

5. The Shaws Water Falls in Greenock

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Although the Shaws Water Scheme is well known, it is often forgotten that it was originally designed to provide water power, not the drinking water which it now supplies. This article, first published in 1976, demonstrates Sylvia's enthusiasm by looking not at the Scheduled lade system, but at its actual purpose, as it cascaded down through the town, providing motive power. A tale of forgotten tunnels though the very bowels of Greenock's industry. It presents a challenge to the reader to go out and find how much of the industry still survives, a further thirty years down the line.

The Historical Background

Greenock in 1824 was a crowded, thirsty and insanitary seaport whose leading citizens were anxious that its growth and enrichment should continue beyond the fairly low upper limit which its situation seemed to impose. It stood on a narrow beach at the foot of a steep hillside, with practically no hinterland, no energy resources and difficult land communications, and its greatest asset was Glasgow's inability to ship goods direct, because of the shallowness of the Clyde. When Glasgow embarked on a programme of river deepening, Greenock was alarmed. It seemed that the fruits of the Industrial Revolution might literally pass it by. The Town Council commissioned trial borings in the hope of finding coal so that Greenock might 'see her ships carry home and abroad her own goods' as a local patriot put it a little later. No coal was found, but the prospecting for water was more successful.

Robert Thom, self-made cotton-spinner, had put Rothesay Mills on a profitable footing, by committing them whole-heartedly to water-power, which he gathered from a very extensive system of cuts, instead of importing coal. He was asked to bring drinking-water into Greenock from the other side of the rampart of hills about it. He pointed out that power could be brought at the same time. The local landowner, Sir Michael Shaw Stewart set up a Joint Stock Company to put the idea into practice and work started in the autumn of 1825. The Shaws Water, a stream named after the farm of Shaws up on the moorland, was dammed up as it flowed southwards away from Greenock, making the Great Reservoir or Loch Thom. Its massive size was expected to even-out the fluctuations, which were one of the main objections to water-power. From its outlet an artificial cut carried the water in a six-mile arc round the rampart of hills, falling four feet per mile, so that at Overton, overlooking Greenock, it was still 500 ft above the Clyde. From that point it was brought down in a series of falls separated by horizontal stretches, and each fall having a bypass channel so that power to the mills could be controlled by sluices .

The Fall

The entire stream from Cornalees Bridge on the heights to the bottom of Baker St was artificial. Below Dellingburn Square it joined the Dellingburn, a smaller stream which it had already twice crossed, and used its mouth to reach the Clyde. This scheme was opened in 1827. It was intended from the first to add a second branch, and this was done in 1846-7. The original intention of making a symmetrical branch westward to join the Westburn as the Old Line joined the Dellingburn, was however abandoned, and instead the New Line ran near the Old, but on the other side of Drumfrochar Rd and Baker St. These two streets thus constituted a kind of linear Industrial Estate. Lynedoch St also had a sail and rope-making complex all along its western side, taking its origin from the Flax and Sailcloth Mill at the top. This mill

used the water-power not only for spinning but to power a ropewalk, and two and briefly three other firms fitted in their ropewalks beside it ¹.

This scheme was probably unique in the faith it showed in the attraction of a water-power site for industry. There were no pre-existing mills; there was no site for any, until it was artificially made. The optimism of the promoters was not entirely justified, for it took much longer than they had expected for feuars to settle, but when the railway was opened in 1841, business brightened. In that year a cotton mill was opened by a group of local enthusiasts, almost all prominent shareholders in the Shaws Water Co. and the Railway Co. It was no accidental coincidence that the cotton mill and the railway held their foundation ceremonies, their trial run and their opening day each simultaneously. Perhaps even more significant of success was the spontaneous settling in Greenock of the incomers Neil, Fleming and Reid whose mills flourish to this day, originally makers of high-quality worsted yarns e.g. for carpets, on one of the higher falls. Those higher falls stood unused for many years in spite of the low rates at which they were offered, except for the Paper Mill right at the top (attracted, no doubt, by the relative purity of the water). It was the development of the turbine that brought all the power into use, and the worsted mills eventually piped all the fall from below the paper mill into one turbine. The paper mill itself eventually had a railway built to its door. While materials had to be carted up to the sites of millwheels, even the cheapness of the power could not lure firms to settle there.

The Shaws Water Co.'s other responsibility for domestic and industrial water supplies through pipes, led to ceaseless bickering and litigation with the Town's Water Trust which only ended when the Town took over the scheme in 1865. They bought out the shareholders for twice the face value of their capital, acknowledging that in the early years very little profit had been drawn from the shares. The Town's first act as owner was to make the two Gryfe Reservoirs to the east of Loch Thom, which continued to supply the mills. In 1922 the Town bought out the water-rights of some of the surviving mills completely, and others partially, not without great resistance from some of the sugar-refiners. The decline of the industrial estate was not entirely due to the users abandoning water-power; it was partly due to the population demanding the water for other uses.

A Short Itinerary of the Falls

Take the bus up to Peat Rd., unless you have a chauffeur who will drive you up and then go down to wait for you in the Town. You will see the front of Fleming and Reid, whose triangular lodge-gate marks the former boundary between their original territory (Fall 12, Old Line) and that of Robert Houston and others on Fall 11. The falls are numbered from the bottom upwards. The water itself will be seen later from the back of the buildings. The road you are climbing was planned before 1818 ² and probably influenced the siting of the line of falls, rather than the other way round.

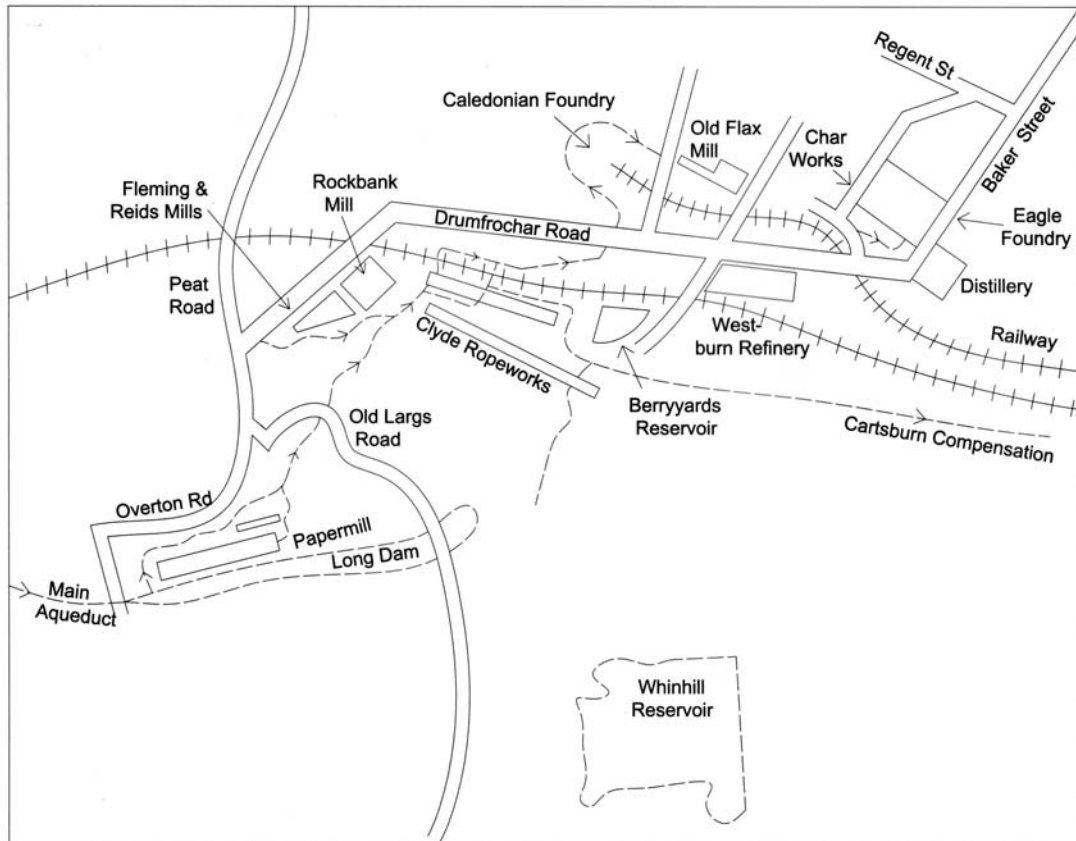
Where the Largs Road turns off to the left, you see a dyke just in front of you, on the far side of that road, and the Shaws Water is behind it. Go into the field and examine the horizontal section which is still partly lined with masonry, and then follow the sloping channel a little way up to the right. This is the undeveloped section where the falls were never built on, but you can still pick out what would have been their sites.

The stream here must have been much diminished from the time when Fleming and Reid piped their turbine supply in 1881, taking in what would have been Falls 12-17,

¹ A ropewalk was a very long building for twisting together single strands to form ropes, the length of the rope being determined by the length of the building.

² David Reid's map of Greenock

but, as you can observe, the original channel remained in use to take the overflow. A little further into the field you may find the inclined bed of the railway line which ran up to the Paper Mill. Get back to the road on the west. Where the new building development is going on, on your right going up the Overton Road, a narrow footpath exists between a garden wall and the wire-netting of the contractor's site. Forcing your way through the undergrowth if necessary you find a stile and, immediately beyond it, the end of an unattractive ditch full of rubbish. View it with respectful sympathy as it is what remains of Robert Thom's first conduit for the drinking water, which was carried in a masonry channel 15 inches square, buried in the ground, to the filters at Prospect Hill.



Sketch Plan of the Falls

If you have time, follow the ditch round the hillside. It shortly meets the Hole Glen, where it formerly crossed by a trough the stream from which the West Burn of Greenock originates, and then it went under the Main Aqueduct. You can follow the small aqueduct which carried this drinking water, back to its origin in a small reservoir or pond, fed by a spring on the face of the hill. Thom linked several of these springs together to provide drinking water in his original plan, but he was diverted from developing this part of the scheme completely when he found he could buy the Whinhill Reservoir (see below) and use it to store drinking water. From near this pond there is a view of Loch Thom itself on the other side of the hills. Retrace the small aqueduct back to the Main Aqueduct, and follow that to the right back to Overton.

The Long Dam (Overton Reservoir) at the top of a steep fall was the Regulating Basin from which the mills received their daily rations of water, originally 1200 cubic feet per minute for 12 hours daily with scheduled stops for meal hours. the Factory Inspectors did not have to worry much about evasion of the regulations regarding

hours of work on the Shaws Water as the flow was strictly controlled. Walking along it on the bank nearest Greenock, you can view the ruins of the Paper Mill (falls 18-19) which was started in 1827, ceased production about 100 years later, and was half-heartedly demolished in 1939. Most of the buildings whose remains you see were built in 1887 after a fire, but the layout was not greatly changed except by addition. The system of lades and ponds was already shown on the 1857 OS map. The influx of water from the Whinhill works into the Long Dam at its east end was not there in the 19th century and reverses the original flow. Beyond the Largs Road the remains of a further pond can be seen in a pasture field, where the Long Dam could overflow on occasion.

By climbing the remaining steep part of the Largs Road you come shortly to a view of the Whinhill Reservoir, also called Beath's Dam after the cornmiller who owned it before the Shaws Water Co. It was originally made for a cotton mill on the Cartsburn in 1792 and had a tragic history of disaster. Robert Thom supervised its rebuilding (but not from the bare ground) after its first collapse in 1815, and advised on its heightening by miller Beath. In 1830 he bought it to hold drinking water, and in 1835 it burst again after some extremes of weather, with thirty eight deaths. There is little doubt that this affair overshadowed the rest of Thom's life. In 1846, however, he rebuilt it again, this time very thoroughly and doubled its area. The position of the original embankment can still be made out, halfway along the reservoir.

Walk down the road to the bend where the Cut goes under it by a masonry bridge, and take the track to the right, following the water down at the back of Fleming and Reid. This is still the bypass lade where the main stream was piped underground. The outlet from Fleming and Reid's turbine house can be seen by crossing a field and going up to the factory wall; and from there the water goes, hugging the buildings, to Fall 11, which was divided into two branches to serve Robert Houston and Son, woollen manufacturers, and another firm. This other firm varied. There was a log wood-grinder (making dye liquors in the days before aniline dyes), there was Whitocke the carpet patentee, there was a jute works, then Robert Houston took over the building and eventually his descendants too left and Fleming and Reid have the entire length of the hill.

Emerging from Rockbank Mills (Fall 11) under the path, the water goes into the Clyde Ropeworks.

Fall 10 remained unoccupied for many years and the Cotton Mill rented the water, which they carried at the same level in an overhead trough to supply a "Scotch Turbine" on their premises. In 1867, following the closure of the Shaws Water Cotton Company, the fall and the site were advertised by the Corporation and two rope making firms competed for it, both having been burnt out for the third time in Lymedoch Street. Alexander Tough made the higher bid by a few pounds, but his amicable rivals Quentin Leitch and Son, though disappointed of the Fall, settled next to him. Theirs was the higher ropewalk (Whinhill Ropeworks) and is built across a stream, controlled by the Water Trust, which they may have used for power. Tough's Clyde Ropeworks eventually took them over. Tough had yet another fire in 1905, and most of the buildings date from then.

The water follows a complicated path round the lower ropewalk. The building of the Wemyss Bay Railway necessitated some changes in the layout designed in 1825. Fortunately these were already foreseen when the ropeworks were being established here in 1868. The fall itself is very near the railway line, under the front wall of the works, and the tailrace runs under the line and then turns to the right. The bypass, which was originally intended to go somewhere else, emerges behind the rear wall

and then goes through an arch under the building to the front. Here part of the water crosses the railway in an iron pipe and pours into the tailrace close to the site of the now vanished Cotton Factory. This must be close to the route of the trough which once supplied the Scotch Turbine with its 'high level lade'. Another part of the water runs, or ran, into a ditch taking off at a right angle eastwards and curving round the end of the ropewalk. This is joined by the stream, already mentioned, which comes from under the higher ropewalk; and the ditch then continues eastwards across the front green of the house at Berryyards. This ditch is the Cartsburn Compensation Aqueduct, which formerly carried 3-400 cubic feet of water per minute from Loch Thom to compensate for the diversion of the Cartsburn headwaters to the filters. It was about a mile long and ran into the Cartsburn just above the Flintmill belonging to the Clyde Pottery. It can still be traced as far as Wellington Park, although its eastern end has been obliterated like the Flintmill site and most of the Cartsburn.

The Cotton Mill (Falls 8-9) is approached from the old Upper Greenock Station yard in Drumfrochar Road. The factory has been very completely demolished, but it is tempting to wonder whether a machine-assisted excavation would reveal anything interesting below ground level. At seventy three feet diameter the mill had the largest water wheel in Scotland. The floor of the wheelhouse was fifty feet below road level, and the tailrace of the celebrated wheel ran through a tunnel obliquely under Drumfrochar Road at that depth. It emerges close to the parting of the Old and New Lines behind the mill tenements which then stood facing the mill. The tunnel was blasted out by gunpowder but finished with handsome ashlar masonry. What can be seen is a good stretch of stone-walled aqueduct running from Fall 10 to Fall 8, with two by-pass falls and the remains of sluices. The by-pass from Fall 10 as already noted, now arrives by way of a large rusty iron pipe over the railway. The site of the wheel-house was close to the road between that pipe and the first of the by-pass falls.

The second by-pass fall plunges under the road, and the cut emerges again in the backyard of the flats opposite, where although you cannot now see the tailrace of the Cotton Mill joining it, the division of the lines is open to view. The New Line added in 1847 plunges underground again immediately going back to the other side of Drumfrochar Road; the Old Line of 1827 describes a big loop round the Caledonian Foundry, which, however, was never one of the Shaws Water mills, but has merely taken advantage of a piece of vacant ground inside the loop. This loop took the water round a bleach-field with the Dellingburn running across its central valley, avoiding the field, the burn and James Watt's Town's Reservoir, which once lay across the place where the railway cutting is now. It brought it to Fall No.7 (Old Line) at the top of Lynedoch Street.

The Flax and Sailcloth Mill had several owners starting in 1827; they were all local firms - the Gourrock Rope Co. may be so described - and until recent years all used it for the same category of manufactures; ropes, sails and coarse fabrics. For the first forty years its 50 horsepower wheel was also connected with one of the group of ropewalks already referred to, which went with the mill though it was not feued by the Shaws Water Co. but leased by Sir Michael Shaw Stewart directly. The other ropewalks belongs to Alexander Tough and Quentin Leitch and there was briefly a small man named Connal, who seems to have been put out of business by the second big fire. From Lynedoch Street bridge the water can be seen issuing from the old mill, now belonging to a plumbing specialist, crossing the railway in a trough, going under the bridge and then underground.

Before looking for its re-emergence, return to Drumfrochar Road at Berry-yards Sugar Refinery, now called Westburn after the former home of the firm who took it

over. (If you still feel energetic, go under the railway bridge and take a look at the oldest of all Greenock's water sources, the Berry-yards Reservoir, made by James Watt in 1773 and still providing water; ironically, it now provides only industrial water while the Shaws Water provides drinking water). Beyond the refinery the former channel of the New Line still carries the industrial water out after use, steaming thickly in cold weather. By entering Wellington Park you may trace its course into the Distillers Co. premises, once a refinery on the New Line. Otherwise there is no trace of this line except that the eye of faith can detect the place on the Cartsburn where one of its branches came out of Scott's engineering division, the Greenock Foundry. This is the part of the scheme which was bought out by the Corporation in 1922.

Returning to Drumfrochar Road, look for the drive leading down to Lynedoch Station (now an industrial estate) from near the corner of Baker Street. Down this drive, on the right, the Cut re-appears from under the station, which has obliterated Old Line 6 (once a Rice Mill). Picking your way with care across a corner of waste ground strewn with rubbish, arrive at the rear of British Charcoals and McDonalds, which as John Poynter and Co. came to Greenock in 1833, and also at the rear of what was once the renowned Eagle Foundry of Rankin and Blackmore, now divided up between several owners. Between the two the water makes a foaming 22 ft. descent (39 horsepower when in use); this is Old Line 5, belonging to the charcoal works. Old Line 4, belonging to the Eagle Foundry and also to a sugar refinery - it is amazing what people in those days could get out of 46 horsepower - has its even foamier fall completely shut in by buildings, and if you want to view it you must woo British Charcoals, who have obligingly shown it to me through an upper window in an empty storehouse.

Below that, no more water is to be seen; but in Scott's Lane (named after the sugar firm not the engineers lower down) there is a low arch now filled in. The large open yard in the Corporation depot and former power station, below this site, is there partly because of a reservoir, made from an old quarry, which once lay between Dellingburn Street and Baker Street and was connected with the Cut. It was originally the private property of the occupant of the lowest fall No.1, at the corner of Rue-End Street, which was a refinery for most of its life but also for a time a sawmill belonging to McLean of the McLean Museum. Thanks to the top-up which this reservoir, fed by the Dellingburn, afforded, the occupants of Old Line 1 could keep working after the Shaws Water had closed for the night. The famous Bakers' Mill which gave Baker Street its name stood on the Baker Street side of this reservoir, and another cornmill, McKenzie and Walker's, stood below it. The Bakers' Mill became part of Scott's sugar refinery, but McKenzie and Walker's lasted until 1902 and its site soon afterwards became part of the Electricity Station, as did the reservoir

Sources

1. Reports and advertisements in the Greenock Advertiser.
2. The Brief Account of the Shaws Water Scheme, Greenock, 1829, and Greenock Corporation's Centenary Volume which adds some later details.
3. Maps, especially the Parliamentary plans Connected with the Shaws Water Acts, and the 1857 OS map.
4. Annual lists of occupants, power of falls, etc, in the Greenock Directories.
5. Murray Smith, History of Greenock, 1921.
6. Parliamentary plans 1845.
7. Greenock Telegraph.
8. Documents in the bundle on the Whinhill disaster.
9. Ardgowan Estate papers letter book.

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