Winchester's Gas Works

Martin Gregory

The provision of coal-gas supplies for towns and cities was one of the first public utilities. The carbonisation of coal to give an 'illuminating gas' was pioneered by William Murdoch when working for Boulton & Watt at their Soho factory in Birmingham. Building on the work of Lord Dundonald and others, Murdoch recognised the commercial possibilities of gas lighting. After several years of experiments he illuminated the Soho Factory for the celebrations of the Peace of Amiens in 1802. Murdoch established the use of 'illuminating gas' in factories but did not patent his processes.

The man who brought gas lighting to British towns and cities was Friedrich Albrecht Winzler, a Moravian immigrant who renamed himself Frederic Albert Winsor. Winsor was a great showman, lighting parts of Pall Mall with gas from his 'stoves'. In 1810, he and his backers obtained an Act of Parliament for the Gas Light and Coke Company with a capital of £200 000 to light the streets of London. By 1813, streets in the City of Westminster were lit by gas lamps and developments in other towns and cities followed. Southampton's first gas lighting was turned on in 1822.

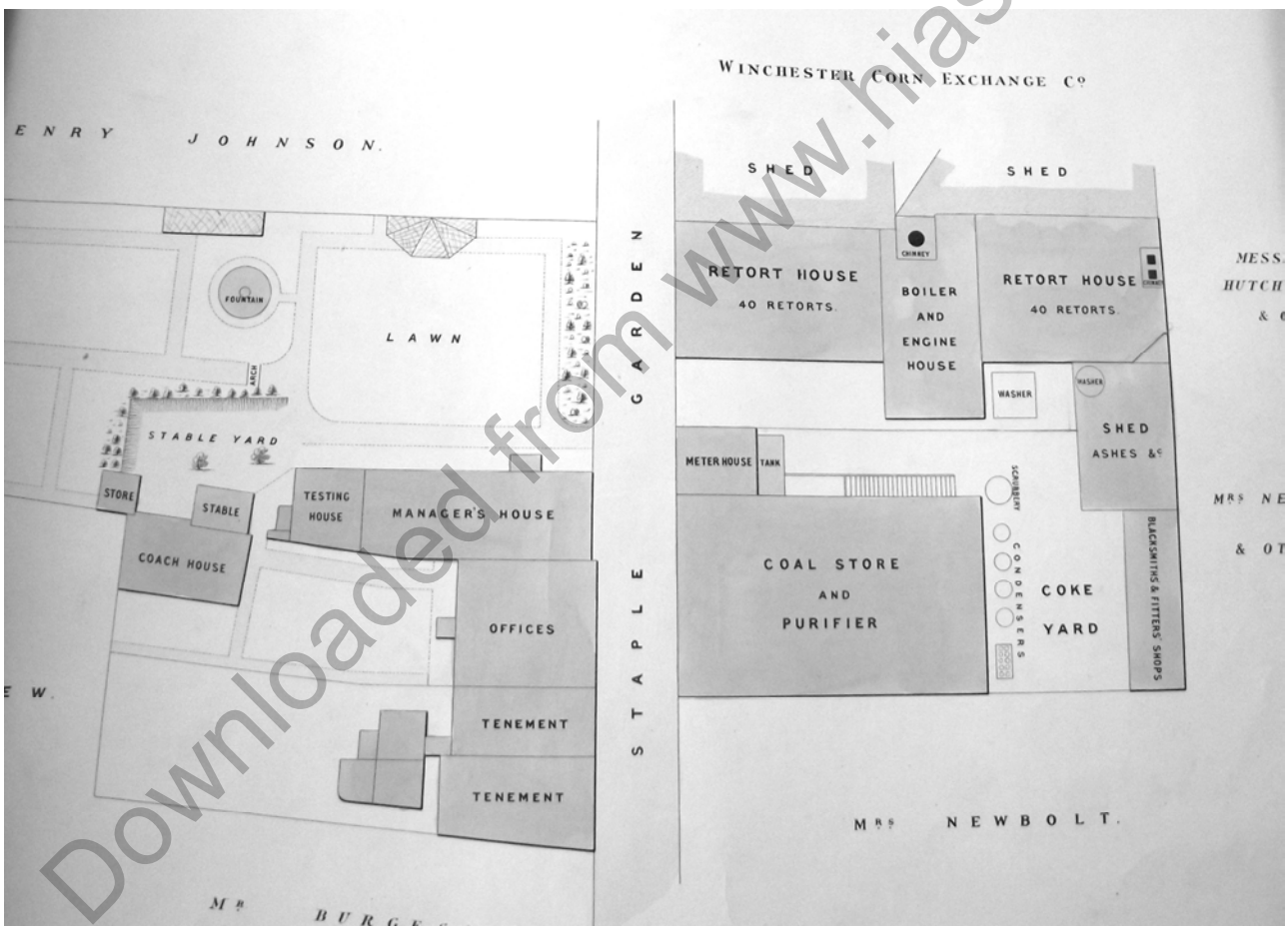


Figure 21. An 1888 plan of the Staple Garden gas works of the Winchester Water & Gas Company. The gas works is on the East side of Staple Garden with housing on the West side. [HRO W/J5/38]

It was another ten years before Winchester got its first gas works in 1832. It was financed by John Newington Hughes J.P. who was made a Freeman of Winchester in 1835. Bryant, Hughes' partner, was the engineer of Maidstone gas works where Hughes also owned property and land. The gas works was made into a company, the Winchester Gaslight & Coke Company, in 1834 and, in 1837, the first street lighting contract was signed. In 1838, the town clock was illuminated by gas. The manager in these early days was Mr. Sharp who was a firm believer in the use of gas for cooking. The gas works was built in Staple Garden

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alongside the back of the then new Corn Exchange (now the Discovery Centre). The sites of both were determined by the desirability of railway access. The original survey for the London and Southampton Railway (later the L&SWR) ran through the city ditch east of the King's House (the army barracks) close by the two buildings. When the L&SWR was built it ran along the castle ditch west of the King's House so that neither building had railway access, severely hampering the operation of both enterprises.

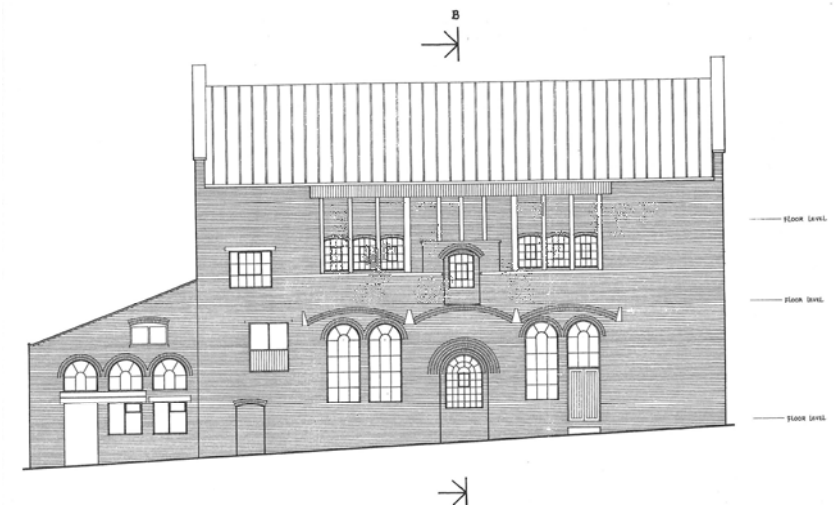


Figure 22. Elevation of the surviving purifier house building drawn by Southern Gas in 1984 prior to demolition.

The gas company applied to the Pavement Commissioners in 1840 for a contract for 21 years to light the streets of Winchester but problems arose and the contract was cancelled after one year. There followed many years of short term contracts and of acrimony between the gas company and the City, resulting in the City of Winchester being the last city in England to remain 'oiled' (lit by oil street lamps). The Winchester Gaslight & Coke Company itself was in a parlous state, as was the Winchester Waterworks Company Ltd., so that, in 1864, the Winchester Consumers Water & Gas Company was formed. On the 26th May 1865, an Act of Incorporation (28 Victoria c38) established the Winchester Water & Gas Company to run both enterprises. Charles Wittman Benny was the Chairman and Samuel Pontifex the manager of the gas works. From that point onwards the company prospered: sales of gas rose from 34 million cu ft (970 000 m^3) in 1876 to 82 million cu ft (2300 000 m^3) in 1904 when gas production ceased at the Staple Garden works.



Figure 23. Webb's Patent Sewer Gas Destructor lamp in The Square. The burners are lit 24 hours per day to maintain the convection currents to ventilate the sewer.

The energy content of coal gas was variable and depended on the variety of coal used and the management of the retorts in the works. The Gas Act of 1871 laid down minimum standards to which gas companies were required to adhere. Initially this was defined in terms of 'illuminating power': the gas, when burnt in a standard type of burner must provide a light of a given luminance. In the case of the Winchester supply, when burnt in a Sugg No. 1 burner with a glass chimney, the light must be of 14 candle power (cp) or greater. Later the standard was redefined in terms of the 'calorific power' or heating effect of the gas. The gas supplied was guaranteed to have a calorific power greater than 500 BThU per cu ft (18 kJ dm^{-3}) at a pressure of 12 inches of water (3.0 kPa) above atmospheric pressure. There were penalties when the calorific value or pressure dropped below these statutory values.

When, in 1878, Winchester's mains drainage was being built, forty one of J. E. Webb's Patent Sewer Gas Destructor lamps were installed to ventilate the sewers. A normal gas lantern mounted at the top of a hollow lamp standard connected to the sewer, set up a convection current to draw any foul air from the sewer; this was the claim of the Webb lamp. One of

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these still exists in The Square, Great Minster Street. Although it is no longer required for street lighting, its four gas jets burn continuously, night and day, to ventilate the sewer underneath.

The coal gas supplied was mostly used for lighting. The introduction of the Welsbach mantle in 1890 revolutionised the efficiency of gas lighting and gave a new lease of life to the industry. Consumption of gas also increased with the introduction of gas cookers and, for workshops, small gas engines. A look at the half-yearly accounts for 1893 shows receipts of £8944 and expenditure of £5435. The chairman, W. Barrow Simonds, declared a dividend of 10% on ordinary shares. A closer look shows that the main sources of receipts were from the sale of 26 million cu ft (740 000 m^3) of gas (£4625), meter rental (£186), sale of coke (£957), of tar (£114) and of ammoniacal liquor (£20). The expenditure was on coal (£2652), the salary of the manager and wages of the workmen (£620), repairs and maintenance (£560) together with (£496) as the cost of the central management and office. The Staple Garden works were very cramped and awkward to operate. The gasholders were removed in the 1880s to a site in Andover Road opposite the entrance to Worthy Lane. A third gasholder was sited in Water Lane on the east side of the city in the 1890s.

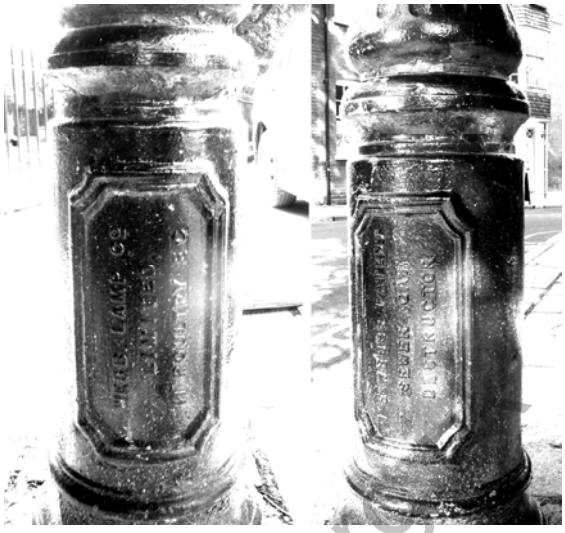


Figure 24. The lamp standard base with (L) "WEBB LAMP COMPANY | LIMITED | 11 POULTRY E C" and (R) "J E WEBBS PATENT | SEWER GAS | DESTRUCTOR".

In 1903 the company applied for an Act to build a new gas works north east of the city on Winnall moors. The new site was clear of the then built-up area and had railway access from the Didcot Newbury & Southampton Railway (Great Western Railway). Two sidings were provided, capable of taking 60 wagons. Usually a daily train of about 15 wagons ran from the goods yard at Bar End, Winchester, to supply the works and collect some of the coke produced. The new Winnall gas works was opened on the 2nd September 1905. Some equipment was moved from the Staple Garden works which was then closed. With the new works in operation the company was able to expand its area of supply to include, by 1911, the districts of Compton, Shawford, Otterbourne, Twyford and Colden Common south of Winchester, plus Harestock and Littleton to the west. The new works sold over 100 million cu ft (2900 000 m^3) of gas per year. Later the supply was extended to Kings Worthy and Itchen Abbas. The offices of the company and the showroom for customers remained on the Staple Garden site in a building facing Jewry Street.



Figure 25. A typical gas lantern of the Victorian era.

In the Spring of 1911, the Company hosted a meeting of the Southern District Association of Gas Engineers and Managers, which was written up in the *Journal of Gas Lighting, Water Supply etc.* London members came down in a special private saloon attached to the 10.15 train from Waterloo, which made a special stop at Winchester. The article provides a contemporary description of the Winnall works and is illustrated by the only early photographs of it that I have been able to locate. "Though five and a half years have passed, the whole place, with its ample room everywhere, seemed to be as spick-and-span as the day of the 'opening' celebration." Having carried out their inspection, the managers retired to the Royal Hotel for luncheon,

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where they were entertained by the Chairman and Directors of the Company and the Mayor of Winchester. The Mayor said he was not quite sure whether he ought not to have expected a warm reception of another kind. The City and the Gas Company were arguing at that time in Parliamentary committee rooms about the City taking over the local Electricity Company and about street lighting contracts. There were streets in Winchester with gas lamps on one side and electric lamps on the other!

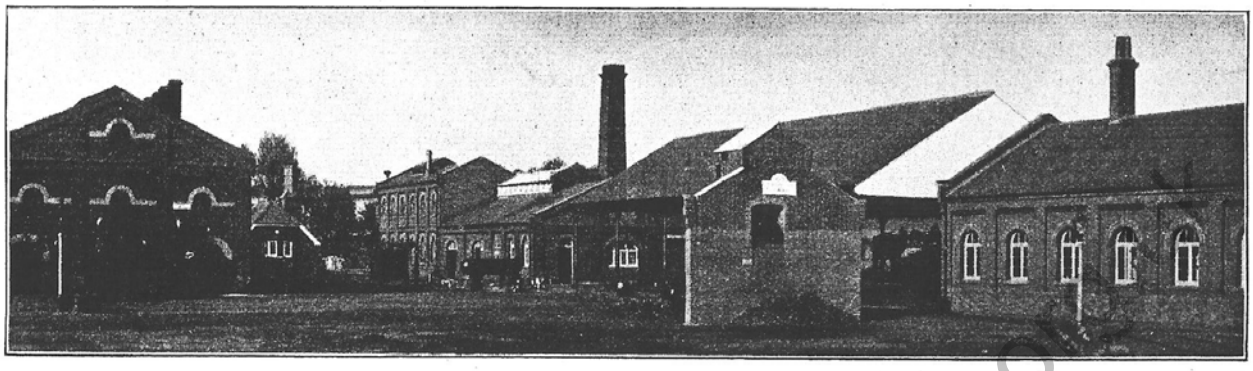


Figure 26. Winnall gas works in 1911. This view is looking north east with the retort house on the left, the machinery building and ammonium sulphate plant in the centre. The open sided building is the purifier house and at the far right is the workshop. [HRO 117M88W/71]

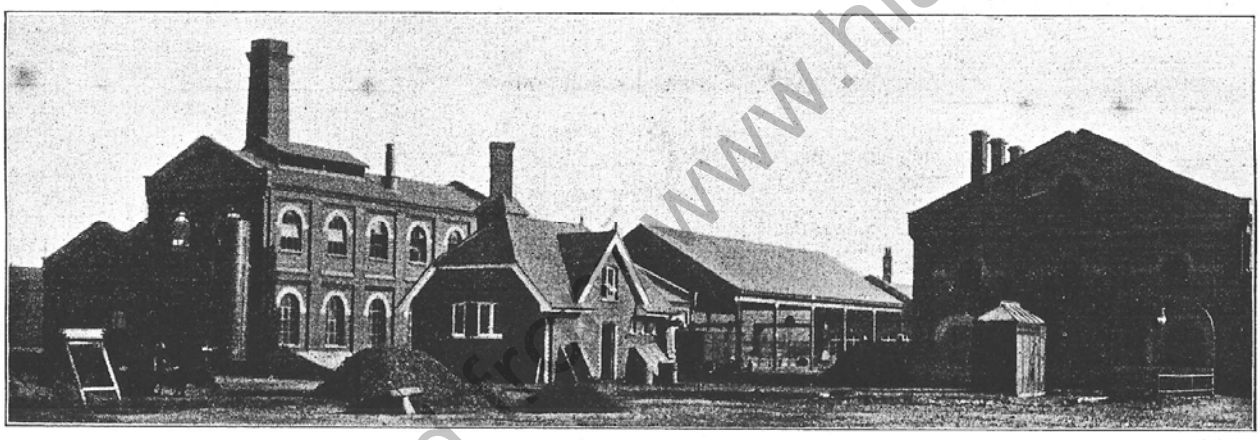


Figure 27. Another view of Winnall gas works looking south east. The machinery building, with boiler house and chimney behind, is on the left. The purifier house in the centre and the retort house on the right. [HRO 117M88W/71]

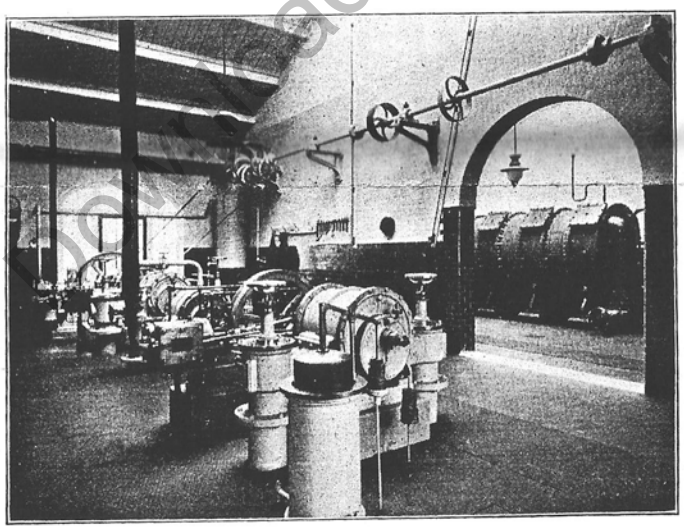


Figure 28. Inside the machinery building at Winnall works. Three exhausters are seen; two steam and one driven by a gas engine. [HRO 117M88W/71]

With the opening of the Winnall works, some of the buildings of the old works in Staple Garden were rebuilt to house a clothing factory for the firm of Burberry. Thomas Burberry had started his tailoring business in Basingstoke in 1856 and opened his first London shop in 1891 in The Haymarket. What garments were produced in the Winchester factory I have not found out!

In the first half of the twentieth century the population of Winchester and environs increased markedly. Output of gas increased proportionately, the Winnall works could produce 500 000 cu ft (15000 m^3) of coal gas per day which was augmented by a water gas plant rated at 350 000 cu ft (10 500 m^3) per day. In 1936 the company was taken over by Winchester City and dismembered.

The City operated the water company side of the business and the gas operation was sold to the Southampton Gaslight & Coke Company. So it remained throughout the war until all became part of the nationalised gas industry. The Southern Gas Board ran down and closed small gas works; the Winnall works closed on 29th November 1957 and the 1960s saw the coming of natural gas.

One final moment of glory for Winchester and town gas came with the proposal to store gas underground in an anticline at Chilcomb on the south side of Winchester. The idea was to store the gas by displacing water from a lower greensand layer of rock 215 m down. The porous rock in the anticline has an impervious cap of gault clay between it and the water aquifers in the chalk nearer the surface. (This is the system now used to store natural gas utilising exhausted natural gas wells for the storage.) Serious planning started in mid-1961 led by the Chief Engineer of Southern Gas Board, Dr A. E. Haffner. By September, sites for surface works had been identified and Parliamentary Agents retained to prepare a bill for Parliament. The Parliamentary Examiner's Inquiry started in December 1961. The detailed initial proposal was to compress 6 million cu ft (170 000 m^3) of gas per day at 50 psig (0.46 MPa) to 450 psig (3.2 MPa) for injection into the porous rock reservoir. Electrically driven compressors would feed gas into the reservoir between 1st April and 30th September when both the gas board and the electricity board had surplus capacity whilst the reservoir would feed gas into the distribution system from 1st October to 31st March. The gas connection would be a spur off the Southern Gas Board 'backbone main' passing Littleton, near Winchester, to the compressor station. Land for the surface works was purchased either side of the Morestead Road at Chilcomb. Nothing came of the scheme: a model of the well head

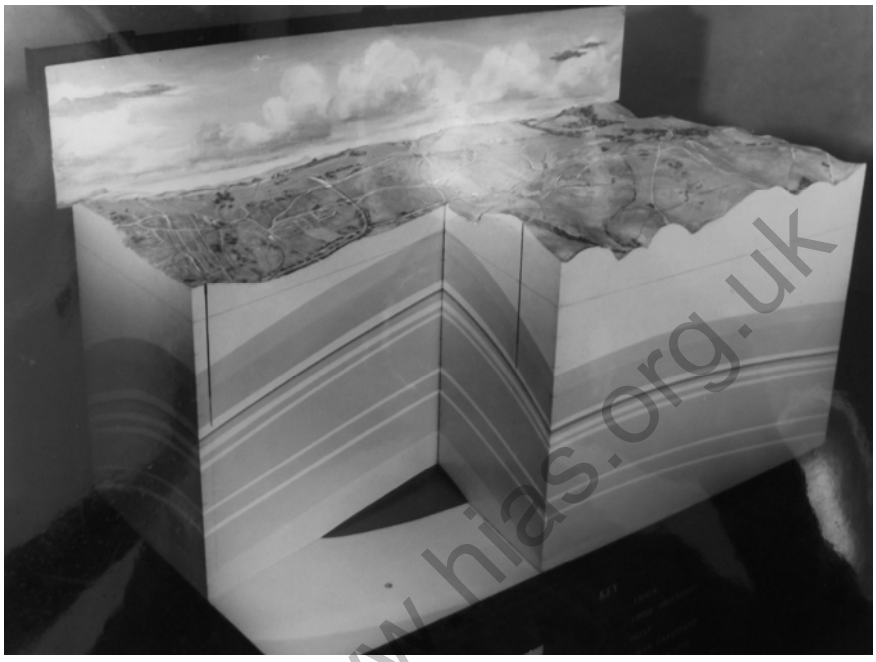


Figure 29. Model of the Winchester anticline showing the geology of the rocks under Winchester. Made for the Inquiry into the 1961 scheme. [HRO 19M65/B504]



Figure 30. The façade of the offices and showroom of the Winchester Water & Gas Company in Jewry Street. The passage at the right hand side led to the gas cooker repair workshop and connected with the Staple Garden site.

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and compressor plant was returned in 1965 to the Gas Council who donated it to the Science Museum. The land purchased for surface works was sold to Hampshire County Council in 1971 and incorporated in the road works for what was then Winchester bypass and became Junction 10 of the M3 motorway.



**Figure 31. The 1960s block of flats replacing the gasholder on the Water Lane site.
(1909 OS map in top corner)**

All the Winchester gas sites have been completely redeveloped over the last fifty years. The gasholders were replaced with offices (Andover Road) and flats (Water Lane) in the 1960s. Nothing remains of the Winnall gas works whose site is now an industrial estate near Junction 9 of the M3 motorway. Major redevelopment in the last ten years of the Staple Garden site has left only the frontage of the office and showroom building remaining in its rebuilt form. The showroom is now a Raymond Blanc restaurant (Figure 30).

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Sources:

1. Hampshire Record Office (HRO). Much of the information on which this article is based comes from HRO. In particular, many references to the gas industry in Hampshire come under reference 19M65/ and to Winchester under W/.
2. Hole, Walter, *The Distribution of Gas*, John Allan & Co, London 1907
3. Jones, Sir Henry, *The Storage of Gas Underground in Aquifers*, Joint meeting of the Institutions of Civil Engineers and Gas Engineers, 18 March 1963. (A good resume of the proposal, Sir Henry Jones was the Chairman of the Gas Council)

A note on Winchester's street lighting

The earliest street lights were oil lamps. The lamplighter came round at sunset, topped up the oil reservoir, trimmed the wick and lit the lamp. He returned after sunrise and extinguished the lamp. With the arrival of piped gas supplies his job was eased in that, although he still had to visit every lamp every night to light and extinguish it, he did not have to carry supplies of oil or wicks. The burners in the mid nineteenth century were Argand circular types with glass chimneys which had a low luminous efficiency (a yellow unstable flame like that of a Bunsen burner with the air hole closed).


Dated 29th March 1852

1/1852

The Winchester Gas Light and Coke Company ..... with The Commissioners of Winchester Pavement

Contract for lighting the Street Lamps for Five years from the 13th of September 1851

W/J1/51

The Indenture

Figure 32. Contract of 1852 for the Winchester Gas Light and Coke Company for lighting the street lamps. [HRO W/J1/51]

For the Winchester Gas Light & Coke Company, and its successor the Winchester Water & Gas Company, the street lighting contract provided an important base load to keep the system stable. Their first short contract came in 1837 and then, in 1840, they tried to negotiate a contract with the Pavement Commissioners for twenty one years. This was cancelled after one year and the Hampshire Record Office has short contracts for street lighting throughout the nineteenth century. The Company does not seem to have enjoyed good relations with the City Council. The 1852 contract stipulated that on the night of a full moon, and on the three days either side, only alternate lights would be lit.

For a three year contract in 1871, the Corporation paid £4-15s-0d (£4.75) for each lamp for a year. The lamp was expected to burn for 3962 hours burning 4 cu ft of gas per hour. Gas was charged at 5/- per 1000 cu ft (25 p per 28 m^3) and 16/- (80 p) was allowed for lighting, extinguishing and cleaning the lamp for the year. In early 1882 it was back with a one year contract for oil lighting which was much cheaper. The Corporation paid only £2-7s-0d (£2.35) for lighting, painting (once per year) and repairing each lamp burning oil. There were fines of one halfpenny per hour when the light was unlit and one farthing per hour when the lamp glass was dirty or smoky. There was a get-out clause for the fines in times of bad weather and high winds. In 1883, at the end of this contract, Robert Bayley of Poole offered to take over the oil lamps at £2-12s-6d (£2.63) per year each and to convert them to electric lamps. This would have put Winchester in the forefront of electric lighting. However, the offer was not taken up but negotiations were re-opened with the Gas Company.

The advent of the Welsbach incandescent mantle improved the light output of gas illumination by an order of magnitude so that it remained competitive with the newer electric light. The 1898 contract stipulates that all lamps must have incandescent mantles and the charge per lamp for the year is £2-10s-0d (2.50) for a lamp with a single incandescent mantle burner, £4 for twin burner lamp and £2-5s-0d (£2.25) for the remaining oil lamps. Fines had risen to 6d (2.5p) per lantern per night for a failed lantern except in exceptional weather and 4d per lantern per night for lanterns with accidental damage. On leap years, the lamps were to be lit on February 29th for the same time as on February 28th at NO EXTRA cost!

STREET LIGHTING.

A Summary of the tender submitted by the Winchester Water & Gas Company for the lighting of the street lamps in the City is as follows:-

No. of Lamps.	Description of Lamps.	Present price.	Proposed price.	Increase per lamp	Increase on total.
79	Single Incandescent No.4 Kern	2.10.0	2.15.0	5.0	19.15.0
444	Single Incandescent "C" Burner.	2.10.0	2.12.0	2.0	44. 8.0
10	Double Kern Refuge reducing ½ at 10 o'clock p.m.	4.10.0	4.10.0		
4	Triple Kern refuge Destructor reducing 2/3 at 11 p.m. Pilot light in day time.	6.12.6	7.10.0	17.6	3.10.0
19	Double Kern refuge destructor reducing ½ at 11 p.m. Pilot light all day	5.10.0	5.10.0		
18	Single Kern destructor Pilot light all day.	2.15.0	3.12.6	17.6	15.15.0
14	Double Kern Incandescent all night.	4.10.0	5. 0.0	10.0	7. 0.0
16	Self intensifying 300c.	4. 0.0	4. 7.6	7.6	3.15.0
2	" " 600c.	5. 0.0	7.15.0	2.15.0	5.10.0
19	Oil Lamps	2. 5.0	2. 5. 0		
619			Total increase per annum		99.13.0

Figure 33. 1904 summary of tender for street lighting. [HRO W/C1/5/21]

At the start of the twentieth century, electricity had finally arrived in Winchester and the first conversions to electric light were made. The 1904 negotiations show there to be 523 single burner gas lamps, 14 double burner gas lamps and 41 destructor gas lamps with one, two or three burners plus pilot lights to ensure they were lit continuously. There were also, still, nineteen oil lamps. In the contract, the Corporation reserved the right to convert Saint Peter Street, Parchment Street, Upper, Middle and Lower Brook Streets to electric lighting. The lighting schedule through the year takes account of day length and suggests that no clocks were attached to the lanterns and that lamps were lit and extinguished by the lamp man each day. The table headings show that all lamps must be lit by one hour after sunset and no lamp may be extinguished before one hour after sunrise.

THE SCHEDULE

Day of Month.	January. All to be lighted by	January. Begin to extinguish at	January. Hours per Night	February. All to be lighted by	February. Begin to extinguish at	February. Hours per night	March. All to be lighted by	March. Begin to extinguish at
1	4 45	7 30	14¾	5 30	7 0	13½	6 30	6 0
2	"	"	"	5 45	"	13¼	"	"
3	"	"	"	"	"	"	"	"
4	"	"	"	"	"	"	"	"
5	"	"	"	"	"	"	"	"
6	"	"	"	"	6 45	13	6 45	"
7	"	"	"	"	"	"	"	"
8	"	"	"	"	"	"	"	5 45
9	5 0	"	14½	"	"	"	"	"
10	"	"	"	6 0	"	12¾	"	"
11	"	"	"	"	"	"	"	"
12	"	"	"	"	"	"	"	"
13	"	"	"	"	"	"	"	"
14	"	"	"	"	6 30	12½	7 0	"
15	"	"	"	"	"	"	"	5 30
16	"	"	"	"	"	"	"	"
17	5 15	7 15	14	"	"	"	"	"

Figure 34. Schedule of lighting and extinguishing times for 1904. [HRO W/C1/5/21]

A map of Winchester annotated c1914 onto the 1909 25 inch Ordnance Survey map shows all the lamp columns coloured to show whether they carry gas lanterns (red), electric lanterns (blue) or

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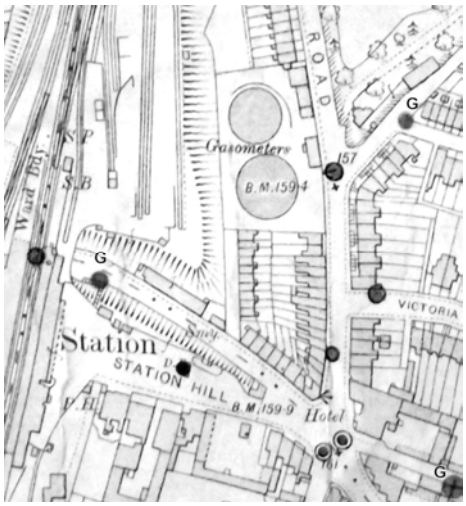


Figure 35. Section of the 1909 OS map showing the location of lamp columns. The three gas ones are labelled G. [HRO W/C7/4/3]

are not in use (Yellow). It shows a varied picture with the city centre mostly lit by electric lamps but with the gas sewer destructor lamps and some other gas lamps still in place. Quarry Road tops the bill with alternate columns with gas and electric lanterns. The small section of this map shown in Figure 35 identifies the location of the two gasholders in Andover Road. (Note that they are labelled 'Gasometers'.)

The cast iron columns, with their ladder bracket just below the lantern served equally for oil, gas and electric lamps. All the contracts required the company to paint the columns once a year and to maintain them. Some were cast locally by P. C. Jewell's City Foundry in the City centre but many were bought in. (The last cast iron lamp column by Jewell was removed from College Street in 2012.) The City of Winchester did not have its own design of lamp column with the City crest. Some had the foundry name on them but others bore no identifying marks.

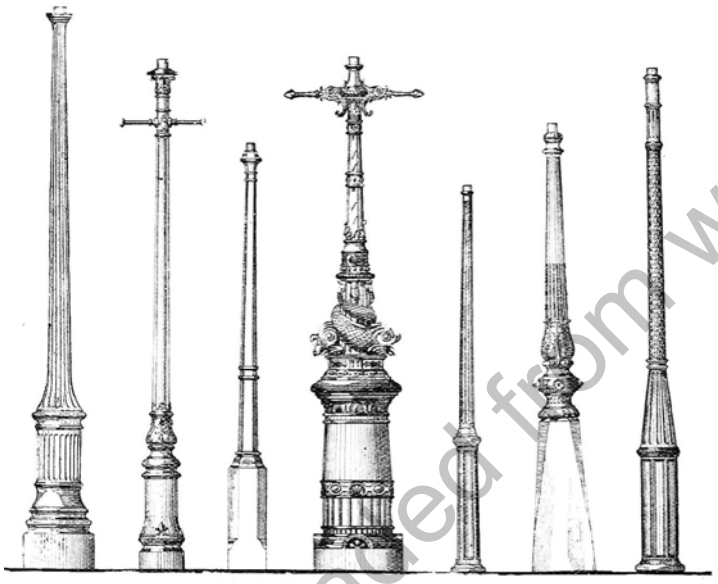
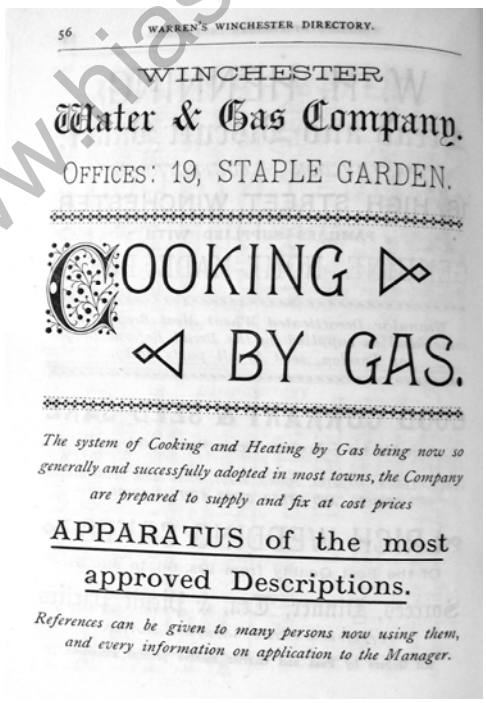


Figure 36. Lamp columns by Wm. Sugg & Co. from the 1890s. Most Winchester columns were similar to the third design from the left.


56 WARREN'S WINCHESTER DIRECTORY.

WINCHESTER

Water & Gas Company.

OFFICES: 19, STAPLE GARDEN.

COOKING BY GAS.

The system of Cooking and Heating by Gas being now so generally and successfully adopted in most towns, the Company are prepared to supply and fix at cost prices

APPARATUS of the most approved Descriptions.

References can be given to many persons now using them, and every information on application to the Manager.

Figure 37. Advertisement for Winchester Water & Gas Co. in Warren's Winchester Directory for 1885.

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