

Industrial Architecture in Oxford, 1870 to 1914

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SUMMARY

In the late Victorian and Edwardian periods rapid increases in population, rises in real wages, and the advent of the mass media fuelled a growing demand for manufactured goods and for clean water and power. The industrial expansion which resulted changed the face of many of Britain's towns and cities. In Oxford, a city rarely thought of as 'industrial' in this period, there were in fact a number of interesting examples of industrial buildings. This study uses physical and archival evidence to examine architecture associated with Oxford's public utilities, breweries, Lucy's iron foundry, several factories and warehouses, and Morris's motor garage.

The British Empire achieved its greatest commercial and manufacturing might in the late Victorian period.¹ The horsepower of British industry increased from two million in 1870 to ten million in 1907, and a higher proportion of the labour force was engaged in manufacture in 1901 than at any earlier or later date.² Rapid population growth, increases in real wages, and the development of mass media stimulated demand for manufactured goods, clean water, and power: the amount of gas sold increased threefold between 1882 and 1912 and the number of gas companies almost doubled to 826.³ The generation and supply of electricity, meanwhile, grew from obscure and makeshift beginnings into a major industry and an important foundation for modern society and civilisation.⁴

Such industrial expansion not only had profound economic, political, and social effects, but also changed the appearance and physical layout of many of Britain's towns and cities. In Oxford, a city rarely thought of as 'industrial' in the late Victorian and Edwardian eras, there were a number of interesting examples of industrial buildings from this period, albeit ones which served mainly a local, rather than a national or international, market. As the city expanded rapidly in the later nineteenth century, fuelled by the growth of the university, buildings associated with public utilities and with a variety of light industries appeared and those of existing manufactories were extended and improved. The seeds of Oxford's subsequent development as a major industrial centre were sown at the end of the period with the establishment of Morris's motor garage in Longwall Street in which the first bull-nose Morris was assembled in 1912.⁵

The motor garage and the electricity station were among the new types of industrial building, driven by advances in science and technology, which emerged in Britain between 1870 and 1914.⁶ The size, layout, and architectural design of these, and of existing types of industrial buildings, were influenced by several economic, social, and technological factors: the move from workshop to factory production; increases in the scale of industry; increases in the diversity and complexity of manufacturing processes, and the growing need to arrange those processes, and the machines that powered them, in an efficient, cost-effective and safe manner; a growing concern for the conditions in which employees worked; technological advances in construction and the gradual introduction of new building materials; the rise of firms of specialist industrial architects and civil

¹ Edgar Jones, *Industrial Architecture in Britain, 1750–1939* (London, 1985), p. 122.

² Jose Harris, *Private Lives, Public Spirit. Britain 1870–1914* (Oxford, 1993), p. 126.

³ Trevor Williams, *A History of the British Gas Industry* (Oxford, 1981), p. 27.

⁴ R.A.S. Hennessey, *The Electric Revolution* (Newcastle-upon-Tyne, 1971), p. v.

⁵ *VCH Oxon.* 4, p. 217.

⁶ The first municipal electricity station was built at Bradford in 1889: David Hey (ed.), *The Oxford Companion to Local and Family History* (Oxford, 1998), p. 150.

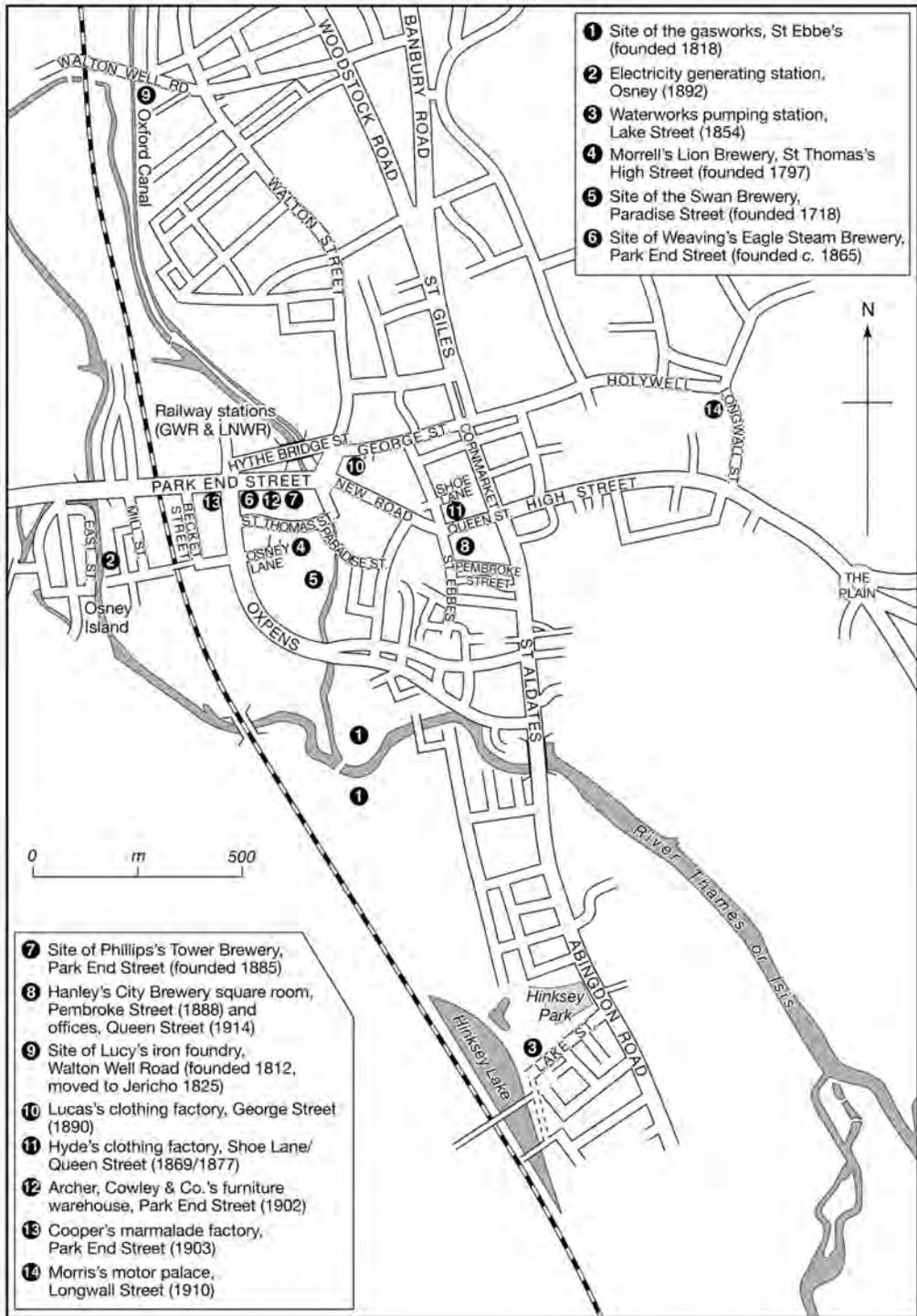


Fig. 1. Map of Oxford showing locations of late Victorian and Edwardian industrial buildings.

engineers; and a general move towards more ornate industrial buildings which acted as status symbols for their owners and which advertised the success of a business and the attractiveness of its products.

In Oxford these factors affected the development of industrial buildings no less than elsewhere. However, the industrial element in Oxford's architecture has not been well-studied, or even perhaps fully recognized. Accounts of Oxford's industries tend to concentrate on commercial and technical aspects rather than on the buildings in which they operated.⁷ This study uses physical and archival evidence to examine the development of a number of the city's later Victorian and Edwardian industrial buildings as examples of their type: firstly the public utilities, then breweries, Lucy's iron foundry, several factories and warehouses, and finally Morris's motor garage.

THE GASWORKS

Oxford's first large-scale markedly 'industrial' building complex was perhaps its gasworks, established in 1818 by the Oxford & District Gas Company on a two-acre site on the north bank of the Thames at St Ebbe's.⁸ The siting of industrial buildings was determined by a number of factors, not least the need to deliver raw materials and to despatch finished and residual products.⁹ Hence, like the gasworks, they were invariably on rivers (as was also the electric lighting station at Osney, 1892), on canals (for example Lucy's iron foundry in Jericho, 1825), or near railway stations (Cooper's marmalade factory, 1903) – see Fig. 1 above. In other ways, too, St Ebbe's was the ideal location for the gasworks: low-lying, so that the natural increase in pressure, as it rose in the mains, could be utilized,¹⁰ and far enough to the south-west of the city that the noise and fumes it produced did not affect the residents of the central parishes too greatly.¹¹

Gas was Britain's first true utility industry, with some large, vertically-integrated companies which paved the way for future public utilities.¹² By the 1830s most towns had gas lighting – it was first introduced to Oxford in 1819 –¹³ and in the later nineteenth century the scale of gas manufacture increased as it was used for cooking, heating, and for powering industrial engines. Gasworks developed and grew correspondingly. *Jackson's Oxford Journal* reported frequent improvements and extensions to the Oxford works from 1870 onwards. In 1871 a new retort house was built by the well-established Oxford architect Frederick Codd (born 1832, still active 1876), better-known for domestic architecture in the growing suburb of north Oxford.¹⁴ It was designed by the engineer F.J. Evans, the man responsible for what was to become the world's largest gas and by-products works at Beckton, Woolwich, built in 1869–70 at a cost of £600,000 (Fig. 2). *The Engineer* noted that Evans had designed the buildings at Beckton with 'regard to architectural effect',¹⁵ an indication that attention to architectural style in industrial buildings was becoming more important. His retort house at Oxford was of similar design (Plate 3). Built on a newly acquired three-quarter-acre plot east of the existing premises, it necessitated

⁷ For example, Brigid Allen, *Morrells of Oxford: the Family and their Brewery, 1743–1993* (Oxford, 1994); Tony Winckworth and Mike Hobbs, *The Lucy Story: Portrait of a Family Company* (Oxford, 2009).

⁸ Anon., *The Oxford and District Gas Company, 1818–1948* (Stroud, 1949), pp. 3–5.

⁹ See, for example, W.H. Herring, *The Construction of Gas Works Practically Described* (London, 1892), pp. 1–6.

¹⁰ Herring, *Construction of Gas Works*, p. 4.

¹¹ Prior to the opening of the gasworks, St Ebbe's was occupied mainly by market gardens; soon after, working-class housing began to develop around the gasworks and to the north: Malcolm Graham, *On Foot in Oxford, 7: St Thomas's and Osney* (Oxford, 1974), p. 2.

¹² Williams, *British Gas Industry*, pp. 26–30.

¹³ *VCH Oxon.* 4, p. 356.

¹⁴ Tanis Hinchcliffe, *North Oxford* (London, 1992), pp. 106, 216–43; *JOJ*, 28 October 1871, p. 5. The retort house made gas by heating coal in the absence of air, producing coke and other by-products including coal-tar and ammonia.

¹⁵ Jones, *Industrial Architecture*, p. 131.



Fig. 2. Retort house designed by F.J. Evans at Beckton gasworks, Woolwich (1869–70), with the railway viaduct to transport coal from the Thames: Edgar Jones, *Industrial Architecture in Britain, 1750–1939* (London, 1985), p. 133. Reproduced by permission of National Grid.

the demolition of ten houses but allowed an increase in the number of available retorts from 181 to 252, so that the works could cope with rapidly increasing demand.¹⁶

Any industrial production involves a number of inter-related processes and the accommodation and relative layout of these within the building or buildings is of vital importance. The Oxford gasworks provides a good example – Fig. 3 shows the large number of buildings required and their complex and careful arrangement to facilitate the efficient through-flow of raw materials, finished products, and wastes. As in all industrial processes, safety was an issue: it was important, for example, that purifiers were sited well away from retort and boiler-house fires in order to avoid serious accidents. Offices should be near the entrance or, as here, placed centrally in order to command a good view of the works and yard.¹⁷

In 1882 the gasworks acquired land south of the Thames and built new plant and gasholders (Fig. 3),¹⁸ though opposition from both city and university prevented the manufacture of gas

¹⁶ *JOJ*, 28 October 1871, p. 5.

¹⁷ Herring, *Construction of Gas Works*, pp. 1–6.

¹⁸ At the time the gasworks was supplying 3,690 customers: *VCH Oxon.* 4, p. 356.

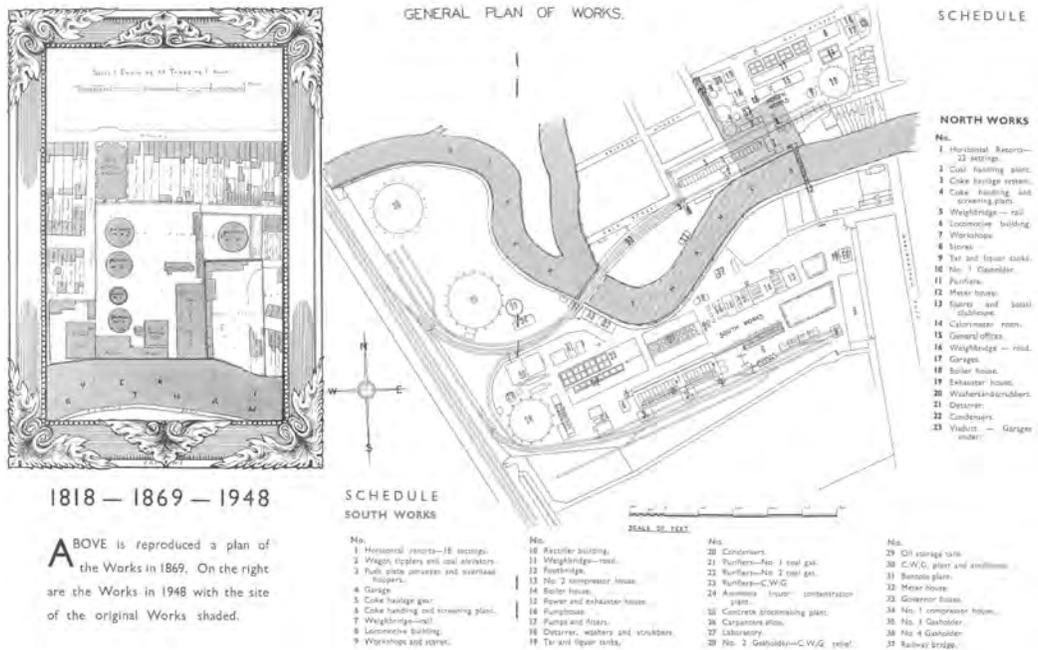


Fig. 3. Plan of the St Ebbe's gasworks, Oxford, in 1869 and 1948: Anon., *The Oxford and District Gas Company, 1818–1948* (1949). Reproduced by permission of National Grid.

there.¹⁹ In 1886 a specially-built spur of the railway was constructed to serve the works. *Jackson's Oxford Journal* noted that

The inconvenience and expense of carting coal through the streets from the Railway Station to the Gas Works has long been felt, and the present undertaking will prove a saving to the ratepayers of the City, and the roads will be relieved of their heavy traffic.²⁰

The bridge carrying the railway across the Thames (Fig. 4) was designed by the nationally eminent civil engineer Thomas Hawksley and cost almost £4,000.²¹ The central cast iron piers were sunk twenty feet into the river bed and the floor of the bridge was supported by cross girders three feet deep through which cast iron gas pipes passed (Plate 4).²² It was a multifunctional structure: one half of its platform was used as a cart road, the other supported a single track of rails. A footway with granite kerbs allowed workers to cross between the sites on the north and south banks of the river.²³ On the northern side the rails were carried on an elevated wooden gantry eleven feet above the ground as far as the retort house.²⁴

This handsome railway bridge and the nearby 1927 pipe bridge (both now foot bridges) are the last physical vestiges of the St Ebbe's gasworks,²⁵ which closed in 1960 and whose remaining

¹⁹ *Ibid.* p. 356.

²⁰ *JOJ*, 16 October 1886, p. 8.

²¹ T.H. Beare, 'Thomas Hawksley (1807–1893)', *ODNB*, online edn (accessed 9 April 2010); J. Dredge, *Thames Bridges from the Tower to the Source*, 4 (reproduced from *Engineering*, 1897), p. 70.

²² *JOJ*, 15 October 1887, p. 7.

²³ Dredge, *Thames Bridges*, p. 70.

²⁴ *JOJ*, 15 October 1887, p. 7.

²⁵ The pipe bridge was built by Head Wrighton & Co. Ltd, engineers, of Thornaby-on-Tees, Yorks. (as recorded on the bridge itself).



Fig. 4. Above: the railway bridge crossing the Thames at St Ebbe's gasworks, under construction in 1886, photographed by Henry Taunt: copyright Images and Voices, Oxfordshire County Council, HT140. Below: the completed bridge with gas holders nos. 2 and 3 behind and the governor house to the left, 1963: copyright Images and Voices, Oxfordshire County Council, D252206a.

buildings were demolished in the late 1960s and early 1970s,²⁶ as were those of many other Victorian gasworks.²⁷ The site is now a nature reserve and housing estate, and Gas Street, on which was the original entrance to the northern works, has become Preachers Lane.

THE ELECTRIC LIGHTING STATION

The 1880s saw the advent of private and local public generation of electricity using water power, reciprocating steam, or gas engines.²⁸ The earliest power houses were small because they produced low voltage direct current (DC) which necessitated building the station virtually amidst the property it was to serve, where land values tended to be high.²⁹ In the 1890s steam turbine-driven alternating current (AC) generation began, fuelled by coal or refuse, prompting the construction of larger and more complex stations serving wider areas.³⁰ The late nineteenth and early twentieth centuries saw exponential growth in the use of electricity in homes, places of entertainment, industry and transport (notably electric tramways), and many power stations were expanded or newly built.

In Oxford a few private generators were in use in the 1880s, including one at the Oxford University Union in 1883. In 1882 the Electric Lighting Act opened the way to public generation, but it was not until June 1892 that the works of the Oxford Electric Company Ltd opened, comprising a generating station at Cannon Wharf in Osney, a central switch station in Broad Street, and two small substations at King Street (now Merton Street) and Carfax.³¹ The works were designed, and their construction supervised, by Thomas Parker, the chief engineer of the Electric Construction Company Ltd of Wolverhampton,³² and the innovative system used for transporting electricity across the network became known as the 'Oxford System'.³³

The opening of the works caused much excitement: ladies at the ceremony were encouraged to declare that no house was properly furnished unless it had the electric light and,

long before dusk the streets in the centre of town were thronged with crowds of persons to witness the lighting of the arc lamps. It was, however, after ten o'clock before the current was turned on, and many persons left without seeing the light, which was brilliant and steady.³⁴

The generating station (Fig. 5), sited on the river in order to ensure a constant supply of cooling water,³⁵ was by the architect A.P. Brevitt, who had also designed the electricity station at Wolverhampton in 1884.³⁶ That building is rather plain, but at Oxford the station is in a lively eclectic style, with an attractive façade of structural polychrome brickwork, perhaps intended to act as an advertisement for the new industry.

Electricity was initially supplied to only five street lamps and eleven business premises but in its first year the company installed 7,000 35-watt lamps and by 1895 almost all the colleges and some university buildings were electrified. Over the next ten years the generating station was expanded five times and by 1914 electricity consumption in the city had increased seven-fold.³⁷

²⁶ Oxfordshire HER, PRN 6377.

²⁷ The only preserved gasworks is at Fakenham in Norfolk, now a scheduled monument and museum: <http://www.fakenhamgasmuseum.com> (accessed 8 April 2010).

²⁸ Hennessey, *Electric Revolution*, pp. 3, 19.

²⁹ *Ibid.* p. 143.

³⁰ *Ibid.* p. 75.

³¹ *VCH Oxon.* 4, pp. 356–7. Minute books of the Oxford Electric Lighting Company are held at ORO, B23/A1–2.

³² *JOJ*, 17 October 1891, p. 8.

³³ Hennessey, *Electric Revolution*, p. 75.

³⁴ *JOJ*, 25 June 1892, p. 6.

³⁵ Hennessey, *Electric Revolution*, p. 146.

³⁶ 'Wolverhampton's First Power Station', Wolverhampton History and Heritage website: <http://www.localhistory.scit.wlv.ac.uk/genealogy/Parker/PowerStation.htm> (accessed 8 April 2010).

³⁷ *VCH Oxon.* 4, pp. 356–7; OXs, *City of Oxford Report on Oxford Electricity Undertaking, March 1924*, OXFO 621.32.



Fig. 5. The Electric Lighting Station at Osney, Oxford (1892). The left-hand (northern) addition, incorporating an oriel window lighting the engineer's office, was designed in 1904–5 by Herbert Quinton, the architect responsible for Cooper's marmalade factory. Photograph by author.

The Company's consumers' books attest to the rapid growth in the number of customers,³⁸ and *Jackson's Oxford Journal* made frequent reports of the spread of electrification across the city. The station closed in 1969 and the building was later used by the university as an engineering laboratory. It is currently unoccupied.

THE WATER PUMPING STATION

In 1832 Oxford suffered the first of three devastating cholera epidemics. Henry Acland's pioneering work on the epidemiology of the outbreaks showed that the mortality rate, which was particularly high in the crowded working-class parishes of St Clement's, St Thomas's and St Ebbe's, was related to poor housing and to lack of proper drainage and sanitation.³⁹ Acland and other reformers pressed for the adoption of the 1848 Health of Towns Act, but whilst the university's commissioners were in favour, most of the city's representatives opposed it, fearing loss of local autonomy. Instead they decided to hold their own inquiry which was, ironically, delayed by another outbreak of cholera in 1849.⁴⁰

When it was eventually implemented in 1851, the inquiry recommended the construction of a covered main sewer to a new treatment works south of Oxford, the installation of mains drainage to houses, and the replacement of cesspools and privies by water closets.⁴¹ The seventeenth-century waterworks near Folly Bridge had undergone a series of improvements in recent years,⁴² but the water remained unfiltered and there were five sewage outfalls and the gasworks upstream.

³⁸ ORO, B23/A3/1 (1893–1904), B23/A3/9 (1892–1923).

³⁹ Sir Henry Wentworth Acland, *Memoir on the Cholera at Oxford in the Year 1854, with Considerations Suggested by the Epidemic* (London, 1856).

⁴⁰ *VCH Oxon.* 4, p. 237.

⁴¹ *Ibid.* p. 238.

⁴² When Folly Bridge was rebuilt in 1825 the waterworks were moved to the west end of Isis Street. The building survived until 1971, first as a flock mill and from 1892 as part of the City Engineer's depot: Malcolm Graham, *On Foot in Oxford*, 4, *Folly Bridge and South Oxford* (Oxford, 1974), p. 2.

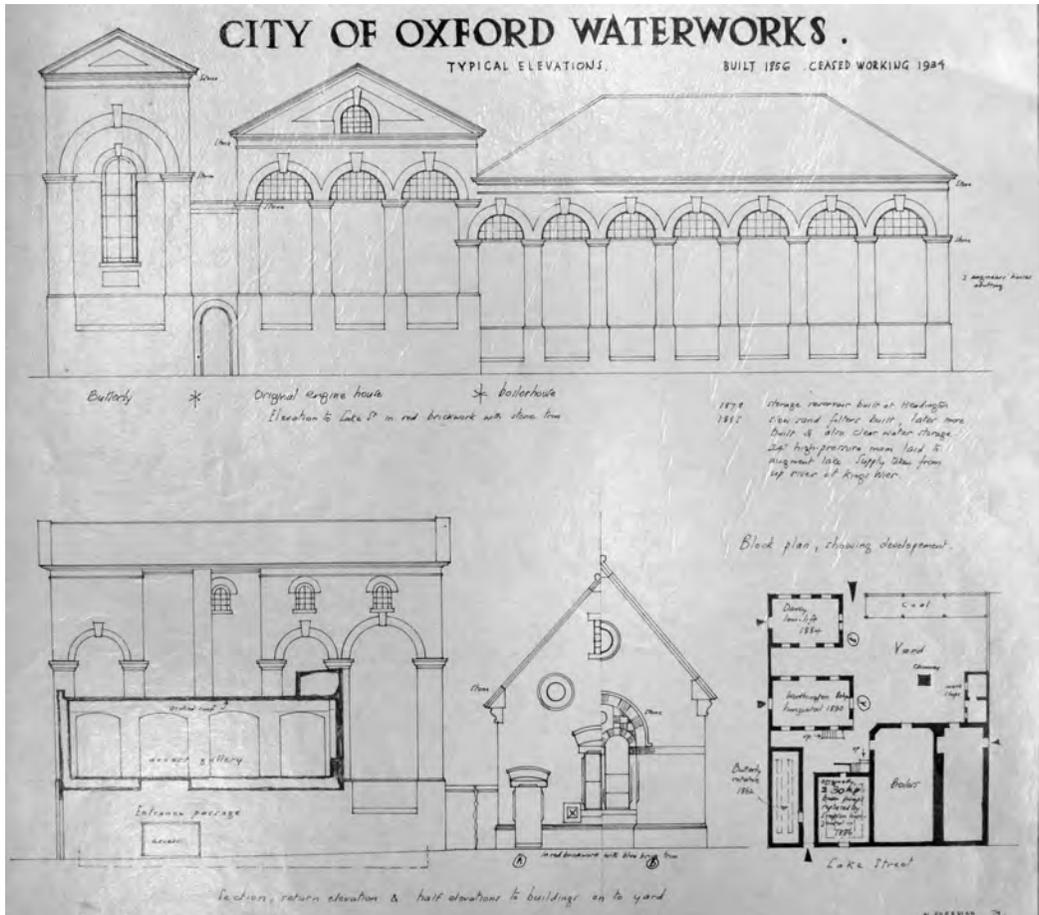


Fig. 6. Plans of the waterworks by W. Foreman, 1974: Oxs, OXFO 352.6. Reproduced by kind permission of Mrs Sylvia Foreman.

Hence most Oxford inhabitants still preferred to rely on wells and in 1851 only 340 of the 4,585 houses took the city water supply.⁴³

In 1854 the corporation bought a lake at South Hinksey formed by the extraction of gravel for the railway embankment and fed by seepage through the gravel and from Hinksey stream.⁴⁴ A new pumping station was built on Lake Street, designed by the engineer James Jones who became the works' first manager.⁴⁵ Like most waterworks, it first employed steam power, initially using beam engines and later compound vertical and horizontal engines. To house this equipment the buildings required height and, for the beam engine, a strong supporting wall. Light and ventilation were also

⁴³ *VCH Oxon.* 4, p. 355.

⁴⁴ *Ibid.* p. 355.

⁴⁵ Jones died in 1864 as the result of an industrial accident: he was visiting Evans's brewery on Cowley Road in order to arrange supply of water to the business when he fell into an uncovered vat of scalding liquid whose top was at floor height (*JOJ*, 30 April 1864, p. 5).

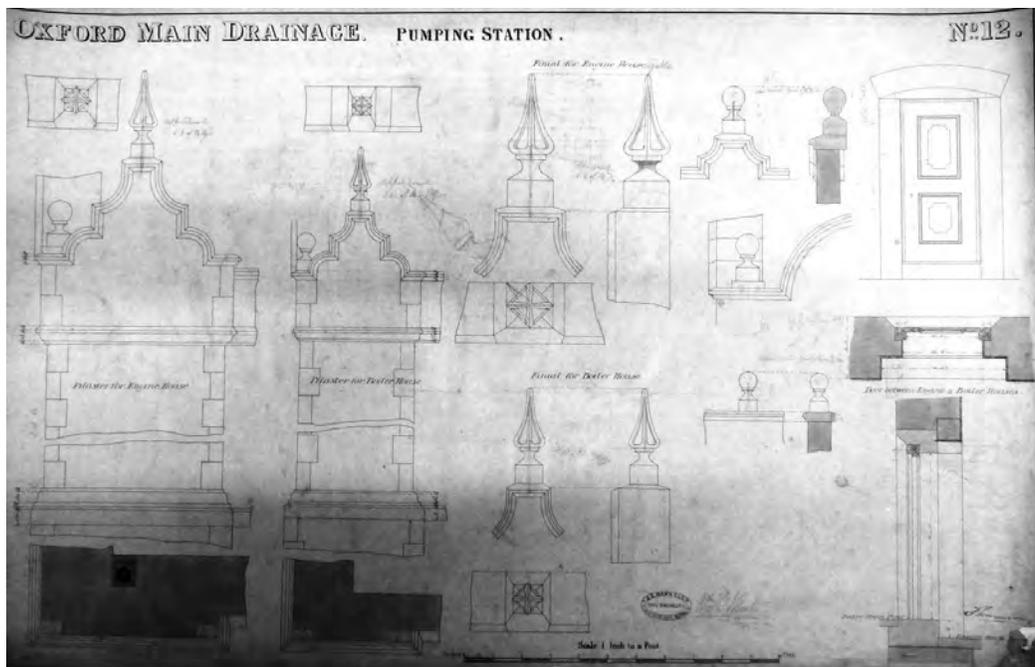
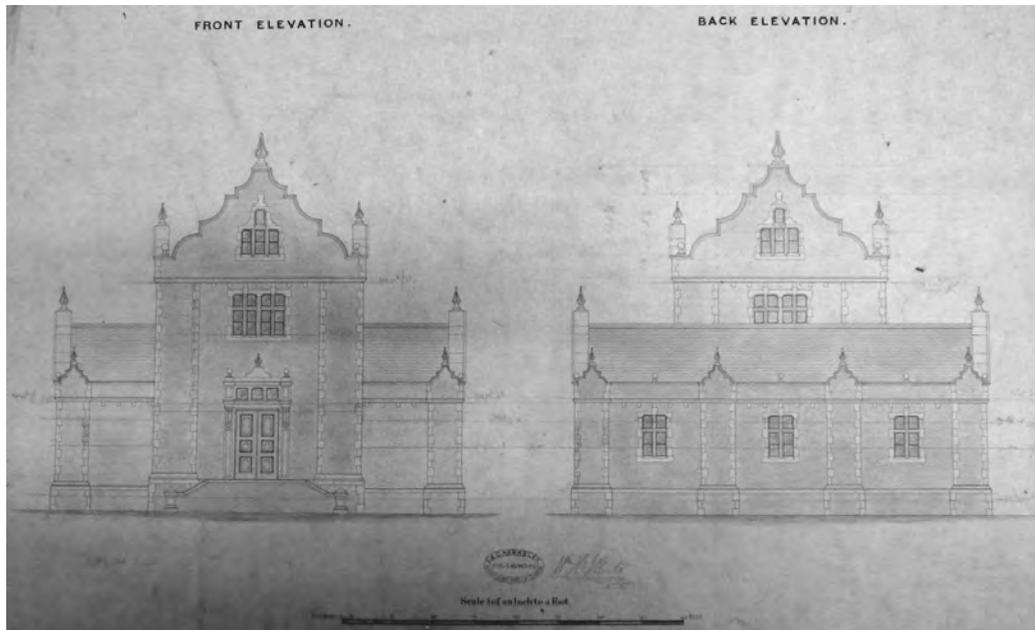


Fig. 7. Plans for the pumping station at Littlemore, designed in 1877 by Hawksley and White and built by the North Moor Foundry Co., Oldham: Oxford Town Hall underground strong room. Above: plan no. 6, front and back elevations. Below: plan no. 12, architectural details. Reproduced by permission of Oxford City Council.

needed, and the high, round-headed windows at Lake Street pumping station, some set in recessed brickwork, are typical of such buildings (Fig. 6 and Plate 5).⁴⁶

Demand for clean water was rising – by 1885 all the houses in the city were on the mains and the works were supplying two million gallons a day.⁴⁷ The subsequent development of the pumping station, using more up-to-date engines, is shown in the diagram in the bottom right-hand corner of the plans in Fig. 6. In 1884 a new engine house was built to house a Davey low-lift engine, and another in 1890 for a Worthington horizontal engine.⁴⁸ The buildings of the pumping station demonstrate changing building materials over the period: the 1856 and 1862 engine houses are made of hand-made bricks (commonly used until the end of the 1860s), whereas the bricks of the later houses are machine-made.

As in other industries of the period, architectural style was increasingly important and pumping stations and other structures such as water towers were often erected to an elaborate house design. In 1879 waterworks in highly ornamental Elizabethan style, in red brick with Taynton stone dressings and ornate internal fittings, were built at Littlemore, designed by the civil engineer Thomas Hawksley (the man responsible for the gasworks railway bridge) and his partner W.H. White (Fig. 7).⁴⁹ They are now, sadly, demolished. At Lake Street the pumping station could be considered to be classical in design, perhaps evoking Roman baths. The semi-circular arches above the windows of the older engine houses and boiler room are of rubbers with stone keystones;⁵⁰ a simple but attractive decorative scheme using dark blue engineering bricks (some stamped ‘Joseph Hamblet West Bromwich’) was used around the windows of the later Davey engine house (Plate 6).

The design of waterworks and their setting were used by water companies as a public expression of purity, improvement, confidence, and reliability.⁵¹ Sites were often landscaped to create a clean impression, and what is now Hinksey Park began life as the grounds of the Lake Street waterworks. These were made accessible to the public in the 1920s and when the works ceased operation in 1934 the landscaped grounds were given to the city as a recreational park, the filter beds were converted into swimming pools and the cooling pond into a boating lake,⁵² as they still are today. The pumping station has become the South Oxford Community Centre.

BREWERIES

A nationwide enthusiasm for beer in the 1870s led brewers to invest in increased capacity and improved efficiency through modernization of their breweries and plant.⁵³ Across the country, brewery development peaked in the 1880s with the building of thirty-four major breweries in 1885, declined in the 1890s (though this masked an overall increase in production as there was a trend towards larger enterprises in fewer hands), and experienced a further rise at the turn of the century.⁵⁴ In the late 1890s there were about 600 large breweries in Britain (each producing over 50,000 barrels per annum) and all major towns and cities, and most small towns, had at least one. The changing

⁴⁶ Tony Crosby, ‘Utilities – Public Water Supply’ (notes accompanying a talk given at the Association of Industrial Architecture/Council for British Archaeology Industrial Buildings day school, Bristol, 27 November 2008), p. 1.

⁴⁷ *VCH Oxon.* 4, p. 355; *JOJ*, 17 October 1885, p. 6. In 1912 the coal shed was extended to store more than 200 tons of coal in order to keep pace with consumption: *Oxford Chronicle*, 18 October 1912, p. 8.

⁴⁸ See also *JOJ*, 11 October 1890, p. 6.

⁴⁹ *JOJ*, 11 October 1879, p. 6.

⁵⁰ Rubbers are soft red bricks made from clean clay containing much sand, moulded then baked (not burnt). They can be cut or rubbed with ease and are often used for arches above windows and doorways, with joints of lime putty: James Stevens Curl, *Oxford Dictionary of Architecture* (Oxford, 2000), p. 94.

⁵¹ Crosby, ‘Utilities – Public Water Supply’, p. 2.

⁵² *VCH Oxon.* 4, pp. 364, 428.

⁵³ Lynn Pearson, *British Breweries: An Architectural History* (London, 1999), p. 61.

⁵⁴ James Bond and John Rhodes, *The Oxfordshire Brewer* (Woodstock, 1985), pp. 22–4; Pearson, *British Breweries*, pp. 4, 62–6.



Fig. 8. Morrell's Lion Brewery gateway and yard, St Thomas's, by Henry Taunt (date unknown): copyright Images & Voices, Oxfordshire County Council, HT181. The brewhouse (1879) is on the left of the gateway, the offices (1892) on the right.

nature of brewery architecture therefore had a tangible effect on the planning and development of most of the principal towns and cities of Britain.⁵⁵

In Oxford, the arrival of the railway encouraged the establishment of new breweries and the opening of brewers' agencies whose job was to arrange transport of beers from far-flung breweries to the city. By 1874 there were thirteen brewer's agents and nine breweries: Flowers & Co. in Cowley Road; Hall's St Giles Brewery; Hall's Swan Brewery in St Thomas's; Hanley's City Brewery in Queen Street; Le Mills's in St Ebbe's; Morrell's Lion Brewery in St Thomas's; Simonds's in Queen Street; Wootten & Cole's St Clement's Brewery; and Weaving's Eagle Brewery in Park End Street.⁵⁶ There were also numerous associated malthouses: surviving examples are Fox's malthouse, an eighteenth-century building on Tidmarsh Lane (now the University Surveyor's Office), and the Swan Brewery malthouse off Paradise Street, built around 1830,⁵⁷ and currently unoccupied.

Many of the city's breweries underwent extensive upgrading in the late nineteenth and early twentieth centuries. Brewing, like other industries, was becoming more mechanised and more technologically-advanced and in order to remain competitive commercial breweries had to be increasingly efficient and organised. Substantial volumes of liquid (and constituent solids) had to be heated, cooled, moved, and stored in an environment where, ideally, ventilation and temperature could be controlled. Packaging demanded racking and bottling plants, a cooperage, and storage areas, and distribution required drays

⁵⁵ *Ibid.* pp. 4, 8.

⁵⁶ *Shrimpton's Oxford Directory* (1875 edn), p. 216.

⁵⁷ Graham, *On Foot in Oxford*, 7, p. 2.

with stabling. There might also be brewery offices, housing for the head brewer and workers, and a brewery tap (an outlet for selling beer to the public).⁵⁸

Such diverse buildings were best arranged logically around a courtyard, as at Morrell's Lion Brewery in St Thomas's (Fig. 8) where the architect H.G.W. Drinkwater (1844–95) undertook a lengthy series of improvements from the 1870s onwards.⁵⁹ These included, in 1879, the erection of a large brewing shed,⁶⁰ followed by a blacksmith's shop and engine house (1880),⁶¹ a further shed in a new yard (1882),⁶² stables (1889),⁶³ new offices (1892),⁶⁴ a tun room (containing the large fermenting vessels, 1895),⁶⁵ further offices (1897),⁶⁶ and a chimney (1901).⁶⁷ All these buildings were of red brick, some with dark brick dressings, apart from the chimney which is yellow brick with red brick dressings (Plate 7). Power was supplied by a combination of steam engines and a waterwheel in the Back Stream of the Thames (Plate 8).⁶⁸ The façades of some of the buildings, the chimney and the waterwheel were retained when the brewery closed in 2002 and the site was developed as housing.

Other nearby breweries, including the Swan on Paradise Street,⁶⁹ were also modernizing and expanding rapidly. In Park End Street William Miller marked the conversion of his brewery to steam boiling by calling it the Eagle Steam Brewery,⁷⁰ and when it was sold by auction in 1869 it boasted a number of newly erected buildings (Fig. 9). It was bought by J.N. Weaving, a maltster and corn merchant, who in 1871 pulled down a portion of the brewery in order to build a large granary on the site.⁷¹ In 1872 he enlarged the premises with the addition of a three-storey malthouse.⁷²

The brewery then underwent an extensive series of upgrades and developments, continued by Weaving's successor F. Phillips.⁷³ These included, in 1885, the building of an imposing new tower brewhouse (Fig. 10), chimney, tun, cooling, and cleansing rooms,⁷⁴ to plans by architect (and County Surveyor) H.J. Tollit (1835–1904).⁷⁵ The main entrance in Park End Street was through an impressive cast-iron gateway crowned with an eagle; gas lamps were mounted on the pillars on either side.⁷⁶

Mr Phillips also owned the Tower Brewery, just to the east of the Eagle, which was built on the site of the Park End coal wharf in 1885.⁷⁷ It adopted the new vertical lay-out before undergoing extensive

⁵⁸ Pearson, *British Breweries*, pp. 20–1; Bond and Rhodes, *Oxfordshire Brewer*, p. 23.

⁵⁹ For Drinkwater see Andrew Saint, 'Three Oxford Architects', *Oxoniensia*, 35 (1970), p. 60

⁶⁰ OxS, City Engineer's Deposited Building Plan [hereafter CEDBP] 382 (OS) 22–04–1879.

⁶¹ Ibid. CEDBP 480 (OS) 03–02–1880.

⁶² Ibid. CEDBP 790 (OS), 01–10–1882.

⁶³ Ibid. CEDBP 1486 (OS) 07–08–1889.

⁶⁴ Ibid. CEDBP 882 (OS) 25–04–1892.

⁶⁵ Ibid. CEDBP 2538 (OS) 17–08–1895.

⁶⁶ Ibid. CEDBP 2945 (OS) 06–07–1897.

⁶⁷ Ibid. CEDBP 25 (NS) 03–04–1901.

⁶⁸ Bond and Rhodes, *Oxfordshire Brewer*, p. 35.

⁶⁹ OxS, CEDBP 337 (OS) 16–11–1878 (H.J. Tollit cleansing house); 1818 (OS) 16–11–1891 (Henry Kerry, open shed); 3094 (OS) 06–04–1898 (J. Simms, new offices); 2260 (NS) 04–04–1914 (Wilkins & Jeeves, bottle-washing shed).

⁷⁰ Allen, *Morrells of Oxford*, p. 66; *Mathieson's Oxford Directory* (1867 edn), p. 178.

⁷¹ *Oxford City Directory* (1871 edn), p. 29; *JOJ*, 14 October 1871, p. 6.

⁷² *JOJ*, 12 October 1872, p. 6.

⁷³ OxS, CEDBP 45 (OS) 17–8–1875 (H. Castle, new tun room); 74 (OS) 17–1–1876 (H. Castle, three horse boxes); 575 (OS) 16–11–1880 (H.G.W. Drinkwater, five-bedroom house, enlargement of); 1020 (OS) 9–6–1885 (H.J. Tollit, converting workshops into brewery); 1573 (OS) 12–5–1890 (W. Wilkins & Sons, rebuilding of stables in yard); 1574 (OS) 12–5–1890 (W. Wilkins, additions to present brewery); 1916A (OS) 27–6–1892 (W. Wilkins, sheds); 41 (NS) 5–5–1901 (J.R. Wilkins, alterations to offices); 825 (NS) 4–10–1905 (J.R. Wilkins, bottle-washing room, store room, cart shed, sign-writer's shop); 1589 (NS) 2–2–1910 (J.R. Wilkins, cooling room); 1897 (NS) 31–10–1911 (J.R. Wilkins, extension of bottle-washing room); 2217 (NS) 4–2–1914 (Wilkins & Jeeves, extension to bottling room, alterations to stable to engine room).

⁷⁴ OxS, CEDBP 1020 (OS) 9–6–1885.

⁷⁵ Chris Gilliam, 'An A-Z of County Council Functions (1889–1974)', *Oxfordshire Local History News*, 119 (2010), p. 4; Saint, 'Three Oxford Architects', p. 60.

⁷⁶ Bond and Rhodes, *Oxfordshire Brewer*, p. 36.

⁷⁷ *JOJ*, 17 October 1885, p. 6.

PARTICULARS.

ALL THAT

FREEHOLD BREWERY,

KNOWN AS

“The Eagle Steam Brewery,”

WITH THE

Six-Horse-Power STEAM ENGINE and Fixed PLANT,

Attached thereto, an Inventory of which will be produced at the Auction,

Also a Newly Erected MALT HOUSE, BARLEY and MALT GARNERS, STORES, OFFICES, WAG and CART STABLES, YARDS & PREMISES, and a very comfortable

RESIDENCE,

CONTAINING

Dining Room, Drawing Room, and Breakfast Room, Kitchen, Scullery, and 3 good Bedrooms, with Attic over, situate

IN PARK END STREET, OXFORD,

And in close proximity to the Stations of the London and North Western and Great Western Railways.

The only Outgoing is a Land Tax of £2. annually.

The Brewery is in good Working Order, and there is an ample supply of Water,

The Purchaser will be required to take at a Valuation to be made in the usual manner, the Stock-in-Trade, Vats, Casks, Horses, Drags, Carts, Harness, Stores, Implements and Effects, in and about the Brewery and Malthouse, and used in, or connected therewith—~~together with the undermentioned~~

FREEHOLD INNS AND PUBLIC HOUSES.

Fig. 9. Part of the sale notice for the Eagle Brewery, 22 May 1869: OxS, MIC OXFO 663.3 (MF4), Sales Catalogue 611.

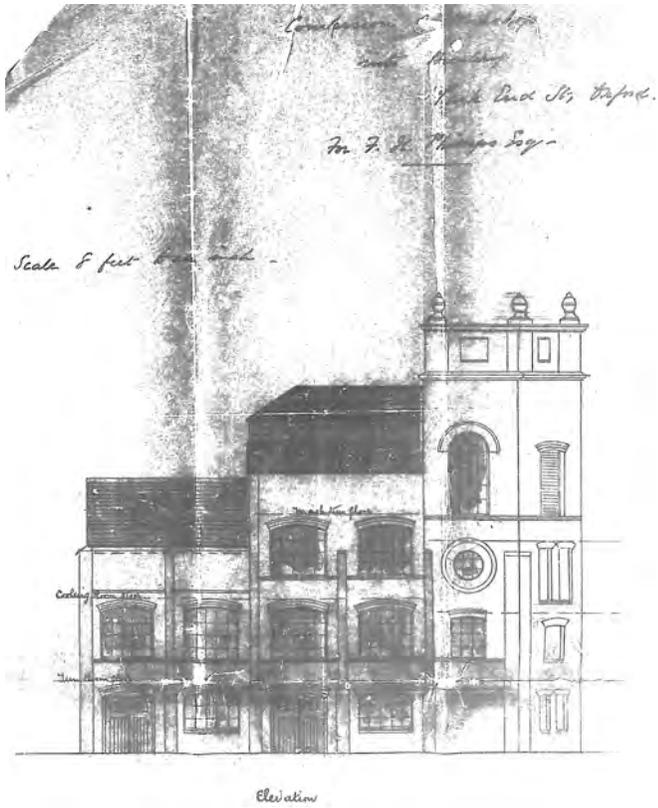


Fig. 10. H.J. Tollit's plan for the tower brewhouse at the Eagle Steam Brewery (1885): OxS, CEDBP 1020 (OS) 9-6-1885. Reproduced by permission of Oxford City Council.

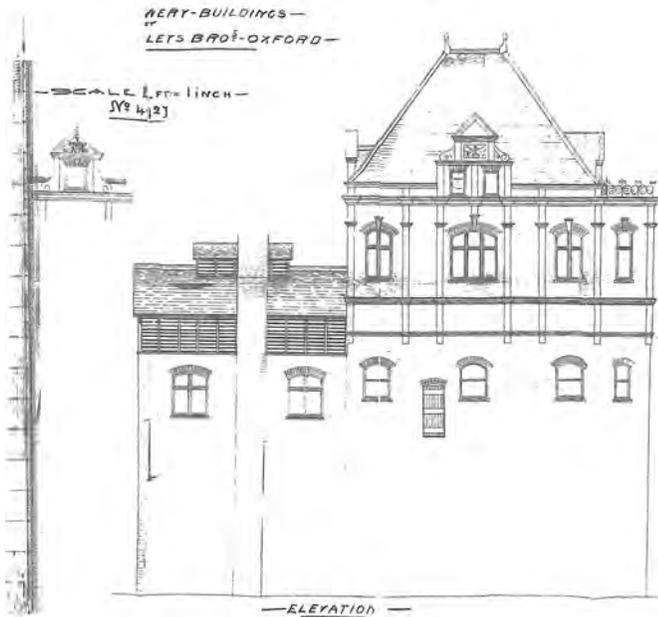


Fig. 11. Arthur Kinder's plan for the brewhouse at Hanley's City Brewery (1882): OxS, CEDBP 754 (OS) 25-05-1882. Reproduced by permission of Oxford City Council.

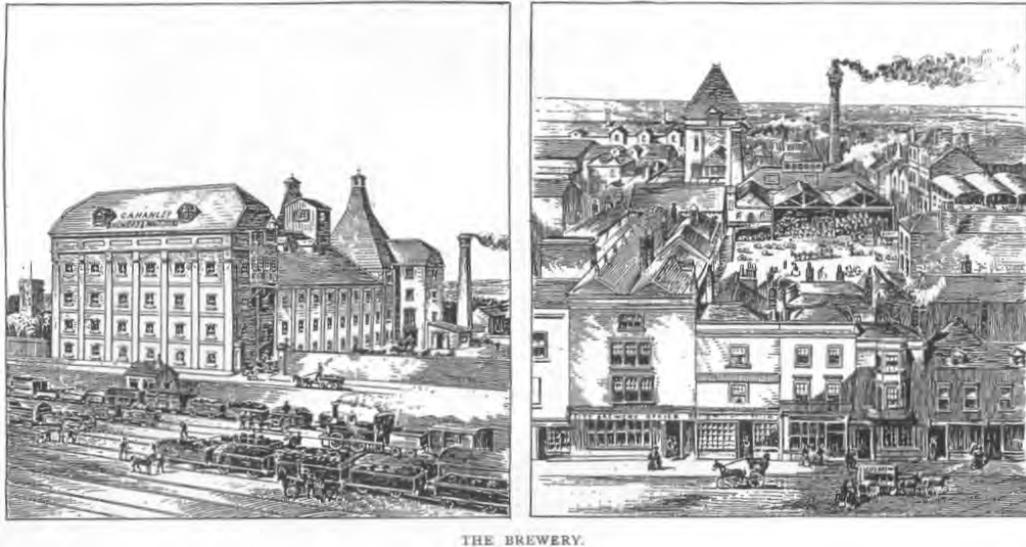


Fig. 12. Illustrations of Hanley's malthouse on Becket Street (left) and the whole city-centre site (right, Queen Street in the foreground and the brewhouse at the rear): Alfred Barnard, *The Noted Breweries of Great Britain and Ireland*, vol. 3, p. 440.

additions to its buildings in the 1890s and early 1900s, mainly by H.J. Tollit.⁷⁸ It is interesting to note that Morrell's did not opt for a fashionable tower brewhouse, perhaps because these tended to be favoured by relatively small-scale brewers, often entrepreneurs new to the industry, rather than by well-established brewers.⁷⁹ Regrettably none of the buildings of the Swan Brewery, the Eagle, or Phillips's Tower Brewery survive.

In 1874 Hanley's City Brewery on Queen Street enjoyed 'a variety of improvements in which are included some modern appliances used in the trade'⁸⁰ and, in 1882, a striking new brewhouse by the London architect Arthur Kinder was added (Fig. 11).⁸¹ A year later, Hanley's erected a five-storey maltings on Becket Street near St Thomas's church, comprising three working floors, each 11'6" x 64', in cement and red tile and two upper floors for barley storage. Water was obtained from a well on the premises, an engine house and boiler were situated near the kiln furnaces and grain was deposited by means of shoots and zinc vessels where required.⁸²

Hanley's was visited by Alfred Barnard in the late 1880s during his tour of 'The Noted Breweries of Great Britain and Ireland' (strangely, it was the only Oxford brewery that he did visit). He illustrated the brewhouse and malthouse in his report (Fig. 12) and noted that in his opinion, Hanley's was producing beers 'quite equal to those of Burton and elsewhere'.⁸³

Most of Hanley's buildings, including the brewhouse and the St Thomas's maltings, have been

⁷⁸ OxS, CEDBP 1740 (OS) 1–6–1891 (H.J. Tollit, new shed); 1977 (OS) 31–10–1892 (H.J. Tollit, new sheds); 3036 (OS) 03–12–1897 (stores); 3218 (OS) 7–10–1898 (Organ Bros., office); 3445 (OS) 24–10–1899 (H.J. Tollit, Stable and additions); 3579 (OS) 11–9–1900 (H.J. Tollit, new copper house); 1235 (NS) 11–11–1907 J.R. Wilkins, stabling).

⁷⁹ Pearson, *British Breweries*, p. 73.

⁸⁰ *JOJ*, 24 October 1874, p. 7.

⁸¹ OxS, CEDBP 754 (OS) 25–05–1882; *JOJ*, 13 October 1882, p. 6.

⁸² *JOJ*, 13 October 1883, p. 6.

⁸³ Alfred Barnard, *The Noted Breweries of Great Britain and Ireland*, 4 vols. (London, 1889–91), vol. 3, p. 458.

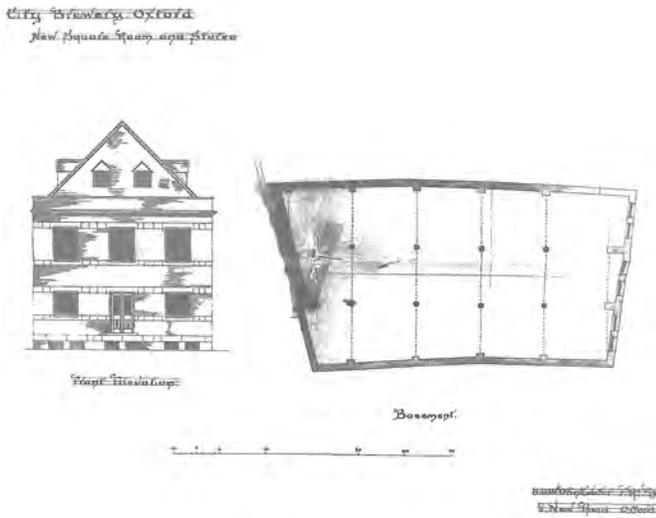


Fig. 13. H.G.W. Drinkwater's plans for the square room and stores at Hanley's City Brewery, 1888: OxS, CEDBP 1373 (OS) 21-07-1888 (reproduced by permission of Oxford City Council). The iron pillars shown on the basement plan are still intact and are marked 'Lucy & Co. Oxford'.

demolished, but their building on Pembroke Street, which is now Modern Art Oxford,⁸⁴ is a survivor: it was added to the brewery as a new square room and stores by H.G.W. Drinkwater (architect) and W. Wilkins & Sons (builders) in 1888 (Fig. 13).⁸⁵ The building is brick, in plain functional style, probably because it was out of view at the rear of the brewery site, on a small back lane.

By contrast, 'commodious new premises' were erected fronting onto Queen Street by architects Wilkins & Jeeves and builders Wooldridge & Simpson in 1914.⁸⁶ Like several other breweries in Oxford, Hanley's had by this time been taken over by Hall's.⁸⁷ The stone façade of this elaborate set of offices, for which the old offices and two adjoining houses were demolished, can still be seen on Queen Street (Fig. 14). The elegant design, with its classical pediment and Tudor windows, was no doubt intended as an advertisement for the brewery's business and as a contribution to the general 'improvement' of the city centre. Hall's maximized the commercial potential of the building by incorporating three shops on the ground floor, with large curving plate-glass windows, which by 1918 were leased to a tobacconist, a boot manufacturer and to Hartwell's Garages Ltd (automobile engineers) for offices and showrooms.⁸⁸

Several extensions to the City Brewery were designed, like those at Morrell's Lion Brewery and at the Eagle Steam Brewery, by H.G.W. Drinkwater, who, despite his name, seems to have specialized in brewery and pub commissions (though he did other work throughout Oxford, notably St Margaret's church in north Oxford, 1883-91,⁸⁹ and Lucas's clothing factory, 1890, for which see below). The names Tollit and Wilkins also occur regularly in connection with brewery buildings. Many breweries (and maltings) of the late Victorian boom were built by a new breed of specialist architects and engineers,

⁸⁴ It became the Museum of Modern Art in 1966, and later Modern Art Oxford.

⁸⁵ OxS, CEDBP 1373 (OS) 21-07-1888. The square room was used for fermentation in 'squares' – open-topped square fermentation vessels in stone or slate bolted together with the joints sealed with cement.

⁸⁶ Ibid. CEDBP 2305 (NS) 01-07-1914; *Oxford Chronicle*, 09 October 1914, p. 8.

⁸⁷ The Eagle and St Clement's breweries were taken over by Hall's in 1897 (Bond and Rhodes, *Oxfordshire Brewer*, p. 36), Hanley's in 1898 (Malcolm Graham, *On Foot in Oxford*, 10, *South-West of Carfax* (Oxford, 1974), p. 7).

⁸⁸ *Kelly's Directory of Oxford and Neighbourhood* (1919-20 edn), p. 258.

⁸⁹ Andrew Saint, 'Architects, Sculptors etc. Living and Working in Oxford', in Peter Howell and Andrew Saint, *Notes on Victorian Architecture in Oxford* (1973), p. 5.



ELEVATION TO QUEEN ST



Fig. 14. Hall's City Brewery office building on Queen Street, designed by Wilkins & Jeeves in 1914. Top: part of the plans (OxS, CEDBP 2305 (NS) 01-07-1914), reproduced by permission of Oxford City Council. Bottom: the façade as it is today, photograph by author. The plans for the façade do not exactly match the finished building, a reminder that deposited plans are not always a reliable guide to what a building looked like.

some of whom, such as Davison, Inskipp & Mackenzie in London, and Brewill & Bailey in Nottingham, commanded a national market and also manufactured brewing plant.⁹⁰

LUCY'S IRON FOUNDRY

Whilst Oxford's breweries were expanding and modernizing, similar upgrading was occurring at Lucy's Eagle Ironworks which had been founded in 1812 by William Carter and moved to its canal-side site in Jericho in 1825.⁹¹ In the late nineteenth century it was one of several Oxford iron foundries, including Taylor's of Blackfriar's Street in St Ebbe's, and Dean & Son, who operated from premises on Temple Street and Cowley Road in east Oxford,⁹² and whose name can be seen on lamp-posts throughout the city. Initially Lucy's catered for the local market, making agricultural machinery and cast iron for ornamental ironwork and lamp-posts.⁹³ In the 1870s these markets grew as Oxford's suburbs expanded, and in 1879 the company established a large new smith shop and foundry building (Fig. 15). It was erected by builder John Money and designed by William Wilkinson,⁹⁴ the architect who had laid out the Norham Manor Estate in north Oxford in the 1860s and built the Randolph Hotel in 1863–6 and St Edward's school on Woodstock Road in 1872.⁹⁵

Wilkinson (1819–1901) was a very well-established Oxford architect whose numerous commissions were mainly ecclesiastical, domestic, and for the police force.⁹⁶ Why he undertook this single industrial assignment towards the end of his long career (1841–1887) is unclear, but perhaps it was an indication of the growing view that industrial buildings were worthy of an architect's attention. In Oxford a new breed of professional architects emerged in the late Victorian period, including H.G.W. Drinkwater, Herbert Quinton, Frederick Codd, and H.J. Tollit, and like their peers nationwide, they increasingly sought industrial commissions, as shown by this study. Codd and Tollit were pupils of Wilkinson.⁹⁷

In 1897 Lucy's became a limited company and expanded its range of products to include shelving and storage equipment, which it sold nationwide.⁹⁸ Over the next ten years its buildings multiplied and diversified accordingly, to include new offices, storerooms, workshop, fitting shop, and additions to the foundry itself.⁹⁹

Lucy's buildings demonstrated a number of features common to factory buildings of the period. The extension designed in 1901 by George Gardiner and built by W. Wyatt had a saw-toothed north-light roof (Fig. 16),¹⁰⁰ a feature which had become increasingly widespread in factories and mills across the country where the weight of heavy machinery dictated a single-storey building.

⁹⁰ Pearson, *British Breweries*, p. 66; Jonathan Brown, *Steeped in Tradition: The Malting Industry in England since the Railway Age* (Reading, 1983), p. 78.

⁹¹ P.W.S. Andrews and Elizabeth Brunner, *The Eagle Ironworks Oxford: The Story of W. Lucy and Company Limited* (London, 1965), p. 5.

⁹² See, for example, *Walter's Oxford & District Directory* (1890 edn), p. 264.

⁹³ Andrews and Brunner, *Eagle Ironworks*, p. 5.

⁹⁴ OxS, CEDBP 282 (OS) 14–05–78; *JOJ*, 22 May 1880, p. 1.

⁹⁵ Saint, 'Three Oxford Architects', pp. 71, 72, 75.

⁹⁶ *Ibid.* pp. 68–79, 88–97.

⁹⁷ Jones, *Industrial Architecture*, p. 125; Saint, 'Three Oxford Architects', p. 60.

⁹⁸ In 1897 Lucy's built the rolling stack system of library shelving which was used underground in the Bodleian, as well as in many other libraries: Winckworth and Hobbs, *The Lucy Story*, p. 22.

⁹⁹ OxS, CEDBP 2804 (OS) 02–12–1896 (new office and storeroom); 3141 (OS) 01–06–1898 (additions to foundry and engine room); 3600 (OS) 31–10–1900 (addition to store room); 808 (NS) 06–09–1905 (new offices); 850 (NS) 06–12–1905 (dated 29 May 1901, new workshop, fitting shop, lavatories).

¹⁰⁰ *Ibid.* CEDBP 850 (NS) 06–12–1905 (dated 29 May 1901).

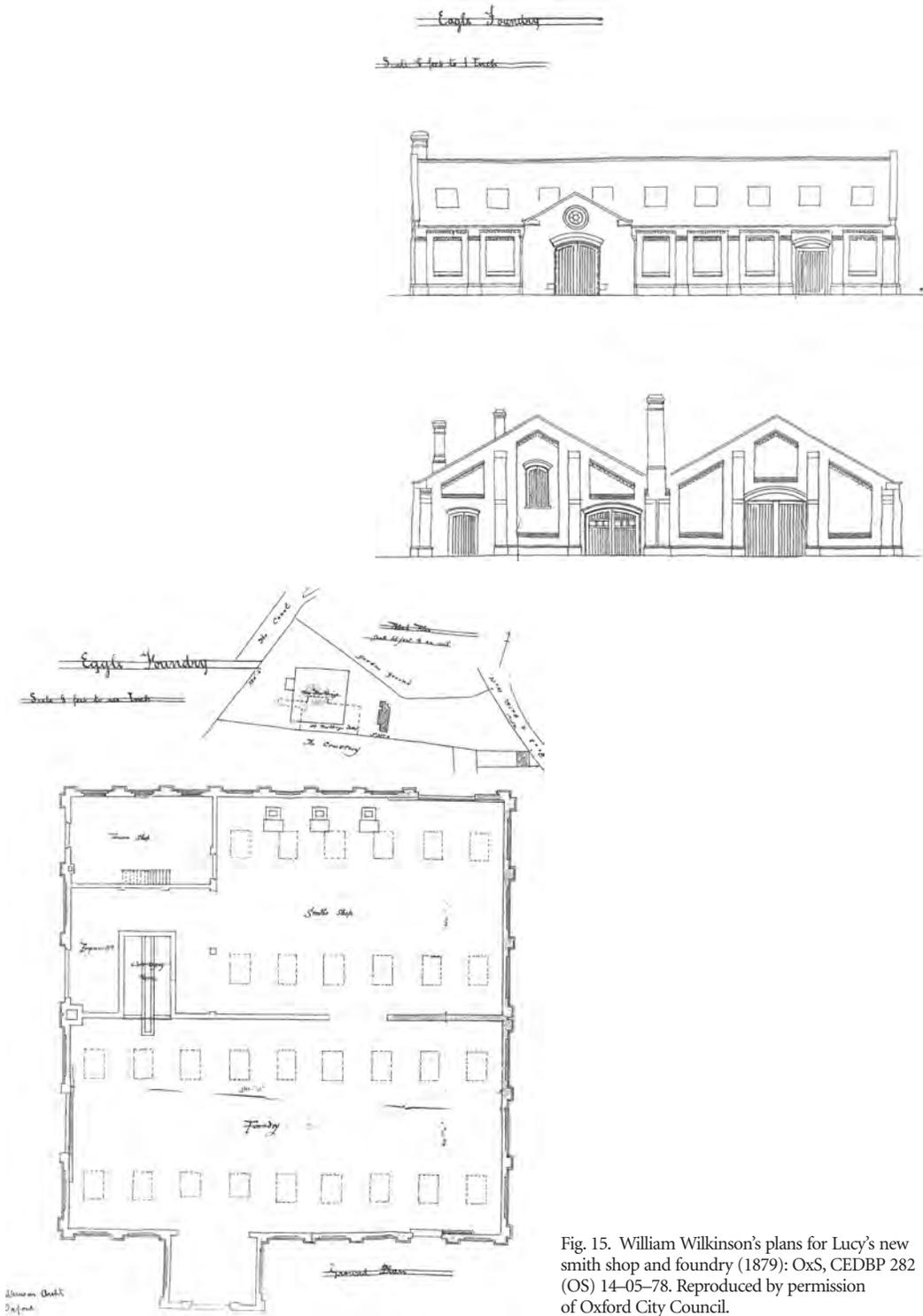


Fig. 15. William Wilkinson's plans for Lucy's new smith shop and foundry (1879): OXS, CEDBP 282 (OS) 14-05-78. Reproduced by permission of Oxford City Council.

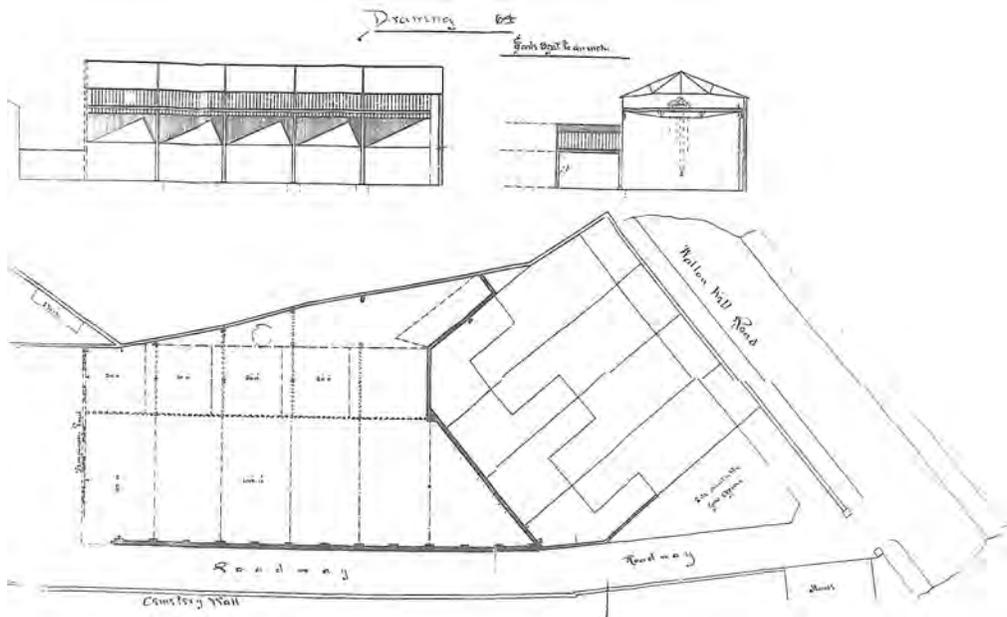


Fig. 16. Part of George Gardiner's plans for extensions to Lucy's (1901), showing the saw-tooth factory roof: OxS, CEDBP 850 (NS) 06-12-1905. Reproduced by permission of Oxford City Council.

The southern faces of such roofs were painted white to reflect more light into the building and to provide steady illumination of the working area throughout the day.¹⁰¹

As the scale of industrial production increased and mills and factories became ever larger, ways had to be found of allowing light to penetrate into the lower floors at the centre of buildings. In many cases this was achieved both by building taller storeys and by providing larger windows,¹⁰² both of which were facilitated by the increasing availability of new building materials such as iron and steel for framing, and of cheaper glass.¹⁰³ At Lucy's canal-side buildings, for example, the fenestration was almost continuous (Fig. 17).

Lucy's ceased operating in Jericho in 2005 and the foundry buildings have been demolished, leaving only the Arts and Crafts-inspired office building, built on Walton Well Road in 1905 by George Gardiner.¹⁰⁴ Attached to the southern end of this is a handsome factory clock, and nearby a set of iron gates and two stone eagles. Another two eagle-topped gateways remain in Juxon Street. The new street-name William Lucy Way is a further reminder of this once extensive industrial site.

CLOTHING FACTORIES

Demand for ready-made clothes increased in the mid nineteenth century,¹⁰⁵ and in the last two decades clothing factories grew steadily in number and size and improved the quality of

¹⁰¹ Marilyn Palmer, 'Woollen Textiles', notes accompanying a talk given at the Association of Industrial Architecture/Council for British Archaeology Industrial Buildings day school, Bristol, 27 November 2008, p. 3.

¹⁰² Colum Giles and Ian Goodall, *Yorkshire Textile Mills: The Buildings of the Yorkshire Textile Industry 1770-1930* (London, 1992), p. 37.

¹⁰³ Nikolaus Pevsner, *A History of Building Types* (London, 1976), pp. 216, 218.

¹⁰⁴ OxS, CEDBP 808 (NS) 06-09-1905.

¹⁰⁵ *JOJ*, 26 May 1849, p. 2.



Fig. 17. Night-time photograph of Lucy's showing the extensive fenestration: copyright Images and Voices, Oxfordshire County Council, D271597a.

their products. Many branched out from ready-to-wear men's clothing into blouses, skirts, and dresses.¹⁰⁶ Hyde's and Lucas's clothing factories in central Oxford together employed more workers than any other commercial employer,¹⁰⁷ many of them outworkers.¹⁰⁸

W.F. Lucas, manufacturers and ladies' outfitters, moved from Gloucester Street to George Street in 1892, and here their factory was rebuilt in its present form by H.G.W. Drinkwater (whose brewery commissions are discussed above) and builders Kingerlee (Plate 9).¹⁰⁹ The building, of plain red brick and in functional style, could accommodate 300 workers and, with its basement dining room, internal lavatories and lifts to all floors, was designed to 'contain every modern requirement for the comfort of the employees'.¹¹⁰ The provision of healthy and safe conditions for workers had become increasingly important throughout the period.¹¹¹ In his 1882 book *Our Factories, Workshops and Warehouses, their Sanitary and Fire-Resisting Arrangements*, B.H. Thwaite went into great detail about the internal planning of buildings, their sanitary arrangements, provision of refreshment rooms, ventilation, heating, lighting, and accident and fire prevention.¹¹² The London Building Act of

¹⁰⁶ F.M.L. Thompson, *The Rise of Respectable Society: A Social History of Britain, 1830–1900* (Harvard, 1988), p. 37.

¹⁰⁷ *VCH Oxon.* 4, pp. 215–7.

¹⁰⁸ See, for example, *JOJ*, 25 January 1868, p. 5.

¹⁰⁹ OxS, CEDBP 1581a (OS) 02–06–1890; 1881 (OS) 26–03–1892.

¹¹⁰ *JOJ*, 11 October 1890, p. 6.

¹¹¹ Jones, *Industrial Architecture*, p. 195.

¹¹² B.H. Thwaite, *Our Factories, Workshops and Warehouses, their Sanitary and Fire-Resisting Arrangements* (London, 1882), pp. xi–xii.

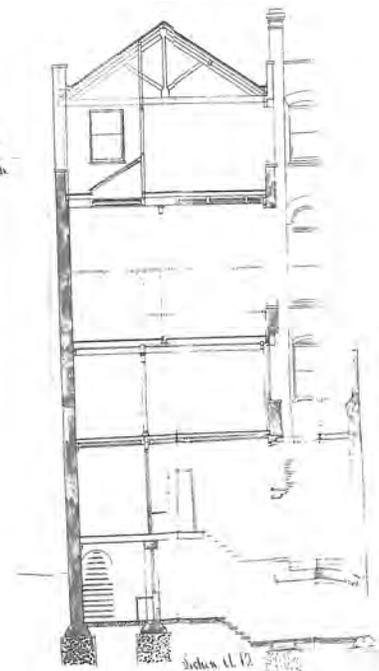
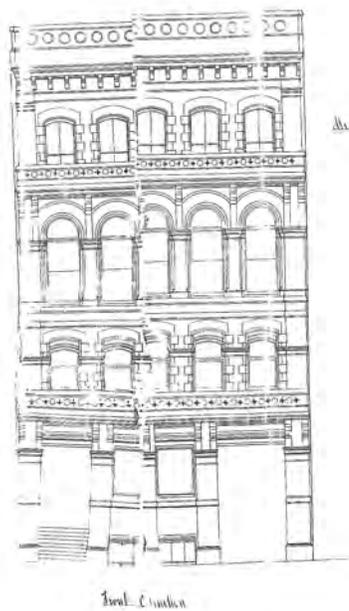


Fig. 18. Above: the front façade of Hyde's clothing factory on Queen Street (Frederick Codd, 1877), photograph by author. Below: part of Codd's plans for the elevation and a section through the building, showing the semi-basement: OxS, CEDBP 231 (OS) 23–10–1877. Reproduced by permission of Oxford City Council.

1894 revised safety regulations,¹¹³ and contemporary newspaper reports of newly-erected buildings frequently mention their adherence to such rules.¹¹⁴

Lucas's rival Thomas Hyde & Co. was established in 1839,¹¹⁵ and had a clothes dealership at 32 Queen Street from at least 1842.¹¹⁶ In 1849 a new shop and warehouse adjoining the existing premises was fitted out,¹¹⁷ and in 1869 a factory erected behind the ready-made department, designed by Frederick Codd. The basement contained rooms for an engine boiler, warehouse, and sorting. The ground floor was a steam-driven cutting room; over this was a stock room, and above were two storeys for sewing machines.¹¹⁸ The building, still visible from Shoe Lane, was, like Lucas's, in brick and plain in style, but in 1877 Codd added a four-storey warehouse fronting onto Queen Street (Fig. 18). This had a striking façade of red Mansfield and Bath stone, a balcony at first floor level and another on the third floor, reached by glazed doors at either end of the rows of windows.¹¹⁹ The building was erected by Symm & Co., cost £8,000–£9,000, and was in three blocks, arranged so as to limit damage in the event of fire. Red brick for the rear came from Oxford yards.¹²⁰

Hyde's was an extensive business, with operations in Banbury and Abingdon,¹²¹ and their striking new warehouse in Oxford must have served to advertise the company's products. Many contemporary warehouses and factories were being built in similar 'palazzo' style: Italianate architecture was strongly associated with commerce and the ideals of free trade and was particularly popular for cotton mills in Yorkshire and Lancashire, contrasting with the Gothic which dominated national architectural fashions in the High Victorian period.¹²²

Hyde's building is an example of how industrial architecture was becoming increasingly ornamental from the 1870s onwards.¹²³ Businessmen took a growing interest in the external appearance of their factories and warehouses, realising that, particularly in inner-city areas, they could act as advertisements and as symbols of success and probity. Although internal function, not external style, was still key to meeting the building requirements of the manufacturer, the keenly competitive markets of the late nineteenth century led to many capitalising on the look of the buildings themselves.¹²⁴ This married with an overall concern for urban improvement which encouraged the erection of buildings of better and more thoughtful design.

ARCHER, COWLEY & CO'S FURNITURE WAREHOUSE

Warehouses were the link between industry and commerce, and towards the end of the nineteenth century they were increasingly ornate in order to impress potential customers and to display the public face of the company.¹²⁵ Archer, Cowley & Co.'s furniture-packing and storage warehouse in Park End

¹¹³ Jones, *Industrial Architecture*, p. 179.

¹¹⁴ For example *Oxford Chronicle*, 17 October 1902, p. 11, reporting on Cooper's marmalade factory; *Oxford Journal Illustrated*, 13 July 1910, p. 6, reporting on Morris's motor garage.

¹¹⁵ *JOJ*, 26 May 1849, p. 2.

¹¹⁶ *Pigot's Oxon. Directory* (1842 edn), p. 26; *Hunt's Oxford Directory* (1846 edn), p. 59.

¹¹⁷ *JOJ*, 26 May 1849, p. 2.

¹¹⁸ *JOJ*, 16 October 1869, p. 6.

¹¹⁹ These balconies, shown in a photograph of 1897, were removed in the 1960s. Malcolm Graham and Laurence Waters, *Oxford Then and Now* (Stroud, 2006), p. 29.

¹²⁰ OxS, CEDBP 231 (OS) 23–10–1877; *JOJ*, 12 October 1878, p. 8.

¹²¹ *Webster's Oxford Directory* (1869 edn), p. 119.

¹²² Williams, *British Gas Industry*, p. 100; Simon Taylor, Malcolm Cooper and Paul Barnwell, *Manchester: The Warehouse Legacy, an Introduction and Guide* (London, 2002), p. 24.

¹²³ Jones, *Industrial Architecture*, p. 150.

¹²⁴ Pearson, *British Breweries*, p. 75; Jones, *Industrial Architecture*, p. 125.

¹²⁵ Pearson, *British Breweries*, p. 120; Derek Linstrum, *West Yorkshire Architects and Architecture* (London, 1978), pp. 298–301.

Street was designed by H.J. Tollit in 1901 in imposing style,¹²⁶ no doubt to further the company's reputation as prime shippers to the administrators of the British Empire (Plate 10).¹²⁷ The building is an impressive block of red brick with stone dressings, with pavilions at each end containing unusual round-headed windows with king mullions and transoms.

Tollit used the most up-to-date building techniques: a steel frame, with floor and stairs of reinforced concrete, and all the steelwork encased in concrete or brickwork. There was 3,840 square feet for storage of furniture and other goods and openings between different parts of the building were protected by armoured fire-proof doors which closed automatically in the event of fire.¹²⁸ As at Hall's premises on Queen Street, Archer, Cowley & Co. incorporated ground-floor shops into their building in order to attract attention and to provide a rental income, initially from a chemist's and Post Office.¹²⁹ Some of these shop spaces still retain original ceramic tiles, mosaic floor designs, and iron columns by Lucy & Co. At the western end the former offices, whose external woodwork was in Burmese teak,¹³⁰ had, as was typical,¹³¹ an eye-catching engraved glass window with the company name and a mosaic-tiled floor at the entrance (Plate 11).

COOPER'S MARMALADE FACTORY

Frank Cooper had been making and selling marmalade from his premises at 84 High Street since 1874 but the Factories and Workshops Act of 1901, which laid down stringent conditions about the kinds of conditions in which factory-hands could work, may have prompted his move to a new, purpose-built and more hygienic building with rest facilities for employees in Park End Street in 1903 (Fig. 19).¹³² The factory was designed by Herbert Quinton and built by Kingerlee;¹³³ it is the only one of Oxford's formerly industrial buildings to be listed and still stands on what is now Frideswide's Square.¹³⁴

In this period factories concentrated increasingly on the division and specialisation of processes in order to facilitate cost-efficient mass production and buildings such as Cooper's reflected this in their layout and internal organisation (Fig. 20). The factory covered 1,630 square feet on four floors and up to sixty workers could be accommodated; their facilities, plus storage rooms, were on the top floor. On the second floor women cut up fruit for jam and marmalade in the long, well-lit cutting room with its large curve-headed windows. Bottling took place on the floor below and the boiling of fruit was done beyond the yard on the ground floor, in a special boiling room equipped with copper (later stainless steel) vats heated through steam jackets by a boiler in the adjacent boiler house with its large chimney.¹³⁵

Cooper emphasised the home-made purity and health-giving properties of his marmalade, as well as its upper-class appeal. He was a vigorous promoter of his products, commissioning the well-known Oxford photographer Henry Taunt to produce a city guidebook in which Cooper's marmalade features as a prominent element in the chapter 'Gastronomical Oxford' and in which the 'well-known analyst' Granville Sharpe is quoted as being much impressed with the planning

¹²⁶ OxS, CEDBP 87 (NS) 07-08-1901.

¹²⁷ Cantay: <http://www.conferencecentreoxford.co.uk/our-history.html> (accessed 22 June 2009).

¹²⁸ *Oxford Chronicle*, 8 October 1909, p. 9.

¹²⁹ *Telegraph Oxford Directory* (1902 edn), p. 265.

¹³⁰ *Oxford Chronicle*, 8 October 1909, p. 9.

¹³¹ Williams, *British Gas Industry*, p. 95.

¹³² Brigid Allen, *Cooper's Oxford: A History of Frank Cooper Limited* (Oxford, 1989), p. 48.

¹³³ OxS, CEDBP 206 (NS) 07-05-1902.

¹³⁴ English Heritage list of listed buildings: <http://www.imagesofengland.org.uk>, ref: 481530, listing ref: 612/7/10070 (accessed 16 February 2010).

¹³⁵ OxS, CEDBP 206 (NS) 07-0-1902; Allen, *Cooper's Oxford*, p. 52. For photographs by Henry Taunt of employees at work inside the factory, see OxS, Images and Voices, HT13727-36 (available online via Heritage Search: <http://www.oxfordshire.gov.uk/wps/portal/publicsite/doitonline/finditonline/heritage>).



Fig. 19. Frank Cooper's Marmalade Factory, Park End Street (Herbert Quinton, 1903). Photograph by Henry Taunt, 1906: copyright Images and Voices, Oxfordshire County Council, HT13787.

of the factory, which was 'fitted with the best modern improvements, and everything is done that is possible to obtain the highest standard of quality, purity and wholesomeness'.¹³⁶

Cooper attracted trade by siting his factory directly opposite the two railway stations and incorporating two shops with large windows (selling his own merchandise) either side of the entrance. Early photographs show that these shops were soon converted into offices with smaller windows,¹³⁷ possibly because Cooper had not been given planning permission to sell goods directly from the factory site. The elaborate façade declares Cooper's confidence as a businessman: he even incorporated his product into the architecture by having swags of oranges carved in the panels between the first- and second-floor central windows (Fig. 21).

The factory is in the 'free style' typical of novel industrial buildings of the new century.¹³⁸ Architecturally the Edwardian era was one of great diversity, characterized by experimentation with established styles, together with a return to classicism and the baroque, the sowing of the seeds of the modern movement and the flowering of the Arts and Crafts tradition.¹³⁹ The architect of Cooper's factory, Herbert Quinton, was a keen follower of the latter, as can be seen also in his houses in north Oxford,¹⁴⁰ the northern extension he designed for the electricity generating station in 1904 (the left-hand end of the building in Fig. 5),¹⁴¹ the Royal Blenheim pub on the corner of Pembroke Street and St Ebbe's

¹³⁶ Henry Taunt, *Gastronomical Oxford*, chapter 3 (printed privately for Frank Cooper, 1905).

¹³⁷ Compare, for example, images CC722166 (1904) and HT13787 (1906), OxS, Images and Voices, Oxfordshire County Council, available online via Heritage Search (accessed 12 July 2009).

¹³⁸ Geoffrey Tyack, *Oxford: an Architectural Guide* (Oxford, 1998), p. 266.

¹³⁹ Jones, *Industrial Architecture*, p. 173.

¹⁴⁰ See Hinchcliffe, *North Oxford*, pp. 218, 235–6, 243.

¹⁴¹ *Oxford Chronicle*, 21 October 1904, p. 3.

PROPOSED MARMALADE & JAM
FACTORY, Park End Street, OXFORD.
 for Mr Frank Cooper. April 1902.

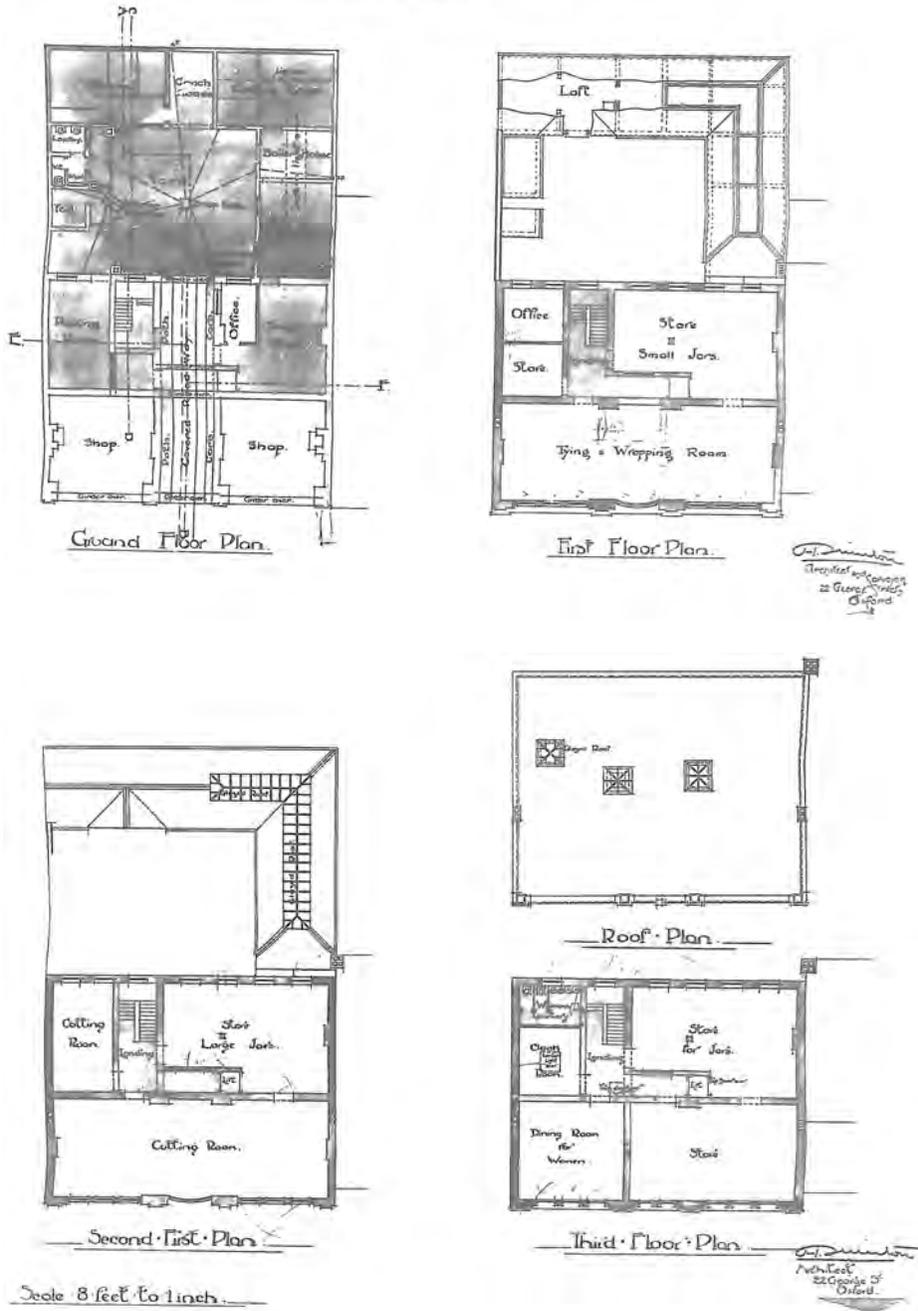


Fig. 20. Herbert Quinton's plans for Cooper's Marmalade Factory, 1902: OxS, CEDBP 206 (NS) 07-05-1902. Reproduced by permission of Oxford City Council.



Fig. 21. Detail of carved oranges between the first- and second-floor central windows of Frank Cooper's marmalade factory. Photograph by author.

which he designed for Hanley's City Brewery in 1897,¹⁴² and his 1912 showroom for Morris Garages Ltd at 36–7 Queen Street.¹⁴³

Cooper's expanded production and extended the building in 1912, 1915, 1924, and 1925.¹⁴⁴ After the Second World War a new factory was opened in the Botley Road, on the site of the former ice rink and Majestic Cinema. In 1964 Cooper's was taken over by Brown & Poulson Ltd and in 1967 production moved away from Oxford.¹⁴⁵ The original factory building is now in multiple occupancy as offices, a restaurant, and a night-club.

MORRIS'S GARAGE

Oxford's most novel industrial building of the period, William Morris's motor garage, was designed in 1910 by Tollit & Lee on the site of some disused livery stables in which Morris had been repairing and servicing cars since 1902.¹⁴⁶ The building was erected on fireproof principles and had a floor area of 4,400 square feet;¹⁴⁷ it could accommodate sixty cars.¹⁴⁸ The combination of a large garage space with workshops at the back and offices and showrooms in front, all under one roof (Fig. 22), is a layout still utilized by many modern service garages today.¹⁴⁹

The façade is in conspicuously neo-Georgian style (Plate 12), perhaps reflecting the budding industrialist's view of Oxford as an elegant city in which the stylish new activity of motoring should take place. The *Oxford Journal Illustrated* devoted a whole page to 'Oxford's New Motor Palace', declaring,

¹⁴² OxS, CEDBP 2986 (OS) 21–09–1897.

¹⁴³ Ibid. CEDBP 1961 (OS) 03–04–1912.

¹⁴⁴ Ibid. CEDBP 2297(NS) 03–08–1912; 2350 (NS) 26–02–1915; 3089 (NS) 26–02–1915; 3248 (NS) 01–10–1924; 3427 (NS) 02–06–1925.

¹⁴⁵ *VCH Oxon.* 4, p. 214.

¹⁴⁶ G. Bardsley and S. Laing, *Making Cars at Cowley: From Morris to Rover* (Stroud, 1999), p. 20. H.J. Tollit died in 1904 but his partner Lee appears to have continued the business under both names: Oxfordshire Buildings Record, *A Study of the Historic Built Environment of the West End of Oxford*, OBR Report, 60 (2006), p. 6.

¹⁴⁷ *Oxford Chronicle*, 14 October 1910, p. 9.

¹⁴⁸ *Oxford Journal Illustrated*, 13 July 1910, p. 6.

¹⁴⁹ Arthur Exell, *The Morris Garages Story* (Oxford, 1979), p. 2.

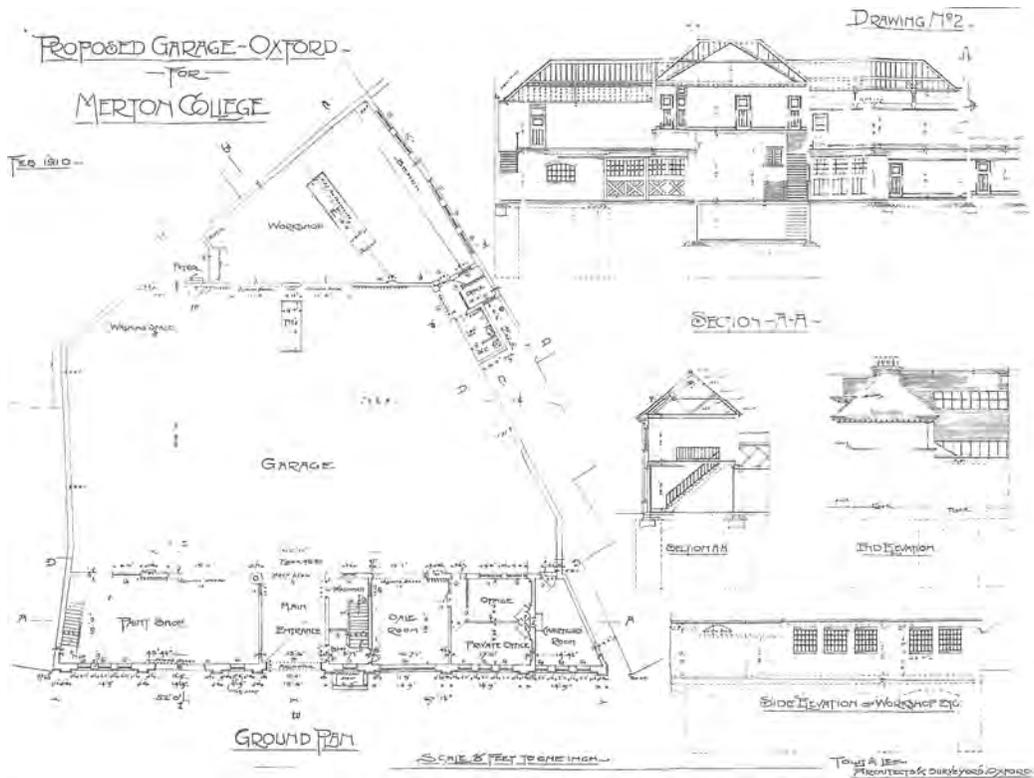


Fig. 22. Part of Tollit & Lee's plans for Morris's garage, 1910, showing the layout of workshops, offices, and showrooms: OxS, CEDBP 1625 (NS) 06-04-1910. Reproduced by permission of Oxford City Council.

'for the Longwall Street elevation there seems nothing to which even our City Fathers can take exception'.¹⁵⁰ The building appears to have been designed primarily for the repair and overnight storage of motorists' cars (houses not yet having private garages) and as a sales showroom,¹⁵¹ but it was here that the first bull-nose Morris was assembled in 1912. Morris quickly realized that larger manufacturing premises were required, however, and with the beginning of mass production of the popular new cars in Cowley the following year, a new phase in the history of Oxford had begun.¹⁵²

After closure, the Morris Garage building continued as Morris's personal business premises and Morris distribution and service centre.¹⁵³ Later it was used by Blackwell's as a book warehouse. In 1977 it was threatened with demolition but a campaign to save it was partially successful and in 1981 the façade was retained, behind which was built student accommodation for New College.¹⁵⁴

¹⁵⁰ *Oxford Journal Illustrated*, 13 July 1910, p. 6.

¹⁵¹ *Oxford Chronicle*, 14 October 1910, p. 9.

¹⁵² Tyack, *Oxford*, p. 267.

¹⁵³ Bardsley and Laing, *Making Cars at Cowley*, p. 20.

¹⁵⁴ Exell, *Morris Garages Story*, p. 2; *Oxford Mail*, 3 October 1981, p. 3.

CONCLUSION

The period from 1870 to 1914 was characterized by a rapid rise in demand for consumer goods and for clean water and power, and this in turn led to the expansion and upgrading of existing industrial sites and the building of many new ones. Industrial buildings, of increasingly large footprint and height, and with their multiplicity of chimneys and towers, dramatically altered the urban landscape in Oxford as in most towns and cities. They were not clustered together on remote industrial estates as they are today, but instead were closely intermingled with housing and commercial premises throughout the city. As a result the noise and smell that these industries produced must have been a normal part of many citizens' daily lives, and the presence of their often large sites had a significant impact on the topography of Oxford. Their chimneys – of which only two survive, at Morrell's and Cooper's – were surely a notable element of the famous skyline.

Late Victorian and Edwardian industrial buildings reflected social, economic, and technological developments. The shape of industrial architecture was determined by the evolving needs of manufacturing enterprise, and, to some extent, by aesthetic considerations. Industrialists' main concerns were for buildings that could house sometimes novel processes and machinery efficiently and cost-effectively (as, for example, at Oxford's breweries and at Cooper's marmalade factory), that were capable of adaptation and enlargement in the face of advancing technology and fluctuating demand for their products (as at the gasworks, pumping station, and Lucy's iron foundry), and that fulfilled workers' increasing demands for safety and comfort (as at Lucas's clothing factory).

However, industrial architecture in this period is also characterized by a growing awareness of style, as exemplified by the electric lighting station, Archer, Cowley & Co.'s warehouse, Hyde's warehouse, and Morris's garage. The influence of architectural display on profits, and the rise of architects like H.G.W. Drinkwater, H.J. Tollit, Frederick Codd, and Herbert Quinton, who understood industrial processes and were willing to embellish breweries, factories, and warehouses in a manner that announced a business' success and reliability without being too expensive, were novel features of the period.

Oxford's industrial buildings, whilst on a smaller scale than those in towns and cities of the industrial north and midlands, nonetheless exemplify many of the features of buildings of their type in the later Victorian and Edwardian periods. A surprising number survive, albeit in commercial and domestic, rather than industrial, use, and their place in Oxford's history deserves to be more fully appreciated.

ACKNOWLEDGEMENTS

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Plate 3. Retort house at St Ebbe's gasworks, Oxford (1871), designed by F.J. Evans: copyright Images & Voices, Oxfordshire County Council, D205365a. [Woolley, p. 69]



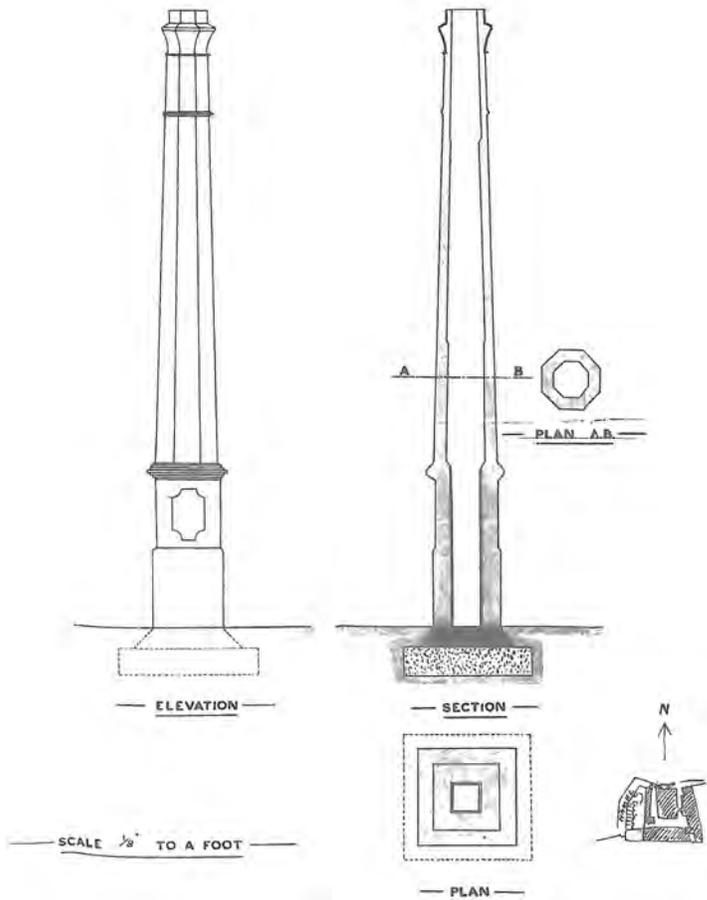
Plate 4. The underside of the St Ebbe's gasworks railway bridge as it is today, showing the two central supporting piers and the mains pipes suspended beneath the floor.
Photograph by author. [Woolley, p. 71]



Plate 5. Part of the southern façade of the pumping station at Lake Street waterworks, Oxford, showing the typical high, round-headed windows. The original engine house, on the right, was built in 1856; the Butterly rotative engine house, on the left, was added in 1862. Photograph by author. [Woolley, p. 77]



Plate 6. Decorative window surround in the eastern wall of the Davey engine house Lake Street waterworks, 1884. Photograph by author. [Woolley, p. 77]



March 14 1901

The City Engineer,
Town Hall, Oxford.

Dear Sir,

I enclose a plan of a new shaft we propose to erect in our Brewery. Please bring it before your next Committee meeting & advise me when it will be passed at your earliest convenience, as we want to get on with the work. We are putting in some new boilers here which necessitate this new chimney.

Thanking you in anticipation, I am,

yours truly,

H. M. Dowsen

Plate 7. Left: the 1901 chimney at Morrell's Lion Brewery, Oxford, photograph by author. Upper right: its plan by H.G.W. Drinkwater (OxS, CEDBP 25 (NS) 03-04-1901), reproduced by permission of Oxford City Council. Lower right: letter from the manager, asking for quick approval of the plan (OxS, CEDBP plan 25 (NS) 03-04-1901), reproduced by permission of Oxford City Council. [Woolley, p. 79]



Plate 8. The Lion Brewery waterwheel in the Back Stream of the Thames (date of construction unknown). Photograph by author. [Woolley, p. 79]



Plate 9. Lucas's clothing factory in George Street, Oxford (H.G.W. Drinkwater, 1892). Photograph by author. [Woolley, p. 88]



Scale 8 feet to one inch



Plate 10. Top: H.J. Tollit's plan for the ornate façade of Archer, Cowley & Co.'s warehouse, Park End Street, Oxford, 1901 (OxS, CEDBP 87 (NS) 07–08–1901), reproduced by permission of Oxford City Council.

Below and opposite: composite of the upper façade as it is today, photographs by author.
 Bottom opposite: the design for the back elevation, facing the yard behind, which was hardly less impressive (OxS, CEDBP 87 (NS) 07–08–1901), reproduced by permission of Oxford City Council. [Woolley, p. 91]



Elevation to yard

Scale 3/16" = 1 foot

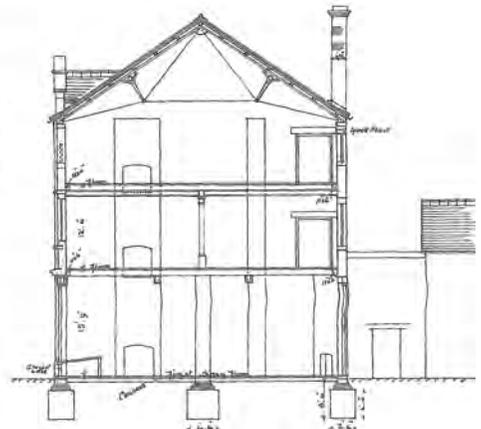




Plate 11. Above an etched glass window and opposite a tiled entranceway embellish the offices at Archer, Cowley & Co.'s furniture packing and storage warehouse, Park End Street, Oxford (H.J. Tollit, 1901). Photographs by author. [Woolley, p. 91]





Plate 12. Part of the neo-Georgian façade of Morris's motor garage, Longwall Street, Oxford (Tollit & Lee, 1910). Photograph by author. [Woolley, p. 94]