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WORKING OF THE ALSTON MOOR MINES

by

J. and J. LAWSON

The following account of the working of these mines is taken from “British Mining”, an old standard reference book on British metalliferous mining. This book by R. Hunt, F.R.S. (published 1887) is in the Science Library (Christy), University of Manchester.

Part 1 - Driving Levels.

These are generally driven in the plate beds, and are usually 3-4ft. wide and 6ft. high. For the first 20 or 30 fathoms the cost is usually £1 to £1. 10s. per fathom excluding the cost of arching timbering and railing. As the level proceeds, the cost rise to £3 to £4 per fathom (this is mainly due to the larger distance involved to remove the rubbish).

Sometimes a level may have to be driven in limestone or some other hard strata and the costs would be proportionately higher. These levels cost £4 to £8 per fathom excluding the cost of arching etc. When the levels have been driven 50 or 60 fathoms, the circulation of air becomes a problem. To overcome this, either a bore-hole or a shaft is sunk from the surface to connect with the level. To improve this circulation of air, the miners often divert a surface stream to run down the shaft into a cistern or tub at the bottom. This device is called a water blast. Experiments have shown that more fresh air is drawn into the level by having a large volume of water flowing down the shaft rather than increasing the height through which it falls. Horse levels are usually driven with a very gentle rise, just sufficient to allow the water to drain along them. On the floor of the levels wooden or iron rails are placed in order to allow the easy movement of the waggons.

From the levels the vein is reached by means of rises; at the bottom of these there is usually a short flat space 3ft. above the sole or floor of the level. The rises are cut at 15 to 20 fathom intervals and usually the ore is brought down alternately from any two of these.

Part 2 - Working of the Mines.

The mines of Alston Moor are usually worked by “partnership [27] bargains” i.e. the “adventurers”, let the vein to groups of miners at so much a “bing”. The miners, after signing the agreement, have to start work within one month from the date of signing.

When work has started it must be carried out daily, until the period of time allowed has come to an end. During the period of the bargain at least two men must be continuously employed.

The miner in making the bargain agrees to pay for the labour in the mine, gunpowder or other explosives, candles or lamps, the charge for bringing the ore out of the mine and the cost of dressing the ore. The cost of working per bing (8 cwts.) varies depending on the richness of the vein. The average cost of working in Alston is 30/- a bing, and four bings are said to equal one fother or fodder of lead. The royalty paid to the Greenwich Hospital is one fifth of all the ore raised.

In Alston Moor the veins are divided into pieces called 'lengths' and in a 'bargain' the miner agrees to raise ore, for a certain length of time, from the length at so much a bing. The 'length' varies from 12 to 20 fathoms, and the cost of raising the ore depends on many factors. One of these is the width of the vein and the so called 'drift room'. This is the amount of valueless material the miner has to remove in order to extract the lead ore.

The rises generally are between 8 and ten fathoms in height and have stemples or pieces of wood on two opposite sides of the shaft, at approximately 5 ft. intervals. From the top of the rise a drift is driven on the vein and the vein is worked down towards the horse-level; these workings are known as 'stoups'. Workings below the horse-level are carried out by means of sumps, these are usually walled except when the ground is strong enough to support itself without the walling. When the sump has been sunk to the required depth drifts are driven and if the vein is rich enough worked by means of stoups. The ore is generally drawn up the sump by means of a hand-whimsey. In flats a great deal of timbering is required, both to support the roof and to enable the ore to be won.

The cost of drawing the ore out of the mine, even using horses, can be quite considerable and the cost depends on the length of the horse-level and the depth of the mine. The ore, or rubbish, is drawn out at so much a shift, and in some mines a shift contains 8 waggons, but in others a shift contains only 6 waggons. The waggons used in the two shifts vary, in the 8 waggon shift it contains 30 kibbles, each kibble is of about fourteen quarts capacity. The waggon used in the 6 waggon shift holds forty kibbles each of the same capacity as the former kibble. Therefore each shift is capable of moving the same amount of material.

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Usually it costs from between 3/6 to 8/- a shift including the cost of filling, driving and emptying the waggons.

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COST OF DRESSING THE ORE RAISED

Bouse, or ore stuff, containing	½	a	bing	a	shift	9/6d.	per	bing.
“	“	1	bing	“	“	6/3d	“	“
“	“	1½	“	“	“	5/0d	“	“
“	“	2	“	“	“	4/4d	“	“
“	“	2½	“	“	“	3/11d	“	“
“	“	3	“	“	“	3/7d	“	“
“	“	3½	“	“	“	3/5d	“	“
“	“	4	“	“	“	3/3d	“	“

Part 3 - The Early History of the London Lead Co.

The history of the London Lead Co. has been fully dealt with by writings of A. Raistrick.^{1,2} However the authors have not seen Dr. Raistrick's major work,³ and it is possible that the quotation below may have been fully dealt there but in view of his more recent work,² and the omission of the following we feel it deserves a place in the Society's records.

The London Lead Co. erected a smelting mill in Teesdale about 1830, under the direction of their manager, Mr. Stagg. In order to condense the fumes from the mill 1,400 yds. of chimney are used terminating in a shaft 150 ft. high. In the chimney (flue), the smoke is filtered through stones 'while self-acting buckets are suspended above, which are each supplied with water. When they are about ¾ full they turn over and empty their contents on the stones and wash off the lead which has collected.'

'In view of the importance of the Governor and Company in the history of mining, especially their early experiments on smelting lead ores with coal, demands some special attention.'

In the early part of the reign of William and Mary (1688-94), a lady, a member of the Society of Friends, was concerned about the poverty of the working classes, especially in the North of England and was determined to do something about it. So she suggested to Annual Meeting of the Society that they should form a Company which would give employment to those unemployed and would ensure a good return on the money invested. Further discussions took place which resulted in the formation of a chartered company under the title, The Governor and Company of Lead Miners. For the first century, although a considerable amount of lead was raised, and great improvements were made in the smelting operations, the proprietors' expectations were not realised. About

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1750 prospects were very bleak. The company were only employing 8 men in their underground workings and several of the proprietors wished to abandon their lead mining operations and concentrate their capital on something more remunerative.

Lodge Syke was one of the leases in Teesdale and was leased to several local speculators. They made a number of hushes on the veins, but in view of their poor appearance they decided to let their lease lapse. The London Lead Co. later took this sett but they also had poor results, so they called in two agents to view the area and to give their opinion on the future mining prospects. One agent said the Company should give up its operations in Teesdale and the other said that the Company should try another hush on another part of the sett. The Company decided on the latter course and were rewarded with finding a rich deposit of ore near the surface.

In view of this lucky discovery the Company decided to continue its lead mining operations and to take further leases in Teesdale.¹

The Company appointed Mr. R. Stagg, superintendent of the works in Teesdale. He erected a crushing mill, jigging sieves, and he introduced the German swing buddle. From that time the mines have been worked profitably and the Company has looked after the safety of the miners. The Company selected their overmen from the 'most intelligent, sober and industrious workmen'. A school was erected and cottages were built and were rented to the poorer workmen.

Much of the above information seems to agree with what the authors have read in Dr. Raistrick's writings.

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- 3 - Raistrick, 1936, Two Centuries of Industrial Welfare (The London Lead Company, 1692-1905). London.

Mr. R. Hunt acknowledges the following references:-

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- 2 - Wallace, W. The Laws which regulate the deposition of lead in veins, etc. 1661. London.
- 3 - Millar, W. Mines of Carlisle. 1800.
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