Field Guide to

Stiperstones Mines

Edited by Adrian Pearce

Shropshire Mines Trust

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Introduction

The Stiperstones ridge in Shropshire is within the South Shropshire Hills Area of Outstanding Natural Beauty, much visited by tourists. From the top, with its “Devil’s Chair”, a visitor can look west to a gently rolling landscape of farming land. In places, square roofless buildings can be seen that were once engine houses – evidence that this area once had a thriving mining industry. In 1875, this small area alone produced over 10% of the UK lead ore and up to the First World War produced about 25% of the UK barite ore.

This publication is not intended to be a definitive history of these mines. It is aimed at the general reader who wishes to know more about the twelve larger mines that were worked to the west of the Stiperstones and perhaps to visit them. Many of the mines were drained by long drainage levels, which passed through the bottom of the workings of several mines. In this area such were Boat Level and Wood Level.

The most productive period for these mines was the mid-19th century but, by the 1880s, cheap lead was being imported from Spain and Australia which drastically dropped the price and it soon became uneconomical to carry on. Many of the mines had closed by the beginning of the 20th century but some carried on by producing barite instead of lead.

The history of each mine is given where known and, for those who wish to visit, the location and current surface remains. Note that some of the mines are on private property with no right of access. In this case, the permission of the owner should be sought before visiting. Parking is also restricted at some locations so care must be taken not to obstruct the roads or access to land.

The text is set out in order of a trail that can be followed by car or bike. The trail starts in the Snailbeach Car Park, where there are public toilets, but you can start and finish it anywhere along the route. It is 12 miles long and mileages are shown as a guide.

Finally a word of warning. Mines can be dangerous places so you must keep children and dogs under control at all times. Do not get too close to the edge of open shafts since the lip may crumble and take you with it! Even if a shaft appears to be filled, treat it with caution since it could subside. Open horizontal entrances may look welcoming but they still
have dangers unless you are properly equipped and led. Do not climb on buildings or machinery since they may collapse and destroy our heritage as well as yourself!

If you are interested in mining, visit the Snailbeach Mine where you can learn more about the industry and go on a led trip underground with helmet and lamp provided. The Visitor Centre is run by volunteers and opens on Sundays and Bank Holiday Mondays from May to October. Further details are at

http://snailbeachmine.org.uk
The Shropshire Mines Trust Ltd is a charity that seeks to preserve mining remains in Shropshire and they manage the Snailbeach Mine, as well as owning the Tankerville Mine. They welcome new members and details can be found at:

http://shropshiremines.org.uk
Field Guide to the Mines

Park in the Snailbeach Car Park and walk up the hill opposite to the mine buildings.

1. Snailbeach Mine

**Location**: SJ374022  
**Minerals**: Lead, Barite & Zinc

**Access**

There is ample parking in the village hall car park (donations are requested for this) and a toilet. Most of the mine site is owned by Shropshire Council and can be accessed at any time but some parts, such as the Count House, are on private property. Shropshire Mines Trust opens the visitor centre on Sundays and Bank Holiday Mondays between May and October, when access can also be obtained to the Loco Shed and Blacksmiths Shop.

**History & Surface Remains**

The reader is referred to the book “Snailbeach Lead Mine” which gives a comprehensive description of the history, remains, etc and it is not worth repeating anything here. There is also a mine trail leaflet that takes the visitor around a marked route.

**Turn right out of the car park and go around a double bend (0.5m). After the second bend, look for a short square chimney on the right.**

George’s Shaft
2. Central Snailbeach Mine

**Location**: SJ368015  
**Minerals**: Lead

**Access**

There is no public access for parking. However, if you ask permission at the house with a truncated chimney (a converted engine house) they may allow parking on a small lay by outside, as well as allowing you to view the outside of the engine house. There is a public footpath up Crowsnest Dingle but all mine entrances are on private land.

**History**

The fame of rich veins and profits being made from the Snailbeach Lead Mine inspired others to study the area for similar mines. One of the obvious places to look was the continuation of the Snailbeach veins but it seems surprising that it took until 1860 for operations to commence to locate these veins. A number of local miners formed a private company and started exploring ground to the west of the Snailbeach Mine. This was on the supposed continuation of the Snailbeach Main Vein and it was intended to locate and work this vein.

By May 1861, several veins had been located underground and sites selected to drive levels west towards Snailbeach. The Crows Nest Level was started about 400 yards to the south of Wagbeach Adit. There was not enough money, however, to develop the mines at depth and it was decided to set up the Central Snailbeach Lead Mining Company to raise the finance for the venture. Mr Edward Davies, manager of the Bretchell Colliery near Shrewsbury, wrote following an underground visit about a “strong vein” with a northern underlie and heading west cut in Crows Nest Level “proving beyond all doubt that it was the Snailbeach Main Lode”. This brought a letter from Captain James Richards of the West Tankerville Mine to refute the claim. Then in September John Evans and David Davies, two of the managers at Snailbeach, wrote to contradict Captain Richards’ statements. They went on to point out “that the ‘Strong Vein’ in the Crows Nest Level of Central Snailbeach is none other than the main lode of this mine”. This was a superb statement for the proposed company plus the publicity engendered by the argument.

The new company was incorporated in 1862 with Job Taylor of Dudley as Chairman and Edward Henry Lowe of Shrewsbury, George Joseph England of Dudley and John Job of Snailbeach as directors. The company
held the lease of a valuable mineral estate under the Haggestow Hall Farm for 21 years. One of their first actions was to present 1,330 shares (fully paid up) to the previous company and to pay all the development costs to date of at least £300. The company set to work with the sinking of Taylor’s Shaft during April. This was intended to intersect the Snailbeach Main Lode at its intersection with Davies Vein at a depth of 45 fathoms and be 9ft in diameter. The shaft was sunk by 12 sinkers while a further 7 miners were driving the Crows Nest Level to intersect the shaft, to provide ventilation and eventually a water adit for the pumps.

By 1864, the manager Walter Eddy was claiming that progress was “most encouraging”. He believed that the 214 yard level was on a continuation of the Snailbeach Main Lode and it was producing 1½ tons of lead ore per fathom. [Note – in the South Staffs Coalfield all measurements were in yards, not fathoms and as some of the directors came from that area, they seem to have preferred yards]. A prospectus for increased capital was issued in 1864 with several photographs of the mine. These show the present engine house and square chimney with a wooden headframe over the shaft, suggesting that construction took place during 1863-64. The buildings are also reminiscent of a colliery, such as would have been current on the South Staffs Coalfield. The winder could have been supplied from the Dudley area, while the use of the square chimney is typical of the Black Country.

Operations continued on the shaft sinking with the aid of the steam winder, while the pump attached to the engine kept the water from flooding the shaft. Information regarding the mine during this year is sketchy but work continued in order to find the Main Lode and produce the elusive profits so much demanded by the shareholders. One major news item for the year was the appointment of John Kitto, late of the Great Laxey Mines on the Isle of Man, as mine manager. The following year, Kitto reported to the shareholders that to date £11,000 had been expended on the machinery and excavations and he believed that the remaining £5,000 in the bank would be well and profitably spent on the mine. The workings of the Snailbeach Mine were only 150 fathoms from the Central Snailbeach shaft and these were said to be producing rich ore from the area. Again, the basic belief was that both mines were working the same vein and it was this that kept the company working over the years.

In 1866, John Kitto reported that the 124 yard level in the No.1 Lode had been driven about 16 fathoms east and west and produced lead ore of poor value. Work on the No.2 Lode was still in the shale and required
much further driving before lead could be expected. Operations had ceased while the shaft was sunk a further 15 fathoms and the shaftsmen had recently extended the pumps to the 124 yard level and were putting in a ladderway to the same depth. He hoped to be able to sink the shaft down to 154 yards depth in five months.

The company at that time had £4,200 in the bank and everyone seemed to be satisfied with progress. Sinking of the shaft continued over the next few months with periodic progress reports from John Kitto. He was always optimistic that riches were just around the corner, shafts should be sunk deeper or levels driven further with profits just out of sight. By the beginning of December, the shaft was down to the 82 fathom level and the driving of two crosscuts commenced. The shaftsmen were busy putting in a kibbleway and lengthening the pumping lift to clear the water. Once this was complete, the shaft sinking resumed while a team of miners drove a crosscut to find the South Lode.

Photos from an old prospectus showing the Engine House

Captain Evans of Flintshire was asked to visit the mine in 1867 and present a report for the general meeting towards the end of January. At the time, the shaft sinking had reached a depth of 164 yards and a level had been driven 5 fathoms to the south towards the No.1 Lode and the Main Lode. 1½ tons of lead ore per fathom was being raised from the level in a promising gangue with better results expected. Captain Evans suggested that continuing the level would intersect the Main Lode, proving its ore content and supplying profits. It was also decided to continue sinking the shaft to a depth of 200 yards and to drive off a level to test the lode at depth. For reasons of economy, this project was shelved.

In June of that year, negotiations had taken place with the landowners to the south east of the Hogstow Farm estate and a takenote for the Hill Sett had been obtained. By July, however, the bank balance had fallen to £547, although the company still held £24,000 worth of its shares and
proposed selling them to the shareholders and the public to boost funds. Four veins of lead were believed to cross the Hill Sett but more important was that the shale beds found under the Hogstow estate terminated against the range of hills. The miners had realised that lead ore was not going to be found in the shales and hoped that the Hill Sett would reverse the cash flow of the company. In the meantime, an outlay of £4,000 was required to develop the new area. Both reports suggested driving the south heading from the Engine Shaft at Central Snailbeach to cut the veins at a depth of around 100 yards. Operations were to commence on the surface to prove the outcrop of the veins and to find any hidden veins.

In 1868, John Kitto reported that, in the 164 yard level to the west of the shaft, the lode was increasing in size, while the underlie had changed from north to the south. This underlie change brought the lode to an angle similar to the Snailbeach Main Lode and improved their chances of being in the correct lode. The shale had almost disappeared from the level, while the lode was now 4ft wide with spots of good lead ore. John Kitto was quick to point out the similarities to Snailbeach and the profits paid over the last 80 years from a lode found in similar circumstances. The level being driven from the Central Snailbeach Engine Shaft was stated to be only 40 yards from the south boundary of the old sett and advancing at a rate of about 6 yards per month. All this expense was draining the bank account so appeals were made for shares to be bought. Of the original 8,000 shares, only 2,422 had been taken and the shareholders were asked to take up the rest. As an incentive, it was mentioned that the lode was now 5ft wide, worth about 1½ tons per fathom, and the value was improving.

The share issue was slowly taken up by the existing shareholders and the shortage of money brought operations almost to a stop, only the New Hill Level was continued. John Kitto protested loudly until operations were recommenced on the shaft sinking below the 164 yard level and the level itself pushed forward. By the middle of April, the shaft had been sunk 12 yards below the 164 yard level, while the level was in a lode of 4ft width but of poor lead values. These two activities continued for the next few months up to August, when it was revealed that the bank balance stood at £934 and lead ore values below the 164 yard level were falling. A boardroom battle then seems to have taken place, with the directors trying to keep the mine working and attempting to raise the necessary finance.

Mining operations seem to have continued into 1869 using the available bank balance but in March there was a proposal to wind up the company. This was not accepted and it was decided to raise more capital from a
share issue. John Kitto produced his usual optimistic report for the occasion, noting the masterly state of the lode with spots of lead ore and expecting riches once the hanging wall of the vein was located. The share issue failed, however, and the company was left without sufficient funds to continue. Operations at the Hill Sett had drained the bank to the point of no return, meaning that liquidation was the only course left to the company. This was not to be the end, however, as a large number of the shareholders were keen to continue operations. The outcome was that the directors were empowered to liquidate in favour of a new company called the New Central Snailbeach Mining Company, which was registered in November 1869. The directors proceeded to offer 8,000 shares to shareholders in the old company but it took appeals and a discovery of lead ore before the shares were taken up.

Early in 1870, John Kitto produced yet another optimistic report with details of the location of the Snailbeach Main Lode at Central Snailbeach. It was also claimed that the Ovenpipe Lode of the Tankerville Mine ran under the Hill Sett. As well as this, it was mentioned that instructions had been given to construct dressing floors, to be followed by regular returns of the lead ore produced. A 3ft wide vein was said to be producing 3 tons of lead ore per fathom, although shaft sinking seems to have ceased at Central Snailbeach and Mytton Dingle. At Central Snailbeach, the plant was extensively modernised, probably with a new beam winder to wind from the greater depths envisaged. The existing Lancashire boiler probably dates from this period, having been invented in 1866. As the original plant seems to date from 1863-64, externally fired egg boilers were probably used at first. Bad weather with severe frosts held up the work during winter for several months. Sinking at the mine continued to a depth of 200 yards to try the veins at a greater depth in the hope of finding the elusive ore.

At Mytton Dingle, the shaft was sunk using a horse gin until heavy feeders of water stopped work. A level was driven to cut the shaft at a depth of 14 yards and a portable traction engine was bought to wind and pump the shaft. At Central Snailbeach, the sinking of a sump to a depth of 230 yards had been the major work, with some nice lumps of lead ore found. A level was being driven south towards the main lode with high expectations and a second sump was being sunk. Alterations to surface plant were nearly complete with the masons and engineers expected to finish by April. It was pointed out that the new plant would be one of the cheapest while at the same time, for its size, one of the most efficient in the county of Shropshire. At Mytton Dingle, the shaft had been sunk to a depth of 44
yards and a level driven on the lode for 8 fathoms. Two large stones of lead ore were produced at a directors meeting to show the quality of the ore at the mine. A large part of the company's capital had been spent proving the lodes here and it was still hoped to develop a profitable mine.

By 1872, work at Central Snailbeach was concentrated on driving the 164 yard level because the extensive workings of the previous company would enable a quicker intersection of the South Lode. However, problems were being experienced with the sale of shares in the company and by September over 1,000 shares still remained to be sold. The directors implored the shareholders to sink more money into the concern but towards the end of 1872 the company finally founded, with little to show for years of work and several fortunes lost. In particular, Job Taylor had made a fortune out of coal mines at Oldbury, Staffs only to lose a large part of it in lead mining.

**Surface Remains**

A prospectus of 1864 shows a completely different setup from that of the present remains, with the shaft and engine house in a different location. These must have been altered very soon after, to be replaced by the later shaft and engine house. The existing remains are in the form of a three storey Mytton Shale and brick built beam engine house, now converted into a private dwelling. The engine beam was mounted on the south wall with a large flywheel slot (now a window) at ground level. At this point would once have been the winding spool with a "Rattle Chain" on it. Pumping was also done by this engine with a crank operating a flat rod to a quadrant on the shaft edge. Internally, the ground floor still retains two wooden beams the full length of the room that once supported the cylinder. To the east is placed the 7½ft diameter twin tube Lancashire boiler, minus many of its fittings but still in good condition (now used as a wine cooler!). Probably once out in the open, it is now roofed over.

Further south is the truncated square brick chimney still connected to the boiler. The chimney is only half of its original height but it is a prominent landmark by the side of the road. It is a square red-brick structure with courses of yellow brick used for decorative purposes. In the west face of the chimney is an arched opening pointing towards the site of Engine Shaft, now filled.

In the bank nearby a short stone arched tunnel can be found. This is believed to have drawn air from the shaft into the chimney, forming a primitive ventilation for the mine. The entrance to Deep Level (SJ366017) has collapsed, as well as two ventilation shafts on the line. An open adit to
Engine House then...

...and now
the north-east (SJ369015) is approximately 100 yards long and ends at an inclined winze about 20ft deep. A supposed adit to the south at Blackhole has not been visited but could be in a clump of trees that can be seen from the road south of the farm.

To the east of the road and about 400yds up Crowsnest Dingle, there is a collapsed adit with a filled shaft just above. What appear to be arched adits in the farm opposite and on the right of the track further up the main valley are only potato stores. About 200 yards north up the side of the valley is an open adit in a large tip. This goes for 40yds to a right-angled bend, then a further 60yds to a winze. On the other side of the winze, the adit continues for 100yds to a blockage. The winze, which is 50ft deep, leads to an adit heading for a short distance in both directions, parallel to the adit above.

Continue to the Stiperstones Inn (0.7m) where you can get meals and refreshments or visit the shop. On the hillside behind were two mines, which can be reached by walking to the left of the pub and following the tracks, either straight on for Myttonsbeach or right for Perkinsbeach.

3. Myttonsbeach Mine

Location : SJ369005       Minerals : Lead

Access

There is no public parking but if you ask at the Stiperstones Inn they may allow you to use their car park, especially if you intend to visit afterwards for refreshments. There is a public footpath up Mytton Dingle that will take you past the mine workings.

History

In the 1830s this mine was part of Tankerville Great Consuls with Bog, Pennerley and Tankerville Mines. Little work seems to have been done on site and in 1870 it was sold to Central Snailbeach Mine, when it was called Hill Sett. Operations were transferred here and this is believed to have been an attempt to recover the savings of investors who had been fleeced at the main mine site. The shaft was sunk using a horse gin until heavy feeders of water stopped work.
A level was driven to cut the shaft at a depth of 42ft and a portable traction engine was bought to wind and pump in the shaft. This shaft reached a depth of 130ft and a level was driven from it for 50ft. Two large lumps of lead ore were produced at a shareholders’ meeting to show the quality of the ore at the mine. However, it is very doubtful if they actually came from here!

By the mid-1870s it appears to have ceased working and it lay idle until 1921, when it was acquired by Shropshire Mines Ltd. They do not appear to have carried out any work on site but there was a final short-lived attempt in 1964 by a lone miner to re-open one of the levels.

**Surface Remains**

There is an open level on top of a large tip and this connects to an open shaft further up the hillside which is offset and appears to continue below water level. An 8" pumping main is present and this may have been operated by an engine sited in the building ruins just to the east of the tip.

Further up the valley, (SJ371004) there is a grilled open inclined shaft on the hillside to the left. This is choked with decaying refuse at 60ft. There is a possibility of it having led to workings beneath the valley floor. A level on the opposite side of the valley is now choked with debris and flooded but is only believed to have been a trial. The body of a tipper truck lies just down the valley from the first level.

**4. Perkinsbeach Mine**

**Location**: SO365997  
**Minerals**: Barite & Lead

**Access**: There is no public parking but if you ask at the Stiperstones Inn they may allow you to use their car park, especially if you intend to visit afterwards for refreshments. There is public access along a track that heads south and then east into the Perkinsbeach valley, becoming a footpath that goes past the New Venture section. The Perkinsbeach section is all on private land.

**History**

This mine was started around 1842 by Walker, Cross & Co and operated on a small scale throughout its life, producing a total of 10,043 tons of barite and 930 tons of lead. At various times it was split into two separate
sections divided by a geological fault, the other section being called New Venture Mine (SJ370001).

By 1850 the area was part of the Stiperstones Mine, which included Bog, Pennerley and Potters Pit Mines. Despite this, little work appears to have been done on site. It was briefly sold to the Perkinsbeach Company in 1860 but they cannot have been very successful since it had been sold back to the Stiperstones Mine by 1862, which carried out some shallow mining operations. In 1866, part of the lease was sold to the Ovenpipe Company who were working Tankerville Mine and two years later they had acquired most of the rest as well. By 1867 the mine had changed hands yet again with the area divided between the Perkins Beach Mining Co Ltd and Central Snailbeach Mine. The former company had ceased by 1877. The history then gets very confusing as various persons and companies worked both sections for short periods up to 1938. None of these could have been very productive. In 1906 Minsterley Baryta Company acquired the lease and built a branch of their aerial cableway to take barite to their mill at Minsterley.

**Surface Remains**

a) Perkinsbeach Section

Maddox Shaft is blocked and Perkinsbeach Deep Level has collapsed. To the east of Deep Level are two open levels and another to the west of these which has collapsed. One of the former leads into the bottom of a working chamber that breaks through to surface. It is rather loose and used to be full of dead sheep.

Vein workings can be easily traced up the hillside and the next entrance up is a 15ft drop into a small chamber. The highest entrance is a short level leading to a 80ft shaft. These two levels were called Lewis's Exploration on an old map, presumably after the miner who was in charge of the team of men creating them.

The vein can be followed over the top of the hill (SO363996) by traces of opencuts and collapsed shafts. Nearby are the remains of the booster station (SO361995) of an aerial cableway which ran from Bog Mine to Minsterley. It also acted as a junction for a branch down to Roundhill Mine. Associated with this are two tower bases further north, the second one below a cutting excavated for buckets to clear the lip of the hill when descending.
**b) New Venture Section**

The entrance of New Venture Deep Level is gated but it is blocked by a fall a short distance inside, corresponding to a collapsed shaft on the hillside above. There are the remains of mine buildings adjacent to the entrance.

There is an open air shaft in the wood to the north which is blocked at 90ft. Just to the north-west of this is a short trial level which has been grilled.

Further up the valley is a 300ft deep shaft (SJ371002) which has now been capped with concrete. There was water at the bottom and this is assumed to be Deep Level. Adjacent to the top is the base of the winding engine. There are several collapsed levels and buildings in the valley leading up to the top, where there is a collapsed shaft and tips.

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*Turn left out of the Stiperstones Inn and continue up a hill. Follow a bend to the right and, where it bends again to the left, park in a lay-by on the left (0.6m). Walk back 100 yards to a mine on the right.*
5. Burgam Mine

Location: SO358997  Minerals: Barite, Lead & Zinc

Access
There is free parking on the lay-by but the mine remains are all on private land and it is difficult to see anything from the road.

Hand boring machine

History
The mine is connected to the Boat Level, which was driven in 1797, so it may well date back to this time. The first documentary evidence was in 1866 when the lease had been acquired as part of the Stiperstones Mine, being acquired in 1881 by Tankerville Great Consols Mine. In 1890 it was acquired by a partnership and was subsequently worked by several small concerns. The last owners were Jackfield Mines Ltd who worked it form the 1950s to 1962. It had the dubious honour of being the last lead mine in the county to close. Total output during its life was only 2,025 tons of barite, 40 tons of lead and 4 tons of zinc.
Surface Remains

There are seven short levels close to the road, some are open and others collapsed. These were the workings mined up to the 1960s.

Further up the hillside is a large spoil tip with an open shaft. This is currently 45ft to a blockage but there used to be two passages off at the bottom. One led to some very unstable stopes and the other had a section of rail but ended in a large collapse. A label from a tin of tea found here was dated 1910-1916, so presumably this area was worked during the First World War.

Further right, near the fence, is an open shaft leading to a tight incline. This drops into some rather unstable workings with bad air which seem to extend to some depth but have not been fully explored. Over the fence, at the top of the big spoil heap, is a grilled level. This leads to 150 yards of passage to a blind heading. To the left of the level are buildings and, further left, a narrow open shaft which is blocked with rubbish at 15ft. Above the level is a grilled open shaft into the grilled level. Diagonally right are ruined buildings and below these is an open shaft and a collapsed level further down.
Adit entrance

Below the road, there are more spoil heaps and a shallow cutting may indicate a collapsed level. A wide depression next to the road was a shaft which was used for many years by locals for dumping - it now appears to be full. This may be the shaft down to Boat Level but the position of this has not yet been confirmed. Further north is a possibly collapsed shaft next to the footpath.

Leave the car where it is and walk 350 yards through the hamlet of Tankerville. Follow the road up the hill past both entrances to Tankerville Lodge and take a footpath going down to the right by a notice board.
6. Tankerville Lead Mine

Location : SO355995  
Minerals : Lead

Access

There is no parking at the mine, the nearest spot is the lay-by as described above. The old mine track is now private property and the only access is from the road (SO355994) down a steep concessionary footpath (closed New Year’s Day). Note that the Ovenpipe engine house and chimney are on a separate piece of land with no public access to them.

History

The mineral rights of the Tankerville area were in the joint ownership of the Earl of Tankerville and the Lloyd family. There is no record of any early mining in the area and the surface of the mine site is shown on old maps as a farm up to the 19th century. The area was being drained by the Boat Level in 1797 but it is not known if any lead deposits had been discovered and were being worked at that time. The earliest known mining at Tankerville was by Walker, Cross & Company from the 1830s, when the mine operated under the name of Oven Pipe. The company’s main activities were at Bog and Pennerley, however, and there was very little investment at this site, other than a crosscut called Oven Pipe Level which had been driven from the Boat Level to work a small pipe vein on Old Lode. Ore was removed from a small shaft by a horse gin and this was probably the one that was later enlarged as Ovenpipe Shaft. Lewis’ Shaft may date from this time as an access shaft when the level was being driven.

Between 1860-63, Fred Jones & Company worked the mine and they had engaged Captain Arthur Waters as manager. In 1862, he referred to the workings in a letter to John Horton:

"... I found Oven Pipe Mine in the same position three years ago as the above named mines are today, but by a system of cross-cutting found a deposit of lead ore that, since its discovery, has yielded about £16,000 worth and that without sinking the Engine Pit an inch ... We are now sinking the shaft as a matter of course, having a rich lode to go down upon".
General view of mine when working

The deposit referred to must be Old Lode and Waters had presumably found both pipes on it from trial crosscuts. On the basis of lead being worth about £20 per ton at that time, about 800 tons must have been produced from 1860. During this time, Heighway Jones of the Bog & Pennerley Company was working several adjacent mines and he realised the potential of Oven Pipe Mine. In 1864, he sold his interest in Pennerley and Myttonsbeach Mines and bought Oven Pipe, where he then concentrated his activities. Waters was retained as manager and the new Oven Pipe Company acquired several other mines, ie Potters Pit and Burgam from 1866 and Batholes and Roundhill from 1868. Probably due to the acquisition of these extra mines, the name of the company was changed to West Tankerville Mining Company from 1869.

As Ovenpipe Shaft was sunk below adit level, the new workings had to be pumped dry and the depth was probably beyond the capability of the old horse gin. As a result, Waters erected a small ex-colliery engine 30 yards from the shaft which raised the ore, operated the pump rods and powered the roller crushers. It was a 16" beam engine of 16 horsepower and 3ft 6" stroke. Ovenpipe Shaft was deepened to the 74 fathom level, being
vertical to 70ft below adit (214ft from surface) and then running at an angle of 15°. The reason for the change in angle was to allow the shaft to follow the direction of Old Lode. This meant that ore extracted during the sinking paid for the costs but it caused problems later with winding and pumping. Levels were driven into Old Lode down to the 74 fathom level and the ore stoped out.

Waters continued to drive exploratory levels from the shaft and one of these, driven south from the 42 fathom level, discovered the top of Main Lode. Other exploratory levels were driven and these proved that the lode extended downwards at 40° and continued to be very rich. Crosscuts from Ovenpipe Shaft allowed the Main Lode to be removed above the 74 fathom level but it was decided not to deepen the shaft since it would move further and further away from Main Lode. At this stage, there was still no indication as to how far the Main Lode would continue but hopes were obviously high.

A description in the Mining Journal early in 1870 describes how the mine was working at that time. Ovenpipe Shaft was used for both raising the material and for the pumps, and access to the levels was by way of ladders in the pumping portion of the shaft. There were about 50 miners employed at the mine, split into three eight hour shifts working round the clock. The steam engine raised ore from 6am to 2pm, drove the ore crushers from 2pm to 5pm and pumped the mine from 5pm to 6am. Pumping was done by four lifting sets of pumps from the 74 fathom level, the lowest having a 7" diameter and the others slightly larger. There was
also a 'forcing set' from the Boat Level to the surface, used to supply water for the dressing floors when surface water was scarce.

The lead ore was raised in a kibble attached to a single linked chain and slid up deal planks in the inclined portion of the shaft. The ore was worked downwards in stopes of 6ft from one level to the next, with the higher level being boarded up for a tramway. The ores from the lower level were raised to the upper level by windlasses and taken by tramway to be loaded into the kibble at the shaft. On the surface, the ore was crushed in roller crushers powered by the steam engine. It was then placed on a rotary screen and the larger pieces were gathered together by brushes on a rotating horizontal wheel, to be sent back through the crushers until small enough for the next phase of the operation. This took place in four jigging machines, sieves worked up and down in water by hand labour, that separated the heavier lead from the spar and stone waste. It was then washed in flat buddles, put through jiggers with finer sieves and finally into rotary buddles. The lead was then ready to be sent to the smelter at Pontesford by horse and cart. On the return journey, the carts brought back coal for the boilers from the Pontesbury Coalfield.

From the bottom of Ovenpipe Shaft, a crosscut ran along the 74 fathom level to Main Lode and an internal shaft was begun down the angle of the lode. By the beginning of 1870, this had reached the 92 fathom level. Since these workings would need to be pumped, there must have been a system of flat rods along the 74 fathom crosscut to operate pumps in the new underground shaft. Water was presumably pumped up to the crosscut and directed to the sump of the Ovenpipe Shaft. Although it was easy to work ore in the lode, it had to be wound up the internal shaft in kibbles, taken by wheelbarrow along the crosscut and then wound up Ovenpipe Shaft using the small winding engine. This was a very inefficient system and it was found that the maximum amount that could be removed was about 50 tons per month. This did not satisfy Waters who believed that it was possible to extract 300 tons per month if a new shaft was sunk from surface directly onto the workings.

Heighway Jones could not afford this scheme himself so, in 1870, a joint stock company called the Tankerville Mining Company was formed with £72,000 capital. The company bought out Heighway Jones' interest in the mine in February 1870 and the names on the official lease were Messrs Murchison, Geach, Watson, Grundy and Mitchell. The share issue was so popular that it was oversubscribed, with 12,000 £6 shares being offered at £20 within a few days. The price soon increased to £30 as early profits rose sharply, a dividend of £3,000 being paid within four months. In May
1870, the mine was renamed Tankerville in honour of the Earl of Tankerville. At that time, Waters claimed that "the mine is unquestionably one of the greatest, if not the greatest, lead producing lodes in Shropshire".

During 1870, the underground shaft was extended from the 52 to the 102 fathom level and a high pressure Fowler engine was installed underground at the 74 fathom level for winding purposes as sinking continued. It had 190 fathoms of wrought iron chimney installed via Ovenpipe Shaft to remove the fumes from the boiler. In 1871 a start was made on sinking the new shaft from surface and a further three engines of 6, 25 and 60 horsepower were installed at surface. At least one of these was probably for ore crushing, etc but the larger one probably replaced the old engine for winding and pumping in Ovenpipe Shaft. This engine may have been housed in the small engine house adjacent to the top of Watsons Engine Shaft. This has the marks of a large winding drum on its internal surface and slots in the north wall. A photograph of around that period shows the winding cable running from this engine house to Ovenpipe Shaft. The old engine house was probably relegated to operating the dressing machinery only.

At the end of 1871, Waters reported that the "mine throughout continues to maintain its high character for productiveness and had never in its history shown such indications of permanency". A local press report said "the rich and profitable mine of Tankerville is second in importance only to Snailbeach, two miles to the north-east". According to the Mining Journal, "the extraordinary richness of the Tankerville Lead Mine is so well known that it is needless to dilate on it here". The new shaft was called Watsons Engine Shaft after Peter Watson, one of the new partners who was also a director of Devon Great Consols Mine. By 1872, some ore was being crushed and stored underground in anticipation of the opening up of the new shaft. A letter to the Mining Journal in 1872 gives some indication of the costs of sinking the shaft. A gang of 12 men was employed with each man earning £1 per week. In a month, the cost of drill steels, powder, fuse, candles, etc was £12, making a total charge of £60 per month for the gang. If the gang was paid on contract at £20 per fathom sunk, they would need to sink 3 fathoms per month to cover costs. In a 12ft x 9ft shaft, this would remove 9 cubic fathoms of ore at 20 tons per fathom, giving a yield of 180 tons per month. Lead ore was selling at £13 per ton at that time.

In February 1873, Waters commented that "the weather is very severe, but by sending the hot water from the condenser through our various dressing appliances, we get on very well preparing the ore for market".
Despite the weather, the new shaft was progressing well, so it can be presumed that the connection had already been made by then. The new shaft was vertical to the 52 fathom level (226ft below surface) and it then followed the angle of Main Lode downwards at 38°. A 32” engine of 25 horsepower was installed for winding in Watsons Engine Shaft and the big chimney probably dates from this time, serving this engine first and later being used for the Cornish pumping engine. An interesting statistic from that year’s Annual General Meeting stated that 27,000 cubic feet of masonry, weighing 1,600 tons, had been used to construct the engine houses. It was also mentioned that Lewis’ Shaft and Ovenpipe Shaft had been re-timbered, with new ladders and pitwork installed in the latter. The underground Fowler engine had become redundant and was removed.

The new 32” engine was also intended for pumping and work was underway to fit new pitwork in the shaft. A crosscut to the Boat Level was made half way down the vertical section of the shaft for the pumped water to flow away. In April 1873, the carpenters were preparing a new balance bob, main rods, etc for pumping in the shaft and it was intended to send down the new pitwork in the near future. By May 1873, all the bobs were ready, the plunger lifts were waiting on the ground and the main pumping rods were to hand. It can therefore be presumed that the new pumps were working by the end of 1873. The vertical motion of the pump rods had to be converted into angular motion at 500ft below surface, where the shaft changed direction to follow the vein. This was achieved with great difficulty and there was considerable wear and tear on the pitwork. Various designs of rods with links, guides, wheels, etc were tried. A great deal of money had been invested in equipment and Waters claimed that Tankerville was only in its infancy and the best days were yet to come.

The angle of the shaft not only caused problems with the pump rods but even more so with the kibbles. The monthly bill for replacing timber kibble guides in the shaft was said to be about £200. The kibbles used, according to the Mining Journal, took 17cwt and even the bulk of Peter Watson himself. Waters replaced the chains on the winding engines with wire ropes, which weighed a lot less and thus saved fuel. In May 1873, after introducing wire rope on Watsons Engine Shaft, Waters said "we do not consume more than half the quantity of coal required to wind with a chain". By 1874, the shaft had reached 190 fathoms below adit and John Smitham was appointed as mine agent to assist Waters. The latter said that the mine was "at last in full swing, despite a drop in lead output due mainly to the amount of work connected with sinking the new shaft. The mine is well-managed and well-equipped and has splendid machinery and
general plant for winding, pumping, crushing and dressing". Lack of surface water for ore dressing was still a problem, Waters arranged for water to be pumped up from the Boat Level and yet the following year he was complaining about the heavy rains which stopped surface working! He continued to issue encouraging reports to the shareholders, saying "there is a great future in the mine and he had never seen finer rocks of solid ore".

It was found, however, that the Main Lode was thinning out with depth and there was increased water in the lower workings. This increased costs and, possibly as a result, in 1875 the company acquired limited liability as Tankerville Mining Co Ltd. The existing pumping engine could not cope with the water and work was started on a new engine house on the other side of the shaft in September 1875. Despite delays due to bad weather, Waters reported in November 1875 that "the new engine house is up to the spring beams, the latter, together with the girder, being in their place. The engine is on the mine and the boiler, with fittings attached, in the house". By the following January the beam of the new pumping engine was lifted into its place.

Alterations were required to the underground pitwork for the new pumping engine and, in summer 1876, Waters reported that "we are getting on well with the engine, the changing of the pitwork, etc, and shall be ready to commence pumping for good with them by the time appointed". The 40" Cornish pumping engine from Harveys Foundry at Hayle was ready for work and connected to the pumps in the first week of August, allowing Waters to announce that it was working splendidly and all the difficulties with respect to drainage were over. By December 1876, he stated that "the new pumping engine drains the entire mine, old and new workings throughout". Waters indicated that only one new boiler was required for the engine, presumably the Galloway boiler which was eventually sold by auction. The other one, a Cornish boiler, may have been for the 32" engine, which was restricted to winding only after the new engine was started up.

In September 1876, the usual shortage of surface water caused Waters to comment that "we have been much put to for want of water for several weeks past but a favourable change has taken place and the dressing can now go without delay". The pump on Ovenpipe Shaft was presumably still working to bring water up to surface from the Boat Level at times of shortage.
At Watsons Engine Shaft, a machine kibble was installed down to the 180 fathom level. This may have been a skip, a method which was used in Cornish inclined shafts to increase the speed of loading. At the top of the shaft, ore was transferred to one of the six adjacent ore bins, all of which had a grating to prevent large lumps passing through. Of the lumps left on top, pure ore was removed for sale, waste rock thrown away and mixtures of the two would be broken up by sledge hammer to a size that would pass through the grating. From here the ore would go to roller crushers and pass through the same dressing processes as previously described. It was originally intended to extend the Snailbeach District Railway in the 1870s to Bog Mine and this would have bypassed Tankerville. In the event, it only reached Crowsnest to the north and all ore still had to be transported by horse and cart to the smelter at Pontesbury.

Waters was still encouraging the shareholders with comments like in 1876 "no finer specimen of a Shropshire lead vein can be found anywhere in the district" and in 1877 "they were mining a champion lode well charged with ore - the 192 fathom level". In that year the mine doctor, William Eddowes, retired and the agents and miners raised £3.18.0d towards his testimonial. There were two dressing floors at the mine and, in November 1877, Waters reported that he hoped to have new machinery installed on the lower dressing floors by the end of the month. This included new machine jiggers, classifiers and round buddles which indicates that he had mechanised the dressing process for greater efficiency. Even so, the surface operations were reliant on the weather and in December 1878, "the frost was so great that for some days the ore weighed into the wagons could not be discharged for some time". 

By the end of 1877, the first hint of caution crept in to Waters' reports when he said "the present state of our mine in no way alters my opinion as to the chances of its opening out again to a profitable state in the future". In 1878 Waters rallied by saying that the mine was "sending off ore as fast as the carriers can take it". The problem was that the Main Lode was thinning out at depth and it was costing more to obtain ore of a gradually decreasing quality. These increased costs corresponded with a fall in the price of lead and in 1878 the company made a loss for the first time. The company's shares were already fully paid up and it was not possible to raise any more capital. Waters recommended to the shareholders that the mine only sell as much ore as necessary to meet costs and concentrate on opening up ore-bearing ground for when the price rose again. The shareholders would not agree, however, and as a result, the old company was liquidated.
New Engine Shaft was commenced in 1879 but it only went down to adit level, from where it connected with Watsons Engine Shaft. The purpose of this shaft is not known but it may have been an attempt to search for new ore deposits or a means of pumping water up to the adjacent reservoir. There is a concrete engine bed next to the shaft but nothing is known about this. The mine was acquired in 1880 by a new company called Tankerville Great Consols, the Cornish sounding name being the idea of Peter Watson, the leading light of the new company. He had bought Bog and Pennerley Mines in 1879 and attempted to raise £100,000 capital to work all three mines plus Potters Pit. The venture was described in the Mining Journal as "probably the largest lead property in the kingdom" but it only raised a little money and this was used to get ore out of Pennerley Mine and to try to drain Bog Mine. Tankerville Mine was all but ignored and, within two years, the company was in financial trouble. In 1882, a crisis meeting of shareholders was held and at the meeting Waters promised:

"We shall not rest until we have Tankerville into such a position as will recoup you all your outlay. As long as we are connected with the mine, no stone shall be left unturned, no brain power that we possess shall be left unexpended to produce a result that shall be satisfactory not only to our shareholders but to ourselves".

Luckily, some more capital was raised and Watsons Engine Shaft was sunk to the 244 fathom level (1,690ft). This was the final depth of the shaft and it has been estimated that it cost a total of £30,000 to sink, although the ore won more than compensated for this. By this time, compressed air boring machines were being used and this is believed to be their first use in Shropshire mines. Despite this, however, the price of lead continued to fall.

It appeared that North Lode was rapidly approaching the Main Lode in the bottom of the mine and Peter Watson and Arthur Waters were most anxious to reach the junction. They believed that this would be where the Main Lode would recover its value, as it had been so rich at about the 92 fathom level where lodes had branched away in the vertical plane. They were unable to raise the necessary finance to continue, however, and the lodes were still 9ft apart at the deepest point seen, the 244 fathom level. The lode was only producing a maximum of 2 tons per cubic fathom and, with dressed galena selling at only £6.50 per ton, the mine could not cover costs. It is worth noting, however, that Arthur Waters said that there was as much lead in total between each level at the bottom of the mine as there had been higher but, spread as it was over a much greater length, it
would not pay to stope under ruling conditions. Since the mine was unable to make a profit, pumping was stopped on 2nd May 1884 and the company was liquidated 13 days later.

The mine workings flooded up to adit and, although there were subsequent attempts to work the mine, these were only small. In 1889-90 the mine was worked by the Earl of Tankerville himself with 4 men on the tips. In April 1891 the mine was leased by Shropshire United Mining Co Ltd, who paid the Earl of Tankerville £193. 7s. 6d for unidentified machinery. They worked the upper levels of Old Lode and the mine tips for lead and barytes but had abandoned the site by 30th September 1893. In 1895 a license was granted to S M Ridge to search for minerals but little work was actually done. In 1898 the Mining Journal reported that the 32" winding engine had been removed from the mine. The remaining mine equipment was finally auctioned off in 1902, together with that of Pennerley Mine. The lots for Tankerville Mine were :-

- Valuable Cornish beam pumping engine, 40" cylinder, 9ft stroke in and 7ft out, in good condition, By Harvey, Hayle Foundry, Cornwall.
- Single purchase rope winch.
- Coil of 1.5" rope.
- About 162ft of 9" cast iron pump trees in shaft above water, with plunger pole, and about 1,450ft of 8", 7" and 6" cast iron pump trees under water; also about 162ft of pitchpine pump rods above water, the remaining pitchpine and iron pump rods under water.
- About 120ft of cast iron 9" steam flange piping from engine to boilers.
- Galloway boiler, with two tubes 30ft 6" x 6ft 6" by Easton & Tattersall, Leeds
- Cornish boiler, with one tube, 3ft x 6ft 6", with steam and safety valves.
- Quantity of 3" steam and feed piping and several 3" bends.
- Two wrought iron kibbles and sheet iron pit tub.
- Quantity of 2" wrought iron piping.
- Wrought iron scale hook and sundries.
A number of items are missing from the list, eg the engines from Ovenpipe Shaft and the crushers, rails, dressing machinery, etc. It is likely therefore that they had been previously been sold or removed for use elsewhere on the combined sett, perhaps at Pennerley.

In 1921-23 the mine was leased to Shropshire Lead Mines Ltd who worked the dumps for barytes and calcite, the latter being used for pebbledashing. In 1922 the official records showed five persons working underground but these may have been working at one of the other mines on the sett. It was probably during this period that there was a branch aerial ropeway from the one that took barytes from Bog Mine to Minsterley. This took spar, etc from Tankerville up past Burgam Mine to a transfer station. In 1929 the Boat Level was blocked just past the junction with the mine, probably by infill of a shaft. The crosscut to Ovenpipe Shaft has also now collapsed but water can still flow through.

The site is now owned by the Shropshire Mines Trust Ltd and has the deepest shaft in the orefield at 1,690ft.
Surface Remains

The obvious large building is the Watson’s Engine House, which housed a 40” pumping engine for the mine. Next to this is an octagonal chimney which served the boiler house. To the left of the engine house is a set of complete ore bins.

There is a small metal headgear over Watsons Engine Shaft but this is only recent and was placed there to facilitate access to the lower workings. The shaft, which, at 1,690ft, was the deepest shaft in the orefield, is now flooded for most of its depth and is blocked a short distance down. In 1995, the shaft walls at the top were reinforced with concrete rings and a cap and grille fitted.

Standing with your back to the engine house, you will see that most of the tips have been removed, taken during the Second World War for building runways at RAF Tern Hill. All buildings on the lower part of the site have had their stone removed down to the footings. The site of Ovenpipe Shaft was located in the middle of the farmyard but is now completely filled. Beyond it is the Count House (now used as a dwelling) which was the mine office and from where miners were paid. To the left of this are some

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*Ovenpipe Shaft engine house and chimney*
miners’ cottages. To the right of the Count House is Tankerville Lodge where the mine manager lived. Further down the track was the magazine, where gunpowder and fuses were stored. These were issued daily to the miners before they went underground.

On the left of the farm track are the remains of the small Ovenpipe Engine House and associated chimney. This contained the original pumping and winding engine for the mine that worked on Ovenpipe Shaft. Although the land belongs to the Trust, there is no public right of access across the track. To get closer you will need to seek permission from the farmer.

In the retaining wall you will see what appears to be a grilled mine entrance. If you look inside you will see that there is a small pit in the floor and this used to house the balance bob, which was attached to the pump rods and counteracted the weight. This tunnel gives access to the concrete platform you can see from the surface but it is not accessible to the public. In the floor of the platform is a trapdoor giving access to the shaft below.

If you visit the mine website, there are photographs of the surface and underground features.

http://shropshiremines.org.uk/tankerville/tankerville.htm

Continue along the road and, just past a post box. Look for rough ground and ruins on the right (0.3m).

7. Pennerley Mine

Location : SO352989  Minerals : Lead, Silver, Zinc & Barite

Access

There is no parking but the roads here are fairly free of traffic and it should be possible to park on the road as long as you do not block traffic or field access. The mine site is on private land but visible from the road.

History

Workings were on a small scale until the area was drained by the Boat Level in the 1780s. This was only 300ft deep at the mine and, since the workings went deeper than this, the water had to be pumped out. The
workings are very old and were described by Murchison in 1839 as "the Penally Mine being long abandoned but now about to be again wrought". The main workings currently visible probably date from the period after 1860 when a depth of over 1,000ft was reached.

The original workings may have been from Gin Shaft, which is believed to have had a horse gin for winding. Engine Shaft was sunk in the 1820s and, by the 1840s, it had a 24" pumping engine. In the 1860s, this was replaced by a 60" engine. Blands Shaft was sunk in the 1850s and was fitted with a 12" winding engine which also wound from Gin Shaft and Potters Pit Shaft. The latter shaft was fitted with its own horizontal winder about 1875 but this had been replaced by 1890 with a portable compound engine with 8" and 14" cylinders.

Last surviving building (now collapsed)

In May 1876, the main pump rod in Engine Shaft broke and this caused considerable damage to the pitwork in the shaft. Very little remains of these engine houses now other than heaps of rubble. The pumping
engine beam and headgear were still standing until about 1900, when they collapsed into the shaft during a violent thunderstorm, allegedly as a result of a bolt of lightning.

The mine was worked on a stop-go basis, often in association with neighbouring mines, which have tended to overshadow it. It did for short periods produce good quantities of lead ore and produced zinc ore between 1870s-1890 and barite from 1890. The peak year for employment was 1883, when 146 persons were employed. The mine worked six principal veins of ore from four shafts, Gin, Engine, Blands and Potters Pit. Until the 1830s, ore was also removed from the mine by boats along the drainage level, hence the name.

It produced 600-900 tons of lead ore per year from 1871-1876 with an anomalous peak of 1,150 tons in 1883, in which year it also produced 2,300 ounces of silver. Its peak for zinc was 50 tons in 1884 and for barite 625 tons in 1892, the mine closing in 1895. During the 1870s, the mine was owned by the Pennerley Company and for most of the 1880s by the Tankerville Great Consols Company.

After 1902, several attempts were made to re-open the mine but none were successful. The last was in 1953, when a new shaft was being sunk. At that time it was 30ft deep and the company was anticipating the arrival of the winding equipment. Much equipment did arrive but was then sold on in the 1960s to Beever Mine and others in Yorkshire.

**Surface Remains**

Most of the buildings have collapsed and the area has been tidied up after use as a scrapyard, so all that remains is acres of stony rubble. The most important remains to be seen at present are around Engine Shaft where, south-east of the shaft and alongside the road, two engine house foundations can be made out complete with engine beds and flywheel pits. Most of the clumps of trees now on the site mark the foundations of groups of buildings shown on early OS maps. All shafts have been filled and a small 20th century brick building collapsed recently.

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**Continue until you reach the Bog Visitor Centre where you can get refreshments. Park further along on the mine site (0.6m).**
8. Bog Mine

**Location**: SO356978  **Minerals**: Barite, Lead, Silver & Zinc

**Access**

There is a public car park at the mine and most of the site is owned by Shropshire Council, so there is free access. The Bog Visitor Centre is open for visitors during the summer season and here you can obtain refreshments and information.

**History**

This mine was being worked by Matthew Dore and Partners in 1739 but, by 1777, it had been acquired by Messrs Scott and Jeffries. In 1777, they installed the first Boulton & Watt engine in this area, a 30" pumping engine costing £800. The life of this engine was very short, however, as it was sold to a nearby colliery in 1782. By 1789, the mine had been acquired by John Weston & Co and they purchased a 45" engine from Boulton & Watt. Its life was only a little longer than its predecessor, however, for in 1797 it was sold to Alex McDonald and moved to a colliery at Nuneaton. The location of this engine is very hard to determine amidst the present day remains at the site. A drawing from the Boulton & Watt Collection shows 2 shafts only 47 yards apart but the 2 obvious shafts on the site, Bunting's and Old Engine Shaft, are 130 yards apart. Either the old drawing is inaccurate or there was an older infilled shaft between the two. There are also references to a 36" engine brought to Bog Mine in 1794 from Wheal Butson.

The mine commenced work again in the early 19th century and a 70" pumping engine was erected at Old Engine Shaft. The Shrewsbury Chronicle dated February 1st 1838 gives an interesting account of the celebrations that took place.

"On Friday last, Mr Cross of Chester put in motion a steam engine of 370 H.P. to conquer the deluge of water. The engine was manufactured by the Coalbrookdale Company, its length of beam over 35ft 10ins, length of stroke of the piston 10ft, internal diameter of the cylinder 70ins, bore of the pump pipes 18ins. The depth of the engine shaft was 315 yards, water being raised to a level 100 yards below surface.

About 1pm, this grand piece of machinery began to have fresh fuel added to its boilers and for several moments the spectators were breathless with anxiety till the beam lifted its majestic head and Mr Cross named her "The
Queen Victoria" amidst the tremendous cheering of a vast multitude, the band playing "God Save The Queen".

When work ceased again in 1844, this shaft was stripped of its pitwork. The company was in financial difficulties by 1859 and a petition for winding up was made by a shareholder. He alleged that the manager, Mr Chenall, was fraudulently converting shares to cash and that the company was in debt. At the same time, however, a prospectus appeared in the Mining Journal in an attempt to rework the mine on a larger scale. Captain Samuel Morris Ridge, writing a report on the mine, recommended that an 80" engine be placed on Old Engine Shaft and a 60" engine on Bunting's Shaft. A Mr Daniel Thomas, in another letter, offered to "put the shaft to rights" for the sum of £5 per fathom if materials were provided. Two large engines such as these suggest the presence of much water in the workings.

In 1870, work on a large scale was again commenced and a 200 H.P. engine with 70" cylinder was installed for pumping. The engine had a beam weighing 26 tons and a 10ft stroke, working 16" plunger lift pumps which were 120 yards long. The engine was named Charlotte after Lady Charlotte Lyster, the lady of the manor and owner of the mine. In addition to these, there was a sinking lift of pump rods 25 yards long and 12ft wrought iron pipes made by Messrs Easton & Tattershall of the Alexandria Foundry, Leeds. The latter were well known in the district as they provided machinery for many of the mines. By January 1871, the mine captain recorded that the men were fitting the capstan engine, capstan and shears for putting the pitwork into the shaft. By February, the shears had been stayed into position and the first two pump rods hung on the beam. Later in the year, the pumps were recorded as working well and the mine had been drained to the 70 fathom level.

In 1872, a letter by E. Cavendish Tahourdin appeared in the Mining Journal. He stated that the water level had now fallen to the 100 fathom level and, in a later letter, pointed out that it had cost £2,000 in the last 8 months to lower the water 26 fathoms. He forecast that, as the remaining capital was only £2,000 and there was 59 fathoms yet to be pumped, the company would be forced to make a further call on the shareholders or go out of business. He also commented that the company only held the lease for 21 years and 7 of these would be up before the shaft was bottomed. An official of the company wrote and indignantly denied these facts but, before the year end, a call was made on shareholders for more capital. By June of that year, the shaft was nearly dry but reports in the Mining Journal show that the task had been very difficult. The pumping
costs had been greatly underestimated and the company were in financial difficulties.

In 1874, the engine was recorded as working at 7 strokes per minute and drawing 877,000 gallons per day. Later in the year, pumping from the bottom levels, this became 4½ strokes per minute and 563,800 gallons per day. The shaft had finally been pumped dry but the expected bonanza was not forthcoming. The 'old men' had filled the levels with deads and it was found that the tales of rich veins were just not true! The company were forced to borrow capital and mortgage the machinery to keep working and it was proposed to move the 70" engine to Bunting's Shaft for winding, replacing it with a more powerful pumping engine. If this had happened, it would have made the engine the largest winder in the country but by 1875 the mine was in the hands of the liquidators. At this late stage, the mine began to show better results but, despite optimistic reports from Captain Harris, the company was wound up.

The mine was last worked on a large scale in 1883 when there was a small output from above water level, as no pumping was being carried out. In 1897, John Smitham of Tankerville commented on the bad state of the pumping engine, boiler house roof and chimney. At this time, Captain Oldfield was making a last attempt to start full scale work at the mine. Bunting's Shaft was later used to pump up to the Boat Level, 52 fathoms below surface at this point, but no details are known of the engine used.

The mine continued as a small scale operation for a number of years mining barite instead of lead. Buntins Shaft was used for winding, with a horizontal winder, until after the First World War. At Ramsden Shaft, sited at the other end of the Bog sett, there was an electric winder, which was probably the first to be used in Shropshire.

Lead ore was transported by horse and cart to the smelter at Pontesbury. It was originally intended to extend the Snailbeach District Railway in the 1870s to Bog Mine and this would have bypassed Tankerville. In the event, it only reached Crowsnest to the north and all ore still had to be transported by horse and cart.

In the 20th Century, when barite was mined, there was an aerial cableway taking the barite to be processed at a mill near Minsterley. This ran for 5 miles and remains of the piers can be found in places, especially near Perkinsbeach. When the volume of mined barite decreased, this was replaced by a traction engine pulling carts. The mine finally closed in 1932 but the wooden headgear remained until 1960. In the 1970s, most of the buildings were demolished and the shafts were filled.
Aerial ropeway

Surface Remains

Despite its long history, only about 7,000 tons of lead ore were ever mined here and most of the tips were removed during the war as hardcore for airfields. The site now belongs to Shropshire Council but most of the buildings have been demolished and all shafts filled.

Only a few foundations remain of the Miners’ Institute and there are some interpretation boards here. It was clad in corrugated iron and was used within living memory for local dances. The old school is now the Visitor Centre which is open for most of the year.

http://www.bogcentre.co.uk/

The Somme Tunnel is still open for 135 yards, with a locked metal grille at the entrance. It is said that unemployed miners were paid to drive this level just to prevent them and their families from starving. The rectangular powder house is in an excellent state of preservation. To the west of Engine Shaft, the embankment of a tramway from Ramsden Shaft crosses an overgrown reservoir built to store water for ore dressing.
Somme Tunnel

Powder House
To the south is the capped Ramsden Shaft, sunk in 1915, which now lies in a stable yard. The sites of Tews No.1 and No.2 Shafts are now covered by trees and hard to find. Swag Shaft is just in the trees by the side of the track leading to Nipstone Rock but has been filled to the top with tree thinnings. A square depression to the south on a large mound may be the Bog climbing shaft shown on old plans.

Return to Pennerley Mine and turn left (0.6m). Pass through Shelve and look for an engine house on the left (1.7m).

9. Ladywell Mine

Location: SO328992 Minerals: Lead

Access

Do not park next to the engine house as this is on private land and you may block access to the fields. Nearby there is an entrance to the Forestry Commission land (SO329995) and cars may be parked here.

History

This mine was part of a property that included Grit Mine and it was leased by Messrs Lewis & Phillips in 1825. After miners driving the Wood Level discovered several veins on the property, the mine was worked via Ladywell Pit in the wood but there is no evidence that an engine was used. The lease was eventually acquired by John Taylor & Co in 1862 and they eventually decided to split the property and concentrate on Ladywell Mine. The landlords refused to do this however, and so Taylor surrendered the lease in 1865. The lease was split eventually and, in 1871, Ladywell was acquired by the Ladywell Mining Company.

Plans were drawn up by the Sandycroft Foundry in 1873 for a proposed engine for the mine. These show a building 26ft 11” x 14ft 1”. The foundations were for an engine described as a horizontal high pressure type, with a 14" cylinder, 24" stroke, boiler and 24" crushing mill. This engine was presumably intended to operate crushing and dressing machinery.

Ladywell Pit was deepened and a new main shaft was sunk which, by 1874, was at a depth of 96ft below the Wood Level. A portable engine
was being used to wind on both of the shafts while the new engine house was being built. The engine and crushing machinery were made by the Sandycroft Foundry at Chester and were operational by 1875.

The mine is reputed to have been very wet and the old miners stated that, when the pumps failed to cope with the water, they had to make a quick exit before the mine flooded. The main engine only appears from the foundations to have had a mere 22” cylinder and the double duty of pumping and winding may account for the occasions when the mine became flooded.

The mine was never very big, only producing a total of 963 tons of lead ore, and there were few underground workings. It was unfortunate for the
mine that, after the great expense of erecting the engine, the price of lead dropped and after 1882 it became uneconomical to continue operations on a large scale.

**Surface Remains**

The engine house, which is built of red brick and local stone, appears to have housed an engine which could be used for both winding and pumping. The long slot in the front wall housed the flywheel, which was used to transmit the reciprocating motion of the beam into rotative motion for winding.

On the right hand side of the engine house is a walled-in trench, which would have been used for the winding drum and the 'walking beam' for transmitting motion to the pump rods. A clutch mechanism, consisting of an iron key or sprocket, would disengage the pump rods when winding was under way.

The engine house is unusual in that there are two 'wells' in the floor inside. Since a normal pumping engine must pause at the end of the down stroke for the pump buckets to fill, these would have held two different sets of controls since continuous motion was required when winding. It appears that flat rods or a winding rope ran from this engine to another shaft across the road in the plantation and the chimney is believed to have been sited on the opposite side of the road as well. The boiler house contained two boilers and was sited between the engine house and the road. Only the engine house remains today and it forms a prominent landmark beside the road to Shelve. The adjacent New Engine Shaft has been capped and even the 2" air pipe left through the capping is blocked.

North of the road in the plantation, Ladywell Pit (SO329994) has collapsed but the nearby Air Shaft is situated in a large spoil heap and is open with trees growing out of the top. It was descended in 1993 to a rubble blockage at 230ft. South of the road in another plantation, First Roman Shaft, on the Wood Level, is amongst the trees but has been filled. Second Roman Shaft is brick-lined and in good condition, although filled to near surface with corrugated iron and rubbish. Other shafts are blocked with spoil.

*Continue and turn left at the crossroads (0.2m). Look for an engine house on the right (1.0m).*
10. Grit Mines

**Location**: SO319980  **Minerals**: Lead, Zinc, Calcite & Barite

**Access**

There is no parking but the roads here are fairly free of traffic and it should be possible to park on the road as long as you do not block traffic or field access. The engine house by the road is on private land but there are public footpaths that pass the rest of the mine site to the east of the road.

**History**

These mines were originally worked as a single sett but were split for a period into East Grit (or Old Grit) and White Grit (or West Grit Mine). Although a Roman pig of lead was found here in 1767, there is no evidence of Roman working but references indicate that mining was being carried out in medieval times. Henry II laid down conditions governing the mining of lead in the Forest of Stiperstones and it is believed that the Grit Mine was working at this time, albeit intermittently and relatively shallow.

In 1760, John Lawrence created the Whitegritt Mining Company with some partners and took on the lease of Grit and Ladywell Mines.
On January 18th 1783, Lawrence contacted Boulton & Watt on behalf of the Whitegritt Mining Company and asked for the approximate costs of erecting an engine at the mine to lift water 60 yards up 13” diameter pipes.

The mine at that time was coping with water by using 2 horses, 6 hours at a time, to work a horse gin. The water was drawn in a 72 gallon barrel, which usually "lacked only 5 or 6 gallons", but at the time of writing the horses were having difficulty in keeping up with the water.

The sale was eventually approved and a legal agreement drawn up between the two parties. On April 10th, Lawrence wrote to Watt to inform him “that evening at about four o’clock we put the engine to work and mean to continue working it for some time”. The former hoped that this would be for at least 3 months. In December, a further letter confirmed that the engine "goes very prosperously being steam and air tight but the boiler is very bad”.

In June 1785, Grit Mine was said to be worked out and so the engine was stopped. By the end of the year, the company offered to sell the engine to a mine at Logelas in Cardiganshire or anyone else that Boulton & Watt cared to recommend after a valuation. Lawrence confirmed that he would run the engine "in 10 or 12 days time to wash out the pumps". It was dismantled in May 1786 and taken to Shrewsbury, where it was last heard of on the quay awaiting transport to Popham & Partners. The site of this engine is now believed to be on what is known as Old Grit Shaft. The shaft is still open here but only two walls of the engine house still stand.

The mine was acquired by Messrs Lewis & Phillips in 1825 and, despite several lawsuits being taken out by Lawrence the previous lessee, much development took place. It was during this period that
several shafts were sunk, including New Engine and White Grit Shafts, an engine house being erected at the latter. White Grit Shaft has now collapsed and the engine house has suffered badly over the years, leaving only the lever wall and parts of two others standing to the west of the road.

Lewis & Phillips gave up the lease in 1848 and the sett was worked separately as East Grit and White Grit until 1860. In 1862, John Taylor & Company acquired the lease and drove exploratory levels from the old White Grit Shaft. His main effort was at East Grit, however, and he erected an engine on New Engine Shaft. This was undoubtedly used for both winding and pumping but no details are known about the engine. Despite this, he failed to make it an economical proposition and soon surrendered the lease. The mine was never worked seriously again although some small scale mining took place. The recorded total output of lead ore is only 7,800 tons but much more must have been taken out.

Surface Remains

White Grit Shaft (SO319980) by the road is completely blocked but some of the engine house still remains, although the tips have been completely removed for roadstone. The arched drainage level is in the wood to the south, it is almost silted up but still issuing water. There is a line of air shafts heading north-east, mostly collapsed.

Rider Vein can be followed east from White Grit towards the trees on the hilltop, passing a circular powder house (SO321980) and three blocked shafts. The former consists of two concentric
circular stone walls with a roof, which enclosed the whole. The outer wall has a door and the inner wall a serving hatch, allowing for one way movement of miners collecting explosives. The building is in an advanced state of decay.

Further on is the fenced Rider Shaft. A short distance to the south is another un-named shaft, now blocked, and a few yards to the north is an open stopеhead. The line of the vein can then be followed to the remains of Old Grit engine house (SO327982). The pumping shaft here is open but flooded a short distance down. The three other shafts in the area, including Foxhole Air Shaft to the north-west and Bye Pit to the south-west, are blocked.

South-west of Old Grit there are dressing floors and the winding engine house of East Grit Shaft (SO327980). The shaft is completely filled. The engine house is similar to the one at Ladywell in that there is the large slot in the north wall, which housed the flywheel (presumably to drive winding or dressing machinery) the axle of which was inside the building. The pit on the east side housed the winding drum and the cylinder was mounted on the raised foundation in the centre of the building. Near this are the remains of ore bins.

A shaft to the south west is called Flat Rod Shaft. This seems to indicate that the shaft had pumps operated by flat rods from one of the engine houses, possibly the one at East Grit Shaft.
The track from here can be followed back to the A488, crossing over Dingle or Squilver Vein. On the south side of the track, Dingle Shaft is completely blocked, though a large stream sinks in this area. Footway Shaft, just to the north of the track, is also blocked.

On the brow of the hill, Hampsons Shaft is filled but Flat Rod Shaft is open to a rubbish infill at 60ft. The next shaft encountered is Stone Shaft, now blocked, followed by an area of gruffy ground in which Gardens Shaft and Old Shaft are located. The last shaft, Gough's Shaft, is by the side of the road and is blocked.

Go back along the road and keep straight on at the crossroads until you come to a bus shelter (1.6m).

11. Roman Gravels Mine

Location: SO334998  Minerals: Lead, Zinc, Barite & Silver

Access

There is no parking but it should be possible to park on the road as long as you do not block traffic or field access. Most of the remains are on private land but there are public footpaths that pass some of the mine site up the hill.

History

Mining has been carried out at this site from early times and some of the shallower workings have been attributed to the Romans. It is known to have been worked opencast by the Romans around 120 AD, using hushing techniques. In this, a dam was built above a slope and then released. The rushing water removed the surface soil layer and hopefully revealed lead veins underneath.

In 1784, John Lawrence & Co worked the mine and erected a 20" Boulton & Watt engine at Engine Shaft for pumping. At the time of installation, the shaft was only 31 yards deep but it was intended to increase this to 60 yards. No details of the engine house are known since the engine was supported in a timber structure and the engine house design was left to the mine engineer. The boiler, however, would have been of a round kettle-like design.
The beam hung over the shaft and it was connected to two pump rods, which would be offset to keep the shaft top clear for winding. The following year, Lawrence wrote to Watt to say that the engine had proved "good and substantial", except that the valve at the bottom of the air pump had lost its copper facing but this had been put right. The engine was "quite superior to the water in power" but, although the inflow of water was trifling, "the work has been opencast in the Roman manner and therefore land water is troublesome".

In 1788, a 24" Boulton & Watt engine was purchased and installed to pump at Old Engine Shaft. In 1790, a third Boulton & Watt engine was purchased, this time with a 14" cylinder and of an unusual design. The outer end of the beam was coupled by a chain or rod to a large pair of bellows and the beam itself was slung from above by a pair of links. The upper end of the piston rod, which was coupled directly to the beam, had a roller running on a vertical guide. This was necessary to prevent the freely suspended beam from moving out of alignment and drawing the piston crab-wise in the cylinder. There were two cocks at the lower end of the cylinder, one for steam to enter and one for it to escape.

A letter from John Lawrence Jnr to Edmund Buckley in August 1831 describes a blowing engine at the slaghearth. Buckley, who was an Ironmaster living in Manchester, wished to buy the smelt house but John Lawrence Snr did not approve. The engine was described as a "little steam engine and good bellows which both have answered their purpose well". He inferred that the engine was not in working order by stating that
it could be put right at little expense. This is almost certainly the 14" Boulton & Watt engine referred to above and it was still in a reasonable state after more than 40 years of working. The exact location of this engine is not known.

In 1860, a 45" pumping engine was installed, together with a 15" winder. About 1875, the New (or Main) Engine Shaft was sunk on top of the hill and a 60" pumping engine from Harveys Foundry at Hayle installed. Shortly after this, a compressor house was built and the pumping engine at Old Engine Shaft was converted to a winder. It is difficult to tie in all these engines with the present remains since the buildings were blown up in the Second World War as practice for the Royal Engineers. The position of the mine buildings is shown on a mine plan of 1872, as well as in the mine section of 1892. There were also 3 waterwheels in use at some period, two of which were of 30ft diameter.

**Surface Remains**

Due to the demolition during the Second World War, little remains of the buildings and most of the tips have been removed for roadstone. This was the second largest lead mine in the area and over 50,000 toms of lead ore were known to have been mined here.

The remains of a pumping engine house (SO333999) can be seen on the east side of the road and this pumped from Old Engine Shaft, now completely collapsed. The footings of a horizontal winder for this shaft are also present. Behind the engine house, the back walls of two ore bins can be seen and, above these, the partly-filled entrance of Day Level with another opening 20ft above. The course of Day Level can be traced up the hillside as a series of collapse depressions to New Engine Shaft, which is completely filled. In 1964, remains of a pump rod protruded from this shaft but these have now slipped down.

To the north is Boundary Shaft. It was open in 1960 but the tip has since been pushed down it, although subsidence is continuing. This shaft, although on First North Vein which branches off Roman Vein, was worked by the California Engine of East Roman Gravels Mine.

Below Boundary Shaft are two others on Second North Vein. One of these is flooded to within 6ft of surface, while the other is blocked 25ft down. There was an open level in this area in 1964 but this was not found on a recent search. Following the track from New Engine Shaft to Ladywell, a small stone-walled shaft on the Sawpit Vein can be seen on the left, which is blocked with rubbish at 90ft. Further to the south, down
the hillside is Spring Vein Pit. This large shaft is still open and the ditch along which the flat rods ran can still be seen. A video camera was lowered down here in 1993 and it was found to be flooded with no passages off above water level.

Roman hush workings

Three sets of what appear to be Roman opencast workings (hushes) are present - a small one just to the north of Old Engine Shaft on First North Vein, a very large one 50yds to the south on Roman Vein and another small one 70yds further on Sawpit Vein. These would have been worked following hushing activities.

The Hope Brook can be followed up the valley to the Roman Gravels tips, where it issues from a culvert (SO332999). This is about 5ft across, with stone walls and a brick arched roof. For most of its 200yds length it is about 4ft high with a paved floor. One 24" culvert (explored for 100ft until it narrowed) enters from the right about 100 yards along, before a collapse of the brickwork has allowed large rocks to block it. Most of the water enters a seepage on the left.

Continue along road and look for a square chimney on tips to the right (0.2m).
12. Wood Mine

**Location**: NGR SJ335002  
**Minerals**: Lead, Silver, Zinc, Barite & Calcite

**Access**

There is no public parking but if you ask the owner you may be allowed to park on the rough ground by the mine. All of the mine site is on private land but you can see a lot of it from the road.

**History**

This mine has often been overshadowed by its adjacent neighbour to the south but it was worked as a separate entity. Obviously, however, it cashed in on the name to attract investors! Despite its grand name, it only managed to produce during its life 3,979 tons of lead/silver, 600 tons of barite and 4,106 tons of zinc.

In the 1790s, John Lawrence worked it as a combined property with Batholes to the north but he had to relinquish it in 1831 to pay the costs incurred in a series of legal battles. By that time, he had installed a small rotary engine with a 24" cylinder and 4ft stroke. The mine was opened up again by the Batholes Co Ltd in 1847 but it had liquidated again by 1853.

The Tankerville Company was working the mine in 1866 and, at the AGM, Captain Waters reported that an engine had been installed for crushing and winding at the Wood and Lawrence Shafts. In addition, a 30 horsepower engine was to be installed for pumping from California and South Boundary Shafts in the near future and a 20" engine and boiler was on order. The old 30" engine had been thoroughly repaired and a new 11 ton boiler and fittings added, with new 8" pitwork placed in the shaft.

This engine is probably the one which pumped on Wood Shaft, raising water from a depth of 480ft to the Wood Level drainage level (120ft deep at this point). In 1870 it was fitted with a new cylinder bottom and spring piston. In the 1870s at Wood Shaft, the weather was so dry that there was no water for the boilers so a pit was sunk on the hillside and water hand pumped out to keep the engines running.

About the same time, a splendid lode of ore was discovered when cutting foundations for a new boiler house. There was also a 14" engine which operated dressing machinery but the location of this is unknown.
Surface Remains

The grey tips and square chimney are obvious features from the road. The tips used to be much bigger but they were removed during the Second World War to build airfields. By following the track that leads up past the tips, the infilled Black Gin Shaft can be seen on the right. The line of four air shafts heading north-west are on the line of Wood Level, which drained the mines in the area.

On contouring round the hill to the south, the site of Wood Winding Shaft has now been capped and is in a garden. The only masonry structure left is the stump of a square chimney by the road which seems to have been associated with the ore dressing plant. By the reservoir are three levels. The first on the south bank is blind, the second leads into a small stope, while the third on the north bank leads to a blockage which corresponds to a blocked shaft on surface.

This may be Lawrence Whim Shaft and its associated Day Level. It is not really clear from plans as there is another shaft on the south side of the valley only 20 yards away, which also may be Lawrence Whim Shaft. Another blocked shaft near the one on the north side overlooks a second reservoir.
Returning to the south side of the valley, Cornish Shaft and California Shaft are located in the first field but both have been filled in recent years. Under the holly tree at the corner of the field is another unnamed shaft on the California Vein. This has been descended for 75ft past a blockage of loose rocks and dead animals to a point where it became too dangerous.

The collapsed entrance to Upper Level, which led into these workings, can be seen by the tramway on the hillside. California Shaft was worked by an engine in the next field, where the groove occupied by the flatrods is visible. This engine also worked Boundary Shaft of Roman Gravels Mine.

Continue and turn right for Snailbeach (3.4m). Go up the hill and back to the Snailbeach car park (1.0m).

We hope you have enjoyed your tour around some of the mines of Shropshire and that it has fired your enthusiasm to find out more. Your understanding of mining in Shropshire cannot be complete until you have visited the Snailbeach Mine and perhaps enjoyed a trip underground. That is the only way to appreciate the conditions the miners worked in.

The Shropshire Mines Trust Ltd consists of volunteers living near the mines and others further way, all interested in preserving the remains of a once great industry. We are always looking for new members to help us and more information can be found at

http://shropshiremines.org.uk
Glossary

ADIT  Horizontal tunnel into a mine.
ADVENTURERS  Shareholders in a mine.
BARGAIN  Agreement between mine captain and mining team to mine ore for a set price for a month.
BARRACKS  Building at a mine where miners lodged during the week.
BOB  The beam of a steam engine or balance box.
BORER  Drill rod.
BUCKING IRON  Flat faced tool for crushing lead ore.
BUDDLE  Structure over which a flow of water passes to separate lead ore from waste.
CAPTAIN  Experienced mine manager.
COUNTRY ROCK  The strata through which the vein passes.
CROSS CUT  A level driven in barren rock for access.
DEADS  Waste rock, often stacked underground.
FATHOM  Unit of measurement – 2 yards or 1.83 metres.
FLATRODS  Horizontal beams for transmitting motion from an engine or waterwheel to a shaft some distance away.
GAD  Wedge for splitting rock.
GIN  Engine.
<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
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<tbody>
<tr>
<td>GRASS</td>
<td>Surface of a mine.</td>
</tr>
<tr>
<td>HADE</td>
<td>Inclination of the lode.</td>
</tr>
<tr>
<td>HUSH</td>
<td>Narrow valley eroded by damming water and releasing it to carry away topsoil, thus exposing lead veins.</td>
</tr>
<tr>
<td>JIGGER</td>
<td>Mechanical sieve for separating ore.</td>
</tr>
<tr>
<td>KIBBLE</td>
<td>Egg-shaped iron bucket for raising ore.</td>
</tr>
<tr>
<td>LAUNDER</td>
<td>Wooden trough for directing flow of water.</td>
</tr>
<tr>
<td>LEAT</td>
<td>Surface water course.</td>
</tr>
<tr>
<td>LEVEL</td>
<td>See ADIT.</td>
</tr>
<tr>
<td>LODE</td>
<td>Ore deposit.</td>
</tr>
<tr>
<td>OFFAL</td>
<td>Waste rock including irrecoverable ore.</td>
</tr>
<tr>
<td>OLD MAN</td>
<td>Miners' term for previous miner or ancient mine workings.</td>
</tr>
<tr>
<td>ORE</td>
<td>Mineral that was mined.</td>
</tr>
<tr>
<td>PITMAN</td>
<td>Miner responsible for maintenance of pitwork.</td>
</tr>
<tr>
<td>PITWORK</td>
<td>Pump pipes, pumps, etc in a shaft.</td>
</tr>
<tr>
<td>RIDER</td>
<td>Rock dividing a lode.</td>
</tr>
<tr>
<td>RISE</td>
<td>Underground shaft driven upwards.</td>
</tr>
<tr>
<td>SETT</td>
<td>Leased area of a mine.</td>
</tr>
<tr>
<td>SHAFT</td>
<td>Vertical entrance to a mine.</td>
</tr>
<tr>
<td>SOLE</td>
<td>Lowest part of a mine.</td>
</tr>
<tr>
<td>Term</td>
<td>Definition</td>
</tr>
<tr>
<td>-----------------</td>
<td>---------------------------------------------------------------------------</td>
</tr>
<tr>
<td>STOPE</td>
<td>Worked out lode, left as an open cavity.</td>
</tr>
<tr>
<td>STULL</td>
<td>Timber support, sometimes used to make a platform on which deads are placed.</td>
</tr>
<tr>
<td>SUMP</td>
<td>Underground shaft driven downwards.</td>
</tr>
<tr>
<td>TAILINGS</td>
<td>Waste material from ore washing process.</td>
</tr>
<tr>
<td>TAMPING IRON</td>
<td>Tool for packing down a charge of gunpowder.</td>
</tr>
<tr>
<td>TUBBING</td>
<td>Iron or timber rings in a shaft to support brickwork.</td>
</tr>
<tr>
<td>TUTWORK</td>
<td>Method of work similar to piece work.</td>
</tr>
<tr>
<td>WHIM</td>
<td>Winding engine, either horse or steam powered.</td>
</tr>
<tr>
<td>WINDER</td>
<td>Steam engine used for winding in a shaft.</td>
</tr>
<tr>
<td>WINDLASS</td>
<td>Hand operated winch for pulling loads up a shaft.</td>
</tr>
<tr>
<td>WINZE</td>
<td>Underground shaft.</td>
</tr>
</tbody>
</table>
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