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TYNEHEAD LEAD MINING COMPANY.

by Nigel A. Chapman

SYNOPSIS

Contemporary reports of a major 19th century trial on Sir John's Vein at Tynehead, in Cumberland, are confused and variously describe any vein being worked as Sir John's Vein, Great Sulphur Vein and the Backbone.¹ The trial showed that the Great Sulphur Vein, whilst rich in iron ore and pyrites, carries little galena. Nevertheless, work continued for several years in the hope of making a 'Good Mine'.

The Great Sulphur Vein runs for about 9 miles from Knapside Hill, on Melberby Fell (NY645389), to Darnigill Bridge, south of Alston on the Middleton in Teesdale road, where it breaks up into strings. It varies in width from 33 metres, in the depths of Black Burn (NY700389), to a staggering 365 metres on Noonstones Hill (NY749381). The major replacement mineral is quartz with a belt of sulphides, pyrrhotite, pyrites, and marcasite with some chalcopyrite, all found on the horizon of the Tynebottom Limestone. Because of its length and width, the vein has attracted many trials, but, although it is believed to contain significant quantities of iron ore, little of value has been found.

Situated on the north-east slope of Tyne Head Fell and at the confluence of the River South Tyne with the Clarhead Burn (at NY752378) are the remains of what has been called the Sir John lead mine.

The beginnings of the existing remains start with a group of local businessmen in 1854-5. They secured a sett in the Manor of Tynehead at a royalty of 1/7th and proposed working the Sir John's and Great Sulphur Veins. Having located the Sir John's Vein in the river bed, operations were centred on the eastern bank, where a level was driven into the vein. At this point, the Directors of the Tynehead Lead Mining Company asked two mining engineers, Evan Hopkins and John Calvert, to view the mine and write comprehensive reports. Both men suggested the development of the level eastwards to the Great Sulphur Vein and expected that, with perseverance, the company would reap large profits.

They both considered the royalty dues too high, advising the company to discuss a lower rate with the landlord. At the next meeting of the shareholders, on October 22nd 1855, the Secretary was delighted to announce a reduction of the royalty from 1/7th to 1/12th. With two optimistic reports and a cut in the royalty, the shareholders were keen to push forward with the operations and provided one shilling per share to settle existing debts of £79 19s 0¹/₂d.

Mr Fordyce informed the shareholders that other commitments would prevent him from executing the office of Secretary. A letter was also received from Mr Woodmass, regretting that, because of ill-health, he would no longer be able to carry out the duties of Agent to the concern.

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Location of Tynehead Mine. NY752378

By February 28th 1857, George Millican, the new Agent, reported that they had put a rise up 4 fathoms in the ends of the level to the 'Post Limestone' and had got ore nearly all the way. From the west cheek of the 'Sir John's Vein' at the bottom of the limestone, they had driven into the vein for 15 feet and were still in the lode.

In a rise about 30 fathoms away, they had driven south in the vein 4 fathoms 2 feet. This had yielded ore that would pay with a crushing mill, but in the end of this drift

the vein was very hard. To the east, softer and more profitable ground had produced some good ore, but this was now poor again.

On the surface, the walls of the mine shop were nearly up and it would be covered in about ten days, if the weather stayed fine. The wheel pit and the water race would be ready the following month.

At the A.G.M. on February 24th, with Mr U. Vipond in the chair, the accounts showed a loss of £21 13s 11d at the last audit. Mine costs for the months from October to January (including £100 for land and buildings) were £205 5s 8d. Sundries were £5 18s 10d. This made a total of £232 18s 5d and so a call of 1s 6d per share was made. Capt. G. Millican reported on the state of the mine and made a statement of what had been achieved since November 15th.

During March the roof timbers were put on the mine shop and the roof was slated. The masons were busy at the wheel pit, which was then ready for timber. The wheel itself was reported to have arrived at Alston. Also, the washing tubs for ore dressing were on the mine. A scene of much activity has to be visualised in the valley at Tynehead with items of all kinds necessary for the mine being delivered and the plant erected.

Underground, lead ore was produced from Kindred's Working, and a nice string of copper ore had crossed the level about one fathom from the forefield. To prove the vein, they had cut across from one cheek in search of the other and had driven 27 feet without finding it.

A meeting was held in Newcastle-on-Tyne on June 6th 1857, with Mr Pringe in the chair. The accounts showed a balance against the mine of £222 18s 5d, with three months' mine costs for machinery, buildings and sundries amounting to £230 6s 3d. Cash received from calls totalled £369 2s 6d, which left a balance against the adventurers of £84 2s 2d. Unpaid calls now amounted to £58 7s 6d and so a call of one shilling per share was made to improve funds.

The Agent reported the construction of the mine lodging house, while the smithy was within a few days of completion, the water wheel pit was finished and the wheel was on the mine. A leat to deliver water to the wheel from Tynehead Fell was almost complete. Work was also progressing on the construction of a crusher to be driven by the wheel.

The Low Level, which became the major working, was being driven eastwards from the valley side by four men, and two men were driving a drift from rise No.1 to rise No.2 in Sir John's Vein to provide ventilation and open the ground for stoping. One man and two boys were engaged in grating the ore at the surface. From rise No.2, the men had driven 27 feet from west to east without finding the other cheek of the vein. The vein contained ore the full width.

By August, the Low Level had been driven 96¹/₂ fathoms and would soon cut an east-west running vein. The drift in the Sir John's Vein was looking well for ore. Two men

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were putting a rise from the level into this working for ventilation and to develop the stopes. Above ground, the stamps were in the course of construction and would be set to work as soon as possible. Whilst stamps were sometimes used at smelt mills for crushing black slag, their use for crushing vein stuff at Dales lead mines was rare. At Tynehead, however, the high proportions of quartz and iron ores in the veins made stamps necessary.

The timber to build a hut for the miners was at Alston and the millwrights were erecting the waterwheel on the mine. By the end of September, the wheel was operating and crushing ore. Rails were laid in the Low Level and hoppers installed to deliver ore to the waggons. Lead ore continued to be raised from the workings at 24 cwts to the fathom, much to the Agent's satisfaction.

With the surface works constructed, operations concentrated on the driving of the levels and the developing of the stopes. Ventilation was proving a problem, so rises were driven to connect with higher workings and provide fresh air. Enough ore was produced to make dressing possible and to promote sales to the local smelters. During a very dry summer in 1859, the shortage of water prevented the waterwheel from operating.

Underground, the driving of the levels went ahead with enough ore cut to cover costs, but little else. Two tons of lead concentrate was sold to Locke, Blackett & Co. for £17 12s 6d during the summer.² John C. Little of Alston was asked to view the mine and report on the future prospects. He described the dressing floors as convenient for the level and the waterwheel as powerful with stamps attached. He also pointed out that rollers for crushing could be attached. The mine shop with the Blacksmith's shop were equipped with every necessary convenience, but, unfortunately, he did not provide details.

The Low Level was being driven south by four men to the west of Sir John's Vein in the Tyne Bottom Plate. They had driven 117 fathoms from the level portal and Little expected that six cross veins would eventually be cut.

At a General Meeting held on November 12th 1859, the balance to October 28th was £47 10s 11d against the company. To make up the deficit, a call of 1s 6d per share was made. Six men were driving in the level early in the next year.

When the General Meeting came round on February 23rd, however, the cash balance against the company stood at £19 9s 8d and total liabilities were £77 13s 4d. To make up the difference, a call of 6d per share was made. After some discussion, it was decided to continue driving the level with six men. Much was said about the proximity of the Sulphur Vein to the level. By the middle of the year, it was stated to be within 50 fathoms of the forefield. The level was described as a little easier to drive at £6 10s per fathom by the beginning of May 1861.

Nothing further was reported until February of 1862 when a lengthy report was carried in the Mining Journal.³ The Tyne Head Low Level had been driven 30 fathoms 3 feet

and a Top Level had been opened. It was also expected that, with a further 7 fathoms' driving, the Great Sulphur Vein would be cut. In the driving, several strings had produced some ore and sulphur, which was believed to be a good sign. The Low Level reached the Sulphur Vein in May, and this was accompanied by much water which spouted 9 feet from the vein.

Later in the same year, they were cutting on the Sir John's Vein, getting some ore from strings, while the forehead was promising great things. It would seem that the vein intersected had been the Sir John's, with the Great Sulphur yet to be found. As ore was extracted, with the expectation of more when the second vein was cut, the reports were optimistic. Work on extracting Sir John's Vein continued, with cross driving to locate the eastern cheek. The vein proved to be 8 fathoms wide with spar intermixed with lead ore. A bargain was let to continue the interrupted drive to the Great Sulphur Vein. It was said to lie within 10 fathoms of the existing forehead.

Later in the year, a vein to the east of the Sir John's Vein was cut and described as being 5 feet 6 inches wide and of beautiful material. Little seems to have developed from this discovery, but operations continued in the Sir John's Vein and eventually a discovery of some fine silver-lead ore was made. It was stated to be the best seen in the mine.

The drive to the Great Sulphur Vein or Backbone, continued until it was finally cut later in the year. The work proved to be very hard and slow, however, with little ore produced. Meanwhile, lead was won from the Sir John's Vein. Early in January 1864, the A.G.M. was held in Newcastle and the usual reports read. It was revealed that a cash balance of £28 15s 7d existed, but a call of one shilling was announced in order to continue activities. The level was stated to be 7 fathoms into the Great Sulphur Vein with some ore being produced, but it was very hard to cut. Some samples of copper ore were also extracted from the Sir John's Vein.

Operations were soon entirely devoted to the Great Sulphur Vein, in the hope of cutting a rich deposit. Instead, some good stones of copper mixed with sulphur were found. The Manager, G.H. Robinson, sent some away for analysis, which proved them to be 34½ per cent sulphur with 4.9 per cent copper, worth £3 10s per ton at Newcastle. A few tons were quickly collected and sent to market to test the response.

Many mining engineers had expected copper to be found at depth and now, with 60 fathoms cover, their predictions were coming true. The amounts of copper were increasing as the south cheek of the vein was located.⁴ Mr Robinson was quick to comment on the ten years of perseverance of the shareholders and hoped their rewards were coming.

Towards the year end they were still cutting into the Great Sulphur Vein and had achieved 15 fathoms driving in a month.

Work continued during the following year, with regular reports being submitted to the management committee and some being published in the Mining Journal. Unfortunately, during November, water appeared in the Low Level and gradually got the better of the pumps until the workings were flooded. Activities centred on the removal of water until early in April 1866, when it was reported that the roof was dry. Men were soon driving at a rate of one fathom per week in a vein of spar and sulphur. Ventilation was a problem, so 40 fathoms of air pipes were urgently requested. Later in the month, they were able to locate the source of the water issuing from the east side of the level.

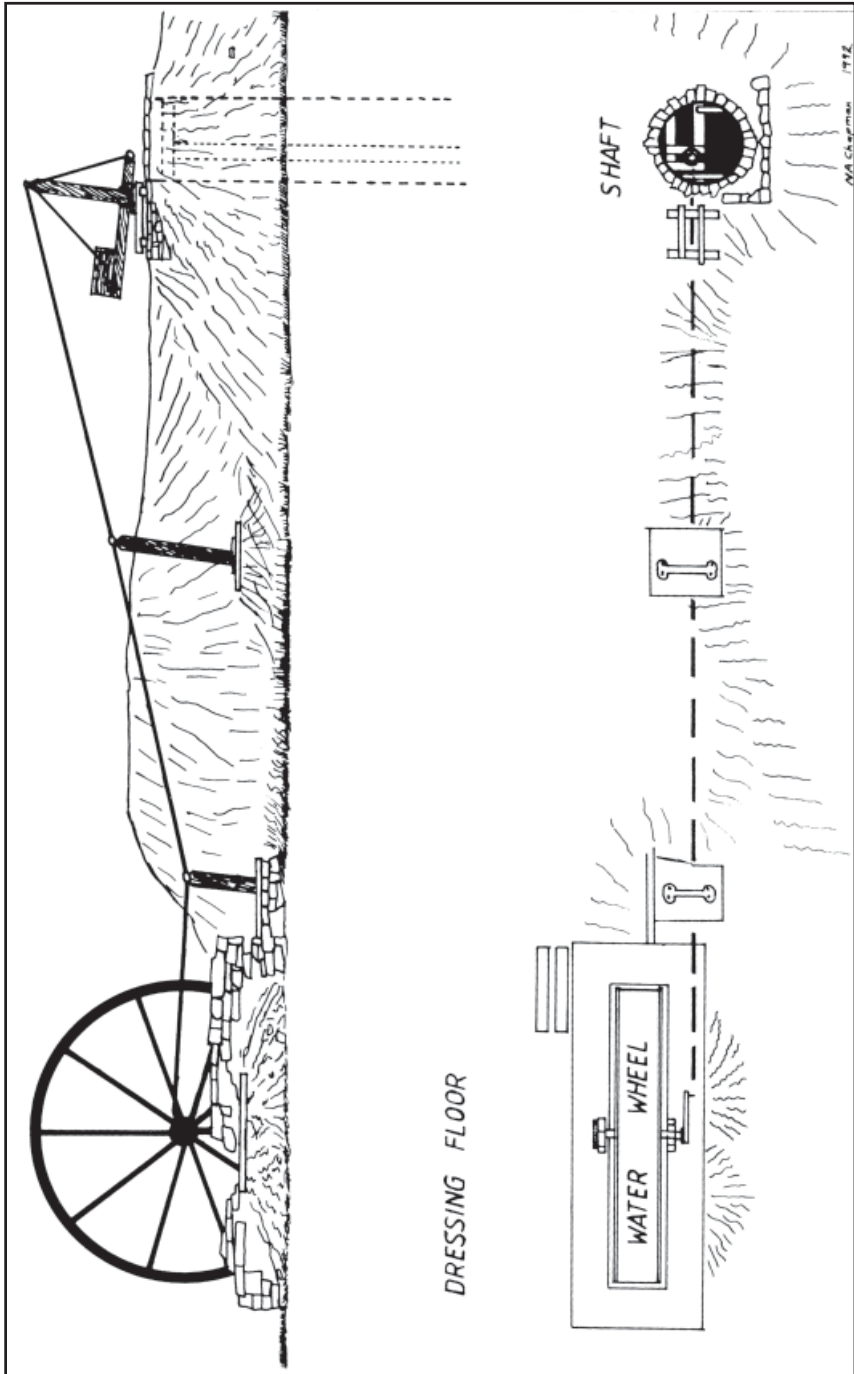
Activity seems to have continued over the next couple of years without any mention in the reports. Then, on September 22nd 1866, George Millican reported that there was no alteration since the Directors were at the mine, only a little more sulphur.

Again the silence returns until a report by Messrs William Vipond and T. Carr of a visit to the mine on January 17th 1869. They examined the workings to study the best method of proving the Sir John's Vein to the south of the Backbone. They had a survey of the mine by a Mr Bell, which they were prepared to accept as correct. This indicated that the vein cut recently had a bearing of 30 degrees East, while the Sir John's Vein ran at 17¹/₂ degrees East and the Backbone was to the south-east. Also, according to the survey, the Backbone was 20 to 30 fathoms ahead.

They recommended driving on the existing cross cut to intersect the Sir John's Vein, then rising to prove the position of the ore-bearing sills. If these were productive, then it would be easy to prove the Sir John's Vein as well. They went on to say that the cutting of the Sir John's Vein was one of the most important trials in the country. It was believed that the ground would be unproductive before cutting the vein. Nothing further was reported until the beginning of 1873, when a sale note appeared in the Mining Journal. It is evident that operations at the mine had ceased without cutting the Sir John's Vein, and a Mr G.E. Swithinbank had been appointed to liquidate the concern.

He instructed Henry Gilpin to auction the mine and its plant and this was done at his Sales Offices, George Chambers, Pilgrim Street, Newcastle, on February 26th 1873. The mine was described as being situated on the north-east slope of Tyne Head Fell, Alston, Cumberland, in the heart of the richest lead-producing district in England, and bounded on the north-east by the River Tyne, on the south by the Clar Head Mine and on the east by valuable mines belonging to the Greenwich Hospital.

The mine extended over 1,000 yards of the Sir John's Vein and from the River Tyne to the Clar Head boundary, or Clargill Burn, on the Great Sulphur Vein, with the usual cords on each side of the veins.



Tynehead Lead Mine. Suggested arrangement of waterwheel driven plant - NY752378

It was considered by some of the leading mining experts to be one of the most interesting trials in the country. Many thousands of pounds had been spent in putting in rails, erecting plant and machinery, and driving to about 20 fathoms from the intended vein.

Unfortunately, the story finishes here at present. What happened at the sale of the mine is not recorded. The mine was abandoned and equipment removed. The waterwheel and its crushing plant, however, were left in place to rot. A photograph, probably taken in the 1950s, shows the waterwheel and much of the crushing plant.⁵ The site was surveyed by a group of pupils from Eston Grammar School in 1971 and the results appeared in the *Cleveland Industrial Archaeologist*.⁶ At that time, enough pieces of the waterwheel were found to permit a reconstruction of the 30 feet diameter wheel. An interesting detail was the finding of the maker's name-plate, "*Deans & Co. No.27*". During October 1991, however, a visit to the site by the writer found no ironwork, just the collapsed structure of the Mine Shop and the crumbling waterwheel pit. The shaft was about 10 metres deep to water, with a number of concrete sleepers covering the top. Nearby, water issued from the Low Level drift.

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