

Grangetown Local History Society



Fact Sheet No. 3

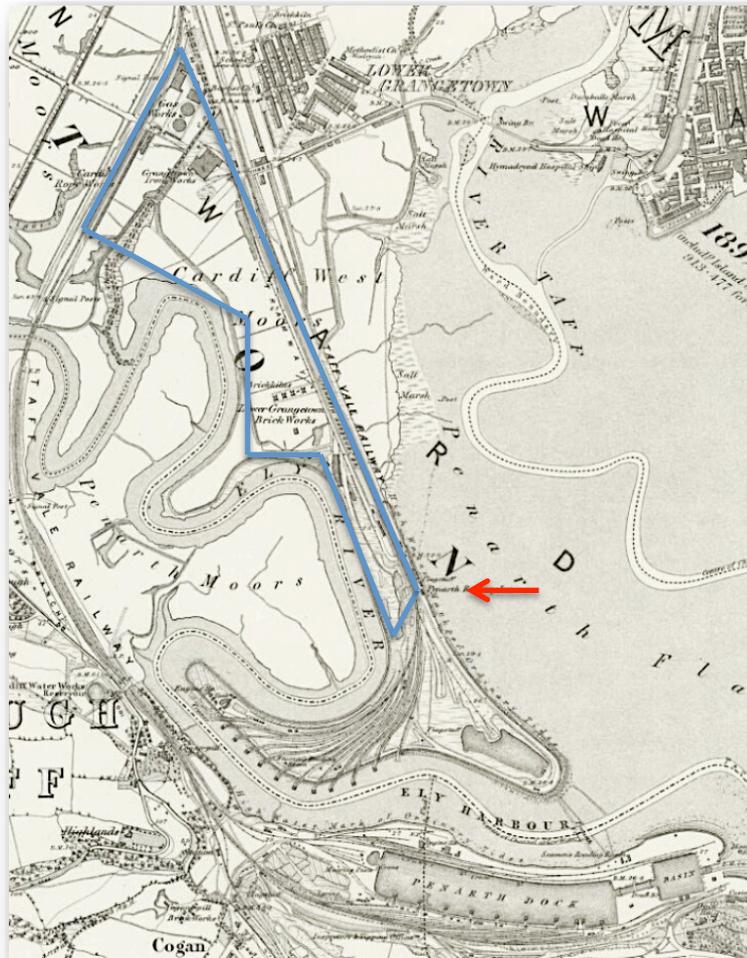
Bricks, Rope, Iron and Gas

Grangetown's early industries

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Introduction

We have learned (Fact Sheet 1) that the Baroness Windsor's plan for constructing Grangetown and Penarth Docks included the creation of an industrial zone between the railway and the river Ely - now occupied by a retail park. She was hoping that this zone - which would extend all the way to the end of the peninsular at the Ely River Harbour - would gradually fill with industries that would not only bring her rental income, but also provide work, thus creating a demand for her houses in Grangetown.



The zone concerned is shown on the map. It is an irregular shape but overall comprises a significant area of land. The end of the peninsular is of course given over to harbour facilities; but the industrial zone extended as far as (what later became) the Red House pub, but which was initially the Penarth Railway Inn. It is indicated in red.

Interestingly, the new industries she hoped to attract - and which did eventually establish themselves there - were not the first ones on the grange. For many years brick-making had been the major activity, made possible by mining of the marl clay that underlay most of the south-west of the Grange Marshes. The largest and most significant excavation was on the Marl field, which took its name from that activity.

Our first investigation will therefore concern the grange's original industry, brick making.

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The Grange Brickworks

If we were to have visited the grange in the early 19th century, we would have seen a very mixed scene. To the east, along the Taff, and to the south along the foreshore, we would have seen deserted marshes, perhaps with the odd fishing boat here and there. This painting dates from 1840 and shows clearly the extensive mud banks constantly replenished by the Taff.



But if we were to look to the north and west, a quite different scene may have surprised us. Dense clouds of smoke from banks of tall chimneys would be drifting across the land, accompanied by the constant movement of materials from clay pits to brick casting sheds and then on to furnaces. This was the grange's early brick industry in action.

The marl clay had been discovered in Cistercian times when it was dried out, crushed and scattered on the land as a lime-rich fertiliser. In fact, one could argue that arable agriculture would have been almost impossible for the monks of Margam Abbey who worked the land, if it were not for marl.

Once the grange fell into private hands, after the Abolition of the Monasteries, and house construction began to use bricks, the marl took on an altogether more specific and valuable role. Beneath the ground was a precious commodity - and there were men prepared to exploit it, albeit on a small scale initially.

The marl was dug out of shallow surface excavations by hand by artisan brick-makers. These small pits would have been dug all over the grange, turning it into something of a moonscape. The deeper the excavations became, the more difficult it was to remove the clay - using a wheelbarrow, for example - so that the men continually moved on somewhere else, in a nomadic fashion. Additionally, the excavations soon filled with water, so that the productive lifetime of a pit was short.



An example of a small marl pit is shown here. On the left is seen the ramp used to wheel out the material and on the right the bank from which it is being cut, probably using a narrow spade, rather like that used for digging peat.

We can imagine that with pits being

dug randomly everywhere and with wagons moving it from the pits to the furnaces, large areas would be little more than a sticky morass of mud. Gradually, roads of a sort were made and the layout of the grange began to take on a shape that we would recognise in part today. One of the principle roads was that which became Paget Street. If ever we wonder why Paget Street was not constructed parallel with Clive Street, the reason may well lie in the fact that the street was built over what was the main track for marl and brick transport.

All bricks were hand made of course and initially in small quantities. We don't know how many such artisans were making their living this way, but there were certainly quite a number. And they were not restricted to the geography of the grange as we know it today. Penarth Road, as a barrier between Taff Mead and Lower Grangetown, did not exist then, so that brick-making was able to spread northwards into Taff Mead. One such operation (as we shall see) was in the area now known as Pentre Gardens, for example.

During (we believe) the 1780s and 1790s, industrialists began to spot the commercial opportunities which brick-making offered. House building proceeded at a feverish pace; they were needed to house the workers of the Industrial Revolution, which was in full swing. Investors began buying up the tithe plots of land to the west and north of the grange (those in the Llandaff parish) with the aim of industrialising the brick-making process. Marl was everywhere and with the coming of the Glamorganshire canal and the railways, so was coal.

But investing in brick-making on an industrial scale was not to be a simple matter of cash. The land belonged to the Windsor-Clive family and they were not interested in selling any of it. They had little or no interest in becoming brick-makers themselves and allowed one particular industrialist, a Mr George Knight of 22 Parliament Square, London, to undertake an investment. He succeeded in agreeing a deal with them to rent land at the grange (22 acres) on which he then constructed the whole paraphernalia of industrial-scale brick manufacturing.

Large, deep pits were sunk (notably on what is now the Marl field); roads and a railway of sorts were constructed for moving materials around and a central moulding shed and kilns were built. The map below shows clearly the straight 'road' from Bromsgrove Street to the junction of Penarth Road with 'Moore Road' (later Corporation Road) that became Paget Street.



Knight also built lime kilns, exploiting the high lime content of the marl to make fertiliser. He would have mechanised the mining of the marl, because some of the excavations became impressive. The one on the Marl field was so extensive and so deep that it was later converted into a banked stadium. There were also brick moulding sheds and kilns on the industrial zone that the Windsors wanted to create alongside the Ely. In the first map, below, is shown the 'Lower Grangetown Brick Works' that was sited there.



On the right we can see an extensive set of deep marl pits and associated kilns and works in the area we now know as Pentre Gardens, just north of Penarth Road.

The Windsors may initially have had no interest in the dirty industry of brick-making, but once they had decided to construct both Penarth Docks and Grangetown, bricks would be needed by the million. It is therefore no surprise to see that in 1856, a year before the Baroness Windsor Act for the construction of Grangetown, they managed to buy Mr Knight's brick business.



As it happened, the Windsors had luck on their side in agreeing the deal. Mr Knight had an errant son who had run up huge debts by betting on horse racing. His father had to liquidate his assets in order to pay his son's debts and the brick works was one of them. Correspondence between him and the Windsor's surveyor, Mr C E Burnand, makes clear his sadness (and annoyance) at having to part with the works. But Mr Knight's loss was the Windsors' gain.

Of course, the Windsors were not going to build the houses in Grangetown themselves; they would merely create the infrastructure within which developers would then build on the plots they would lease; but what the Windsors *could* do was to insist contractually that all houses must be built using Windsor bricks. This applied in Penarth too, where a large brick works was opened in Cogan, in front of what is now the Cogan Sports Centre. The large depression in the ground is what is left of the excavations.

FOR WEEK ENDING *April 11th 1856*

Wages as P Abstract.

	£	s.	d.	£	s.	d.
General Charges	1	2	0			
Brickmaking	23	8	5			
Solid do.	7	9	10			
Tilemaking	3	10	0			
Pipemaking	"	13	2			
Repairs Account	1	3	"			
Building Account				40	10	5

Description.	Quantity.	©	£	s.	d.
Bricks made	<i>June 100,000</i>	<i>22</i>			
Do. set	<i>4</i>	<i>45,000</i>			
Do. drawn	<i>"</i>	<i>84,000</i>			
Do. burnt	<i>"</i>	<i>216,000</i>			
Solid Bricks made	<i>arch 11,500</i>				
Tiles made	<i>June 2,400</i>				
Pipes made	6 inch.				
Do. do.	5 "				
Do. do.	4 "				
Do. do.	3 "				
Do. do.	2 "				
Do. do.	1 1/2 "	<i>1,100</i>			<i>24</i>

The brick works was a very profitable business and Mr Knight was admirably helpful in ensuring a smooth transition from his ownership of it to that of the Windsors'. Just how profitable the business was we can infer from a paragraph in a letter he wrote to the Windsors' surveyor, Charles Burnand:

"I can assure you that the only difficulty in these works are the first outlay. It takes no capital to speak of to work it, as there is no raw material to purchase, all being found on site."

The raw materials were indeed on site: the marl clay was beneath their feet. All that had to be purchased was labour, and coal for the furnaces. The expertise for the business was provided by Durham-born Samuel Stubbs, a brickyard engineer. He was recorded as living in a house on the site with his family in the 1861 census.

Here is the first annual account of the bricks made under the ownership of the Windsor family. It shows that 330,000 bricks were made the first year in 1856.

This was two years before construction at Grangetown really started. At the height of its construction, in 1871, the works produced 1,457,000 bricks not including sewer pipes, tiles and roof ridge tiles. Grangetown was constructed from the very clay on which it sits.

As the industrialisation of the brick-making process increased, it demanded more clay and the marl pit in the Marl field grew to huge dimensions, as shown below, left.

The main kilns and moulding operations were situated just south of Penarth Road, behind what is now Redlaver Street, on Paget Lane. This is where a small industrial zone is situated. In view of this, one has to wonder if the brick works were kept running until the very last minute so as to be able to complete the construction of Grangetown; once cleared away, the area was unsuitable for housing and was used as the industrial area it still is today.



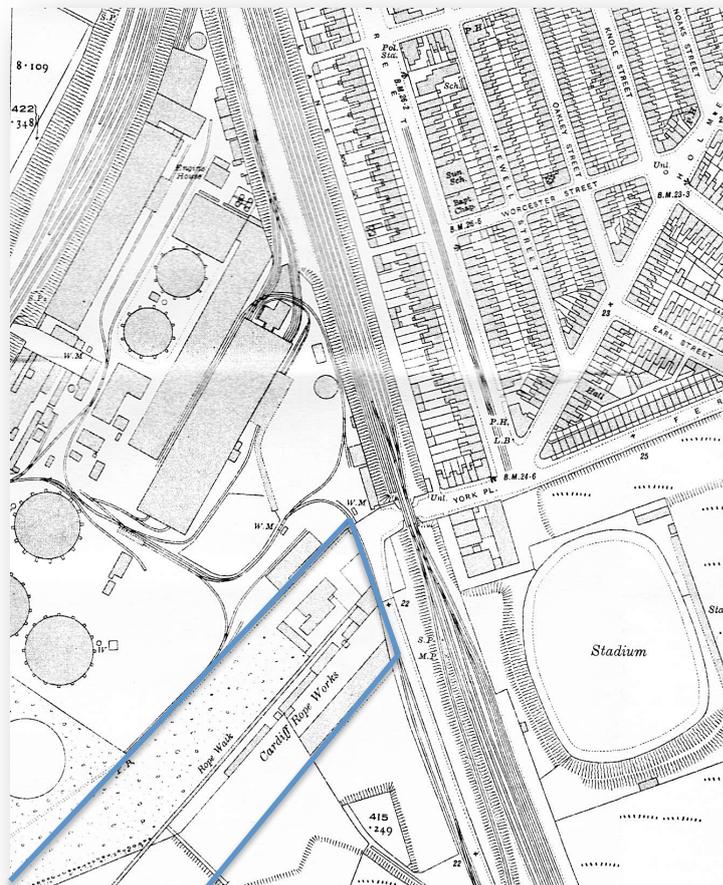
Grangetown Rope Works

This was the earliest works to be established in Grangetown's industrial zone. Originally, it was immediately adjacent to the railway line that branched from the Taff Vale Railway (shown as the Penarth Railway) that led onwards to Penarth. Once the gas works required land in the same area (where IKEA is now) the works moved to a larger and longer piece of land to the south, which is shown in the lower map.



This map on the left, shows the original position of the rope works and has a number of interesting features. The 'rope walk' is shown adjacent to the railway in the bottom left of the map, with the early outline of both the gas works and iron works nearby. We can see how early is this map by the very few streets thus far constructed in Grangetown.

Also of interest is the large 'brickyard' to the north of the grange and the location of the tannery (opposite what is now Sevenoaks Park, one of its nicknames being The Tan). We can also see the proposed Penarth Harbour Road and the Hamadryad Hospital ship,



anchored at the mouth of the canal. The Penarth Harbour Road was later constructed somewhat further south, striking the bank of the Hamadryad area on the seaward side of the hospital.

The second map on page 7 shows the rope works and gas works in 1915. The iron works has gone and its land taken over by the much expanded gas company. The rope works itself is shown to the south of the site, with its long 'rope walk' which runs from its Ferry Road boundary almost to the banks of the River Ely. The area of the works is shown in outline in blue. The remnant of the long rope walk is still there today as a brick lane between the gas works site and the rear of some of the retail park buildings.

[We should also note the significant size of the 'stadium' or marl pit on the Marl field.]



The newly-positioned rope works (known as the Cardiff Rope Works Ltd) was opened in 1863 by Verity and Coward Ltd. It manufactured an impressive range of rope, made from various materials, such as Manilla, Russian hemp, sisal, New Zealand fibre and produced large quantities of so-called reaper twine. It boasted that it could produce ropes from half an inch circumference to twenty-four inches circumference. Its smallest range was probably incorporated into the sash windows of many of the houses in Grangetown.

At its peak, it employed 60 men, women and boys and its 'rope walk' was one of the longest in the UK, being '170 fathoms [1,020 feet] long'. Its chief customers were, of course, chandlers at both Penarth and Cardiff Docks, although Penarth Docks didn't open until 1865.

The Penarth Iron and Steel Works Ltd

The history of this iron and steel works is something of a sad story. One can imagine the delight of Baroness Windsor when a request was made to lease her land and set up such a large business on the very land she had reserved for such enterprises - right next to the gas works. Not only would the works generate income for her, but it would also generate jobs and a demand for the housing she was building in Grangetown, besides boosting the economy of the area. There was also the possibility that once investors saw this third example of significant investment and large scale works in the area, others would follow. The Baroness' plan for creating an industrial zone of some consequence appeared to be working.

As far as its founder and investor was concerned, it was his life's dream to own such an undertaking. To have found land right next door to a ready supply of gas and within yards of a railway line all seemed to be the perfect formula for such a large investment.

John Oliver York (1811 - 1887), who may have given his name to nearby York Place, had been Chief Engineer at the Horsley Iron Works near Tipton, Staffordshire. In 1848 he went to France as Chief Engineer and General Manager of an ironworks near Evreux, northwest of Paris. Having made his name and, we assume, something of a fortune, he decided in 1862 to return to the UK with the intention of setting up his own iron works. In August 1862 he signed a memorandum of agreement with Baroness Windsor for the leasing of some 3 acres of land, with an option to expand the works to cover a total of 5 acres.



The original situation plan of the site is shown here. We must imagine the gas works occupying all the land in the upper right hand corner and the rope works to its left. We can see that the site is delineated in two shades of blue: the lower part is the 3 acres of land Mr York definitely wanted to use and the lighter shaded area are the two further acres on which he held an option.

Reading the voluminous correspondence between Oliver York and the Windsors' agents, one has the distinct impression that notwithstanding that he was absent in France, he seemed so excited that his dream was coming true, that he accepted nearly all the conditions and limitations on the lease that were imposed upon him. In particular, he did not resist the unusually onerous conditions concerning the site itself and the rate of investment in it. In a nutshell, he was required to wall in all the land in question (to a level of at least six feet) and to invest a minimum of £4,000 (£9.2 million in

today's money) within two years or he would lose the lease. He also had to declare within those two years whether he wanted the additional acreage or not and would have to pay for it.

To offset these onerous conditions, were some amusing ones in the lease. For example, no fornication was allowed on the site, no women of ill repute and no brothels; no butchering of animals, no stabling, no drinking or distilling of alcohol, no production of bricks, tiles or drain pipes. The latter is understandable: the Baroness did not want York to compete with her brick works, but how fornication was to be policed the lease did not specify!

York signed the lease in August 1862 and complied with all these conditions and more, investing his £4,000 in machinery and buildings within two years. In terms of equipping his works, he had been lucky: the iron works at Horsley where he once worked was closing down and he was able to negotiate advantageous terms for buying its equipment.

The Baroness was playing a bullish hand. She (her agents) had a clear strategy as to how to maximise the benefits of having an industrial zone adjacent to housing. Put simply, they would charge £30 an acre to lease industrial land but forbid the erection of any housing on it; whilst charging £50 an acre to lease land for housing in Grangetown, thus forcing workers to buy or rent houses at a higher ground rent.

The negotiation with Oliver York was a slick and clever affair by the Windsors' agents. York was initially offered the land for £50 an acre. He declared to his son how pleased he felt when managing to negotiate a reduction in price for the lease of the land to £30 an acre. Little did he know that this was precisely the price which the Windsors had really wanted anyway!

All seemed to be going well. Good quality second-hand machinery was arriving and an experienced ironmaster had been found - Mr George Levick, the son of the ironmaster Frederick Levick who managed large iron works at both Blaina and Nantyglo. Railway connections were being made between the Taff Vale Railway and the works and in 1865 Penarth Docks and Harbour were both functioning, allowing sea-borne raw materials to be accessed.

Then, in the late 1860s something of a recession hit the iron industry. Prices fell due to overproduction in the several foundries in the Rhondda and in Cardiff. But on top of this, the real existential threat to Oliver York's iron works was the sheer commercial clout of the mighty Bute empire. The Marquis could drop his price of iron (and coal) without undue pain. His docks (the West Dock being the largest in the world), his ships, the Glamorgan Canal and the railways could provide him with raw materials at prices with which York could not compete. The iron works in Grangetown was simply in the wrong place and unable to compete, notably on transport costs and energy costs.

For years, the enterprise struggled on with fixed costs that were threatening its existence. Eventually, barely ten years after opening, it was put up for sale as a going concern. Not a single bidder came forward. York was in a bind. Despite this, he soldiered on, but in 1882 the business was liquidated and a distressed sale of all its assets, excluding fixed ones, was staged at the Great Western Hotel.

Once again, not a single bid was forthcoming and its machinery was later sold off piecemeal at a great loss. What happened to Oliver York has not been established, but we know he passed away in 1887, aged 76, some 25 years after setting up the foundry and only five years after his business failed.

No figures for the number of men made redundant from the iron works have been found, but its demise was felt across Grangetown as records from the National School make clear. Many children failed to go to school because the fees were unaffordable and they were too poorly clothed and fed. Their poverty and that of their families was very real.

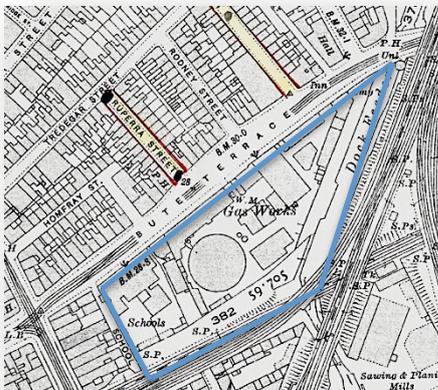
The only winner in this sad story was the gas company, whose profits soared as the town's demand for gas increased. The company took over the iron works' lease for the land and was able to expand significantly.

The failure of the iron works signalled the failure of the Baroness Windsor's plan to attract industry to her industrial zone alongside the Ely. A number of small businesses did establish themselves there - such as a slaughterhouse and associated glue factory - but these somewhat marginal activities employed few. This situation persisted until modern times.

The Cardiff Gas, Light and Coke Company Ltd

The gas works was one of the earliest industries of any size to be established on the grange. It was eventually a big employer. It belonged to the Cardiff Gas, Light and Coke Company, which was formed in 1837 and was first established in Bute Terrace (formerly Whitmore Lane) in the centre of Cardiff. It was adjacent to the feeder supplying water to the Bute's great West Dock. It remained their offices for many years, the site now being occupied by a hotel which distinguishes itself by the narcoleptic title of The Big Sleep. The Marquis of Bute sold the land to them but it was a very small plot of barely three-quarters of an acre.

Although its position was ideal for connecting the gas mains to the centre of Cardiff, the area was small. The company had to expand in order to satisfy the growing demand from the town, notably for street lighting. The company

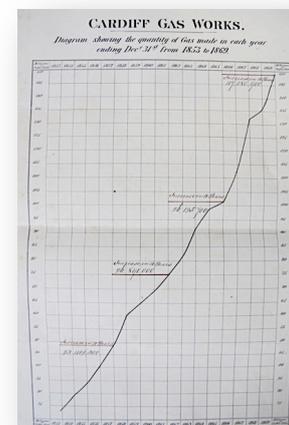


also needed dedicated rail access to bring in raw materials. The company therefore leased land on the Grangetown site in 1863, at the same time as the iron works was being set up. (A minor part of the Grangetown site, towards the River Ely, belonged to the Marquis of Bute.)

The Gas Works became a large complex as shown above. It produced not only gas by the heating of coal in closed retorts, but also tar and ash products. The latter, when mixed with a little sand and lime became the most common (black) mortar for building Grangetown's back yard walls and it can

be seen everywhere in back lanes and in the school walls.

The initial Grangetown works was little more than a duplicate of the small one on Bute Terrace but demand was huge and it very quickly expanded to the full capacity of its ten acre site. Its output increased exponentially, as shown by the graph which shows the growth in output between 1863 and 1890. By 1870 it was supplying gas to Cogan and as far away as St Fagans. With the demise of the iron works the gas works more than tripled in size. Eventually it would reach as far as the banks of the River Ely.



The initial use for gas in Cardiff was not domestic but for lighting the streets, especially in the town centre. This was a fairly obvious place to start in that many streets were already quipped with kerosene lamps, streets that were near the original gas works.

Kerosene lamps were not very effective, even when they worked. They gave out a weak, flickering, yellow light and needed regular topping up with fuel. They were prone to extinguishing in high winds and had to be lit manually. Here is a Victorian lamplighter of 1853, with his ladder and acetylene lamp.



Gaslights still needed lighting manually, but their light was brighter and more constant. Gradually the technology improved and mechanical timers and ignition mechanisms were introduced. Although semi-automatic, the mechanisms needed maintaining as did the gas mantles and ignitors.



The photograph on the left shows a lamp being maintained in the 1950s and is of the kind seen in Grangetown. These men would carry a short wooden ladder on their shoulders whilst riding on their bikes between the lamps. Their busiest time was when the timers had to be reset when clocks were changed at the spring and autumn equinox.

Gas lighting in Cardiff spread outwards from the centre of the town in a haphazard way, often determined by the identification of crime hotspots and the demands of local councillors. It is not known when gas lighting came to Lower Grangetown (Phases 1 and 2) but it is likely (reading through the minutes of the Health Board, the body that controlled lighting) that the area was still lit with kerosene lamps until about 1873. Later Grangetown (from 1876) was equipped with gas lighting as part of its design.

The introduction of gas lighting was not a smooth process. The production of gas was still in its infancy as was the difficult technology of pumping it through gas mains. The Cardiff Health Board (Grangetown became part of Cardiff Borough in 1875) appears to have had a number of quarrels with the gas company over the unreliable quality of the light from the lamps and the tendency of some of them to blow out. The problems were centred on the original gas works where it was found ammonia had contaminated the gas, leading not only to poor light but corrosion. The Grangetown works introduced new technology to remedy these problems - taking advantage of them, in fact, by installing an ammonia processing plant and a creosote plant and selling both by-products.

Remnants of the gas works are there today as this modern photograph shows. The circular base of the largest gas holder can be seen in the left foreground and the skeleton of the last remaining holder shows up against the blue of the IKEA building.



In common with other utilities, the gas company was nationalised in 1948. Shown below is a photograph of the company board in that eventful year.



The Grangetown works played an important part in the growth of Cardiff; it also played an important role in its wartime defence. It was a prime target for bombing but managed to escape on numerous occasions, although the same cannot be said for some adjacent housing. The area's civil defence unit was based there and it was from the works that air aid sirens sounded across Lower Grangetown.

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Comment

We have to conclude that the Baroness Windsor's vision of creating an industrial Grangetown failed to get off the ground. After the passage of 150 years it is now a 'retail zone' and also contains housing - both of which she may not have approved. Ironically, the selling of flat pack furniture, groceries and pet food, has fulfilled her original vision at last, albeit in a very different form.
