Birmingham University Field Archaeology Unit
Project No. 1034
March 2003

The Warwick Bar Conservation Area, Birmingham:
further archaeological desk-based assessment and building recording for the Townscape Heritage Initiative

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Summary

In January and February 2003 Birmingham University Field Archaeology Unit carried out documentary assessment and building recording of a number of historic canal structures within the Warwick Bar Conservation Area, Digbeth, Birmingham. The work was commissioned by British Waterways through the Townscape Heritage Initiative (THI) and was undertaken in advance of a scheme of repair and refurbishment of this historic stretch of urban industrial canal. Two sections of canal wall and features were investigated along the Digbeth Branch Canal south of the Curzon Street canal bridge and in the vicinity of the Gun Barrel Proof House. Several structural phases were identified, ranging in date from the late 18th to 20th centuries. Moreover, sections of walling could be identified as survivals of former structures, including engine houses, interchange docks and wharves. An external inspection was made of 176-182 Fazeley Street, thought to have been associated with the former gas works that occupied the site between c.1836 and 1874. Two properties, 180-182, were found to be contemporary with the gas works and comprised a former dwelling house and offices, whereas the other buildings, 176-178, post-dated the gas works. Inspection of the Corporation Wharf on the Birmingham and Warwick Canal revealed that while most of the above-ground features associated with a night-soil processing plant had almost entirely disappeared, there was considerable potential for below-ground survival.

1.0 Introduction

In January and February 2003 Birmingham University Field Archaeology Unit (BUFAU) carried out a desk-based assessment of part of the Digbeth Branch Canal, within the Warwick Bar Conservation Area, Digbeth, Birmingham, together with the recording of historic structures associated with the canal (Fig. 1). The work, which was commissioned by British Waterways as part of the Townscape Heritage Initiative (THI), was undertaken in advance of repairs and refurbishment to the canal.

The project comprised four separate sites:

- Canal features south of Curzon Street (hereafter known as Site A)
- Canal wall of Proof House (hereafter known as Site B)
- 176-182 Fazeley Street (hereafter known as Site C)
- Corporation Wharf (hereafter known as Site D)

Each site was provided with a separate brief prepared by Birmingham City Council (Hodder 2002a-d).

2.0 Site location (Fig. 2)

The location of all four sites is in north Digbeth in central Birmingham within a block of land defined by Curzon Street to the north, Fazeley Street to the southwest, Montague Street to the east, and by Andover Street and New Canal Street to the west.

Site A is at NGR SP 0813 8715, Site B at SP 0792 8690, Site C at SP 0809 8671 and Site D at SP 0816 8675. In addition, an arbitrary Study Area defined by significant land use boundaries, including roads and railways has been defined within which to view the inter-development of these four specific sites.

3.0 Objectives and method

To identify and obtain a record of the canal related structures in advance of, and to inform, repairs and alterations. The extent, survival and significance of the specific structures were assessed by site inspection and a search of published and unpublished written records, illustrations and maps. Documentary research of primary and secondary sources, including maps, was undertaken at Birmingham Central Library Local Studies and Archives, and at Birmingham University. In addition, a written analytical description was made, supplemented by a monochrome and colour photographic record, from which phase drawings were prepared. The work was carried out in accordance with the Code of Conduct, standards and appropriate guidelines and practices of the Institute of Field Archaeologists.

4.0 Previous archaeological work

In 1999 BUFAU undertook a general desk-based assessment of the entire Digbeth Millennium Quarter within which three of the four sites that are the subject of this report are situated (Mould 1999). This report divided the Study Area into 33 separate areas:

Area 19 (Andover Street, Banbury Street, the Digbeth Branch Canal and Fazeley Street) contains Site B.

Area 21 (the River Rea, the Warwick and Birmingham (Grand Union) Canal, Great Barr Street and Fazeley Street, including the Great Barr Street Road Bridge) contains Site C.

Area 22 (the Digbeth Branch Canal) contains Site A.

In 2001-2002 Martin Cook carried out a number of desk-based assessments in conjunction with land survey and building recording for British Waterways of several sites associated with the Digbeth Branch and Birmingham and Warwick Canals. These included the Warwick Bar Stoplock and Dock (Cook 2001a), the site of the former Belmont Glassworks and Ashted Pumping Station (Cook 2001b), the former Fazeley Street Gasworks (Cook 2002a), and the former Warwick Wharf (2002b). The detailed results of the above work are obviously not reproduced here, and so in the following section the general characteristics of the historical development of the overall Study Area are outlined below.

5.0 General background

Geology and topography have been very important determining factors upon the historic transport geography of the Study Area. The Study Area is mainly situated on the east-facing side of the river valley and the floodplain carved by the River Rea, that is a tributary of the Tame. The edge of this valley slopes quite sharply from the

sandstone ridge that the Bull Ring and Saint Martin's Church occupy towards the bottom of the valley where it shelves over deposits of Mercia Mudstone and alluvium that was prone to flooding until the 1850s. From the Middle Ages the Study Area formed part of the manorial demesne and was largely rural in character, with the exception of activity associated with the Heath Mill, latterly called Cooper's Mill. The Study Area remained rural well into the later 18th century, when it was held by Dr Sherlock, Bishop of London (1678-1761). Thomas Hanson's map of 1778 shows a landscape of enclosed pasture and gardens with drying areas for tanneries clustered around the river. It was not until the construction of the Digbeth Branch Canal around 1790 (Stephens, 1964, 34) that any major change occurred. From then the potential of this undeveloped real estate situated quite close to the town centre began to be realised. Earlier development had been hindered by the refusal of the proprietor, Dr Sherlock, to grant building leases on the grounds that 'his land was valuable, and if built upon, his successor, at the extirpation of the term would have the rubbish to carry off'. Sherlock, by the terms of his will, even went so far as to debar his successors from granting such leases (Stephens 1964, 8). It was not until 1766 that this impediment was removed by the passing of a private Act of Parliament. This allowed Sherlock's successor, Sir Thomas Gooch, to grant long term leases and consolidate his holdings by exchanging plots of land.

The Digbeth Branch Canal was built on land leased from the Gooch Estate. It was first depicted on 'A Plan of the intended Navigation Canal from the Town of Birmingham into the River Severn near the City of Worcester' drawn up by John Snape in 1789. It was planned as a single branch terminating within a planned grid of streets including Fazeley Street to the north, Bordesley Street to the south, Trent Street (now Pickford Street) to the east, and Canal Street (now New Canal Street) to the west. The Warwick and Birmingham Canal followed in 1793; both canals and street grid being on Pye's map of 1795 (Fig. 3). Therefore, the building of both canals proved a catalyst for accelerated expansion of what were essentially still the medieval boundaries of the town here into the fields east of Park Street and north of Digbeth. However, the construction of both canals was also complicated by the topography of the river valley. It was necessary to build flights of several locks in order to reach this area, and this was to have important implications for both the pumped supply of water, and, ultimately, the volume of trade that these canals handled. Nevertheless, commercial take up in the area was relatively rapid, particularly around the junction of the two canals. This was also the closest part of the Study Area to the town centre. The New Steam Mills were first shown on the 1795 map and were involved in the drawing of iron wire, and the Proof House is dated 1813 (Site B). There was also early warehousing close to the Warwick Bar. Cooper's Mill had long been situated to the east of the Study Area, and this was converted to steam power in the 1850s also. In between these sites along the Birmingham and Warwick Canal, Pickford's Yard and Wharf was developed after 1812, followed by another edge-tool mill that became the Minerva Iron Works, *c.*1828, and a gas works of 1836-7 (Figs. 4 and 5). These industries employed modern technologies by the standards of the day, like rotative steam-power and gas retorts, and were characteristic of the new type and scale of industries that canal traffic enabled. Nevertheless, together with the distributive wharves and warehouses these newer industries remained essentially in the service of the traditional workshop economy.

When 'railway mania' hit the Midlands from the later 1830s the railway companies latched onto the Rea valley as a natural transport corridor into Birmingham. They chose the land to the north of the Birmingham and Warwick Canal which, even by 1847 was still relatively undeveloped, as the line of least resistance (Fig. 6). The initial terminus at Curzon Street Station, despite its fine portico by Philip Hardwick, was nearly one mile from the town centre, a problem that was finally solved by the construction of New Street Station in the 1850s. The arrival of the railway added an extra dimension to the industrialised character of the canal corridor within the Study Area. This was the interchange trade of goods between rail and barge. One such interchange is depicted on Ackerman's Panoramic view of 1847 to the south of the railway bridge over the canal, and a second one was recorded to the north of the bridge in *c.*1855 (Site A). Canal carriers such as Pickford's, Samuel Fellows and later Fellows Morton and Clayton all developed close links with the railway companies who increasingly controlled barge trade along the Birmingham Canal Navigations (BCN).

The basic pattern of industry continued relatively unchanged into the early 20th century, although the gas works (Site C) closed after municipalisation in the 1870s, to be partially replaced by an ice manufactory. The ice works was later incorporated into a wharf and warehouse for Fellows Morton and Clayton, now called The Bond. A large Corporation Wharf (Site D) was also built on the north side of the Birmingham and Warwick Canal to the south of the abortive viaduct between what later became the Great Western Railway and the London North Western Railway. This wharf was served by a basin off the main canal with a bridge to carry the towpath over. The wharf was the Corporation processing plant for Birmingham's night soil and ash, which by 1885 was handling two million pans of waste a year some of which was recycled (Upton 1993, 141).

Canal trade progressively declined during the 20th century effectively fossilising the decaying industrial infrastructure of the Study Area. This remarkable survival was recognised and appreciated relatively early by canal enthusiasts and sympathetic planning officers and was given full conservation area status in 1987 that has now led to the development of the Townscape Heritage Initiative.

6.0 Site specific studies

6.1 Site A: Curzon Street tunnel portal and adjoining canal features

The Digbeth Branch Canal runs through a cutting between Curzon Street road and rail bridges. The east, or towpath, side of the cutting that formerly abutted the Banbury Street Wharf of the L.N.W.R. is grassed over and is bounded with a modern post and wire fence. The west side of the cutting that backs onto the former Curzon Street Station compound retains more historic features that are described below.

Documentary background

The portal to the 'tunnel' is in fact that of a bridge taking the Digbeth Branch Canal under the railway. It dates from the late 1830s and was built to carry the Grand Junction Railway into Curzon Street Station. In a short space of time four railway companies were operating from the terminus and these, together with the new connection to New Street Station in the 1850s, effectively made the new railway

bridges built to accommodate this new traffic into one long tunnel. The earlier bridge arrangement is shown on Ackerman's view of 1847 (Fig. 6), together with Curzon Street Station, the terminus of the London and Birmingham, which, like Euston, the company's London terminus, was designed by the architect Philip Hardwick. To the south of the earlier and smaller railway bridge was an interchange basin served by a horse drawn railway that looped from the covered interchange shed back to the ancillary building to the side of Curzon Street Passenger Station. However, this was largely encapsulated under the extension of the railway bridge in the 1850s.

Kempson's map of 1810 (Fig. 4) is the first to depict a canal lock and side basin immediately south of Duddesdon Street, which was later renamed Curzon Street. This lock was the first of the Ashted flight of locks around the sandstone ridge and the earlier maps may simply not have been sufficiently detailed enough to show this type of feature. By 1855, a rectangular building had been erected over the basin parallel and immediately to the west of this lock (Fig. 7a). This was probably a covered interchange dock like the one indicated on Ackerman's view of 1847 to the south of the railway. Indeed, in his view a building and derrick are depicted that are in approximately the right place to be the former interchange basin, although no basin is actually shown. However, one is clearly depicted on the Pigott Smith map of *c.*1855. At this stage, the retaining wall on the west bank of the canal extended north from the tunnel portal then dog-legged to the west before joining the southwest corner of the interchange building.

By the 1:500 Ordnance Survey map of 1889 (Figs. 7b and 8 the 1890 OS 1:2500) the interchange building had been demolished because it had effectively been cut off from the rest of the Curzon Street railway depot by a series of sidings that probably supplied coal to a pumping station erected by the BCN. The pumping station had an L-shaped plan and by 1905 was owned by the London North Western Railway (Fig. 9). A significant section of this building survives today although detailed inspection of the elevations behind the Curzon Street depot was not possible. The line of the retaining wall of the canal cutting was also straightened when the interchange building was dismantled to take on its present position.

Description of the tunnel portal and canal wall

The tunnel portal faces north towards Curzon Street, and is built in the classical style favoured by the London and Birmingham Railway Company (cf. Euston and Curzon Street Stations). It is constructed of brick, faced with rusticated ashlar stonework bearing edged, parallel striated, tooling marks (Plate 1). A broad segmental arch is flanked by pilasters with squat pyramidal caps, the left hand pilaster is partially covered by a later blue brick (English bond) retaining wall (Plate 2). Above, a projecting cavetto-moulded parapet band is carried on stone dentils. The parapet and its coping stones are undecorated.

The right (west) abutment curves round to the north, the parapet (brick at this point) being carried on a squinch arch, to merge into a brick wall with stone coping that retains the western boundary of the canal (Plate 3). This wall extends for approximately 45m to the lock that lies to the north, and displays several structural phases (Plate 4), numbered here from south to north.

Phase 1
Phase 1, which is part of the tunnel portal build, is approximately 24m in length and built of 9"x 4½" x 2¾" red bricks.

Phase 2
Approximately 4m from the bridge slight anomalies in the brick coursing (Plate 5) suggest that from this point northwards (i.e. for about 20m) the upper courses of wall belong to a separate build, though, owing to its similarity of character, was probably raised only slightly later than Phase 1.

Phase 3
The junction of phases 2 and 3 is marked by a very clear, but ragged, vertical joint (Plate 6). Phase 3, which is approximately 6m in length, is built of 8¾" x 4¼" x 3" red bricks of mid to late 19th-century character laid in English bond. The joint between phases 2 and 3 appears to coincide with the point at which the canal boundary returned towards the west to accommodate the building over the dry dock shown on Pigott Smith's map of *c.*1855, so Phase 3 as well as later phases must post-date the demolition of this building which occurred sometime between 1855 and 1890.

Phase 4
Phase 4 is represented by a stretch of wall built in a mixture of red and blue bricks to the north of Phase 3. Its exact relationship with Phase 3 could not be ascertained, but it appears to post-date the Pigott Smith map of *c.*1855.

Phase 5
Phase 5 lies above the northern section of Phase 3, being separated from it towards the south by a vertical joint (Plate 7), and is built in front of the southern end of Phase 4. It is constructed of engineering bricks of late 19th-century character laid in English bond. The remainder of the canal wall, which is also built of engineering brick, and which is also stratigraphically later than Phase 4 is considered here to be part of Phase 5. It extends towards the north as far as Curzon Street.

Lock and interchange basin

Both the lock (Plate 8) and interchange basin are of early 19th-century character. They are built of red brick laid in English bond with stone coping. A flight of stone steps extends up the east side of the lock. At the south end of the interchange basin is a semi-conical weir.

Pumping Station

The pumping station, which fronts Curzon Street, is a late 19th-century structure of classical proportions built in red brick (English bond) with blue brick bands (Plate 9). This two-storey building, which has probably been reduced in height, has three bays of panels with dentilled heads recessed between pilaster buttresses. In the central panel of the ground storey there is a blocked segmental-headed window with stone sill, and in the right hand panel an inserted doorway with concrete lintel. In the right hand upper panel is an inserted window. The first two bays of a high wall attached to the right continue the style of the pumping house and appear to represent the remains

of a contemporary structure, though a vertical joint between the two bays and differences in the use of brickwork suggest that the right hand bay has been largely rebuilt. There is also a high wall attached to the left hand side of the pumping house, but joints in the brickwork point to this being a rebuild of an earlier structure (Plate 10).

6.2 Site B: Canal wall, Fazeley Street Bridge to the Gun Barrel Proof House

Documentary background

The New Steam Mills are first depicted on Pye's map of 1795 (Fig. 3). Two buildings are shown, one immediately west of the Digbeth Branch Canal on Andover Street, the other on the south side of Fazeley Street. On Pigott Smith's map of 1828 (Fig. 5), the mill comprised two roughly square blocks situated to the north of Fazeley Street, one of which, probably the engine house, was hard against the west bank of the canal in the position of the existing boundary wall. The New Steam Mill Company was listed in the 1818 edition of James Piggot's *Commercial Directory* as 'Wire Drawers and Workers', a growing industry in Birmingham that was to undergo vast expansion during the latter half of the century (Skipp 1983, 57-8).

In 1813 the Birmingham gun makers obtained an Act of Parliament for erecting and establishing a proof-house where gun barrels were to be tested and marked. A plot of land was purchased immediately to the north of the New Steam Mill Company buildings, and the first stone of the proof-house laid on 29 September 1813 (Dent 1894, 344). The 1828 map shows a small inlet from the canal at the south corner of the Gun Barrel Proof House site at the point at which the canal widens around the junction with the Birmingham and Warwick canal. Here, the west bank is cut back at an oblique angle to follow a more northerly direction, the southeast wing of Gun Barrel Proof House being aligned with it, before turning back to its original course.

Both the New Steam Mill and Proof House are shown on Ackerman's Panoramic View of 1847 (Fig. 6) which depicts a densely built up plot of land between the canal to the east and Andover Street to the west. A more accurate representation can be seen on Pigott Smith's *c.* 1855 map (Fig. 10), on which the eastern walls of the New Steam Mill Company appear built right up to the water's edge, whereas those of Gun Barrel Proof House were set back from the canal. Between the two properties at this date was a third set of premises with a canal frontage. This was entered from Banbury Street and comprised a long L-shaped plot with buildings all along the southwest boundary with the New Steam Mill Co. and along the southeast side where they were separated from the canal by a narrow wharf or strip of land.

On the 1890 map (Fig. 8) the central property is described as a chemical works and there is a covered gateway depicted in the southeast range towards the canal. By this date too a narrow strip with rectangular end blocks had been built in front of Gun Barrel Proof House on the canal bank. By 1905 (Fig. 9) the chemical works was no longer being described as such, and the buildings in the southeastern half of this property had disappeared. Little change had occurred by 1918 (Fig. 11), but by 1937 (Fig. 12) the canal frontage of the former chemical works had been provided with a small wharf.

Description of the Gun Barrel Proof House canal wall

The brick-built canal wall (Plate 11) extends along the opposite side of the Digbeth Branch Canal from the towpath from the Fazeley Street bridge in a northeasterly direction for *c.*60m (Section A) as far as, and including, the Proof House. Here it turns north-northeast for about another 20m (Section B), before turning to the northeast again for *c.*10m (Section C). The canal is situated within a cutting along this section, although the depth of the cut is not as severe as that in Site A.

Section A can be divided into four principal components numbered here from left to right (southwest to northeast). A1 has a height of *c.*3.5 – 4m above water level, and extends from the Fazeley Street bridge for *c.*10m. A2 is *c.*20m long and *c.*6m high, and A3 *c.*20m long and *c.*1.2m high. Most of A4, which is *c.*10m long, does not appear to be bricked, although the bank is about the same height as A3, but at the right hand (northeast) end a short length of four brick courses is visible above water level.

Section A1-2: Phase 1

Phase 1 consists of hand-made red brick, some flared, laid in English garden wall bond (mainly one row of headers to three courses of stretchers), or, in some of the lowest courses, English bond. It is largely confined to A2 where is rises from water level to a height of about 3.5m. The structural character of this phase is consistent with an 18th-century date, and can be identified with the remains of the New Steam Mill Company wire manufactory.

At the left-hand end of this Phase 1 wall there is a blocked opening (Plate 12), apparently a doorway, with a blue brick sill approximately 2 ft above the water. The blocking consists of a lighter coloured brickwork. Immediately to the left of this former opening is a vertical joint in the brickwork which marks the junction of A1 and A2. In the centre is a blocked segmental-headed opening, possibly a doorway at one stage, but then blocked and converted into as window (Plate 13). Approximately 2 ft above water level is a blue-brick sill.

To the right of the blocked doorway is a vertical joint in the brickwork, the wall beyond this belongs to Phase 2. The joint begins about 1m above water level, and it seems that the canal wall was originally much lower to the northeast. Probably it was only a retaining wall to begin with here, whereas the left-hand (southeast) section represents part of the mill building that appears on maps from the late 18th century onwards and is clearly shown on Pigott Smith's map of *c.*1855.

The only other part of the wall that that can be identified as belonging to Phase 1 is the lower courses of A1 which seem to be continuous with those of A2. Later alterations have obscured the degree of Phase 1 brickwork within A1, but it certainly seems to extend as far as the obtuse angle within the wall, and may have extended as far as the bridge. Its current upper limit is marked by a concrete band approximately 1m above water level.

Section A1-2: Phase 2

Phase 2 is a continuation to the north of the New Steam Mill building and is built of red brick laid in Flemish garden wall bond in contrast to the English garden wall bond of Phase 1. It represents an extension to the New Steam Mill building and had been built by 1889.

Section A1-2: Phase 3
Immediately above the concrete band across A1 the wall is built in English bond and is probably mid to late 19th century in date. It extends across the entire length of A, though it is stepped down towards the right (northeast), and includes the foot of a buttress at the junction with A2.

Section A1-2: Phase 4
Phase 4 is represented by a rebuild of the right hand (northeast) side of A1 in English bond, and includes a reconstruction of the Phase 3 buttress.

Section A1-2: Phase 5
Above A2 is an upward extension of approximately 3.5m in a paler red brick laid in Flemish stretcher bond with a late 19th-century or early 20th-century blue brick coping. It includes a heightening of the buttress at the junction with A1.

Section A1-2: Phase 6
A late 20th-century rebuild of the left hand (southwest) side of the bridge abutment wall in stretcher bond.

Section A3
A3 comprises a low retaining wall of several periods. A vertical joint in the brickwork and a misalignment of the brick bonds demonstrates that the left hand (southwest) section is structurally distinct from A2. Here, English garden wall bond is used, but two further sections of brickwork, in the centre and at the right hand (northeast) end of A3 are in English bond and appear to be later in date (mid to late 19th century). These three sections of wall are separated by two blocked openings, perhaps inlets or outlets from the canal into the New Steam Mill Company works. A3 seems to be part of a later phase of the New Steam Mill Company works that was developed in stages between 1855 and 1905.

Section A4 is the site of the chemical works of 1890. Although there were buildings on the site by *c.*1855, they were not seemingly built up to the water's edge.

Section B, which relates to the Gun Barrel Proof House, dates from the late 19th century, and is built of red brick laid in English bond with a blue-brick plinth and dressings. On the left-hand side of the waterfront is a boldly projecting blind section, overlying the corner of the adjacent recess containing a blocked square window (Plate 14). The wall then continues at a different angle, in front of, and parallel with, the southeast range of the Gun Barrel Proof House (Plate 15). This section of wall, which has extensive later patching, is terminated at each end by a blind pavilion, the left-hand one of two stories and the right-hand one of one storey with a lean-to roof.

Section C had not been built by *c.*1855 but appears on the Ordnance Survey map of 1890. It is constructed of red brick laid in Flemish bond and contains a segmental headed gateway towards the left-hand, or southwest, end (Plate 16).

6.3 Site C: 176-182 Fazeley Street: remains of Fazeley Street Gas Works

Documentary background

Site C lies within the street block formed by Fazeley Street, the River Rea, the Birmingham and Warwick Canal (now Grand Junction Canal), and Great Barr Street. The only building depicted on Pye's map of 1795 (Fig. 3) was located in the eastern third of this block and was called 'Cooper's Mills', the later name of Heath Mill that was medieval in origin.

The northwestern two-thirds of the block remained undeveloped until 1836 when the Birmingham Gas; Light and Coke Company leased land from the Gooch Estate in order to construct a gas works between Cooper's Mill and the River Rea. The complex is depicted on Ackerman's View of 1847 (Fig. 6), a plan of 1854 (Fig. 14a), on Pigott Smith's *c.*1855 map (Fig. 13), and finally on a plan of 1875 around the time of its closure after the gas industry came under municipal control in Birmingham (Fig. 14b). The 1854 and 1875 plans show the three gas holders and retort house clustered together at the northwest end of the site. Immediately to the southeast of the gas holders, along the Fazeley Street frontage, was a terrace of three properties. These buildings can be identified as the existing 180-182 Fazeley Street and comprised the valve and meter houses, offices, and a dwelling house during the life of the gas works.

In 1884 part of the retort house section of the gas works was converted into an ice manufactory and 180-182 Fazeley Street were retained. Fellows, Morton and Clayton also built a canal-side warehouse and wharf (The Bond) next to the ice manufactory over the area formerly occupied by the purifiers, condensers and lime shed of the gas works (Fig. 15). Development continued on the site of the former gas works such that by 1905 (Fig. 9) an extra building had been added to the southeast of 182 over the former entrance to the gas works. In addition a longer range, 176-178 Fazeley Street had been attached to the northwest of 180. It is these buildings that comprise the present day frontage.

Buildings description

176-8 Fazeley Street

The map evidence indicates that 176-8 were built between 1890 and 1905, and the architectural evidence accords with this view. Both buildings are of two-storeys and built of red brick rendered to the front, with slate roofs (Plate 17). No. 176 (Hicks Metals and Alloys Ltd) has a central carriage entrance, doors to left and right and five bays of small windows with cambered heads. No. 178 has slightly irregular fenestration, probably indicating two properties of three bays (left) and two bays (right). There is a large carriage entrance occupying a position to the centre and right of centre, a blocked door to the right with straight dripstone on console brackets and a rectangular overlight, and a later 20th-century door and flanking windows to the left. All five 19th-century windows survive at first floor level. They are four-pane sashes with straight hood moulds on console brackets. Neither of these properties appears to be of special architectural or historic interest.

180-2 Fazeley Street

180-2 include the three properties depicted on the Pigott Smith map of c.1855 and are contemporary with the gasworks. Today all are of domestic character (Plate 18) but

from left to right comprise the former meter house, offices, and dwelling house. All components are of red brick, have slate roofs and are of two stories. 180 comprises an early to mid-19th century two-storey, two-bay house to the left, and a higher two-storey wing to the right with a hipped roof. Twelve-pane glazing bar sash windows are used throughout. The left-hand section has a four-panelled door to the left with rectangular latticed overlight and a straight hood mould, and windows with straight bracketed hood moulds with low keyed obelisks above. The windows of the right-hand section have straight hoods on console brackets.

No. 182 comprises an early to mid-19th-century three-bay house to the left, and an addition of between 1890 and 1905 to the right with slightly higher eaves level, a hipped roof, and four-pane sash windows with straight hood moulds. The earlier house has a six-panelled door to the left with pilastered doorcase, rectangular overlight and straight hood mould. The windows are twelve-pane sashes, and between the two first floor windows is a blocked lunette. The brickwork of the upper storey is lighter in colour than the ground storey and probably represents a raising of the eaves line. In the middle of the first storey is a semi-circular recess. There is no clue to its function but it may have housed a gas light.

6.4 Site D: Corporation Wharf

Documentary background

The land occupied by the Corporation Wharf was never intensively developed until the 1870s. To a large extent this was probably due to its propensity to flooding, being situated so close to one channel of the River Rea. This stretch of the Rea was not effectively protected until the 1850s when the water management system for Cooper's or Heath Mill was radically altered. Pigott Smith's map of 1828 shows a towpath against the northeast side of the canal (Fig. 5), and immediately northeast of the path, at the corner of Great Barr Street, a small L-shaped building. Ackerman's View shows the area of the Corporation Wharf to have retained a rural aspect, and to have been dotted with small houses (Fig. 6). Much the same arrangement prevailed by *c.* 1855, but by 1889 the Ordnance Survey 1:500 map shows the night soil and ash processing plant at the Corporation Wharf at its zenith (Fig. 16). The plant was built within a large triangular plot of land between the canal, the River Rea, and the redundant Great Western Railway viaduct to the east. The landward access to the site was from Montague Street where there was a covered carriage entrance. This led to the south corner of a large three-armed building that lay immediately northeast of the towpath, from which rails appear to have emanated. Two other ranges had been built to the north, on a northeast/southwest alignment. Essentially, the same arrangement prevailed in 1905 though another range had been raised to the east, close to the railway viaduct (Fig. 9). No further major changes had occurred by 1937.

The night soil and ash processing plant was an important component of the Corporation's response to one of the most pressing issues confronting the Victorian industrial town, and was developed in the 1870s and 1880s in response to increasing concerns about sanitation and public health. This problem revolved around the disposal of two commodities, the basic waste products of an industrial town based on coal technology – one was the enormous quantity of ash from open fires and the other was night soil. Prior to the construction of the plant a simple yard was used to deposit the refuse collected from night soil pans copied from those used in many northern

towns including Rochdale, which lent its name to the system. From 1873 these pans began to replace the open middens that had been scattered throughout the town. The problem was that the contents of these middens tended to seep through the permeable sandstone and gravels thus contaminating the town's ground water supply, a large proportion of which was still drawn from wells in the poorer districts. At this stage in the early 1870s, unbelievably to our 21st-century sentiments, this waste was sorted by gangs of scavengers by tipping the ash into a sort of pound and emptying the contents of the pans into the middle. The whole would then be mixed together, and when dried, would be sorted by throwing against sloping wire screens. Some waste was then sold as manure and distributed by cart and canal boat to the countryside and the rest dumped on tips. There was obviously scope for the introduction of mechanisation to this process in the use of steam power to screen the waste and heaters to dry the mixture. Therefore, in 1879, after a phase of experimentation and comparative study of other towns, machinery, plant and stabling were erected at the cost of £25,000 at the Montague Street wharf. The works was further extended in 1882 by £27,000 worth of larger machinery. In 1874 the number of pans in use was only 3,845. By 1884 this had risen to 38,865, nearly two million loads being dealt with in the course of the year. In 1883 the staff at the Montague Street depot included a superintendent, 7 foremen and clerks, 60 collectors, 4 ashmen, 22 wharfmen, 30 stokers, 9 wheelwrights, 1 groom and two labourers. The civic pride in the application of 'scientific principles' to the problem of night soil can be gauged from an extract of a description of the Montague Street works that appeared in the *Birmingham Daily Post* in August 1883 that is reproduced as figure 17 (copied from Bunce 1885,143-145). This found further expression in the laying out of flower-beds around the sweeping drive into the works. This article provides a detailed insight into the operation of the works and clearly there is a significant potential for below-ground remains associated with the works to have survived. In 1884 a further proposal was made to extend the works, at an estimated cost of £35,000. However, this would appear not to have been implemented for by that date the Saltley filtration and sewage works had been completely reconstructed and an 8 foot diameter conduit laid to carry the towns water-borne waste to it. This finally made possible the fulfilment of Pigott Smith's vision of 1857 of 'ultimately and universally' introducing 'the water closet and house drainage by means of tubular pipes' (Skipp 1983, 166), preparations for which had involved the detailed mapping of the town at 1:528.

Building description

The continued use of Corporation Wharf as a waste management centre by the City Council has meant that very few of the features described above are visible. However, the sweeping approach to the works from Montague Street survives as a roadway paved in stone setts (Plate 19). It leads through one of the railway viaduct arches towards the former entrance of the covered wharf and opens out into a yard. Here there is a curving wall (Plate 20) that seems to be represented on the 1889 map as flanking the north side of the approach to the wharf. It is constructed of 9" x 4½" x 3" red bricks with blue brick headers laid in English bond and appears to be of late 19th-century date. The wall incorporates three square piers with bullnose corner bricks, including one at the east end. It has a concrete slab coping.

Behind (southwest of) the current late 20th-century buildings is the mouth of a truncated arm of the canal that formerly extended into the Corporation Wharf (Plate 21). It flowed under a towpath footbridge that is supported on a steel girder carried on

stone blocks. At the lower level the bridge abutments are built of late 19th-century bricks (9" x 4¼" x 3"). Above the girder is later brick in English garden wall bond. This canal arm does not appear on any of the maps because it was covered along its entire length by buildings.

7.0 Conclusions

This programme of archaeological desk-top assessment and building recording has demonstrated that above-ground elements of historic structures associated with canal-based trade and commerce survive within each of the four sites studied. In addition, documentary research has established a chronological framework within which the development of the structures may be understood that ranges in date from the late 18th-century arrival of the canals through to various 20th-century changes. These standing structures include the partially demolished remains of the pumping house, and the blocking associated with the encapsulation of the interchange dock at Site A. At Site B, the truncated survival of walling possibly associated with the putative engine house for the New Steam Mills, and various alterations to access from the canal into the Gun Barrel Proof House. At Site C numbers 180-182 Fazeley Street have been demonstrated to be the former dwelling house and offices associated with the gas works, and at Site D limited above-ground remains have survived of the former night-soil processing plant, including the entrance to the canal basin, a paved roadway, and a ramp. Another aspect of this survey has been to establish that there is potential survival of below-ground features and deposits on each site. These include: features associated with the pumping house and interchange lock at Site A; features associated with the putative engine house at the New Steam Mill site and the canal wharf at the Gun Barrel Proof House at Site B; remains of gasometers and possibly distributive metering and pipe work in the gas works buildings in Fazeley Street at Site C; and the remains of various types of plant, including engine bases, flue bases and sorting facilities, at the night-soil processing works at the Corporation Wharf.

The Warwick Bar Conservation Area represents probably the least-altered survival of buildings and structures associated with urban canal-based trade and industry in Birmingham. While - with the possible exception of the pumping house (Site A), canal wall of the Gun Barrel Proof House (Site B), 180-182 Fazeley Street (Site C), and basin entrance (Site D) - these above-ground remains are variable and partial, nevertheless, they derive group value by association. Therefore, these above-ground and potential below-ground remains require careful management and curation in order to preserve and enhance the unique character of the conservation area. Historical research and structural survey work are one stage in this process, providing information upon which informed conservation decisions may be based. While it is not the place of this study to offer recommendations regarding these issues, clearly , if access were negotiated in future, it would be worthwhile inspecting internally the pumping house at Site A and 176-178 Fazeley Street at Site C.

8.0 Acknowledgements

This project was commissioned by British Waterways and Birmingham City Council. Thanks are due to Stephen Sedgwick of British Waterways who oversaw the project for BW, and Dr Mike Hodder, the Planning Archaeologist for Birmingham City Council. Thanks are also due to Toni and George Demidowicz for advice on

documentary sources and for providing information on the Heath Mill area based on their research. Also the aid of staff at the Birmingham Central Library is gratefully acknowledged. At BUFAU Steve Litherland managed the project and the fieldwork was undertaken by Malcolm Hislop, both of whom collaborated on the writing of this report. The illustrations were prepared by John Halstead and Edward Newton and the report was edited by Kirsty Nichol.

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1810 J. Kempson
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*c.*1855 J. Piggott Smith, Survey of Birmingham 1:528, sheets 112, 128, and Supplementary Sheet 1, Plan 2.
1889 O.S. 1:500
1890 O.S. First Edition 1:2500
1905 O.S. Second Edition 1:2500
1918 O.S. Third Edition 1:2500
1937 O.S. Fourth Edition 1:2500

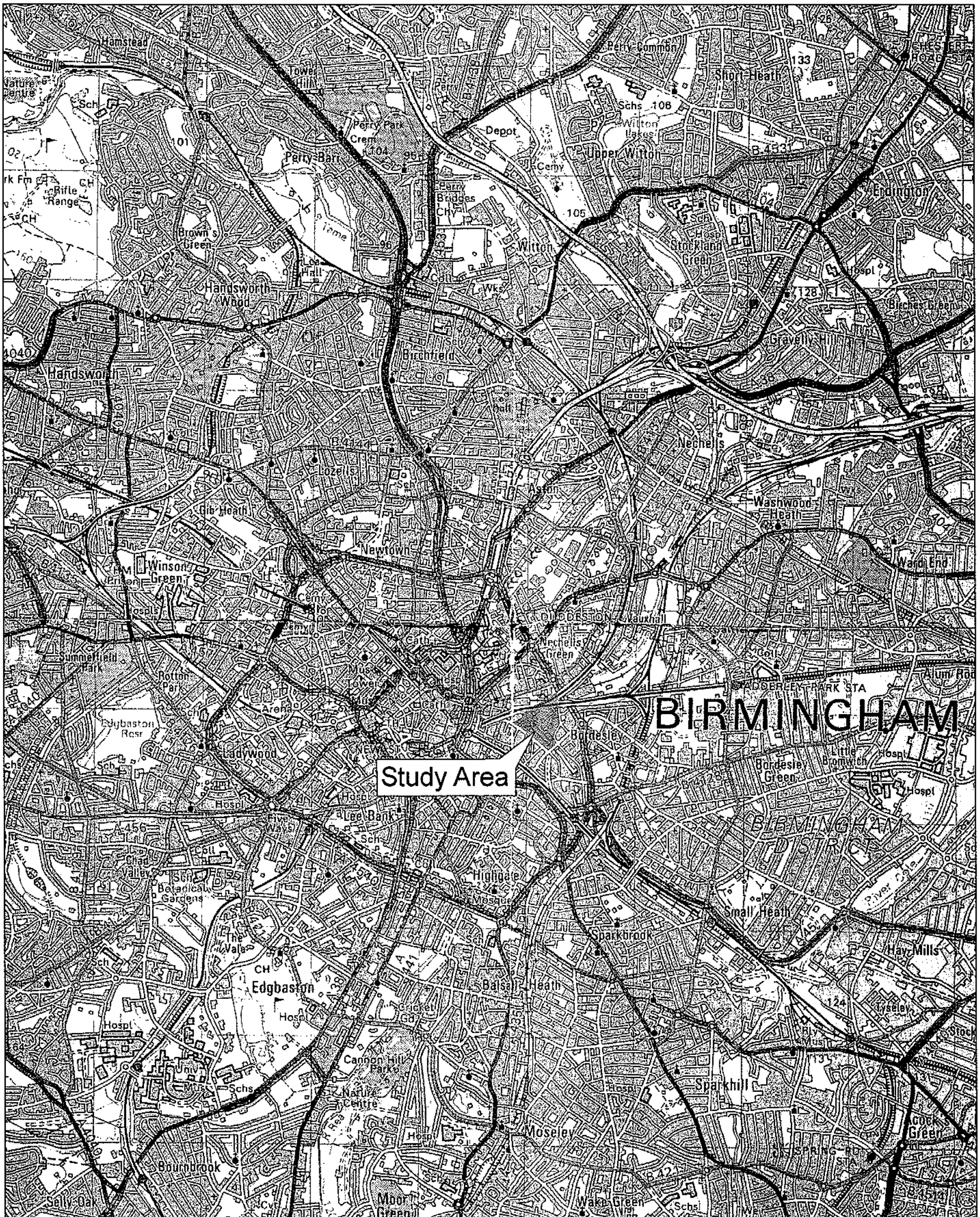
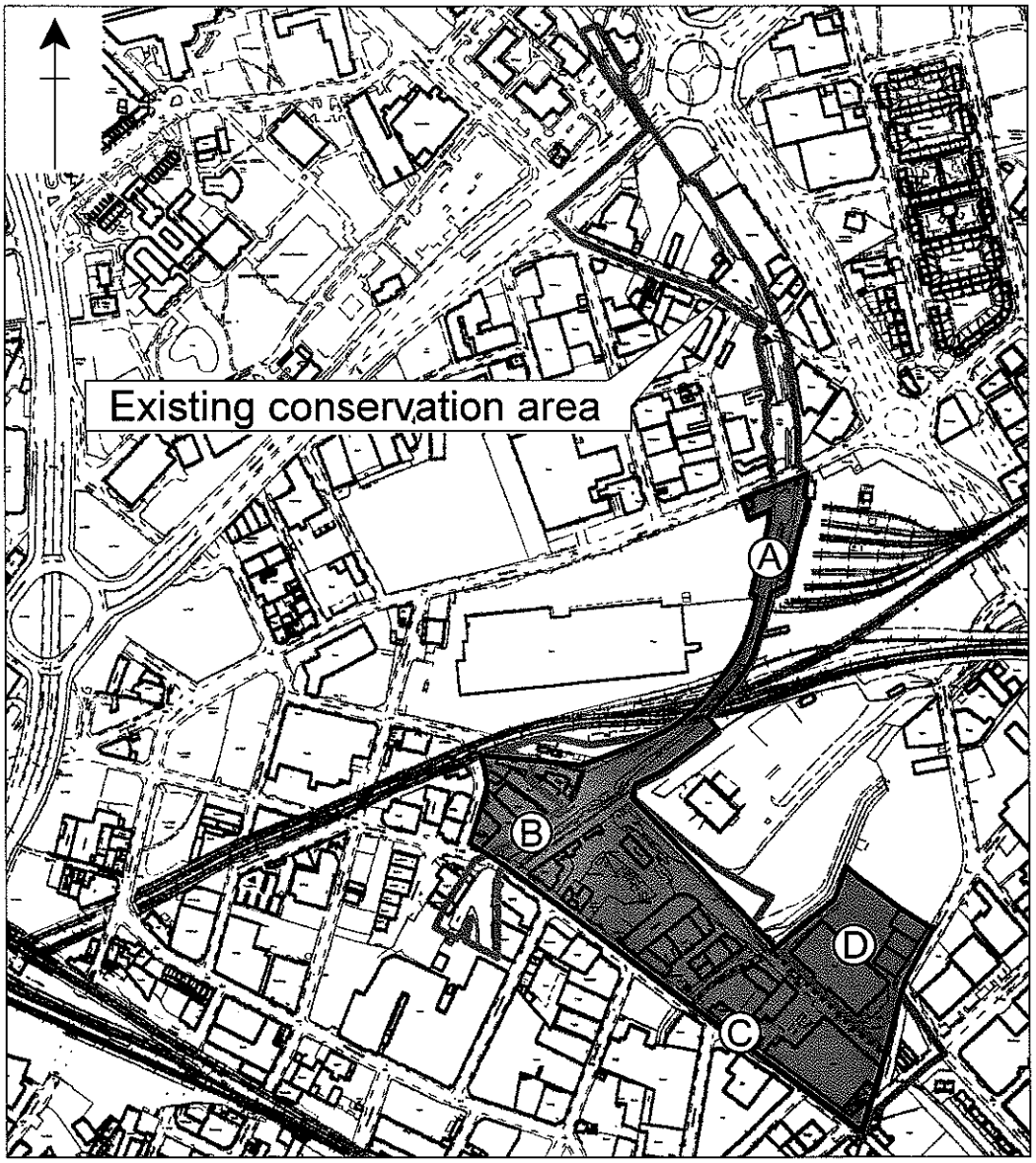

Study Area
BIRMINGHAM
Hamstead
Perry Common
Short Heath
Perry Barr
Upper Witton
Erdington
Witton
Stockland Green
Handsworth Wood
Birchfield
Gravelly Hill
Handsworth
Nechells
Lozells
Aston
Washwood Heath
Newtown
Winson Green
Ward End
Summerfield Park
Rotton Park
Edgbaston Resr
Ladywood
Bordesley
Bordesley Green
Little Bromwich
Five Ways
Lee Bank
Highgate
Botanical Gardens
Sparkbrook
Small Heath
Hay Mills
Edgbaston
Balsall Heath
Tyseley
Cannon Hill Park
Nature Centre
Sparkhill
Moseley
Bournbrook
Selly Oak
Moor Green
Wake Green
Selly Park
Ten Acres
Springfield
Kings Heath
Stirchley
Bournville
Billesley
Billesley Common

Fig.1



study area

Ⓑ sites

Fig.2

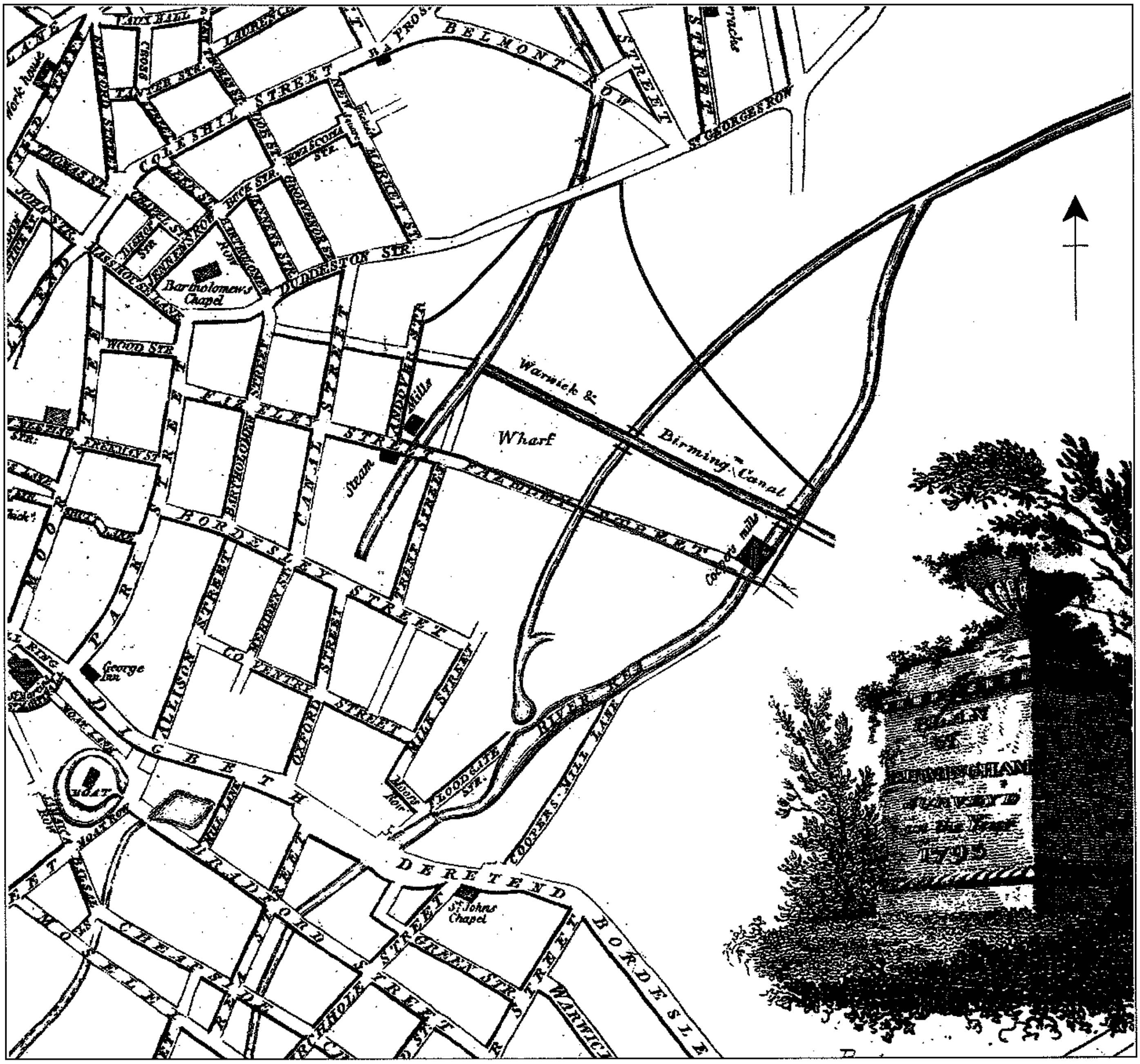

BELMONT ROW
COLESHILL STREET
DUDDESTON STR.
Bartholomew's Chapel
WOOD STR.
CANAL STREET
Wharf
Warwick & Birming.m Canal
Coopers mills
George Inn
DERETEND
St. Johns Chapel
COOPERS MILL LANE

Fig.3

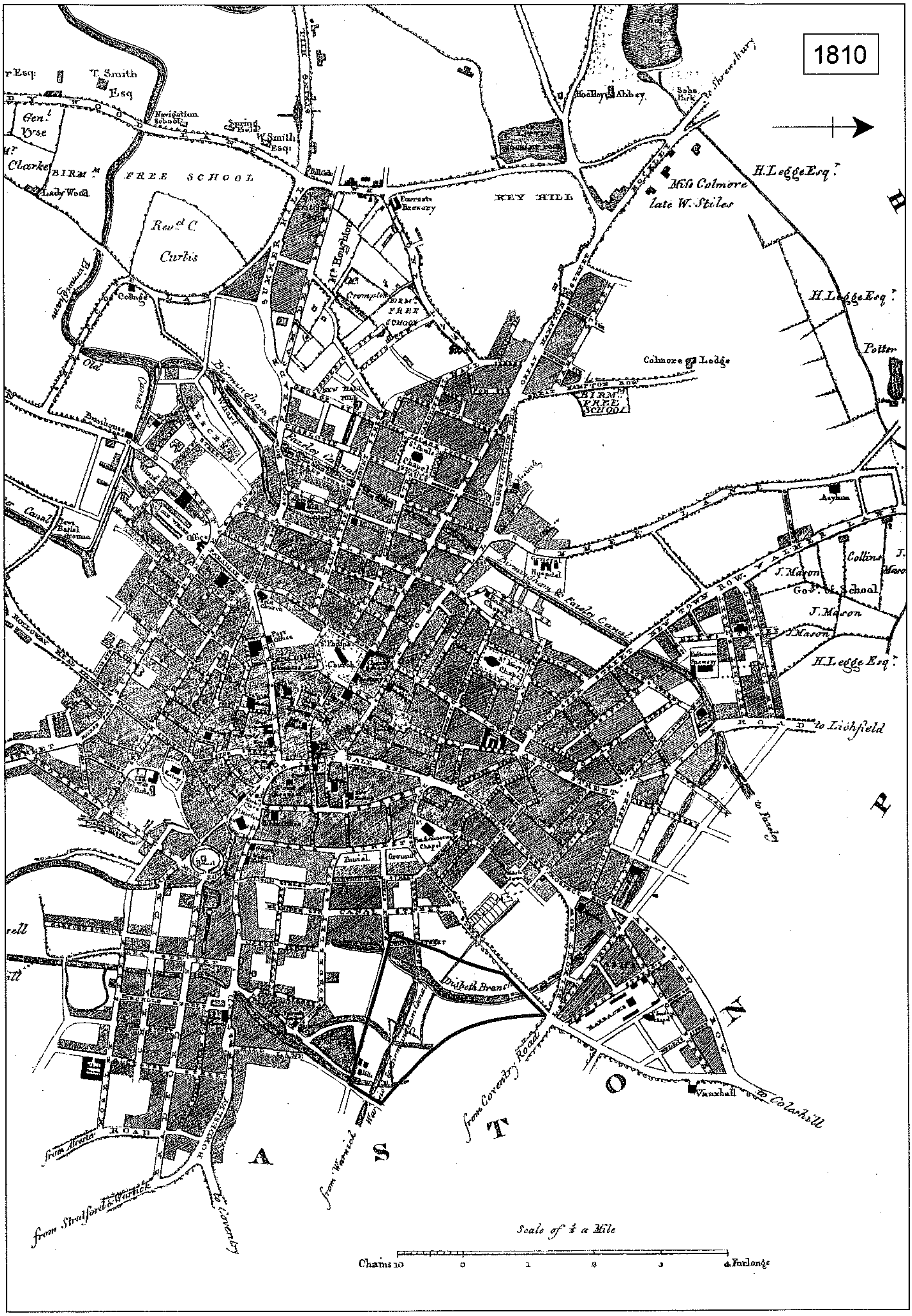

1810
T. Smith
Esq
Navigation School
W. Smith Esq
Lady Wood
FREE SCHOOL
Revd. C. Curtis
KEY HILL
Hockley Abbey
Soho Park
to Shrewsbury
H. Legge Esq.
Miss Colmore late W. Stiles
H. Legge Esq.
Colmore Lodge
BIRM. FREE SCHOOL
Potter
Asylum
Collins
J. Mason
Gov. of School
J. Mason
J. Mason
H. Legge Esq.
to Lichfield
Birmingham & Fazeley Canal
St. Philips
Church
Post Office
Burial Ground
Chapel
Digbeth Branch
from Coventry Road
Vauxhall
to Coleshill
from Warwick
from Alcester
from Stratford & Warwick
to Coventry
A S T O N
Scale of ½ a Mile
Chains 10
0
1
2
3
4 Furlongs

Fig.4

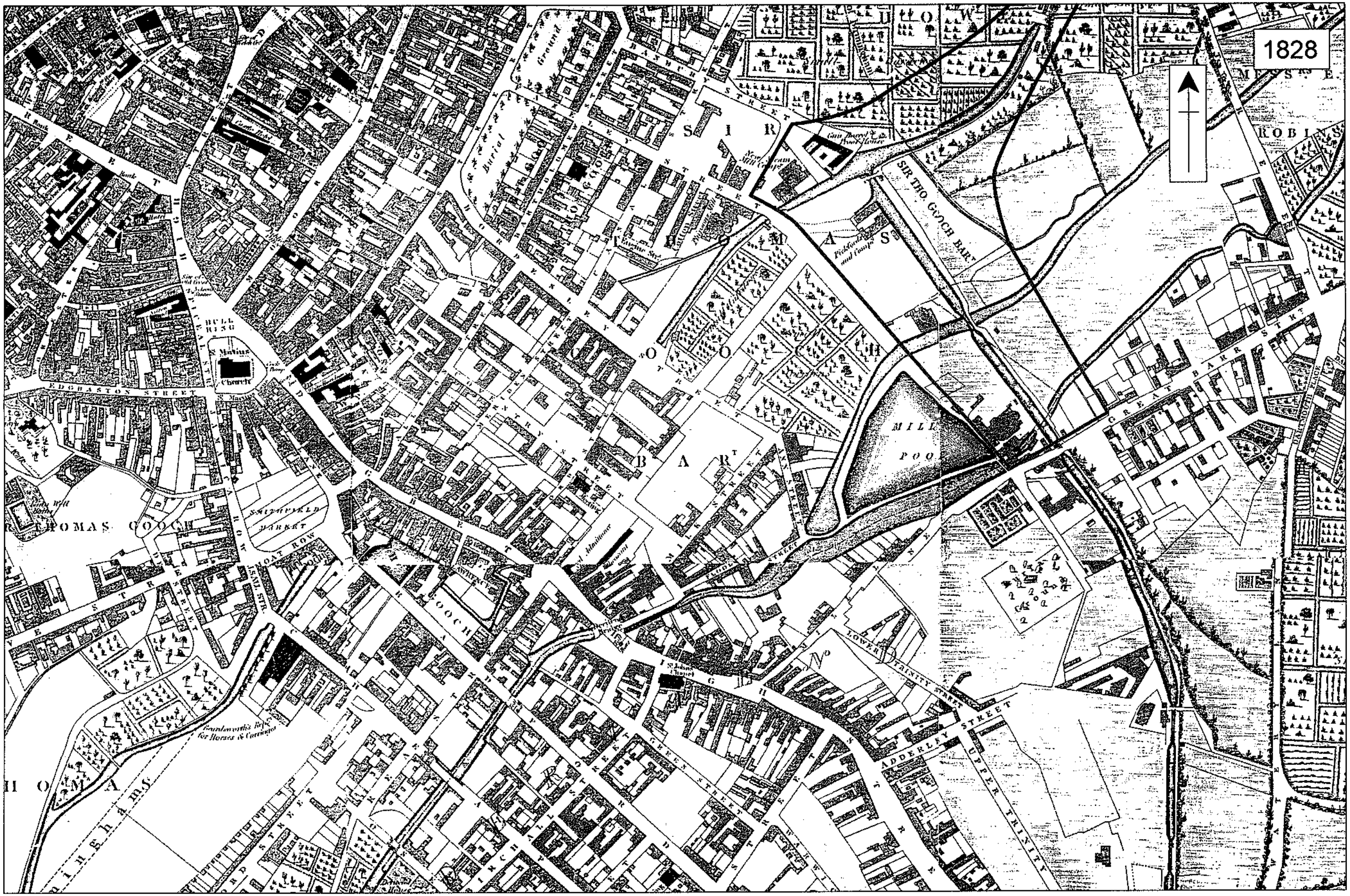

1828
SIR THO. GOOCH BAR^T
MILL POOL
BULL RING
EDGBASTON STREET
SMITHFIELD MARKET
MOAT ROW
GREAT BARR STREET
LOWER TRINITY STREET
ADDERLEY STREET
UPPER TRINITY
GREEN STREET
ISAAC STR.
St Martins Church

Fig.5

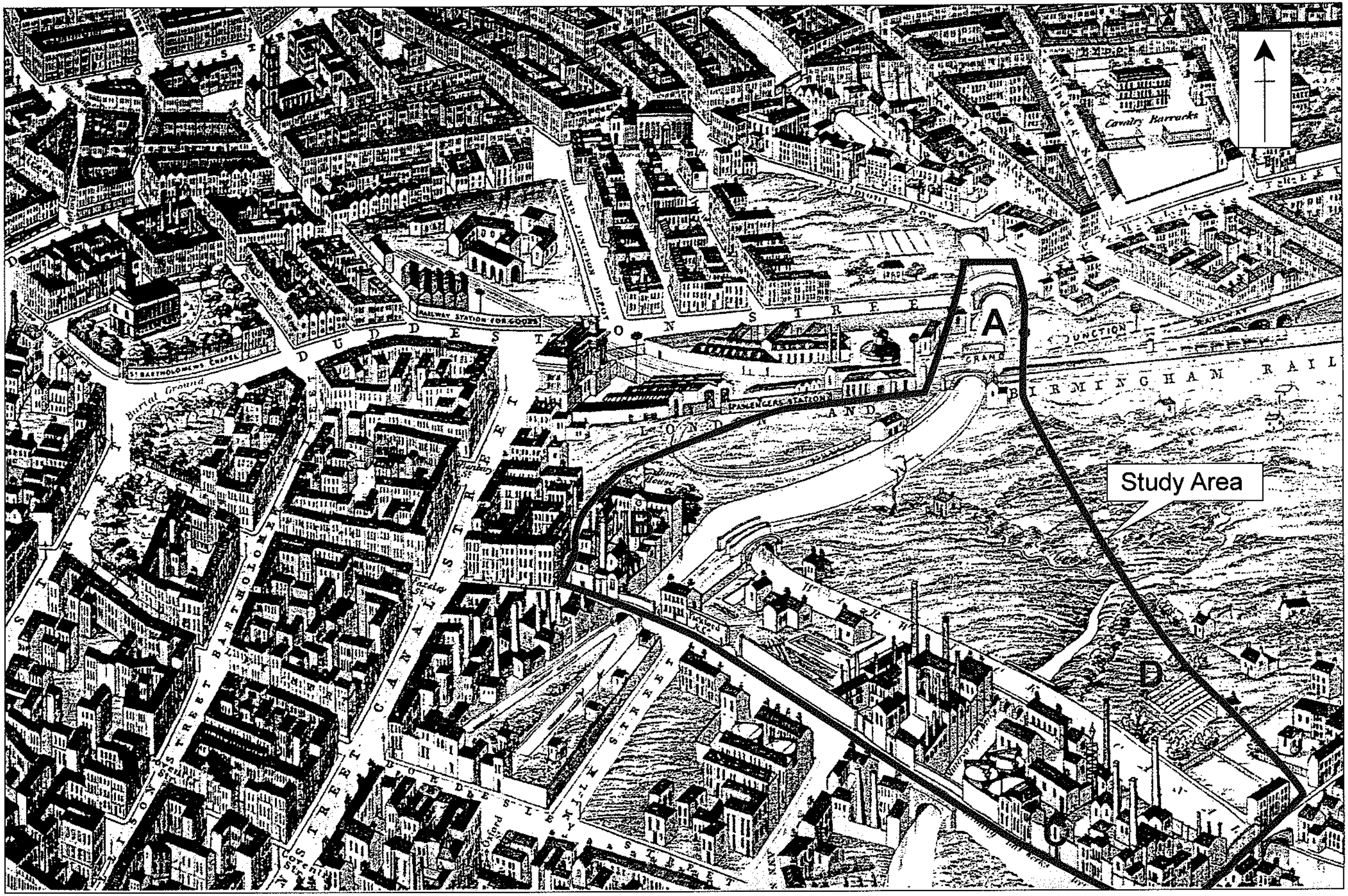
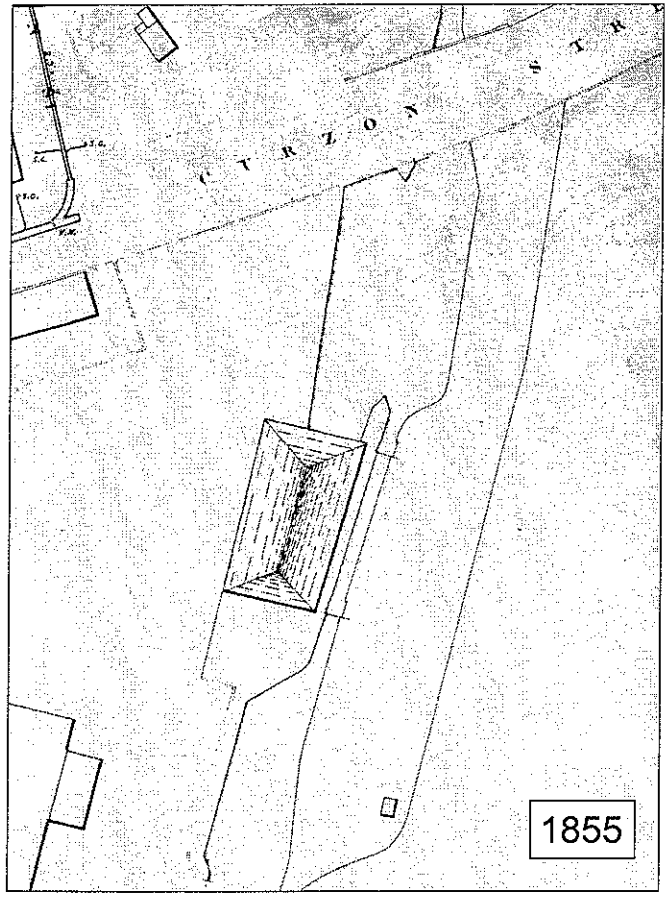

Study Area
A
B
C
D
DUDDESTON STREET
BIRMINGHAM RAIL
LONDON AND
JUNCTION
GRAND
PASSENGERS STATION
RAILWAY STATION FOR GOODS
St BARTHOLOMEWS CHAPEL
Burial Ground
Windsor Street
Cavalry Barracks
CANAL STREET
BARTHOLOMEW STREET
FORDROUGH STREET

Fig.6

SITE A



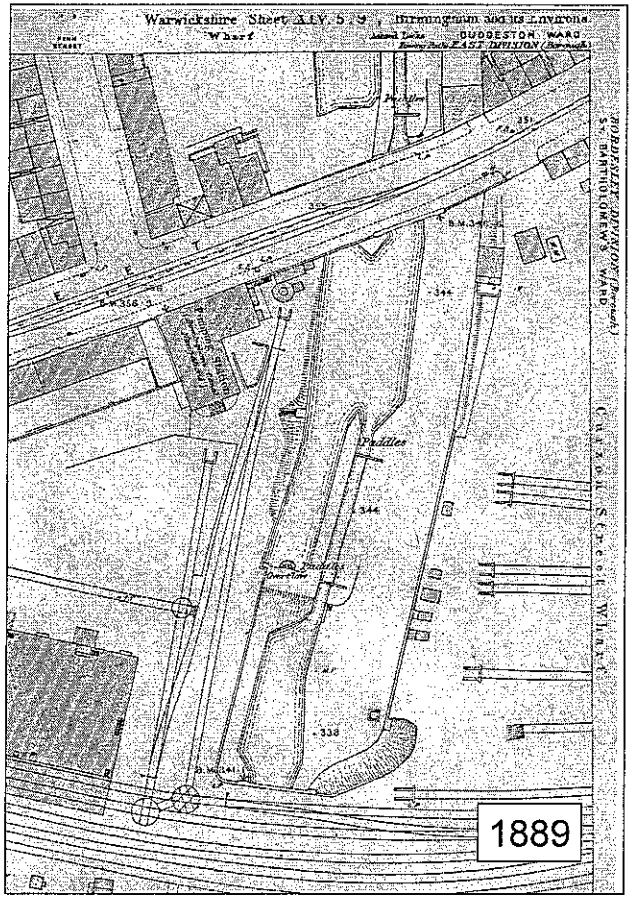


Fig.7

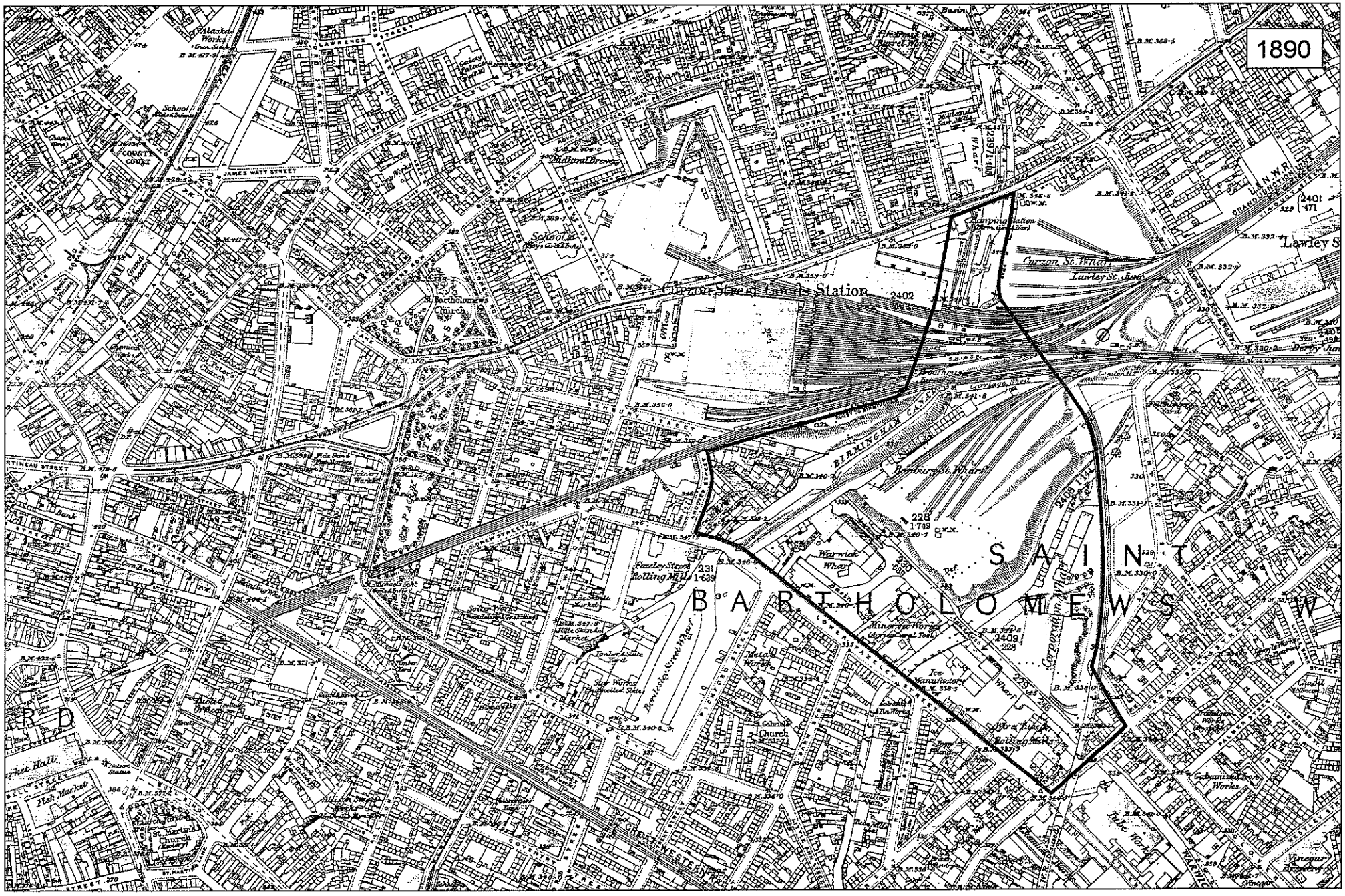


Fig.8

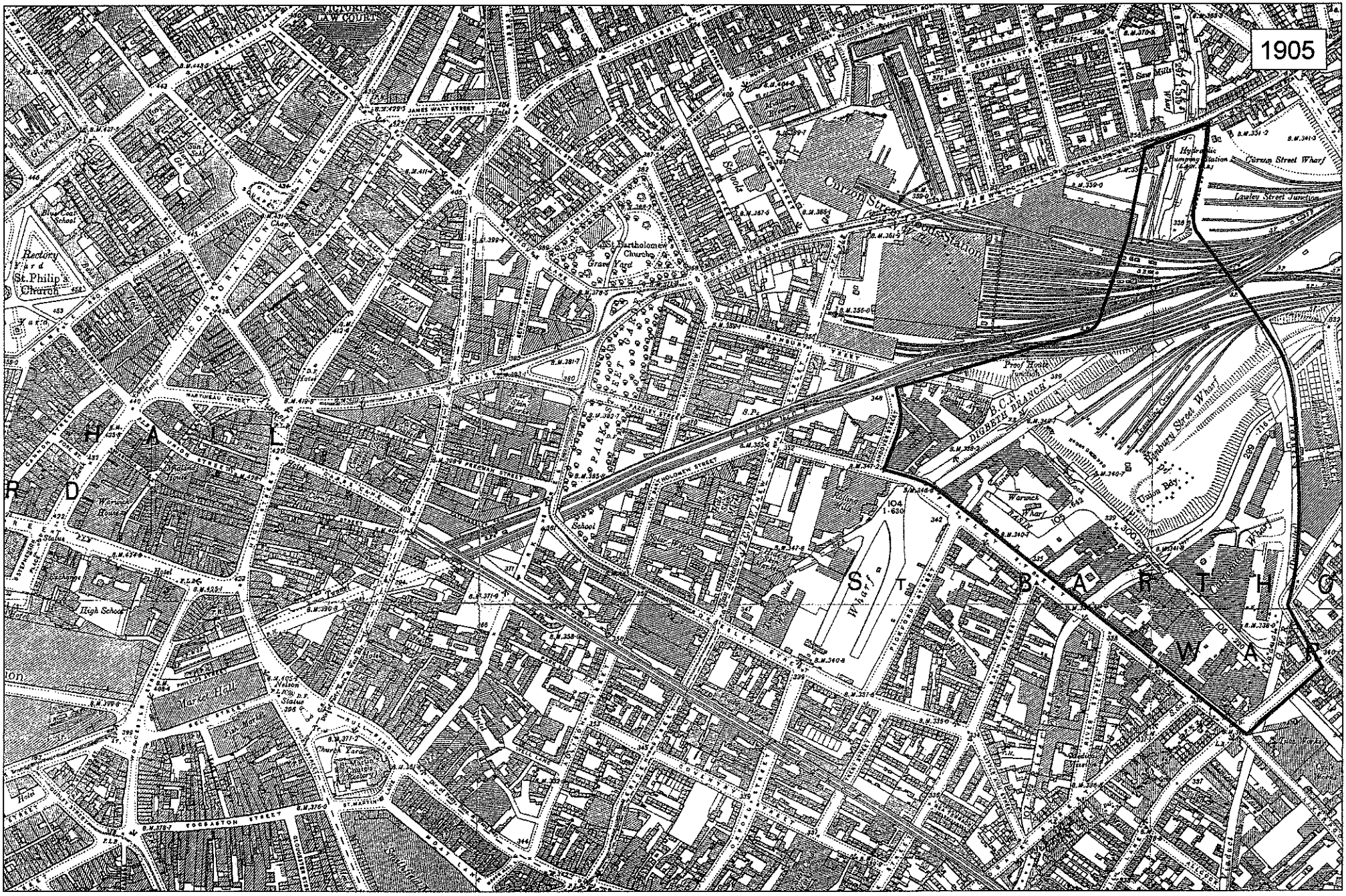


Fig.9

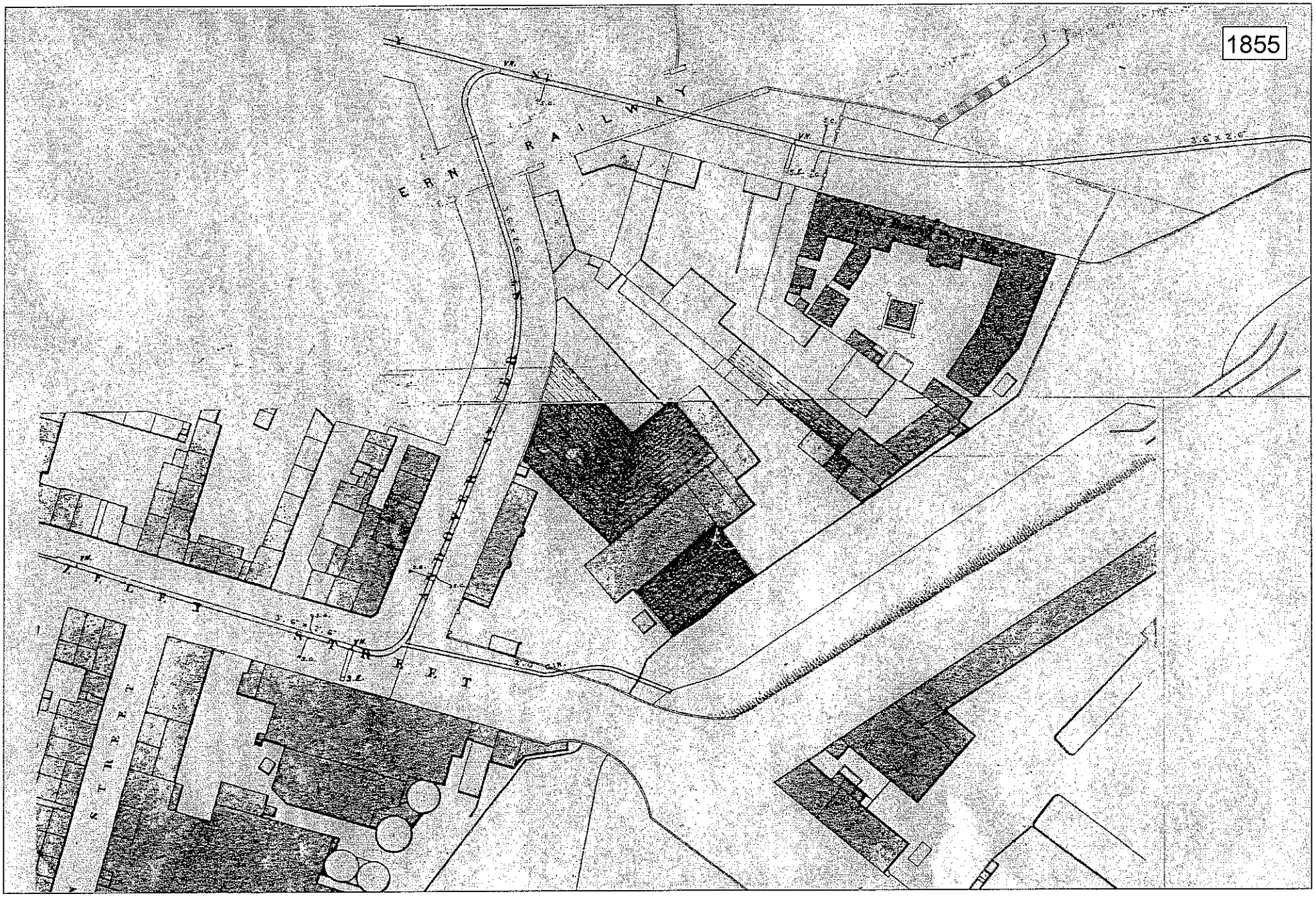


Fig.10

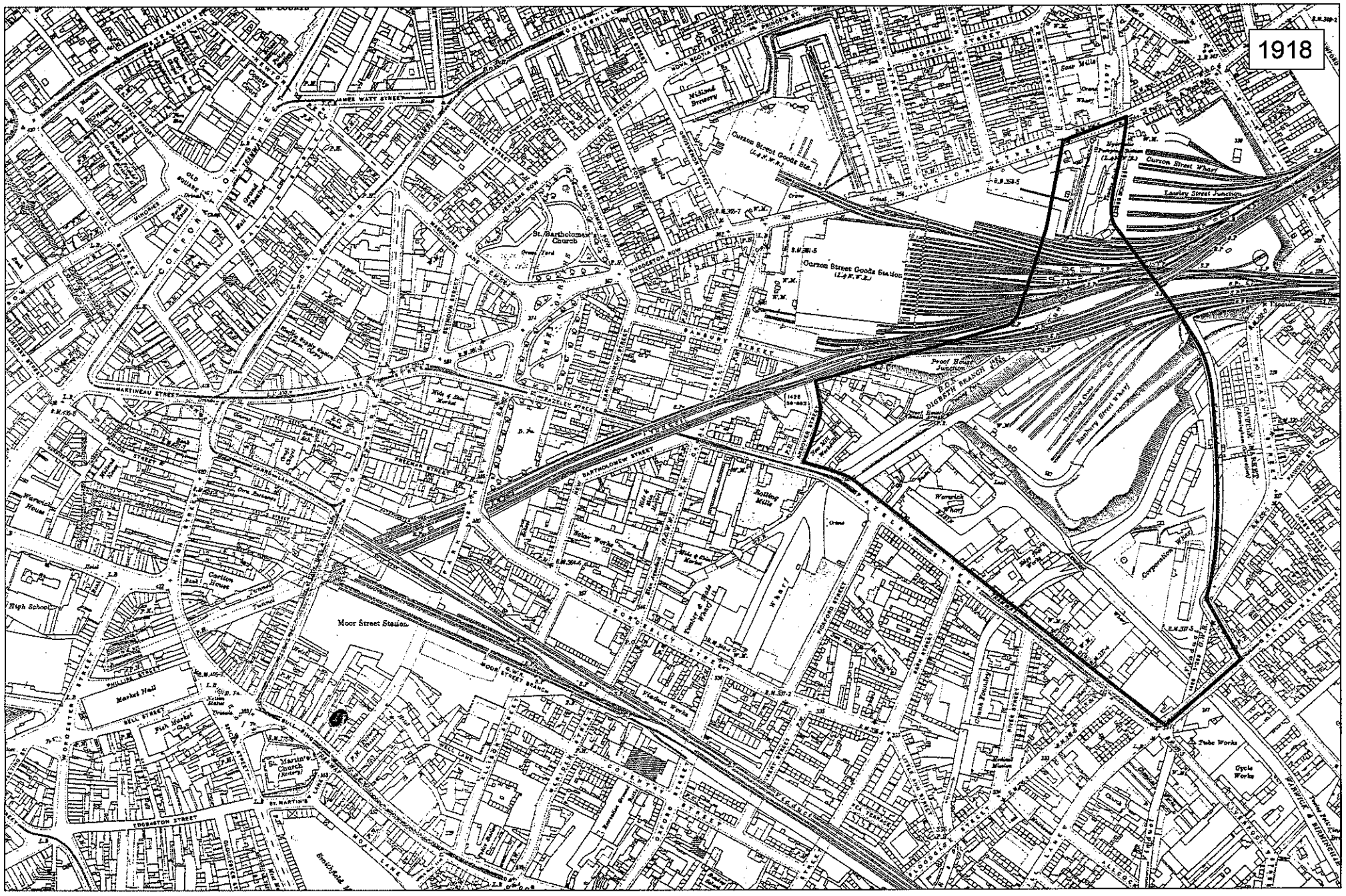

1918
Curzon Street Goods Sta.
Curzon Street Goods Station
St. Bartholomew's Church
Curzon Street Wharf
Lawley Street Junction
Proof House Junction
Rolling Mills
Moor Street Station
Market Hall
Fish Market
St. Martin's Church
Warwick & Birmingham

Fig.11

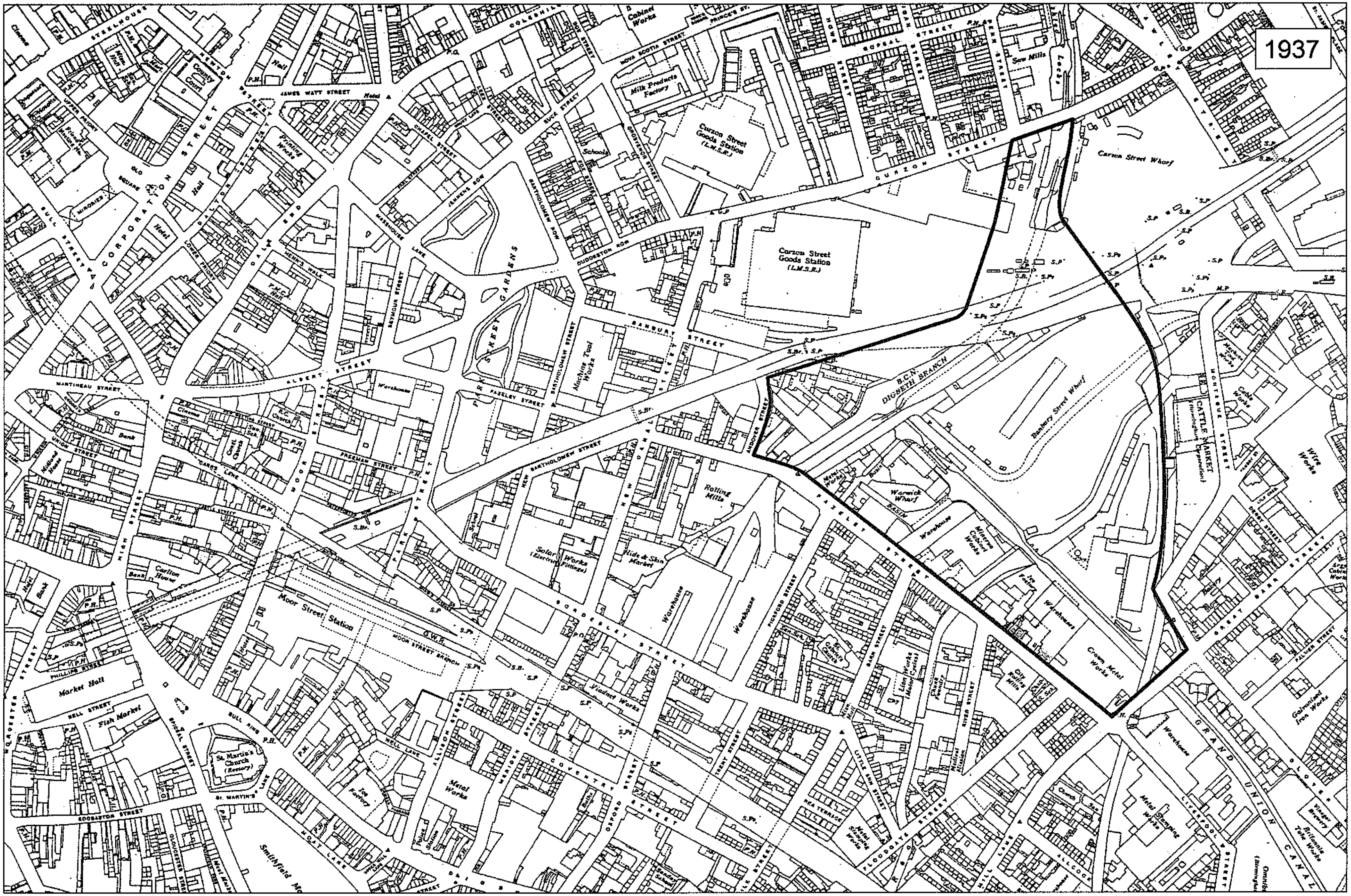

1937
Curzon Street Goods Station (L.M.S.R.)
Curzon Street Wharf
Banbury Street Wharf
B.C.N. DIGBETH BRANCH
CATTLE MARKET
Warwick Wharf
Crown Metal Works
Minerva Cabinet Works
Rolling Mills
Hide & Skin Market
Machine Tool Works
Moor Street Station
G.W.R.
Market Hall
Fish Market
St. Martin's Church (Rectory)
Metal Works
Metal Stamping Works
Wire Works
Galvanised Iron Works
Britannia Tube Works
Viaduct Works
Milk Products Factory
Printing Works
County Court
Saw Mills
Locks
GRAND UNION CANAL
CURZON STREET
BANBURY STREET
FAZELEY STREET
BORDESLEY STREET
COVENTRY STREET
MOOR STREET
PARK STREET
ALBERT STREET
CORPORATION STREET
HIGH STREET
BULL STREET
NEW CANAL STREET
NEW BARTHOLOMEW STREET
DUDDESTON ROW
GARDENS
Smithfield

Fig.12

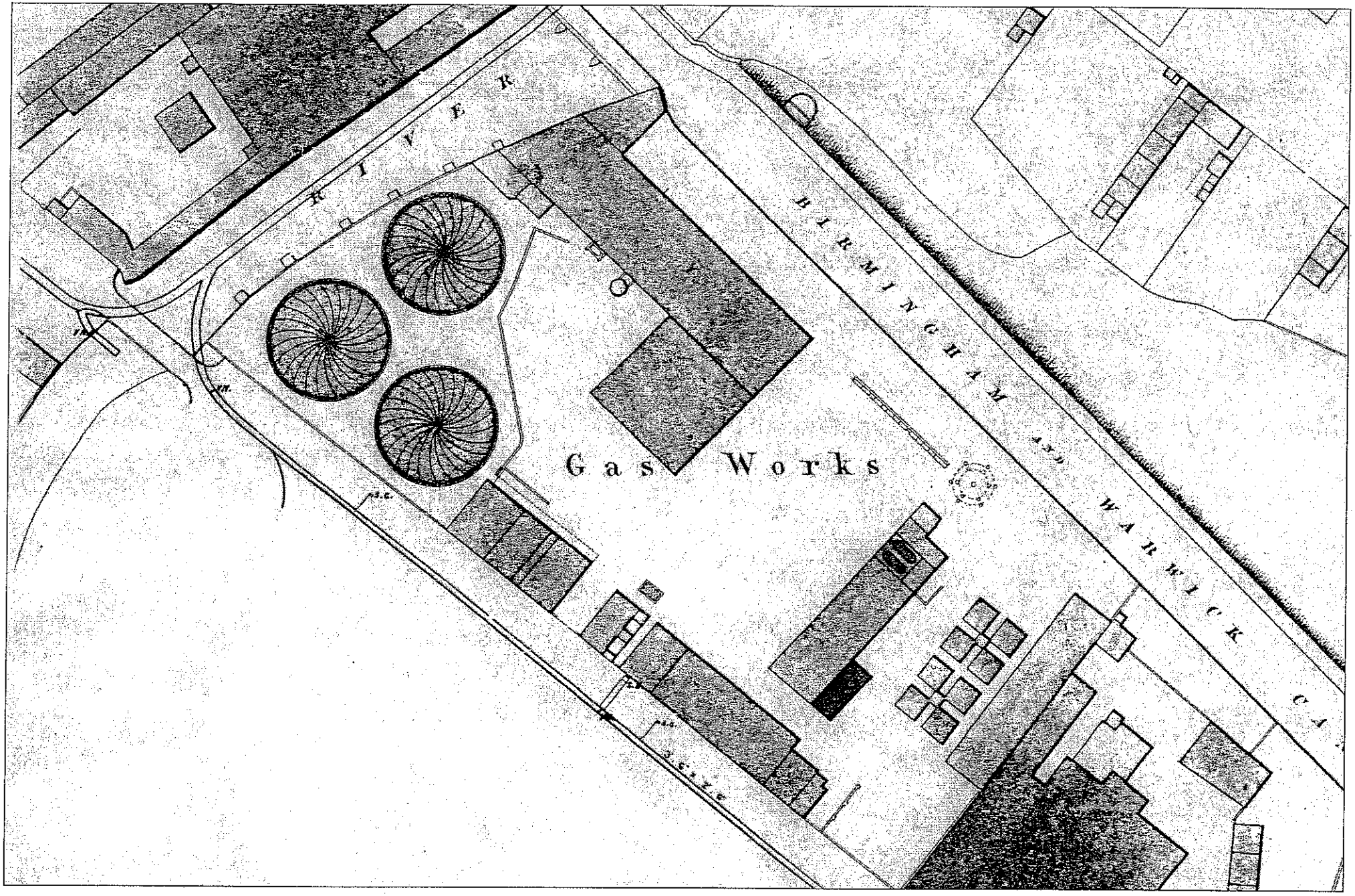
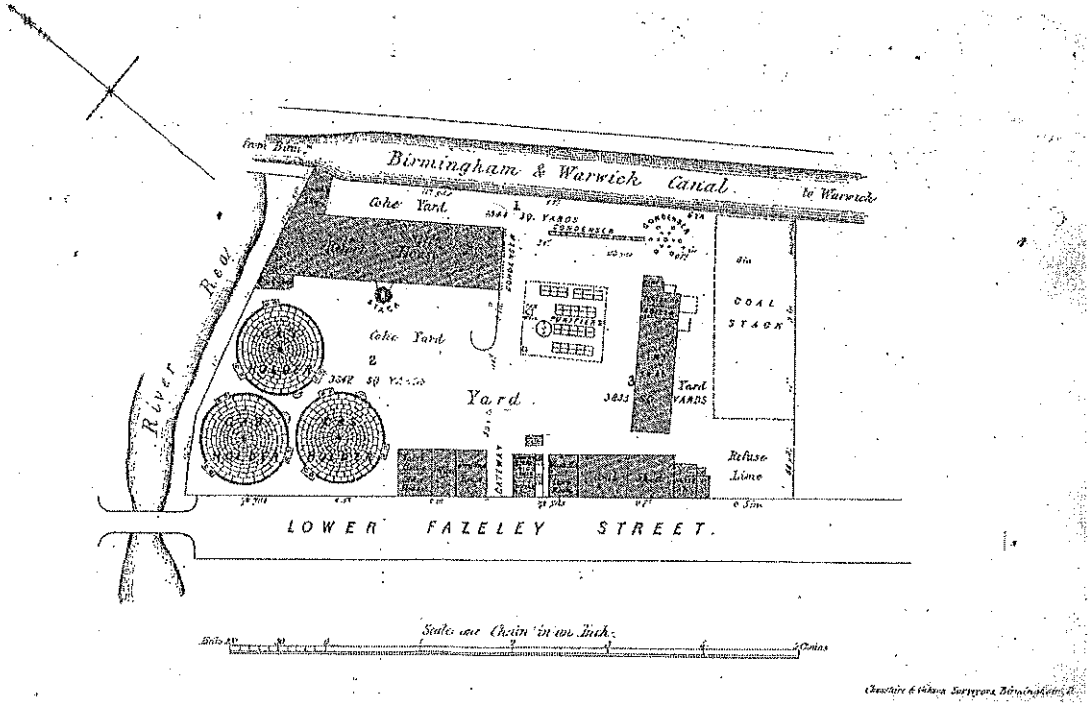
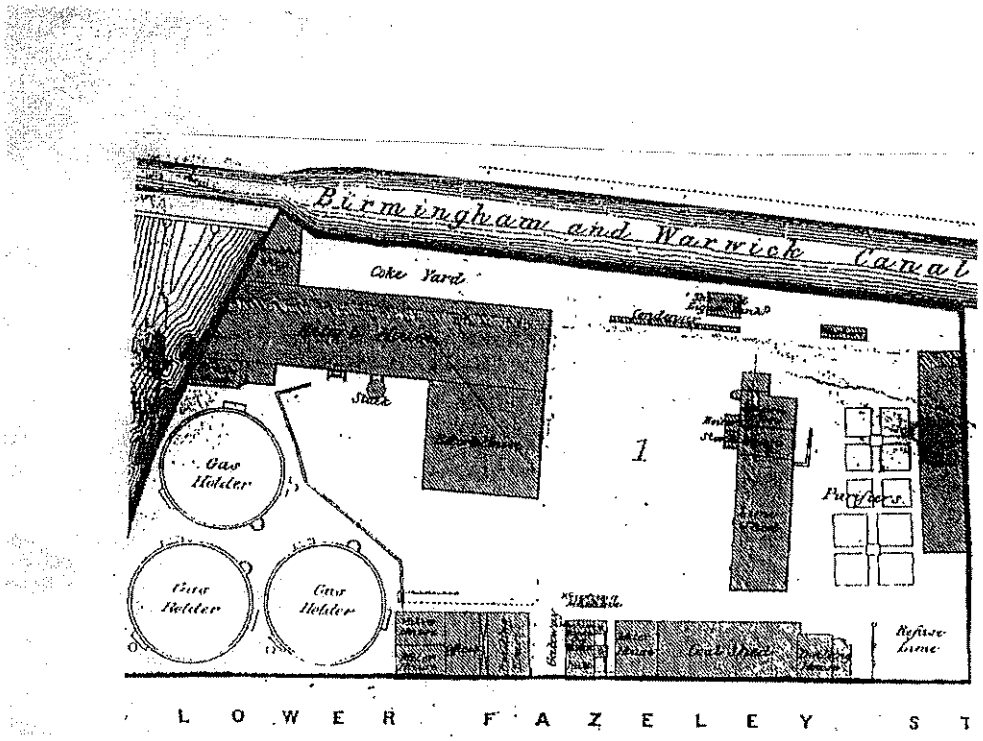


Fig.13



1854



1875

Fig.14

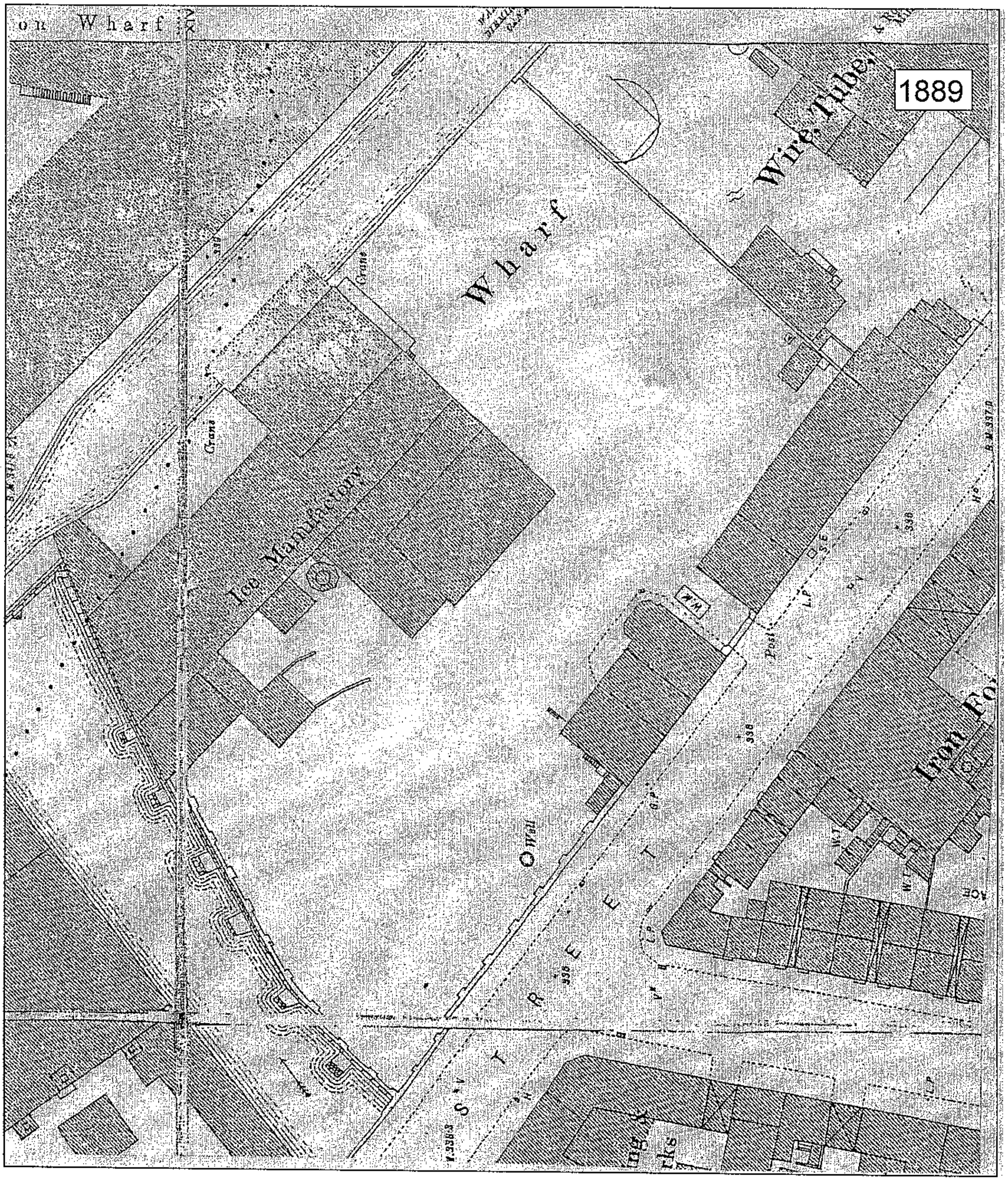

on Wharf
1889
Wire, Tube,
Wharf
Crane
Crane
Ice Manufactory
Post
Iron Fo
S T R E E T
rks

Fig.15

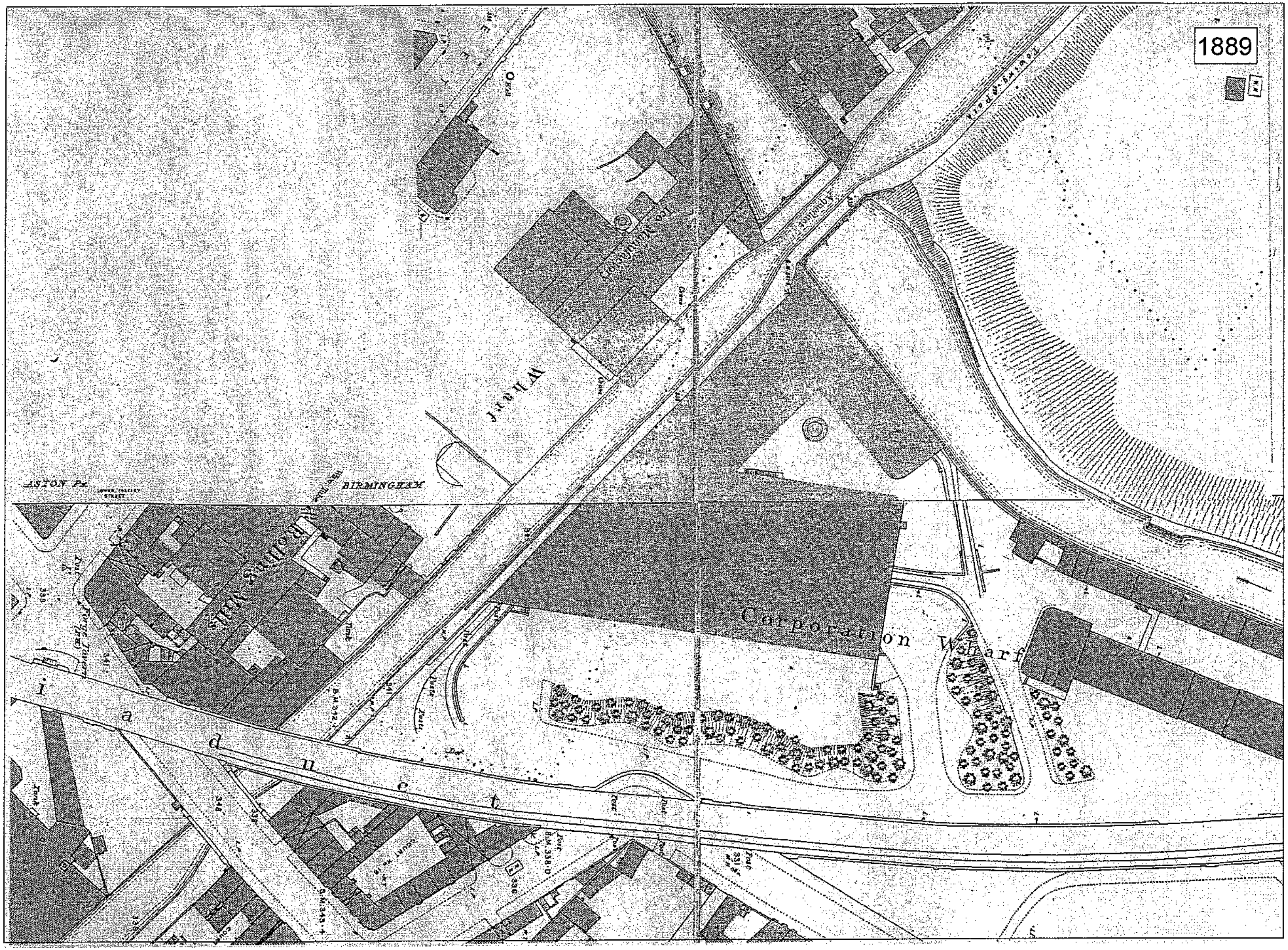
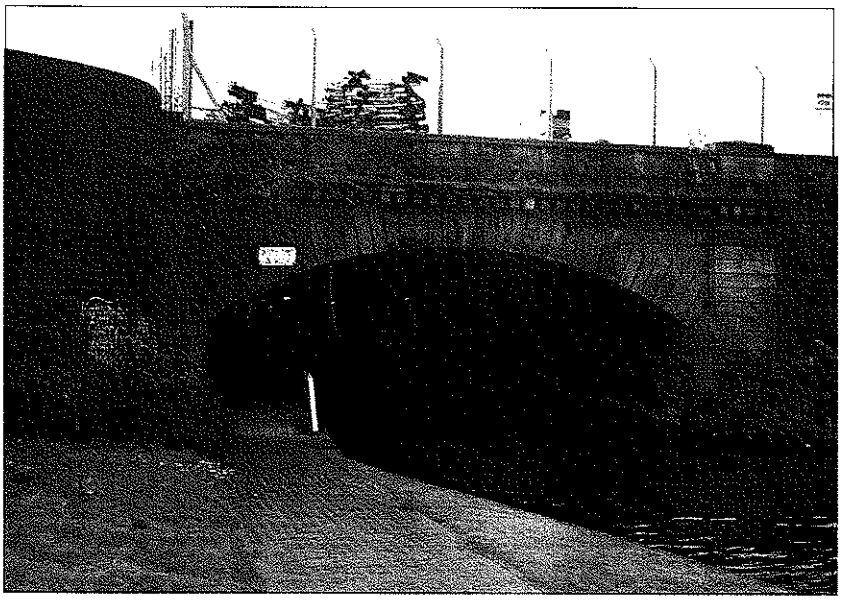

1889
Wharf
Ice Manufactory
Aqueduct
Corporation Wharf
Rolling Mills
Forge Tavern
Tank
ASTON P.
BIRMINGHAM
Viaduct

Fig.16

What is being done by the Health Department in the treatment of refuse is best illustrated by describing a visit to the large wharf in Montague Street—once a nuisance, which threatened to lead to more ligitation—but now part planted out with shrubbery beds, and intended, possibly, at no distant time to be opened to the public as a recreation-ground. It is thirty-one acres in extent, and has a rise from Montague Street towards the canal, which runs through it. Along the lower side is a roadway, along which, in the daytime, may be seen a line of between thirty and forty of the removal vans. Each of these will carry eighteen pans at a time, as well as a quantity of dry refuse from the dust tubs, and some of them perform three or four journeys per night. About two-thirds of the matter collected under the interception system in the borough is at present dealt with at this wharf. Looking towards the canal, we see upon the other side of it a long range of buildings elevated upon iron pillars, so that there is a large span of canal bank beneath, and approached at the left-hand side by a bridge and inclined plane. As the carts arrive at the foot of the ascent the over-exertion of the horses is avoided by the use of a chain revolving over a steam-drum, which quickly helps them and their burden to the top. Turning to the right, the van is brought to the side of a platform constructed of open ironwork, which runs level with the floor of the van, and on the further side of which is a huge iron tank, closely covered in with a partly-movable lid, and capable of containing between twenty and thirty tons of pan contents. The pans are removed from the wagon one by one on to the platform, and emptied into the tank, into which the moving of a crank also discharges over the contents of each a sprinkling of charcoal. The van is drawn on a little further until the rear end is over a trap door beneath, down which, by the opening of a hopper, the contents of the ashbin are quickly discharged into a capacious iron-lined pit. There are four such iron tanks as the one just described along the line of platform, and two ashpits; also a kind of stall, in which pans which have been emptied are thoroughly washed before being again sent out. At some height over each of the ashpits is a large octagonal iron screen, into which the mixed contents of the pits are raised by a chain of buckets. The revolutions of these screens results in a division of the mixture into fine ashes, coarse ashes, and miscellaneous refuse—animal, vegetable, and mineral—which will not pass through the bars, and these three constituents are discharged in separate heaps upon the canal bank below. None of them are without some element of value. Under the older process which the Health Committee have been carrying on, the fine ashes are mixed in a pug-mill with fœcal matter from the tanks, so as to make a portable and inoffensive manure, which is sold to farmers at £2 10s. per boat-load of 25 tons—a price which involves a loss to the committee of between 5s. and 10s. per boat-load. The coarse ashes are of value as fuel; while the miscellaneous mixture which will not go through the screen comes under the hands of the rag and scrap-metal pickers employed by a dealer in the locality, who under contract takes out and pays 3s. 6d. per cwt. for the rags and about £2. a ton for the metal and glass. The remainder has to be sent away to wherever tips can be found for it. A new process is, however, being brought into extended operation under which this sifting of the dry refuse and this unprofitable disposal of manure will be abolished. It consists of fixing the ammonia and artificially drying the pan contents, and of burning the ashbin mixture under the boilers which do the work. The Health Committee had occasion a short time since to erect a new chimney-stack, and, with the aid of Mr. W. S. Till, Borough Surveyor, the highest structure of its kind in Birmingham has been raised, at the cost of £800. This enables the committee to carry on their operations more effectually than could otherwise have been the case. The works in which the new process is carried on are at the rear of the range of buildings first seen on entering the wharf, and they are based upon an idea the credit of which has been the subject of litigation between two claimants, named respectively Firman and Forrest. It was by the former that the Health Committee were furnished with their experimental machine. This, which is still in operation, consists of a steam-jacketed cylinder composed of boiler-plates, and through the centre of which runs a hollow revolving spindle, to which are attached a number of hollow beaters or scrapers. A steam jet through the spindle and scrapers keeps them hot as they revolve. Into this vessel the fœcal matter is placed, with the addition to each ton of 30lb. of sulphuric acid, which destroys fermentation and fixes the volatile salt in the form of sulphate of ammonia. The beaters revolve, and keep the mass hot and in motion, while the evaporated steam is drawn out by means of an American blower, and condensed and poured away. At the end of sixteen hours the contents of the cylinder are removed in the form of dry nodules, and are disposed of under a contract for the manufacture of artificial manure at £5. per ton. The process, however, as conducted in Firman's machine proved too slow to be remunerative, and it occurred to a member of the committee that an economy would be effected if the diameter of the cylinders was increased. Two newer machines were provided, measuring 6ft. diameter, as compared with 4ft. of the experimental one. These would hold four tons of matter as compared with two tons, and the process was completed in twelve hours instead of sixteen. This was seen to be an improvement, but still not of sufficient extent, and a still further capacity was desired, but engineers advised that another six inches would cause too great a strain upon the rivets of the plates. Just at that time the Chancery action between Firman and Forrest was going on, and Mr. Wilkinson, the superintendent of the department, was in London as one of the witnesses. He there met a Manchester witness, Mr. Farmer, and, describing to him what was wanted in Birmingham, Mr. Farmer said he thought he had got a contrivance which would just suit, and which was originally intended for the mixing of paint. It was in the form of two cylinders, minus a chord of the circle, and joined together in the form of a figure CO, so as to communicate internally. Being also of cast-iron, in sections bolted together, it was perfectly rigid. There was a separate spindle with beaters to each division of the vessel, revolving towards one another. A machine of this construction was supplied, in which each cylinder had an external chamber of 7ft. 6in., the width across the two laterally being about 13ft. The vessel was capable of holding a charge of fifteen tons, and, as originally worked, the contents were dried in sixteen hours. The cost was considerably less than double that of the older machines, while nearly four times as much work was done. Lately, at the suggestion of Professor Smith, of the Mason Science College, hot air from the flue, instead of cold, has been drawn through to carry off the evaporated steam, and this has resulted in reducing the working of the charge to ten hours. Under this arrangement, the dried "poudrette," as it is called, is at present being produced, counting all capital, establishment, and working charges, as well as the cost of collection, not only without loss, but at a profit of a few pence per ton of matter dealt with.

It is hardly to be expected that equally good results should be obtained with the more bulky and less valuable contents of the ashtubs; still the efforts have not been unrewarded even here. The portion which will not go through the screens, or, still better, the unscreened mass, containing all sorts of inflammable and uninflammable matter—vegetable and mineral—when there is more on hand than can be otherwise dealt with, is burnt in large quantities in the furnaces under the boiler. All offensive matter is thus effectually destroyed, but of course there is a large amount of clinker—about 25 per cent.—consisting partly of metal and partly of vitreous elements. Though bulky, it is absolutely clean and innocuous, and is available for filling up hollows for building, or for making into concrete with an admixture of Portland cement in the proportion of one part cement to three parts of the clinker. For this latter purpose it seems admirably suited, especially when ground and washed of some of its lighter constituents. Some paving slabs thus made at present form the footpath under the portico of the rooms of the Society of Artists in New Street, and appear to bear the test of heavy wear exceedingly well. The Health Committee have tendered and obtained the contract to pave with this kind of concrete the floor of the new covered market in Smithfield, the price agreed upon being 3s. 3d. a square yard, which was 6d., below any other tender sent in.

Fig.17



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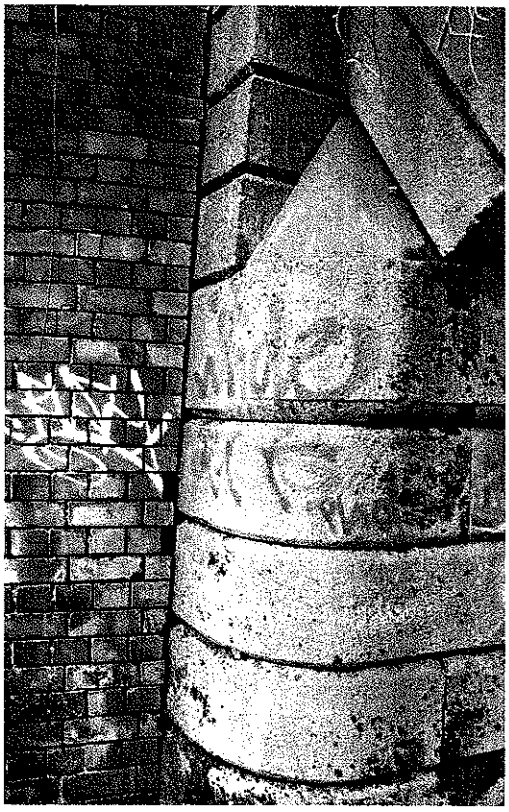
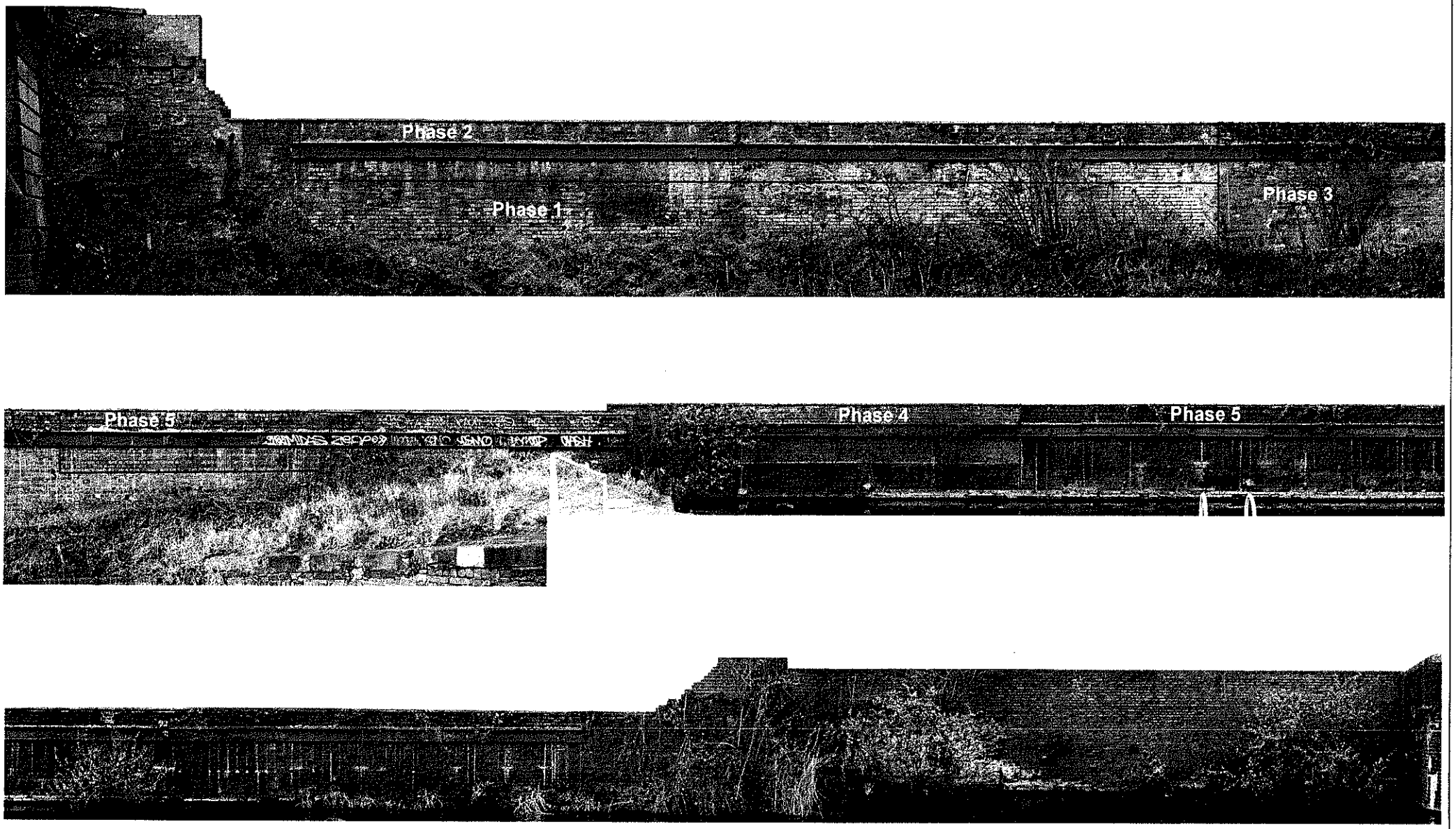


Plate 2

Plate 3



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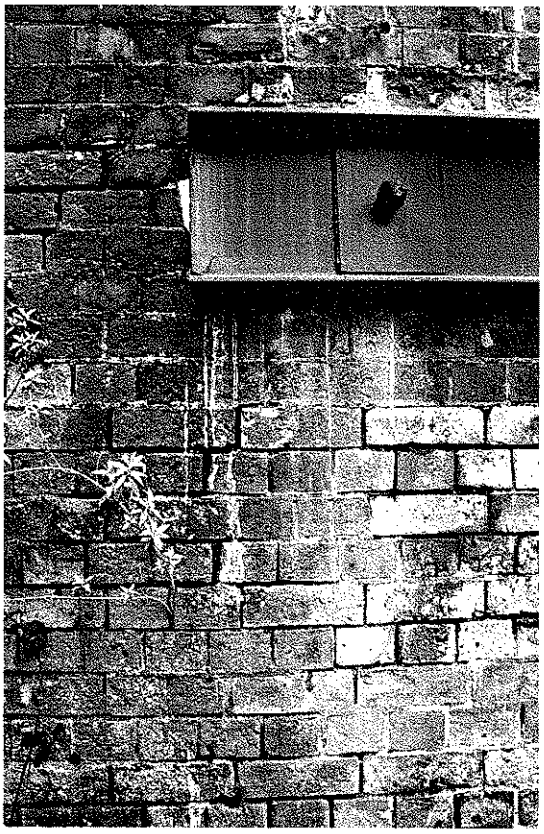


Plate 5

Plate 6

Plate 7

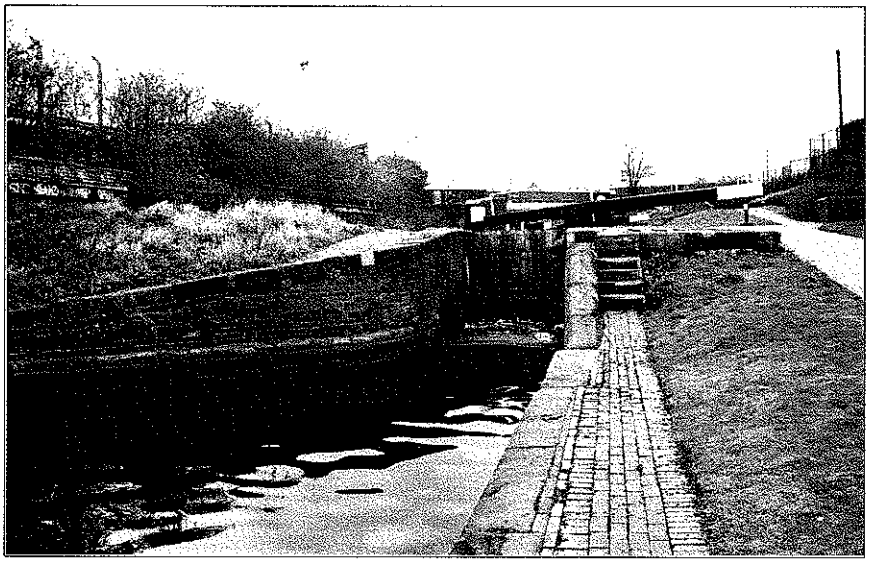
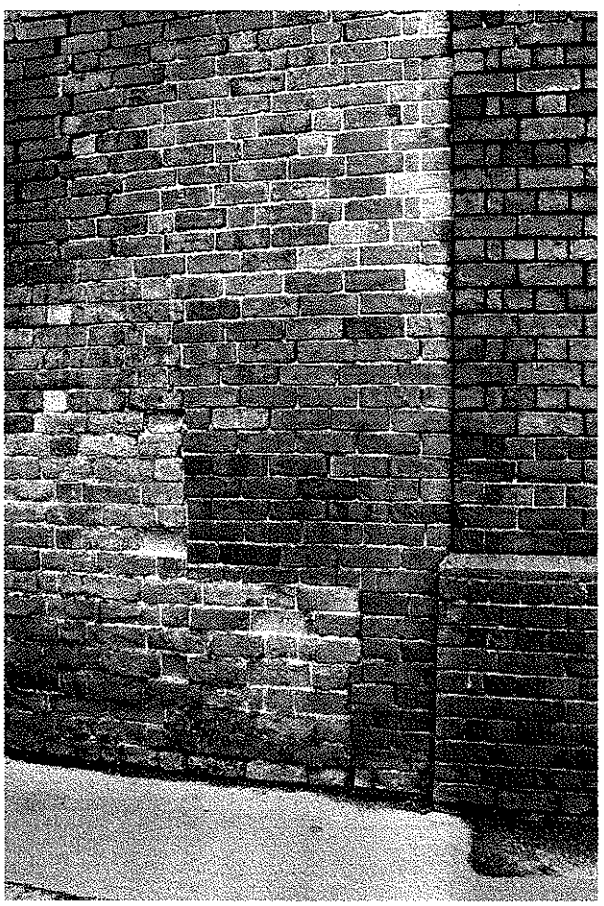


Plate 8

Plate 9



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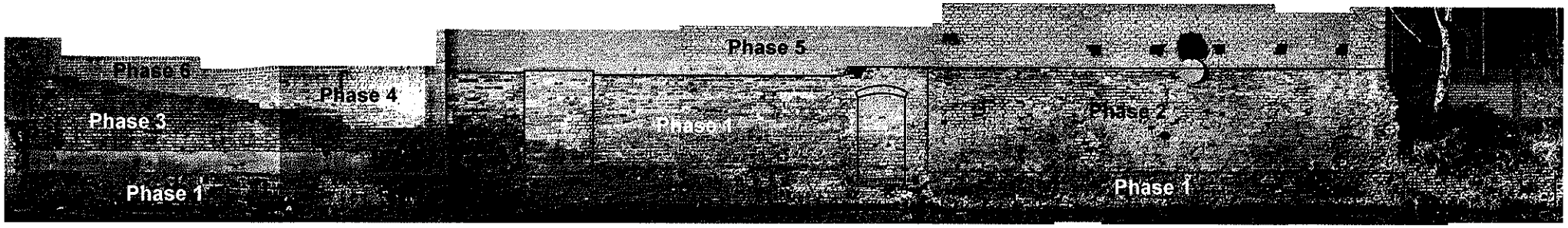

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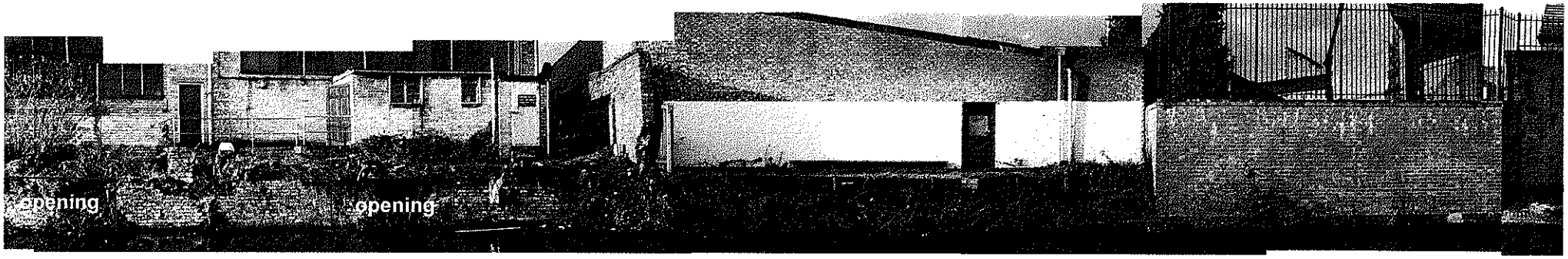
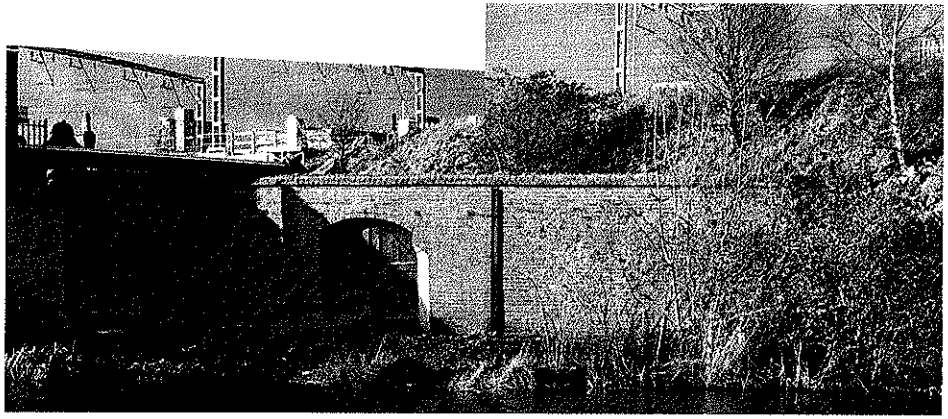
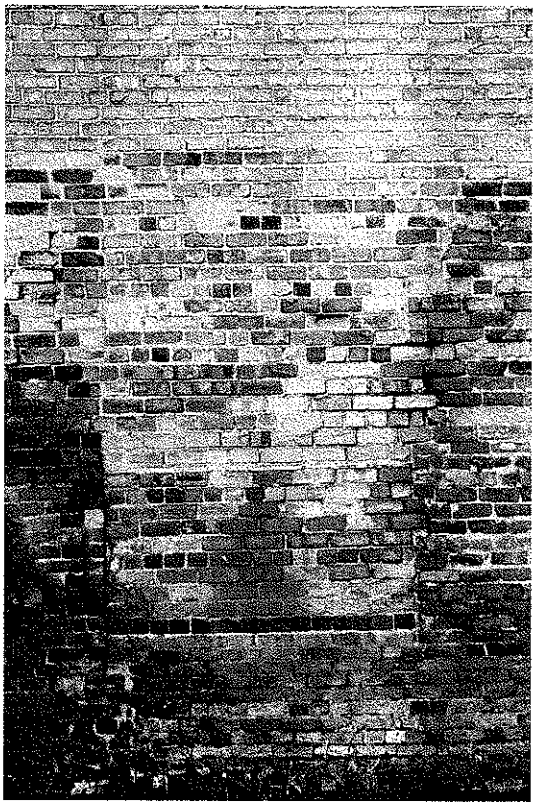


Section A3 Section A4 SectionB



SectionB Section C

Plate 11



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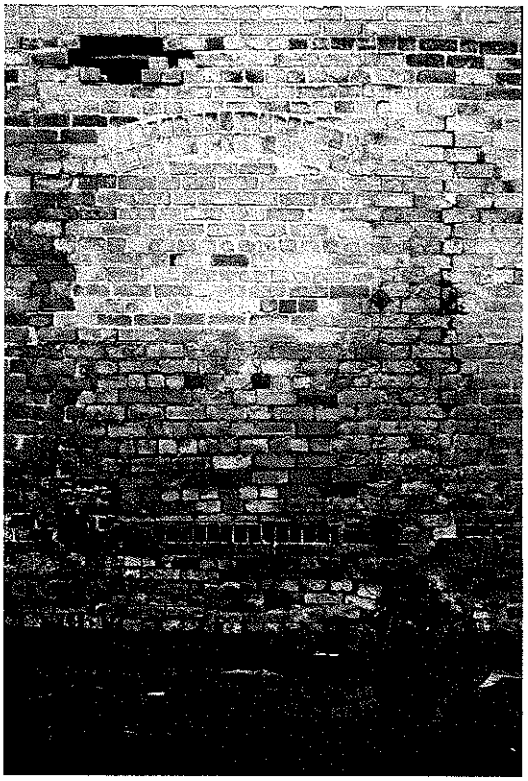

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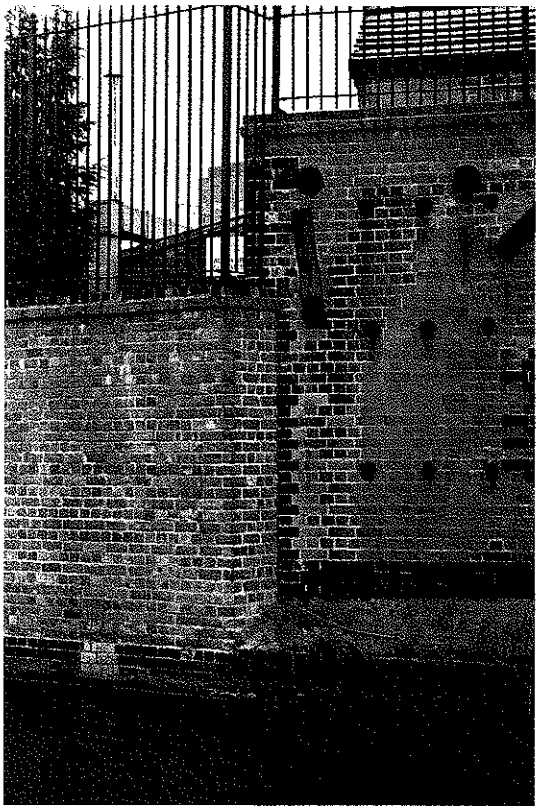
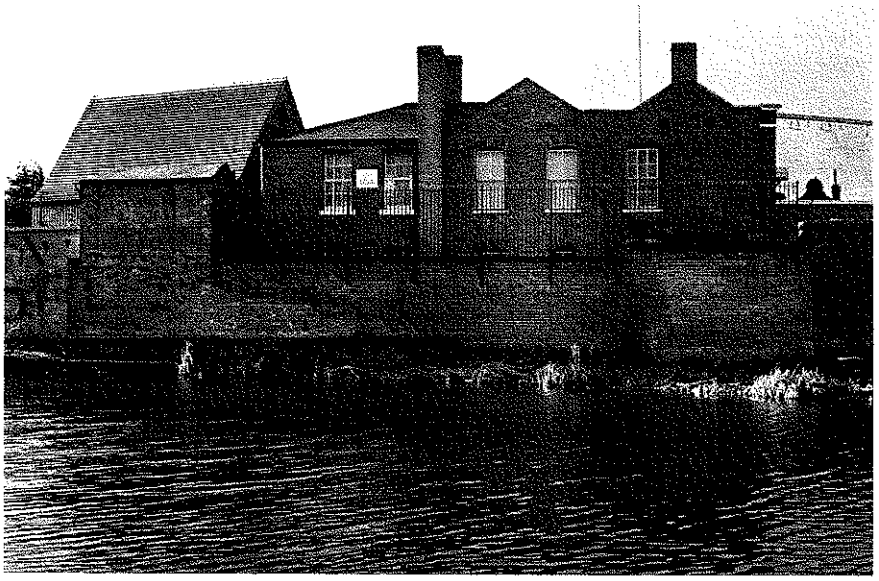


Plate 14



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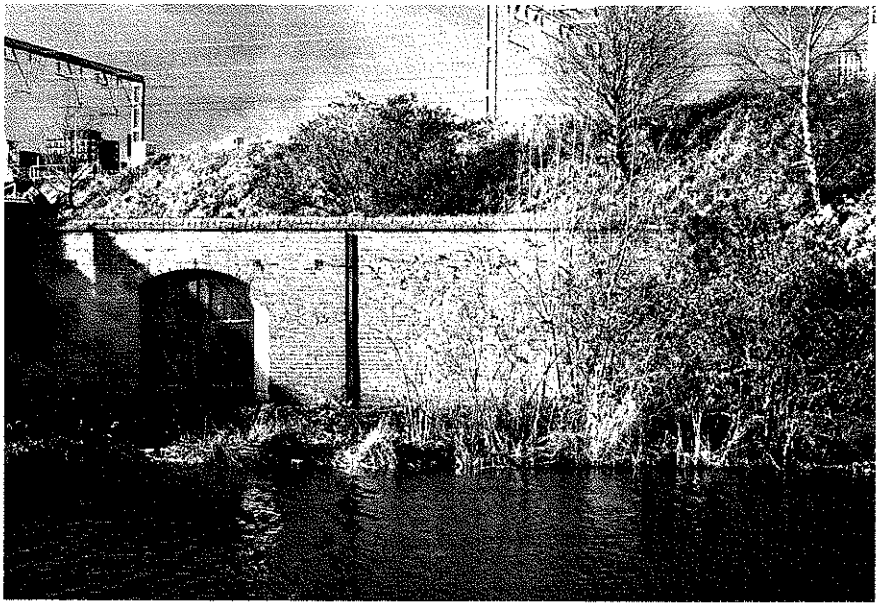

Plate 16

Plate 17

Plate 18

Plate 19

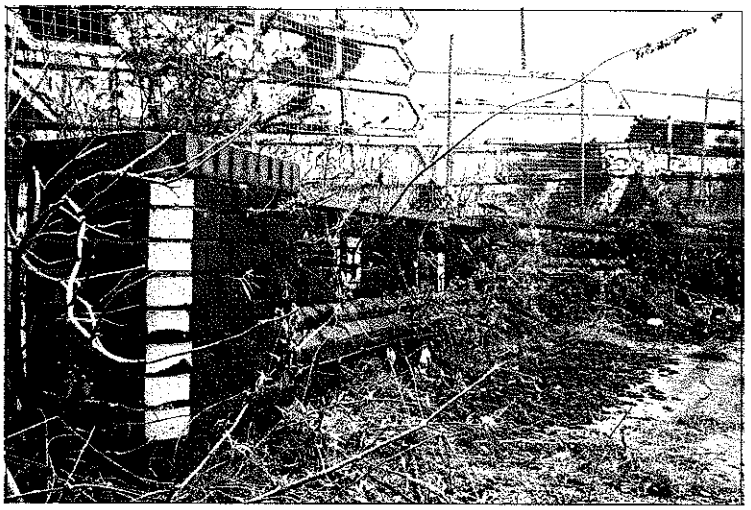

Plate 20

Plate 21