Birmingham University Field Archaeology Unit
Project No.926
October 2002

An Archaeological Evaluation of the Former Royal Brierley Crystal Works Brierley Hill, Dudley, West Midlands

by
Malcolm Hislop

For further information please contact
Simon Bateman or Iain Ferris (Directors)
Birmingham University Field Archaeology Unit
The University of Birmingham
Edgbaston
Birmingham B15 2TT
Tel. 0121 414 5513
Fax. 0121 414 5516
e-Mail: BUFAU@bham.ac.uk
Web Address: http://www.bufau.bham.ac.uk

Contents

Figures

Plates

3. Dentilled eaves course of 1870-84
4. Window of 1870-84
5. Early-20th-century window incorporating a jamb of 1870-1884
6. Northwest (front) elevation: main block
7. Northwest (front) elevation: glasshouse and southwest arm
8. Northeast (front) elevation
9. Blocked window in southeast wall of Southwest Wing
10. Northeast (rear) elevation
11. Southwest elevation of glasshouse
12. The cutting lathe drive shaft in the northwest range (LB17)
13. Wall in the Southwest Wing between LB8B and LB8C
14. Cutting lathe drive shaft in the Southwest Wing (LB18)
15. Small drive shaft in the Southwest Wing
16. Blocked windows in the Southwest Wing
17. Drive shaft housing in the Southwest Wing
18. Recess in northeast wall of glasshouse
19. Blocked arch in northeast wall of glasshouse
20. Blocked windows in northeast wall of glasshouse
21. Sawn off rafters in northeast wall of glasshouse
22. Underground furnaces towards the southwest end of the site
23. Honeybourne
24. The Weigh House
25. The South Range
26. The Glasshouse of 1884-1903
27. The East Range of 1903-1919
28. The buildings of 1925-6
29. Rainwater head of 1926
30. Chimney stacks from the southwest

An Archaeological Evaluation of the Former Royal Brierley Crystal Works, Brierley Hill, Dudley, West Midlands

1.0 Summary

In July 2002 an archaeological evaluation consisting of a desk based assessment and building recording was carried out on the former Royal Brierley Crystal Works, Brierley Hill, West Midlands (NGR SO 913870) by Birmingham University Field Archaeology Unit (BUFAU). The work was commissioned by St. Modwen Developments Ltd. The purpose of the project was to assess the impact of proposals involving the conversion of some of the historic grade II listed glassworks buildings to residential use and the demolition of other less important structures, prior to the consideration of planning and listed building consent applications.

The documentary assessment confirmed the date of construction as 1870, and identified four later phases, the most recent of which was a major modernisation and expansion of the factory premises that took place in 1949. The recording and analysis of the extant structures confirmed that the greater part of the 1870s buildings survive, albeit in various states of alteration. Amongst the early buildings, the offices were identified; so too were the original glasshouse and a second glasshouse that was added between 1884 and 1901. The cutting shop was recognised, as well as the former location of the engine house.

It is recommended that a more comprehensive assessment of the Royal Brierley Archives be undertaken and that further building recording work be carried out on selected parts of the glassworks that were inaccessible at the time of this survey. In addition, the air passage beneath the glasshouse should be investigated and some targeted trenching of below-ground features associated with the glass furnaces carried out.

2.0 Introduction

In July 2002 an archaeological evaluation consisting of a desk-based assessment and building recording was carried out on the former Royal Brierley Crystal works by Birmingham University Field Archaeology Unit for St. Modwen Developments Ltd. The purpose of the project was to assess the impact of a proposal for partial demolition of the factory, and the conversion of part of the historic glassworks buildings to residential use, prior to consideration of planning and listed building consent applications.

The work was carried out according to a brief prepared for Dudley Metropolitan Borough Council (BUFAU 2002). The documentary assessment adhered to the advice given in the *Standards and Guidance for Archaeological Desk-based Assessment* (IFA 1999a). The building recording followed the requirements set down in the *Standard and Guidance for the Archaeological Investigation and Recording of Standing Buildings or Structures* (IFA 1999b), and consisted of a Level 3 record - as defined by the Royal Commission on the Historical Monuments of England (RCHME 1996) - of the historic glassworks buildings including the manager's house and weigh house. The remaining buildings were recorded to Level 2.

3.0 Site Location (Figure 1)

The former Royal Brierley Crystal works is located on North Street, Brierley Hill, Dudley, West Midlands (NGR SO913879). It occupies a triangular shaped site between the railway line to the west, North Street to the east and the North Street Industrial estate to the south.

4.0 Objectives

- To assess the historical significance of the glassworks buildings
- To make a Level 3 record (RCHME 1996) of the historic glassworks buildings.
- To assess the impact of proposed works on the historic glassworks buildings.
- To make Level 2 record (RCHME 1996) of the remaining buildings.
- To set the site in context (desk based assessment).
- To identify areas of potential below-ground archaeological significance.

5.0 Methods

An assessment of documentary and cartographic sources was undertaken in order to set the site in context and to identify areas of potential below ground archaeological significance related to the 1870s glassworks factory. This was carried out at the Dudley Records Office, and at the libraries of the University of Birmingham.

In respect of the historic glassworks buildings, existing plans and elevations were used as a basis on which to record structural phasing. A room data sheet, summarising materials, possible construction date, condition and significance of walls, floors, ceilings and other architectural or industrial features, was completed for each room. Inaccessible areas, including those obscured behind later fittings, were also identified on the drawings. In addition, a 35mm format photographic survey was undertaken of the buildings, their structural and architectural details and industrial fixtures and fittings.

The development of the rest of the works was also assessed. Recording of the structures was mainly achieved through photography and the compilation of textual notes.

6.0 Historical Background

In 1760 J.C.Tildesley listed ten glass manufacturers in the Stourbridge area (Haden 1977, 18). One of them was a man called Honeybourne who owned two glasshouses on Moor Lane. The Moor Lane works were to evolve into the manufactory of the company known as Stevens and Williams, which would later take the name of Royal Brierley Crystal.

In 1870, the decision was taken to construct a new, custom-built, glassworks a few hundred yards to the east of the Moor Lane works. Samuel Cox Williams purchased the land (on which the premises latterly occupied by the Royal Brierley Crystal Works now stand) on 26 January 1870 for the sum of £525. It was described in a conveyance document (Royal Brierley Crystal Archive, Dudley Record Office) as 'Hardwell Piece'.

amounting to '2 acres one rood and thirty-six perches or thereabouts'. It was a triangular plot bounded by the railway to the northwest, a road to the southwest, and a lane to the northeast, now North Street (Figure 2). The only building on the site at this time was a small rectangular structure aligned roughly east/west, with a roofless section at the east end.

A series of entries in the diary of Samuel Cox Williams show that by August the new glassworks had been built. On 20 August it was recorded that the furnace builders had 'set 11 large and two small pots in the new furnace'[1], and on 31 August some glass making 'commenced at the new glass works with one chair[2] and two others'. On 2 September the workers 'filled nine large and two small pots with metal and commenced at the new place altogether', and on 7 September they 'let out the old furnace' (Woodward 1970).

The earliest representation of the factory is on the 1st edition of the Ordnance Survey map of 1884 (Figure 3). By this time, the lane along the northeast boundary of the site had become more defined, and the new factory buildings were depicted for the first time. This map is augmented by a large-scale plan of the factory in the Royal Brierley Crystal Archive (Figure 4), seemingly based on the 1:2500 Ordnance Survey map of 1884, although it has been annotated '1881', probably erroneously, by a later hand.

The most important of the buildings depicted in these two documents was a long range aligned northeast-southwest with the railway, the southwest section of which projected towards the southeast. From each end of this range two narrow arms extended towards the southeast. The northeastern arm was set at right angles to the main range, but the southwestern arm was set obliquely, being aligned against the road that followed the southwest boundary of the site. A number of small annexes protruded from the main block. The largest of these was L-shaped and was attached to the southwest wall and there was a small yard associated with it, between the main block and the southwest arm.

The southeast side of the works yard, that was partially enclosed by the structures described above, was defined by a small cluster of buildings, which included the Manager's house (Honeybourne) at the southern apex of the factory complex, the Weigh House immediately to the northeast, and, further to the northeast, the south range. To the north of the Weigh House was a small rectangular building. On the plan, this has been annotated 'Boiler Stack' in a later hand. Occupying a large area on the east side of the site, to the north of these buildings, was an irregularly shaped earthwork, possibly a pool, or perhaps more probably, in the context of the area, an exhausted clay pit. Access to the works was via a gateway between Honeybourne and the southwestern arm of the factory, and there was also a covered entrance through the northwestern arm.

The 2nd edition of the Ordnance Survey (Figure 5) shows that a wing had been added to the southeast side of the main range by 1903. A photograph in the Royal Brierley Crystal archive, dating from 1911, shows the glassworks from the southeast; an undated drawing,

[1] The clay pots in which the glass was melted

[2] A 'chair' was a team of glassworkers who worked around a furnace.

evidently based on this photograph, is reproduced here (Figure 6). The photograph illustrates two large glasshouses. Unlike the cones that were characteristic of 18th century glassworks, and which had become obsolete by *circa* 1830, they were square buildings with pyramidal roofs and central cone-shaped vents. The larger of these buildings was situated towards the southwest end of the main range, and the smaller one can be identified with the extension of between 1884 and 1903. Another early photograph of the works, described in the Royal Brierley Crystal Archive as 'A post card of c.1900 showing the works rebuilt in 1870', has been annotated with the names or functions of some of the buildings. It describes the larger glasshouse as a '12 Pot Frisby Furnace', a type named after its inventor, Myron John Frisbie, who patented his feeding mechanism in 1868, only two years before the Brierley Hill works were built. The smaller furnace is called an '8 Pot Teaze Hole Coal-Fired Furnace'.

By 1919, when the company received its first royal warrant, a new narrow range had been built along the east side of the yard, aligned with the road that defines the northeast boundary of the site (Figure 7). The Duke and Duchess of York visited the works in 1925, and in the same year plans were drawn up by the Kidderminster architects Gething and Rolley (Royal Brierley Crystal Archive, Dudley Record Office) for a sizeable extension to the north. These drawings depict the existing buildings at the northern apex of the site. In 1926 the company took out its patent for Royal Brierley Crystal, and these extensions were probably connected with this event in the company's history. It was during the 1930s that Royal Brierley Crystal was adopted as the company's tradename.

An aerial photograph of 1946 in the Royal Brierley Crystal Archive (Dudley Record Office) shows that the two glasshouses, the chimney of the engine house, and the yard entrance through the northeast arm remained in use. However, the northwest end of the southwest arm had been replaced by a new structure. Anonymous plans of the buildings (Royal Brierley Crystal Archive, Dudley Record Office), drafted about the same time, and which are annotated with the functions of the various areas, show that this new building was another glasshouse.

In 1949 the factory was remodelled and up-to-date equipment installed (Woodward 1970). An aerial photo taken *circa* 1950, demonstrates that the work included large additions within the former factory yard to the rear of the premises, the taking down of the roofs and furnaces of the two early glasshouses, and the demolition of the engine house and its chimney. However, the southeast end of the southwest arm survived to be demolished later. Certainly, by 1985 when another plan of the factory buildings was prepared by the Brierley Hill architects Jennings, Homer and Lynch (Figure 8), it was no longer extant.

7.0 Survival and Character of the Buildings (Figure 9)

Recording and structural analysis of the complex, in concert with the map evidence, deduced the extent to which the buildings of 1870-84 survive. In essence, nearly all the buildings that were in existence in 1884 remain, albeit in various states of alteration. The principal exceptions are the south-west arm of the factory and a short, narrow, link that

joined it to the main block. Although these structures have been largely demolished, vestiges of them remain in the northwest wall of the complex, the entire length of which survives, in the rebuilt stub of the southwest wall of the southwest arm (Plate 1), and in a fragment of the same wall incorporated into the northwest wall of F9, one of the 1949 buildings (Plate 2). These elements indicate the southwesterly extent of the 1870s work. The L-shaped annexe that projected from the southwest wall of the main block, has also largely disappeared, though its southeast wall survives, incorporated into the wall northwest wall of F9. The second glasshouse of 1884-1903 also survives, as does the range of 1903-1919, the additions of the 1920s, and the extensions of 1949.

The factory buildings of 1870-84 were built of red brick laid in English garden wall bond with blue brick header courses and dressings and hipped plain tile roofs. They are mostly two stories high and have dentilled brick eaves courses (Plate 3). Windows are small-pane fixed cast-iron lights beneath semi-circular heads (Plate 4) with chamfered surrounds to the exterior, and rounded surrounds to the interior. The 19th-century office doors are 6-panelled, with ogee-moulded architraves, (Figure 10a) and fielded panels within ovolo-moulded surrounds. Original skirting boards have a simple beaded moulding (Figure 10b).

Generally, the quality of the later alterations to the exterior is high. Openings were not simply blocked, but the surrounds were skilfully rebuilt in order to bond the brickwork of the blocking with that of the surrounding walls. Similarly, where windows have been replaced, considerable effort has been expended in blending them into the older fabric. Here it should be noted that the earliest buildings exerted a considerable influence on the character of later additions and alterations. Replacement windows were, in many cases, given chamfered brick sills and jambs; this practice may have originated in the widening of existing openings, whereby one of the original jambs was retained, whilst the new one was built in a matching style (Plate 5). The dentilled eaves courses that are characteristic of the 1870s buildings, were also used in the additions of 1884-1903 and of 1919-38. Conservative building practices account for the former, but the latter appear to be the result of deliberate archaism in which aspects of the earlier style were reproduced in order to blend with the older buildings (see below). Nevertheless, there are considerable differences between the details of the original structures and those of the 20th-century. English bond tends to have been used rather than English garden wall bond. Replacement windows are generally larger and square-headed with concrete lintels (Plate 5). The door architraves have a main ovolo-moulding flanked by smaller ogee and concave quarter round mouldings in contrast to the details of 1870-84.

8.0 The Buildings of 1870-84

8.1 The Main Factory Buildings

Exterior

The Northwest (Front) Elevation (Figure 13)

Unbroken brick coursing shows that the entire length of the northwest elevation that existed in 1884 survives in some measure. The main component of the original buildings is a 2-storey block (Plate 6) comprising a principal range flanked by two wings, with a rhythm of 2:8:3 window bays. All the 19th-century first-floor window openings survive, the four to the right (southwest) retaining their original frames, though the others contain mid-20th-century wooden frames. The ground-storey windows have been replaced by large mid 20th-century metal-framed windows with chamfered-brick sills and concrete lintels.

Attached to the right (southwest) of this block is a single-storey, 6-bay range with mid-20th-century windows, and, to the far right, a large roller-shutter entrance. Beyond this range to the right is a 2½ storey, 4-bay gabled wing (Plate 7). Only the ground storey appears to be original, however. At this level the bricks are laid in English garden wall bond like the rest of the 19th-century buildings, though there are large areas of disturbance, including the insertion of several windows. Between the ground and first-floor windows, there is an off-set, above which the bricks are laid in English bond, apparently a later phase. Above the first floor windows the brickwork changes again to Flemish stretcher bond. All the windows of this wing are mid-20th century with concrete lintels; the first-floor windows are under a continuous concrete-faced lintel.

The three left hand (northeast) bays of this 19th-century front are obscured at ground level by a single-storey, 8-bay, flat-roofed, 20th-century structure that extends to the northeast, beyond the 19th-century buildings, in front of the 1920s additions.

The Northeast (Front) Elevation (Figure 14, Plate 8)

The buildings of 1870-1884 comprised a long 2-storey range, roofed in three sections. The left hand (southeast) section is ten bays in length, and almost all its original fenestration survives. At the left-hand end is a mid-20th-century half-glazed door with concrete lintel. The brickwork around the right-hand jamb and above the lintel has been rebuilt, but the chamfered left-hand jamb appears to be original, so it seems that there was probably a doorway here from the start.

Similarly, the left-hand bay of the central section contains a blocked, round-headed doorway, the head now glazed with small pane metal-frame similar to those of the original windows. To the right of this doorway is an original window, and beyond this a blocked gateway, apparently the entrance that is depicted on the early Ordnance Survey maps. While the left-hand side of the latter is obscured by later additions, the sandstone

hinge blocks of the left-hand side survive, and part of the timber lintel is still visible and still bears writing. Apart from its roof, this is all that can be seen of the central section, because a first-floor enclosed gallery supported on brick pillars has been built in front of it. This has mid-20th-century casement windows with concrete lintels.

The right hand section of the 19th-century range has three widely spaced original window openings containing 20th-century casements, but it is obscured from the yard by the additions constructed in 1925-6 (described below) that have been built in front of it.

The Southeast (Rear) Elevation (Figure 15)

The 19th-century southeast elevation originally fronted the factory yard, though at ground-storey level it is now an internal elevation. What survives of the original front is a single-storey range to the left (southwest), and then the main 2-storey block with (from left to right) a boldly projecting 4-bay wing, the main 8-bay range, and then the projecting northeast wing.

At ground-storey level extensive areas of the fabric have been destroyed by the insertion of large mid-20th-century openings, and at first-floor level all the original window openings have been replaced by mid-20th-century casements with concrete lintels, apart from one in the main range, also containing a mid-20th-century casement. Some of these replacement windows represent widenings of original openings in each of which a single 19th-century jamb survives. The formerly blind end of the Northeast Wing has, at ground level, a mid-20th-century half-glazed door and window under a common concrete lintel. The brickwork has been rebuilt above and to the right of the inserted openings. At first-floor level blocked joist holes can be seen, confirming the map evidence that shows this range continuing to the boundary of the site from 1884 onwards.

Apart from the dentilled eaves course, no other original architectural features survive on this front, though a few can be discerned from the interior. One of these is a blocked round-headed opening, probably a window, that can now be seen from a staircase within the Southwest Wing (Plate 9). This detail does not relate to the present first-floor level, which cuts across it. Two more windows at this level have been identified in the single-storey glasshouse to the left (southwest) where they seem to have served as clerestorey lighting. Two areas of what are probably original walling have survived at ground-storey level. One of these, belonging to the Southwest Wing, contains a series of building breaks, which appear to define two rectangular openings 2.2m wide, one above the other. The uppermost opening is present on the interior as a recess. The other area of possibly original walling forms the northwest wall of the former diamond cutting room. It is currently obscured on one side by plaster, and on the other by lime wash, but may, perhaps contain original features.

The Southwest (Rear) Elevation (Figure 16)

The southwest elevation also faced onto the factory yard originally. Here, the articulation of the northeast range can be seen in the recessing of the central range between the outer

two. There are original doorways at the right-hand (southeast) end of the left-hand section, and at the left-hand (northwest) end of the right-hand section. There is also an original doorway at the right-hand end of the central section, almost opposite the one in the northeast front. No 19th-century fenestration survives at ground-storey level, though several of the original round-headed openings remain, having had their window frames removed and the wall below them broken through so that they now form open arches. The fenestration of the right-hand or southeast section of the range appears to have been continuous at ground storey level, though the evidence of the three right-hand bays has been destroyed by the insertion of mid-to-late 20th-century openings. In the central section, the area directly opposite the carriage entrance in the northeast front is blind and shows no trace of an opposing gateway, though its former existence is not in doubt. Apart from the maps which depict a covered entrance in this position, it appears quite clearly in the photograph of 1911. Removal of the lime wash may reveal evidence of the blocking. There are two mid-to-late 20th-century inserted doorways in this section.

At first-floor level, six original windows survive in the right-hand (southeast) section, as well as the vestiges of two others which have had late 20th-century casements inserted into them. There is also a mid-20th-century half-glazed door, with a concrete lintel, perhaps inserted into a former window opening and one blind bay, the second from the left. The central section of the range retains only two 19th-century windows in the two right-hand bays, the rest of the building being fenestrated with casements under concrete lintels. These seem to have been in existence by 1911 to judge from the photograph of that date.

The Northeast (Rear) Elevation (Figure 17, Plate 10)

This is the wing at the southwest end of the main northwest range. It is two stories in height and four window bays in width. At ground level is an early to mid-20th-century doorway to the left, or southeast, and two windows of similar date to the right, or northwest. All have concrete lintels, but the doorway and the right-hand window both appear to occupy original window openings. Both have chamfered jambs, and those of the window are rounded on the inside. It is possible that they represent widenings of original openings. At first-floor level are two blocked 19th-century windows, though between them the walling has been rebuilt and two late 20th-century windows inserted.

Section A-A (Figure 18, Plate 11)

Section A-A represents the southwest elevation of the single-storey glass house. Much of the 19th century fabric has been destroyed by the insertion, during the mid-to-late 20th century, of large openings, and the only original architectural feature appears to be the dentilled eaves course. This wall is lime washed, so it is possible that other features survive underneath. There is no sign of the building that formerly extended from this wall to the southwest, but the uninterrupted eaves course of the glasshouse suggests that it was a low, single storey structure. This theory is corroborated by the brickwork of the northwest front, where, to the southwest of the glasshouse, only the brickwork to the ground storey of the present structure is original (see above p.6).

Interior

The Northeast Wing Ground Storey (Figure 11)

The southeast section of the range is now divided into one large (LB1) and three small (LB4) rooms by a number of partition walls, though originally it probably formed a single space, and was probably the fitting shop. Apart from the 19th-century windows to the north-east and the 19th-century window openings to the southwest, now opened out into an arcade, there are no original architectural features surviving. At the northwest end of the section, and entered from the former factory yard to the southwest via a 19th-century doorway, is a staircase that ascends to the first floor.

The central section now forms a single room (LB2) but may originally have been divided into two by a cross wall on the northwest side of the carriageway that the maps suggest led from the gateway in the northeast wall to the factory yard. There were also pedestrian entrances in the northeast and southwest walls. The northwest section of the range also comprises a single room (LB3). It is entered from the rear yard. There is a staircase against the southeast wall ascending to the first floor. There is no indication as to the former function of this room.

Northeast Wing First Floor (Figure 12)

The staircase at the northwest end of the southeast section of the range gave access from the rear yard to a first-floor landing. From the landing there is access to the central and southeast sections via original doorways with distinctive block architrave stops (Figure 10a). The door on the southeast side of the landing has been replaced, but the one on the northwest side is original. At first-floor level, the southeast section of the wing appears to have formed a single room (LB 9 & LB10), apparently a warehouse. Most of the 19th-century fenestration survives on both sides of the building, but there are no other original features. One of the southwest windows has been converted into a doorway during the mid-20th century to give access to the roof of the adjacent buildings. A mid-20th century partition now divides the area, and into this a door of 1870-84 has been reset. At the southeast end of the room is a mural painting of 1949 on removable panels, designed by Deanne Meanley, a former glass designer at the works (Woodward 1970).

The door from the landing to the central section opened to a small rectangular room (LB11), latterly a dining room, with a chimney breast containing a blocked fireplace on the northwest wall. The windows are original, and the room retains a 19th-century skirting board. There is a blocked doorway in the northwest wall that originally led into the adjoining room (LB12). In the southeast wall there is a 20th-century serving hatch to the former kitchen pantry in LB10, and in the northeast wall an inserted doorway to a corridor within the 1920s additions.

LB12, latterly the board room, was originally entered both from LB 11, and from a corridor (LB14) that communicated with the landing at the head of the stairs within the

northwest section. The doorway and door from the landing to the corridor are original, so too are the doorway and door to LB12, and the room retains its 19th-century skirting board, though there is a break in the southeast wall in the position of the blocked doorway from LB11. In the southeast wall is a chimney breast with a tiled fireplace of *circa* 1930. The steel-framed windows, including a pair of French casements, are of similar date.

Another doorway in the northwest wall communicates with LB15. This is currently divided into two offices, both of which can be entered separately from the corridor (LB14) via inserted doorways, but it was originally a single room accessible only from LB12. Some original skirting survives, but the former fireplace in the northwest wall has been blocked. Within the alcove to the left, or east, of the chimney breast is an original panelled cupboard. Above it a safe has been inserted.

The northwest section of the northeast range is now divided into a series of offices but was originally occupied by a single room. It is now entered from the staircase landing through an early to mid-20th century door, but when built the room was probably open to the stair, and probably functioned as a workshop of some kind. There is beaded skirting of 19th-century character around some of the room, though it is possible that it has been reset. The roof is supported on king-post trusses and large roof lights have been inserted to the southwest and northwest.

The Northwest Range Ground Storey (Figure 11)

At ground level the northwest range appears to have been divided longitudinally into two areas. There is no surviving evidence to suggest that the northwest section was ever subdivided, but it is probable that the southeast section was divided into two rooms by a centrally placed transverse wall; before 1925 the ground storey of the range contained a warehouse and the flatting room. The two main sections of the range were lit respectively from the northwest and southeast. It must be assumed that the southeast elevation contained an almost continuous row of windows at this level, and this seems to be confirmed by the photo of 1911. Remnants of some of these openings may survive in the as yet unexplored fragment of walling that forms the northwest wall of the former diamond cutting room.

The Northwest Range First Floor (Figure 12)

At first floor level the range was also divided longitudinally by a central partition wall. As at ground level there is a single room (LB17) to the northwest. This was a cutting shop, and its principal feature is a drive shaft that extends for 13.75m from the southwest end of the range (Plate 12, Figure 19a). It is held by housings bolted to the tie beams, and supports two drive wheels of 3ft and 2ft diameters and twenty two gears. The purpose of this equipment appears to have been to drive the cutting lathes with belts attached to the gearing. The lathes would have been situated on both sides of the room, those on the northwest side being lit by the windows, and those on the southeast side by the roof lights which are continuous down this side of the room. A photograph of *circa* 1900, entitled

'the big old cutting shop' exists in the Royal Brierley Crystal Archive and shows this machinery in use. The main drive wheel is situated towards the southwest end of the range, the tie beam next to it being strengthened from below by a central post. Directly opposite the wheel, in the central partition wall, is an area of disturbed brick work, presumably a formed aperture through which the drive belt passed to the steam engine that powered this arrangement.

The southeast half of the range (LB21), which, *circa* 1946 contained the 'Flower Room' and the 'Small Cutting Shop', retains its central transverse wall dividing it into two rooms, but is currently divided into a series of mid-to-late 20th-century offices. The walls are mostly obscured by cladding, but in the southwest office the rounded brick jambs of an original window survives, though the window itself appears to be a replacement. This window is directly opposite the main drive wheel of the machinery in LB17. Attached to one side of the embrasure is a metal housing. Immediately to the southeast is the site of the engine house, the tall chimney of which is visible on the photo of 1911. It was a small annexe that projected from the wall of the range, though it has now disappeared without trace.

The Southwest Wing Ground Storey (Figure 11)

The internal arrangement of the southwest wing is rather unusual. The external evidence suggests that whereas the northwest and northeast sides were of two stories, in uniformity with the northwest range, an L-shaped area within the southern angle either had a floor at mezzanine level, or was only one storey in height, with clerestorey lighting. There are no original features apparent at ground level but it is possible that there may be evidence concealed behind the lime wash. The ground storey has been subjected to considerable alteration, and the original arrangements cannot be reconstructed in their entirety, though the fenestration suggests that there was a roughly rectangular room to the northwest (LB8A), an L-shaped room towards the south (LB8B), and another L-shaped space towards the east (LB8C). *Circa* 1946 LB8A contained the Lehr[3] to the southwest, and the Shrower[4] to the northeast. No original features are visible, several large inserted openings having removed most of the northeast and southwest walls; the southwest half of the southeast wall has also gone, and there is a large, blocked, inserted opening in the other half. In addition, the northeast end of this wall has been reconstructed so that it now projects towards the northwest and continues the line of the partition wall within the northwest range. At the southeast end of LB8B's southwest wall is a blocked semi-circular archway approximately 3.15m high by 2.75m wide, which may have been the entrance to the original Lehr, but there are no other original features.

[3] The Lehr was a long tunnel-like structure through which the glass bottles were conveyed on a slowly moving platform. The bottles were placed at the hotter end and gradually pushed forward to the cooler end of the oven so that they cooled slowly.

[4] The Shrower was a room situated at the cool end of the Lehr where the products were inspected and from where they were distributed to other parts of the factory.

The L-shaped wall between LB8B and the northwest section of LB8C is thickened by a high chamfered plinth (Plate 17). This wall is broken on its southwest side by a large 20th-century opening. Evidence at first-floor level (see below) suggests that the southeast section of the wall returned towards the southeast, though there are no visible indications of this at ground level. *Circa* 1946 LB8C contained two moulds rooms. The narrow southeastern part was lit from the yard to the northeast; remnants of two original windows probably survive in the existing openings. The northwest section of LB8C has no external walls, and can only have been illuminated by artificial light. The wall dividing it from the northwest range has been largely removed. A wide opening in its southeast wall with rounded southwest corner, apparently original, gave access to the southeast section of the room.

The Southwest Wing First Floor (Figure 12)

At first-floor level the same essential layout appears to have prevailed. The northwest room (LB18) retains its three original northwest windows, and houses another drive shaft (Figure 19, Plate 14), in line with, and similar in character to the one in the northwest range. It extends across the entire width of the wing and has one 18" diameter and two 3ft diameter drive wheels, and twenty-one gears. This, too, drove machinery that is depicted in a photo with the caption 'View of the Old Cutting Shop...approx. 1946 before the general move' (Royal Brierley Crystal Archive, Dudley Records Office). It shows a series of lathes against the northwest wall of the wing. What is probably a drive belt, covered by a wooden guard extends down from the drive shaft towards the southeast. High up against the southeast partition wall within the roof space, and relating to an open-sided loft, is another, short, drive shaft with one drive wheel and four gears (Plate 15). This small area is also depicted in a photograph entitled 'The Very Old Stoppering Shop'. The southeast end of the northwest wall has been rebuilt at an oblique angle, and a doorway inserted in it. There is also an inserted doorway at the southwest end of the wall.

The L-shaped room to the south (LB19) has been remodelled, for the first floor cuts across three blocked windows to the southwest (Plate 16). This floor is reached by a staircase in the south corner which cuts across another blocked window (Plate 9). The northwest part of this area was the 'putty polishing shop' *circa* 1946. In the southwest wall is an original housing for another drive shaft (Plate 17), that would have been aligned northeast-southwest like the surviving ones. At the southeast end of the room is a lift relating to the inserted floor.

The L-shaped section to the east (LB20) contained the cutting stock room and marking room *circa* 1946. Like its counterpart at ground level (LB8C), the southeast section of LB20 was lit by windows to the northeast, two of which survive (blocked). Although the southwest wall of the southeast section does not survive, its former presence is suggested by a vertical scar on the southeast wall. *Circa* 1946 this room contained the cutting stock room and the marking room. The northwest section of LB20 was split, like the corresponding area at ground level

The Glasshouse (Figure 11)

The single storey range to the southwest of the Southwest Wing is the original glass house, one of those visible in the photograph of 1911. It is rectangular in plan approximately 32m x 12m. To the northwest it is lit by large early to mid-19th-century windows. To the northeast is the wall of the Southwest Wing (Figure 20). In it are several blocked 19th-century openings. In a roughly central position is a segmental-headed recess with a sill approximately 0.95m above floor level (Plate 18). To the right (southeast) is the other side of the blocked semi-circular arch (Plate 19), that can be seen in LB 88, and which may have been the entrance to the original Lehr. The right-hand jamb is clearly indicated by a break in the brickwork, though there seems to be no interruption of the left-hand side.

To the left of this arch, the sills at a level just above the springing of the arch, are three blocked windows with segmental heads, 1.8m wide x 1.7m high (Plate 20). These openings are even more visible on the other side of the wall, where their rounded jambs can be seen (Plate 16). The windows are interesting in that they are at a lower level than the first-floor windows on the other side of the building, and that they look out from one building into another. They are also unusual in having segmental heads. The blockings demonstrate that the interior of the Southwest Wing has been modified; this seems to have occurred by the early 20th century when a photograph of the glasshouse was taken (Royal Brierley Crystal Archive, Dudley Record Office). Though the glasshouse was re-roofed *circa* 1949, there is a row of sawn-off rafters approximately 5m above the floor level (Plate 21), which probably belonged to the original pyramidal roof.

Both the southeast and southwest walls have been extensively altered by the insertion of large openings. No original features survive in the southwest wall, but the southeast wall retains another segmental-headed recess, and the remains of two blocked semi-circular-arched clerestorey windows. There may have been others, vestiges of which may be obscured by the lime wash.

It was in this glasshouse that the '12 Pot Frisby Furnace' was situated. A Frisbie furnace was fed mechanically from underground, and indeed, beneath the glasshouse, extending from southeast to northwest is a vaulted passage or 'cave', with an entrance at each end. It was approximately central to the building and would have run almost directly beneath the furnace. This passage was inaccessible at the time of the evaluation.

To the southwest of the glasshouse, beneath the demolished sections of the 1870s factory is a basement containing the bases of two furnaces (Plate 22). The entrance has been reborn since 1985 but prior to that lay immediately outside the southwest arm.

3.2 Honeybourne (Plate 23; Figures 21 & 23-25)

Honeybourne, which is named after the former owner of the Audnam Estate works, was the house in which lived John Northwood, the Technical Director from 1881. It stands at the southwest entrance to the site and is aligned roughly northeast-southwest facing

southwest. The house is constructed of red brick laid in Flemish stretcher bond with blue brick dressings and hipped plain tile roof, and brick chimney stack. There are two stories above a basement and the house has a dentilled eaves course in the same style as those of the factory buildings. The three bay main front has vertical sashes with chamfered jambs and painted sills and lintels, the centre window being of reduced projections. A single storey porch has a terracotta coping and contains a 20th-century door within an original ogee and quarter round moulded architrave. Above a rectangular overlight is a lintel bearing the inscription 'Honeybourne'. Both the overlight and a pair of small windows to the side walls of the porch contain stained glass within decorative leaded patterns. The garden front, to the southeast, is dominated by a single-storey canted bay window with a terracotta coped parapet. The bay contains three blocked, segmental-headed, full-height openings to the ground storey, and three vertical sashes to the first floor.

The basement is entered from the northeast. A central semi-circular-arched opening leads into a narrow, unlit tunnel-vaulted room. To the right, or northwest, is a door with a segmental-headed relieving arch flanked by a pair of 19th-century casement windows. This entrance gave access to a large square room, also tunnel-vaulted, the walls lined with low stone benches. Against the southwest wall is a brick-built stove containing a copper, suggesting that this room may have been a laundry.

In the southwest wall is a doorway leading to two more cellars at the front that are not vaulted. Each cellar is lit by a single window. There are also stairs ascending to the ground storey. The walls of the two rooms are lined with low brick benches, and both were probably used for the storage of provisions.

Access to the ground storey from the front door is to a small hallway within the porch with decorative-tile floor, moulded coving and foliate-ceiling rose. Opposite the entrance are two late 20th-century doors opening to the staircase (left) and corridor (right), though the house was originally open to the porch. The corridor leads past the staircase to a rear hall. Both corridor and rear hall have the same decorative tiles and coving as the front hall, as well as a moulded picture rail. The staircase is now boxed in, but, originally, the balustrade was open to the corridor; it has a closed string above wooden panelling, turned column-on-vase balusters, and square newels at top and bottom with ball finials.

There were four main rooms at ground level. At the front were the dining room (southeast), and a parlour (northwest); to the rear were the drawing room (southeast) and the kitchen (northwest). The parlour was entered from the front and rear halls, the dining room from the corridor and the drawing room, the drawing room from the rear hall and dining room, and the kitchen from the rear hall. The rear hall also gave access to a pantry at the back of the house, to the back door, and to steps leading down to the cellar.

Each of the four main rooms was provided with a fireplace, but these are blocked and the surrounds have not survived. Several original doorways remain. These are mostly 4-panelled with ogee-moulded architraves and metal fingerplates. All the principal rooms retain skirting boards, and in the drawing room there is an elaborately moulded plaster ceiling rose and moulded coving.

The staircase gives access to a balustraded landing at first floor level. This communicates with two front bedrooms over the dining room and parlour respectively. At the rear of the house were two more bedrooms, one with a bay window overlooking the garden, a bathroom and a lavatory. All the original fireplaces have been removed, though in two cases the surrounds survive, in pieces, and could be reinstated.

8.3 The Weigh House (Plate 24, Figures 22 & 23-5)

The Weigh House is attached to Honeybourne by a brick wall, and, like Honeybourne, is constructed of red brick laid in Flemish bond, with blue brick dressings. It appears to be of the same build, though it now has a hipped concrete tile roof. Facing northeast, it is a 2-storey, 2-bay structure with dentilled eaves course. The windows, like those of the factory have semi-circular arches and contain small-pane cast iron lights; the doorway, to the right, has a segmental head. At ground level, the interior appears to have been completely remodelled to accommodate lavatories. Even the staircase has been inserted, so that it now cuts across an original window. The upper storey, however, appears to be in its original state. It consists of a single room with a king-post roof.

8.4 The South Range (Plate 25)

Situated against the southern boundary of the site, the south range is a single-storey brick building with slightly raised eaves level, corrugated iron roof and brick chimney stacks to the rear. It is aligned northeast-southwest and faces northwest. There is a segmental-headed door to the right, full height double doors to the centre, and half-glazed door to left. To the southwest end is a blocked semi-circular arched doorway. *Circa* 1946 this range was described as containing a barn, coal store and stable.

9.0 The Later Additions

9.1 The Glasshouse of 1884-1903 (Figure 8)

The extension to the main block that was erected between 1884 and 1903, was a roughly square single-storey brick building with dentilled eaves course of identical character to those of the 1870s buildings, and was roofed in two spans (Plate 26). Otherwise no original features have survived. It is probable that this building formed a second glass house, one of the two depicted in the photograph of 1911.

9.2 The East Range of 1903-19 (Plate 27)

The East Range, built between 1903 and 1919, is aligned roughly north-south along the eastern boundary of the site. This 2-storey, 11 bay building is built of brick and roofed in slate, except for the three right hand (southern) bays which are covered in asbestos tile. The range falls into two sections; the 8-bay section to the left has wooden framed, mullioned and transomed windows with chamfered brick sills, two large factory doors at ground level, and a doorway at first floor level approached by an external steel staircase.

Most of the openings at ground storey level are set beneath steel girders. The 3-bay section to the right has a central board door at ground level flanked by a pair of windows, the right hand one has small panes, the left hand one is boarded over. At first-floor level there are three late 20th-century windows inserted into original openings. *Circa* 1946 the east range contained the 'intaglio shop', 'small cutting shop' and 'new engraving shop'.

9.3 The Buildings of 1925-6

The most prominent element of the buildings of 1925-6 at the northern apex of the site is a 2-storey, 3-bay building built on the same alignment as the 19th-century northeast range, and in the style of the 1870-84 buildings (Plate 28). At ground level the right and centre bays contain blocked openings. A round-headed arch survives of the former, together with a brick sill close to ground level. The other opening was of similar height and a late 20th-century window now occupies its position. Three original window openings survive at first-floor level; the left hand one retains its 19th-century style small pane window frame, but the others contain 20th-century casements. The principal feature of the main front, however, is a bow-shaped portico to the left. The recessed doorway is flanked by splayed stucco pilasters with moulded capitals, which support a stucco entablature and parapet, with raised stylised keystone within the frieze above the doorway. It extends around the left hand corner of the building at an oblique angle, from where it is continued as a 2-storey flat-roofed building that provides a link with the 19th-century range. A later 20th-century single-storey extension has been built in front of it, and the gable end of the main building. The latter retains a round-headed window to the first floor, and two circular oculi at attic level; all three have small-pane, fixed-light casements. A rainwater head at the left hand (southwest) end of the portico is dated 1926 (Plate 29). The northwest elevation of the main building has blocked round-headed first floor windows and blocked circular oculi at attic level.

The portico gives access to an entrance lobby which communicates independently with the ground and first floors of the main building. There has been a certain amount of alteration at ground level, but the architects' plans of 1925 show that the main building a contained a single room known as the 'Finished Stock Room', whereas the single-storey building to the southwest was a 'Warehouse'. The stairs lead to a first floor landing. In the angle between the stairs and the main building is a small room, described as an 'Office' on the plans, but may have been for a porter connected with the reception of visitors. This room has a window in the southeast wall towards the landing akin to a railway ticket office window, complete with counter, and bolts for holding the lower portion open. The landing gave access to the 'Office', to the first floor of the main building, which was given over entirely to a 'Showroom', and to a corridor communicating with the Northeast Wing. On the southeast side of the corridor are male and female lavatories and a strong room with heavy steel door. This seems to have been the original arrangement.

9.4 The Buildings of 1949 (Figure 8)

The other buildings largely date from 1949 and after. The main components include three glasshouses to the southwest, and cutting shops within the former courtyard between the Northeast Wing and the glass house of 1884-1903. To the southeast of the cutting shops were the final inspection area and the acid room, and beyond them, aligned with the range of 1903-1919 the acid settling tanks and export shed. These structures are constructed of brick and corrugated iron walls, steel roof trusses and corrugated iron roofs. There are concrete floors throughout.

Immediately southeast of these structures are two tall chimneystacks (Plate 30). One of these appears to be associated with the glasshouse of 1884-1903. It is built of red brick laid in English garden wall bond. There is no access to its base from with the factory, and it is probably reached from the tunnel that runs under the original glasshouse. The other, which is built of brick laid in Flemish stretcher bond, is directly behind F8, though a raised brick platform, probably the roof of a tunnel, appears to connect it with F9. However, this too was inaccessible at the time of the survey. Neither of these two chimneys appears to have been in existence in 1946 when the aerial photograph was taken.

10.0 The Symbolism of the Buildings

From the first, the factory was to some extent a medium for the advertisement of the company. The northwest front, the most architecturally satisfying of the elevations, faced the existing railway line in order, perhaps, to gain maximum publicity. The buildings convey an impression of solidity, prosperity, and, through the rigid application of symmetrical fenestration, order (and, implicitly, respectability), all aspects that late 19th century society aspired to. However, it would have been clear to any Victorian businessman that practicality had not been compromised by outward display. Variations in roof lines and building size proclaimed that form was determined by function, whilst the most important and impressive element in this front, the glasshouse, would have provided an unequivocal statement of the nature of the business.

The extensions of 1925, containing the showroom, are probably associated with a renewed attempt at self-promotion that was intended to convey a different message to a different public. The archaic architectural style signifies a respect for the past, and hints at the company's long tradition of craftsmanship. On the other hand, there is, in the disposition of main building, an element of theatricality and vitality that sits well with the modernism of the twenties. It is situated directly opposite the factory gate, thrusting forward from the 19th century buildings in an attempt to engage the attention of the visitor. The impression of a carefully staged approach is bolstered by the contrasting, somewhat classicistic, style of the portico. The portico gave access to the grand staircase which in turn led to the spacious showroom on the first floor. Both components no doubt owing something to the glamour of contemporary picture houses.

11.0 Historic Glassworks Impact Assessment

Despite the fact that it represents a comparatively late phase in the glass industry, the Royal Brierley Crystal Works were given the highest grading of *** in the Monuments Protection Programme Step 3 Site Assessments (Crossley 1996, 10). This considerable survival of a late 19th century custom-built factory complex for the production of fine table wares is sufficiently unusual to merit a high degree of protection. In addition, much of the historic glassworks, including Honeybourne and the Weigh House is Grade II Listed. This is the background against which the impact assessment must be made.

The most significant impact of the proposed development will be the demolition of the pre-1884 structures that survive to the southwest of the southwest wing, the most important of these being the original glasshouse.

The effect will not be particularly serious from an aesthetic point of view, because the buildings in question have limited architectural merit, and have been considerably altered. Large areas of the 19th-century fabric have been destroyed by the insertion of much later openings, and few original features appear to survive. The most significant aspects of the glasshouse, namely, its pyramidal roof and conical furnace vent, have been replaced, and the buildings now form a rather untidy adjunct to the two-storey main block that is to be retained.

From an archaeological point of view, however, the glasshouse represents a key element of the original structure. It is possible that there are original features yet to be discovered beneath the lime wash that would assist the interpretation of the architectural character, function, and structural development of the works. The air passage beneath the glasshouse may also yield information about the character of the Frisbie furnace, a very early example of its kind.

Regarding those parts of the factory that are to be retained, despite there having been considerable alterations to the fabric, many original features survive, notably window openings, windows, doorways, and carpentry details including doors and skirting boards. It is important for the integrity of the building that these items are kept. The machinery in the northwest range and southwest wing is particularly important for the interpretation of the factory, and the mural painting in the northeast wing is of historic interest as well as being worthy of preservation for its artistic merit.

12.0 Potential for Below-Ground Archaeology

Regarding the below-ground archaeology, potentially sensitive areas are those formerly occupied by the now demolished pre-1884 buildings at the southwest end of the site, the interior of the original glasshouse, and the site of the engine house. These sections all have the potential to throw further light on the character and development of the glassworks. At present there is no information available concerning the survival, character and date of any potential archaeological deposits, therefore a programme of archaeological trenching may be required in the sensitive areas described above.

13.0 Recommendations

Despite there being a large Royal Brierley Crystal Archive in the Dudley Record Office, it is currently uncatalogued and, as yet, access is restricted. The current assessment concentrated on photographs and building plans, it is, however, possible that further information about the development of the works may be forthcoming from textual documents. Those that were sampled tended to predate the 1870s buildings, and it seems reasonable to suppose that there may also be later documents that would have a bearing on the existing structures. There is therefore potential for a more detailed documentary assessment which would result in a more complete understanding of the glassworks complex.

There are various areas of the 1870s fabric that could not be investigated thoroughly owing to later cladding such as plaster and lime wash. Before these areas could be recorded in full it would be necessary to soft strip them. Of particular importance in this respect is the original glass house which it is not intended to retain. It is recommended, then, that removal of the coverings from the glass house walls and further recording work should be undertaken prior to demolition. Monitoring of the rest of the 1870s buildings should also be undertaken during or after the soft strip.

Another part of the original complex that was inaccessible at the time of the survey was the tunnel or 'cave' that runs beneath the original glass house. Investigation of this tunnel would no doubt throw further light on the development of the factory, including a greater understanding of the two chimneys on the southeast side of the complex. A further recommendation, then, is that the tunnel and any basement rooms connected with it are investigated and recorded. In addition, it may be necessary to have a targeted programme of archaeological trial trenching in sensitive areas. This could be co-ordinated with other geotechnical or ground-testing work.

14.0 Acknowledgements

Steve Litherland managed this project. Malcolm Hislop carried out the desk-based assessment of cartographic and documentary sources and supervised the building recording assisted by Richard Cherrington, Andy Rudge and Steve Williams. Much of the photography was directed by Richard Cherrington. Nigel Dodds and Ed Newton prepared the illustrations. The author is grateful to the staff of the Dudley Records Office for their assistance in dealing with the Royal Brierley Crystal archive, and to Peter Boland and John Hemmingway of Dudley Metropolitan Council for their contributions to the interpretation of the factory buildings.

15.0 Sources

14.1 Primary Sources

Dudley Record Office. Uncatalogued collection of papers from Stevens' and Williams' Royal Brierley Glassworks.

14.2 Secondary Sources

BUFAU 2002 *Royal Brierley Crystal Works, Brierley Hill, Dudley, West Midlands (SMR 4821): Brief for archaeological evaluation (building recording) in advance of planning application and listed building consent application* (25 March 2002).

Crossley, D. 1993. *Monuments Protection Programme: The Glass Industry. Step 1 Report.* Unpublished English Heritage report.

Crossley, D. 1996. *Monuments Protection Programme: The Glass Industry: Introduction to Step 3 Site Assessments.* Unpublished English Heritage report.

Dodsworth, R. *Glass and Glassmaking* (Shire, 1982).

DoE. 1990 *Planning Policy Guidance. archaeology and planning.*

DoE. 1994 *Planning Policy and Guidance. planning and the historic environment.*

Frost, H.E. 2001 *The Future Development of the Royal Brierley Crystal Factory* (unpublished report by the Royal Brierley Crystal Historical Consultant).

Haden, H.J. *Notes on the Stourbridge Glass Trade* (Dudley Public Libraries, 1977).

IFA. 1999a *Standard and guidance for archaeological desk based assessment*

IFA 1999b *Standard and guidance for the archaeological investigation and recording of standing buildings or structures.*

RCHME 1996 *Recording historic buildings: a descriptive specification*, 3rd edn.

Woodward, H.W. 1970 'One hundred years of Royal Brierley crystal', *International Tableware* (September 1970), 74-5.

14.3 Maps

Ordnance Survey 1: 2500, Sheet LXXI, 1881

Ordnance Survey 1: 2500, Sheet LXXI, 1903

Ordnance Survey 1:2500, Sheet LXXI, 1919

Ordnance Survey 1:2500, Sheet LXXI, 1938.

Great Western Railway, Kingswinford Branch map, *circa* 1910

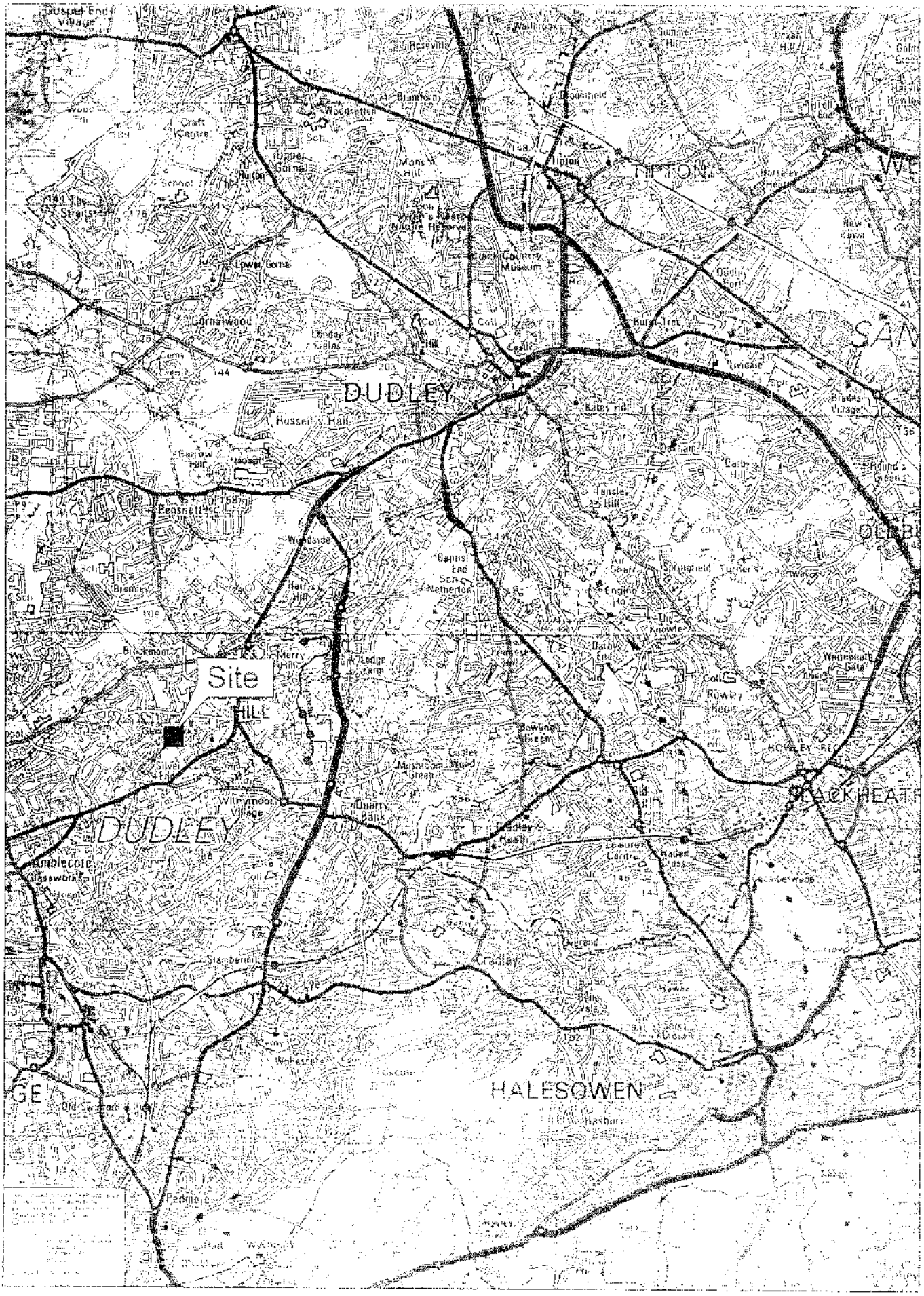

Site
DUDLEY
DUDLEY
HALESOWEN
TIPTON
Gornalwood
Lower Gornal
Upper Gornal
Sedgley
Coseley
Tipton
Dudley Hill
Pedmore

Fig 1

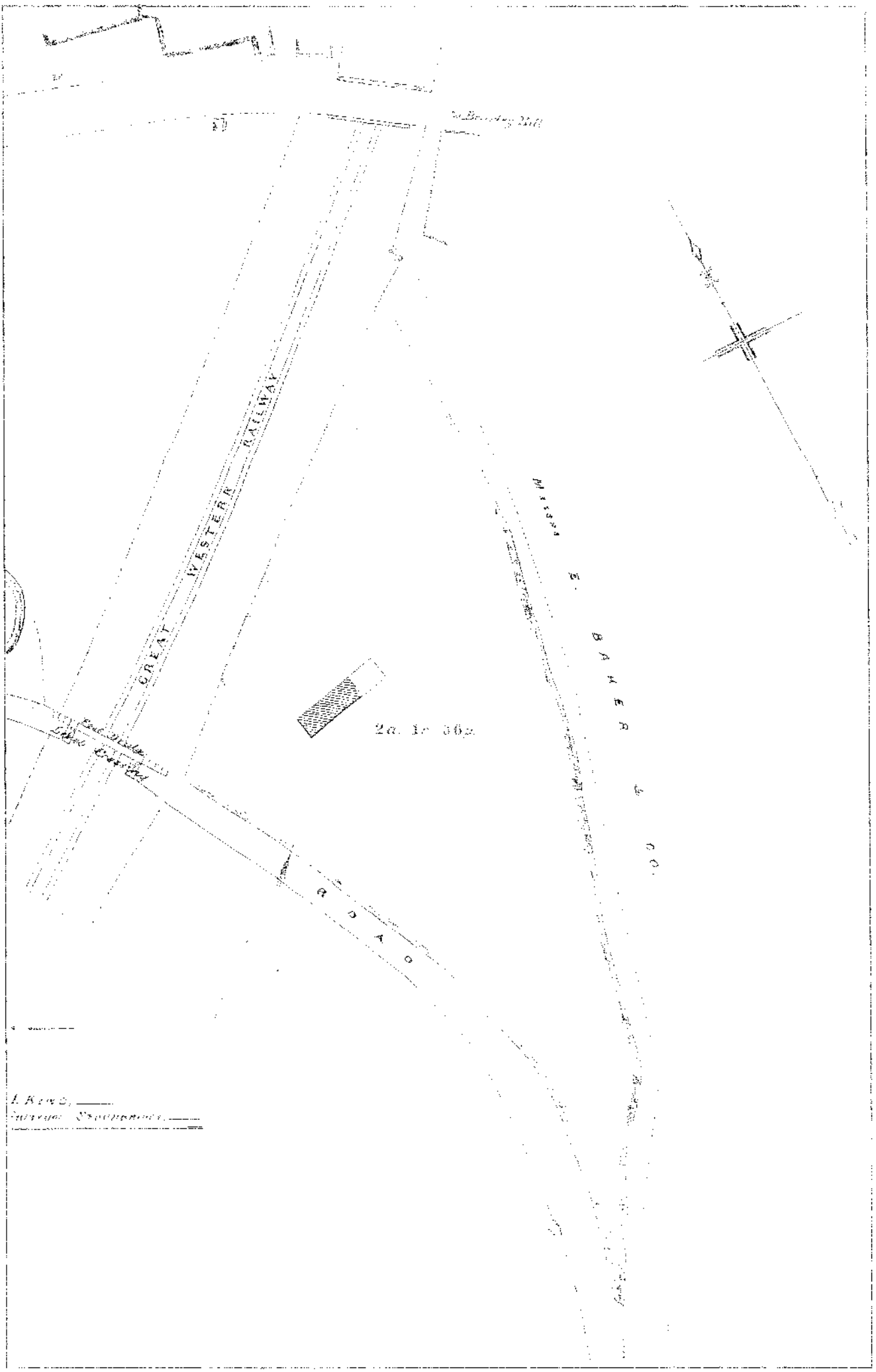
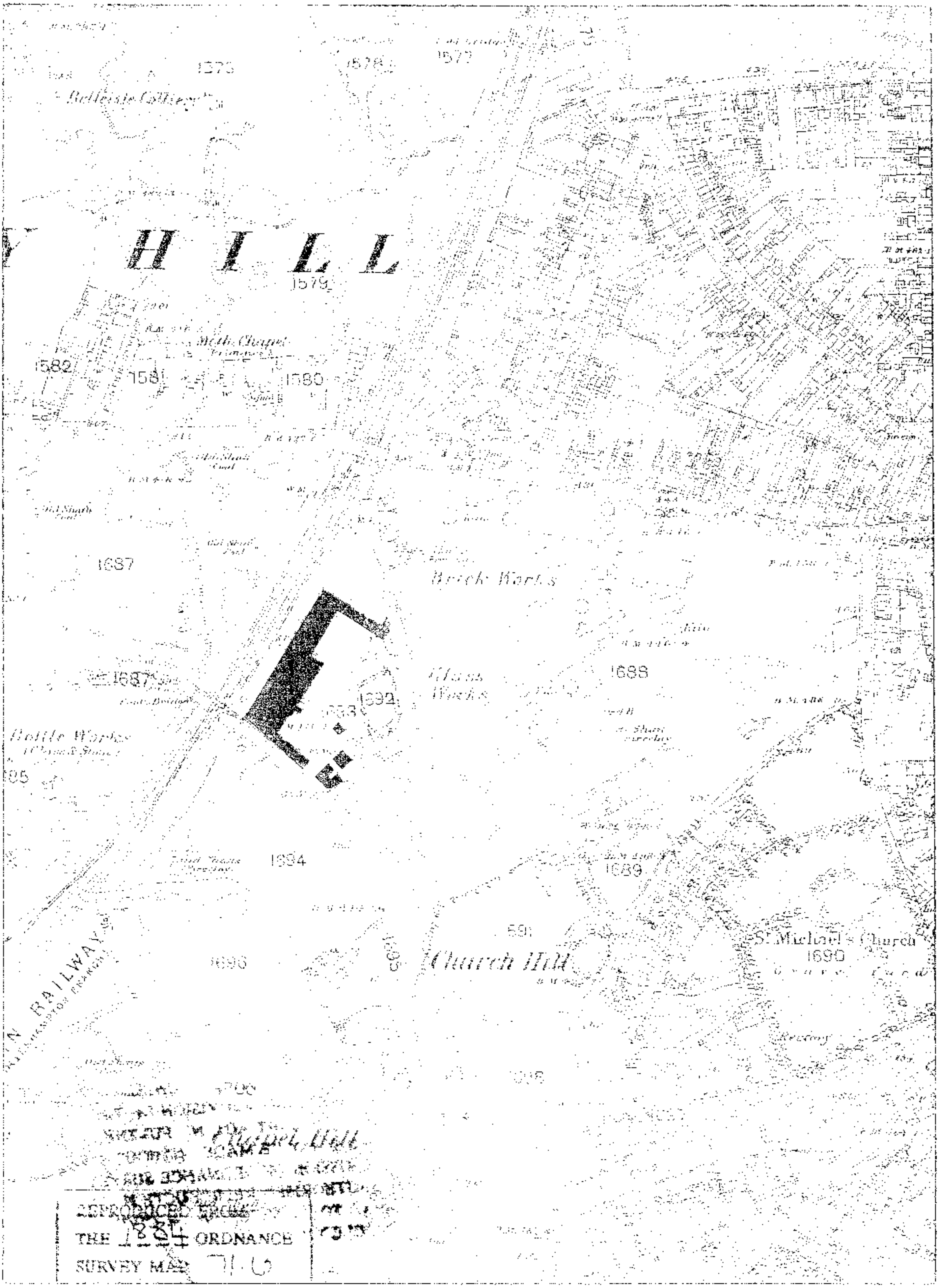


Fig.2 (January 1870)



HILL
Belleisle Colliery
1578
1577
1579
Meth. Chapel
1582
1580
1687
Brick Works
Glass Works
1688
1692
Bottle Works
1694
1689
Church Hill
St. Michael's Church
1690
RAILWAY
THE ORDNANCE
SURVEY MAP

Fig.3 (1864)

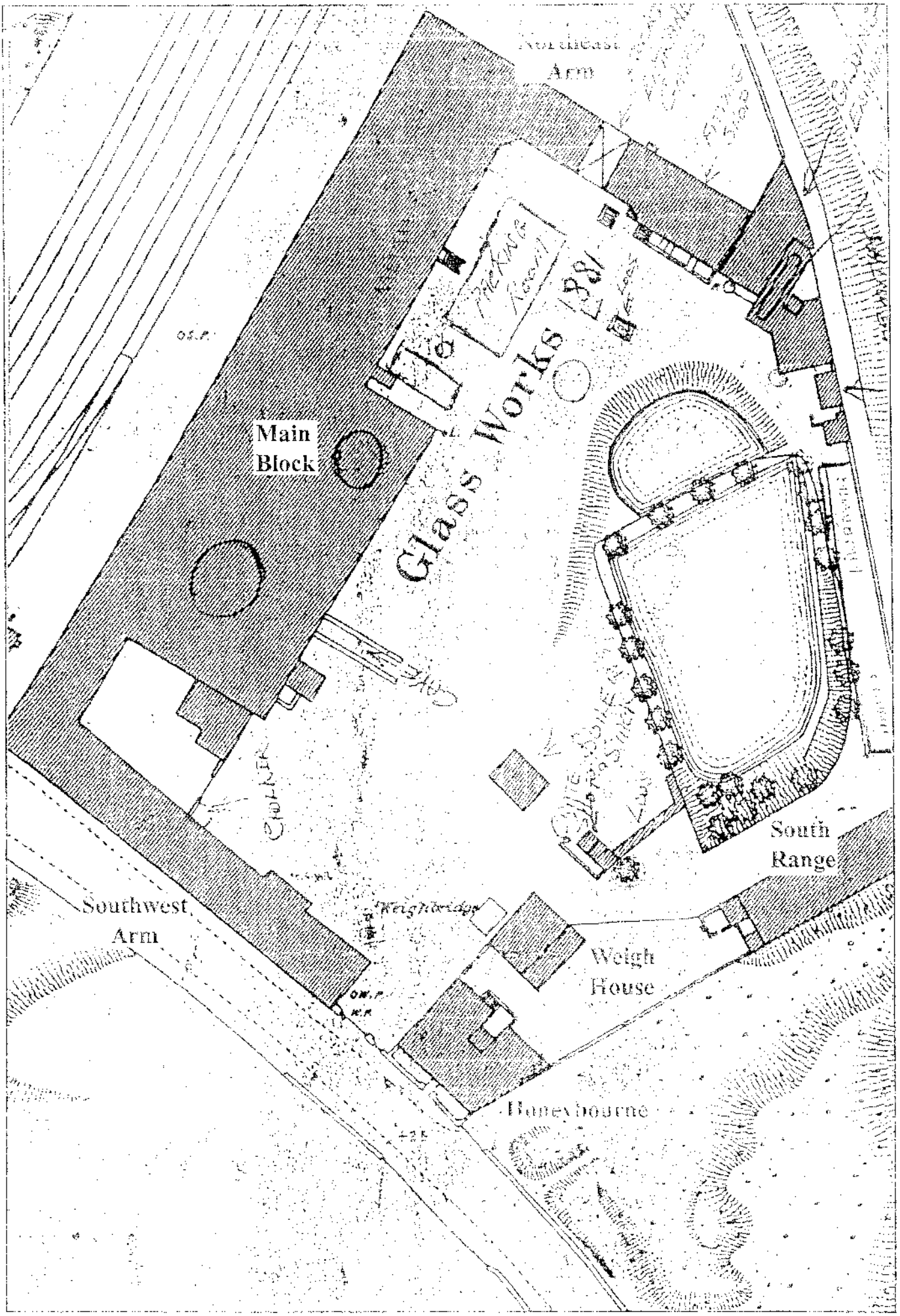

Arm
Glass Works 1881
Main Block
South Range
Southwest Arm
Weigh House
Boneyhourne

Fig.4 (c.1884)

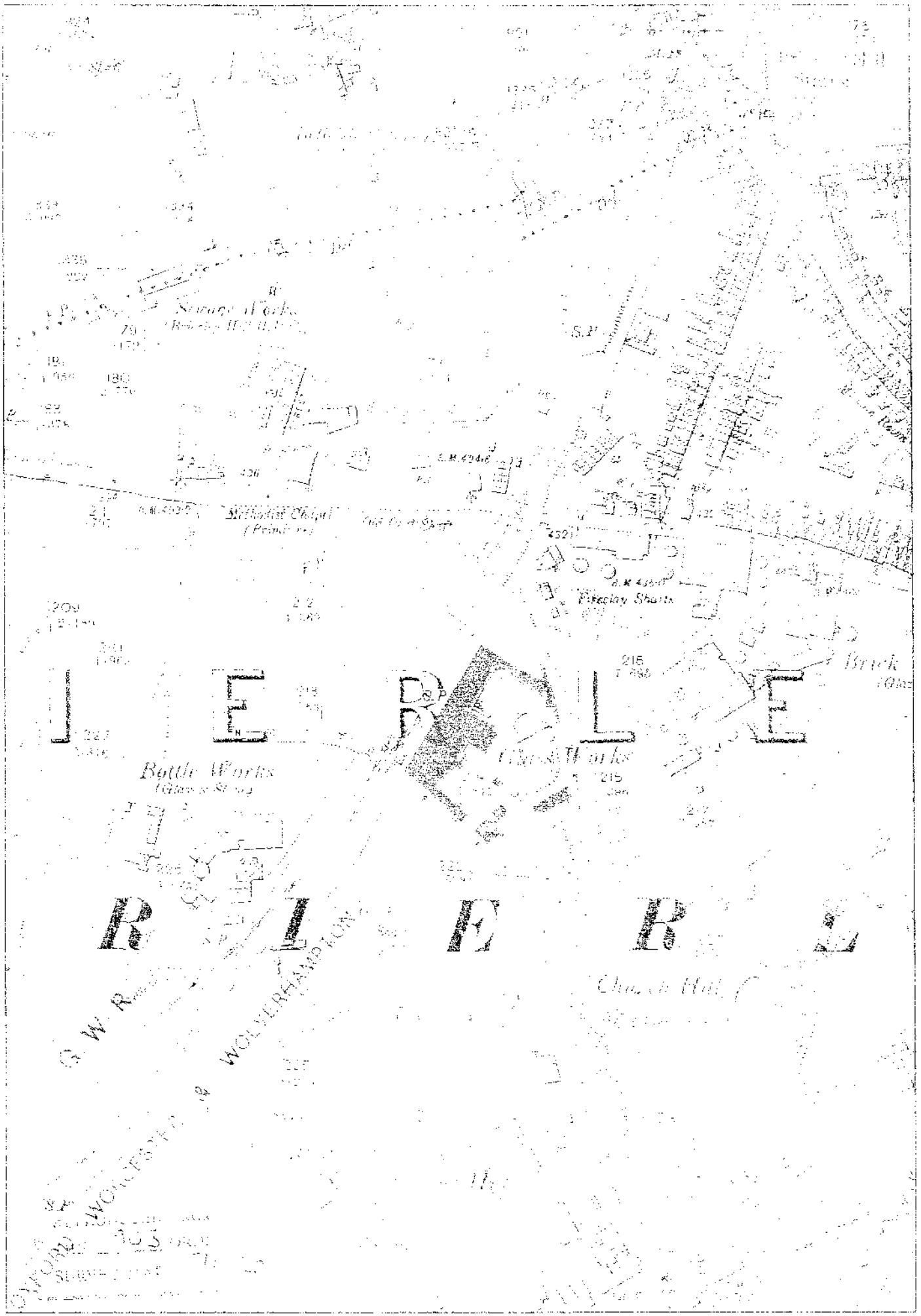


Fig.5 (1903)

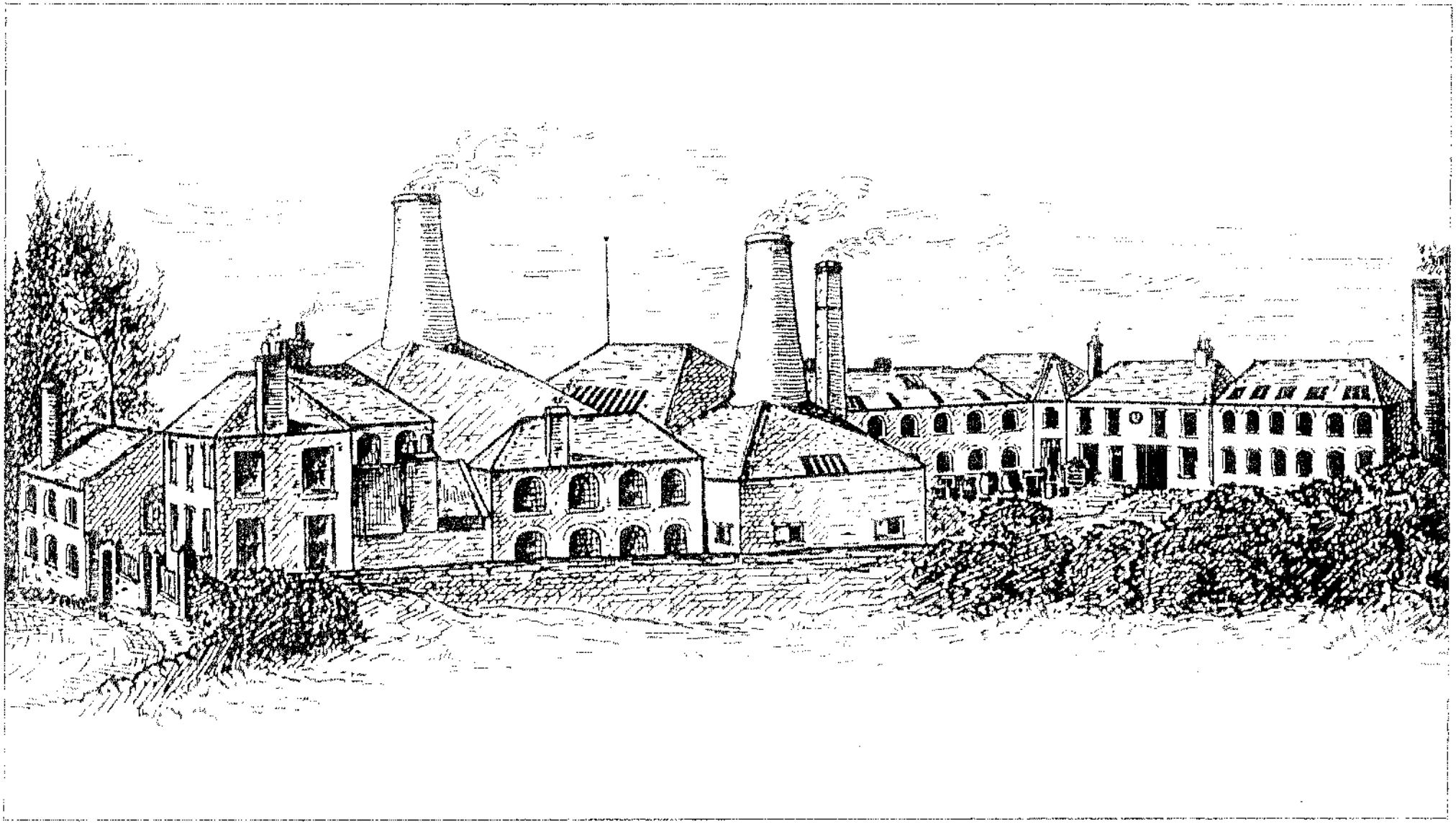


Fig.6 (c.1911)

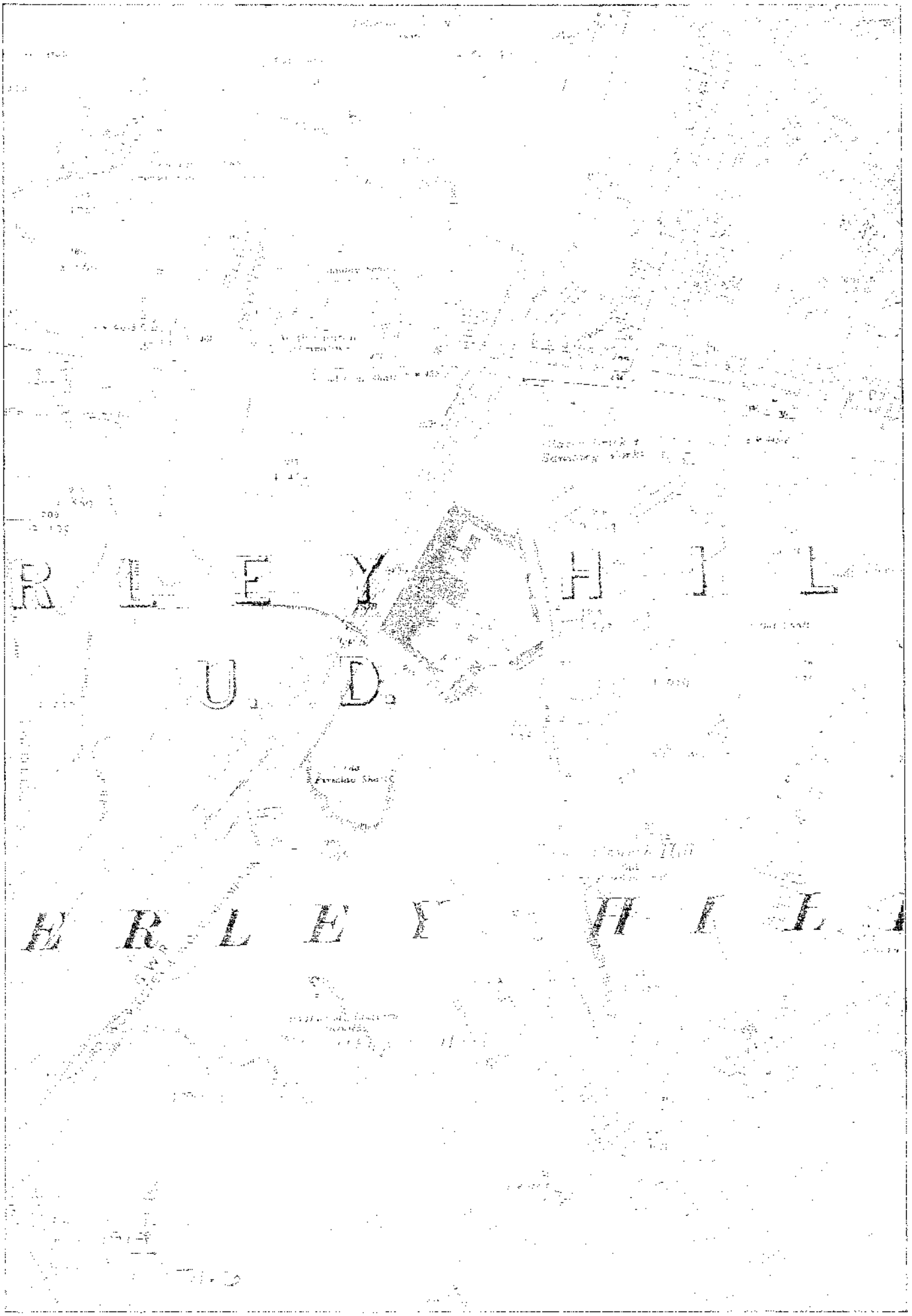


Fig.7 (1919)

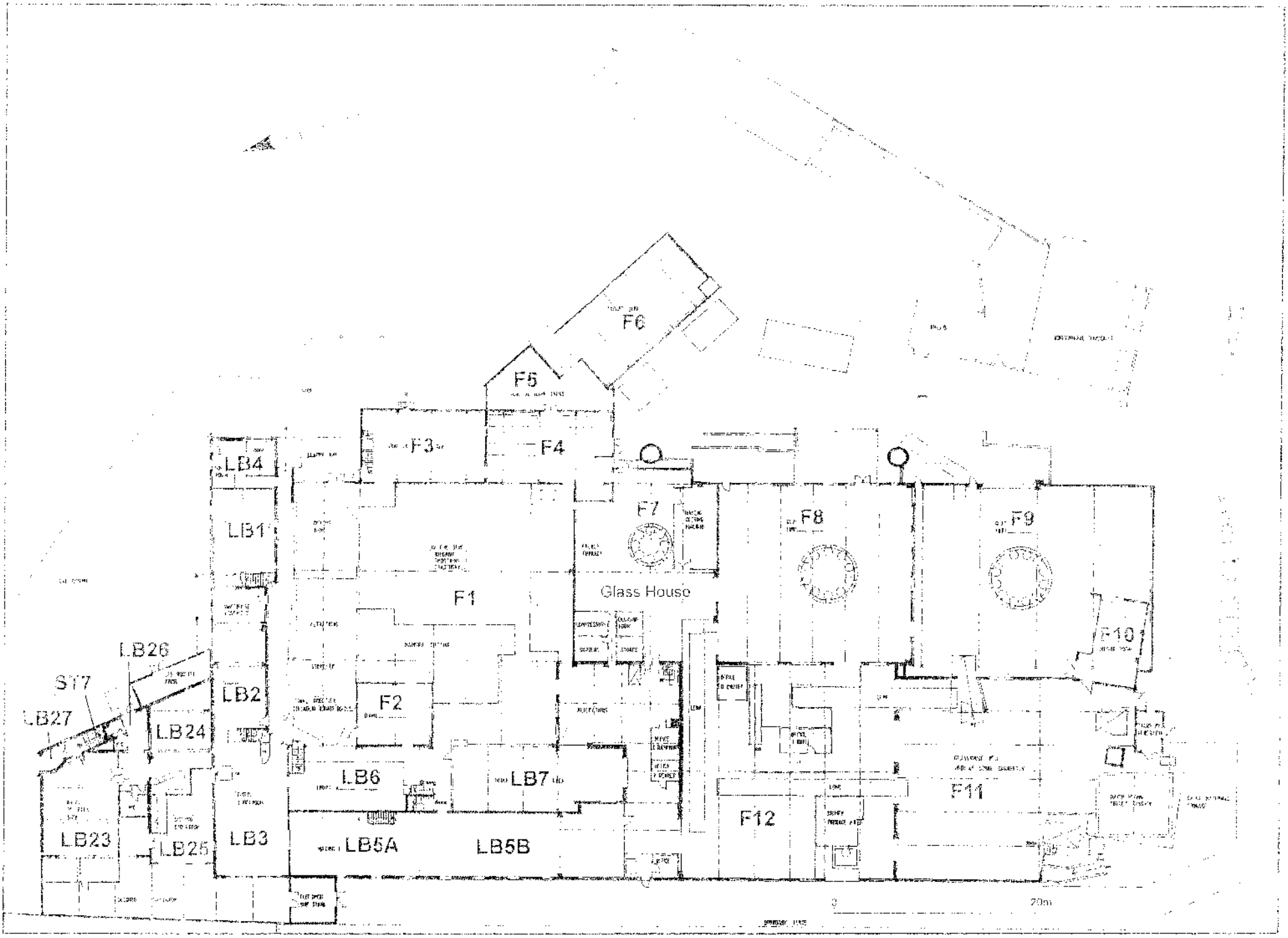

F6
F5
F3
F4
LB4
LB1
F7
F8
F9
F1
Glass House
F10
LB26
ST7
LB27
LB2
F2
LB24
LB6
LB7
F11
F12
LB23
LB25
LB3
LB5A
LB5B
20m

Fig.8

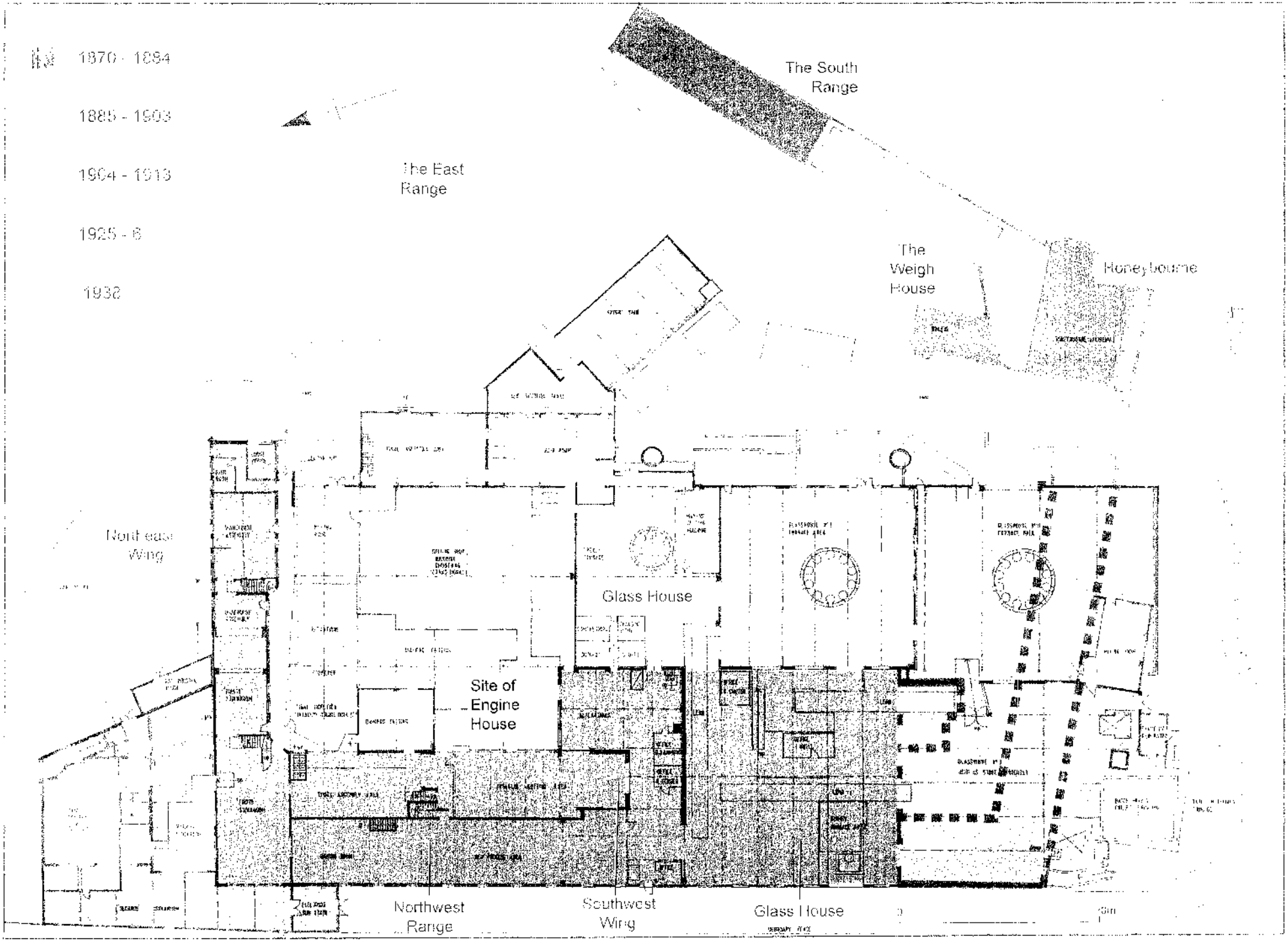


Fig.9 The Main Phases

(a) Door architrave

(b) Skirting board

Fig 10

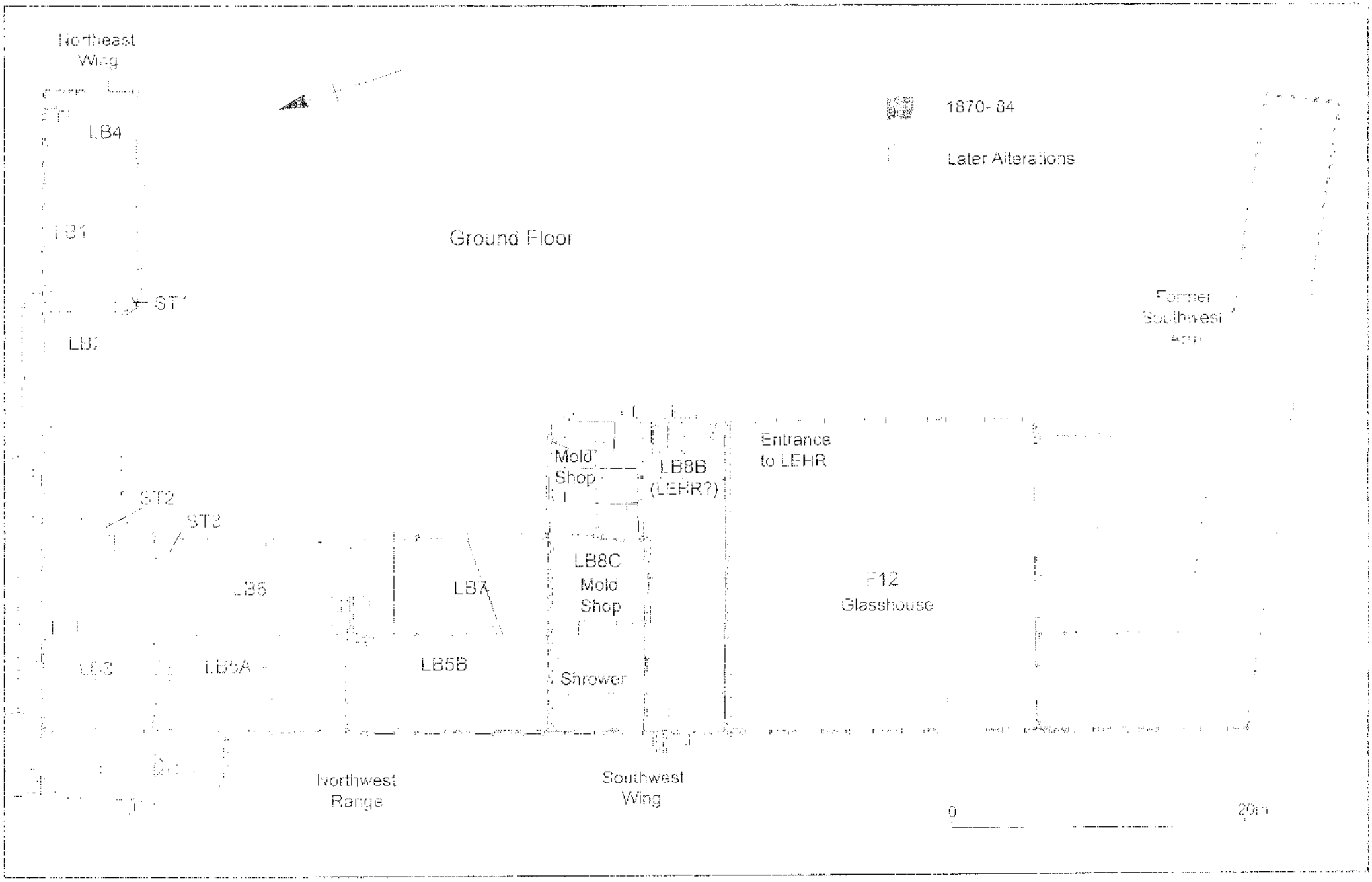


Fig.11 Ground Plan of Historic Glassworks

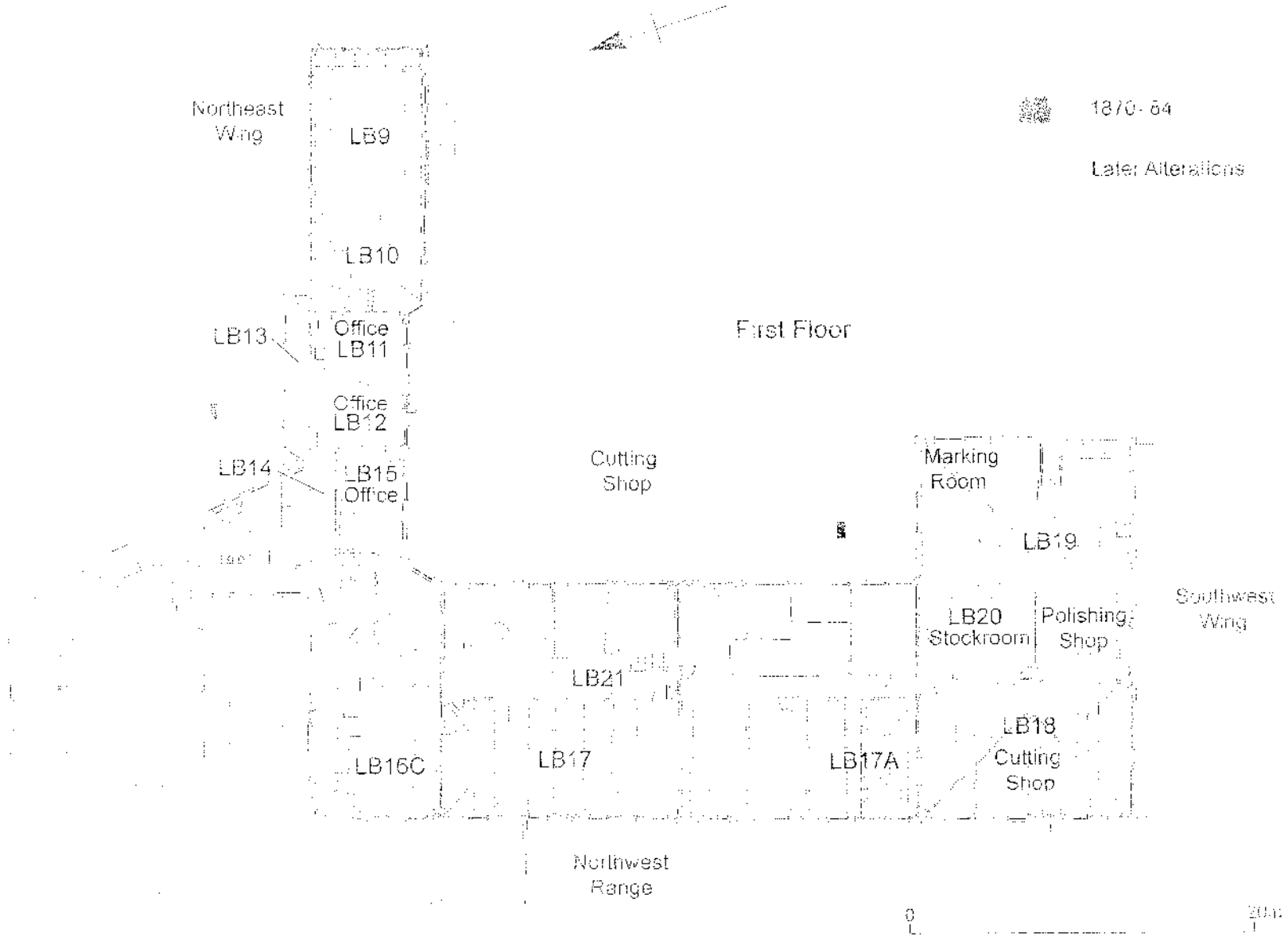


Fig.12 First Floor Plan of Historic Glassworks

Main NW Elevation

Wing Main Range Wing

Fig. 13

Main NE Elevation

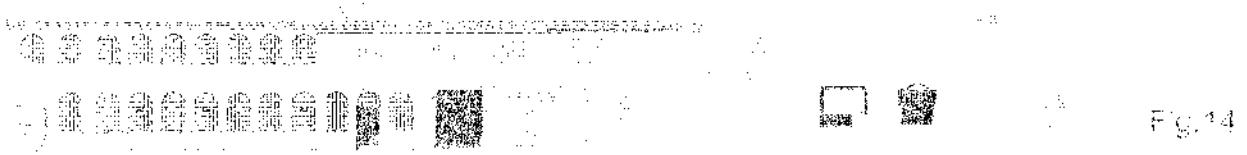


Fig. 14

Main SE Elevation

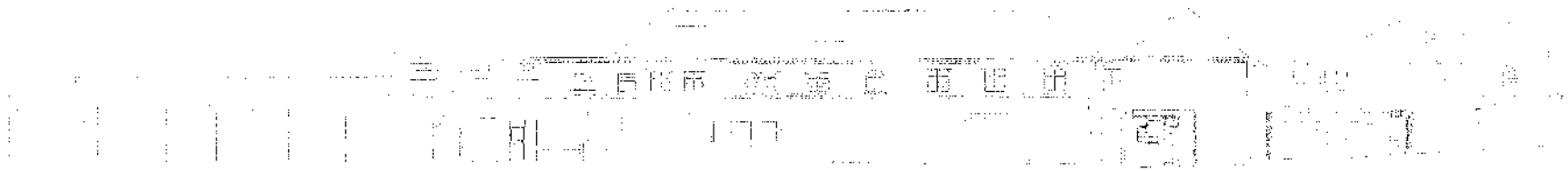


Fig. 15

Later Additions Later Blockings

Later Additions

Later Blockings

SW Elevation

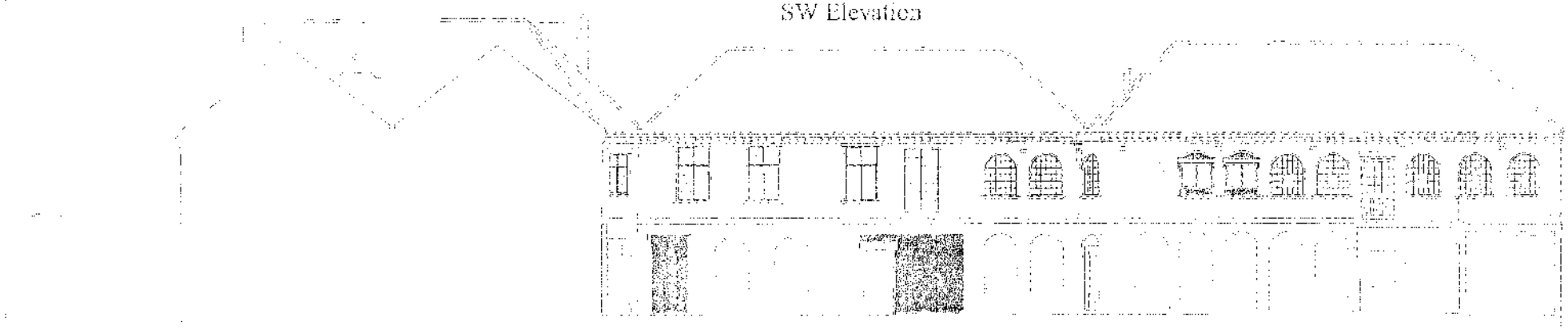


Fig.16

0 20m

Section A-A

NE Elevation
(Courtyard)

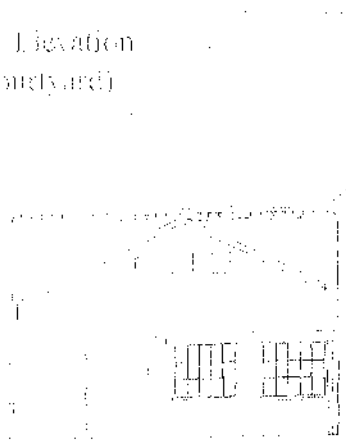


Fig.17

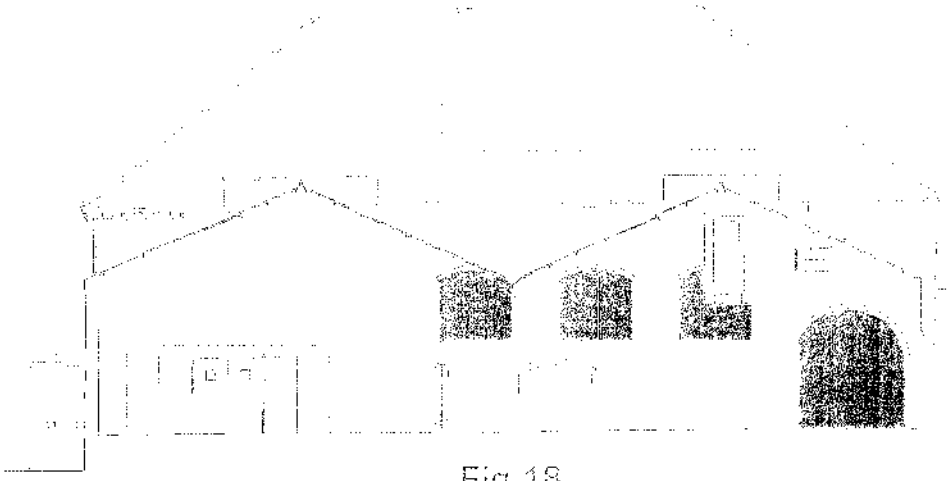


Fig.18

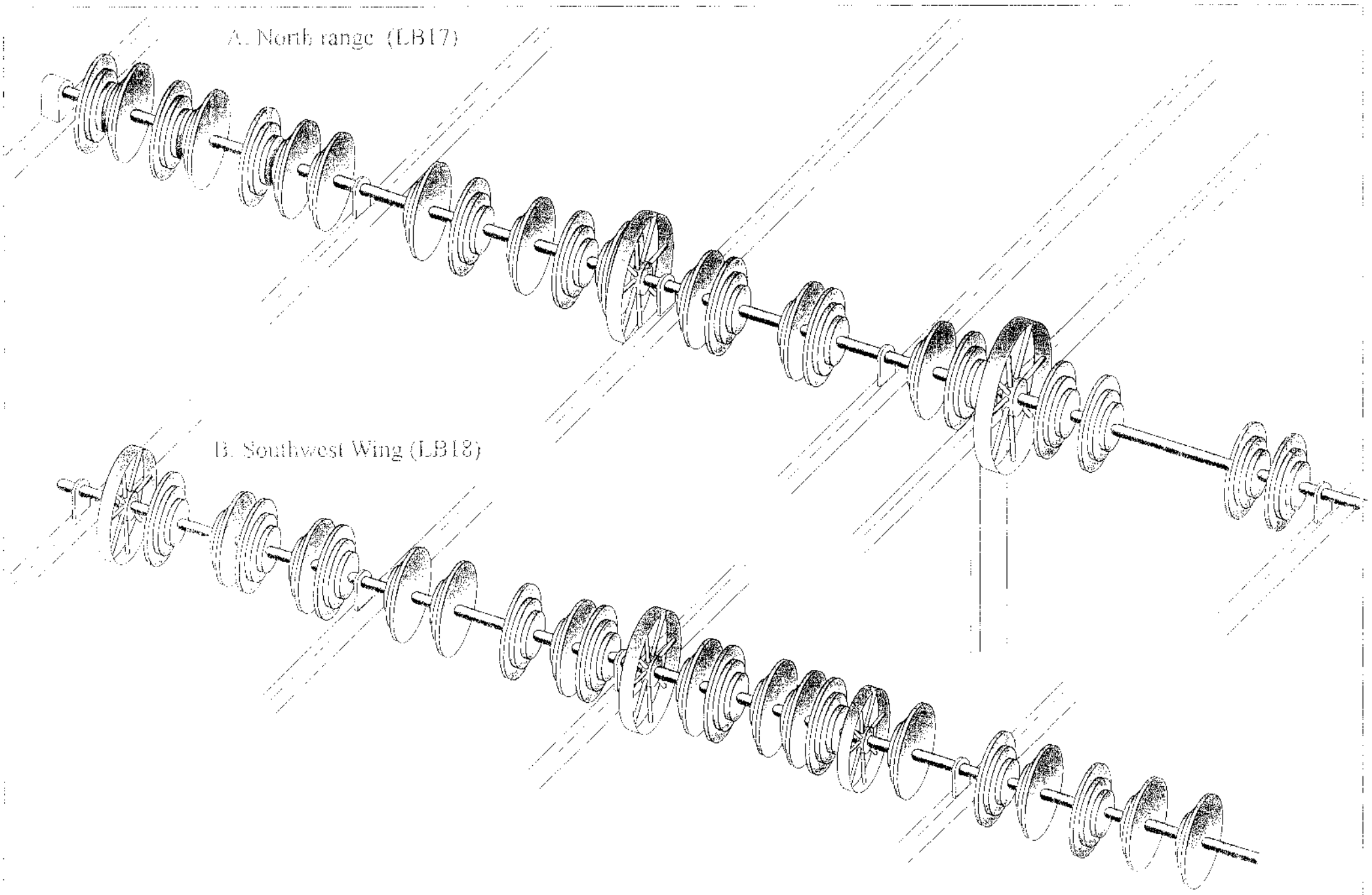


Fig. 19 Schematic diagram of lathe drive mechanism

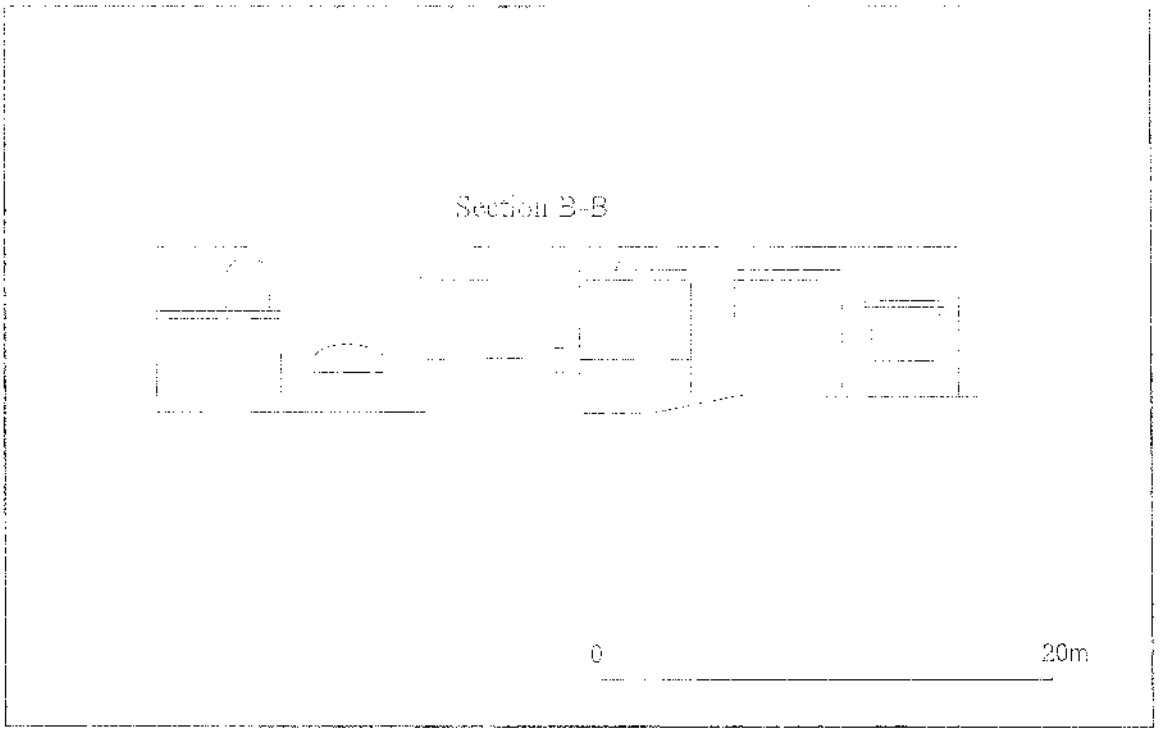


Fig.20 Glasshouse Southeast wall interior

Fig.21 Honeybourne

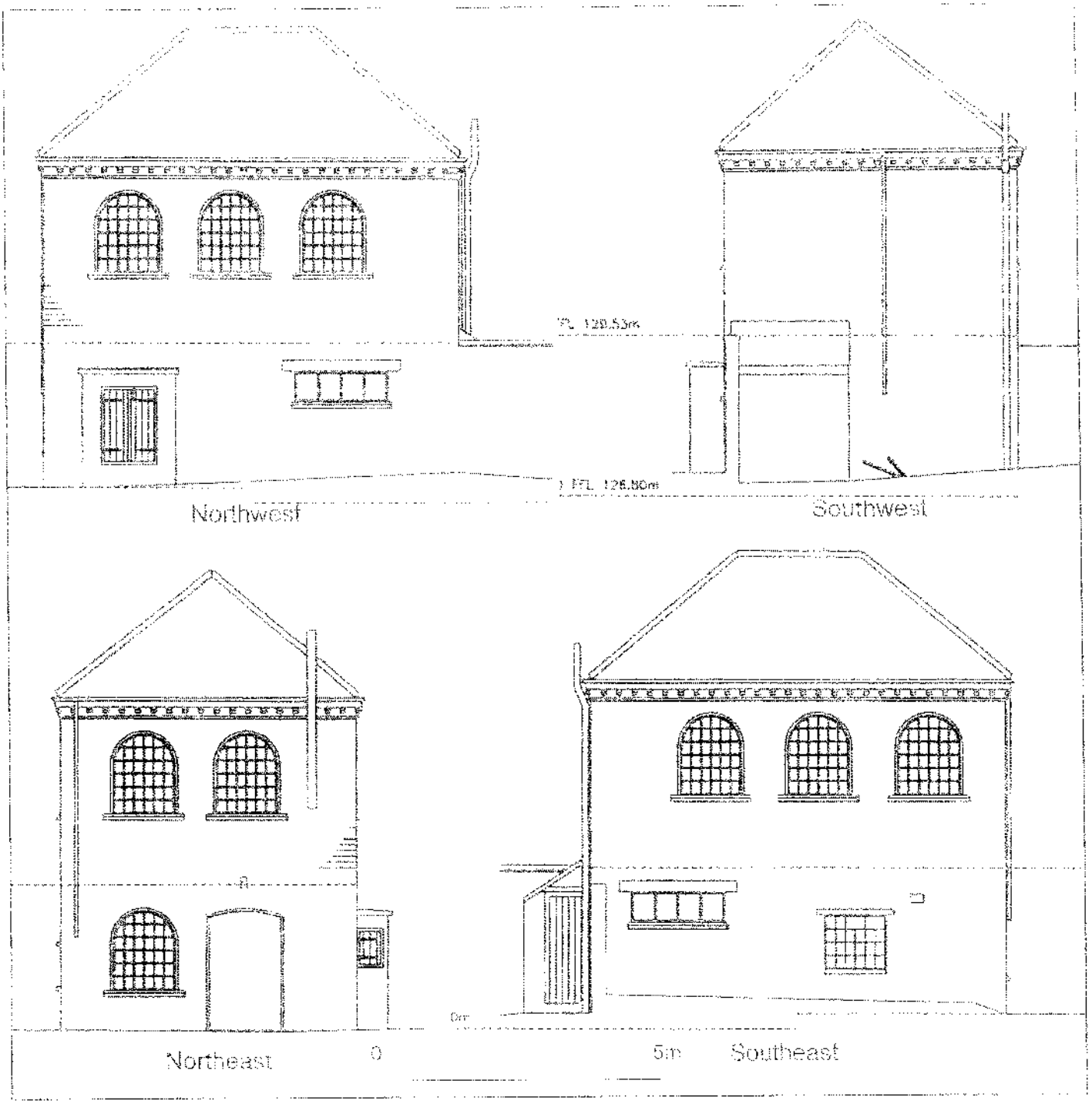


Fig.22 The Weigh House

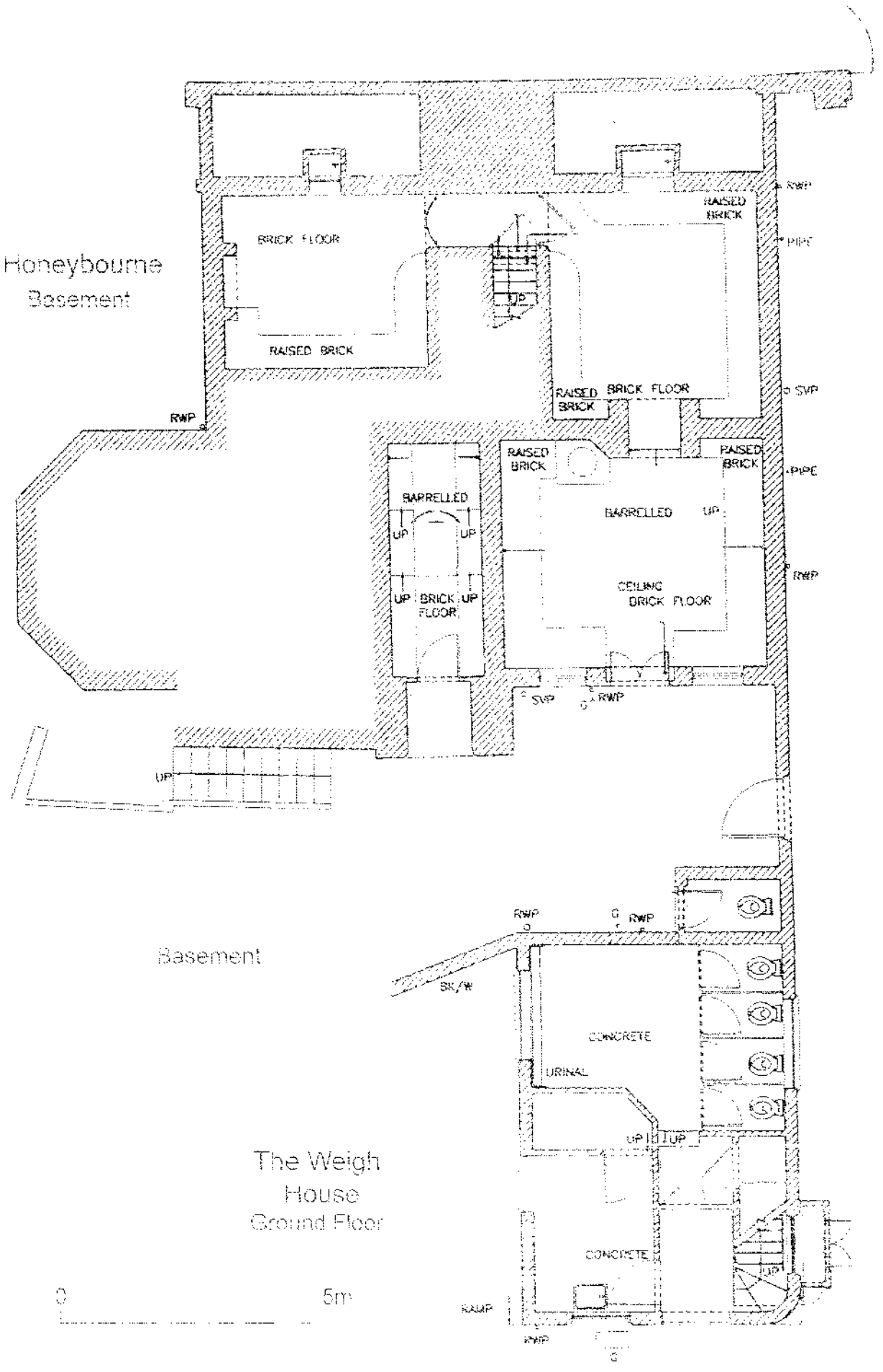

Honeybourne
Basement
BRICK FLOOR
RAISED BRICK
RWP
RAISED BRICK
PIPE
RAISED BRICK FLOOR
SVP
RAISED BRICK
RAISED BRICK
PIPE
BARRELLED
UP
UP
UP
BRICK FLOOR
UP
BARRELLED
UP
CEILING
BRICK FLOOR
RWP
SVP
RWP
UP
Basement
RWP
RWP
SK/W
CONCRETE
URINAL
UP
UP
The Weigh
House
Ground Floor
CONCRETE
UP
0
5m
RAMP
RWP

Fig 23

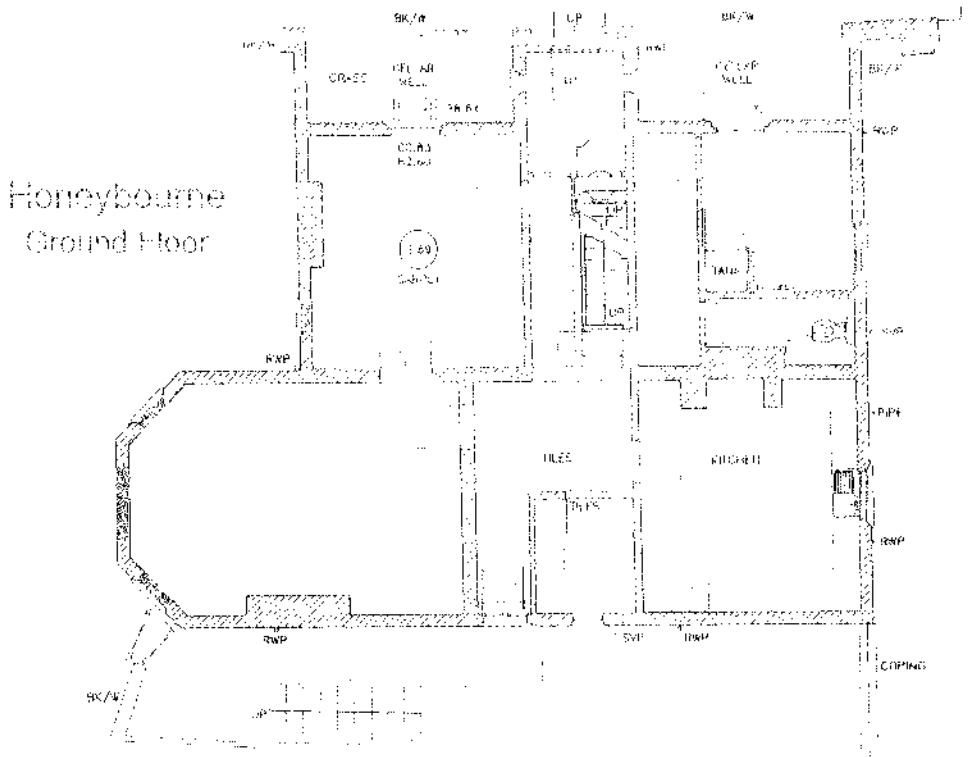
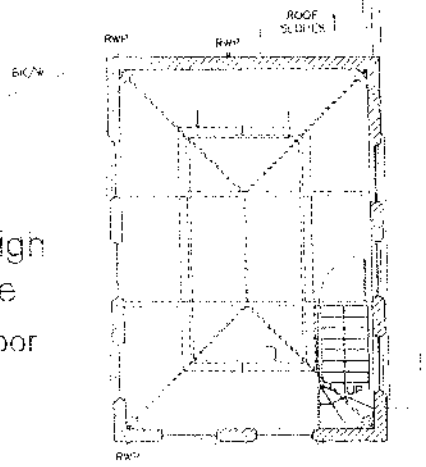
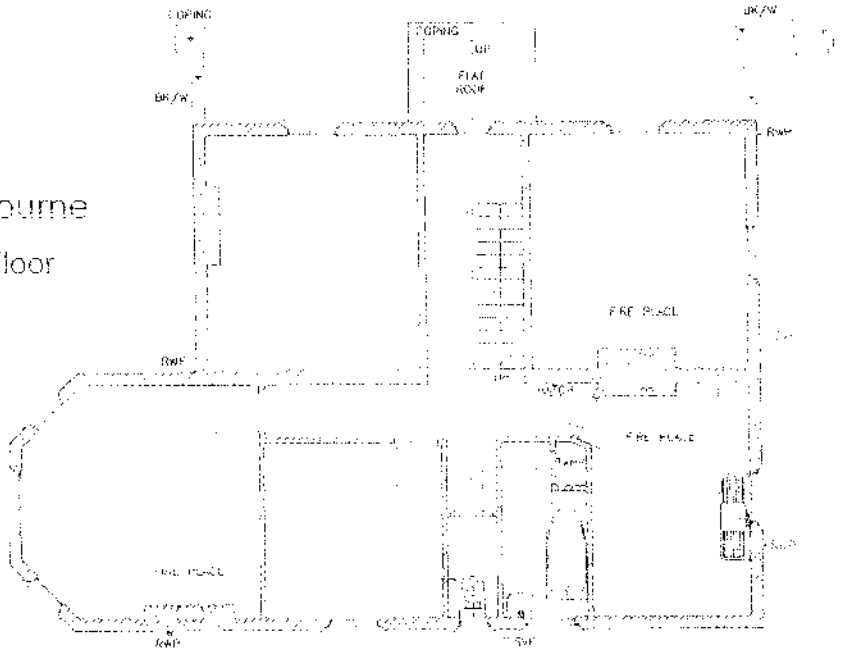


Fig.24



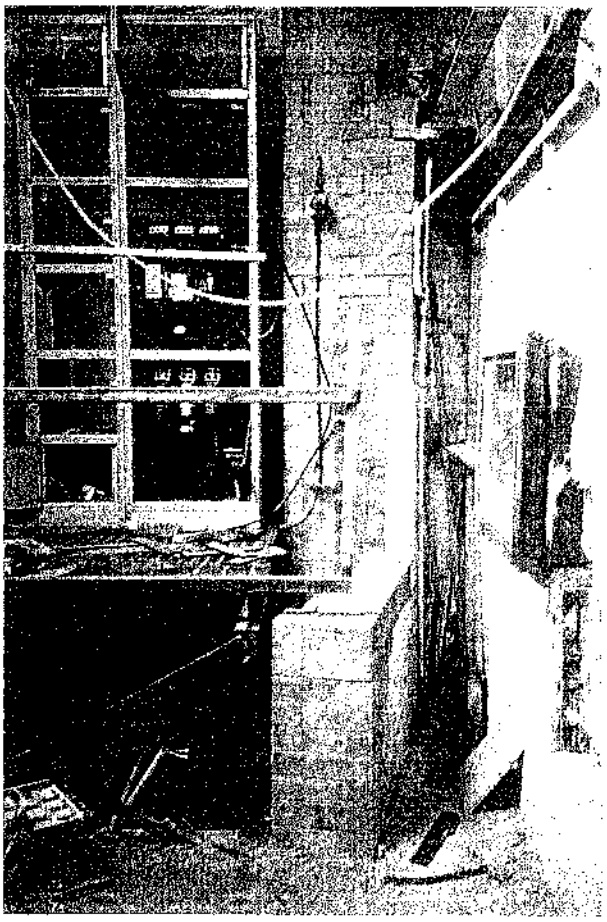
The Weigh House
First Floor

0 5m



Honeybourne
First Floor

Fig.25



Place 1

Place 2.

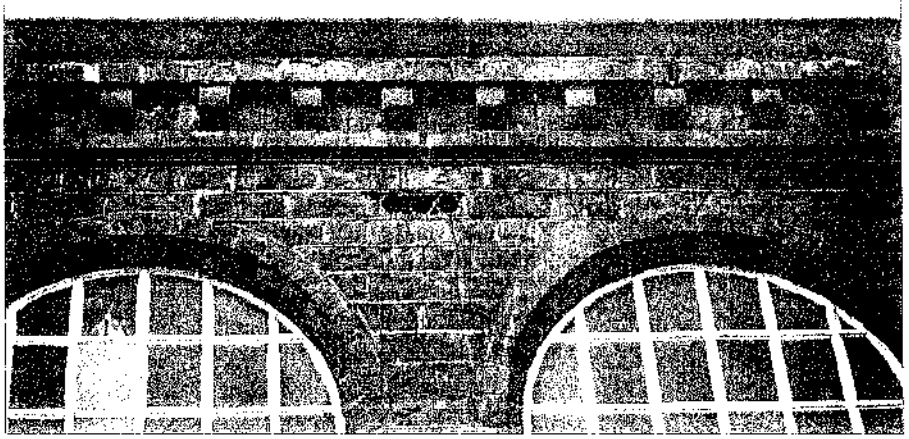


Plate 3.

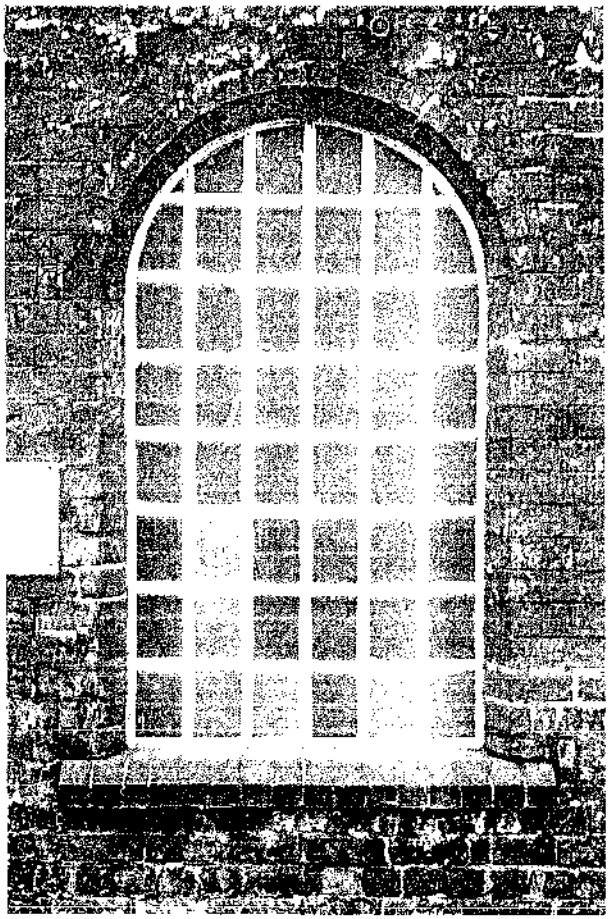


Plate 4

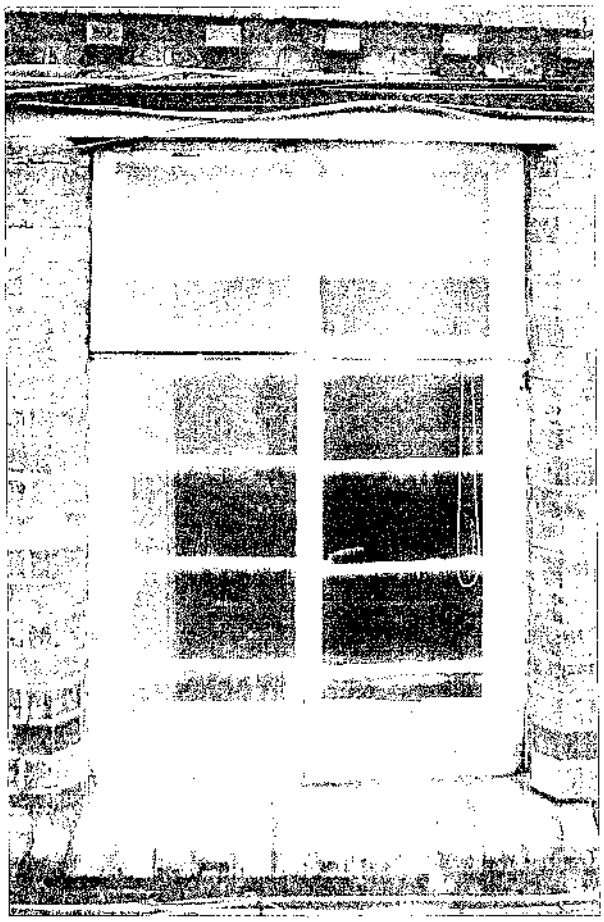


Plate 5

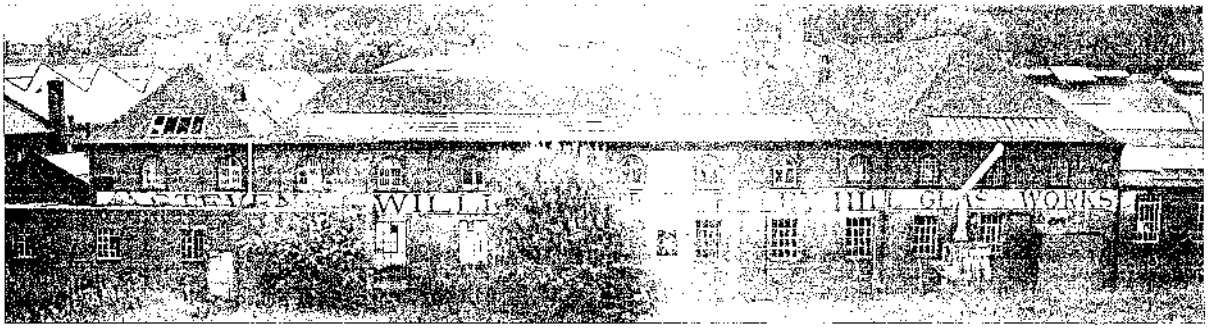


Plate 6

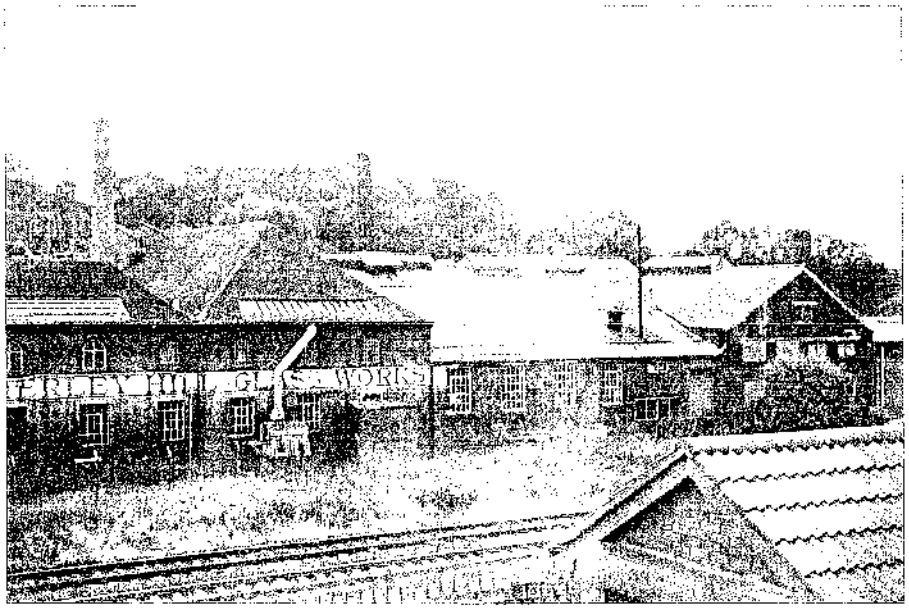


Plate 7.

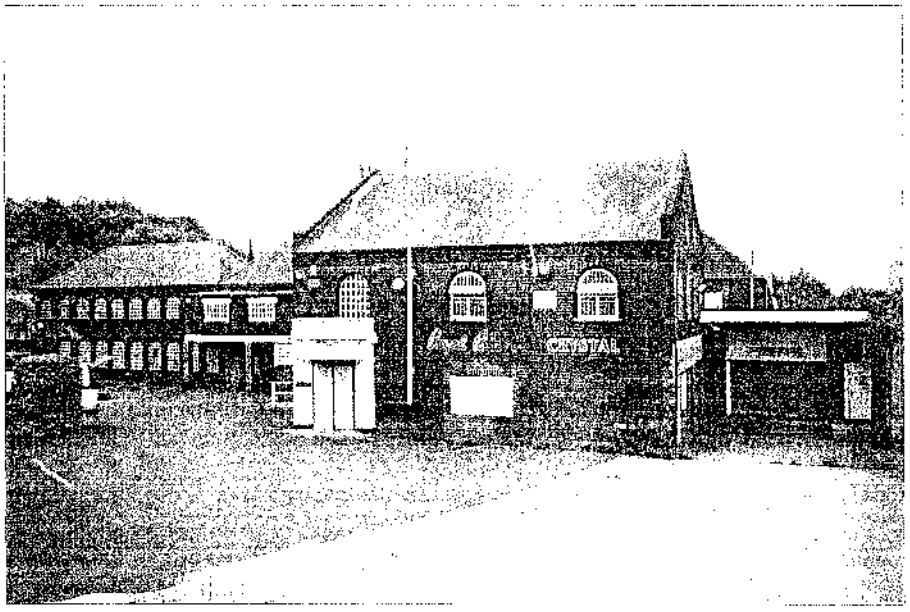


Plate 8

Plate 9.

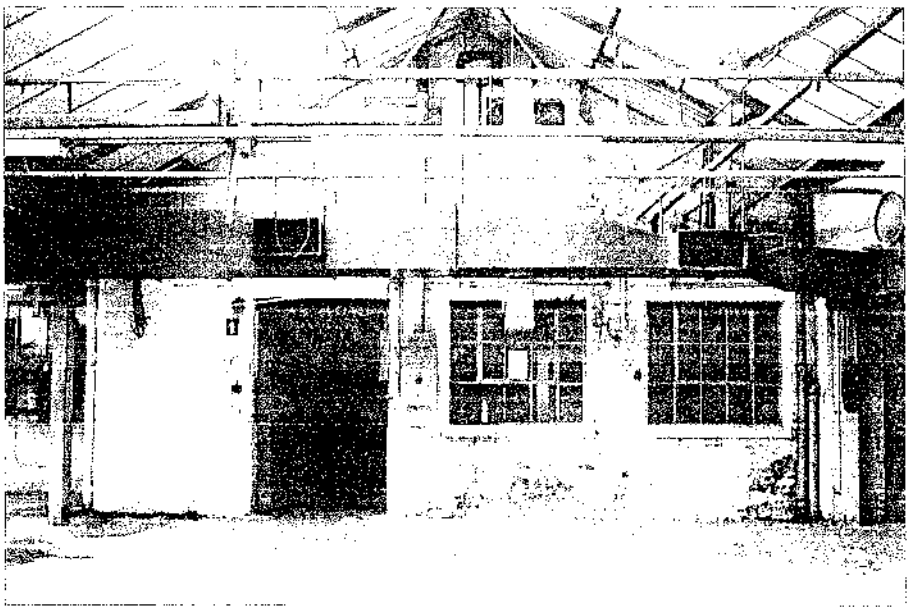


Plate 10.

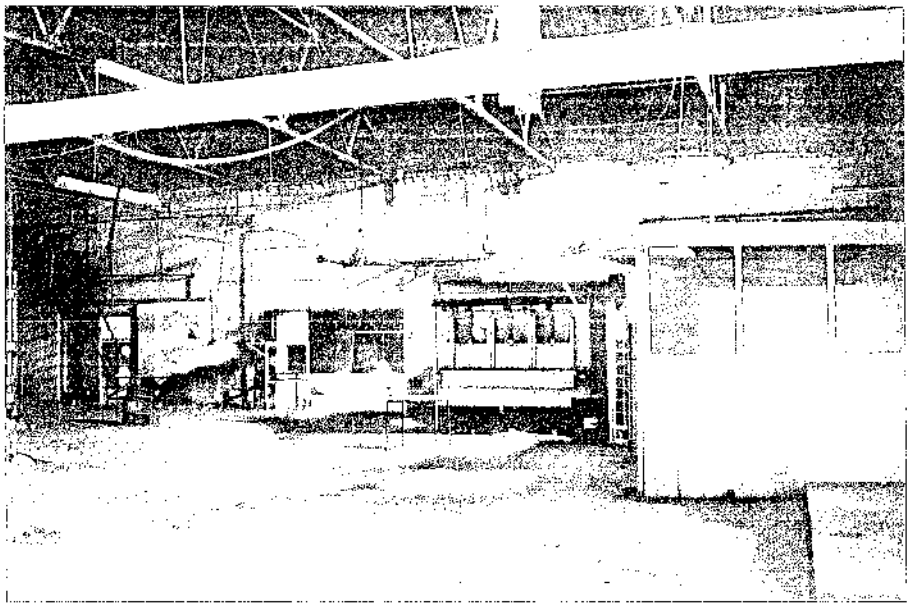


Plate 11.

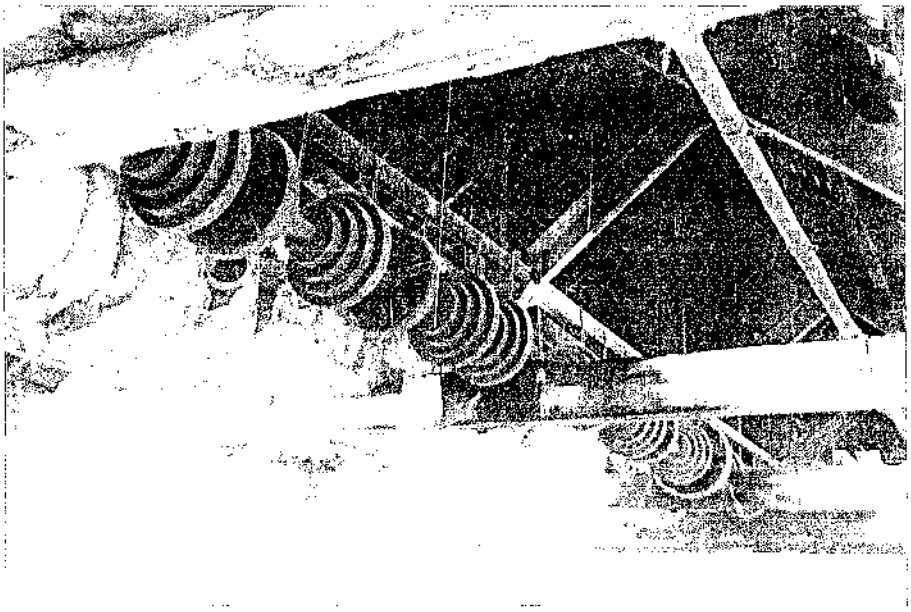


Plate 12.

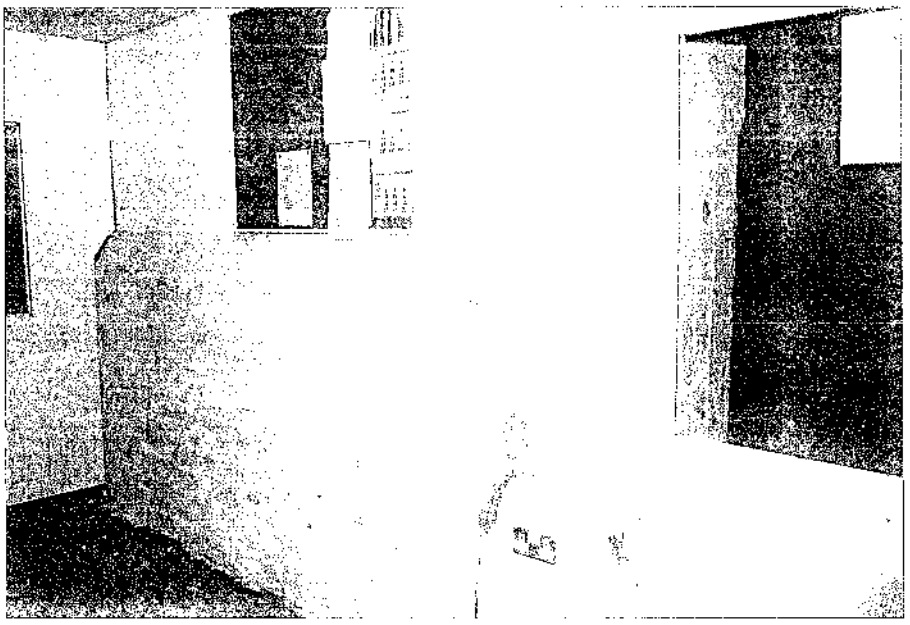


Plate 13.

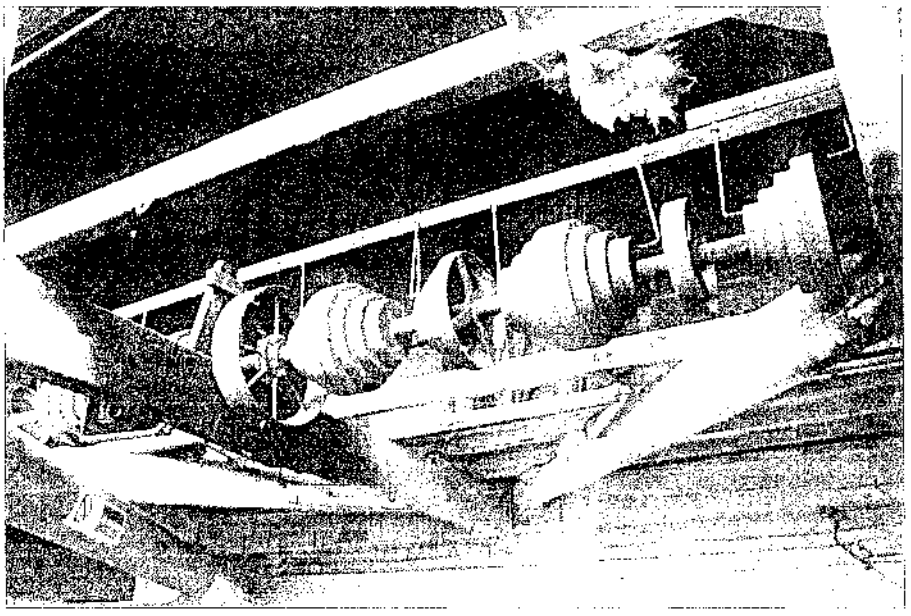


Plate 14

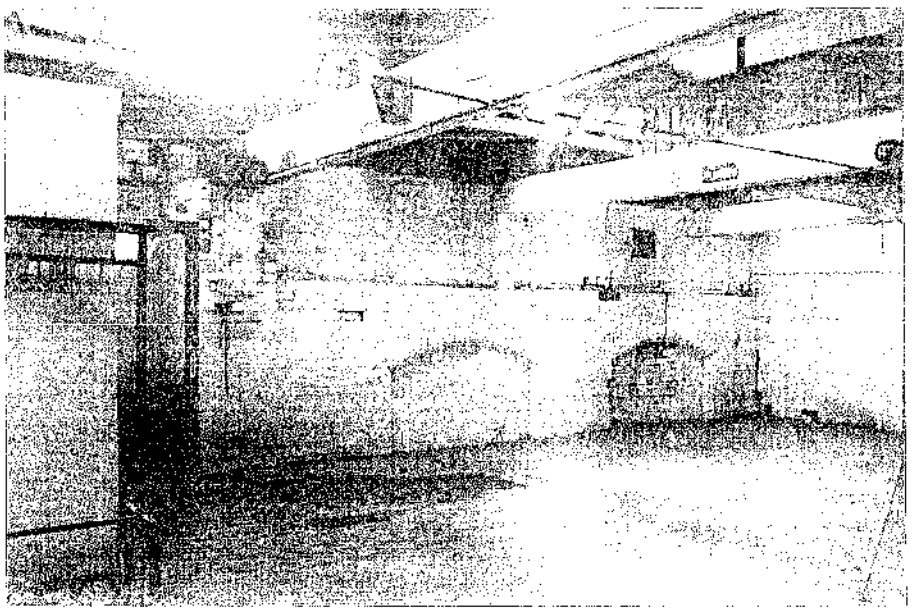


Plate 15

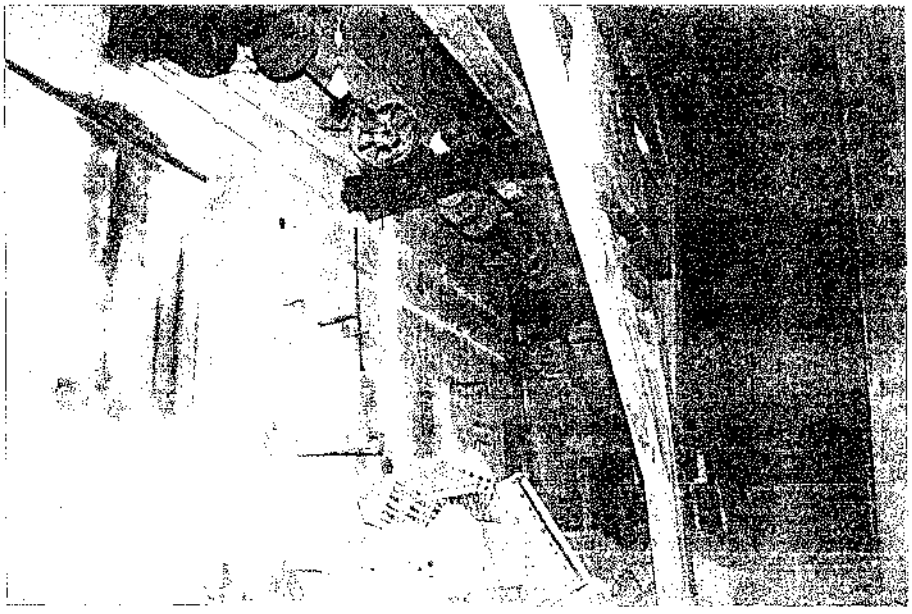


Plate 16

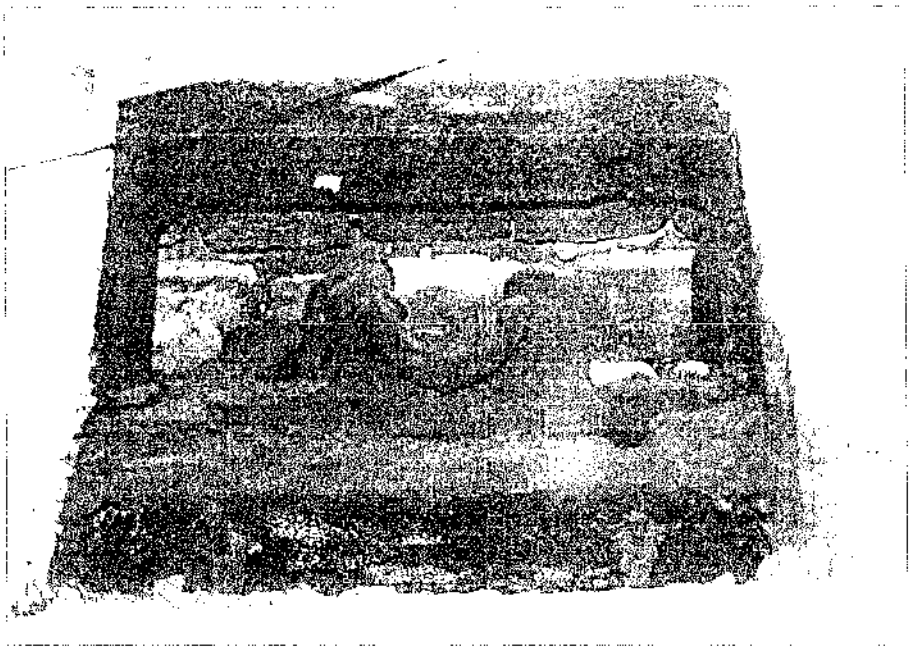


Plate 17.

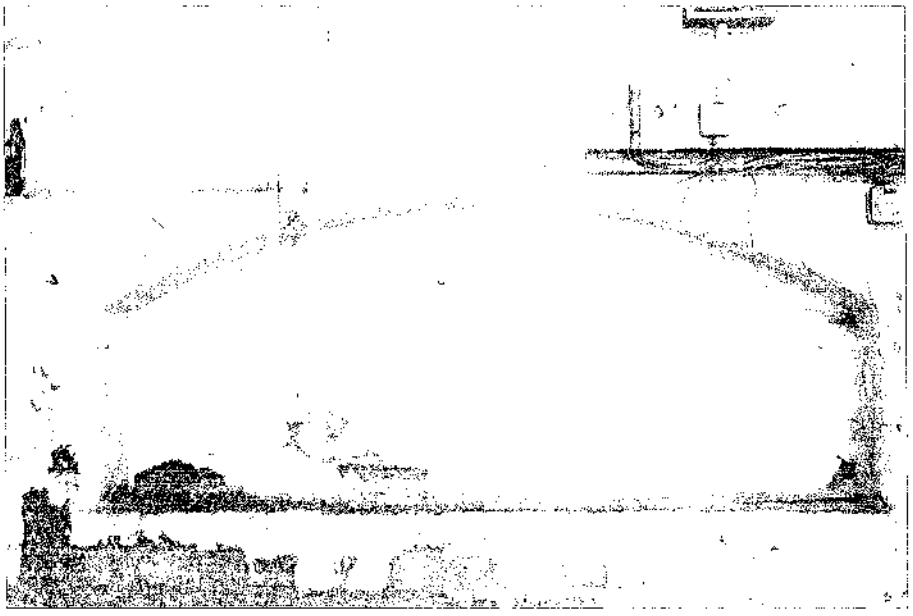


Plate 18.

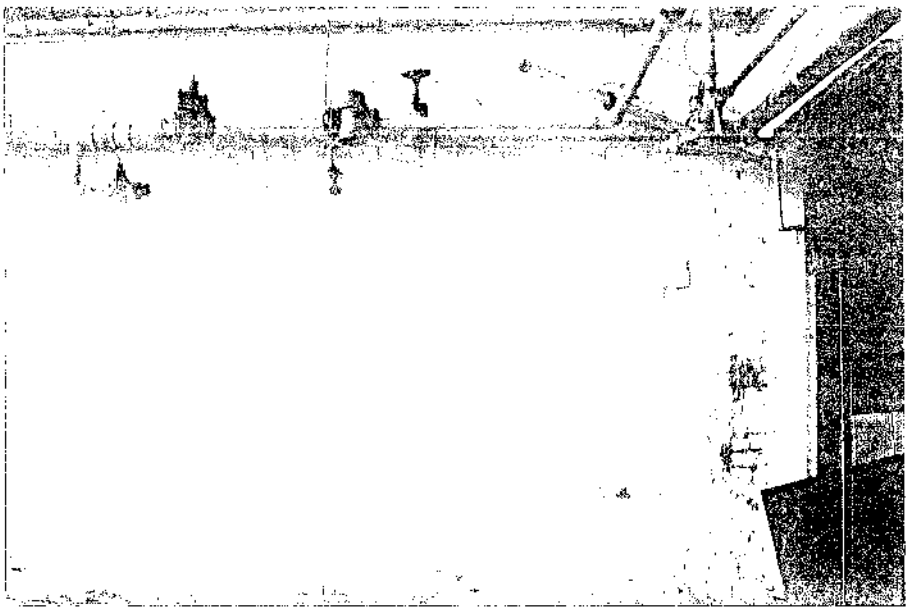


Plate 19.

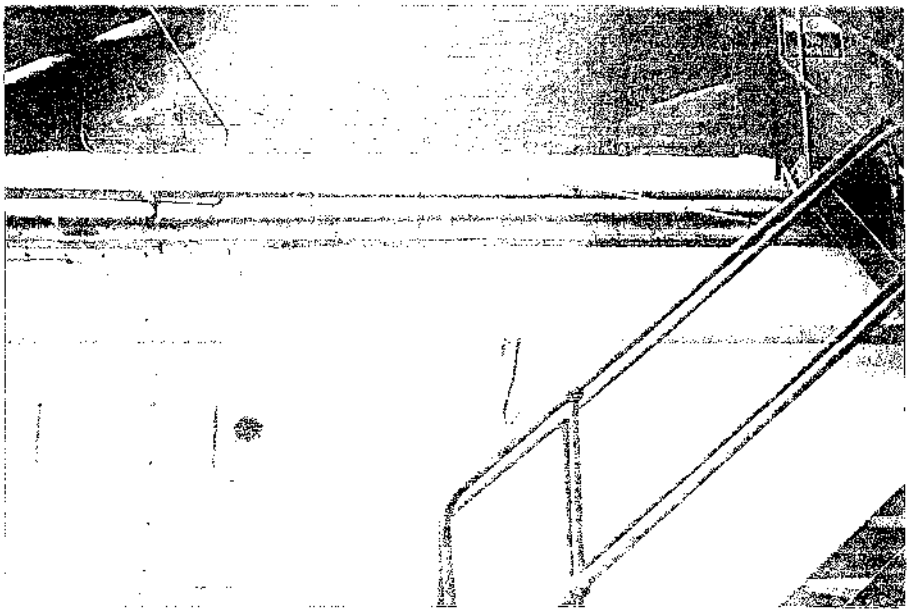


Plate 20.

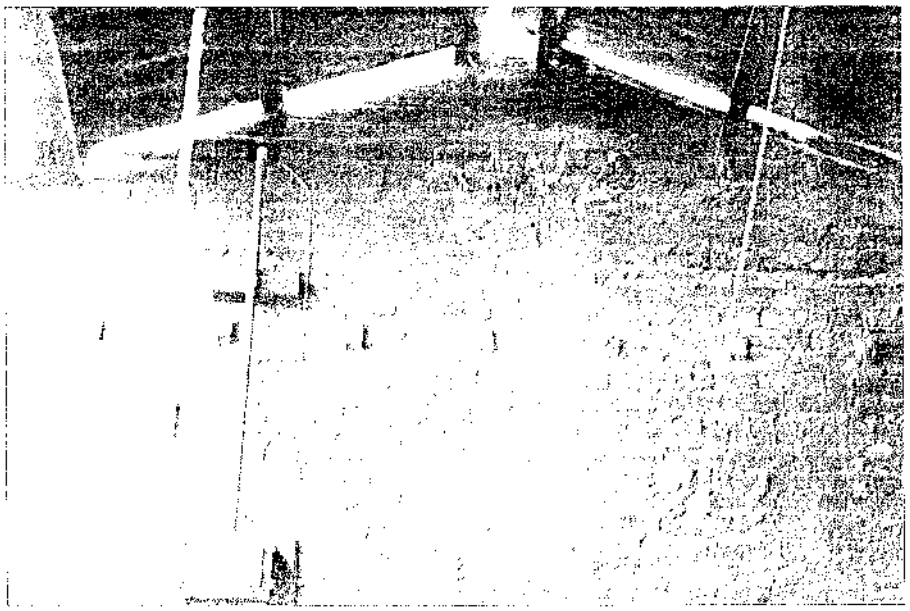


Plate 21.

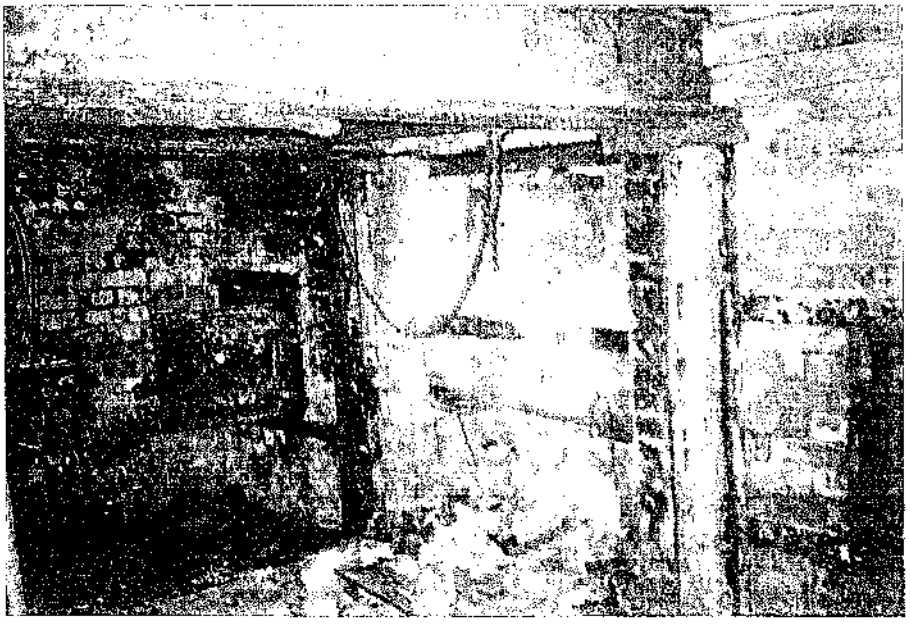


Plate 22.

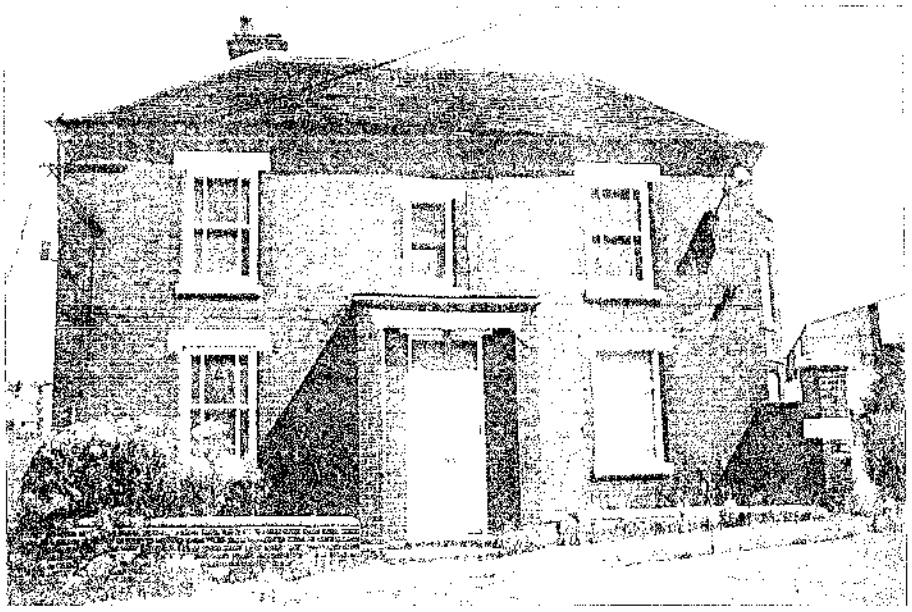


Plate 23.

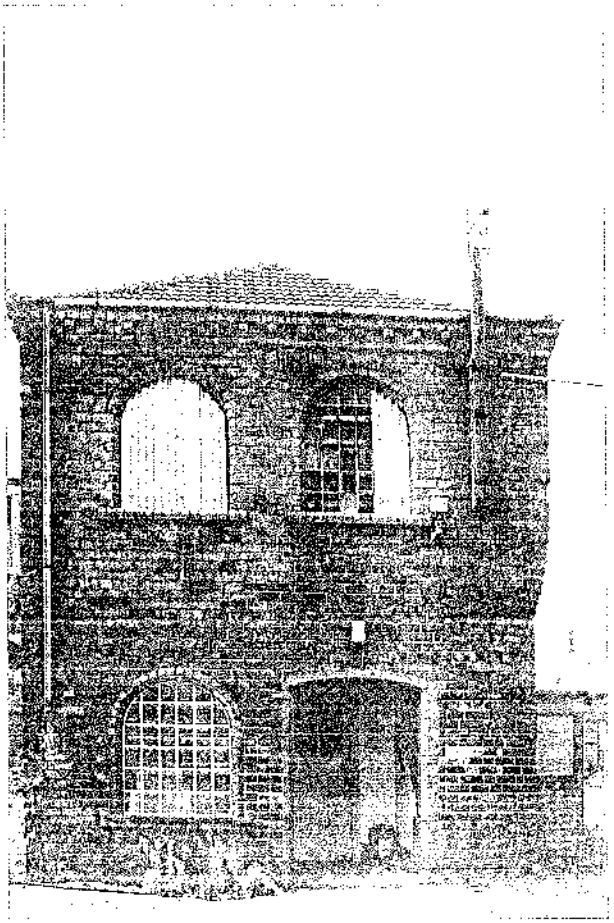


Plate 24.

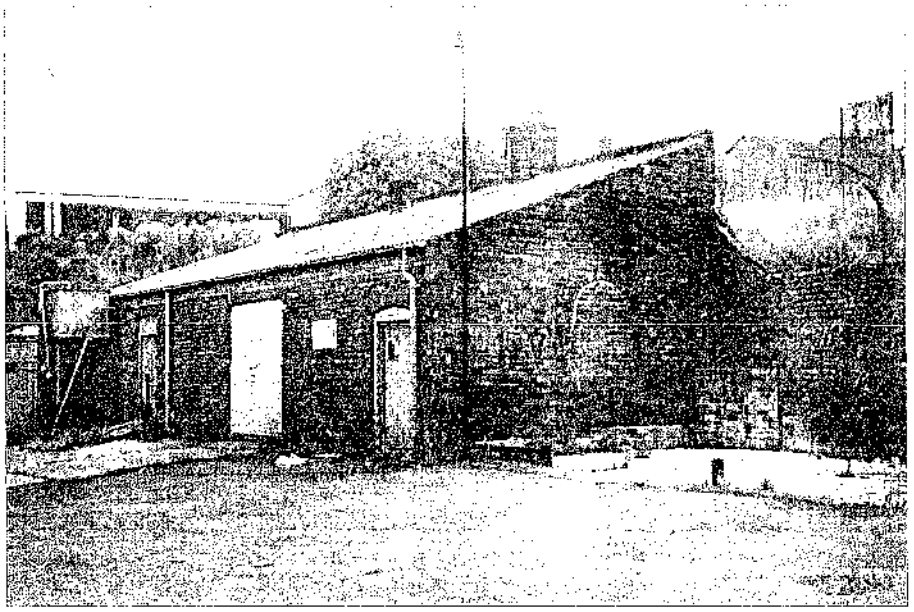


Plate 25.

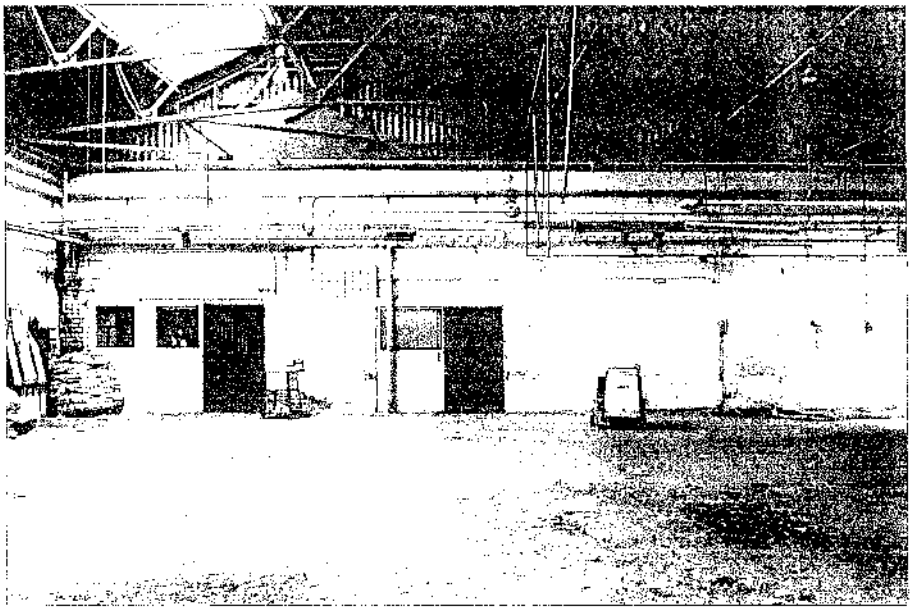


Plate 26.

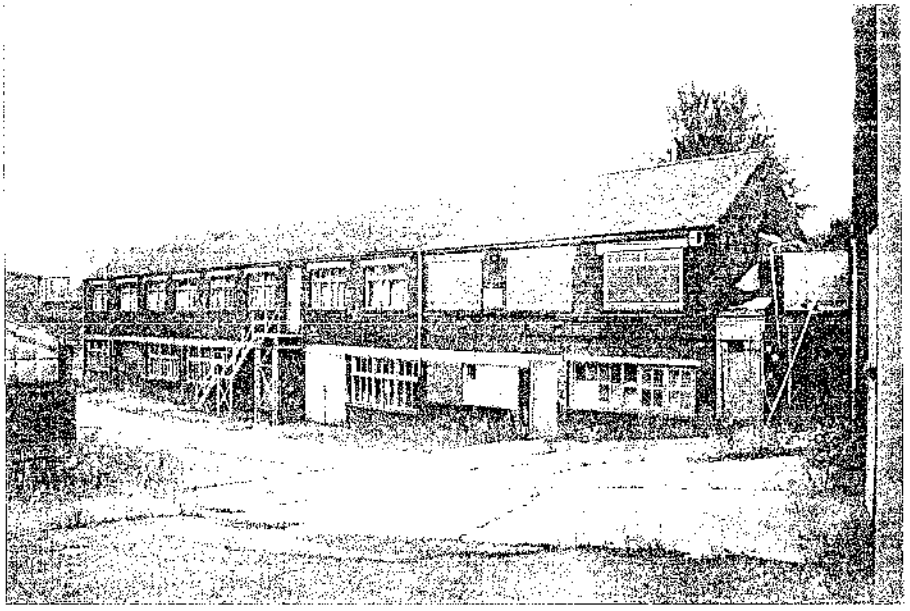


Plate 27

Plate 28

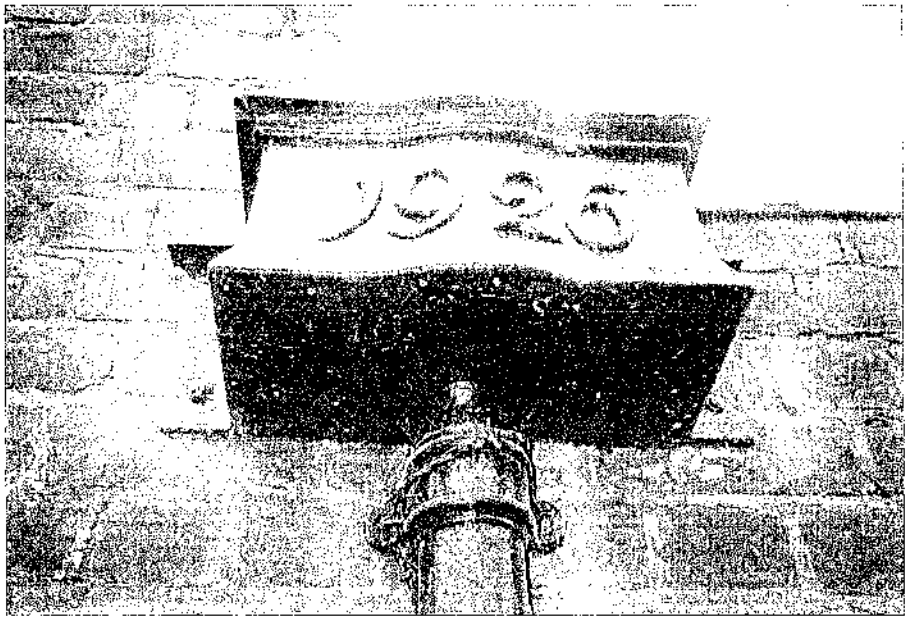


Plate 29.

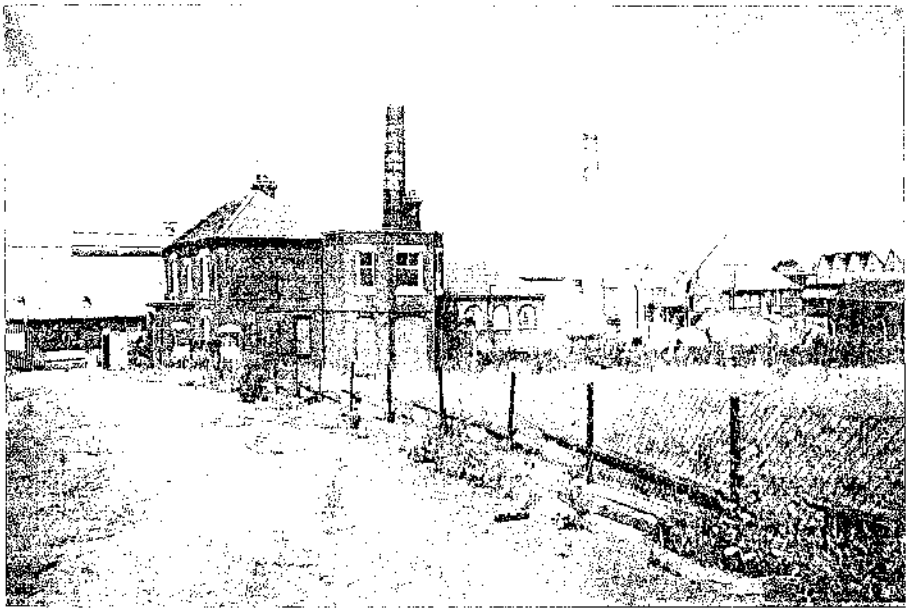


Plate 30.