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THE WEARDALE LEAD COMPANY LIMITED

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Brief History

The Weardale Lead Company was formed in June 1883, taking over the mines and mineral leases in Weardale relinquished during the previous three years by the Blackett/Beaumont family (sometimes referred to as the Beaumont Company). It thus maintains an unbroken mining tradition that [9] dates back to 1698 when these leases were first granted to Sir William Blackett by the bishops palatine of Durham. Operations were not at first successful and the company was wound up and reconstructed in September 1900. Fortunes improved for the new enterprise and it has grown to become one of the oldest established, and at times most commercially successful, mining concern in this country. Imperial Chemical Industries Ltd. (Mond Division) acquired a majority interest in 1962 and have since increased their original holding, although the undertaking still remains a public company.

The twentieth century has seen the end of lead mining as such in the Dales and the steady rise in importance of fluorspar – once a useless gangue mineral in the lead veins and now a valuable raw material for the chemical and steel industries. Fluorspar was produced at first as a by-product, in 1897, but now the converse is true and lead concentrates are produced only as an essential stage in the purification of fluorspar.

The company operates Redburn and Burtree Pasture fluorspar mines, Boltsburn Dressing Plant and leases mineral rights over 45,500 acres in the Weardale area.

Products and Uses

Three main products are marketed. Acid grade fluorspar (98% CaF_2; less than 100 mesh) is consumed in the manufacture of hydrofluoric acid which is in turn the basis for the fluoro-chemical industry. The bulk of the company's acid grade output is sold to I.C.I. Ltd. Rocksavage Works, Runcorn, producing the 'Arcton' fluorocarbon range of fire extinguishants, refrigerants, aerosol propellants, etc. Metallurgical grade fluorspar (70-85% CaF_2; 4" to 1/8") is commonly used as a flux in production of steel by the open-hearth, basic oxygen and electric processes. The mineral enhances the fluidity of the slag and aids removal of sulphur and phosphorous from the steel.

The current minor production of high grade galena concentrates is sold to a lead smelter in Belgium.

All of the products are transported by local haulage contractors.

Past Mining Operations

Mining is by nature an unsteady operation, its profitability depending not only on the natural variations of quality and quantity of ore in the ground, but also on the vagaries of market prices and changing demands. Hence the histories of older mines often record repeated reopening and closing in response to fluctuating commodity prices.

This is illustrated by examples in Table 1. Production statistics are incomplete for some properties because of the loss of most records between 1883 and 1900 and because of the practice in later years to combine the outputs from neighbouring mines (e.g. Allendale).

The total recorded output of the company, between 1883 and the end of 1976, was:

Lead concentrates	193,623 tonnes
Fluorspar "	642,557 tonnes
Pig Lead	99,279 tons

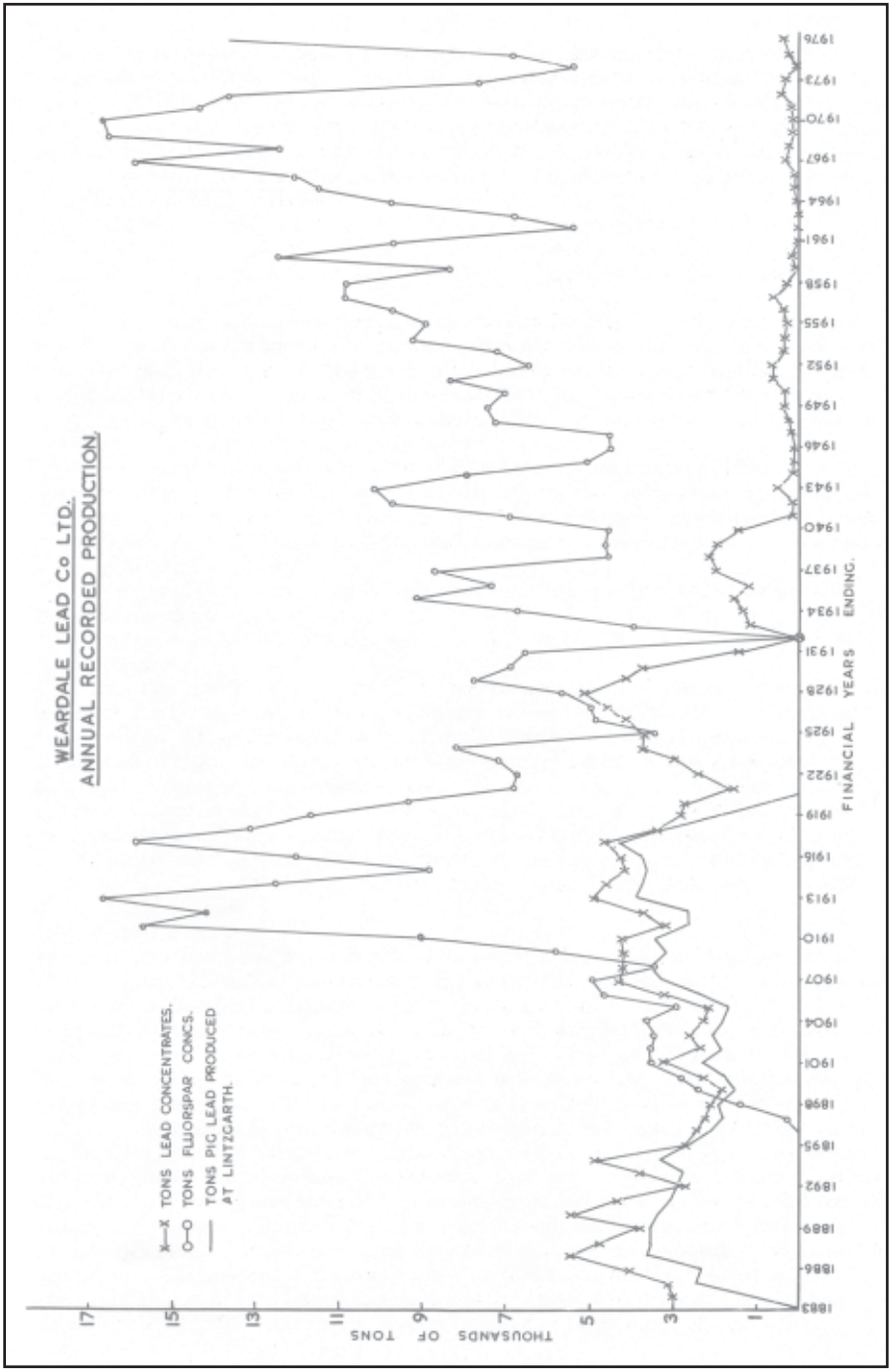
Present Mining Operations

Redburn Mine is the first new mine to be opened up in Weardale this century. It was started from an inclined drift entrance in September 1964 to explore an unworked length of Red Vein between Groverake and Boltsburn Mines. Two productive ore-zones have been discovered and developed. The western ore-zone is a particularly complex network of interconnected veins – some 13 individual 'branches' having been worked to date. Vein widths [10] reach up to 6m. Overall run of mine grades vary between 30 and 60% CaF_2, though individual stopes may average as much as 80% CaF_2. The lead content is relatively low, at 2.4%, and could never have repaid working by itself. Redburn Shaft, 98m deep, was sunk in 1967/8 to replace the drift entrance and has levels off at 17, 34, 40 and 50 fathoms. It is equipped with a Tinsley double drum, 80 h.p. winder engine brought from East Tanfield Colliery. Haulage inside the mine is by electric locomotives on the 17 and 40 levels. Mining is by classical shrinkage stoping with sub levels at about 25-30m intervals. The total ore production up to the end of 1976 was 247,217 tonnes.

Reopening of the old Burtree Pasture Lead Mine began in 1971 and is still in progress. Level Head Engine Shaft has been re-equipped with a Robey, single drum, 10ft dia. 300 h.p. underground hoisting engine (brought from Kimblesworth Colliery) and has been widened and secured for 74 m down to Gargett's Level. Work is now directed towards reopening this old level to the north east and testing the vein. Waste fluorspar that had been back-filled into old stopes by lead miners in the period 1800-1825 has been successfully mined by draw-point loading methods. Run of mine grades of backfill and of virgin fluorspar vary between 30 and 80% CaF_2

Ore from both mines is taken by lorry to Rookhope for processing at Bolts burn Mill. Approximately 50,000 tonnes of 'Black Dump' jig tailings, dating from the old Boltsburn Mine operations have also been reprocessed in recent years to extract fluorspar and the company is considering retreating more than 100,000 tonnes of old flotation tailings.

Planning permission has been obtained to open a new drift mine at Frazer's Hush, Rookhopehead, where a substantial fluorspar deposit on the Greencleugh Veins was discovered by diamond drilling in 1974/75.


WEARDALE LEAD Co LTD.
ANNUAL RECORDED PRODUCTION.
X—X TONS LEAD CONCENTRATES.
O—O TONS FLUORSPAR CONCS.
—— TONS PIG LEAD PRODUCED AT LINTZGARTH.
THOUSANDS OF TONS
FINANCIAL YEARS ENDING.

Other Operations

(i) Mineral Dressing Plants - At various times the company has operated dressing plants at the following locations - Killhope, Park Level (closed 1916, scrapped 1919); Sedling (closed 1953); Sipton (jig plant rebuilt 1927;) destroyed by fire September 1929; rebuilt 1930; flotation circuit added in 1938; abandoned and jigs removed to Boltsburn , 1949); Groverake (dismantled and removed to Rispey, 1889?); Rispey (1889 ? - 1904 ?); Stanhopeburn, Shield Hurst (re-used by later owners); and Boltsburn.

The old Boltsburn dressing floors, inherited from the 'Beaumont Co.' were extensively rebuilt in 1903/4 to incorporate five jigs, a Record table, round buddles, Brunton belts and hand dolly tubs. It was again rearranged in 1948/9 to take the jigs from Sipton Mill. A flotation plant was installed in 1955 to produce acid grade fluorspar and a Wemco H.M.S. plant installed in 1960, replacing the jigs in the production of met. grade fluorspar.

Separation at Boltsburn Mill is at present based upon the following units:

1) 1 - Wemco double drum heavy media separator (H.M.S.), used variously to produce met. spar or to upgrade flotation feed.
2) 1 - Newell Dunford ball mill (brought from Smalldale Limeworks).
3) 12 - Lead rougher and scavenger cells, standard Denver type.
4) 1 - Holman James vibrating table used to upgrade the lead concentrate.
5) 16 - Fluorspar rougher and cleaner cells (brought from Durham Chemicals Ltd.).

The entire plant was water driven (as were most of the others) with auxiliary steam power until 1937 when the village was connected with the national grid. A relic of water power – the 34ft. dia. wheel at Killhope [11] Mill – has been preserved by Durham County Council and all the others have now been demolished.

(ii) Lintzgarth Smelt Mill - The mill was described in a report, dated 1884, as 'of an irregular and antiquated type, not apparently under any unique design or with an eye to order, or consideration for the work to be done'. The equipment at that time comprised two roasting furnaces, a reverberatory smelting furnace, three ore hearths, and a slag hearth. Nine Pattinson's de-silverizing pots, a silver refining furnace and a reducing and calcising furnace made up the silver refinery (which was closed down sometime prior to 1900) . Power was supplied by a 24ft. dia. water wheel. Smelting fumes were conducted along a 2600 yards flue, on Redburn Common inside which a certain amount of condensation of metallic vapours occurred. Some of this condensate was recovered from time to time by flushing the flue with water.

A large new roasting furnace was constructed in 1912 and a water jacket blast furnace replaced the slag hearth in 1913.

All the company's galena output was smelted at the mill and also some from the W.B. Lead Company Ltd. (formed in 1884 to work Allenheads and the Allendale Mines). From 1915, the mill also bought varying tonnages of ore from the Vieille

Montagne Co., The Wales Co., The Leadhills Co., The Wanlockhead Mining Co., Thornthwaite Mines Ltd., Settlingstones, Rotherhope Fell and Scoredale Mines, and from Derbyshire. The presence of silver in the pig lead (about 6oz silver per ton) meant that it could only be sold to firms with desilverizing plants and, faced with considerable increases in desilverizing charges, the company closed Lintzgarth Smelter in May, 1919 and contracted to sell its dressed lead concentrates directly to Bagillt Mill.

(iii) Whetstone Mea Colliery – This mine was acquired in 1923 as steam power began to replace water at many of the company's mines. Several years were spent reopening it towards supposedly unworked areas of coal. Considerable problems were encountered with old uncharted workings and the mine was abandoned in April 1927 when it became clear that it could not compete with the prices quoted by neighbouring collieries. 290 tons of coal were produced in 1926 – the best year.

(iv) The Weardale Lead Company Railway comprised three separate lines. The earliest was established around 1889 and ran from Groverake Mine, via Wolfcleugh Mine, to Rispey Mill - following the opposite side of the Rookhope Valley from the 4' 8½" gauge Weardale Iron Company railway. The W.L.C. line was closed around 1909, Groverake having closed down some time before, and the engine transferred to Stanhopeburn. There the company had relaid the old horse drawn wagon-way from the mine to the N.E.R. connection at Crawley bank foot. This line closed in 1930. A third line, 1' 10" gauge, was laid between Boltsburn Mill Mine and Lintzgarth Smelter in 1913 and was used until 1923. A little earlier the Weardale Iron Co. had closed down its railway between Rookhope and Parkhead Depot, isolating the village and mines except for road transport. This problem was overcome when the W.L.C. opened a 3 mile aerial ropeway, in 1923, between Boltsburn and Eastgate station. (Another aerial ropeway was used at Sipton between 1927 and the 1930's).

(v) Shield Hurst Limestone Quarry at Stanhopeburn was opened up by the company and worked between 1922 - 3 and 1926 - 30, eventually closing due to fall in demand for the product.

(vi) Miscellaneous Interests - Company offices and central workshops [12] were based in Ireshopeburn until about 1947 when they were transferred to Rookhope. The old managing director's house and boardroom is now used as a Youth Centre. The workshops, now used by Featherstone's Garage, comprised pattern makers, blacksmith's, millwrights, machine and joiners shops, and had its own railway siding. The new offices at Rookhope were converted from the Old Boltsburn compressor and fan houses. In 1975, the Boltsburn manager's house was also converted for office accommodation. The company owned tennis courts, a bowling green and childrens' playground – all now built over by the village hall and school – maintained by a levy of one penny per employee per week until the Second World War.

Labour: The company employed approximately 400 men in the mines in 1913 and their gross remuneration for the year was £31,200. In 1974 the total number of persons employed in the entire operation was 110 and their gross remuneration was £232,614.

WEARDALE LEAD COMPANY MINING OPERATIONS

Mine	W.L.C. tons Pb conc.	Production tons Fluor conc.	Remarks o - opened. r - reopened. c - closed
Barbary	(600-800)	(31,213)	r 1954-c1959
Boltsburn East	100,000	7,299	c 1931
" West	5,000	-	o 1930-c1931; r1935-c1941
" Mary's/Red Vein	?	?	r 1884-c1891; r1918-c1930
Brandon Walls	< 500		c 1886
Burtree Pasture	904		*c 1887; r1971
Coptcleugh	359		r 1948-c1952
Craig's Level	1,059		c 1920; later worked for ironstone
Greenlaws	16,056		Main part closed 1897; remainder closed 1902 and 1907
Groverake	18,061	~ 15,000	c 1903; later reopened by other owners
Killhope	9,544	-	c 1906; r1916-c1917
Levelgate	< 100	< 100	r 1917-c1920
Lintzgarth	-	-	o 1927-c1930
Lodgefield	~ 30	~ 80	o 1896-c1898; r1925-c26
Old Fall Shaft	< 100	< 100	o 1928-c1930
Redburn			*o 1964
Rispey	-	< 500	worked by tribute 1905-6
St. Peter's)			r 1923-c1931; r1933-c1943
Sipton)	21,156	-	r 1923-c1931; r1933-c1944
Sedling	6,159	174,500	r 1889-c1931; r1933-c1948
Stanhopeburn	2,550	114,439	r 1884-c? r1906-c1931 later reopened by other owners
Stotsfieldburn	(8,958)	(~ 320,000)	r 1914-c1917; r1929-c1931; r 1932-c1939; r1940-c1966
Wearhead	64	22	r and c1920; r1923-c1926
Wellhope Trial	< 100	-	o? 1883-c late 1880's
West Blackdene	5	43	r 1905-c1906; r1937-c1938 later reopened by other owners
West Pasture	-	-	c 1884
Wolfcleugh	1,682	4,561	r 1901-c1910; r1946-c1949; r 1953-c1956

NB: In addition to these mines, a number of tribute workings relied upon the Company to process their ores. *N B: For current operations see text.
( ) Fluorspar ore or lead bouse – not concentrates.