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**THE DALES CHEMICAL COMPANY**

J.M. Dickinson

The Dales Chemical Company started operations on Grassington Moor Yorkshire in 1955. At the site of the High Grinding Mill near Coalgrove Beck a modern flotation mill was erected for the purification of old lead mine dumps containing Fluor-Spar and Barytes, and was in production by early 1957. Considerable dumps of Fluor-Spar were located at all the main dressing floors which had been built by the Duke of Devonshire during his great modernisation of the Grassington Lead Mines in the early 1820s. These heaps assayed up to 65% Fluor-Spar. The heaps were loaded on to 5 ton Bedford tipping wagons by two Priestman Wolf  $\frac{1}{2}$  cub. yd. excavators, one rigged as a dragline and the other as a luffing shovel.

On reaching the mill the feed was tipped into a 90 ton concrete bunker, at the foot of which a small log washer discharged via vibrating screens into a Ball mill and thence into the flotation circuit. The Fluor-Spar obtained at this time was bagged and exported to Turkey, India and Sweden. By 1961 it was apparent that the dumps on Grassington Moor were becoming exhausted, in fact the cream had already been skimmed off. Therefore a lease was obtained on the Cockhill sett at Greenhow, some seven miles East of Grassington. Excavations were made at Galloway Pasture by diesel excavators and a soft clay Bub soil overlying the Galloway vein was found to contain Fluor-Spar and some Barite in recoverable quantities. This material was shipped to Grassington by road.

The Greenhow feed presented new washing problems so a large sand and gravel log washer and a rake classifier were installed. A thirty foot conveyor belt moved the washed feed to a 3/8 inch vibrating screen mounted directly over the concrete bunker and another conveyor at the foot of the bunker fed the Ball Mill. A two inch grizzly was placed over the log washer and a wagon running from a stock pile tipped three ton loads upon it. Three sturdy Irishmen then poked the sticky mass through the grizzly into the log and in this way all stone over two inches was rejected.

In the Mill the spar and barite were pumped from the final flotation cells in each circuit to sets of Denver disc filters which discharged their cake into cyclone type atritors heated by two diesel furnaces. When dry the spar was blown into 14 ton storage bins for collection by a road tanker, the barytes being bagged from its respective bin.

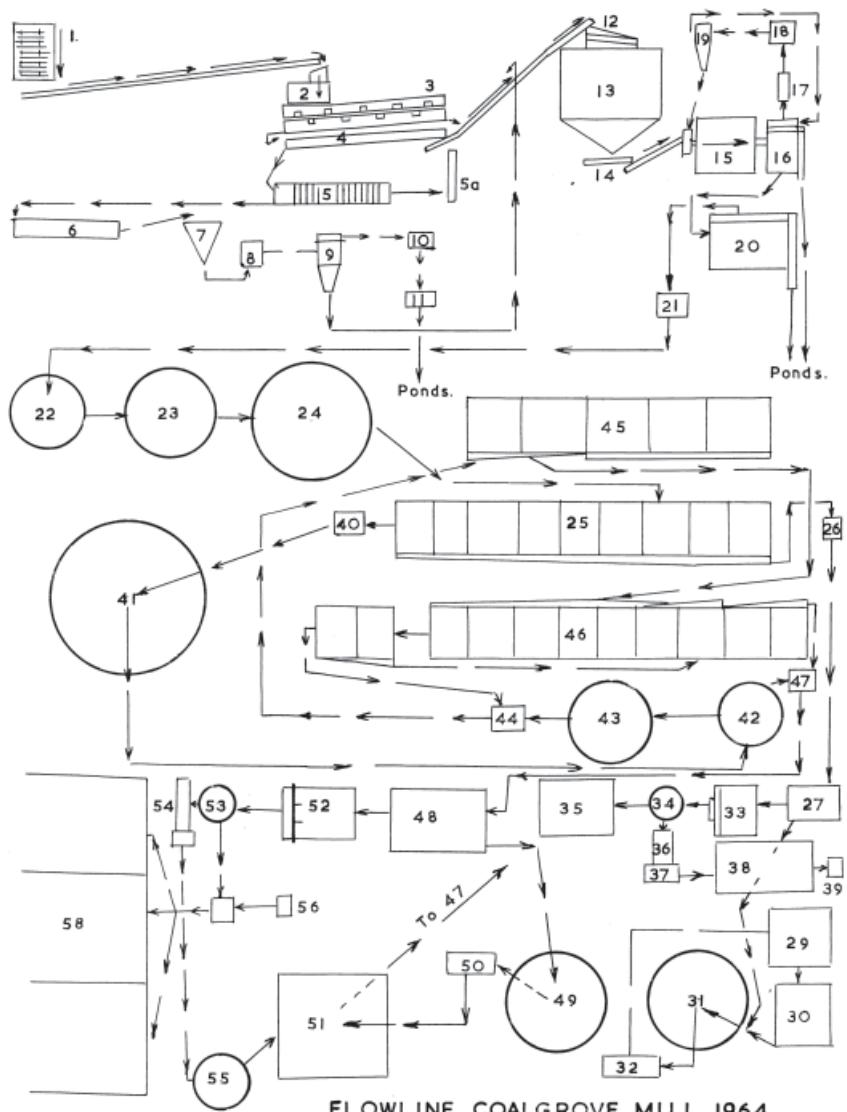
The mill tailings ran into four large settling ponds, the final pond overflowing into the Dukes Low Water Course (which originally supplied the dressing floors at Yarnbury Mines) and following it to the point where it crossed the Gill House valley, where a broach was made and the water allowed to run into a series of dried out sink holes. These sinks took all the water easily, the point of resurgence being at the Browngill at Low Mill

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**KEY TO FLOWLINE OF COALGROVE MILL 1964**

1	Scraper Feeder	31	Filtrate receiver
2	Hammer Mill	32	Mono Pump
3	Large Log Washer	33	Barium Atritor
4	Small Log Washer	34	Atritor Cyclone
5	Rake Classifier	35	Dust Collection
5a	Screw conveyor	36	Screw conveyor
6	Trummel Screen	37	Bucket elevator
7	Cone	38	Barium Storage Bin
8	Linatex Pump	39	Bagging machine
9	Sand Separator	40	1½ inch pump
10	Surge Box	41	Fluorspar thickener
11	Vacseal Pump	42	Fluorspar Conditioner
12	Niagara Screen	43	Fluorspar Conditioner
13	Feed Hopper	44	1½ inch Sand pump
14	Weight Feeder	45	Fluorspar Scavengers
15	Ball Mill	46	Fluorspar Cleaners
16	Unit Cell	47	1½ inch Sand pump
17	Trummel Screen	48	Disc Filter
18	Linatex Pump	49	Filtrate receiver
19	Sand Separator	50	Mono Pump
20	Lead Cell	51	Settling Cone
21	1½ inch Sand Pump	52	Fluorspar Atritor
22	Barium Conditioner	53	Fluorspar Cyclone
23	.....	54	Atritor Fan
24	.....	55	Dust Collection
25	Barium Cells	56	Reavill Blower
26	1½ inch Sand pump (Denver)	57	Hopper selection valves
27	Disc Filter	58	Fluorspar storage Hoppers
28	1 inch Sand Pump		
29	Settling Cone		
30	Disc Filter		

**TABLE 1**



## THE DALES CHEMICAL COMPANY

rising just above the River Wharfe opposite Linton Church. These ponds were a cause of great trouble both for Dales Chemicals and the Yorkshire Ouse River Board, which latter, together with various 'Dales Lovers', was always howling about the strange colour of the River Wharfe; indeed the discolouration was once reported to have been seen at Otley. Due to the clay in the Greenhow feed the wash water was, to say the least, thick and when one considers that up to 200 tons of material were washed each day, there was bound to be a strong effluent. If it had been possible to keep the ponds entirely clean, plus the flocculation of the tailings with lime, which was standard practice, a satisfactory effluent could have been achieved. The only method of cleaning the ponds was by dredging by a dragline, which stirred up the particular pond it was working on and made the effluent even worse. The answer would seem to have been the construction of a duplicate set of ponds, so that, while one was in use, the others could be drained and cleaned out, but this was not done. Before leaving the ponds, the dredging machinery is worthy of mention. Up to late 1963 this work was carried out by a diesel powered excavator in an advanced stage of senile decay. This machine, powered by a Fowler twin cylinder diesel engine rated at 20 h.p. was built by Thomas Smith of Rodley some time in 1928. It had a commodious wooden cab with a corrugated iron roof and was known by the workmen as 'Pilkington' after the well known hen-house builders although at one time it carried the self explanatory title 'General Ball' on a name plate mounted on the cab side. In between breakdowns it did, however, manage to keep the ponds partially clean.

About August 1962 the controlling interest in the Dales Chemical Company was purchased by Orbit Holdings of London. By now the Company was supplying Acid Grade Fluor-Spar to the I.C.I. plant at Runcorn in Cheshire. A road tanker wagon on contract from John Ancliffe of Manchester was used to convey the spar between Grassington and Runcorn in 14-ton loads.

The feed from Greenhow proved to be of a very varied nature. Sometimes it was very good but usually it was a struggle to fill the bunker with sufficient feed to keep the mill running during the day and gain enough for the night shift. This meant that washing was carried on on a 12 hour shift basis most days of the week. At one period the feed from Greenhow became so poor that shipment was stopped and, whilst better feed was being found, the heaps of the dressing floors at Bycliffe, Ringleton, Glory and Low Peru Mines on Grassington Moor were re-worked.

At one time the Company was going to re-open the Gill Field Level at Greenhow and drive on the Waterhole Vein under the Cockhill Level to an area known to be still rich in Fluor Spar, but presumably the capital for this venture was not forthcoming from the board in London. An excavator was set into the Garnett Vein on Coldstones Hill for a short period, but the results were rather poor. Actually it was not there long enough to prove anything.

Over the years the management had slowly improved the mill and had to adapt it to run off low grade feed with no small measure of success. Early 1963 saw the installation of a large chain scraper feeder and a hammer mill. The scraper feeder was built into a ramp to enable the waggons from Greenhow

to tip straight into it. The feeder discharged on to a long inclined conveyor belt that carried the raw feed to a large hammer mill (minus grates) mounted directly over the end of" the log washer. Over-sized stones and balls of clay were picked Off, in theory at least, before reaching the hammer mill. This set-up had the usual teething troubles which can be expected, but, after being in use for some time, the impact of stones being flung from the hammer mill into the log washer shattered the paddle shaft, so that, after repairs, baffle plates were fitted to break the fall of the stone. After being washed, the feed passed to a 3/8 inch vibrating screen and all rejected material, including spar, went on to a waste heap. Plans to recover this wastage were well advanced. By placing a belt under the discharge end of the screen, rejects were to pass through a roller crusher and back into the log washer, but unfortunately closure came before this scheme could be carried out.

Towards the end of 1963, a de-sanding unit was built, consisting of a De-sanding cone mounted on a 20ft tower and a long perforated pipe line running over the moor, through which dirty water was pumped and allowed to drain naturally on to the moor. All the water from the washing section passed through the de-sander, the mill tailings, mainly slimes, running into two large settling ponds that were made by damming the Coalgrove Beck Valley and diverting the stream. A modern ¾ cub. yd. Diesel excavator was purchased. This machine, a Ransomes and Rapier 423, was rigged as a Dragline with a 50ft jib and was capable of cleaning the largest of the old ponds in two days. These modifications finally solved the problem of pollution in the River Wharfe. In addition it was found that the de-watered washed sand was quite rich in spar and could be retreated by passing it back through the mill.

At this time the assays of the Fluor-8par being sent to Runcorn were on average 98 to 99%.

At Greenhow, too, things were improving. Excavations on and near a large Gulf hole (shake hole) indicated the presence of a vein, probably Galloway Old Vein, and a cutting was made into the gulf with the intention of putting an excavator, rigged as a face shovel, in the bottom. Unfortunately, no sooner had the cutting been completed, when the weather broke and heavy rains flooded the bottom of the cutting. The machines at Greenhow were transported back to Grassington to await better conditions in the following spring.

The new year looked, at least to the workmen, quite bright; all the major snags had been cleared up and the plant was running well and producing high grade spar from very poor feed; come spring, better feed would be sent from Greenhow.

On January 3rd, 1964, all employees received a letter giving them one week's notice, due to the fact that the board in London was selling out to Laporte Industries Ltd. Laportes, with their main Fluor-Spar interests at Glebe Mine in Derbyshire, had no use for the plant at Grassington and it has now been dismantled. So ended the boldest mining venture that Craven has seen for the last 30 years. There can be little doubt that, had the Com-

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ASSAY OF MINE DUMPS ON  
GRASSINGTON MOOR AND CONONLEY

**Feed Ore**

Date	Site	Barium	Carbonates	Fluoride	Silica
8.11.57	Ringleton Mine	62.9%	4.0%	26.4%	6.7%
8.11.57	Glory Mine	25.8%	6.3%	60.4%	7.3%
17. 4.58	Moss Mine	34.0%	16.3%	48.3%	1.4%
7. 6.58	Moss Mine	34.7%	9.4%	49.3%	6.6%
11. 6.58	Ringleton Mine	29.2%	1.2%	66.4%	2.7%
27.10.58	Ringleton Mine	20.8%	1.9%	54.2%	23.1%
27.10.58	Turf Pits Mine	10.5%	6.6%	43.0%	39.9%
23.10.58	Glory Mine	43.8%	7.6%	24.0%	24.6%
22. 1.59	Bycliffe Mine	18.6%	6.4%	24.9%	50.1%
22. 1.59	Moss Mine	37.3%	9.1%	31.5%	22.1%
1. 9.59	Yarnbury Mines	63.8%	61.0%	23.7%	7.4%
18. 8.59	Moss Mine	41.3%	21.8%	30.1%	6.7%
21. 1.61	Cottingham Mine	21.0%	2.4%	31.1%	45.5%
9.10.57	Cononley	72.2%	7.9%	9.1%	10.8%

TABLE 2

[5]

pany erected their plant at Greenhow and obtained leases on a better part of the mining field, possible opening a mine on some part of the Cocyhill Veins, this account would have remained unwritten for many years to come.

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[6]