacing all the timber supports and stulls etc.

Tolgus Tin: A company working in the 1960's re-dressing numerous old mine dumps for tin. The company has now disbanded and part of the site is now a museum in Gilbert Coombe.

Wheal: This is prefixed on most of the mines. A corruption of the Celtic word Huel, meaning a pit, hole, mine or place of work. Mine is also referred to as Bal, hence Bal Maidens. These were the ladies who dressed the ore on the surface.

Winze: An underground shaft (e.g. not to surface) which is dug downwards connecting upper and lower levels. A raise is the same as a winze except it is dug upwards. These enabled miners to climb to and fro between underground levels. Also aided ventilation.

The author would like to remind readers that, sadly, no dumps remain. There is strictly no admittance to the mine underground or surface.
The mine is now on private property with no buildings left from Wheal Gorland.

Dave Smith.