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Statistics of the Production of Barytes, Copper Lead and. Zinc Ores from the Pennines, 1848 - 81

PART 1.
The Central Pennine Orefield.

J. Lawson Grad. R.I.C.

In 1848 the amounts of copper, lead and tin ores raised from the mines of Great Britain were recorded for the first time; initially the returns were rather sparse, but later they were extended to include the owners and. mineral agents, and tended to be a sort of advertisement for the mines. Obviously in recording such a list, mistakes were made but I felt that a list would form a reference from which the history of the mines could be inferred and as the Statistics are not readily accessible such a list would be of interest to Society Members.

This list forms the first of a series which will cover the Pennine Orefield. The list is compiled from the Mineral Statistics for 1848-1881, and the Author offers his thanks to the Librarians of the following Libraries:-

Christie Library, University of Manchester.
Central Reference Library, Manchester.
University of Manchester, Inst. of Science & Technology Library.

For without the extended loan of some of the volumes the work could not have been carried out. The second part of the Central Pennine Orefield will give a list of the mine owners and agents. This will be published in a future issue of the Memoirs.

The tables show some of the effort that was put into the Yorkshire Mines during the years 1848-81. Little comment on the statistics has appeared in print, the major exception being a paper by K.C. Dunham (1944). The years of greatest production are shown to be 1856 and 1857, and the falling production in later years are well shown by the statistics for the Grassington and Old Gang mines. Wensleydale reached its peak of production prior to 1861, and was only represented by a few mines after 1865. Silver returns are also listed in the statistics but these were very incomplete. It is hoped that when the history of the Yorkshire Mines is fully recorded, anomalies in the statistics will be explained, e.g. the extraordinary production figures for Appletreewick in 1880, whilst the previous and next years production figures are insignificant by comparison. Other examples could also be quoted but I hope that I have hinted at some of the problems that remain to be answered.

TABLE la ORE RETURNS 1848 – 1860

Mine		1848	1849	1850	1851	1852	1853
Cononley	Ore	699.0	588.2	804.0	733.5	554.2	722.0
	Lead	437.0	395.4	556.0	520.5	381.6	550.0
Grassington	Ore	1159.0	1231.6	1766.8	1489.9	1530.5	2127.5
	Lead	707.0	810.5	1325.0	997.5	1036.0	1494.0
Hurst						426.0	274.0
						264.0	169.0
Kettlewell &	Ore		154.0	150.0	200.0	180.0	160.0
Coniston	Lea		100.0	96.0	140.0	120.0	110.0
Nithsdale	Ore		74.0				
	Lead		52.0				
Pateley Bridge	Ore	937.0	905.0	875.0	981.7	950.0	796.0
District	Lead	609.0	591.0	500.0	652.6	632.5	531.0
Lunehead	Ore						31.2
	Lead						23.2
Swaledale &	Ore	4053.0	4954.0	5110.3	5000.0	4765.0	4947.0
Arkendale	Lead	3040.0	3648.0	3475.3	3472.0	3240.0	3276.0
Wensleydale	Ore			696.0	2670.0	1185.0	
				264.0	1386.0	615.0	

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TABLE 1b ORE RETURNS FOR 1854 - 1860 in TONS

Mine		1854	1855	1856	1857	1858	1859	1860
Braithwaite	Ore	96.5	67.1	74.7	91.7	17.9	36.5	59.1
	Lead	70.0	39.0	55.0	65.0	12.5	25.9	41.0
Buckden	Ore						182.0	
	Lead						128.5	
Cononley	Ore	606.0	654.5	596.1	538.8	555.8	519.6	494.9
	Lead	463.0	475.0	441.3	388.8	387.3	363.5	345.0
Grassington	Ore	1800.0	1575.7	2133.0	1449.5	1498.8	1188.9	1216.8
	Lead	1270.0	1121.3	1538.9	1049.4	1134.9	882.0	931.7
Hurst	Ore	225.0	129.6	118.0	190.4	149.5	158.0	58.5
	Lead	168.0	96.8	87.0	130.0	102.0	133.1	39.0
Kettlewell &	Ore	110.0	95.0	156.5	150.0	154.0	160.0	
Coniston	Lead	70.0	50.0	100.0	105.0	101.5	110.0	
Linehead	Ore			4.3				
	Lead			3.0				
Hebden Moor	Ore			201.8	275.2	222.8	242.4	260.0
	Lead			139.6	182.1	101.5	164.5	165.0

TABLE 1b Continued

Mine		1854	1855	1856	1857	1858	1859	1860
Pateley Dist.	Ore	680.0			760.0	865.0	913.0	958.0
	Lead	477.0			535.7	577.5	609.0	694.0
Scargill	Ore			47.1	60.0	40.0		
	Lead			35.0	44.5	30.0		

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Swaledale &	Ore	4817.0	4345.0	5371.4	6326.0	5517.0	4720.0	4410.0
Arkendale	Lead	3276.0	2956.0	4278.8	3722.0	3478.0	2976.0	2780.0
Teesdale	Ore		13.6		14.5	40.1		65.8
	Lead		8.5		10.3	28.5		42.3
Wensleydale	Ore	910.3	1864.0	2800.0	2550.0	2412.0	1585.0	2815.0
	Lead	682.0	1200.0	1806.0	1643.0	1599.9	1047.0	1872.0

Notes on Table 1a and 1b

a) Grassington includes the Yarnbury Mines.

b) Prior to 1854 and including 1850 Hurst was included with Swaledale.

c) In 1855 the Pateley District was divided as follows:- Sunside Mines ore 274.0 lead 182.2. Prosperous and Providence, ore 18.0 lead 13.1. Mines on Mr Yorkes Liberty, ore 342.0 lead 227.6.
In 1856 from all these mines the returns are: ore 671.8 lead 501.5. In the period 1857-60 the returns shown in the table were from the above mines.

d) In 1860 the returns from Buckden, Kettlewell and Coniston were further amplified as follows:-

	Ore	Lead
Wharfedale Mine, Silver Rake, Old Providence and Middles Moor	79.6	46.0
Moor End	47.7	27.4
Hawkswick	2.8	1.5
Buckden Gavel	128.2	73.6
Coniston Out Moor Mine	51.6	35.8
Starbotton Cam	1.9	0.8
Cracoe	7.3	5.4

(Prior to 1859, and including 1857 returns from Buckden were included with Kettlewell/Coniston)

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TABLE 2 ORE RETURNS FOR 1861 - 1866 in TONS

		1861	1862	1863	1864	1865	1866
AIREDALE							
Cononley	Ore	380.7	485.3	523.9	499.4	290.5	268.7
	Lead	254.0	329.3	358.2	287.1	201.4	190.6
GREENHOW AREA							
Burnaby and	Ore	53.9		51.0	50.0		
Hutchinson	Lead	35.0		23.0	35.0		
Nidderdale	Ore	31.5		3.7	19.3	59.7	52.2
	Lead	20.5		2.4	11.0	35.6	31.3

TABLE 2 Continued

		1861	1862	1863	1864	1865	1866
Merryfield	Ore	23.5	50.0	24.8	69.5	90.4	
	Lead	15.3	31.8	14.5	41.2	53.l	
Prosperous &	Ore	18.5	40.3	80.0	78.4	85.5	74.0
Stoney Groove	Lead	12.0	25.5	35.8	55.9	55.6	56.0
Providence	Ore	31.2					
	Lead	20.3					
Sunside and	Ore	367.8	458.9	423·7	462.4	199.9	197.7
Cockhill	Lead	339.1	291.4	309.6	300.5	134.0	128.3
Mr. Yorkes	Ore	4.6			100.0		
Royalty	Lead	2.9			60.0		
Yorkshire Co.	Ore	12.5	22.3	137.3	23l.2	290.1	
	Lead	8.2	10.8	89.2	154.9	191.2	
Burhill No.1	Ore	149.0	116.9	90.0	98.2	128.0	85.5
	Lead	96.8	76.0	59.9	63.8	83.2	64.1
GREENHOW AREA							
Craven Moor	Ore	152.6	140.8	206.7	187.2	41.8	90.6
	Lead	99.2	89.4	124.0	128.7	26.1	67.9
Forest Moor	Ore		44.7	27.2	19.3	11.8	
	Lead		28.3	20.3	12.8	7.8	
WHARFEDALE							
Appletreewick	Ore	146.0	307.7	234.8	239.9	528.6	1026.6
	Lead	94.8	200.0	152.7	155.9	343.6	667.3
Buckden Gavel	Ore	104.2		120.6	152.1	115.2	62.8
	Lead	60.1		73.0	137.8	67.2	40.1
Coniston Moor	Ore			9.3	4.7		
Head Mines	Lead			6.8	2.8		
Mossdale	Ore	127.2	184.5	123.6	7.9	78.3	28.0
	Lead	88.0	125.4	83.3	2.8	52.1	18.8
Cracoe and	Ore	13.5	5.8	2.6	3.2	16.9	1.8
Elbolton	Lead	9.9	4.6	1.8	2.1	9.8	0.9
Grassington	Ore	886.1	994.8	864.8	720.3	535.2	584.2
	Lead	772.3	731.6	642.9	490.8	349.0	387.3
Grassington	Ore			134.8	104.5	94.2	59.6
Royalties	Lead			73.7	61.9	53.1	33.5
Hebden Moor	Ore	152.6	425.6	352.2	186.5	57.6	115.8
	Lead	99.2	298.8	229.7	122.9	35.6	75.3

TABLE 2 Continued

		1861	1862	1863	1864	1865	1866	1867
WHARFEDALE								
Old Providence	Ore		11.7	47.5	88.9	171.8	205.3	
	Lead		5.8	35.5	60.3	105.0	124.8	
Silver Rake &	Ore		28.8	10.1	60.1	43.7	37.9	
Brakenthwaite	Lead		16.4	4.8	39.2	25.9	23.8	
Starbotton	Ore	40.9	17.1	40.1	49.1	73.8	35.1	
Moor End. (x)	Lead	25.1	10.0	21.8	24.1	41.8	18.3	
Starbotton	Ore	0.9		4.5	14.0	1.6	1.6	
Cam.	Lead	0.6		2.8	1.3	0.9	0.9	
WENSLEYDALE								
Askrigg Moor	Ore				11.5	4.4	2.8	
	Lead				8.3	3.2	1.9	
Aithwaite	Ore				4.0			
End	Lead				2.4			
Mines of	Ore			242.0	176.2			
Governor Co.	Lead			157.3	118.0			
Wensleydale	Ore	2550.0	2024.0	2340.0	1300.8	1200.0		
Mines	Lead	1605.0	1518.8	1413.0	932.1	840.0		
Wensleydale	Ore		51.8					
Mining Co.	Lead		37.6					
West Burton	Ore				400.0	99.0	94.0	50.0
	Lead				280.0	70.3	63.0	33.0

WENSLEYDALE								
Wet Grooves	Ore		3.7		6.0			
	Lead		2.7		3.6			
Apedale	Ore						8.0	
	Lead						5.5	
Bolton Park	Ore						475.6	
	Lead						356.7	
How Bank	Ore						2.5	
	Lead						1.8	
Keld Heads &	Ore						500.0	
Crenia	Lead						334.0	
Virgin	Ore							
SWALEDALE AND ARKENGARTHDALE								
Arkendale &	Ore	3032.0	2460.0	2874.0	2964.0	2887.0	4565.0	
Swaledale	Lead	2274.0	1640.0	2156.0	2224.0	2165.6	3652.8	

TABLE 2 Continued

		1861	1862	1863	1864	1865	1866	1867
Blakethwaite	Ore		94.4					
	Lead		58.5					
Hurst or East	Ore	60.0	331.0	272.0	272.0	137.5	465.8	
Swaledale	Lead	41.0	221.0	176.0	176.0	95.9	197.5	
Surrender	Ore		536.8					
	Lead		221.0					

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TEESDALE (Yorks.)								
Bishopdale	Ore			6.4	3.9			
Gavel				4.5	2.1			
Braithwaite	Ore	77.1	27.0	7.0		16.2	15.6	25.0
	Lead	53.5	18.8	4.8		11.8	10.8	19.0
Mines of	Ore	162.9			174.9	100.0	102.3	
Governor Co.	Lead	105.3			117.3	70.0	71.4	
Grasshill	Ore							
	Lead						18.9	9.5
							13.3	7.8

No further returns were made for the Teesdale (Yorks.) mines after 1867.

Notes on Table 2

Wharfedale:- Complete returns were only available from 1860 onwards.

Swaledale:- Blakethwaite consisted of Arngill and Sun Hush.

Wensleydale:- Complete returns from all mines are not recorded until 1866. West Burton Mines ceased production in 1867 but were producing again by 1877. It would seem that the London Lead Co. abandoned its Wensleydale mines in 864 since records of production cease in that year.

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TABLE 3 ORE RETURNS FOR 1867 - 1874 in TONS

		1867	1868	1869	1870	1871	1872	1873	1874
AIREDALE									
Cononley	Ore	247.9	270.8	130.8	54.2	12.7	5.2		20.4
	Lead	173.3	188.7	95.9	37.5	7.7	2.1		13.8
Cowling	Ore		20.3				37.6		
	Lead		13.4				28.2		
Yorkshire	Ore	198.7	90.8	23.3					4.4
	Lead	149.2	59.0	17.4					3.2
WHARFEDALE									
Appletreewick	Ore	584.0	469.1	367.5	182.6	494.7	45.0		
	Lead	380.0	304.9	275.3	118.8	370.5	33.3		
Buckden Gavel	Ore	57.6	19.3	12.1	21.5		12.2	19.8	20.4
	Lead	36.9	12.5	6.3	18.6		6.6	13.7	13.8
Burhill	Ore	148.0	114.9	72.2	106.2	184.7	41.0	29.1	
	Lead	111.3	79.1	42.1	70.8	149.1	30.8	22.1	

TABLE 3 Continued

		1867	1868	1869	1870	1871	1872	1873	1874
Coniston Moor	Ore				0.5				
Head	Lead				0.3				
Coniston Out	Ore	11.1	21.8	9.8	90.8	122.3	10.5		
Moor	Lead	7.4	13.5	6.5	62.7	79.0	8.2		
Cracoe &	Ore	8.7	5.9	2.8	2.0		9.5	9.5	
Elbolton	Lead	6.3	4.3	2.1	1.3		7.1	5.2	
Grassington	Ore	582.1	451.1	324.7	235.1	177.6	129.2	286.4	286.5
	Lead	417.1	357.3	295.7	200.5	160.5	81.8	182.1	182.7

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WHARFEDALE									
Grassington	Ore	55.6	39.9	34.7	55.8	32.4	34.4	29.9	9.8
Royalty	Lead	28.5	19.1	19.3	30.1	1816	18.3	21.1	5.8
Hebden Moor	Ore	73.7	88.6	84.3	46.8	31.2	32.4		
	Lead	47.6	57.6	54.8	31.6	23.4	21.1		
Old Providence	Ore	325.2	192.3	117.8	72.5	68.6	16.0	15.0	4.7
	Lead	173.0	120.5	73.2	47.1	45.4	12.0	11.3	3.5
Silver Rake	Ore	4.5	0.9	6.9	18.0	1.1	3.0	10.1	
	Lead	2.6	0.5	0.6	1.1	0.8	2.5	7.5	
Starbotton	Ore	13.3	2.5	13.3	18.5	11.5	15.3	47.3	40.9
Moor End	Lead	6.6	1.4	10.0	10.5	6.3	11.4	35.4	30.7
Starbotton	Ore	1.6		16.0			4.3		
Cam	Lead	0.8		8.6			3.2		
PATELEY DISTRICT									
Craven Moor	Ore	89.0	32.3	114.4	101.2	73.3	26.2		
	Lead	67.0	27.0	74.3	84.2	49.0	19.7		
Nidderda1e	Ore	40.5	26.3	17.5	48.5	13.8	14.0		
	Lead	26.3	15.8	10.5	29.6	9.7	10.0		
Merryfield	Ore	14.6							
	Lead	10.9							
Prosperous	Ore	74.0	50.8	43.5	43.3	49.1	117.0	17.4	
Stoney Grooves	Lead	56.0	33.0	28.2	19.5	18.5	87.8	17.0	

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SWALEDALE & ARKENGARTHDALE									
Arkindale	Ore	2345.4	1596.2	1617.0	935.0	800.0	601.0	601.1	1265.4
	Lead	1759.0	1257.0	1230.0	700.0	629.5	450.8	451.2	790.8
Blakethwaite	Ore	171.6	155.0	95.0	148.9	99.5	16.5		
	Lead	128.7	114.0	70.0	111.7	74.5	12.3		

TABLE 3 Continued

		1867	1868	1869	1870	1871	1872	1873	1874
Fell End	Ore			0.3	8.0	9.1	9.2	2.1	0.8
	Lead			0.2	5.0	6.8	6.9	1.5	0.6
Hurst	Ore	1171.0	704.9	652.7	752.8	387.2	357.6		536.8
	Lead	749.5	528.7	501.5	564.6	290.4	268.2		397.0
Mukerside	Ore	228.4	233·9			50.8			
	Lead	170.0	175.0			38.1			
Risden	Ore		6.8						
	Lead		5.1						
Old Gang	Ore		2172.0	3328.0	2532.7	2321.7	2759.8	2625.8	2250.7
	Lead		1596.0	2300.0	1772.4	1740.0	2069.8	1969.0	1687.3
Surrender	Ore		57.2		94.5	118.1	68.3	74.1	31.0
	Lead		42.9		70.8	88.5	51.2	55.5	23.3
Swinnergill	Ore							13.1	36.3
	Lead							9.8	23.3

Note:- The figure of 2,345 tons for Arkindale in 1867 included the production for Old Gang and Surrender mines.

WENSLEYDALE									
Askrigg Moor	Ore	37.0	12.2						
	Lead	25.9	8.0						
Bolton Park	Ore	46.0	15.0	20.0	20.0				
	Lead	34.0	10.8	15.0	15.0				
Keld Heads	Ore	498.8	432.0	532.0	528.8	525.0	558.0	424.0	367.5
& Crenia	Lead	300.0	340.0	3340.0	396.0	394.0	418.5	318.3	293.0
Wet Grooves	Ore						4.7		
	Lead						3.5		

Returns from Mines not included previously.

Ellerton Moor	Ore						114.0	84.3	4.8
	Lead						85.5	63.0	3.7
Fearnought	Ore	0.7							
	Lead	0·3							
Gayle	Ore						12.2		
	Lead						9.5		
Middlesmoor	Ore	10.3							
	Lead	5.7							
Whitewell	Ore	630.0	550.0	300.0	200.0	80.0	8.0		1.5
	Lead			225.0	144.0	62.0	6.0		1.1
Woodhall	Ore		6.5		4.1	2.3			
	Lead		4.8		3.1	1.8			

Note:- No returns from Ellerton Moor after 1875:- Ore 15.8 tons lead 11. 8 tons.

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TABLE 4. ORE RETURNS FOR 1872 - 1881 in TONS

Mine		1875	1876	1877	1878	1879	1880	1881
Apedale	Ore		50.0	113.0	100.0	50.0	45.8	70.8
	Lead		37.5	65.0	60.0	20.0	34.0	56.5
Appletreewick	Ore	18.0	137.7	401.5	412.0	78.8	1850.0	153.1
	Lead	13.5	97.0	292.6	254.4	52.3	1410.0	107.8
Arkendale	Ore	1479.0	1259.9	1974.7	2459.0	1623.3	1659.3	1959.6
	Lead	1037.0	882.0	1482.0	1967.3	1217.1	1244.8	1469.1
Buckden Gavel	Ore	35.0	46.3	34.8	36.8			37.0
	Lead	26.8	34.7	24.7	27.5			26.0
Burton West	Ore	7.9	21.5				31.0	28.9
	Lead	5.8	15.3				23·3	20.5
Burhill	Ore			13.3	12.0	17.2	14.0	5.0
	Lead			9.8	8.0	10.5	10.5	3·3
Cononley	Ore	26.5	9.5					12.7
	Lead	18.5	6.9					9.0
Craven Moor East	Ore					110.5	270.0	330.0
	Lead					83.0	202.5	231.0
Craven Moor West	Ore		30.0	100.0	136.0	50.0	60.0	14.0
	Lead		22.5	75.0	95.2	37.5	45.0	9.8
Elbolton	Ore		2.2		4.0	2.0	5.0	6.0
	Lead		1.5		3·0	1.5	3.8	4.3
Fell End	Ore		1.1	0.5		2.1	2.4	3.7
	Lead		0.8	0.3		1.5	1.8	2.8

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Gill Heads	Ore				0.5	7.3		
	Lead				0.3	4.6		
Grassington	Ore	279.1	271.1	290.0	262.1	214.5	270.0	20.0
	Lead	215.7	197.1	210.0	187.9	160.8	200.0	13.0
Keld Heads	Ore	89.3	256.4	232.7	186.8	400.0	316.0	241.3
	Lead	60.0	184.1	201.6	131.6	300.0	250.0	184.0
Hurst	Ore	351.1	342.7	407.7	241.8	200.5	55.5	
	Lead	263.5	247.0	307.5	180.0	150.3	42.8	
Old Gang	Ore	1378.5	1075.5	1046.2	910.7	865.8	650.6	294.2
	Lead	1033.5	753.0	690.6	628.7	590.8	488.0	210.0

TABLE 4 Continued

Mine		1875	1876	1877	1878	1879	1880	1881
Pateley Bridge	Ore	78.1	77.3	157.0	324.0	371.0	238.0	100.0
	Lead	51.0	56.8	111.1	220.7	227.0	178.8	72.0
Silver Rake	Ore	3.4	3.2	5.3	12.0	1.3		
	Lead	1.6	1.8	3.0	7.5	0.9		
Skelhorne	Ore				5.0	1.3		
	Lead				3.0	0.9		
Surrender	Ore	88.0	110.0	90.8	28.0	47.5	108.0	103.0
	Lead	66.0	68.8	56.0	19.5	36.0	81.0	73.5
Swinnergill	Ore		86.8	48.0	700.0	824.0	954.0	629.0
	Lead		54.5	30.0	455.0	618.0	715.5	440.0
Worton	Ore	108.0	117.3	38.3		10.0	23.6	34.0
	Lead	81.0	88.0	28.5		7.5	17.7	23.6

[15]

Wet Grooves	Ore	27.2	74.8			20.0		
	Lead	20.0	55.0			15.0		
Middle Hill Level	Ore						7.3	
	Lead						5.5	
Sargill Side	Ore							14.0
	Lead							9.5
Starbotton	Ore					8.0		
	Lead					6.0		
Stoney Grooves	Ore					30.0		
	Lead					22.5		
Wharfedale Mine	Ore	40.9	46.5	30.6	35.8	42.0	19.7	
	Lead	30.7	25.5	18.3	17.8	27.7	15.0	

Note:- In 1879 Swinnergill became known in the returns as Sir Francis Level.

[16]

TABLE 5 RETURNS OF COPPER, ZINC & BARYTES. in TONS

Mine	Ore	1864	1865	1866	1867	1869	1870
Merrybent	Galena	150.0	345.7	205.0	178.0	135.0	9.0
	Pig Lead	107.0	241.5	150.0	134.9	103.0	6.8

		1864	1865	1870	1872	1873	1874
Copper	Ore	76.0	80.0	80.7	137.0	72.3	128.5
	Copper	7.3	8.3	28.5	8.2	4.3	35.3

Note:- The years of copper and lead production do not coincide exactly in some instances. The mine is not mentioned in Special Reports, Min. Res. G.B. Vo1.XXX, 1925. In 1863 463 tons of Copper ore were mined yielding only 46 tons of metal.

Mine	Ore	1876	1877	1878	1881
Elbolton	Zinc	3.5			
Skelhorne	Zinc		4.8	5.7	
Apedale	Zinc				35.3

Mine	Ore	1876	1877	1878	1878	1880	1881
Raygill Lothersdale.	Barytes	2057.3	2722.8	2786.0	2245.0	2408.0	2017.0
Lancaster and York United. (Skelhorn or Rimington Mines					10.0	331.0	

Note:- Rimington produced Barytes for a number of years.
1882 - 1,340 tons. 1884 - 50 tons and 1885 - 308 tons.