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THE MINERAL PRODUCTION FIGURES OF ALSTON MOOR

J. Lawson, M.R.I.C. C.Chem.

Summary

The known mineral production figures of the Alston Moor Mines, 1848-1881 are listed and this evidence is used in an attempt to speculate on the reasons behind the abandonment of the LL.C.'s Alston Moor leases in 1882.

Introduction

Alston Moor's mining history has been covered by several authors but little annual evidence has been presented for the mines production figures, although the complete production figures have been listed by Dunham.¹ In this article, which is the third of the series^{2,3} the lead, zinc and barytes production figures of the various Alston Moor mines are listed and it is the author's hope that this information will be of benefit to other workers in this area.

In the official Statistics the mines of the Governor and Company of Lead Miners are kept separate from the ones which were not leased by them and this has enabled me to draw up two separate lists of their respective production figures. There has undoubtedly been much confusion over which mine was worked by the company and which by private companies but I sincerely hope this article will end the confusion.

TABLE 1 is the Lead Production Figures of the LLC.'s Mines

TABLE 2 " " " " " " " " Mines not leased by the LLC

TABLE 3 " " " " " " " " Smaller mines on Alston Moor

TABLE 4 is a summary of the Zinc production figures from Alston Moor

TABLE 5 is a summary of the Barium Mineral production figures from the area

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TABLE 1 - Lead Ore Production from the London Lead Company's Alston Moor Mines - 1848 - 1881

	1848	1849	1850	1851	1852	1853	1854
Bentyfield Sun Vein	35.00	26.90	9.00	39.80	48.40	37.20	51.50
Browngill	603.00	582.00	308.90	191.50	234.80	191.00	204.70
Capel Cleugh	139.00	400.75	330.20	272.00	297.90	269.25	280.60
Carr's &							
Hanging Shaw	146.00	174.35	143.25	154.00	101.75	164.60	243.10
Cowperdykeheads	14.45	80.90	153.35	202.35	83.40	43.30	28.50
Fletcheras	-	-	-	-	-	-	6.90
Guddangill	50.00	46.00	47.40	67.85	80.30	93.40	80.45
Longcleugh	1664.00	2224.50	2866.00	2052.70	1656.80	868.30	778.10
Middlecleugh	30.00	47.35	62.10	77.65	49.85	71.05	96.10
Priorsdale			17.50	9.95	14.05	14.40	5.45
Rampgill	424.00	418.50	318.10	267.40	200.65	283.60	275.90
Scaleburn	238.00	169.85	122.35	83.00	92.40	73.25	114.25
Smallcleugh	31.00	35.10	25.70	74.20	135.55	246.65	352.00
Tynebottom	80.00	54.60	73.65	61.85	56.60	48.30	57.85
TOTAL TONS	3454.45	4260.80	4477.50	3554.25	3052.45	2404.30	2575.40

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	1855	1856	1857	1858	1859	1860	1861
Bentyfield Sun Vein	112.10	75.80	97.30	108.70	126.80	93.90	98.45
Browngill	197.10	168.00	120.45	160.30	203.40	237.50	170.30
Capelcleugh	220.95	179.75	187.40	148.70	263.05	264.25	298.25
Carr's & Hanging Shaw	158.45	313.55	337.15	371.25	343.50	260.05	286.15
Cowperdykeheads	21.25	25.05	18.95	9.65	50.05	46.10	21.70
Fletcheras	1.80	7.10	0.70	27.40	27.45	50.60	16.50
Guddamgill	62.60	40.10	27.30	57.15	51.60	37.60	65.05
Longcleugh	887.90	798.10	475.25	569.10	808.80	512.35	442.20
Middlecleugh	123.85	199.80	315.75	151.05	201.50	326.05	279.90
Priorsdale	0.80	-	2.40	1.10	-	2.55	1.60
Rampgill	296.30	284.65	433.40	276.85	306.50	311.35	352.50
Scaleburn	154.50	74.65	87.15	88.85	39.85	69.45	71.35
Smallcleugh	88.05	248.60	648.20	706.85	223.80	200.80	338.90
Tynebottom	82.55	47.35	87.15	42.55	21.60	19.85	31.45
TOTAL TONS	2408.20	2462.50	2838.55	2719.50	2667.90	2432.40	2474.30

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Table 1 continued	1862	1863	1864	1865	1866	1867	1868
Bentyfield Sun Vein	90.40	61.55	59.25	27.05	64.45	12.25	-
Browngill	108.35	97.65	88.35	135.25	224.70	423.80	252.30
Capel Cleugh	185.25	195.35	178.45	135.00	128.90	121.40	145.70
Carr's & Hanging Shaw	228.35	434.70	699.70	1132.85	1029.05	756.30	691.65
Cowperdykeheads	16.90	19.85	22.25	13.85	7.00	7.05	3.15
Fletcheras	28.55	9.70	1.65	2.00	5.40	36.6	92.70
Guddamgill	95.00	107.90	88.60	120.35	99.45	75.50	58.55
Longcleugh	763.95	980.70	1196.80	1266.60	1300.75	1271.65	1351.50
Middlecleugh	491.75	240.00	144.50	140.20	174.80	148.70	151.70
Priorsdale	8.90	19.60	1.30	1.00	0.60	0.20	4.70
Rampgill	598.40	582.75	449.70	301.45	343.55	295.40	255.30
Scaleburn	95.45	93.45	107.10	67.65	35.00	23.60	35.45
Smallcleugh	111.55	129.15	125.05	63.90	89.30	108.25	108.85
Tynebottom	36.60	23.55	10.30	8.00	4.45	0.90	11.85
TOTAL TONS	2859.40	2996.30	3173.00	3465.15	3507.40	3281.50	3163.40

	1869	1870	1871	1872	1873	1874	1875
Bentyfield Sun Vein	-	-	-	-	-	-	-
Browngill	322.80	144.15	181.10	153.40	113.80	49.55	103.77
Capel Cleugh	85.10	43.15	50.10	79.80	90.20	81.10	69.80
Carr's & Hanging Shaw	419.80	223.65	224.50	204.00	156.75	148.15	113.90
Cowperdykeheads	7.90	2.30	-	1.25	-	-	-
Fletcheras	58.90	45.85	30.40	12.95	2.25	5.65	16.30
Guddamgill	87.90	92.90	85.60	51.30	24.25	7.30	56.50
Longcleugh	551.45	290.90	365.05	250.75	162.55	161.50	215.10
Middlecleugh	170.35	156.60	189.90	228.20	361.45	253.00	325.85
Priorsdale	1.20	14.70	31.75	42.50	79.10	15.30	11.05
Rampgill	332.19	259.15	329.55	331.30	169.60	174.60	74.70
Scaleburn	18.90	22.35	63.10	36.40	30.95	12.90	3.00
Smallcleugh	139.15	107.05	72.65	52.05	30.45	17.05	14.75
Tynebottom	8.20	20.10	5.20	0.35	-	-	-
TOTAL TONS	2203.84	1422.58	1628.90	1444.30	1221.90	926.10	1004.65

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<u>Table 1 continued</u>	1876	1877	1878	1879	1880	1881
Bentyfield Sun Vein	-	-	-	-	-	-
Browngill	162.50	311.30	333.30	189.35	119.15	124.00
Capel Cleugh	150.35	274.50	124.10	240.65	307.80	305.15
Carr's & Hanging Shaw	145.85	117.00	137.85	163.20	113.35	92.20
Cowperdykeheads	-	-	-	-	-	-
Fletcheras	15.10	9.10	5.45	-	-	-
Guddamgill	146.85	314.40	312.45	305.50	247.80	200.40
Longcleugh	250.25	237.35	269.70	101.15	102.55	133.45
Middlecleugh	253.85	116.60	151.75	106.55	182.70	159.80
Priorsdale	44.55	21.80	13.80	12.10	17.00	11.40
Rampgill	140.65	263.60	265.75	226.85	197.60	255.25
Scaleburn	-	-	5.85	22.90	13.00	30.50
Smallcleugh	8.60	14.75	7.15	54.45	107.40	133.15
<u>Tynebottom</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>
TOTAL TONS	<u>1318.55</u>	<u>1680.40</u>	<u>1627.15</u>	<u>1422.70</u>	<u>1408.35</u>	<u>1445.30</u>

NOTE:

1. There is a recorded production figure of 0.4 tons from Bentyfield Sun Vein in 1872, which is the last occasion that ore was raised by the L.L.C. from their section of vein, although production continued at the East end, by a private company until 1881. (See Table 2).

Tynebottom ceased production in 1873, and Cowperdykeheads in 1872. Fletcheras Mine finished production in 1879.

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TABLE 2 - Lead Ore Production from Alston Moor from Mines not leased by the LLC

	1848	1849	1850	1851	1852	1853	1854
Bentyfield Sun Vein East End	119.00	105.00	265.60	88.80	-	66.00	35.20
Black Syke	-	18.60	50.30	45.10	54.20	38.20	19.30
Blaigill Vein	76.00	63.30	181.60	65.10	57.80	69.60	77.70
Brigal Burn	244.00	209.30	102.90	133.00	144.90	117.60	113.90
Brownley Hill	227.00	252.00	263.20	280.00	156.80	800.80	1722.00
Claregill Head	-	-	-	11.55	7.10	17.80	28.35
Clargill Burn	-	-	-	1.25	1.45	1.85	0.35
Calvert	11.30	58.55	-	-	-	10.20	15.35
Cross Fell Mines	44.10	155.00	186.00	166.80	88.00	74.15	30.85
Dowkeburn W. End	95.00	54.60	20.75	1.20	-	49.50	73.00
Carrs West of the Nent	39.00	30.20	16.15	7.90	8.35	8.40	14.10
Holyfields	58.00	16.20	15.00	19.00	47.35	39.75	18.00
Guttermill	-	-	-	0.50	6.75	0.70	-
Galligill Syke	176.00	132.10	125.75	89.50	79.80	71.20	67.60
Grassfield	31.00	24.25	30.80	30.80	29.75	57.20	22.45
HudgiII Burn	188.00	160.65	128.10	138.60	154.00	210.70	214.45
Low Birchy Bank	19.60	-	18.55	29.80	2.90	21.35	1.50
Natgrass N. Vein	-	-	-	1.85	1.05	11.05	79.60
Rodderup Fell	1470.00	1297.60	1128.85	1200.30	1200.00	1618.40	1982.00
<u>Wellgill Cross Vein</u>	<u>98.00</u>	<u>87.80</u>	<u>70.35</u>	<u>50.40</u>	<u>86.20</u>	<u>65.80</u>	<u>28.00</u>
TOTAL TONS	<u>3184.65</u>	<u>2625.05</u>	<u>2423.05</u>	<u>2423.15</u>	<u>2134.60</u>	<u>3454.70</u>	<u>4572.30</u>

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NOTE: The above production figures include sporadic producers also, as included in TABLE 3.

	1855	1856	1857	1858	1859	1860	1861
Bentyfield Sun							
Vein East End	43.44	76.40	85.00	124.65	82.80	113.85	104.15
Black Syke	0.60	49.50	10.70	3.10	12.25	22.65	7.25
Blaigill	41.40	41.30	37.60	57.65	56.00	17.65	19.85
Brigal Burn	112.00	82.80	105.70	107.20	-	-	-
Brownley Hill	1601.60	1092.00	420.00	420.00	560.00	626.00	492.00
Claregill Head	3.65	22.35	3.15	1.45	4.85	0.85	4.05
Dowgang	-	-	-	-	120.00	98.00	130.00
Clargill Burn	3.25	76.50	-	-	-	-	4.05
Calvert	19.55	21.75	9.70	0.60	-	-	12.00
Cross Fell Mines	72.05	13.45	24.55	24.55	84.75	31.85	12.25
Doukeburn	18.10	44.15	178.15	328.70	105.00	69.65	77.00
Carrs West							
of Nent	10.90	20.29	16.00	20.45	15.90	8.05	-
Holyfields	16.15	9.45	6.30	11.10	14.50	10.00	3.00
Guttergill	-	7.60	18.75	178.20	225.60	229.50	121.70
Gallygill Syke	29.05	75.75	48.65	45.85	122.15	124.60	169.60
Grassfield	21.70	9.15	33.30	18.05	7.85	24.85	7.90
Hudgill Burn	208.60	228.70	126.00	105.00	92.40	50.40	48.65
Low Birchy Bank	5.15	7.40	11.35	-	-	-	-
Natrass Vein	12.05	7.55	6.55	17.85	5.90	8.70	11.30
Rodderup Fell	1806.00	1531.60	1201.20	1125.60	1418.20	1198.40	1086.90
Wellgill Cross Vein	40.25	22.95	13.25	19.95	11.65	-	4.30
TOTAL TONS	4203.95	3689.30	2547.40	3099.20	3219.05	2917.25	2482.10

[27]

Table 2 continued/

	1862	1863	1864	1865	1866	1867	1868
Dowpot Syke	-	-	-	-	19.45	10.35	10.35
Bentyfield Sun							
Vein East End	203.90	150.50	170.00	120.00	92.00	79.00	176.00
Black Syke	7.90	1.50	1.50	4.40	2.40	3.40	-
Blaigill	7.25	11.80	11.80	11.20	26.95	23.45	25.20
Brigal Burn			See Dowgang				
Brownley Hill	560.00	492.00	400.00	400.00	320.00	320.00	320.00
Claregill Head	-	0.65	-	0.70	1.00	0.70	-
Clargill Burn	-	3.85	-	-	-	-	-
Calvert	9.40	-	15.20	13.40	40.45	28.40	7.10
Dowgang	104.50	130.00	128.00	200.00	120.00	90.00	118.00
Cross Fell Mines	-	40.10	44.65	-	-	-	-
Doukeburn	87.50	86.00	179.50	212.20	130.00	124.00	204.00
Carrs West of							
the Nent	3.35	-	17.10	14.30	6.05	8.05	9.00
Holyfield	8.80	7.85	10.00	6.50	-	-	-
Guttergill	128.10	52.55	11.15	21.80	19.20	10.40	5.50
Gallygill	122.50	56.00	26.00	11.50	-	-	-

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Grassfield	14.35	8.40	7.15	6.40	15.40	2.10	13.50
Hudgill Burn	72.80	75.60	47.60	39.55	21.35	9.10	12.60
Nentsbury Green	-	-	-	3.70	1.20	2.10	-
Low Birchy Bank	3.35	7.80	7.25	-	-	-	-
Nattrass Vein	3.35	-	2.00	3.40	2.00	4.70	4.25
Rodderup Fell	<u>1086.90</u>	<u>1384.00</u>	<u>1248.00</u>	<u>880.00</u>	<u>300.00</u>	<u>460.00</u>	<u>400.00</u>
<u>TOTAL TONS</u>	<u>2839.70</u>	<u>2539.60</u>	<u>2384.50</u>	<u>2020.45</u>	<u>1172.30</u>	<u>1237.25</u>	<u>1386.45</u>

	1869	1870	1871	1872	1873	1874	1875
Dowpot Syke	11.20	35.35	26.60	75.60	43.20	38.00	49.00
Bentyfield Sun							
Vein East End	164.00	232.00	208.00	130.00	116.80	45.60	-
Black Syke	2.75	-	-	-	-	-	-
Blaigill	12.25	8.10	-	24.00	-	28.80	26.25
Brownley Hill	332.00	240.00	272.00	240.00	180.00	180.00	180.00
Calvert	11.15	3.55	17.00	-	8.90	7.60	-
Dowgang	99.00	81.00	71.00	52.00	72.00	52.00	94.00
Doukeburn	332.00	319.00	327.00	288.00	182.00	224.00	176.00
Holyfield	-	-	24.00	26.40	6.00	-	-
Guttergill			Combined with Dowpot Syke				
Gallygill	20.00	7.75	2.20	-	-	-	-
Grassfield	-	8.75	8.00	8.00	-	-	-
Hudgill Burn	24.15	9.80	-	-	-	-	-
Nentsbury Green	-	3.35	-	-	-	-	-
Nattrass	1.40	-	-	-	-	-	-
Rodderup	648.00	464.00	528.00	402.00	81.60	264.70	240.00
Carrs West of the Nent	<u>21.95</u>	<u>4.55</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>
<u>TOTAL TONS</u>	<u>1716.05</u>	<u>1469.10</u>	<u>1521.25</u>	<u>1379.20</u>	<u>693.60</u>	<u>839.10</u>	<u>797.80</u>

[28]

Table 2 continued/

	1876	1877	1878	1879	1880	1881
Dowpot Syke	50.10	41.60	15.85	1.25	3.90	8.50
Bentyfield Sun						
Vein East End	80.80	64.00	60.00	72.00	80.00	34.00
Blaigill	40.00	20.00	28.00	-	26.40	2.80
Brownley Hill	128.80	200.00	168.80	173.60	191.20	144.60
Calvert	3.00	-	-	4.40	-	-
Dowgang	80.00	182.40	108.00	61.60	51.35	62.00
Doukeburn	233.60	218.00	144.00	-	-	-
Nentsbury Green	4.00	16.75	8.00	8.00	-	8.40
Rodderup	<u>320.00</u>	<u>408.00</u>	<u>444.00</u>	<u>380.00</u>	<u>220.00</u>	<u>268.00</u>
<u>TOTAL TONS</u>	<u>1057.90</u>	<u>1257.05</u>	<u>996.25</u>	<u>842.90</u>	<u>717.90</u>	<u>734.05</u>

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TABLE 3 - Sundry Production Figures from Alston Moor Mines

	1849	1850	1851	1852	1853	1854	1855	1856	1857	1858	1859
Cow Hill	4.50	5.80					0.85		4.95		
Crossgill Head							1.55	3.30	5.25	11.7	
Crag Green N.Vein		10.30			1.50	0.90	0.85	-	2.85	9.0	2.80
Doukeburn E End					10.50	-	18.10	5.0	-		
Dozey & Tyne Boys					3.10	5.65	9.40	9.95	6.10	0.60	9.25
Fambury	160.00	8.45			10.05	2.40	-	4.20	-		
Foreshield	34.85	23.80	1.70	16.35	5.85	6.10	0.60	-	-	39.90	3.70
Flow Edge			1.65	3.40	4.25	-	-	-	1.50		5.60
East Crossfell						10.85	3.20	30.85	18.60	24.55	
Lady's Vein					2.22	13.20	35.90	28.75	17.15	13.80	
Lee House Well				16.15	2.85	-	9.65	12.45	9.40	7.55	
Metal Band						13.30	10.95	-	-		
Natgrass Middle Vein		13.20	14.15	13.40	9.05	2.75	5.70	2.80	1.20		
Park Grove			10.51	5.45	1.35	2.40	0.25	2.05	4.65	-	2.85
Peat Stack Hill		29.25	20.40	8.25	8.60	4.80	6.90	6.90	3.60	4.30	
Slote		22.25	0.65	3.15	-	-	0.55	-	-		
Stow Crag					13.40	23.75	7.70	31.35	26.95	29.55	15.90
Teeside							4.55	-	36.30	15.15	41.85
Thorngill E. End			3.05	8.35	16.00	12.50	10.55	21.95	18.90	17.90	33.00
Thorngill W. End	29.20	21.45	33.80	13.30	7.06	6.50	3.15	5.60	11.15	24.90	13.90
Tynehead		39.20	48.30	68.25	-	-	-	-	-	2.00	1.05
<u>Windy Brow Vein</u>			1.10		0.60	0.95	8.30	3.10	-		

Note in the period 1848-1859, the following mines raised lead ore for a short time:

1848, North Grain Cross Vein, 155.0 tons; Park Grove 21.0 tons; Slaty Syke and Stow Crag..25 tons;

1849, North Grain Cross Vein produced..85 tons. In 1850, Sunnyside, 13.05 tons.

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1851, Anna Clough 60.0 tons. Allens Cleugh 0.6 tons. Dry Burn 1.05 tons. Howgill Sykes, 13.75 tons. Sunnyside 1.05 tons. Smittergill Head 42 tons. Smittergill Foot 5.85 tons.

1852, Howgill Sykes, 8.7 tons. Coatlithe Hill 0.3 tons. Slaty Dyke, 45 tons. Sunnyside, 0.5 tons. Smittergill Head 15.45 tons. Smittergill Foot 0.6 tons.

1853, Coatlithe Hill, 0.4 tons. Crag Green South Vein, 2.6 tons. North Grain Cross Vein, 1.0 tons. Slaggyburn, 4.75 tons. Thorngill Slit. 1.0 tons. Pedlar Syke, 5.25 tons.

1854, Fairhill, 14.1 tons. Kennyside, 5.55 tons. Middle Syke, 4.2 tons. Slaggyburn, 1.75 tons. Thorngill Slit 1.0 tons.

1855, Nentsbury Pasture, 0.35 tons. Pedlar Syke, 3.45 tons. Thorngill Slit, 1.0 tons.

1857, Green Banks, 1.05 tons.

1857, Gallygill Bents, 13.850

1858, Guttergill West End, 6.8 tons. High Tyne Green..5 tons. Pattersyke 7.4 tons.

1859, Guttergill W. End, 10.85 tons. Pattersyke, 8.4 tons.

Table 3 continued/ Sundry Production, Alston Moor Mines.

	1860	1861	1862	1863	1864	1865	1866
Guttergill W. End.	8.80	27.70	6.30	5.40	7.30	-	7.30
Crag Green N. Vein	5.10	3.50	5.45	11.15			
East Crossfell	-	-				34.00	16.15
Lady's Vein	-	-	11.60	20.75	2.20	0.75	
Dozey & Tyne Boys	7.20	6.25	3.60	4.50	-	-	1.80
Peat Stack Hill	-	-	-	-	5.25		
Stow Crag	12.60	12.60	17.05	20.15	29.40	35.80	20.80
South & West Crossfell	-	-	5.25	20.10	3.05		
Pattersyke	8.40	-	0.90	-			5.25
R. Tyne	-	-	-	-		0.75	0.10

Note in the above period the following mines made small returns.

1860, Coatlithe Hill, 2.75 tons. Gallygill Bents, 3.15tons. Lee House Well 4.85 tons. Park Grove, 3.6 tons. Slote, 5.25 tons. Thorngill W. End, 31.80 tons. Teeside, 15.0 tons.

1861, Coatlithe Hill, 2.85 tons. Gallygill Bents, 5.4 tons. Farnbury 2.9 tons. Park Grove 3.8 tons. Slote 12.9 tons. Thorngill W. End 17.0 tons. Thorngill E. End, 9.8 tons. Teeside 3.75 tons. Battle Green Veins 2.55 tons.

1862, Mellmerby Scar, 4.55 tons.

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1863, Croggill Head, 5.5 tons. Farnbury, 3.55 tons. Mellmerby Scar, 5.0 tons.

1864, Lee House Well 5.75 tons.

1866, Crossgill Head 3.0 tons.

Table 3 continued/

	1867	1868	1869	1870	1871	1872
Guttergill W.End	2.55	1.65	8.60			
Crag Green N. Vein						
East Crossfell	5.85	5.35				
Lady's Vein						
Dozey & Tyne Boys	5.20	0.35	2.85	0.15		
Peat Stack Hill		2.10	25.80	4.75		
Stow Crag	7.65	10.65	35.80	20.50	10.65	16.70
South & West Crossfell	6.70			22.00	25.00	
Pattersyke	32.85	32.90	5.45	16.90	24.55	14.85
R. Tyne	0.70	1.65				

1867, High Tyne Green..2 tons.

1869, Park Grove 2.6 tons.

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Table 3 continued/

	1873	1874	1875	1876	1877	1878
Alston Moor				117.60	84.00	
Pattersyke S & W			31.90			6.00
Crossfell					13.40	9.20
	1879	1880	1881			
Alston Moor	80.00	80.00				
Pattersyke S & W	42.80	30.00	41.20			
Crossfell		4.00	3.80			

Other Returns during this period include:

1873, Peat Stack,..9 tons

1877, Grassfield, 1.35 tons

1879, Park Grove, 10.65. Windy Bridge, 13.0 tons

1880, Gallygill Syke, 3.6 tons. Holyfield, 3.8 tons. Park Grove,..85 tons. Windy Bridge 2.4 tons

1881, Gallygill Syke, 7.5 tons. Holyfield, 1.65 tons. Metal Band, 9.6 tons. Teeside, 10.0 tons

NOTE: The total of all the Sundry Mines Production Figures is included in TABLE 2

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TABLE 4 - Zinc Production, Alston Moor

	1872	1873	1874	1875	1876	1877	1878
Browngill	5.00	-					
Bentyfield			40.00				
Alston Moor Mining Co.						364.20	235.50
Brownley Hill	147.30	147.30	160.30	160.30	122.10	-	100.40
Dowgang	47.85	109.25	-		86.10	18.00	70.60
Grassfield	20.00				53.25	23.20	
Nenthead	468.00	355.20	435.70	892.30	792.80	1003.00	555.80
Nentsbury Green			40.00		267.60	224.70	158.85
Bayle Hill (Calamine)							

	<u>1879</u>	<u>1880</u>	<u>1881</u>	NOTE: The Production figures for Nenthead are those raised by the London Lead Co. in 1874; they also raised 20 of tons Calamine. The Alston Moor Mining Co. also raised calamine in 1877 when they raised 23.2 tons. In 1873 Carrs West of the Nent raised 9.0 tons.
Browngill				
Bentyfield				
Alston Moor Mining Co.		54.00	21.00	
Brownley Hill	150.50			
Dowgang	116.10		28.10	
Grassfield		54.50		
Nenthead	1198.80	757.80		
Nentsbury Green		54.50	47.60	
Bayle Hill (Calamine)	52.50	71.10	25.35	

TABLE 5 - Barium Minerals Produced on Alston Moor

	<u>1874</u>	<u>1875</u>	<u>1876</u>	<u>1877</u>	<u>1878</u>	<u>1879</u>	<u>1880</u>	<u>1881</u>
Brownley Hill Carbonate	160.30		122.10					
Blaigill (SO ₄) Carbonate	572.65	154.35	140.00	25.60	11.50	21.60	10.75	48.70
London Lead Clargill	20.00		792.50	10.90			23.60	

NOTE: It is possible that the production figures quoted above (for L.L.C. 1876) is a mistake on the part of the authors of the Mineral Statistics, but there again it could represent an attempt by the L.L.C. to obtain as much cash as possible for the minerals it was raising, but in any case there are no further figures so either the value of the ore raised around £1/2/0 per ton was not worth the effort or alternatively it was as mentioned previously, a mistake.

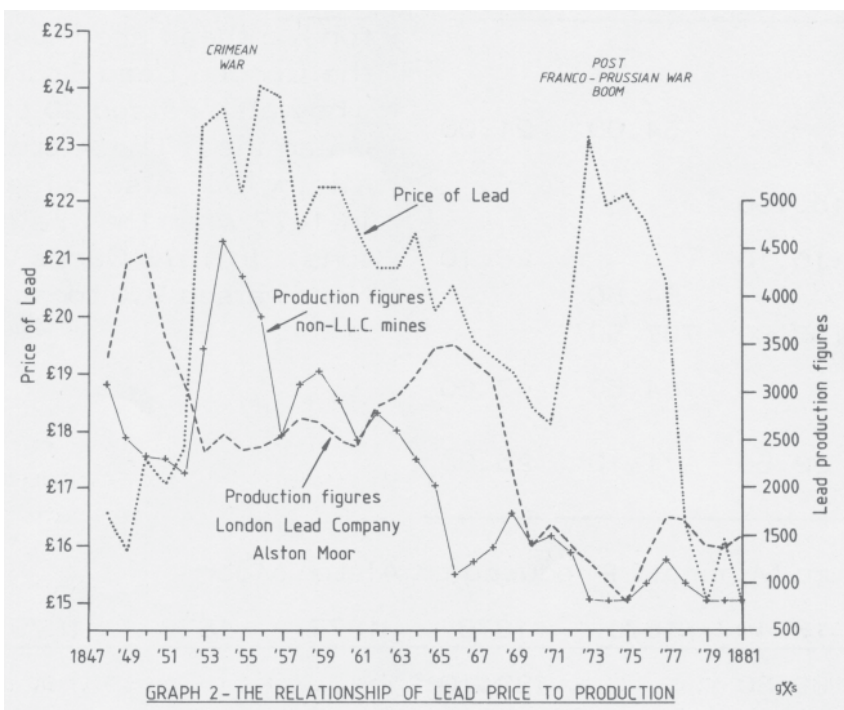
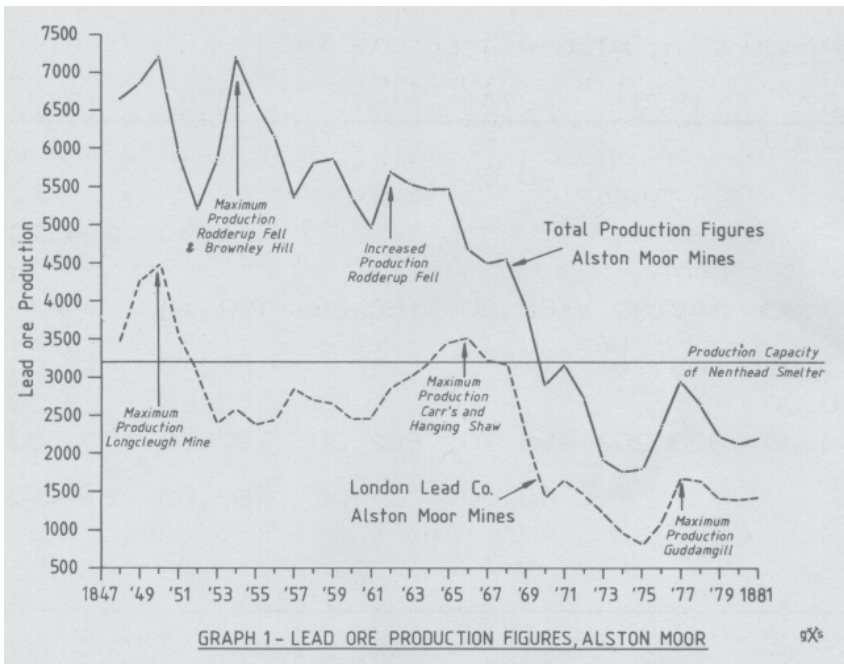
NOTES ON TABLE 1 - It will be seen that the LLC worked only 14 mines in the area during the period 1848-1881, and that a number of these closed down during that time, presumably because their lead ore was exhausted. These include, Bentyfield in 1867, (although a small amount was raised in 1872), Cowperdykeheads in 1872, Tynebottom in 1874 and Fletcheras in 1879.

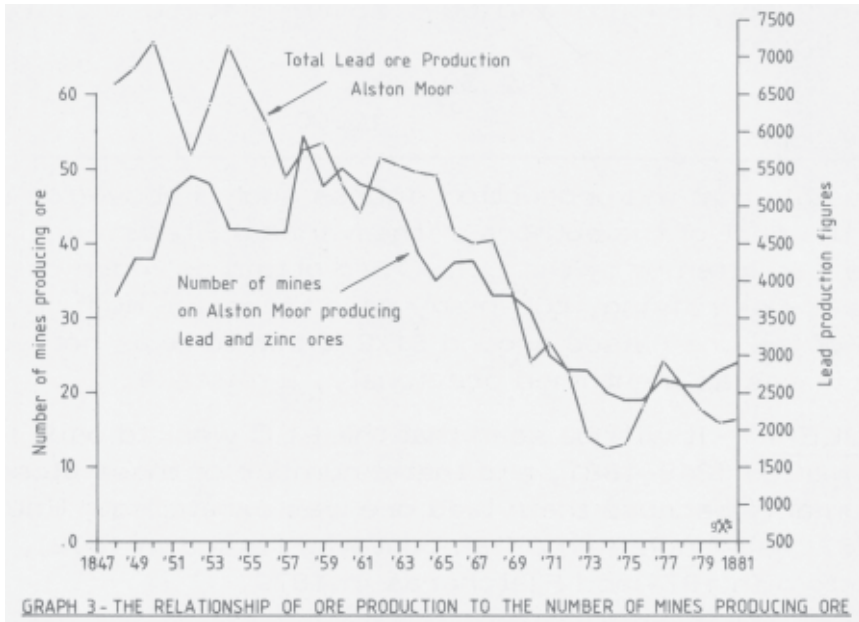
[32]

NOTES ON TABLE 2 – For the first time the results from this table (and Table 3) give us some idea of the amount on non-LLC. ore raised on Alston Moor, and it is considerable. Indeed during this period only half of all the ore mined was in fact produced by the LLC. (Although some was probably also raised either in conjunction with them or raised under tribute, the latter would probably include Dowgang and the East End Portion of Bentyfield). From Table 2 we can see that a number of mines closed down during the period including: Low Birchy Bank in 1864; Wellgill Cross Vein in 1861; Black Syke in 1869; Claregill Head in 1868; Calvert in 1880; Doukeburn in 1879; Holyfield in 1873; Gallygill in 1872; Hudgill Burn in 1870 and Natrass in 1870.

NOTES ON TABLE 3 – This table consists of the smaller Alston Moor mines and as such the life of these mines was considerably shorter than those in the other two Tables. Some of the production figures quoted here probably reflect the last ‘gleanings’ prior to final abandonment. An example of this would probably include the Farnberry Mine. Note the Alston Moor Mines listed in the Table were said to include, Horse Edge, Scarberry Mines on the River S. Tyne and Bleagate Mine Alston Moor.

NOTES ON TABLE 4 – In this Table the London Lead Company is noted for the first time as a major producer of zinc ore. Since few of the Garrigill mines were worked after the LLC’s abandonment in 1882, I would suggest that there is distinct probability of zinc ore remaining in situ in some of these.





DISCUSSION

The production figures have been represented graphically. The first Graph represents the annual production figures for the Total of the Alston Moor Mines and also includes a separate graph for the production of the LLC's mines. The second graph shows the relationship between production and the price of Lead. (The latter, being taken from Willies.⁴ The third graph shows the relationship of the number of mines in production to the total ore raised in the area.

From the first and the third graphs it will be seen that although there is a general relationship between the number of mines in production and the ore raised, this relationship is at best tenuous and in fact that lack of coincident peaks suggests the 'bonanza' nature of the deposits i.e. a large easily worked ore-body giving rise to good yields of lead ore per fathom. In this period we can see five such deposits. The first in 1850 when Longcleugh Mine reached production; the second in 1865 when Carrs/Hanging Shaw reached full production; the third in 1877 with Guddamgill, and in the non-LLC mines, 1854, for Brownley Hill and Rotherhope Fell and again in 1862 for the latter mine. After the peak in production there is a gradual fall, corresponding with the exhaustion of the more readily won ore and the raising of more mixed ore, and with it, a consequent lower production. One of the successes of the London Company was that by leasing a number of mines it could hope for these 'bonanzas' to provide the company with a good operating profit for them. Now since there was no way of knowing when these deposits would occur they had to hope that at any one [33] moment of time at least one of the mines would have such a deposit and hence keep the company's profit up. For with the larger company, more would

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have to be spent on 'Dead Work' etc. and consequently they would be more in need of such deposits than the smaller company, who could just close down when the price of lead dropped. One possible reason for the failure of the London Company at a later date was its bad-luck in not finding one of these bonanza deposits.

I would suggest that earlier 'bonanzas' which would have produced similar results for the company would include Rampgill in the period, 1780-1800 and Smallcleugh in the period 1800-1820. Undoubtedly the company needed the easily won ore of these deposits to provide 'the jam' whilst the rest of the mines would provide the 'bread and butter'.

In a recent paper by Almond⁵ a great deal of light has been shed on the workings of the company in its latter years at Nenthead, and from this paper we are told the capacity of the smelter and numerous other details. From this, together with the published production figures, we can speculate on the reasons why the LLC closed down its operations in 1882, after 179 years of profitable business in the area.

Raistrick considers that the reason was due to the low price of lead,⁶ whereas Almond⁷ considers that it was the company's inability to raise and sell a mixed mineral ore that was the source of their low profitability. Certainly the price of lead was low in 1881-1882 but had been low in 1870, but had risen later. Also why did the LLC continue their operations in Teesdale, when they could have just have easily abandoned the whole lot? It could be argued that production was low in 1881-1882 so they sold out because they had raised all the available ore. This argument doesn't hold water either, for the minimum production of the LLC was in 1874 and yet they continued production for a further 8 years.

The production figures certainly were a factor in the company's decision to sell, for although in the 1840's the price of lead was not much higher than it was in 1881, but then the production was three times higher than it was in the later years. To counter the low production figures of the later years, the company could also count on a sale for zinc minerals, which 30 years earlier had been valueless, generally realising £3 - £4 a ton. It appears to this writer that the operations at Nenthead were of a fully integrated type i.e. the whole unit at Nenthead had to make a profit and the income was made up as follows:-

Period 1848-1867- Production of Lead ore & Silver and sales of refined lead and silver.

Period 1868-1882- Production of lead and silver ores and zinc ore. Sales of refined lead and silver and profit from the smelting of purchased lead ores.

We have already seen that the production capacity of the smelter was 3,300 tons per year so that in the period 1848-1867 the company's own production would have been sufficient to keep it in full production. After that time ore would have had to be purchased to keep it running at capacity. The LLC are said to have made £2.50 per ton on such purchases⁸ and these would have obviously added to the general profitability of the company.

[34]

Zinc production commenced in 1872, just after the drastic fall in the price of lead and probably reflects the company's attempts to maintain overall profitability and as such shows that the company were perfectly aware of the value of zinc ores, and obviously refutes any suggestion that the company were not interested in the ore. Indeed production of it rose so rapidly that in 1877 it reached 1000 tons.

From the figures quoted in Almonds paper we can arrive at probable operating cost figures for the operation at Nenthead.

1. Possible Balance Sheet 1880

<u>Income</u>		<u>Expenditure</u>	
Profit from smelting lead ores	£ 1,466.9	Mining Costs	£17,000
Sales of zinc mineral	£ 2,750.8	Overheads	£ 3,000
Sales of refined lead	£18,000.0	Smelting and refining lead	£ 3,940
Sales of refined silver	<u>£ 1,275.0</u>		
TOTAL	£23,491.17		£23,940

Note: In this calculation I have made a number of assumptions. These include:

1. The company could purchase all the non-LLC ore produced on Alston Moor for this year.
2. The overhead figures were similar to those suggested for the Tynedale Zinc Co. and,
3. The lead recovery figures quoted by Almond (8).

If one accepts the above calculation then clearly the company made a small loss in 1880, but this loss could have been offset by rents etc. and probably the company also made a small profit on its operations in this year. If the same calculation is applied to 1881 then the following figures would apply:

<u>Income</u>		<u>Expenditure</u>	
Smelting profit from the purchase of ores	£ 1,835.0	Mining costs	£17,000
Sales of Lead	£16,950.0	Overheads	£ 3,000
Sales of Silver	£ 1,300.0	Smelting Costs	£ 4,050
Sales of Zinc ore	<u>£ 2,700.0</u>		
TOTAL	£22,885.0		£24,050

In this calculation I have assumed the zinc ore production to have been the same as that for 1880, for the actual figure has not been seen, and indeed Almond suggests⁹ a production figure of 1,500 tons which would have a saleable value of double that quoted above, and would have turned the apparent losses into profits. Certainly in the latter years on Alston Moor it would appear that the Company made small profits

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if not small losses. Any such losses could have been offset if more ore could have been purchased and smelted. The Smelter had a under capacity of 1,000 tons during these later years but clearly, from Tables 2 & 3 the production of the non LLC mines had fallen so low that these ores were not available to purchase, and so this avenue of increasing revenue was barred to the company.

[35]

The only other way the company could have used to increase its profit would have been to smelt its own zinc ores and so gain a share of the profit on smelting the metal, for whilst the price of the ore was relatively low the price of the metal was considerably higher e.g. Ore, £3-4 per ton, price of zinc metal, £17.20 per ton.

We can only speculate why the company did not erect a smelter and so obtain this extra profit, but perhaps the situation is best summed up by the unknown author mentioned by Almond, 'through the length of time during which the London Lead Company has existed, its affairs have fallen into unprofitable grooves and its products have not been well sold.'¹⁰ From this I would suggest that it was the failure of the London Lead Company to change its operations from lead smelting to that of zinc, (as well as the traditional lead and silver), was the real cause of the abandonment of the Alston Mines. This, in view of the later history of the area was a mistake, for had they made the change then they would have been able to continue operations for at least another 60 years, forty years after the closedown of their Teesdale operations.

Prior to carrying out the research for this article I would have concurred with Raistrick,¹¹ who suggests that when the price of lead was high then old veins with poor lead values would be worked and production would rise. Graph 2 shows little correlation of this for the LLC, but shows a close agreement for the non LLC mines. From this we must infer that the managers operating the smaller mines were much more closely in touch with the market situation than those of the larger company, and indeed Brownley Hill and Rotherhope Fell must have made excellent profits during the 1850s.

During the research of the statistics, information came to light on the silver content of the lead ores from the LLC's mines. Dunham¹² has stated that in the official statistics only an average figure is available for the LLC's Alston Mines, and indeed this is true for every year except 1854, when each individual figure is quoted.

These figures are:- Browngill 10ozs. Rampgill 7ozs, Scaleburn 6ozs. Carrs & Hanging Shaw 4ozs. Capelcleugh 5ozs. Smallcleugh 5ozs. Middlecleugh 5ozs. Guddamgill 6ozs. Longcleugh 7ozs. Bentyfield 10ozs. Cowperdykeheads 8ozs. Tynebottom 10ozs. Priorsdale 6ozs.

Every other year an average figure is quoted (7ozs). The silver figures for Hudgill Burn are very interesting for initially (1854) they are around 17-18 ozs per ton but they fall in later years to around the more usual 7ozs per ton. I would suggest the earlier figures are richer due to a carbonate ore being raised. The carbonates are

presumably higher in silver than the corresponding sulphides because these ores will represent the last ore fluids to crystallise out of the original brine solution, and since AgCl is more soluble than PbCl₂ it would stay preferentially in the primary ore solution.

[36]

Conclusion

In this article I have tried to speculate on the reasons why the LLC abandoned their leases in 1882, and I would suggest that the real reason that the Company failed was because they neglected to enter the zinc smelting field. Another subsidiary reason may have been the management itself, for clearly (Graph 2), they did not produce ore to take advantage of the market price of the metals. However, they certainly knew how to sell the concern, for the document referred to in Almond's article is full of inaccuracies and misrepresentations, for the production figures there are higher than those produced and the projected production figures clearly must have been impossible, based on the company's own recorded production figures.

REFERENCES

1. Dunham K.C. The Geology of the Northern Pennine Orefield, HMSO. 1948
2. Lawson J. Statistics of the Production of Barytes, Copper, Lead and Zinc Ore from the Pennines 1848-1881, NMRS Vol.2 No.1 1971.
3. Lawson J. Statistics of Mineral Production of the Pennines, Part 2 Westmorland and the Lake District. NMRS. Vol.2 No.2 1972.
4. Willies L. 1969. A note on the price of Lead 1730-1900, Bull PDMHS. 4.2, pp.179-191.
5. Almond J.K. 1977 The Nenthead and Tynedale Lead & Zinc Co. Ltd. 1882-1896. British Mining 5, pp.22-40.
6. Raistrick A. & Jennings B.A. History of Lead Mining in the Pennines. Longmans 1965. p.328.
7. Almond 1977. op.cit. 24
8. Almond 1977. op.cit. 25
9. Almond 1977. op.cit. 26
10. Almond 1977. op.cit. 25
11. Raistrick & Jennings 1965 op .cit. 280.
12. Dunham 1948 op. cit. 87.

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