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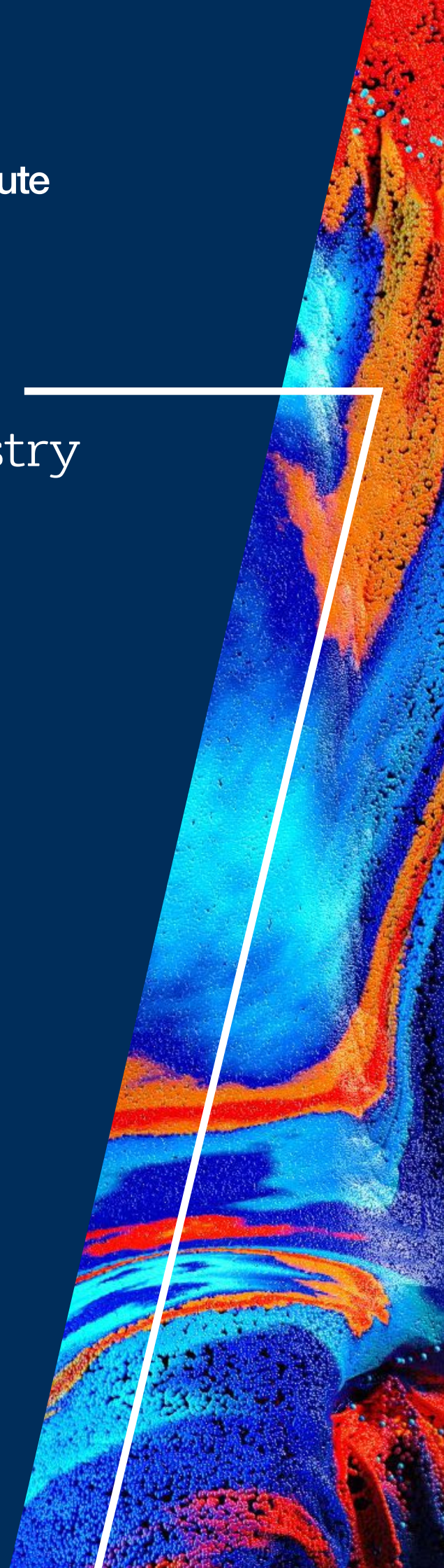
Avon Street Gasworks and Bristol's Gas Industry

**A Bristolian history of innovation
with lessons for our digital future**

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About the Bristol Digital Futures Institute (BDFI)

Bristol Digital Futures Institute was launched in 2019 to transform the way digital technology is created for a more inclusive, prosperous and sustainable society. The £100m Institute, funded by UK Research Partnership Investment Fund (UKRPIF) is pioneering a different approach to digital technology innovation, bringing together social and technological expertise from across the University of Bristol and partners in academia, industry, government and local communities.

It is the first research hub to open on the University's new Temple Quarter Enterprise Campus.

Find us at bristol.ac.uk/bdfi
or follow us on [LinkedIn](#) or [Twitter](#).

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Acknowledgements

This report could not have been written without the prior research done by Mike Richardson, Michael Painting and Harold Nabb on the Bristol Gasworks and their writings, cited in the report, are invaluable further reading.

We also thank Professor Tim Cole and Professor Richard Owen for their support in conceptualising this project, and the members of the BDFI Academic Advisory Group (Awais Rashid, Richard Owen, Esther Dermott, Dave Bull, Ian Craddock) for their support and enthusiasm for this project.

Foreword

Why we commissioned this report

In early 2022, BDFI, together with the MyWorld media programme, will establish a unique global research hub for digital innovation at the heart of the Temple Quarter Enterprise Campus in Bristol.



The development will see two former industrial buildings on Avon Street, Bristol, transform into a new bespoke hub driving upwards of £146m research and innovation. When fully complete in 2023, the space will be occupied by up to 250 people, and will include globally unique research facilities plus workspaces, collaboration areas, training and meeting rooms.

As we began to design the hub, we became fascinated by the insights we were able to gain into the history of the site and began to consider its connections to BDFI's mission.

Through new historical work, we learned that the buildings were the former headquarters of the Bristol Gas Company, who brought a wave of technical innovation to Bristol in the form of gas lighting. This innovation benefitted the local economy and delivered social and cultural change, reforming the ways in which urban inhabitants experienced the night. The improved lighting developed a new nighttime economy where factory work could be undertaken more efficiently at all hours of the day. But for all the innovation and cultural or economic benefits, there were challenges. Gas works were difficult places to work: employees were faced with the potential for injury and the long-term health issues. Later, the site was an automotive garage – part of another wave of technological innovation – that opened-up new kinds

of mobility in everyday life but has had serious negative consequences for population health and the environment. Throughout the history of the site, technical change and social change have been bound together in ways that have shaped the lives of local people as well as the economy and environment of Bristol.

As a new wave of 'sociodigital' change takes shape through digital and social innovation, we prepare to site the BDFI in these historic buildings and want to consider our role as stewards of their histories. We want to critically reflect on the histories of innovation on this site – who they have served, what futures they have opened up, and which they may have closed down. As an institute firmly committed to charting a path through sociotechnical digital innovation towards more inclusive, sustainable, and prosperous futures for all, we would like to explore if and how the social, economic and environmental concerns of the past still play out today.

We have been privileged to work with Dr James Watts and Lena Ferriday (Research Associates), with support from Professor Richard Owen, Professor Tim Cole and our Academic Advisory Group to explore these questions and themes further.

We hope you enjoy this short insight into the fascinating history of the site, and that you will join us in crafting a legacy of transformative and responsible digital innovation.

The BDFI Team

Bristol Digital Futures Institute



Figure 1 The weathervane from Samuel Loxton's 1919 drawing of the old front of Avon Street, Bristol Library, J785. By permission of ©Bristol Libraries.

Introduction

Bristol Gas Company was founded in 1815 at a meeting in the Commercial Rooms on Corn Street on 15 December 1815 which formed a gaslight company for Bristol.¹ An Act of Parliament incorporated the Bristol Gas Light Company in 1818, after two years of business as an unincorporated body run by a committee of twelve. The gasworks at Avon Street opened four years later, in 1821.² The move to larger dedicated premises allowed the company to expand and improve its operations until 1970, when it was decommissioned as part of the move to North Sea gas. In the intervening 150 years the buildings were frequently renovated, altered, and expanded.

This report will consider the social, economic, environmental and technological histories of the Avon Street site, and its place in the Bristol gas industry. These themes encapsulate the industrial history on which the Bristol Digital Futures Institute will be built and speaks directly to the mission to 'drive digital innovation for more sustainable, inclusive, and prosperous societies'. There are also of course differences across the span of two

centuries and the value of this history, and the lives of the people it represents in and of themselves. It is these lived experiences, of both the production and use of gas, that we attest to in this report, alongside the wider networks in which gas was embroiled and contributed to.

The method for identifying these themes comes from research into these histories. It was important for BDFI to understand the history of the building they were moving into and to consider this sympathetically. James Watts therefore spent some time doing research with the institute on the Avon St site and the history of the gasworks in Bristol examining the history and how this will resonate for the University of Bristol and BDFI.

In sum, the intention of this research is to understand the history of the former Gasworks and its place within Bristol. It is part of an effort to understand where BDFI is due to create its home, and to develop a legacy from the histories of innovation and learning on this site.



Figure 2 Foundation stone commemorating the incorporation of Bristol Gaslight company

¹ The Commercial Rooms is now the Wetherspoons on Corn Street

² The foundation stone commemorating this was discovered on the site in 2016

Experiencing Gas

Gas was experienced in a number of ways by Bristol's inhabitants in the nineteenth century. The first and most direct point of contact between residents and the substance was in the industrial setting, at the site of the gasworks itself. Gas is created by heating coal in retorts, enclosed furnaces without oxygen, and these large furnaces were tended by stokers in hot and back-breaking work. The challenging work undertaken at the gas works site also had important implications for how residents experienced urban space across the wider city. As the economic historian Joel Mokyr has argued:

Although this invention [gaslighting] was probably modest in its contribution to national income, it was important in its effects on the quality of life: gaslit streets were safer, gaslit homes promoted literacy, gaslit theatres made entertainment more sophisticated, and gaslit factories made night work cheaper and more efficient.³

Working Conditions

Working conditions in gasworks were physically demanding, hot, smoky, and long. Accidents, injuries, and even deaths, were not uncommon for workers at these plants. Nevertheless, the gasworks, both in Bristol and elsewhere, did represent a steady, relatively secure, job for many workers.

Resistance at work, up to and including strikes were a feature of nineteenth century industry. Workplaces tried to closely regulate the behaviour of workers. In the gasworks there were a series of regulations, with breaches incurring a fine. These included, 'For wasting time in the water closet... 6d', 'For riotous or disorderly conduct, or using any profane, abusive or obscene language within the Gates... 2s. 6d', or the most expensive and possibly an indication of the resentment felt about these regulations, 'for tearing or defacing any copy of these regulations... 5s.0d.' The money from these fines was given to Bristol infirmary or the workmen's sick club.⁴

Strikes were a feature of industrial working life and the gasworks was not immune to this. Working conditions were tough and wages were not high. The first recorded strike was at the Canon's Marsh site in 1866 over the dismissal of 16 men for not obeying the engineer. In 1889 there were widespread strikes across Bristol and

these involved the gas workers. This was part of a long running wage dispute with workers were petitioning for 8-hour shifts (rather than 12). Under the leadership of the Trade Union leader Ben Tillett this dispute continued for some months and was ultimately successful.⁵ The company tried to bring in blackleg labour to cover for striking workers, these workers failed to get to the site due to organized opposition. The gasworkers besieged the trains bringing in strikebreaking workers, and the Bristol Gas Company received a large bill from GWR for their return journeys. The Chief Constable of Bristol stated that the areas surrounding Canon's Marsh and Avon Street were in the hands of the strikers and, although his whole force was on duty, he was unable to break up the demonstrations.⁶ However, in the following year there was backlash from the employers which led to the laying off of union employees across the gas company.⁷ New working regulations were introduced in 1892, and with 'Black Friday', the defeat of the workers at Sanders Chocolate factory (when the military was sent in against a peaceful demonstration), a period where management across factories in Bristol further extended their control ensued.

Thirty years later, 1920 saw another year of significant strikes in Bristol and was the first time the supply of gas was interrupted due to industrial action. By this date negotiations over wages were conducted through a national board and workers in Bristol were unwilling to accept the settlement and so began an unauthorized strike. Despite this history of unionism and strikes, Bristol gasworkers did not participate in the General Strike of 1926, although it did affect the coal supply and the company sourced coal from the US in order to maintain operations.

There is evidence of a strong collegial atmosphere at the works with a brass band as well as a football team (See Figs 4 & 5). Nevertheless, this collegiality did at times come under pressure. The nationalist tensions provoked by the First World War led to the dismissal of a German born weigh clerk at Avon Street with a month's wages after protests by other workers. Further tension arose on the return of men from the First World War given the employment of women during the war. These women were employed as the number of men who volunteered created labour shortages and allowed men to be shifted to more physically intensive work. The reabsorption of ex-servicemen was largely accomplished in 1919 and

³ Joel Mokyr, *The Lever of Riches: Technological Creativity and Economic Progress* (Oxford: Oxford University Press, 1990), p. 109.

⁴ Bristol Archives, 28777/U/E/6/1

⁵ Mike Richardson, *Men of Fire: Work, Resistance and Organisation of Bristol Gasworkers in the Nineteenth Century* (Bristol Radical Pamphleteer Pamphlet #44, 2018), pp. 43-66.

⁶ 'Gas stokers' strike at Bristol a disturbance: several arrests' *The Manchester Guardian*, Oct 10, 1889

⁷ Richardson, *Men of Fire*, pp. 66-75

1920 for the gasworks which employed 77 disabled ex-servicemen, although this was a contributing factor to strikes in 1920. These years saw tension around unemployed ex-servicemen across Bristol particularly

in relation to the trams whose employment of numerous women as conductors during the First World War led to riots in 1920 and 1921.

Pensions for injured or sick workers were established



Figure 3 Avon St Employees 1910, Bristol Archives, 28777/U/Ph/1/11



Figure 5 Bristol Gas Company Brass Band on steps of Victoria Rooms (late 1800s), Bristol Archives, 28777/U/Ph/1/1



Figure 4 Bristol Gas Company Reserves Football Club, 5th Division champions, Bristol and District League 1931 28777/U/Ph/1/6

from 1823 by the Bristol Gaslight Company, although this was on a discretionary basis. From 1859 a workmen's sick club was established at Avon Street followed by one at Canon's Marsh.⁸ These were organized by the men and supported by the company for workers unable to continue work in different circumstances and were a recognition of the hazardous work they engaged in. These were discontinued in 1889 a few months before the strikes as a cost-cutting exercise.

As this project continues, we intend to supplement these archival histories of labour at the Gasworks with oral memories regarding the lived experiences of the site.

The Lengthened Day

Gas was the first form of publicly funded and widely used public lighting. As a result, experiences of the city in the nineteenth century were fundamentally shaped by the introduction of gaslighting, which 'blurred the age-old sensory divide between the visibility of daytime and the tactility of night-time'.⁹ Central streets were lit in Bristol from 1820 onwards and this contributed to the development of a night-time economy with shops staying open later and theatres being lit by gaslight. The Bristol Old Vic was an early customer of the company and remained one of their largest customers. In 1869 the Old Vic was one of 12 customers eligible for a special discount due to using more than 1 million cubic feet of gas a year.¹⁰

The impact of gas-light on industrial work was mixed. Factories like Arkwright's mill at Cromford was already lit with argand oil lamps throughout the night. Although many factories enthusiastically utilised gas lighting as more efficient, brighter, and less dangerous, this did not necessarily lengthen the working day which was often already running through the night.¹¹ What gas did do in these cases was make lighting more reliable, less dangerous, and brighter within the confines of the factory as well as the roads in the city surrounding it, making work at night easier.

Nevertheless, some wholeheartedly praised the benefits of gas.¹² The headmaster of Sidcot school wrote "Some Lines Written on the Occasion of Lighting Sidcot School with Gas" in which he exclaimed 'Hail to the gasworks! Hail the pleasing day... The brilliant gas light occupies your stead.' The ease and cleanliness of gas is praised as rooms are lit with 'the effulgence of dazzling light' especially as the 'evening's occupation' can 'rejoice in good illumination.'

Local Industry

Gas was used as either a source of light or in industrial processes which links Bristol Gas Company with almost every large industry in Bristol over the past two centuries. From Filton Aeroplane company to Wills Tobacco, to Fry and Sons chocolate, power often came from gas. This was used for a variety of processes beyond lighting. As Michael Painting notes, by the early twentieth century, "The tobacco industry used gas for drying tobacco leaves, the chocolate industry for processing cocoa, while the emergent aircraft industry used it in the heat treatment of metals."¹³

Two innovations in particular allowed for the expansion of gas in the wake of increasing competition with electricity: the pre-payment meter, and the incandescent mantle. The first allowed for working class customers to only pay for gas that they could afford and therefore avoid the often-unpredictable Quarterly bills. These were introduced widely in Bristol, and by 1902 7000 of these meters were in use. The incandescent mantle or Welsbach mantle, gives off a more brilliant light, allowing more light to be produced from less gas. This was also introduced into public lighting in Bristol in the 1890s.

Wider social and economic developments also broadened the reach of gaslighting and heating. In 1886 Bristol Gas Company began hiring out gas cookers and 10,000 were in use by 1900. In 1902, nearly 7000 (nearly 30,000 by 1914) slot prepayment meters were in use. The gas was 1d more expensive, but uptake was good as customers could avoid the unpredictability of bills by only paying for gas as they wanted it. By the interwar period through slum clearance and building improved housing with better kitchen facilities on the outskirts of the city, a new 'peak period' appeared due to these cookers – Sunday morning as people prepared for the Sunday Roast rather than six o'clock in the evening.

Environmental Impacts

Creating gas relies on the burning of coal in large quantities in retorts to capture the gas this emits, which is then transported and burnt to create light or heat. For many this could have been considered a 'clean' or 'smokeless' fuel as it produces far fewer by-products on burning than coal fires in the home. But this pollution is shifted from the site of consumption (the house, street, or factory) to that of production in the form of smoke, escaping gasses, and effluents which were often dumped into rivers.¹⁴ Some of this by-product was sold on. Bristol

⁸ See Richardson, *Men of Fire*, Appendix 1, p. 80 for the rules and regulations of this sick club.

⁹ Constance Classen, 'Introduction: The Transformation of Perception' in Constance Classen (ed.), *A Cultural History of the Senses in the Age of Empire* (London: Bloomsbury, 2014) 8,10

¹⁰ Others included Bristol Infirmary, Bristol Corporation, the Clifton Royal and Down Hotels, and Fry and Sons Chocolate Manufactory. Michael Painting *The Development of the Gas Industry in the Bristol Region, 1810-1950*, unpublished dissertation, University of Bath, 1979, p. 88.

¹¹ Ian West, 'Industrialising Light: The Development and Deployment of Artificial Lighting in Early Factories', *The Oxford Handbook of Light in Archaeology*, ed by Costas Papadopoulos and Holley Moyes (Oxford: Oxford University press, 2017)

¹² Evelyn Roberts, *A Sidcot Pageant of School Life*, quoted in Harold Nabb, *A History of the Gas Industry in South West England Before 1949*, unpublished dissertation University of Bath, 1986, p. 65. See Appendix 1.

¹³ Michael Painting, *The Development of the Gas*, p. 393

¹⁴ Leslie Tomory, 'The Environmental History of the Early Gas Industry, 1812-1830', *Environmental History*, January 2012, Vol. 17, No. 1 (January 2012), p. 30; Peter Thorsheim, *Inventing Pollution: Coal, Smoke, and Culture in Britain since 1800*, Ohio University Press, 2018, p. 136.

Gas Company sold ammoniacal liquor at auction to chemical companies. In 1889 this amounted to 3 million gallons, liquor that was then used in chemical processes ranging from spraying on crops as it is high in nitrogen as

well as in the rubber industries.¹⁵ Gasworks in the nineteenth century were notorious, among many polluting heavy industries such as Ironworks, limekilns, soap factories and others, as particularly noxious.



Figure 6 Prepaid gas meter in Blaise castle Museum, courtesy of Bristol Museums - <http://museums.bristol.gov.uk/details.php?irn=130950>

¹⁵ Advert from *The Journal of Gaslighting, Water Supply & Sanitary Improvement*, v. 53, 1889, p. 56



Avon Street was situated in an industrial area. Although it bordered onto green fields when it was established in 1821, the area was already industrial and became more so as the nineteenth century progressed. Acraman and Morgan built an ironworks in 1829 and Lysaght's ironworks were built in 1860 just across Silverthorne Lane. On the other side of Avon Street were vitriol works and lead works and a cattle market operated across the canal until 2005. Temple Meads station was built in 1840 and the railway which goes above and next to the site added to this industrial feel. On the other side of the railway was an engine works, a glass works, and Broad plains soap works. All of this industry was in the area known as The Dings and St Philips and the workers at these industries lived in and around the area and the air pollution in particular would have had severe impacts on their health and lives.

There was some government regulation to combat industrial pollution in the nineteenth century. Fines could be levied for public nuisance and complaints appeared quickly in London as gasworks damaged the Thames fisheries.¹⁶ The government, largely in hock to laissez faire economic doctrines attempted some regulation, but as Peter Thorsheim notes,

The Gasworks Clauses Act of 1847 barred the

industry from discharging liquid effluents directly into watercourses, its impact was limited. Many companies dealt with such wastes by pouring them into holding ponds, from which they could seep into groundwater or "accidentally" over flow into nearby streams or rivers.¹⁷

We have not found direct evidence of pollution in this way (although searching through County Court records might lead to results) from the Avon Street site, but the retort house across the road from the Sheds, and directly next to the Avon and the Feeder canal, would have been the main source of much of these industrial by-products and effluents. What happened to these by-products so close to the water is easy to guess.

Pollution, and public opposition it led to, was a concern from the early days of the industry. John Breillat, the man who first demonstrated gas in Bristol and the engineer from the beginning of the Bristol Gas Company, worked in the 1820s to help reduce the noxious smell of gas and reduce how much it polluted the surrounding area. This smell came from the burning of coal and the capturing of the gas that this produced. Leaks of gas in pipes underground as well as within the gasworks would poison the air and ground, as well as building on this smell. The company adopted a technique by Phillips and Holdsworth of Dartmouth which helped to purify the gas to a degree. However, they did so without permission and had to pay compensation, in conjunction with other gas companies from Birmingham, Bath, Cheltenham, and Stafford, of £1500.¹⁸ Criticism of the noxious smells from gas led to calls for the gas company to use oil gas, made from whale or seal oil, but these foundered when the gas company decided this did not produce a good enough flame or light. Belief in the uses of animal oil did lead to the formation of the Bristol and Clifton Oil Gas Company in 1823 which used oil gas until the price rose in the 1830s and they switched to coal gas. The companies amalgamated in 1853.

¹⁶ Tomory, "Environmental History", p. 30.

¹⁷ Thorsheim, *Inventing Pollution*, p. 141.

¹⁸ Michael Painting, *The development of the gas industry*, p. 235.

Nevertheless, gasworks remained a stark source of pollution, even in areas familiar with pollution from other heavy industries. Despite this gas companies often presented themselves as environmentally friendly and worked to promote this image. In 1934 the Bristol Gas Company won a smoke abatement award medal from the Royal Sanitary Institution, the same year as a Health Congress at Bristol (see Fig 7.).¹⁹



Figure 8 Bristol Archives 28777/U/Ph/3/2

Pollution in the Home

Although gasworks shifted most of the pollution from the home elsewhere there was still concern about the pollution and danger of gas in the home. In domestic settings the effects of gas on plants was well noted in the nineteenth century.²⁰ Gas would often blacken the ceiling in rooms where it was used giving an obvious mark of its pollution and use. There were also fears about the health dangers of gas in terms of poisonous air as well as well publicised explosions which became one of the distinctive features of gas in the minds of most members of the public.

It was recommended by some horticultural experts to give plants the protection of a Wardian case (used for transporting plants from across the globe) if there was a gaslight in the room. Gas was associated with air pollution which posed a constant threat to horticultural activities. “The fumes, or products of combustion, of coal-gas have a more injurious effect upon plant-life than anything else,” wrote B. C. Ravenscroft in his handbook *Town Gardening* (1883).²¹

Concerns about the invisible dangers of gas in the home, poisoning the inhabitants, whether animal or plant, highlighted the anxieties around domestic gas lighting and heating.

¹⁹ *The Journal of the Royal Sanitary Institute*, Volume LV. – No. 2. <https://journals.sagepub.com/toc/rsi/55/2> & Bristol archives, 28777/U/Ph/3/2

²⁰ Sarah Milan, ‘Refracting the gaselier: Understanding Victorian responses to domestic gas lighting’ in *Domestic Space: Reading the Nineteenth Century interior*, ed by Janet Floyd and Inga Bryden (Manchester, 1999), pp. 91-100.

²¹ Lindsay Wells, ‘Vegetal Bedfellows: Houseplant Superstitions and Environmental Thought in Nineteenth-Century Periodicals’, *Victorian Periodicals Review*, 54:1, 2021, p. 4.

Explosions and Danger

From its inception, gas had a dangerous reputation. In Bristol John Breillat's early demonstrations in 1812 led to accusations of devilry. Nevertheless, John Latimer records that

'it seems strange that the Bristolians who witnessed Breillat's success should have been reluctant to abandon their flickering and malodorous tallow candles; but for some time the Broadmead dyer passed among the vulgar as a man having unholy dealings with an infernal power, while the upper classes treated the innovation with contemptuous indifference.'²²

The establishment of gas companies supplying public lighting and its general use dampened these fears to a certain degree. Nevertheless, the fears of infernal dealings may have seemed less unfounded given the

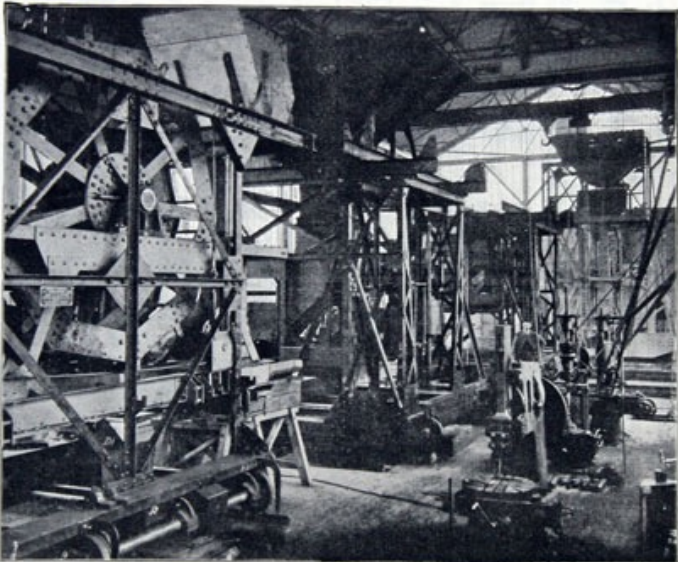
litany of injuries and deaths which gas workers, and some consumers, had to brave.²³ Gas explosions in domestic houses and more particularly in the gasworks themselves, were not uncommon.

Discharging the retorts led to large shoots of flame, especially until the Fiddes-Aldridge machine in the early 1900s. Gas escaped in the basement of Bristol College in 1909 and was lit, possibly by a lighted match dropped through a grating, leading to a large fire, although thankfully, as the building was made of stone, this was not too extensive.²⁴ On another occasion in 1901, a gas main that two workmen were working on exploded, severely burning them.²⁵ This is just a sample of the dangers and the kinds of accidents which were commonplace in nineteenth and twentieth century heavy industry and of the particular dangers from the explosive and fiery nature of gas.

**FIDDES
ALDRIDGE**

**NEW YEAR'S
ORDERS :
ROCHESTER,
PORTSMOUTH,
GRIMSBY.**

**WE DESIGN AND CARRY OUT
COAL & COKE HANDLING
PLANTS TO SUIT OUR SYSTEM
OF MACHINE STOKING.**



MACHINES IN COURSE OF CONSTRUCTION AT AVONBANK.

Telegrams: "MOTORPATHY, LONDON." Telegrams: "SIMULTANE, BATH."
AVONBANK WORKS, BATH.
Telephone: 5118 WESTMINSTER. Telephone: 536 BATH.

SIMULTANEOUS

**STOKING
MACHINE.**

These Machines are
Built with

**AUTOMATIC
MEASURING
CHAMBER**

To take Coal supply from
Continuous Hoppers

**SELF-
CONTAINED
HOPPERS**

To take Coal supply from
one or more Central
Hoppers.

**ALDRIDGE & RANKEN,
39, VICTORIA STREET,
LONDON, S.W.**

Figure 9 Advert for Fiddes Aldridge stoking machine, 1911

²² John Latimer, *The Annals of Bristol in the Nineteenth Century*, p. 43.

²³ "GAS WORKS AT STAPLETON," *Bristol Mercury*, 25 Apr. 1896; "EXPLOSION AT EASTVILLE GAS WORKS," *Bristol Mercury*, 17 Feb. 1900; "GAS EXPLOSION IN BRISTOL," *Bristol Mercury*, 16 Feb. 1895; "GAS EXPLOSION IN BRISTOL," *Bristol Mercury*, 28 Nov. 1898; "Alarming Gas Explosion - Bristol, Dec. 17," *Times*, 18 Dec. 1851, p. 8.

²⁴ "Gas explosion at Bristol college", *The Manchester Guardian*, Aug 25, 1909;

²⁵ "A gas explosion in a main at Bristol yesterday severely burnt two workmen, who were taken to hospital," *Daily Mail*, 9 Aug. 1901, p. 3.

Exhibiting Gas

Innovation and work of any kind relies on the interconnections between people, networks of expertise which interweave and support the work. The gas industry in Bristol was part of the wider gas industry in Britain and across the world. From its inception it relied on innovations at Redruth in Cornwall, at Boulton and Watt's works in Birmingham, and the London Gas Company. For instance, Samuel Clegg came to Bristol in the early days of the Bristol Gaslight company from the London Gas Company bringing his expertise in building and establishing gasworks with him.

Networks of Expertise

The technical and business connections of the Bristol gas companies tied them into an important network of experts who were crucial in establishing the company. The expertise of engineers John Breillat and Samuel Clegg in particular were important in this. Later in the century the Fiddes family of father and son were important presences in Bristol gas and oversaw the engineering departments. This engineering expertise, through a collaboration between Walter William Fiddes (the son) and Southampton gas engineer James Aldridge led in the 1900s to the development of a new machine for the simultaneous charging and discharging of gas-retorts (see Fig 8).²⁶ Fiddes had tested this back in 1893 at Avon Street, but it was only in the early 1900s that this was applied. This was far more efficient and reduced the waste of heat, and danger, in manually discharging gas retorts which led to a gout of flame as the gas ignited.

Local Government

As an industry of important local concern gasworks often had strong links with local government. Bristol Gas Company, the Bristol Corporation and Bristol City Council often had close links in official terms and as a major customer of the gasworks.

Municipal control of utilities like gas became a recurring issue from the 1880s onwards as growing cities often sought to bring these under public control, often termed 'gas and water socialism' at this time. Nevertheless, Bristol did not bring the gasworks, or other utilities like water under public control. An 1891 Fabian pamphlet written by Hartman Wolfgang Just, *Facts for Bristol: An Exhaustive Collection of Statistical and Other Facts Relating to the City; with Suggestions for Reform on Socialist Principles*, argued that Bristol was 'in many respects the most backward of English municipalities'.²⁷ These remained private companies for private profit and throughout most of its history the gasworks paid the maximum allowed 10% dividend.

²⁶ <https://www.gasguides.co.uk/Fiddes-Aldridge>.

²⁷ Hartman Wolfgang Just, *Facts for Bristol: An Exhaustive Collection of Statistical and Other Facts Relating to the City; with Suggestions for Reform on Socialist Principles*, Fabian Tracts, no. 18 (Fabian Society, May 1891), p. 2. Cited in George Campbell Gosling, *Payment and Philanthropy in British Healthcare, 1918–48* (Manchester: Manchester University Press, 2017).

²⁸ Jean-Baptiste Fressoz, 'The gas lighting controversy: Technological Risk, Expertise, and Regulation in Nineteenth-Century Paris and London', *Journal of urban history*, Vol. 33 No. 5, July 2007, p. 729.

²⁹ Sarah Milner, 'Refracting the gaseous: Understanding Victorian responses to domestic gas lighting' in *Domestic Space: Reading the Nineteenth Century interior*, ed by Janet Floyd and Inga Bryden (Manchester, 1999), pp. 91–100.

Selling an Ideal Future

Gaslighting and heating was advertised as a technology of the future, for some though, it was coarse and vulgar, representing the worst aspects of 'progress.' As Jean-Baptiste Fressoz puts it, "In the nineteenth century, gas lighting was a potent but ambivalent symbol. Although it certainly represented progress and comfort, many condemned it as coarse materialism and as a dangerous technological innovation."²⁸ Charles Dickens' novels have numerous characters who use gas lighting, and it usually denotes vulgarity or deception. For instance, the Veneerings' family in *Our Mutual Friend* (1865) have a strongly gaslit dining room which went along with their ostentatious veneered (and therefore false) furniture. Dombey, in *Dombey and Son* (1848) similarly uses gaslighting, a 'garish light' to illuminate his dark drawing rooms. Therefore, alongside the positive aspects of gas light being reliable for reading in evening, which was linked to the education of the working classes, gas light could denote social class divisions and critical representations of 'social climbing'.²⁹

Gas companies worked hard on advertising throughout this period. They were attempting to sell gas as a technology of the future where gas lighting, and later heating, entered every home. This meant they had to work on a number of fronts. Gas had to appear convenient, useful, and crucially, safe.

Advertising

The advertising for gas shifted greatly over the lifetime of the Bristol Gas Company. Initially gas was a source of light. From the 1880s onwards this slowly shifted towards gas being considered and marketed as a fuel for cooking. In the period before 1900 much of the advertisement for this was pursued through exhibitions in the city.³⁰ These were intended to demonstrate the benefits of gas to customers ranging from individuals to homebuilding associations.



Figure 13 Bristol Mirror, 1935

³⁰ The Bristol Mercury, Wednesday May 16, 1888

BRISTOL'S ANNUAL EXHIBITION
Colston Hall.
 September 11th to September 24th 1930

**VISIT THE
 BRISTOL GAS COMPANY'S
 STAND**

and inspect the latest type of
 Gas Cookers and Gas Fires.

What GAS Means to You!

HEAT when you want it — for as long as you want it.

BETTER COOKING — just the right heat for whatever you wish to cook.

NO DUST. NO DIRT. No grates to clean and no smoking chimneys.

A WARM HOUSE, a clean house, and better food.

We shall be pleased to give you Expert Advice Free either at the Exhibition or at our Showrooms in Colston Street.


THE BRISTOL GAS CO.

Figure 12 Bristol Mirror, 1930

DO YOU DREAD WASH-DAY?
 IF SO AN

ECONOMIC

GAS WASHING MACHINE WILL SOLVE YOUR PROBLEMS



CASH PRICE:
£6/18/9

FITTED FREE

HIRE PURCHASE TERMS:
 12
 QUARTERLY
 PAYMENTS
 OF **13/-**
FITTED FREE.

SENIOR WASHER WITH DUAL PAN
 DEMONSTRATIONS WILL BE GIVEN DAILY AT THE
VICTORIA ROOMS, BRISTOL
 MARCH 13, 14, 15, and 16.

Supplied by:— Bristol Gas Company, Radiant House, BRISTOL 1

Figure 11 Bristol Mirror, 1939

After the First World War advertising in newspapers was a far greater part of the strategy of the nationwide co-ordinated campaigns of the British Commercial Gas Association. These advertisements extolled the benefits of gas, mainly in terms of cooking, as a great benefit to the household in strongly gendered terms. Gas cookers were 'helping women to leisure' and were 'always in fashion' as they made housework easier using 'the fuel of the future.'³¹ Adverts usually featured women using cookers with questions like 'Christmas is coming... Are you ready?'³² The gas company also marketed gas powered washing machines, asking 'Do you dread washday?'³³

THE BRISTOL GAS COMPANY

In view of the growing demand for GAS COOKING and to meet the wishes of our consumers for advice on the efficient use of Cookers,

MISS G. E. RICHARDSON

(the well-known Cookery Expert),
 has been appointed as "Lady Demonstrator" on our permanent staff, and is now available for advice and information on all matters connected with

GAS COOKING

We feel sure that our 100,000 Consumers will appreciate the opportunity of securing the personal services of MISS RICHARDSON, and she will be pleased to make appointments at the Offices or Showrooms of the Company, or will visit consumers at their homes.

Apply for this extended service to the Sales Manager, Gas Company, Colston Street, Bristol.

S. E. Halliwell,
 Secretary and Commercial Manager.

CHIEF OFFICES,
 COLSTON STREET, BRISTOL.

April, 1933

Figure 15 Western Daily Press and Bristol Mirror, Monday April 24, 1933.

³¹ Western Daily Press, Monday August 25, 1930.

³² Bristol Gas 1935 – see fig.

³³ Bristol Gas, 1939 – see fig.

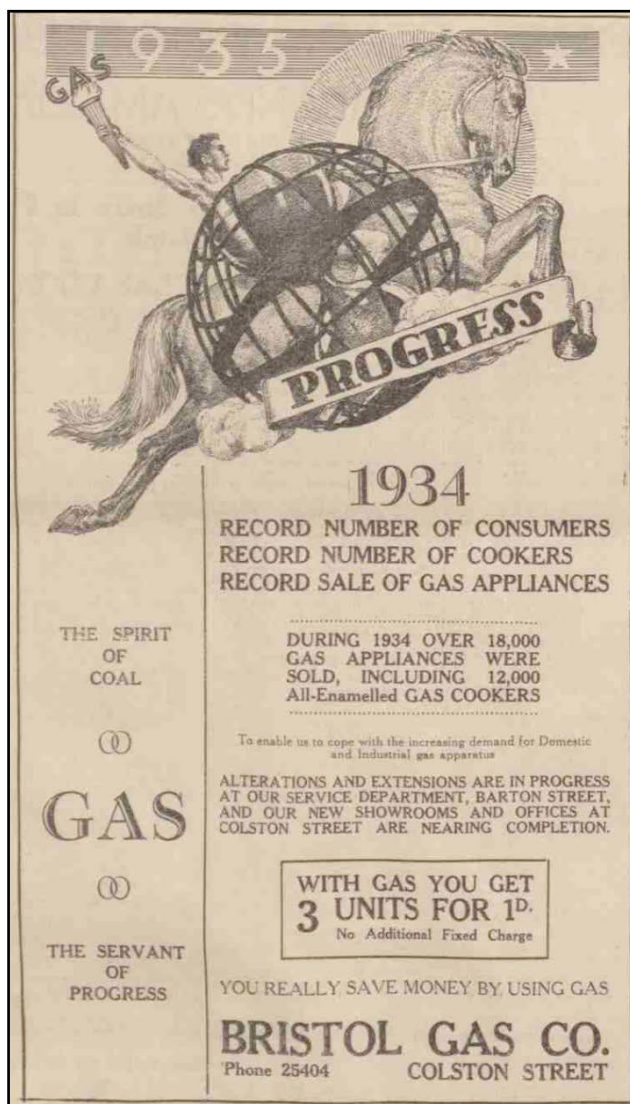


Figure 10 Western Daily Press and Bristol Mirror, Friday January 11, 1935

Gas was associated with progress as this advert from 1935 which termed gas the 'servant of progress' alongside a man on a horse leaping into the future with a torch of gas (See Fig.10).³⁴

During the Second World War, buying gas was also advertised as a patriotic duty with adverts proclaiming 'praise the gas industry' because the 'modern wizardry' of the industry meant that not only gas but numerous by products were useful in the war effort, contributing to the making of shells, bombs, and torpedoes.³⁵ (See Fig.16)

Exhibitions still featured heavily, and the showrooms of the Bristol Gas Company on Colston Street (See Fig.15) had showrooms for cookers as well as cookery lessons by Miss G. E. Richardson.³⁶ Demonstrations in showrooms were there to reassure customers about the safety and user-friendly nature of cookers or washing machines.

³⁴ Western Daily Press and Bristol Mirror, Friday January 11, 1935.

³⁵ Western Daily Press and Bristol Mirror, Monday April 24, 1933.

³⁶ Western Daily Press, Bristol, Tuesday, January 19, 1926.

³⁷ Western Daily Press and Bristol Mirror, Friday June 25, 1943.

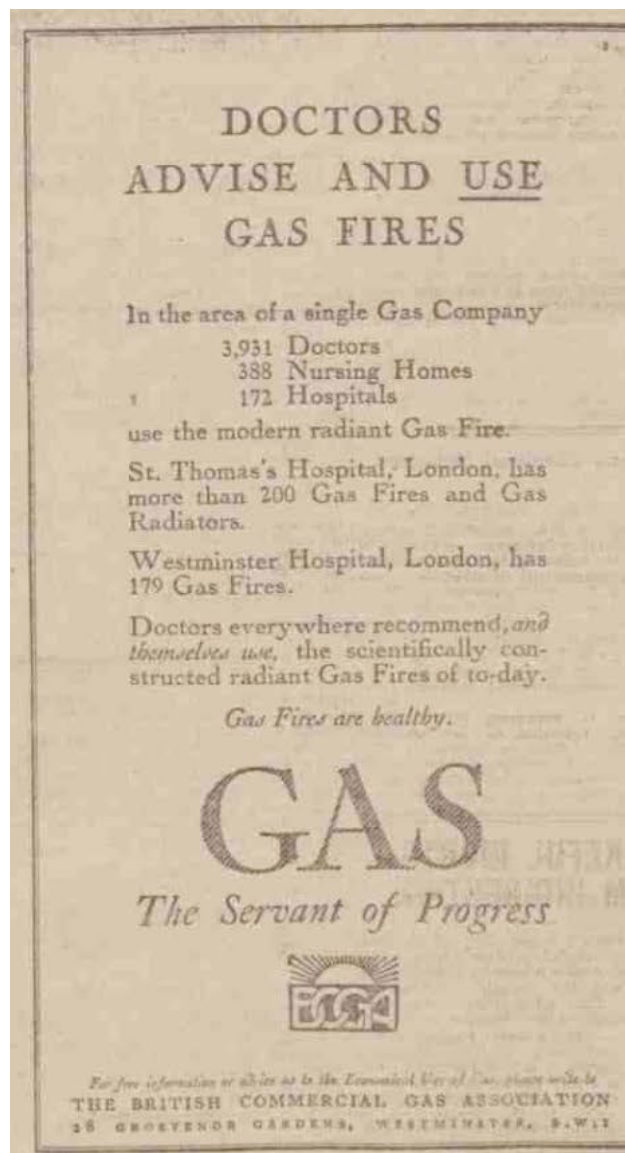


Figure 14 Western Daily Press, Bristol, Tuesday January 19, 1926.

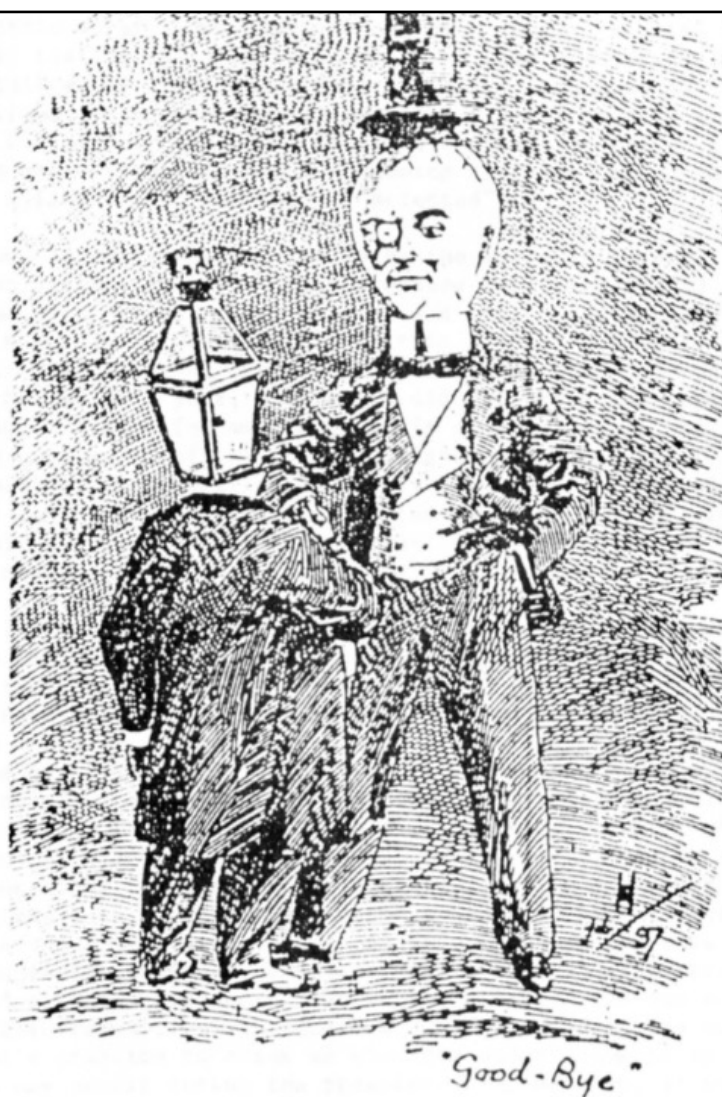
This advertising also emphasized the cleanliness and healthiness of gas. One advert, (See Fig.14) encouraged gas use by arguing that 'Doctors advise and use gas fires.'³⁷

There were of course those who did not buy the promise of gas. Gas lamps, particularly in the 1820s and 30s were seen as symbols of affluence and authority made by the dangerous work of the working classes for the rich. This meant that they were damaged widely during the Reform Riots in Bristol in 1831 when soldiers were also posted to guard the works and many workers had to live onsite for the duration to ensure the gas supply.

Competition with Electricity

Wills tobacco was one of the first to install an electric generator in the factory at Redcliffe street because gas lighting distorted the light needed to sort the tobacco leaves and therefore work had previously had to halt, especially in winter, around 4pm. These were installed by Dr Thompson of Bristol University College. Nevertheless, wider competition with electricity began in Bristol from the 1890s. This was a little later than in other centres like London and the technology behind efficient electric lighting developed into something suitable for households.

This competition seems to have spurred the Bristol Gas Company (as they were rechristened, dropping the 'United' in 1891), into a more proactive approach to selling gas as a source of light as well as increasingly developing methods to sell gas as a fuel for heating more easily. The hopes for electricity are encapsulated in this cartoon from the Cheltenham Free Press and Cotswold News in 1897 (See Fig.17), but gaslighting remained popular far longer than many anticipated, and shifted to a source of heat once the competition from electricity increased.³⁸



1818.

1897.

Gloucestershire Chronicle 16 June 1984

(Copy of original published in the Cheltenham Free Press and Cotswold News in 1897)

Figure 17 Cartoon from Cheltenham Free Press, 1897

³⁸ Harold Nabbs, *A History of the Gas Industry in South West England Before 1949*, unpublished dissertation University of Bath, 1986, p. 136.

Conclusion

The Avon Street gasworks is intimately tied into the history of Bristol. It has a rich history of innovation, and one that can continue to be honored through the activities and research of the BDFI. It can be linked to local industry throughout the eighteenth and nineteenth centuries, altered the social and economic lives of Bristolians, and transformed the feeling of a city brightly lit at night. In its public positioning, gas provided public benefit for all, lighting the street and thereby reducing crime and lengthening the working day. Indeed, the company had as its motto ‘service to the community’.³⁹ This ‘exhibition’ of gas extended beyond Bristol, reliant on advertising that promoted the substance and diffused expert knowledge across wide networks. But in the home, gaslighting and heating was, until around 1900, largely the preserve of the middle classes, and also posed great danger in pollution to both those working and residing close to it. Gas pollution did not, however, just impact the various experiences of urban space, but also had profound, long-lasting, destructive effects on the environment as well as its communities.

The tension between the benefit and harm brought by the introduction of gas to the city, upheld in Bristol by the Avon Steet Gasworks, is what characterises the history of this site. These insights provide a rich opportunity for BDFI to create a ‘learned legacy’ from these histories, and indeed highlight the necessity of developing transformative sociotechnical approaches to drive new innovations that truly deliver a more inclusive, sustainable and prosperous future for all. We hope the histories of the site will inspire those who visit, work in, and collaborate with the Institute to take forward these principles – bolstered by the lessons learned from the site’s heritage.

³⁹ Chairman’s Speech, 1949.



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