

birmingham archaeology



**THE UNIVERSITY
OF BIRMINGHAM**

**The Crescent Lock Works
Willenhall, West Midlands, 2003**



Project No. 1092
September 2003

The Crescent Lock Works, Willenhall, West Midlands
An Archaeological Desk-Based Assessment and Building Record, 2003

By
Malcolm Hislop and Kirsty Nichol

For Morris Homes Limited

For further information please contact:

Alex Jones (Director)
Birmingham Archaeology
The University of Birmingham
Edgbaston
Birmingham B15 2TT
Tel: 0121 414 5513
Fax: 0121 414 5516
E-Mail: bham-arch@bham.ac.uk
Web Address: <http://www.barch.bham.ac.uk/bufau>

The Crescent Lock Works, The Crescent, Willenhall, West Midlands
An Archaeological Building Record, 2003

Contents

	Summary	1
1.0	Introduction	1
2.0	Location	1
3.0	Objectives	2
4.0	Methods	2
5.0	General Historical Context	2
6.0	Detailed History of the Study Area	3
7.0	The Building Record	5
8.0	Phasing	11
9.0	Conclusion	12
10.0	Acknowledgements	12
11.0	Sources	13

Figures

1.	Location map
2.	Site plan
3.	Godson's map 1800
4.	Tithe map
5.	Ordnance Survey map 1887
6.	Ordnance Survey map 1903
7.	Ordnance Survey map 1918
8.	Ordnance Survey map 1938
9.	Building A, ground plan
10.	Building A, first floor plan
11.	Building B, ground plan
12.	Building B, first floor plan
13.	Building B, south elevation
14.	Building B, west elevation
15.	Building B, Section A-A
16.	Building C, ground plan
17.	Building C, roof plan
18.	Building C, east elevation
19.	Building C, west elevation
20.	Building C, south elevation
21.	Building C, north elevation
22.	Building C, Section B-B
23.	Building D, ground plan
24.	Building D, west elevation
25.	Building D, east elevation
26.	Building D, north elevation

27. Building E, ground plan
28. Building E, south elevation
29. Building E, west elevation
30. Building F, ground plan
31. Building G, ground plan
32. Buildings H, J, K and L, ground plan
33. Building H, Section C-C
34. Building J, Section D-D
35. Building M, plan

Plates

1. Buildings A and G from the southeast
2. Building A, joint between cottages and house from the west
3. Building A, cottage windows from the west
4. Building A, staircase, G1
5. Building A, fireplace, F3
6. Building A, stained glass window, F5
7. Building B from the southwest
8. Building B, forge from the northeast
9. Building B, roof truss from the west
10. Building C from the southwest
11. Building C, original window from the southeast
12. Building D from the northeast
13. Building E from the southwest
14. Building F from the southwest
15. Building G from the east
16. Building G, works entrance passage from the east
17. Building G, interior from the west
18. Building H from the northeast
19. Building H, line shaft and presses
20. Building J from the northwest
21. Building K from the southwest
22. Building L from the northeast

The Crescent Lock Works, The Crescent, Willenhall, West Midlands: An Archaeological Desk-Based Assessment and Building Record

Summary

In July 2003, Birmingham Archaeology carried out a desk-based assessment and archaeological recording of the upstanding structures of the Crescent Lock Works, Willenhall, West Midlands (NGR SO 973984). The work was commissioned by Morris Homes and was a condition placed on the planning permission for demolition of the buildings and redevelopment of the site for residential use. The documentary search revealed that the site of the Crescent Lock Works had been occupied since 1800, and that the manufacture of locks had probably been carried on there since that time or even earlier. Twelve buildings of various dates were recorded and six phases identified. The earliest of these was dated on architectural grounds to the late 18th/early 19th century and comprised a row of cottages with a workshop to the rear. A major expansion of the works took place in the mid-19th century when a house and two more workshops were added to the complex. Another important period of growth was in the 1920s and 1930s when three new workshops, a casting shop and a despatch warehouse were added. In the 1940s a canteen and an air raid shelter were built. Finally, c.1970, another large workshop was erected. In addition to informing us about the general development of the site, and to providing a model for comparison with other lock making premises, the buildings of the Crescent Lock Works furnish material for a typology of structural details used in industrial buildings of the 19th and 20th centuries. Characteristics of the roof trusses, windows, brickwork, etc. are recorded here with a view to providing an opportunity for future comparative analysis with less well-documented sites.

1.0 Introduction

In July 2003, Birmingham Archaeology carried out a desk-based assessment, and archaeological recording of the upstanding structures, of The Crescent Lock Works, Willenhall, West Midlands (SMR 13162). The lock making company, John Worrall and Son Limited, had occupied the premises since 1895, but the relocation of the company occasioned the sale of the site to Morris Homes Limited who proposed to demolish the buildings and create a residential development. The programme of archaeological work was undertaken as a condition imposed on the planning permission for this scheme by Walsall Council.

2.0 Location

The site is a roughly rectangular plot of land centred on SO 973984, and situated between numbers 15 and 25 The Crescent, to the southeast of Willenhall town centre. Willenhall itself lies in a saucer-shaped depression located on an east-west ridge along which runs the main Bilston to Walsall road. The town is located within the South Staffs and Cannock Chase coalfields, that also contained beds of ironstone (Moreton 1979, 4, and Tildesley 1951, 9-10).

3.0 Objectives

To obtain a descriptive, drawn, analytical and photographic survey of the buildings, to RCHME Level 2 or 3, as appropriate, and to identify the need for further recording during redevelopment of the site.

4.0 Methods

4.1 Archaeological Desk-based Assessment

The desk-based assessment comprised a site inspection, consultation of the Black Country Sites and Monuments Record, and an examination of relevant primary and secondary sources, including maps, at Walsall Local Studies Centre and at the library of the University of Birmingham. The assessment was carried out in accordance with the guidelines laid down by the *Standard and Guidance for Archaeological Desk-Based Assessments* (IFA 1999A).

4.2 Archaeological Building Recording

Plans, elevation and section drawings were produced at scales of 1:20 and 1:50, as appropriate, by measured survey with manual tapes. The drawings were supplemented by written notes, analysis, and by monochrome and colour negative photography. Colour slides were also taken for presentation purposes.

The survey work followed the requirements set down in the Institute of Field Archaeologists' *Standard and Guidance for the Archaeological Investigation and Recording of Standing Buildings or Structures* (IFA 1999B) and more specifically the relevant parts of the definition of Level 3 recording in *Recording Historic Buildings* (RCHME 1996). The work also adhered to the guidance issued by the Association of Local Government Archaeological Officers (ALGAO 1997).

5.0 General Historical Context

Early industry in the area was based upon the proximity of the town to ironstone beds lying within the surrounding coalfields (Moreton 1979, 4). Lock making in the local area came to the fore in the 17th century, following a grant from Queen Elizabeth I that qualified Willenhall to make all locks used for state purposes (ibid. 7). Writing in 1856, George Price noted that in 1770 in Willenhall 148 lock makers were listed, compared to 134 in Wolverhampton, and eight in Bilston. He compared these figures with those available for 1855, which recorded 340 in Willenhall, 110 in Wolverhampton and two in Bilston (Evans 2002). This massive increase showed that Willenhall had indeed become the centre of the lock making trade.

Early lock makers were traditionally small-scale masters, operating out of workshops to the rear of their homes, assisted by their wives and families (Tildesley 1951, 139). This work space was often small with usually only one hearth (Moreton 1979, 18), a typical workshop measuring 11½ x 16½ ft, standing two stories high, and consisting of a room containing the hearth on the ground floor, and a workshop reached by an external staircase above, the walls being almost entirely windows (ibid. 25-6). It was also common practice to build extra workshops on the same plot rather than to extend

those already standing, this meant that fathers often worked alongside their sons in neighbouring workshops (ibid. 19).

Masters oversaw all elements of production, from the purchasing of raw materials to the selling of the finished item, either to wholesalers or through their own shop which was often on the premises (ibid. 21). These small domestic workshops were characteristic of the industry well into the first half of the 19th century, however it became increasingly common for masters to take on journeymen or apprentices and this inevitably led to expansion (ibid. 20). By the mid-19th century workshops had become manufactories, often employing a relatively large workforce. However, they generally continued to operate from the same property, albeit in much larger premises than had previously been constructed (ibid. 22).

With the exception of a mechanised hand press, produced by Isaac Mason in 1790, locks continued to be made largely by hand, machinery only became extensively used in the 1890s and early 1900s (ibid. 24-5). An obvious by-product of the lock making industry was that of keys, which were produced from swarf iron, the filings left over from lock manufacturing. Thus this industry grew side by side with the lock makers.

6.0 Detailed History of the Study Area

The earliest cartographic evidence reveals that this part of Willenhall was largely unsettled in the early 1800s, with strip fields still visible in the surrounding area. The Crescent had been laid out by this period, though it was only sparsely occupied. Godson's Map of 1800 (Fig.3) depicts a small building on the frontage of The Crescent within the study area. This may correspond with the residence of Charles Harthill who is recorded as a producer of padlocks in the Crescent in 1815 (Stevens 1971, 33). Jonah Harthill (padlock maker) is listed in Pigot's Directory of Staffordshire for 1835, and Kelly's Directory of Staffordshire for 1880.

The Tithe Map of 1841 (Fig. 4) shows a complex of buildings occupying the study area. The earlier cottage has been extended to the northwest, with further structures being built along the frontage. Immediately to the rear of these was a second range of buildings that probably contained workshops. A detached building in the northeastern corner of the study area may be the Crescent Tavern. The area behind the frontage was open. In 1855 several padlock makers were recorded in The Crescent; Charles Adams, Edward Burns, Joseph Dunn and Joseph Smith (Stevens 1971, 33). A slightly later directory reveals that the Harthill family was still in residence in The Crescent in 1861, when Thomas and William Harthill were listed as brass and iron padlock makers (ibid.).

This increase in population is also evident on the First Edition OS Map of 1888 (Fig. 5) which shows the western side of the road lined by houses. The frontage within the study area had also become more built up by this period, with the addition of a small row of houses between the Lock Works and the Crescent Tavern. These properties had small out houses to the rear with a new boundary between the Works and the new development that is largely visible on the ground today. The entrance to the Lock Works was open to the elements at this time, and to the rear of the frontage several of the buildings had been extended. However, most of the plot, to the rear of the Works, remained open and may have been an orchard at this time. The surrounding area was

covered by quarry pits, and old shafts are annotated on the map immediately south of the study area.

The first entry in the trade directories for John Worrall at The Crescent Lock Works is in Kelly's Directory for 1896 where "Worrall and Sons (old established) manufacturers of all kinds of rim and dead locks and patent four hand night latches" are listed. The original premises taken on by John Worrall are believed to have included a row of cottages, a 'brew-us', and a two-storey workshop at right angles to the road (Stevens 1971 34). The Second Edition OS Map of 1903 (Fig. 6) reveals that the Worralls made little change to the layout of the Works, with the exception of part of the central building being demolished, presumably to increase the yard space by the entrance, the entrance had also been enclosed. Land to the rear of the Works remains open, a brick works lay to the southwest, and a football ground further to the south. In Kelly's 1904 Directory Worrall and Sons are listed as makers of "rim and deadshot locks to H.M. War Department". In 1912 Samuel Worrall was listed as shopkeeper at Number 33 The Crescent. The Third Edition OS Map of 1918 (Fig.7) shows little physical change in the study area, with the exception of a small L-shaped building having been constructed along the southern boundary of the site, and a small out house nearby. Part of one of the main workshops had also been demolished by this period. The surrounding area remained relatively open, with old shafts and the remains of quarry pits evident.

Between 1918 and 1938, when the 4th edition of the OS map was published (Fig. 8), the site underwent a period of expansion. A total of seven new structures were built, and one of the old workshops was extended, but there was no change to the buildings on the frontage itself. Four of these buildings, including a casting shop and despatch warehouse, are known from original drawings in the possession of Mr Dominic Cooper to have been the work of the Willenhall architect Fred D. Marston, and to have been carried out between 1925 and 1936. The Works buildings extended fully half way across the whole plot by this period, though there remained a large open area at the very rear of the plot. This period of expansion happened during the 1930s (Cooper pers. comm.), at which time the business was run by John Worrall and one of his nine children, Ivor. Two other key personnel also joined the business at this time; Mr Llewellyn, and Mr Cooper who eventually married John Worrall's daughter. Upon the death of John Worrall, Ivor Worrall, Llewellyn and Cooper took over the management of the firm which was by then employing c.150 people. Following the death of Ivor the company was taken over by Mr Cooper, assisted by Len Llewellyn (Evans 2002).

As well as extending the Works at The Crescent, the family also branched out during this period. Thomas Worrall and Co. are listed as padlock makers at 17 Doctor's Piece in Kelly's Directories from 1928 onwards, and David Worrall set up as lock maker in Fletchers Lane in the late 1940s. New building work in the area had not been solely confined to the Crescent Lock Works during the Inter-War years. Housing development had also taken place to the north and southeast of the site resulting in allotment gardens being laid out directly across the road from the Works, and a playground being created to the southwest. During WWII many manufacturies across the Midlands were turned over to the production of munitions, lock factories commonly producing grenades and detonators, as well as locks to secure spinners on planes and padlocks, for kit bags amongst other things (Evans 2002). However,

The front room itself (G2) had a board floor, moulded skirting board, a fireplace with chamfered stone surround and cast iron grate (dismantled at the time of the survey), and a gas light fitting suspended from the ceiling. The room was formerly smaller, the position of the rear wall originally coinciding with the corner of the chimneybreast. A boxed RSJ was in this position at the time of the survey, and had evidently been inserted to support a corresponding first floor wall. At a later date the walls had been lined with wooden pigeonholes for the storage of blank keys.

The rear room (G3) had been considerably altered during the mid-20th century. A concrete floor had been laid, a set of Avery scales in the north corner of the room being set into it, the back doorway had been blocked, and a new doorway broken through the northwest wall. The latter alteration involved the taking down of the lower part of the chimneystack and supporting the upper part on an RSJ, so it is probable that this room was at one time heated by a fireplace.

This room gave access to a second rear room (G4) towards the southeast, which had been truncated by the expansion of G2 so that it was little more than a cupboard. There was a blocked doorway in the southeast wall that formerly communicated with the wing, but no other architectural features were distinguishable.

The staircase communicated with a first floor landing from which doors led into the two front rooms (F1 and F2) and to one of the rear rooms (F3). The partition between the stairs and landing and F1 was of vertical plank construction. A six-panelled door opened to F1 with small-pane overlight and plain surround.

A six-panelled door opened to F2, which contained a moulded skirting board and fireplace denuded of its surround. A vestibule had been created by a plank partition directly opposite the door incorporating a frosted glass pane, and there may have been a counter between this partition and the north wall. In the southeast corner of the room was a safe.

A half-glazed door gave access to the rear of the house, where the room arrangement had been altered. Originally the space was divided into two rooms by a wall on the line of the east-west partition at ground level. The only trace of this former wall was a boxed beam, an early 20th-century vertical plank partition having been built further to the north to create one large (south) and one small (north) room. The northern room (F3) had a fireplace with chamfered stone surround and a cast iron range with embossed neo-Greek designs (Plate 5).

There was a step down to the southern extension (F5). It had a moulded skirting board, and a window containing a stained glass pattern (Plate 6).

Building B (Figs 11-15, Plate 7)

Smithy and workshop. *Circa* 1830 with later alterations. Hand-made red brick (9¼" x 4½" x 2¾") with large pebble inclusions, laid in English garden wall bond (four stretcher courses to one header course), plain tile roof and brick end stacks. Two stories on brick plinth projecting both externally and internally in the manner of foundations. Both stories on the north and south elevations were dominated by three

very wide (ranging between 10 and 12 feet) windows separated by 2ft wide piers. The ground floor windows were blocked but the upper openings retained fixed-light small-pane windows, probably of late 19th or early 20th-century date, with chamfered blue brick sills.

There were two windows to each storey of the west elevation, similar in character to those in the north and south elevations. The upper part of the west wall had been rebuilt in machine made light red brick (9" x 4" x 3") laid in English garden wall bond, and the first floor windows had concrete lintels, suggestive of a date in the 1930s when a good deal of building work was done at the site. However, it is probable that the window frames themselves were reused.

At the east end of the south front was an inserted mid-20th century doorway. There was no trace of an original doorway in the north, nor south, nor west walls, and it was probably situated in the east gable end, though this wall, which had an inserted 20th-century doorway leading to Building G, was largely obscured at the time of the survey by plaster, paint and internal fittings.

Each storey accommodated one large room, the original windows of which had rounded jambs built of bullnose bricks. At ground level there was a forge at each end, both either insertions or reconstructions. The western one (Plate 8) blocked the south end of one of the windows. Each forge had a draught hole at one side for the bellows, which did not survive.¹

An inserted staircase that extended along the south wall, against one of the blocked windows led to the upper storey (Building A). Workbenches lined the two long walls, and the room was divided into three roof bays, the trusses being carried on the brick piers between the windows. A tie beam supported short principal rafters and a crown strut, which in turn carried a collar on which a pair of purlins rested (Plate 9). The westernmost of these three trusses retained a support for machinery, possibly a line shaft, the other end of which was held by the chimneybreast against the west wall.

Building C (Figs 16-22, Plate 10)

Building C was a workshop dating from the late 18th or early 19th century, presumably the building that appears on Goodson's map of 1800, but had been considerably altered. It was built of hand made dark red brick (9 x 4¾ x 2¾), with occasional pebble inclusions, laid in English garden wall bond. At the time of the survey the roof was covered with corrugated asbestos. A few of the bricks had parallel skintling marks. This single-storey building represented the two southernmost bays of a once longer structure, and had been the subject of considerable alteration.

Building C had 8ft wide windows, an original one surviving in the south bay of the east elevation (Plate 11). This window comprised nine vertical lights separated by wooden mullions, graded in size, flat-faced on the exterior, but chamfered internally. The central light contained an opening side-hung casement. There were no transoms but tiers of small overlapping windowpanes within each division. A smaller window immediately to the north was probably of similar date but had been resited, and now

¹ The bellows from the eastern forge were donated to the Black Country Museum (Pers. Comm. Dominic Cooper)

occupied a blocked doorway. To the north of this opening was a blocked window opening, which may have been its original position (Fig. 18).

The windows to the west, which were fixed-light, small-pane windows, were later in date, probably late 19th or early 20th century, but occupied original openings (Fig. 19). The south gable end contained two fixed-light 4-pane windows, within a section of the elevation that had been rebuilt in the 20th century. There was probably one 8ft wide window here originally (Fig. 20).

At the time of the survey Building C was entered from the north gable end. This wall was a later build apparently dating from between 1886 and 1903 during which time the building was truncated. There was a line shaft housing on each side of the elevation, and a concrete mounting block for machinery at the east end of the elevation with a blocked opening in the wall itself (Fig. 21).

Inside, the single roof truss was supported on a pair of brick piers; the survivor from a second pair of piers was situated hard up against the existing north wall, showing that there was formerly a roof truss in this position. The surviving roof truss originally comprised a tie-beam supporting short principal rafters, set approximately 0.70m in from the ends of the beam, and which in turn carried a collar on which a pair of purlins rested (Fig. 22). The centre of the collar had been cut away and the ends of the two remaining portions supported on piles of sawn blocks, though it was not apparent why this was done. The interesting aspect of this truss is that in contrast to the roofs of all the other buildings on the site the joints of the principal members were secured by wooden pegs.

The tie beam supported housings for two line shafts that extended along each side of the building. Two other beams had been inserted roughly mid-way between the central truss and the end walls, for the specific purpose of supporting these line shafts. Additional support was provided by a brick pier built up against the north wall and the former roof truss pier on the west side. The western line shaft incorporated three drive wheels, having 12", 20" and 28" diameters. The eastern line shaft had two drive wheels with respective diameters of 12" and 16", one either side of the tie beam. There were work benches on both sides of the building. Beneath the eastern bench was a pit containing another line shaft with two 24" diameter drive wheels and one 14" diameter wheel. Within the pit the projecting brick foundations of the east wall were visible, similar in character to the plinth of Building B.

Building D (Figs 23-26, Plate 12)

Building D was, in origin, a mid-19th century workshop, truncated by the time of the survey, with a casting shop added to its south end in 1936. It was latterly a single-storey, 2-cell building, the early phase lying towards the north. The bricks of the original fabric of the north bay were 9" x 4½" x 2½" - 2¾", a few having parallel skintling marks. There was a vertical joint in the brickwork between the two phases, and a continuation of the east wall towards the north confirmed that the early building formerly extended towards the north. The east wall of this remnant of the early structure had been almost entirely rebuilt in the mid-20th century; it had a boarded door and a fixed-light window. To the west were two windows with wooden frames incorporating chamfered mullions and transoms.

The casting shop of 1936 to the south was designed by Fred D. Marston. It was built of pale red machine made brick, 9" x 4¼" x 3", laid in Flemish stretcher bond. Steel-framed windows to the east and west had chamfered blue brick sills, and projecting from the west side of the roof was a timber louvre. Inside, the low level furnace and casting pit survived. There was a steel-plated canopy over the west side of the room which directed the smoke and heat towards the louvre in the roof. On the east side of the room was a wooden sand trough.

Building E (Figs 27-29, Plate 13)

Workshop. C.1920. Pale red brick (9" x 4¼" x 3") laid in English garden wall bond, plain tile roof. One storey, eight window bays. Segmental-headed windows with small-pane cast iron frames and chamfered blue brick sill string. Door in the centre of each gable end. Concrete floor. Divided internally into four roof bays by king-post trusses.

Building F (Fig. 30, Plate 14)

Canteen. C. 1940. Weatherboarded timber-framing and felted roof erected on a concrete platform. Built to a T-shaped plan, with main range aligned east west facing south, and cross-wing towards the east. A porch projected from the south front. Direct access to the main range was via opposed entrances at the west end of the two main fronts and a door on the east side of the porch. In addition there were three doorways in the cross-wing, to the south, east and west. Doors were half-glazed and windows were small-pane, fixed lights or casements. Inside, the main range contained a single room originally, though a transverse partition had been inserted. The cross-wing was divided into two rooms by a doglegged partition, the southernmost room appeared to have been used for the preparation of food. The plan of the building was evidently influenced by the concept of a late medieval hall-house, the dining room (with its opposed entrances and projecting porch) taking the place of the great hall, and the rooms in the cross-wing substituting for a chamber and service room.

Building G (Fig. 31, Plate 15)

Building G, which lay to the north of the house (Building A) incorporated the covered entrance to the works. Designed as a warehouse in 1933 by Fred D. Morton, it was built of machine-made pale red brick (8¾" x 4" x 3") laid in Flemish bond. It was a double pile building of trapezoidal plan, the west and south walls being at right angles to one another, likewise the north and east walls. The roofs were aligned north-south. One storey with plain parapet to flat roof, two large windows, and door to left, all with concrete lintels. Steel girder over the entrance passage. The passage itself was paved on each side by stone sets (Plate 16). The front door of Building G opened to a small vestibule, in the north wall of which was a blocked reception hatch communicating with an office that occupied the whole south front. At the west end of the vestibule was a door with another hatch in it, which gave access to a lobby communicating with the office to the north and with the warehouse to the west. At the time of the survey the walls of the warehouse were lined with pigeonholes (Plate 17), and there was a gallery to the north reached by a flight of steps. On the south side was a platform immediately behind a sliding door that opened to the covered entrance.

This was evidently for the dispatch of goods. There were two other doorways in the south wall and one leading into Building B to the west.

Building H, J, K and L (Fig. 32)

These four workshops, although of different dates and largely planned independently of each other, had been linked together to form a single complex.

Building J was designed by Fred D. Marston in 1925 (Plate 18). Built in machine-made, medium red brick (9" x 4¼" x 3") One storey, three bays. The original entrance was in one of the gable ends. The architect's plans show a window to the left and a sliding door to the right. Steel-framed windows with blue brick sills and concrete lintels. Concrete floor. Divided into three roof bays by Belfast trusses on chamfered brick piers (Fig. 33). On the south side of the building was a line shaft powered by a motor mounted on a platform to the north at roof level (Plate 19). This machinery powered, until very recently, two presses embossed with "Sweeney & Blockside / Power Presses Ltd / Birmingham / No. 12". A third press, also by Sweeney and Blockside was powered independently. Building J had been extended to the north to join up with Building H. On the basis of the map evidence this must have happened after 1938.

Also designed by Fred D. Marston, in 1936, Building H (Plate 20) was built of machine-made medium red brick (9" x 4¼" x 3") laid in Flemish stretcher bond, and roofed in Welsh slate. This single-storey, seven-bay building was aligned east-west facing north. Doorways in centres of north and east fronts, and small-pane, steel-framed windows with chamfered blue brick sills and concrete lintels. Blue brick floor, work benches down both sides of the building. Four roof bays divided by king-post trusses on chamfered and stopped brick piers (Fig. 34).

Building K also belongs to the 1930s (Plate 21). It too was constructed of machine-made medium red brick (9" x 4" x 3") laid in Flemish stretcher bond. It also had small-pane, steel-framed windows with concrete sills and lintels, and a hipped Welsh slate roof. One storey, 12 bays. Entrance in centre of each gable end. Blue brick floor. 7 roof bays divided by king-post trusses on chamfered brick piers. The windows on the east side were all blocked following the raising of Building L which was attached to the c. 1970 (Plate 22).

Building M (Fig. 35)

Lying 11.25m to the south of the canteen was an air raid shelter. It was a simple covered trench type that had been constructed using the *cut and cover* technique where spoil created from the excavation of the trench was banked over the shelter to give extra protection from blast. The whole shelter was made from prefabricated, reinforced concrete sections. These were mass produced in Birmingham and arrived on site in kit form. Wall sections measured c.2m in height and had rebated panels, the floor and roof sections were flat, and indented at the ends so that they could be slotted together. Access was gained from the north end down steps, which were protected by a half-brick thick blast wall. An emergency escape hatch was visible in the roof at the south end of the shelter, but no internal fixtures or fittings survived.

Shelters such as this are relatively common in a Black Country context, other examples have previously been recorded at Croft Street Industrial Estate, Willenhall (Nichol and Ramsey 2000), and Bilston Girls High School, Bilston (Nichol 2001). A German bombing map of Willenhall (dating to 1941) reveals that the principal targets in the area were the Star Foundry, adjacent to St Giles Church to the west of the Study Area, as well as the Iron Works further down The Crescent. More importantly, a third target, the Brick Works immediately to the south of the site was also highlighted.

8.0 Phasing

Six significant phases were identified.

Phase 1 (Late 18th/early 19th century)

Phase 1 comprised the cottages (Building A) on The Crescent street frontage, and Building C which appears to have been the earliest industrial structure on site. This arrangement of domestic accommodation fronting the street and workshop to the rear appears to be characteristic of early lock making premises. The northwest corner of the cottages was rounded with bullnose bricks, which may indicate that before the house was built there was an entrance from the street in this position.

The characteristics of the workshop include the mullioned window, the pegged roof truss and the parallel skintling marks. The roof truss appears to have been a late development of the medieval short principal truss which is itself related to base cruck construction (Alcock and Barley 1972). Interestingly the Willenhall truss has no parallel in J.E.C. Peters' classification of post-medieval Staffordshire roof trusses (Peters 1988), though it is true that this survey was based on farm buildings rather than industrial buildings. As far as can be ascertained from the surviving evidence, the original structure was a single-storey, probably three-bay workshop, the most conspicuous feature of which was the fenestration, which comprised a series of large wood mullioned windows. Access was from a doorway in the east elevation, and the accommodation probably consisted of a single general-purpose workshop with benches beneath the windows. There would have been room for approximately half a dozen craftsmen.

Phase 2 (Mid-19th century)

The second quarter of the 19th century witnessed a major expansion of the workshop accommodation with the construction of Building B, and the early phase of Building D. Both these structures had rounded window jambs made of bullnose bricks. Building D seems to have been a similar type of structure to Building C, being single-storey and at least two bays in length. The roof truss over Building B, whilst being typologically related to that of Building C, had a steel bolt securing the crown strut, which may point to a date after 1830 (Peters 1988, 29). The blue brick sills are another chronological indicator suggesting a mid rather than early 19th-century date. The purpose of Building D is uncertain though Building B contained a smithy at ground level, with two forges, and an assembly workshop at first floor level.

The house (Building A) also dates from the mid-19th century and appears to have been attached to the north end of the cottages, blocking the entrance to the yard at the rear of the cottages.

Phase 3 (Late 19th century)

Some time between 1887 and 1903 Building C was truncated, and some of the machinery may have been installed at this date. It is possible that this change was associated with the purchase of the premises by the Worrall family and the creation of the company, John Worrall and Sons Ltd.

Phase 4 (Inter-War Years)

A major expansion and modernisation of the site took place during the Inter-War years with the Willenhall architect Fred D. Marston as principal architect. Buildings E and H were built in the 1920s, the latter containing powered presses, and Buildings G, J and K, and the casting shop (Building D) in the 1930s.

Phase 5 (1940s)

It was probably during the 1940s that the canteen was built, as well as the nearby air raid shelters.

Phase 6 (Late 20th century)

The final phase involved the construction of Building L c. 1970.

9.0 Conclusion

The significance of the Crescent Lock Works lies in the fact that it illustrates the evolution of a medium-sized lock making company and provides evidence for the character of this quintessential Black Country industry over a period of 200 years. During this period lock making developed from a cottage industry into highly organised modern concerns with international profiles. The Crescent Lock Works itself never became large enough to necessitate relocation, there was ample room for expansion without having to resort to much demolition of older buildings. Therefore, the older buildings survive sufficiently well to enable the structural history of the site to be traced without too much trouble. In addition to informing us about the general development of the site, and to providing a model for comparison with other lock making premises, the buildings of the Crescent Lock Works provide material for a typology of structural details used in industrial buildings of the 19th and 20th centuries. Characteristics of the roof trusses, windows, brickwork, etc. are recorded here with a view to providing the opportunity for future comparative analysis with less well-documented sites.

10.0 Acknowledgements

This project was managed for Birmingham Archaeology by Kirsty Nichol, who also carried out the desk-based assessment. Malcolm Hislop completed the building recording assisted by Bob Bracken, Bob Burrows, Richard Cherrington and Derek

Moscrop. The work was monitored for Walsall Council by Mike Shaw, Black Country Archaeologist. Thanks are owed to Lee Perry, Jason Berry and the other staff of Morris Homes for their co-operation and assistance.

11.0 Sources

11.1 Primary Sources

1880 Kelly's Directory of Staffordshire
1884 Kelly's Directory of Staffordshire
1892 Kelly's Directory of Staffordshire
1896 Kelly's Directory of Staffordshire
1900 Kelly's Directory of Staffordshire
1904 Kelly's Directory of Staffordshire
1908 Kelly's Directory of Staffordshire
1912 Kelly's Directory of Staffordshire
1916 Kelly's Directory of Staffordshire
1928 Kelly's Directory of Staffordshire
1932 Kelly's Directory of Staffordshire
1940 Kelly's Directory of Staffordshire

11.2 Secondary Sources

Alcock, N., Barley, M.W., Dixon, P.W. and Meeson, R.A. 1996, *Recording Timber-Framed Buildings: An Illustrated Glossary*, CBA Practical Handbook in Archaeology 5, rev. edn.

ALGAO 1997 *Analysis and Recording for the Conservation and Control of Works to Historic Buildings*.

Brunskill, R.W. 1990, *Brick Building in Britain*.

Campbell, J.W.P. and Saint, A. 2003 'The Manufacture and Dating of English Brickwork 1600-1720', *Archaeological Journal* 159 for 2002, 170-193.

Evans, J. 2002, www.localhistory.scit.wlv.ac.uk/Museum/locks/gazatteer

IFA 1999A *Standard and Guidance for the Archaeological Investigation and Recording of Standing Buildings or Structures*.

IFA 1999B *Standard and Guidance for Archaeological Desk-Based Assessments*.

Moreton, C. J. 1979 *The Willenhall Lock Industry 1770-1870*. Unpublished thesis, Birmingham University.

Nichol, K. 2001, *A World War II Air Raid Shelter at Bilston Girls High School, Bilston, Wolverhampton*. (BUFAU Report 778).

Nichol, K. and Ramsey, E. 2000, *Trial Trenching and Salvage Recording at Croft Street Industrial Estate, Willenhall, Walsall*, (BUFAU Report 718.02).

Peters, J.E.C. 1988 'Post-Medieval Roof Trusses in some Staffordshire Farm Buildings', *Vernacular Architecture* 19, 24-31.

RCHME 1996 *Recording Historic Buildings: a Descriptive Specification*, 3rd edn.

Stevens, G. 1971, 'The Crescent Lock Makers', *The Black Countryman*, Vol.4, 1.

Tildesley, N.W. 1951, *A History of Willenhall*.

11.3 Cartographic Sources

1800 Godson's map

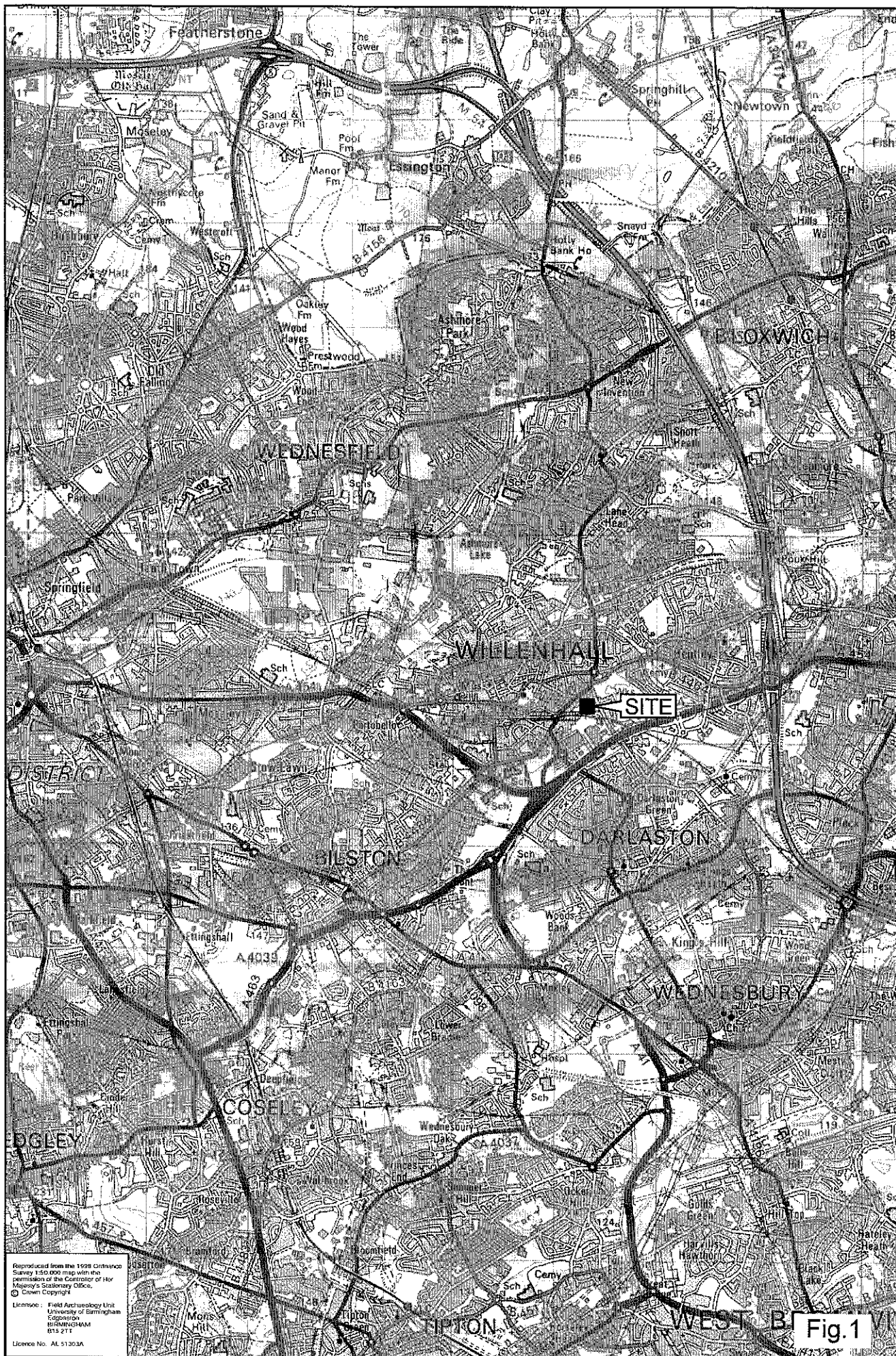
1841 Tithe map

1886 Ordnance Survey 1:2500

1903 Ordnance Survey 1:2500

1918 Ordnance Survey 1:2500

1938 Ordnance Survey 1:2500



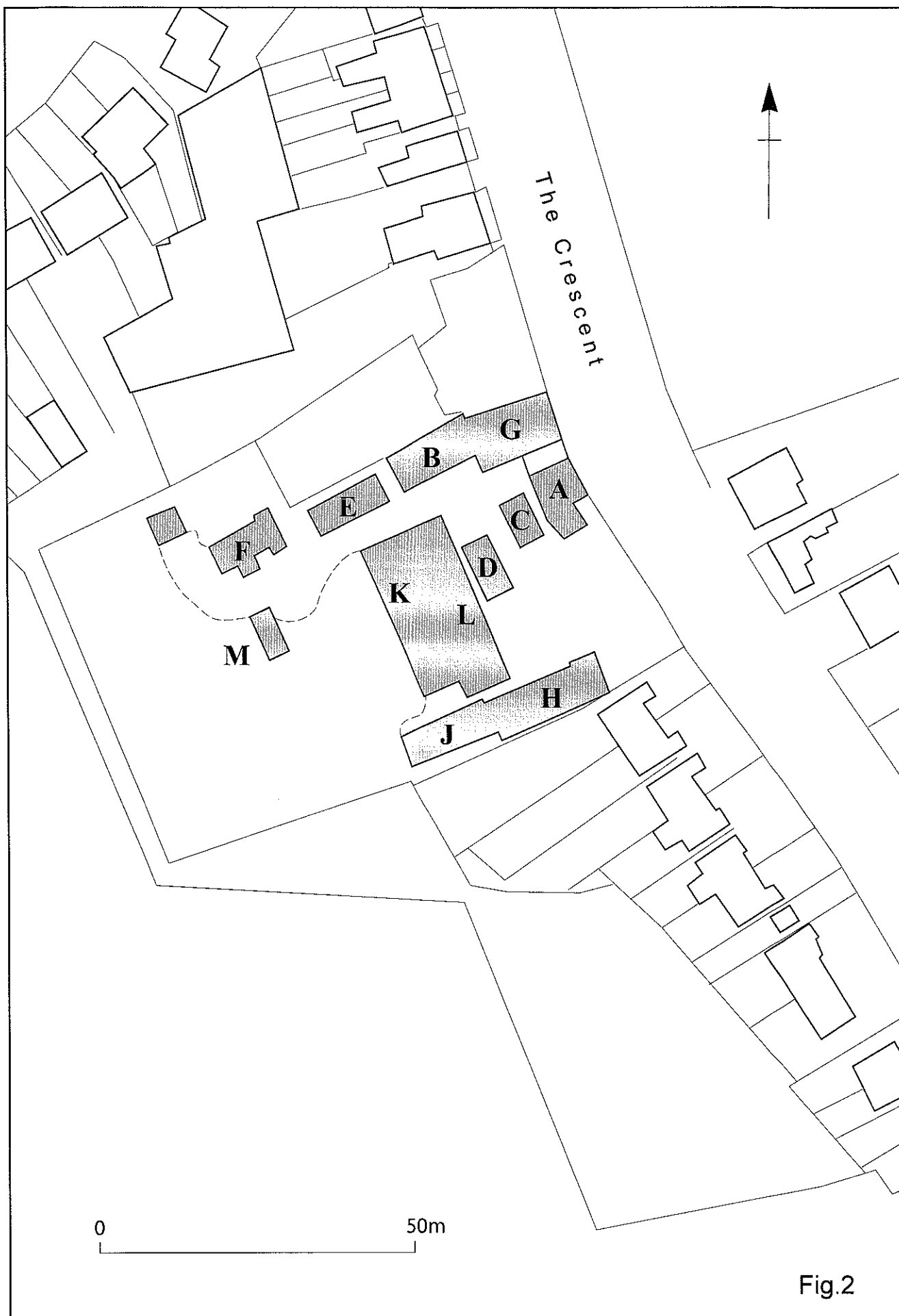




Fig.3 Godson's Map (1800)

Willenhall Tithe Map 1841

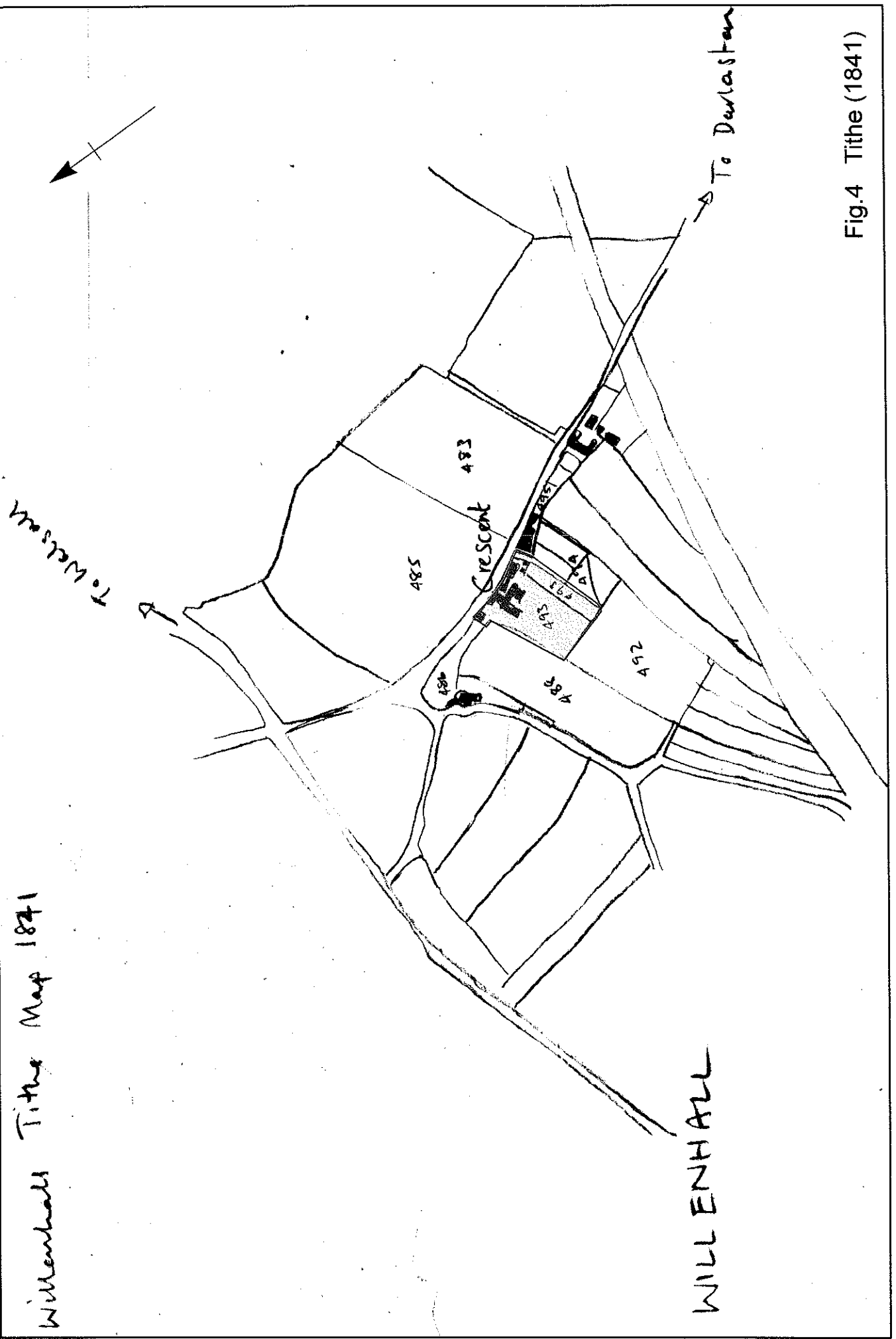


Fig.4 Tithe (1841)

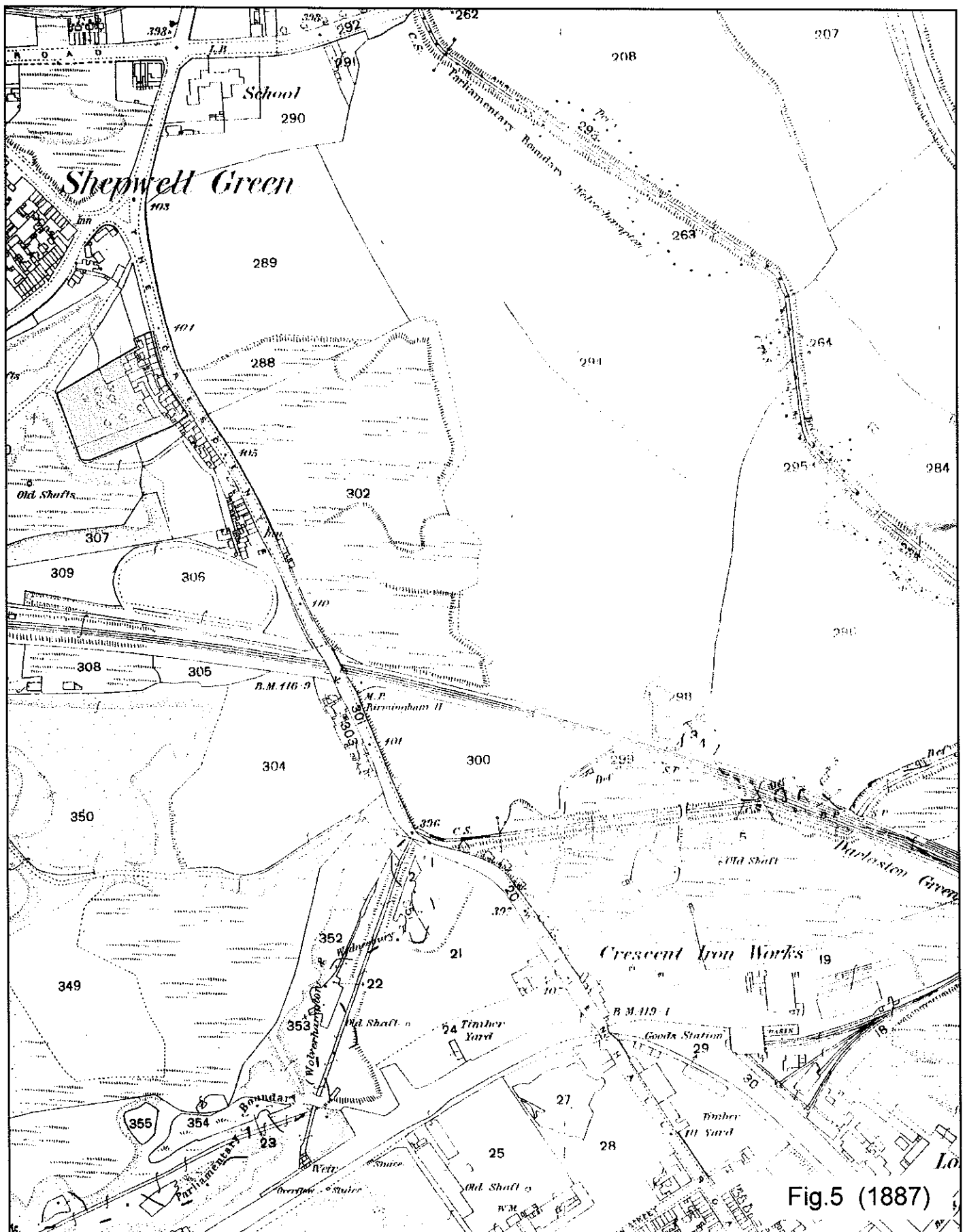


Fig.5 (1887)

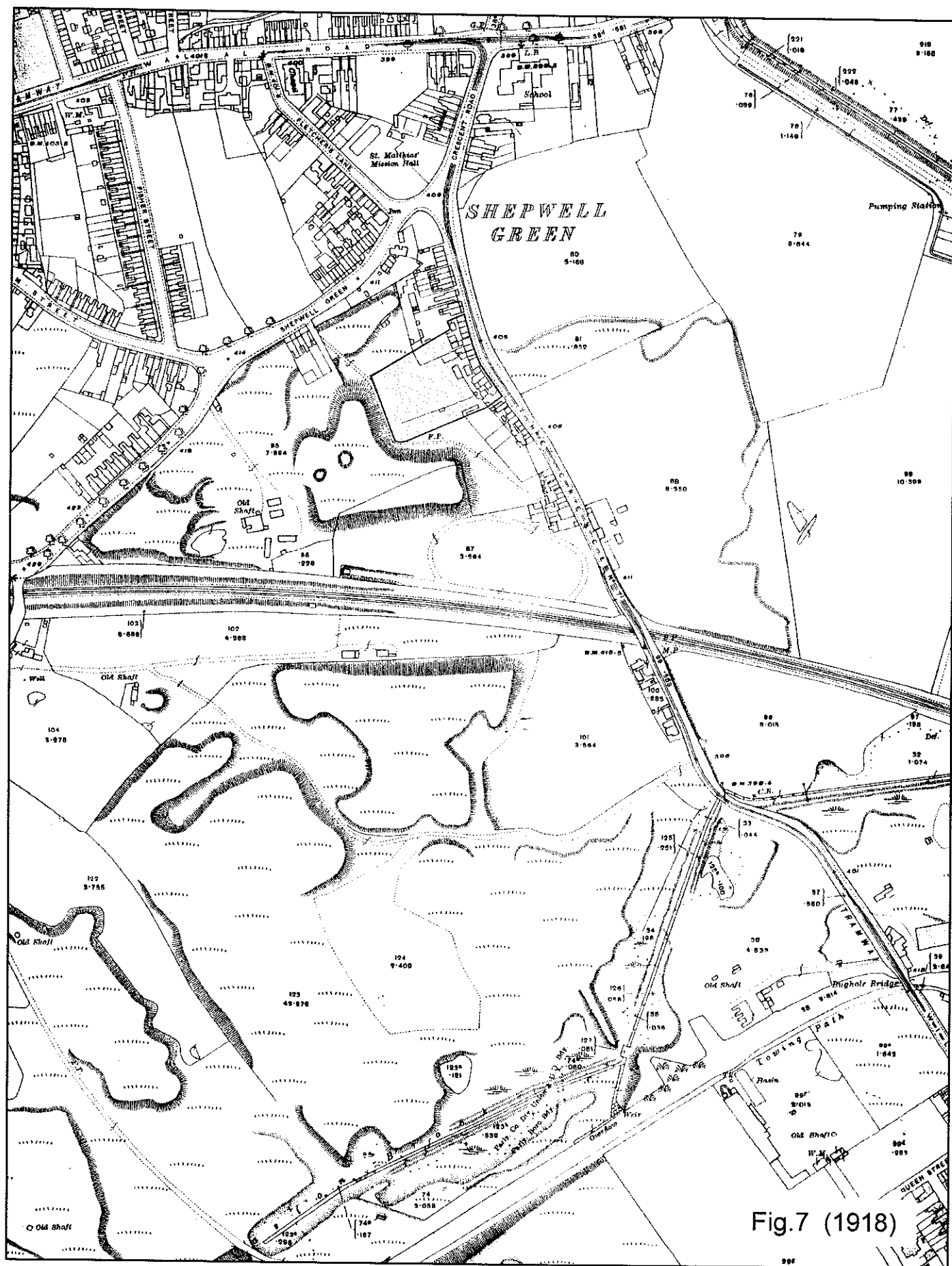
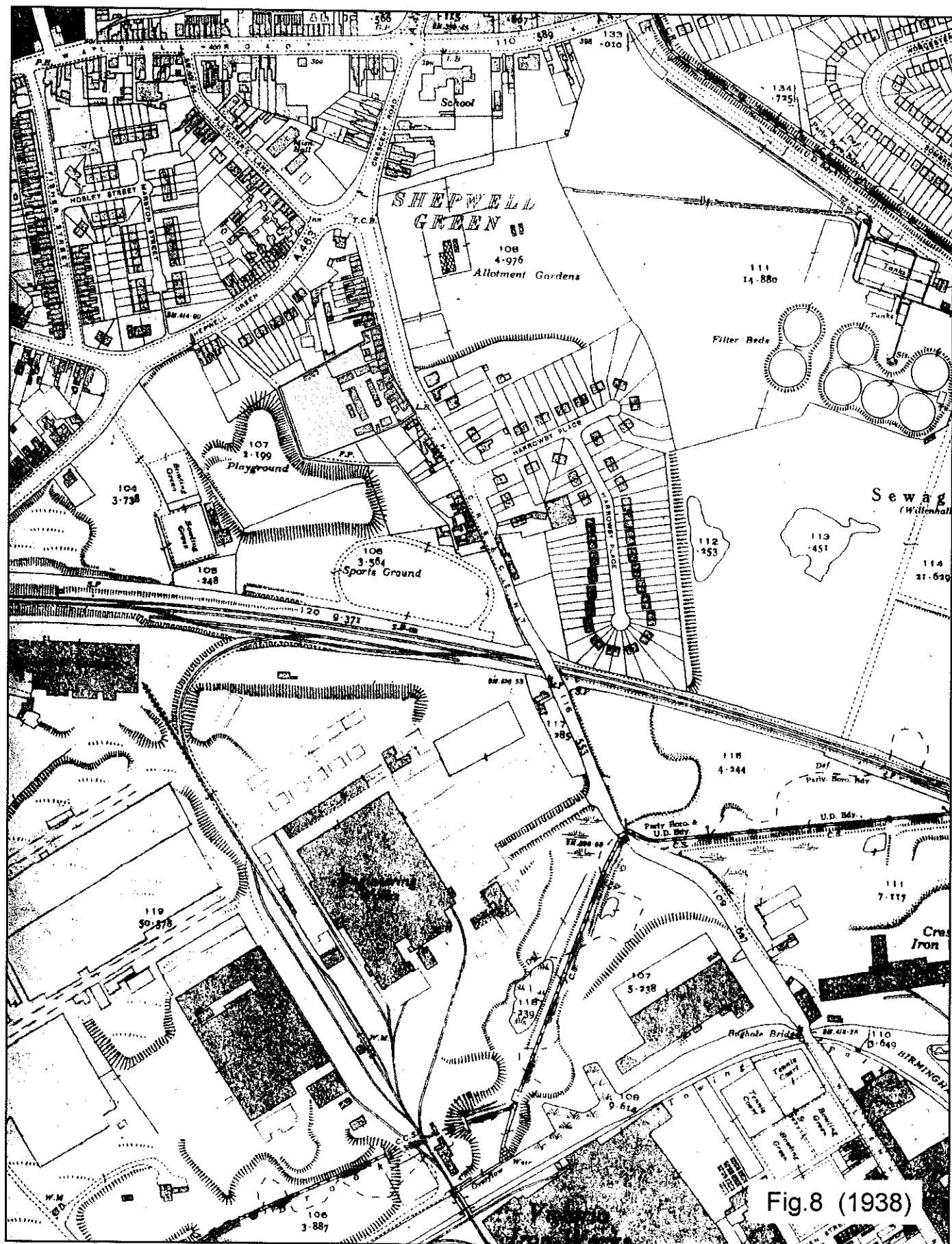


Fig.7 (1918)



Building A



0 5m

Ground Floor

G1

G2

G3

G4

G5

Fig.9

F1

F2

First Floor

F3

F4

F5

Fig.10

Building B

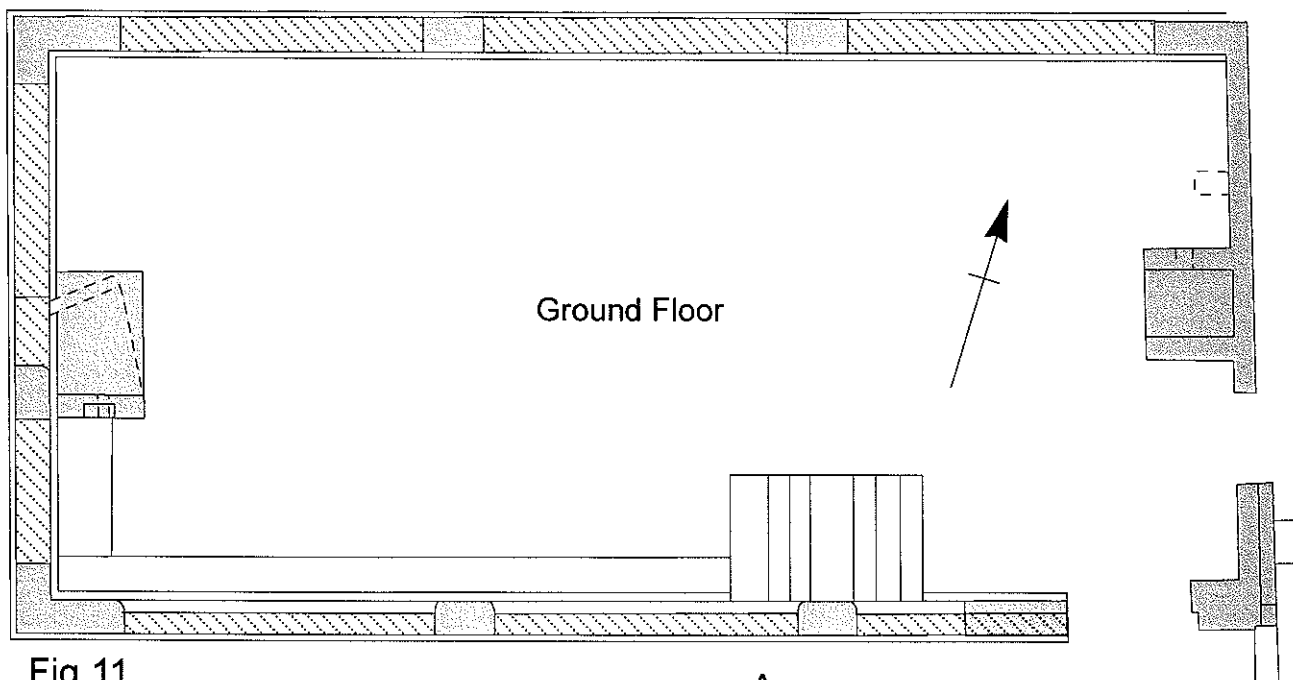


Fig.11

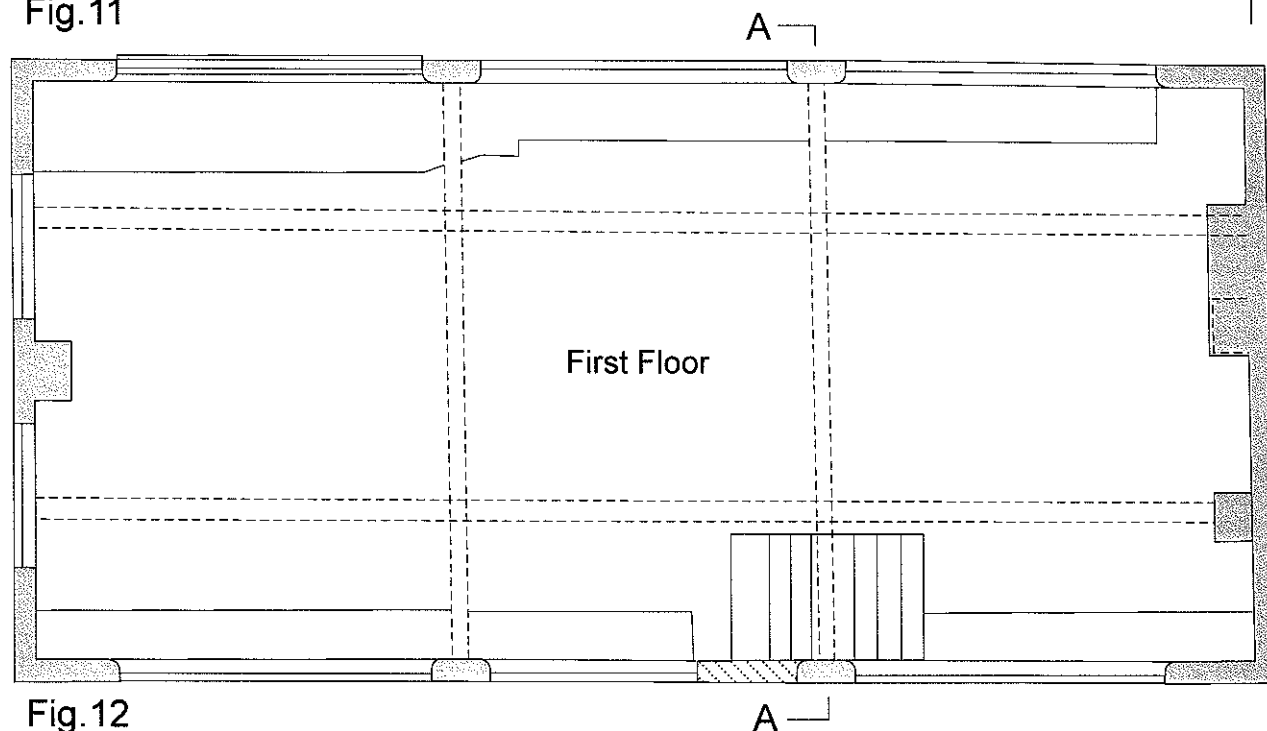


Fig.12

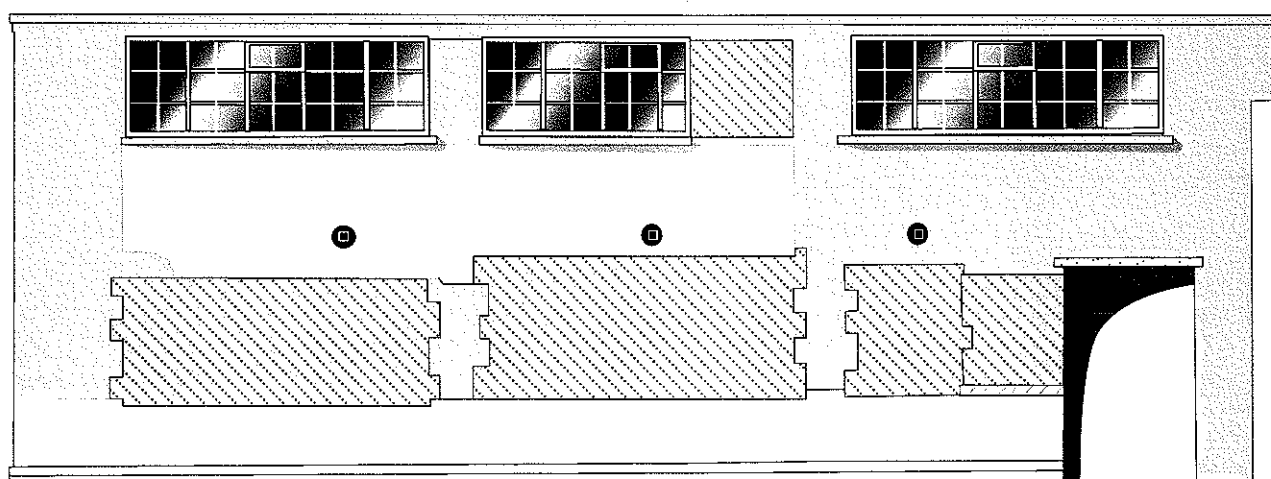
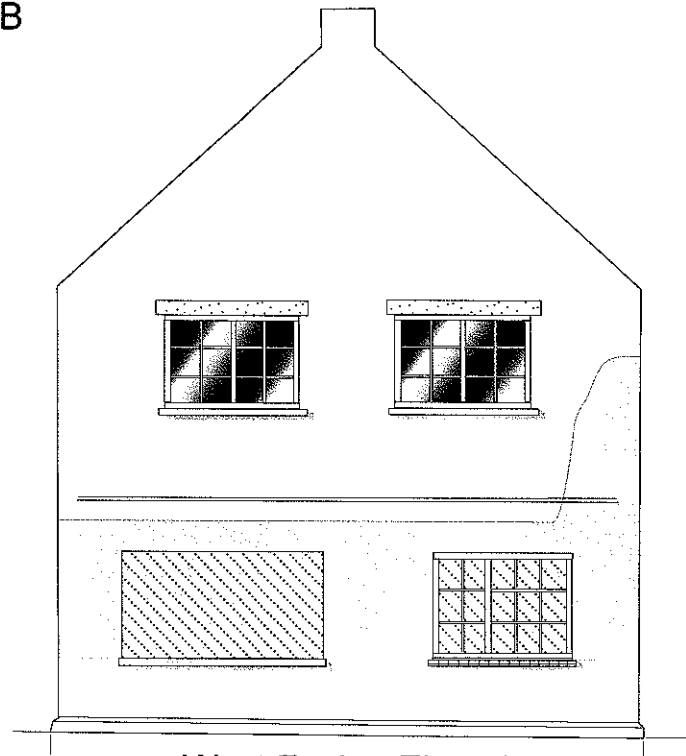


Fig.13

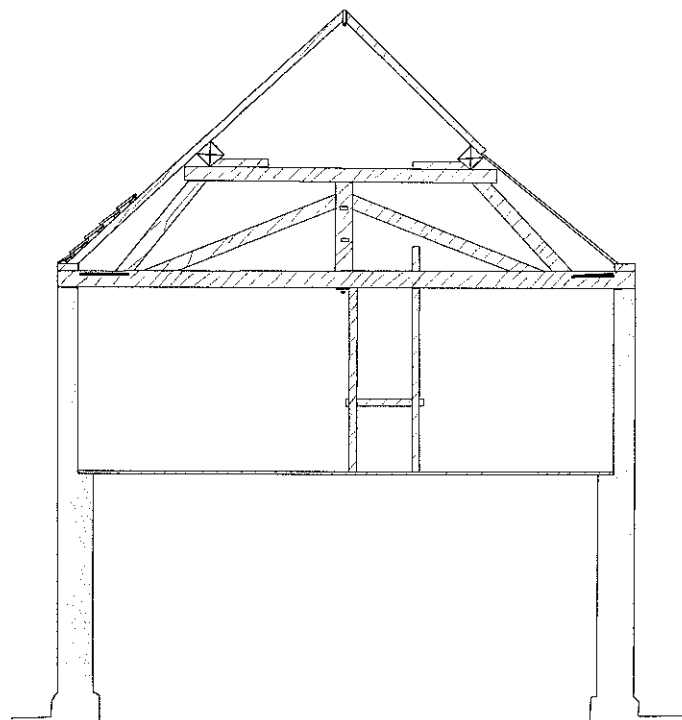
0 5m

Building B



West Facing Elevation

Fig.14



Section A - A

Fig.15



Building C

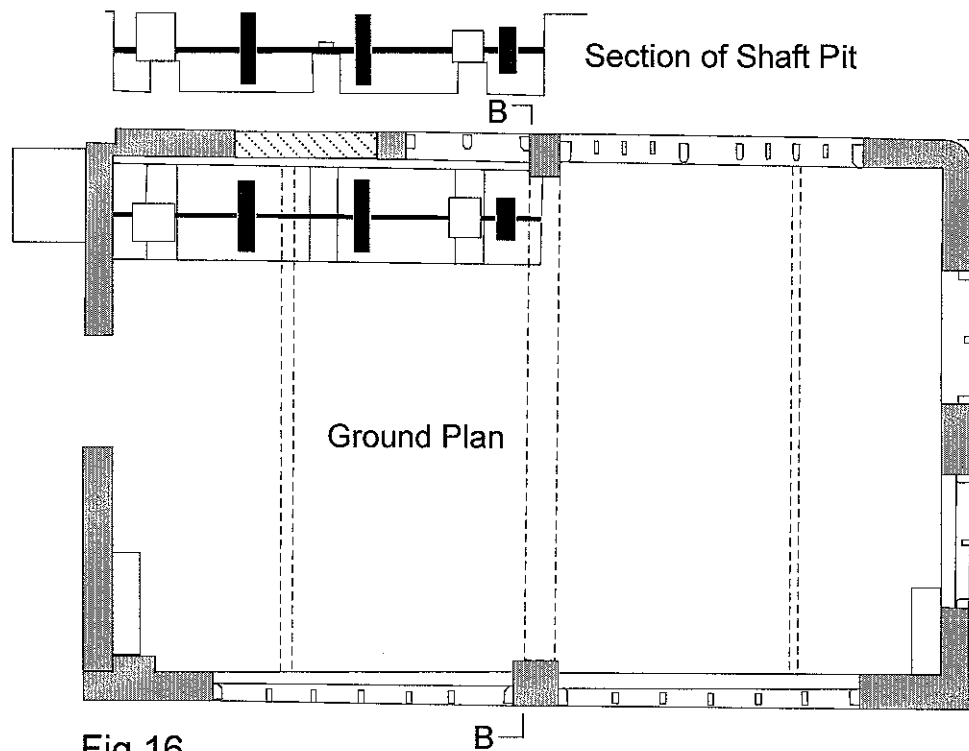


Fig.16

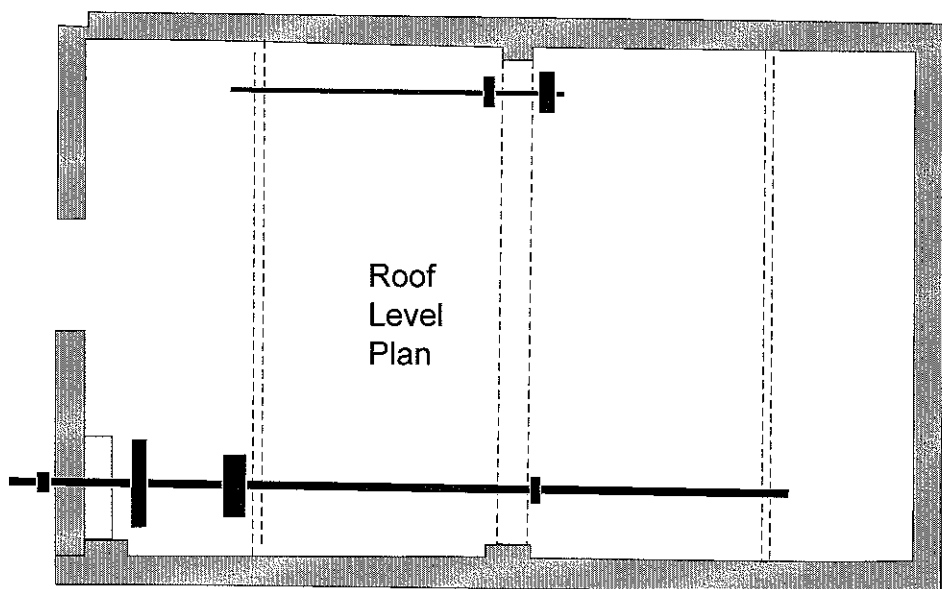
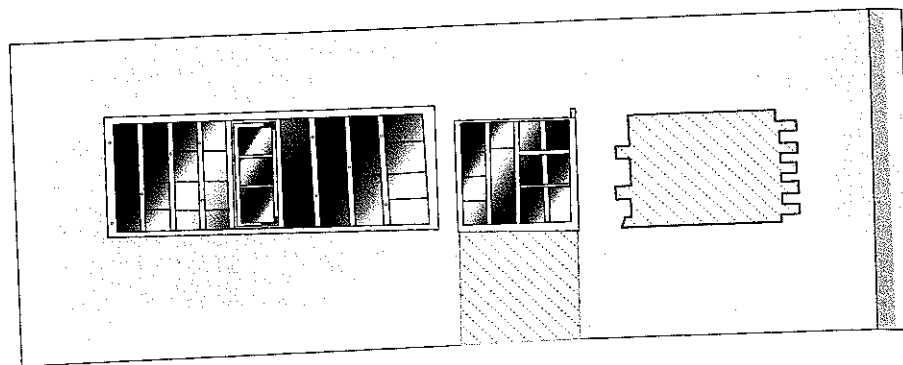


Fig.17

0 5m

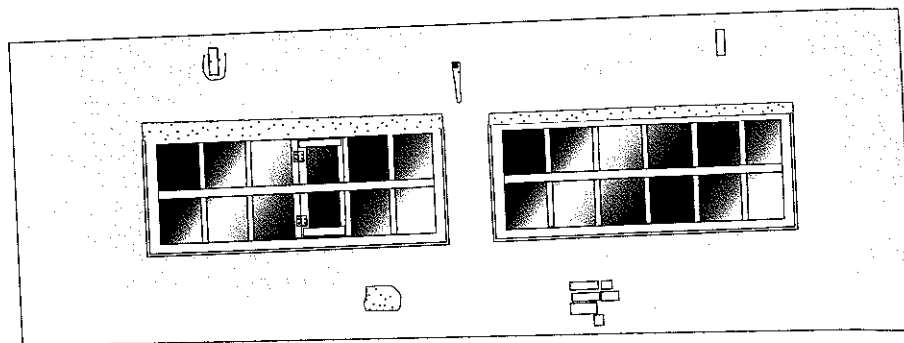
Building C

Fig.18

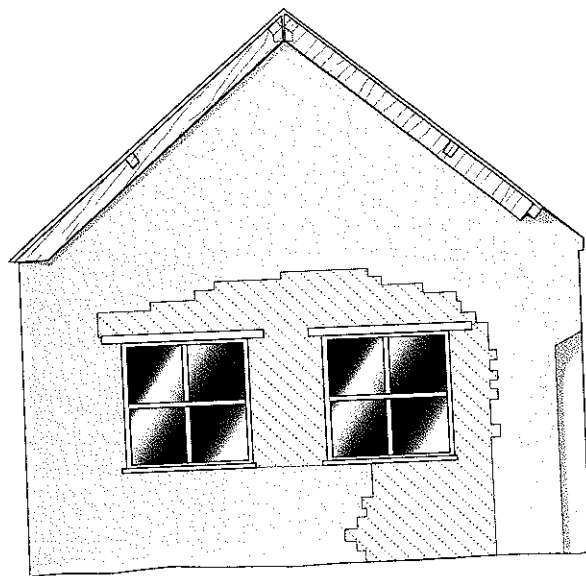


East Facing Elevation

Fig.19

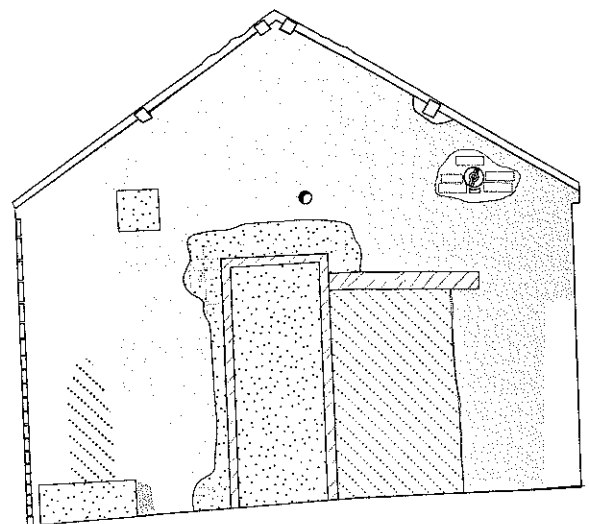


West Facing Elevation



South Facing Elevation

Fig.20



North Facing Elevation

Fig.21



Building D

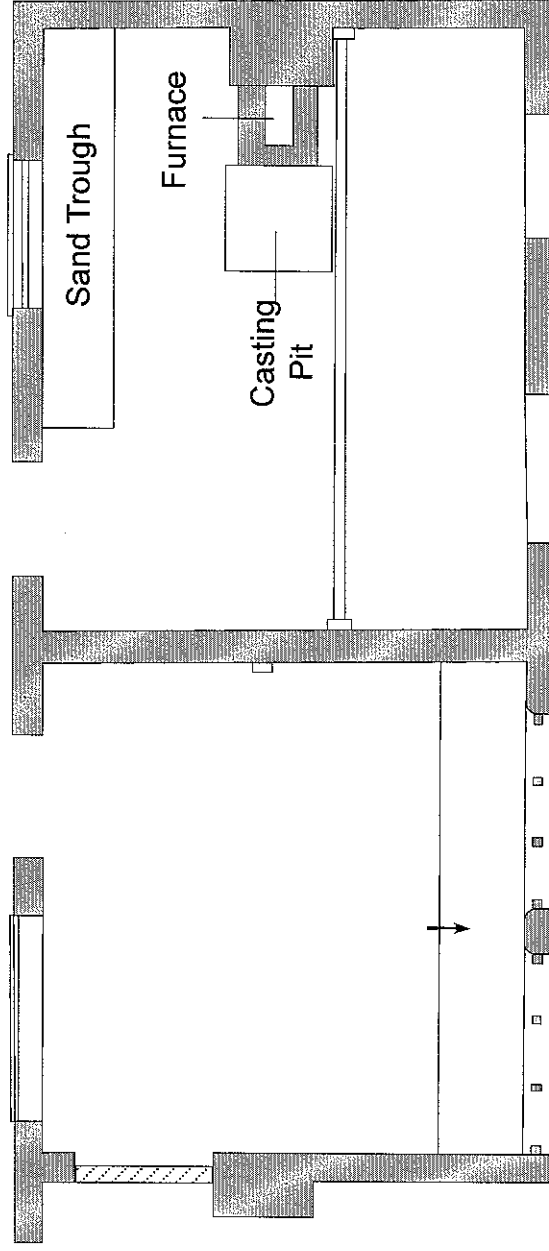


Fig.23



Building.D

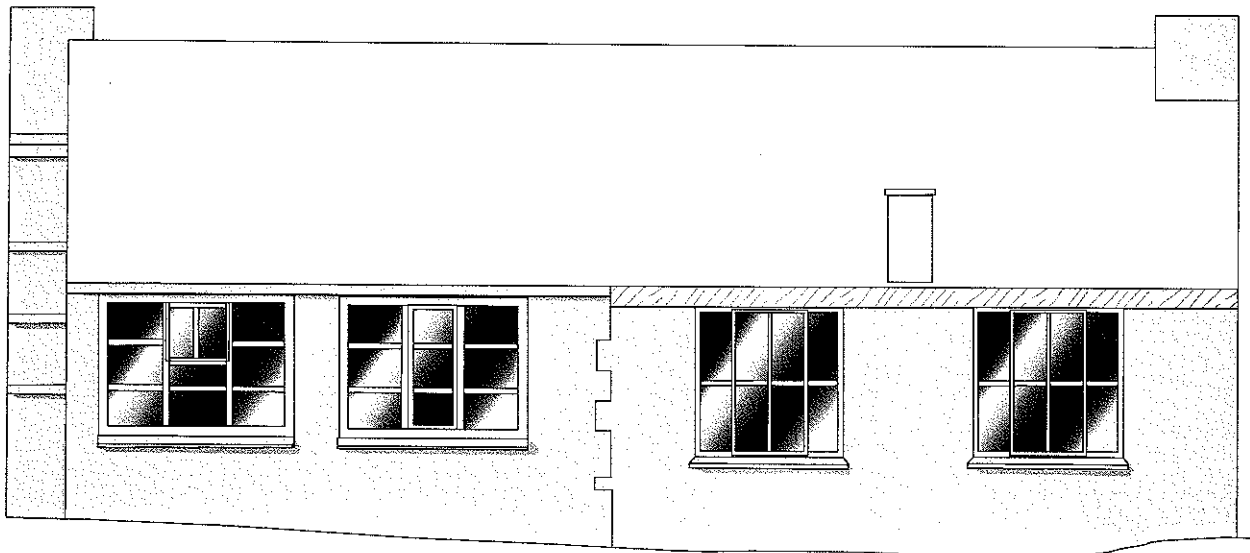


Fig.24

West Facing Elevation

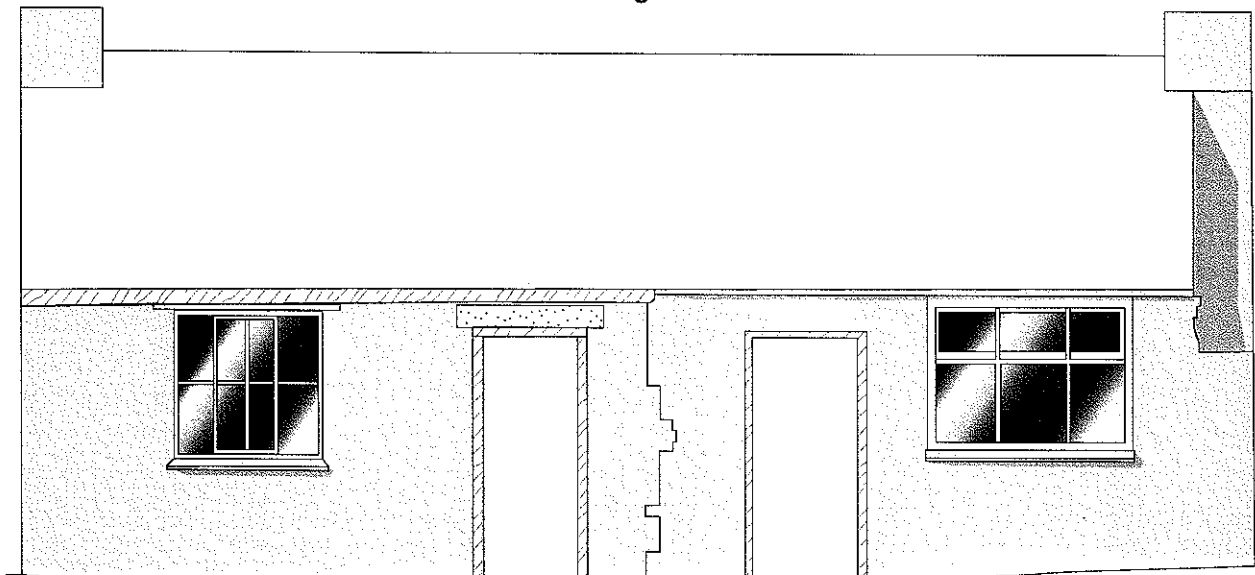


Fig.25

East Facing Elevation

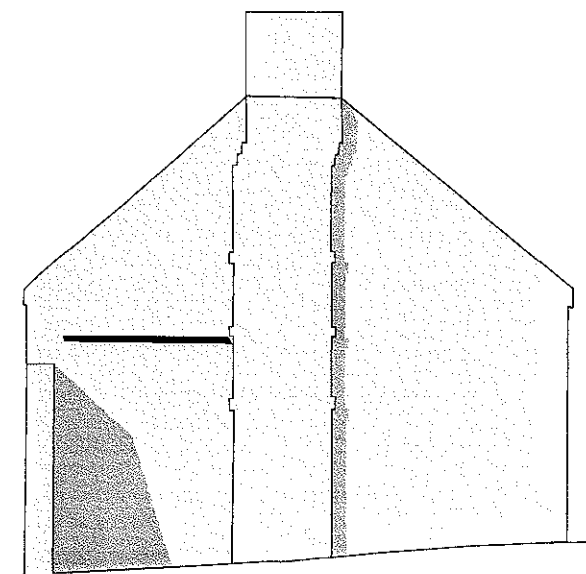


Fig.26

North Facing Elevation

0 5m

Building E

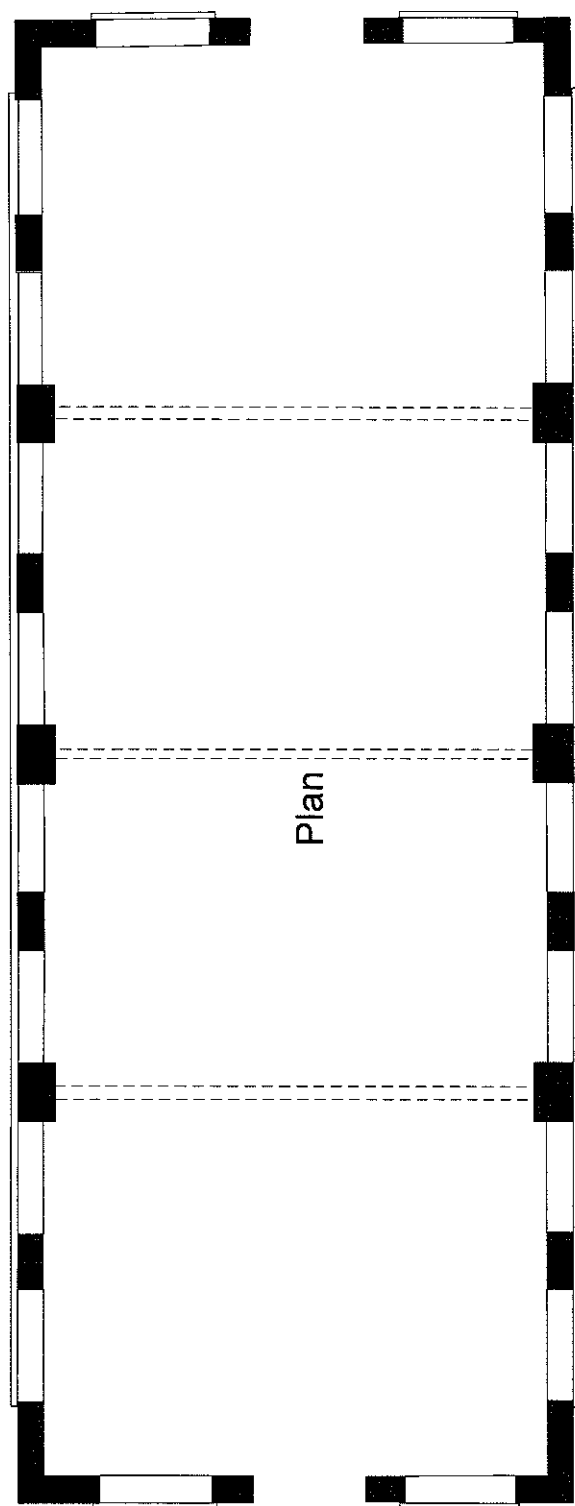


Fig.27

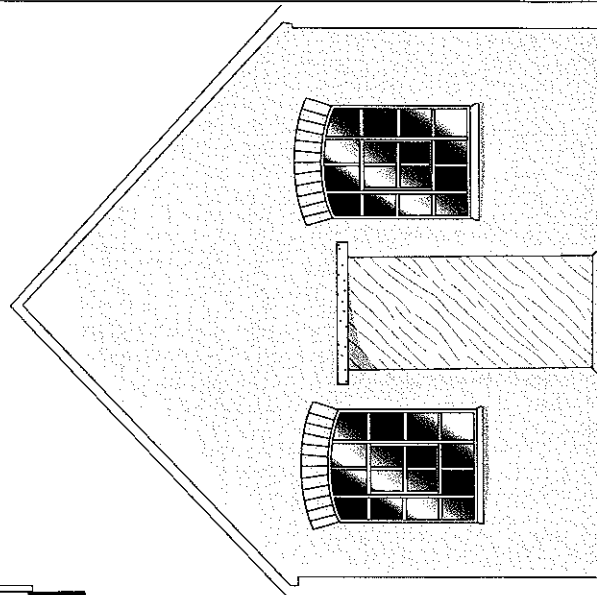
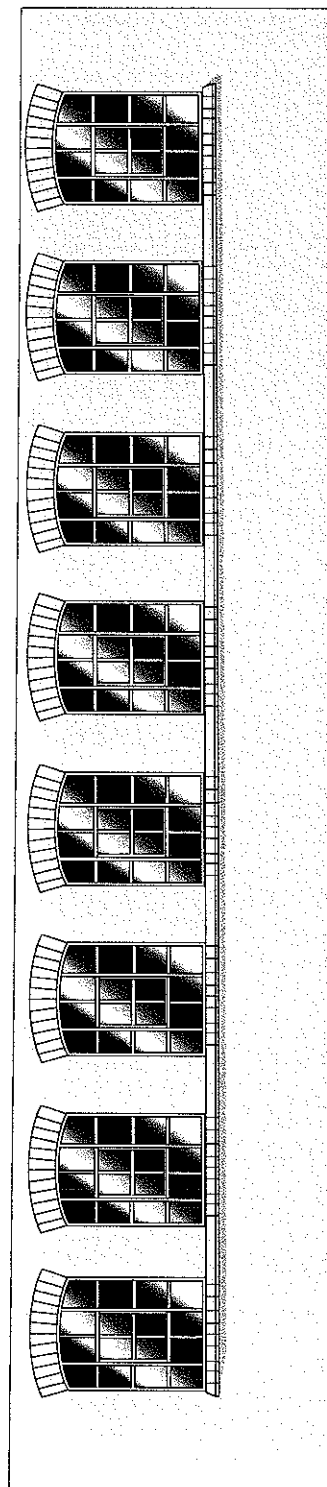


Fig.29 East Facing Elevation

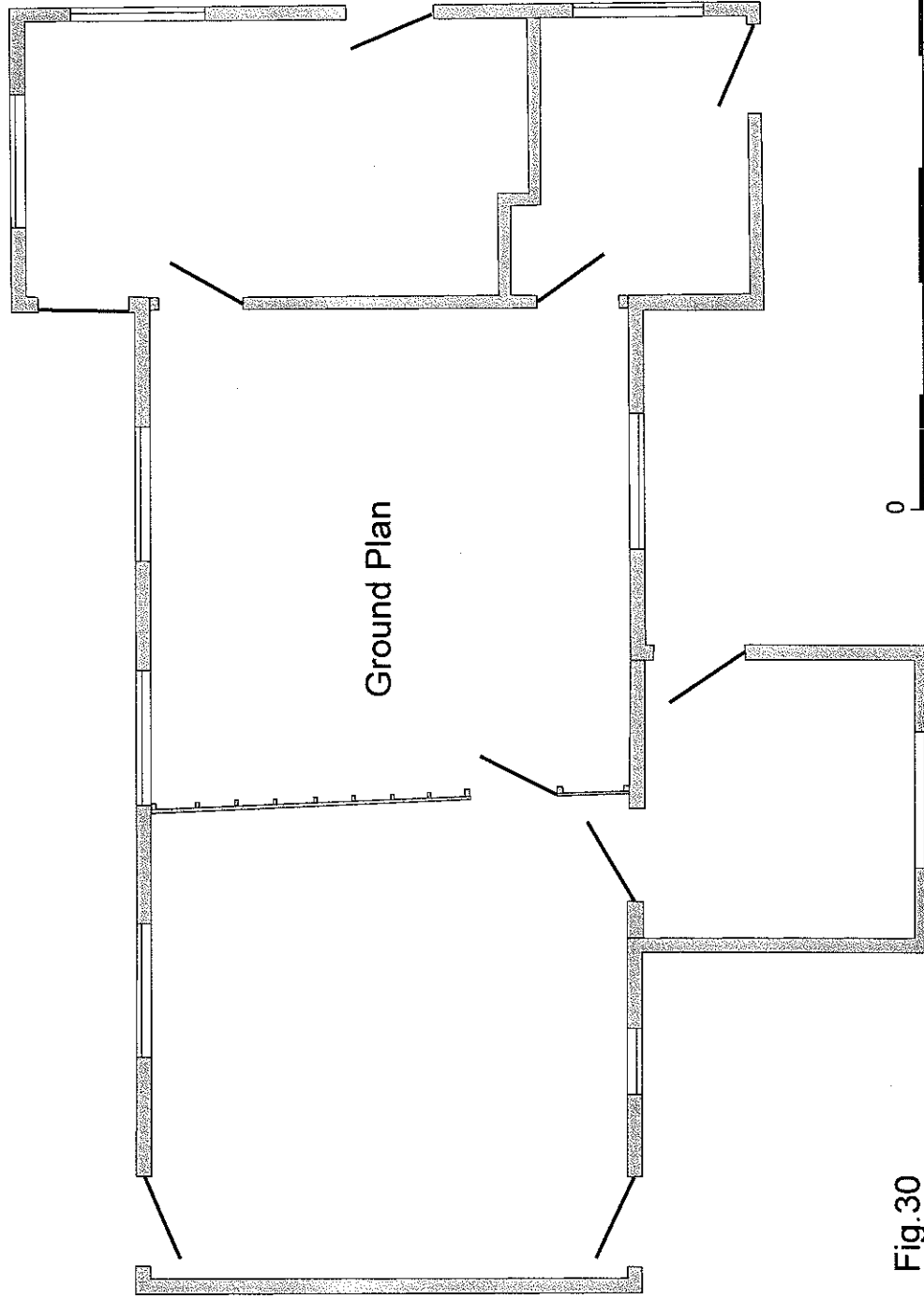
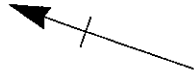


South Facing Elevation

Fig.28

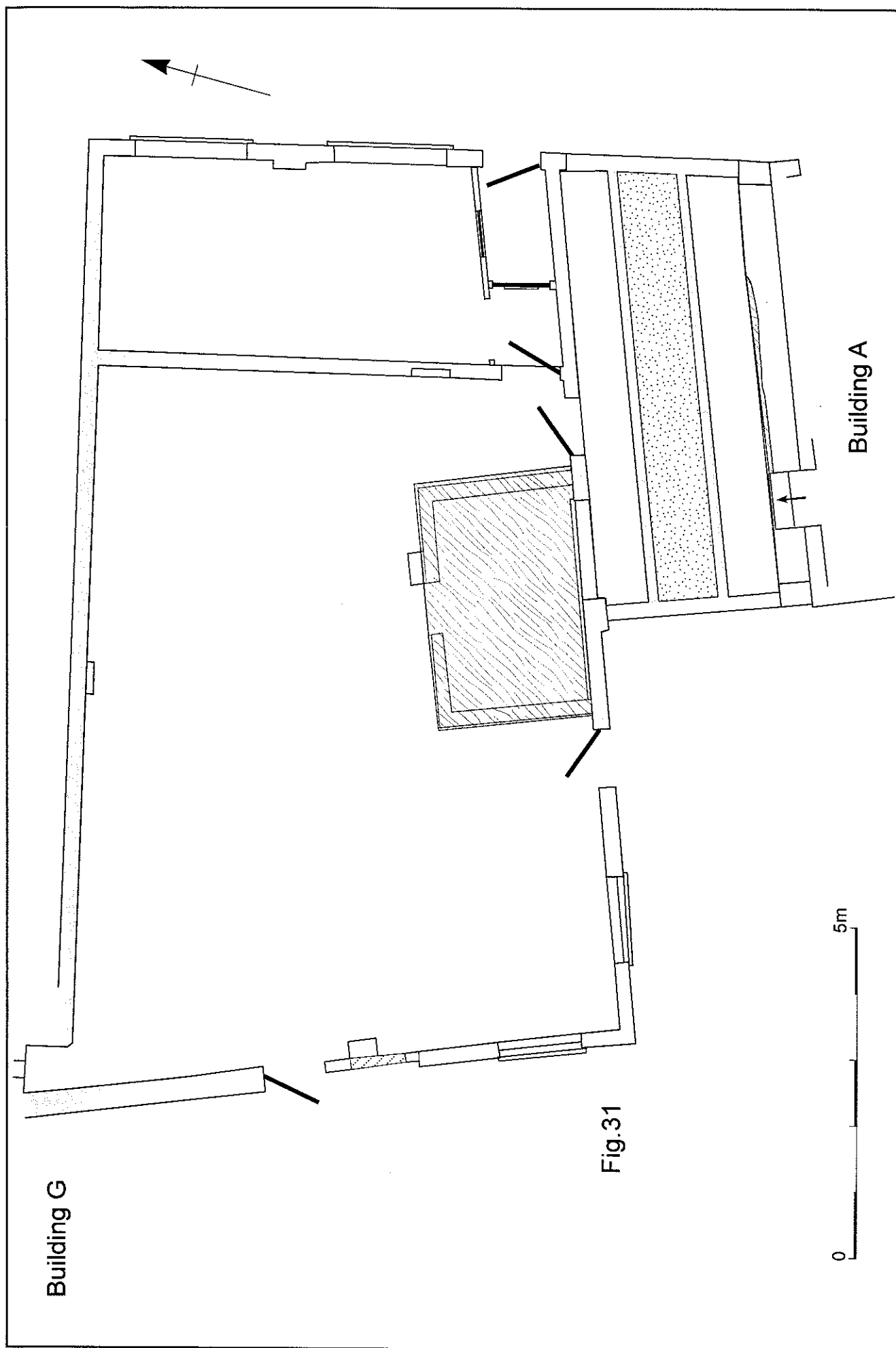


Building F

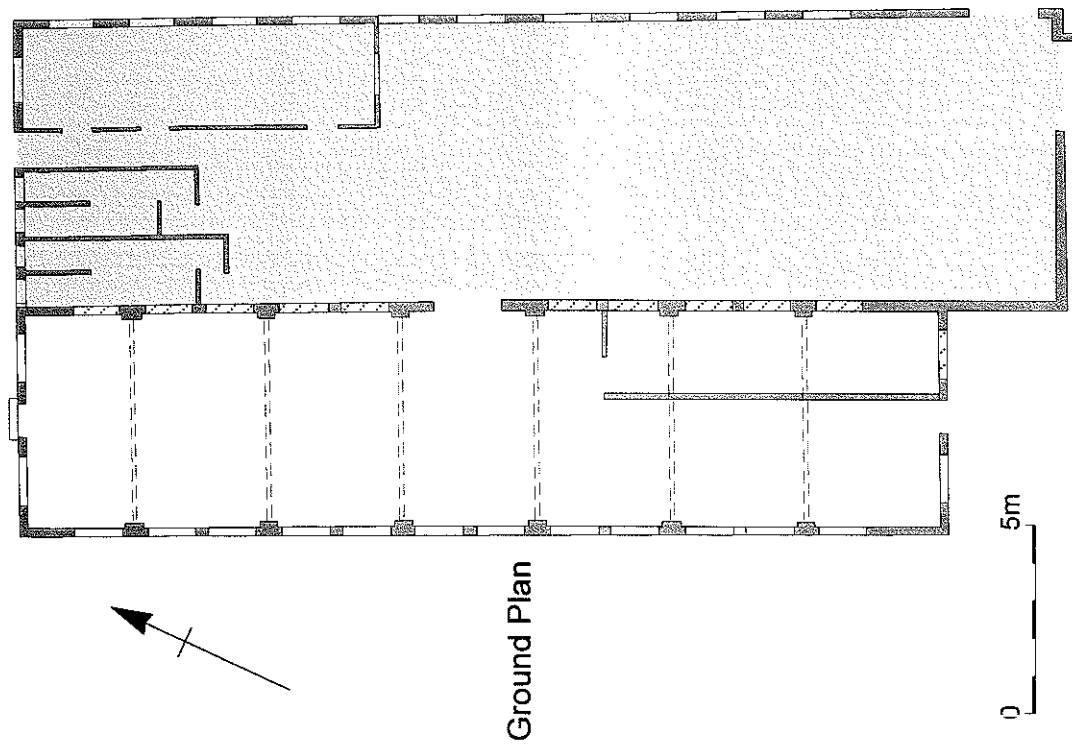


Ground Plan

Fig.30



Buildings H, J, K and L



Ground Plan

- H
- J
- K
- L

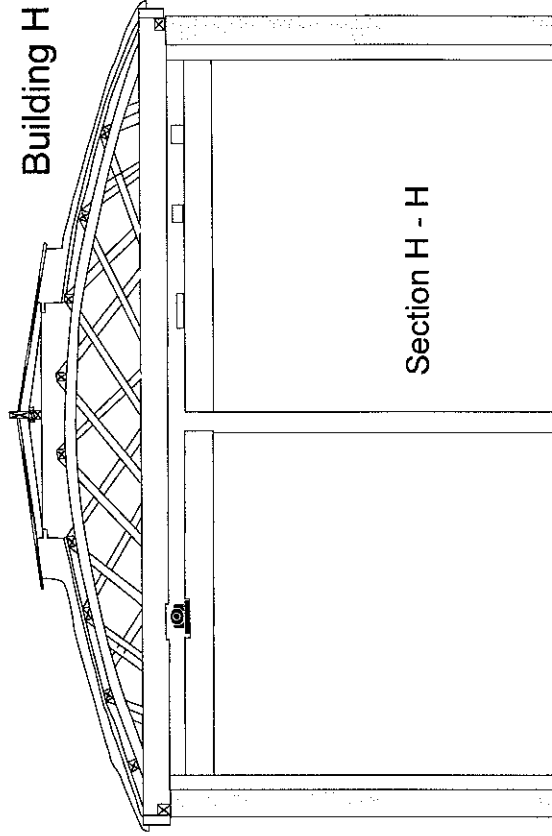


Fig.33

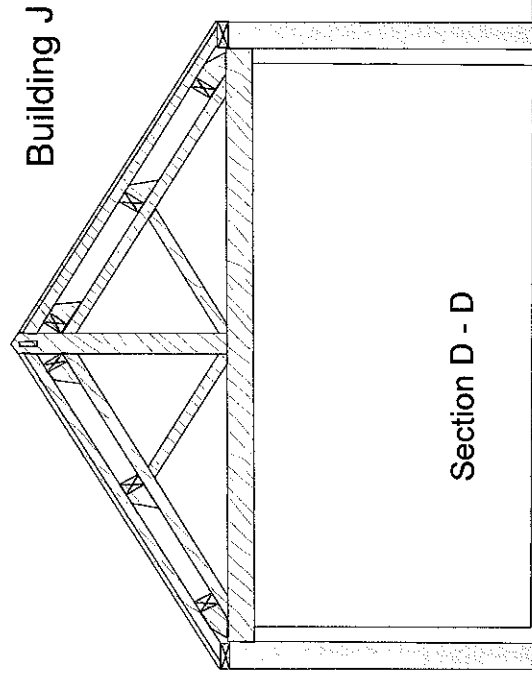


Fig.34

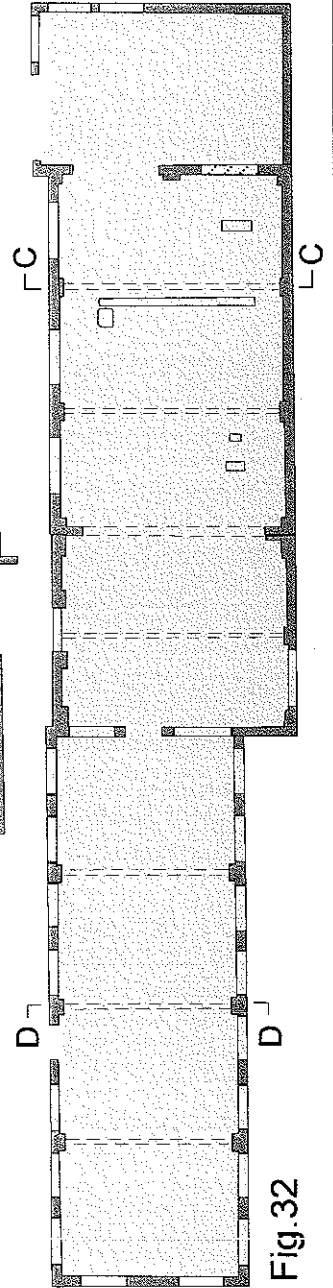


Fig.32

Building M

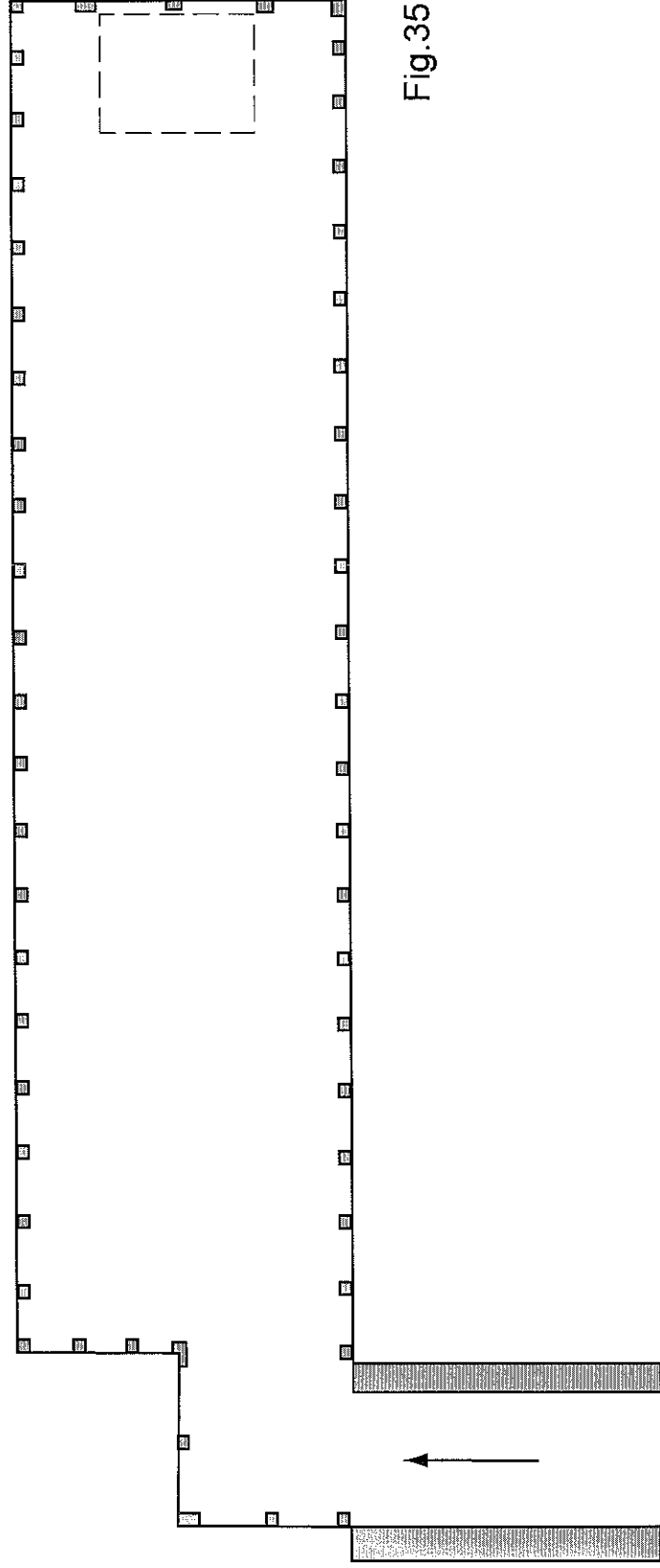


Fig.35

0 5m



Plate 1



Plate 2



Plate 3



Plate 4

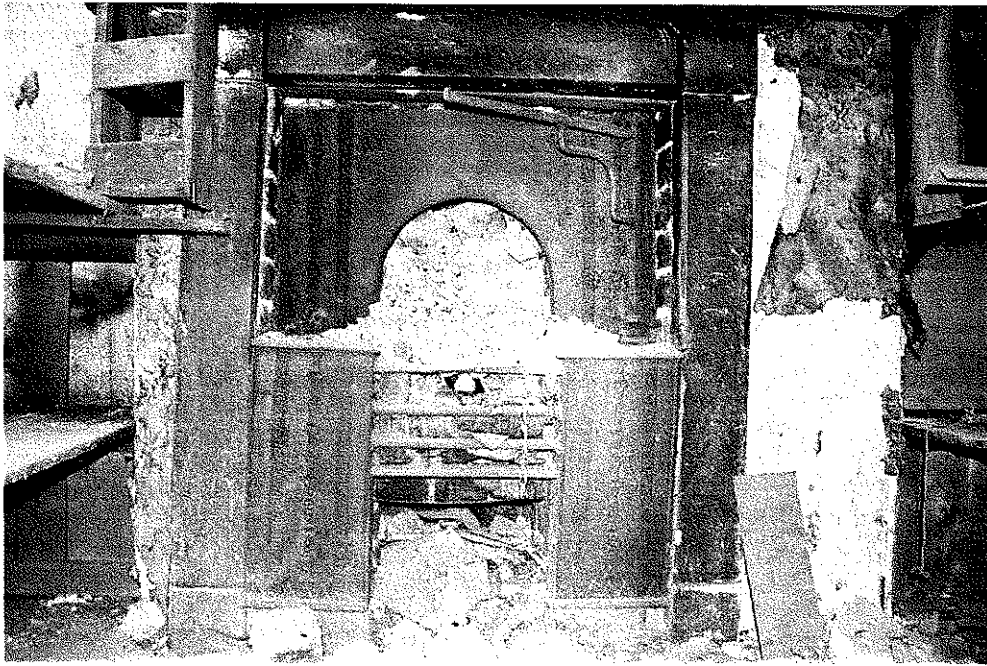


Plate 5



Plate 6

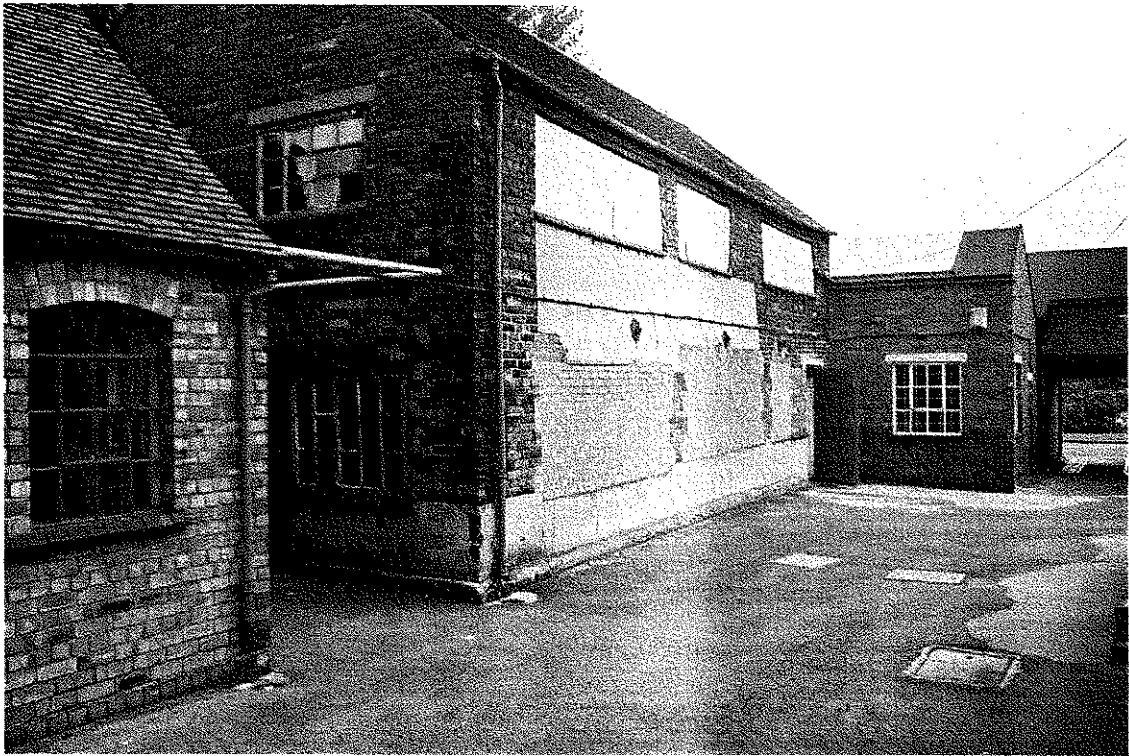


Plate 7

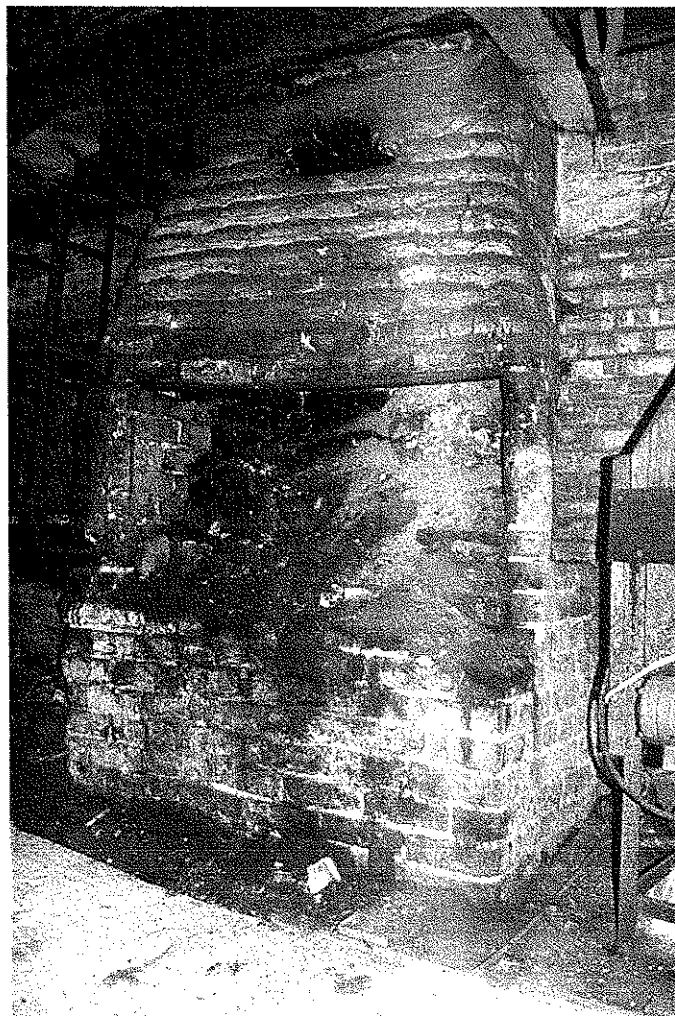


Plate 8

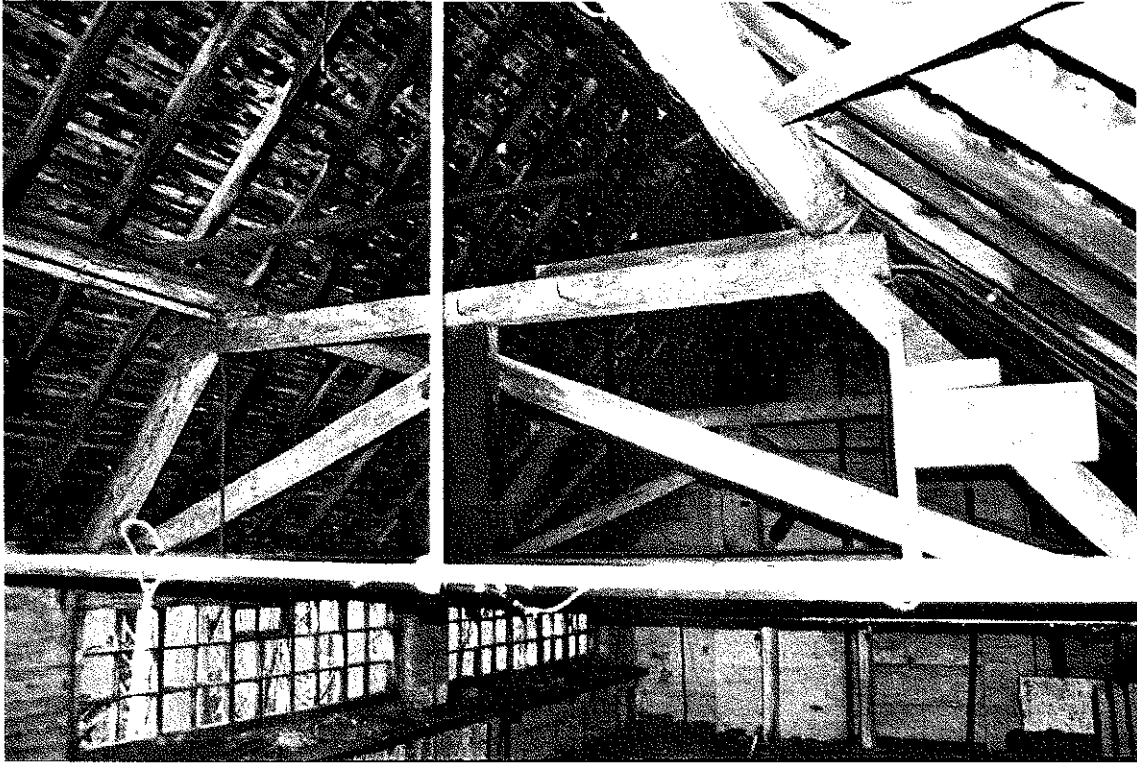


Plate 9



Plate 10

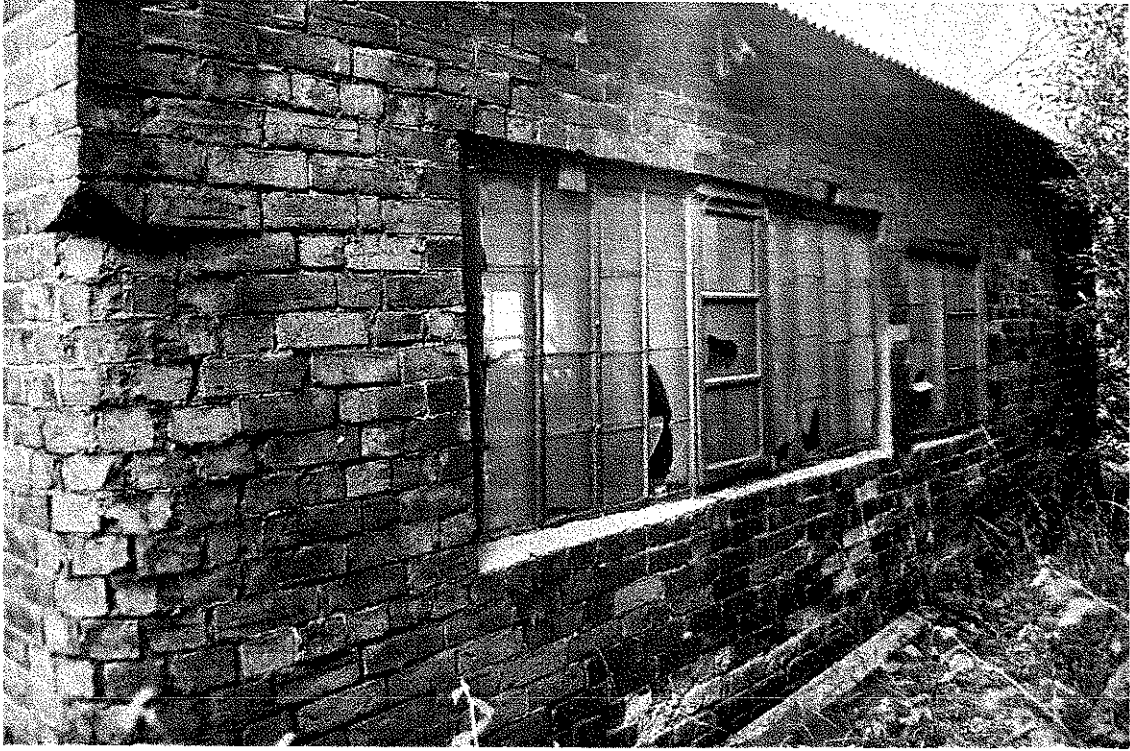


Plate 11

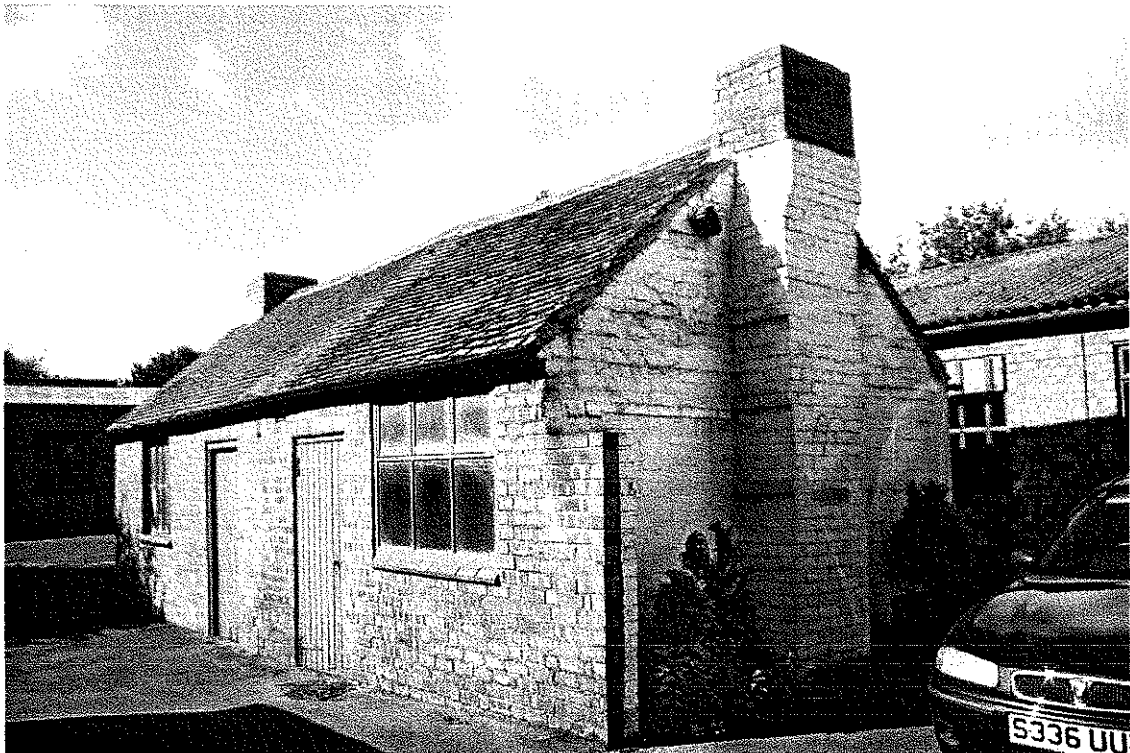


Plate 12

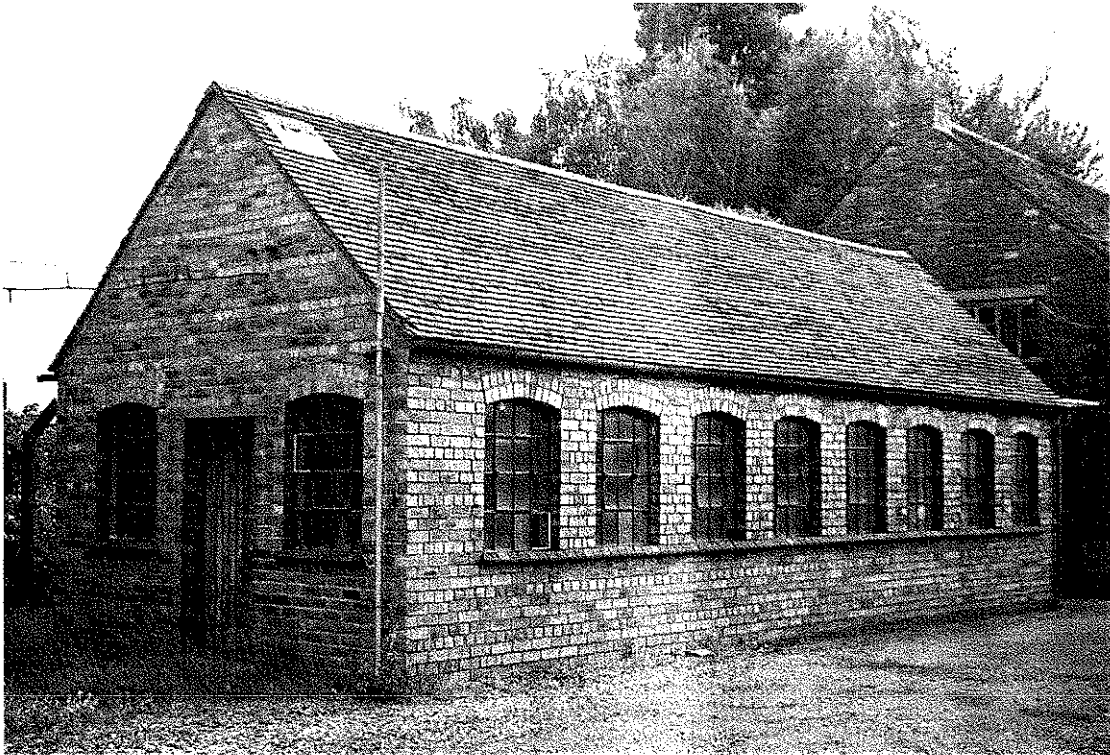


Plate 13



Plate 14



Plate 15



Plate 16

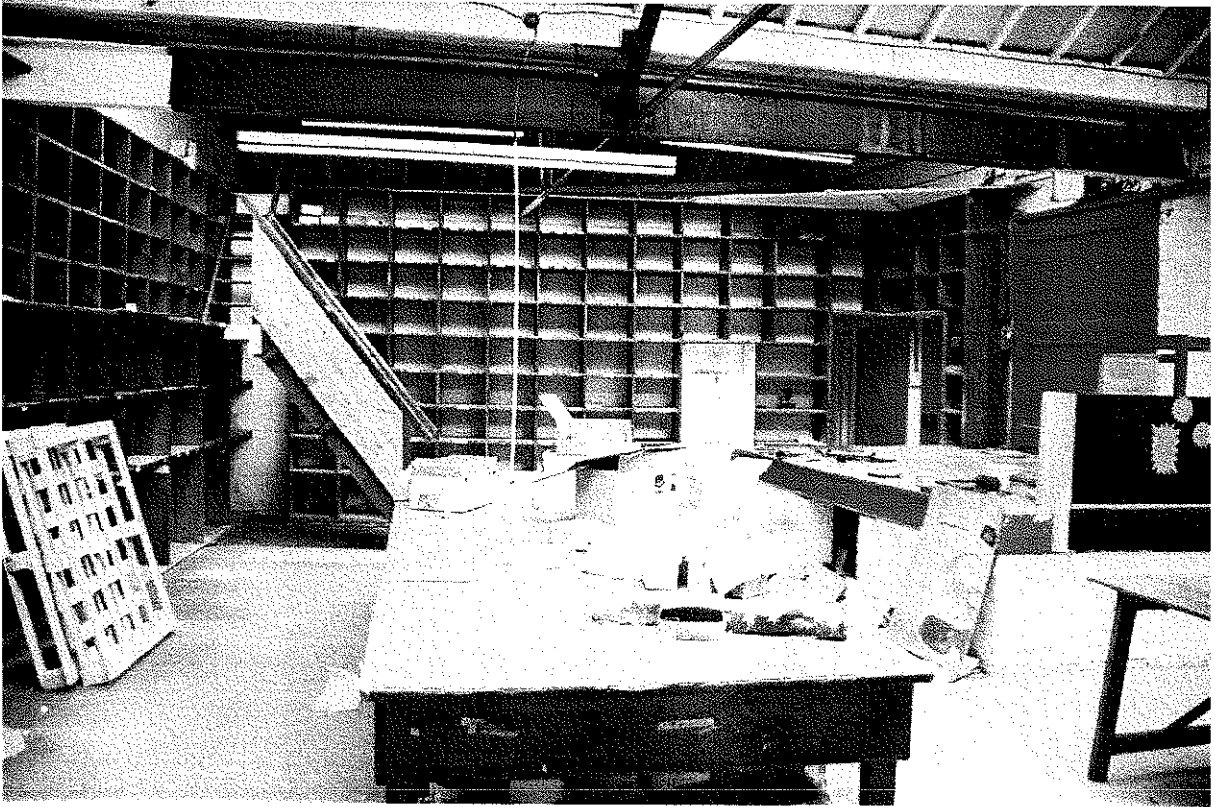


Plate 17



Plate 18

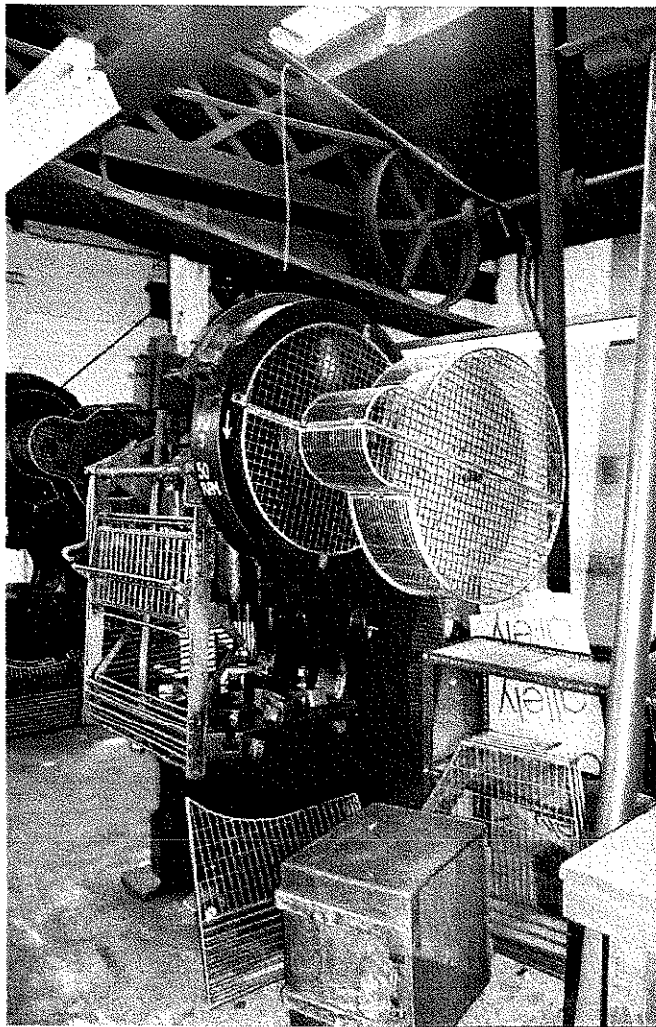


Plate 19

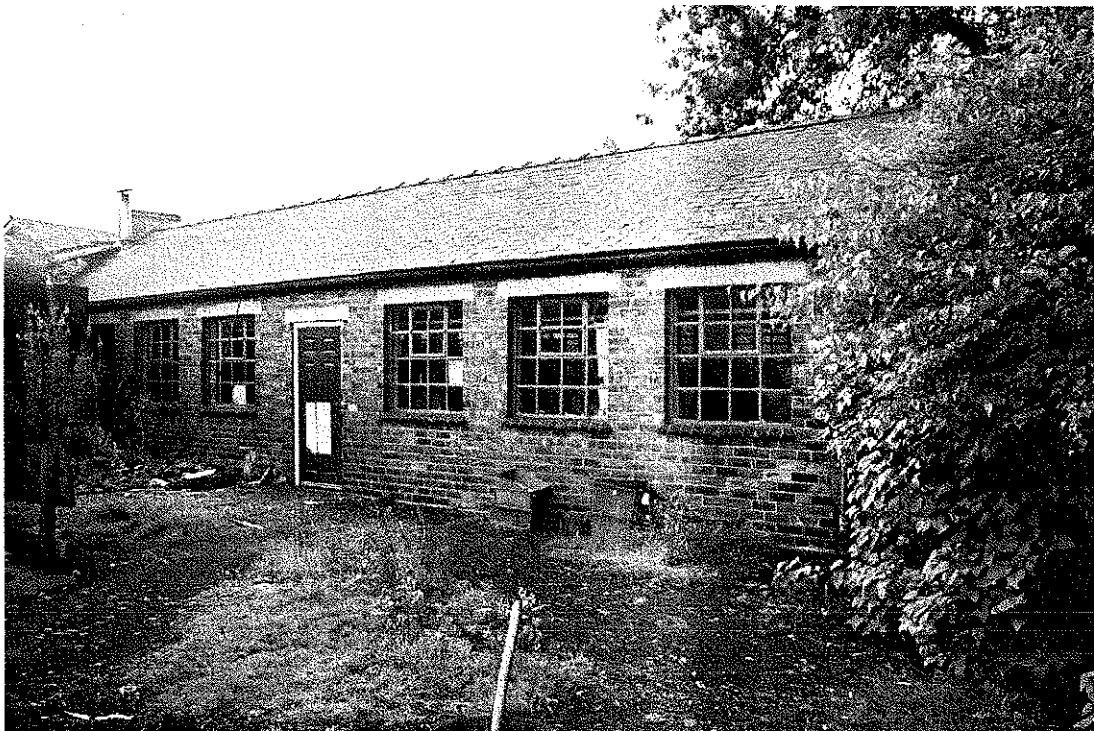


Plate 20



Plate 21



Plate 22