

**The churchyard of
St. Philip's Cathedral,
Birmingham**

An archaeological watching brief

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An Archaeological Watching Brief

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THE CHURCHYARD OF ST. PHILIP'S CATHEDRAL, BIRMINGHAM

An Archaeological Watching Brief

1.0 : SUMMARY

An archaeological watching brief was carried out at St. Philip's Cathedral Churchyard, Birmingham (NGR SP 0700 8720; SMR 01205; Fig. 1) between March 2000 and September 2001. The work was carried out by Birmingham University Field Archaeology Unit on behalf of Birmingham Design Services Landscape Practice Group during the groundworks undertaken as part of the Birmingham Cathedral Square Restoration Project. Previous work had shown the churchyard to be an area of high archaeological potential. A desk-based assessment (Moscrop 1997) had shown that the churchyard had been used as a burial ground from when St. Philip's was built in the early 18th century until the closure of the burial ground in the mid-19th century. The closure came as a result of intensive use over the previous 150 years during which it is estimated that 80,000 individuals were buried in the churchyard. The potential of the area was further highlighted by an earlier watching brief carried out in the surrounding streets during March and April 1999 (Patrick 1999). This discovered both articulated and disarticulated human remains beneath the road surface where areas of the churchyard had been absorbed by the surrounding streets as they were widened in the 19th century.

The watching brief carried out in 2000 and 2001 confirmed much of the research of the desk-based assessment. Most notable was the evidence confirming the high density of burial across the whole site, with human remains recovered from all areas of the churchyard. The bone found at depths of less than one metre tended to be disarticulated while at depths of over a metre a horizon containing articulated burials was encountered. Bore holes drilled around the perimeter of the site showed the burials to extend to a depth of 3m in places, while some disarticulated bone was recovered from just beneath the existing grass surface. An area on the southern side of the site excavated to accommodate a pump house produced eight articulated human burials at a depth of approximately one metre and further articulated human remains were also recovered at a similar depth in another area to the south of the cathedral.

The watching brief also recorded the discovery of grave monuments and burial vaults during ground works spread over all areas of the churchyard. The vaults were either chamber vaults or brick lined shaft graves, some of which were found to have been emptied while others were found to be intact and still occupied. Two vaults belonging to the Harrison and Baldwin families respectively were excavated during the project.

The project produced a wealth of information on the population of Birmingham at an important period of the city's development as an industrial centre. The human remains recovered provided important information on the health of the population and the conditions in which they lived, in addition to information on funerary rites in Birmingham and the growth of the funerary industry in the city. The results of the work at St. Philip's may also be supplemented by forthcoming work on other churchyards of the period in Birmingham, notably St. Martin's in Digbeth, and provide a comparative source with other post-medieval urban burial sites in Britain.

2.0 :INTRODUCTION (Figs. 1 and 2)

This report describes the results of an archaeological watching brief carried out by Birmingham University Field Archaeology Unit on behalf of Birmingham Design Services Landscape Practice Group. The work took place between April 2000 and September 2001 during groundworks in the churchyard of St Philip's Cathedral, Birmingham (NGR SP 0700 8720; SMR 01205; Fig. 1) as part of the Birmingham Cathedral Square Restoration Project. The scheme consisted of the rebuilding of the boundary wall and the erection of new railings, the replacement of paved areas, the installation of new street lighting and irrigation systems, the restoration of surviving monuments and the planting of mature trees. These trees supplement the trees that exist at present and will form an avenue around the perimeter of the churchyard, in imitation of the 18th-century layout (Fig. 2).

The watching brief conformed to a brief prepared by Birmingham City Council Department of Planning and Architecture (Appendix 1) and followed the guidelines set down in the *Standard and Guidance for Archaeological Watching Briefs* (Institute of Field Archaeologists 1999).

3.0 : SITE LOCATION (Fig. 1)

The site consists of approximately 1.5 hectares of land bounded by Colmore Row, Temple Row/Temple Row West and St. Philip's Place in Birmingham City Centre (NGR SP 0700 8720; Fig. 1).

4.0 : GEOLOGY AND TOPOGRAPY

The church stands on a sandstone ridge. The superficial geology of this area consists of glacial sands and gravels.

St. Philip's Churchyard is located on the highest point within the centre of Birmingham. The grounds of the cathedral are surrounded by a low stone wall and consist of lawned areas divided by paths leading from the cathedral to the surrounding streets. A number of grave monuments and mature trees are present, principally in the western and southern areas of the churchyard.

5.0 : HISTORICAL BACKGROUND (Figs. 2, 3, 4, 5, 6 and 7)

The construction of the Church of St. Philip's led to a radical change in the appearance of the surrounding area. Prior to this, the main focus of the town was around St. Martin's Church and the Bull Ring, but because of the lack of space in Birmingham's parish church and churchyard a new church and burial ground was needed (Upton 1993). In 1709 an Act of Parliament was passed for the establishment of a new parish church and under its terms the church commissioners purchased a piece of meadowland known as Horse Close from Elizabeth Philips, the widow of Robert Philips, a local landowner. The site of the new church was on the highest part of Birmingham in virtually unoccupied land. An 1890 map (not illustrated) by Hill and

Bickley, based on 18th-century mapping, and written surveys of the medieval and post-medieval landscape, gives some idea of the area prior to the construction of St. Philip's Church. Although this information is not totally reliable, it does accord with later accounts that describe the area as virtually open land (Upton 1993) lying to the northwest of the medieval town of Birmingham. The church of St. Philip's was erected between 1709 and 1715. It was designed by Thomas Archer and was accompanied by a finely laid out walled churchyard and a parsonage built on the corner of what is now St. Philip's Place and Temple Row. The new church lay on the southwest side of Newhall Lane, now Colmore Row, which at that time represented the northeastern boundary of the town. Beyond Newhall Lane lay the house and grounds of New Hall, an estate belonging to the Colmore family of Colney Hatch in Middlesex.

Evidence for the development of St. Philip's Churchyard and the surrounding area comes mainly from map, pictorial and secondary documentary sources. The earliest known representation of the church and its grounds is Westley's map of 1731 (Fig. 3). This stylistic representation of the churchyard shows a perimeter wall with an internal perimeter path flanked by a row of trees on either side. Paths are illustrated leading from St. Philip's Church to the surrounding streets, much as they do today, with a few tombs and headstones on the grassed areas. The Birmingham historian William Hutton described St. Philip's Church as he first saw it in 1741:

'When I first saw St. Philip's in the year 1741, at a proper distance, uncrowned with houses, for there were none to the north, New Hall excepted, untarnished with smoke and illuminated in a western sun, I was delighted with its appearance, and thought it then, what I do now, and what others will in future the pride of the place.'

'If we assembled the beauties of the edifice, which covers a rood of ground; the spacious area of the churchyard, occupying four acres; ornamented with walks in great perfection; shaded with trees in double and treble ranks; and surrounded with buildings in elegant taste; perhaps its equal cannot be found in the British Dominions'.

Westley's view of the north prospect of the church of 1732 (Fig. 2) illustrates a very orderly and again probably stylised scene showing the church and churchyard with a funeral-taking place. To the left of the illustration on the corner of St. Philip's Place and Colmore Row is the Blue Coat Charity School designed by local architect John Rawsterne. Along Temple Row are ten grand town houses divided into two blocks by Cherry Street. These demonstrate how the area was attracting new wealthy residents. The writer William Toldervey refers to Temple or Tory Row in a letter published in 1762. He describes St Philip's Church standing

'.....in the middle of a large Churchyard, around which is a beautiful walk, adorned with trees like those in Lincoln's Inn Gardens. On one side of this churchyard the buildings are as lofty, elegant and uniform as those of Bedford Row, and inhabited by people of fortune, who are great wholesale dealers in the manufactures of this town..... These buildings have the Appellation of Tory Row; and this is the highest and genteelst part of the town of Birmingham'.

However, by the mid-19th century the once underdeveloped area around the church was overpopulated. This, combined with poor water supply and inadequate sanitation, resulted in disease and a high mortality rate. The population of Birmingham had almost quadrupled between 1775 and 1831 while, like many fast growing industrial towns of this period, the provision of burial space had failed to keep up. This resulted in the often foul condition of many urban graveyards. By 1849, all nine of Birmingham's Anglican graveyards were closely surrounded by housing and all but one, All Saints, were full. Robert Rawlinson, who reported on the sanitary condition of Birmingham in 1849 described St. Philip's thus:

'St. Philip's Church stands near the centre of the town, and the graveyard surrounds the Church, and is itself entirely surrounded by houses. This yard has been partially closed, and it certainly should be closed as soon as possible, as the effluvia from the yard and graves is said to be very offensive to the surrounding neighborhood, especially in the summer months; the surface of the yard has been considerably raised by the vast number of interments which have taken place there.'

The high concentration of burials is demonstrated by an illustration of circa 1840 (Fig. 6) with a great density of headstones, jumbled and pitched at various angles. As well as endangering the health and comfort of the living, these overcrowded graveyards frequently offended the dignity of the dead. Since no record of interments was kept, graves were frequently disturbed and remains disinterred even when a boring rod was used to find space beneath the ground. Such indignities were no longer confined to the poor. The fear and disgust of the urban middle classes at the prospect of such a grisly fate gave considerable impetus to the movement for decent and permanent burial. A secure and spacious plot with a fine tombstone or monument could also provide confirmation of status, an issue in death as in life. The pressure on the churchyard at St. Philip's was partially relieved by the opening of new cemeteries at Key Hill in 1835 and at Warstone Lane in 1848. The latter coinciding with the closure of the southern and eastern areas of St. Philip's in the same year. The closure of these areas first suggests a higher concentration of burials there and demonstrates the preference for burial in the southern areas of a churchyard, away from the shadow of the church.

The churchyard at St. Philip's finally closed to earth burials on 15th August 1858, with Henry Barker of Temple Street being the last interment. Burials in existing vaults and brick-lined graves continued after this date (Morriss 1996), although the lack of documentation means that all but a few are anonymous. The problem of burial for the masses was only resolved by the opening of the corporation cemetery at Witton in 1863.

The churchyard was refurbished in the mid-1860s, having become neglected and filled with rubbish since its closure. A new, lower, boundary wall topped with railings was erected, along with railings lining the paths to the church from the streets. Many of the headstones were laid flat at this time and a contemporary illustration (Fig. 7) depicts the southern area of the graveyard as more of a public garden. Many of the stones were later buried in these locations and were turfed over. The railings were dismantled as a contribution to the war effort in 1940 and the churchyard remained largely unchanged throughout the post-war period until the present restoration.

While the pathways within the churchyard have remained broadly the same, changes to the boundaries have taken place. The original perimeter path, known as Bachelor's Walk, was closed to the public in 1839, and the space was probably used for additional burials. Copies of letters held in the archive collated by the Landscape Practice Group suggest that Temple Row was widened in the 1840s after objections had been received concerning the unsuitable alignment of the original perimeter brick wall. A comparison of the map of 1824 (Fig. 4) with the 1889 Ordnance Survey Map (Fig. 5) shows that Temple Row is considerably wider on the later map. This suggests that most of the churchyard boundary alterations occurred between these dates. Further alterations to the boundaries took place in 1900 with the widening of Temple Row West and St Philip's Place at the expense of the burial ground. Letters from both 1839 and 1899 concerning the boundary alterations gave instructions as to what to do with any remains that were disturbed during the work, and how arrangements were to be made for their re-interment.

6.0 : ARCHAEOLOGICAL BACKGROUND

A desk-based assessment of the churchyard was undertaken by Birmingham University Field Archaeology Unit in 1997 (Moscrop 1997). The assessment considered the implications of the proposed landscaping on the archaeological remains likely to be present in the churchyard and suggested an appropriate response. The main area of the churchyard and the streets to the south and west that were formerly part of the churchyard were identified as areas of potential archaeological survival.

Between March and April 1999 a watching brief was carried out during the excavation of 14 test pits in Temple Row and Temple Row West (Patrick 1999). The principal objectives of the watching brief were to confirm the original extent of the burial ground and to assess the density of the burials and how they had been affected by later disturbance from landscaping and services.

Of the 14 test pits that were excavated through the road surface of Temple Row and Temple Row West, 10 produced human remains ranging from complete articulated skeletons to small fragments of bone. This suggested that the locations of all the test pits were within the original 18th-century boundaries of the churchyard. It was not possible to confirm the exact extent of the churchyard prior to the road widening as no perimeter wall was identified. The test pitting did show, however, that the original burial ground extended for approximately 4-6m beneath the existing pavement and road surface. A brick wall was found at the northern ends of four test pits, aligned east-west along the western end of Temple Row. The wall survived to approximately 0.7m in height and was 0.35m thick with a series of wide low arches in the lower courses. It was not thought to be the boundary wall as in two test pits later burials were cut against its southern face, which would have been on the street side rather than the churchyard side. One possible explanation for the presence of the wall is that it was the original boundary of the churchyard in the early 18th century and that the burial ground was expanded at some point before contracting to its present extent in the last century. Another suggestion was that the wall is somehow related to the internal path and avenue of trees that originally surrounded the perimeter, and that the

arches in the wall were designed to accommodate the growth of the roots of the neighbouring trees.

It was estimated in the desk-based assessment (Moscrop 1997) that 80,000 individuals had been interred at St Philip's. Evidence from the test pitting and the subsequent study of the bones supported the notion of a high density of burials, with a minimum of 22 individuals represented from the 10 test pits that contained human remains. One test pit on Temple Row, close to the top of Temple Street, contained an articulated burial and the disarticulated remains of at least four other individuals. Disturbance to the archaeology was present in all the test pits and only two articulated skeletons were found in the test pits along the western end of Temple Row. The reason for their survival seems to be due to the fact that they were buried slightly deeper, 1m beneath the present road surface and probably closer to 2m beneath the ground level of the 19th-century cemetery. In Test Pit 8 the skeleton survived in a shallow cut 0.15m deep, while above it the graves of two further individuals had been heavily disturbed with the bones scattered through a very mixed layer of material. Evidence for the intercutting of graves was visible in a test pit on Temple Row, where three coffins were identified, each cutting the previous one before the last was truncated by a gully. Only the last coffin contained any bone and it seems likely that the occupants of the earlier coffins had been removed.

The cutting of services had caused a great deal of disturbance to the archaeology and in some cases had destroyed it totally. This was particularly apparent in the eastern half of Temple Row in front of the former Bank of England building, where only one out of five test pits contained any *in situ* archaeology, a grave cut with the base of a wooden coffin with a lead lining but no human remains. The presence of this grave demonstrated that the churchyard extended well into Temple Row, but heavy disturbance means that very little archaeology survived in these areas.

The western half of Temple Row presented a contrast. Although services were present they were shallower and a greater quantity of churchyard archaeology was left *in situ*. Intact burials were also discovered in this area during the erection of the CCTV mast at the top of Temple Street in 1998. No services were noted in the four test pits excavated along Temple Row West, although the ground had been heavily disturbed by other means. Three of the four pits produced human remains representing a minimum of nine individuals, six of which were children. No articulated burials were present in the test pits although intact burials were visible in the west-facing sections of the test pits beneath the pavement. The remains of a brick wall buttress was present in the western end of one test pit and was possibly part of the original perimeter wall.

Remains of coffins were identified in four test pits along Temple Row, while coffin handles were recovered from nearly every pit. The coffins were all of a very similar design, of wooden construction with a thin lead lining on the inside and a felt-like fabric held in place by brass studs covering the outside. Complete coffins with the studded exterior design were observed in the vaults on the northern side of the cathedral. As the coffins in the vaults can be roughly dated using the memorial plaques inside the cathedral, we can assume that the coffins from Temple Row are broadly contemporary with these, dating from approximately 1750-1820. Several types of coffin handle were found. The most distinctive and common design featured two winged cherubs and was made of cast iron. This was also the most commonly

observed design found in the vault of Christ Church, Spitalfields, London (Reeve and Adams 1993) and has been dated to between 1743-1847, broadly the same period that St. Philip's churchyard was in use for.

As part of the 1999 watching brief, a final four test pits were excavated along the northern wall of the cathedral. These revealed the roofs of three brick burial vaults. A hole knocked through the ceiling of the vault on the far northeastern corner of St. Philip's showed it to be approximately 4m long, 2m wide and 2m deep, and to contain at least four damaged coffins covered in a studded design. The vault appeared to have a sealed-up entrance approximately 1m square and 1m above the floor of the vault at the northern end. The 1731 Westley map of St. Philip's (Fig. 3) shows a path running against the northern side of the cathedral directly over the vaults, which probably had entrances on the northern side of the path. Traces of the path were visible in section during excavation of the test pits, although most of the path had been lost due to laying of cables for the existing floodlights. It was estimated that if the dimensions of the vaults were regular, there would be 16 running along the 32m northern wall.

No evidence for the use of the site prior to the construction of St. Philip's Church was recovered during the test pitting.

The watching brief carried out in 1999 established that the original churchyard of St. Philip's Cathedral extended for several metres under what is now the pavement and road surface of Temple Row and Temple Row West. In some areas the archaeology was heavily disturbed while in others there was reasonable preservation.

7.0 : ARCHAEOLOGICAL WATCHING BRIEF

The requirements for archaeological work during the Birmingham Cathedral Square Restoration Project were outlined in a brief prepared by Birmingham City Council's Planning Archaeologist and the Cathedral's Archaeological Consultant (Appendix 1). A detailed archaeological investigation was required to provide information on the health, lifestyle and life expectancy of part of Birmingham's 18th and 19th century population, and on contemporary burial practices, independent of, but complementary to, the documentary record. It was considered likely that many of the burials would consist of disarticulated bone and that many of the vaults would have been disturbed although some may have survived intact. The reworking of the ground through successive burials meant that any evidence for pre-cathedral land use was likely to be represented by objects rather than intact deposits.

7.1: Objectives

The objectives of the archaeological watching brief were to:

- (1) Discover the density of burial in the former churchyard and the extent of disturbance through intercut graves, earlier landscaping and the cutting of services.
- (2) Remove any human remains exposed, whether disarticulated bones from disturbed burials or intact articulated burials as specified by the Officer for Environmental Health for Birmingham City Council, in accordance with the conditions of the Home Office license.

- (3) Record the remains of coffin fittings, which are likely to be products of Birmingham's brassworking industry.
- (4) Record the construction details of burial vaults if any were encountered.
- (5) Record any grave monuments uncovered during the groundworks.
- (6) Confirm the original extent of the burial ground.
- (7) Record the construction details of the former boundary wall.
- (8) Record any evidence for the use of the site before the 18th century.

7.2: Method

An archaeologist was present on site at all times to observe the groundworks and to record all archaeological features and deposits by written description, drawing and photography. No excavation was undertaken other than the cleaning of exposed deposits for better definition. The exception was in specially agreed circumstances where archaeological excavation was necessary to remove unforeseen obstacles that prohibited the continuation of the groundworks.

Archaeological deposits observed were recorded using pre-printed *pro-forma* recording cards for features and contexts, supplemented by scale drawings, colour slide, colour print, and black and white photographs. These records form the site archive.

An officer from Birmingham City Council's Environmental Services Department was also present on site at all times to check that the conditions of the Home Office License for the removal of human remains were adhered to. The license stated that the removal of bones should be screened from public gaze at all times and should be effected with due care and attention to decency. All human bone that was removed was then bagged and placed in boxes and transferred to Birmingham University for study. Once the remains had been studied they were reinterred. Environmental Services also required that all those present at the exhumation wore protective suits, gloves, face masks and boots.

The groundworks consisted of:

- (1) Stripping of turf and topsoil over the area of the churchyard to a maximum depth of 0.4m.
- (2) Excavation of a trench around the perimeter of the churchyard against the interior of the boundary wall to enable its dismantling and rebuilding prior to the erection of the new railings.
- (3) Drilling of 90 bore holes between 3m and 4m in depth around the perimeter of the site for piles to secure the back stay stones for the new railings.
- (4) Lifting of all flagstones and kerb stones in the churchyard.
- (5) Excavation of pits 1.2m x 1.2m and 1.5m deep, to accommodate gully pots for drainage on the paved areas.
- (6) Excavation of ducts for drainage purposes, maximum depth 0.5m.
- (7) Excavation of ducts for electrical services, maximum depth 0.5m.
- (8) Excavation of ducts on the grassed areas for the new irrigation system, maximum depth 0.5m.
- (9) Excavation of a pit 4m long, 2m wide and 1m deep to accommodate a pump house adjacent to Temple Row to supply the new irrigation system.

- (10) Excavation of tree pits 1.2m square, 1.2m deep. These were located within the churchyard along St. Philip's Place and in the street and churchyard along Temple Row and Temple Row West.
- (11) Excavation of foundation trenches for the stone boundary wall 1m deep and 1m wide along the eastern half of Colmore Row and along a 30m stretch of Temple Row where the parking bays were formally located.
- (12) Excavation of 22 foundation pits for the pillars of the gateways leading in from the surrounding streets.

8.0: RESULTS

For the purposes of archaeological recording the churchyard was divided into zones (Fig. 8). The nine grassed areas and the paved area to the east of the church were lettered A to J while the paths leading to the church from the surrounding streets were lettered A1 to I1.

The results of the watching brief are described below by area. Each description includes the results of observation of groundworks, with specific sections on memorial stones, vaults and human burials. The locations of the features that are described are shown on Figure 9; the locations of individual memorial stones, vaults and bore holes are contained within the site archive. More detailed descriptions of the memorial stones are given in section 8.2.

8.1: Descriptions of Areas

Area A (Figs. 8 and 9; Plate 1)

Grassed area in northwest part of the churchyard adjacent to Colmore Row, bordered to the south by Area A1 and to the East by Area I1.

Memorial Stones

Stripping of topsoil in the area immediately behind the perimeter wall revealed five headstones (Stones 3-7) laid flat and buried approximately 0.2m beneath the surface. The five stones were all lifted to enable access for a drilling rig prior to piling (Plate 1). Expansion of the paved area to west of the church required the lowering of the grassed area and the excavation of a new kerb line through the southern edge of the area. This was 0.5m deep and 0.5m wide and produced finds of disarticulated human bone and partially exposed fragments of two headstones; no inscriptions were visible.

Boreholes

The drilling rig excavated 15 bore holes along the back of the perimeter wall to accommodate the piles to secure the back stay stones for the railings. Bore holes 1, 2, 8, 9, 11 and 12 all produced finds of human bone from depths of between 1.5m and 3m. It was impossible to tell if the remains had been articulated or not.

To enable the dismantling of the perimeter wall, a trench 1m wide and 1m deep was excavated behind it, exposing the brick foundations of the buttresses into which the 19th-century railings had been secured.

Vaults

The use of plant machinery in Area A later resulted in the collapse of a large stone slab covering a brick lined shaft grave, Feature 128, in the centre of the area (Fig 9).

The brick-lined shaft was aligned east to west. It was 3m deep, 2m long and 0.8m wide at the eastern end and trapezoidal in plan to facilitate the lowering of coffins. No coffins or human remains were visible, although for safety reasons inspection was only possible through the hole in the roof. The base of the shaft vault was covered in soil, in which a single footprint could be seen. However, a small hole in the floor was visible at the western end, suggesting that this was probably an artificial level. It was possible to insert a tape measure through this opening to confirm that there was a 0.4m void beneath. No further work was possible and the shaft was re-sealed with a concrete cap.

Area A1 (Figs. 8 and 9)

Area A1 was a path leading to St. Philip's from Temple Row West and incorporating the paved area in front of the west end of the church.

The paving was lifted to reveal a foundation layer of sand overlying an reddish-orange natural sand. Trenches were cut to accommodate two gate pillars and two gully pots close to the Temple Row West at a maximum depth of 1.2m. No archaeological features were observed.

Vaults

Use of plant close to the southwest corner of the St Philip's Cathedral resulted in the collapse of a rectangular chamber vault, Feature 136 (Fig. 9). A hole approximately 1m by 1.2m was made in the roof of the vault on its northern side. All archaeological observation was carried out from above.

The vault was 1.8m deep from the roof level on to the top of the collapsed roof material. The interior dimensions were 2.6m by 2.6m with a barrel arched brick roof aligned north-south and a rectangular entrance approximately 1m by 1.2m located in the upper courses of the southern wall. The entrance had been blocked-up with roughly laid brickwork. The interior walls and ceiling had all been white-washed.

The interior floor space was divided into two areas by a low partition wall aligned east-west. The partition wall was at least four brick courses high, a single brick in width, and was crudely mortared. It was not possible to tell if the brick wall was sitting on the true floor of the vault or upon an artificial floor. The remains of a coffin were visible in the northern area, aligned east-west and almost totally covered in soil. A horizontal scar of mortar was visible on the western and northern walls, level with the top of the partition wall. This suggested that the coffin had previously been sealed in by a stone slab similar to the slate slabs seen in Areas H1 and G1, Features 124 and 195.

The southern area of the vault had not been filled with debris but the floor was covered with a layer of soil within which a skull and other human bones were visible. The vault had clearly been disturbed at some time but had not been emptied.

The human remains were left *in situ* and the vault was backfilled with sand to protect the deposits.

Area B (Figs. 8, 9, 10a and 10b; Plates 2 and 3)

Area B is a grassed area which occupies the southwest corner of the churchyard. It is bordered to the west and south by Temple Row West and Temple Row and is bordered to the north by Area A1 and to the east by Area B1.

Memorial Stones

The stripping of topsoil revealed a group of four headstones (Stones 8, 9, 10 and 11) buried approximately 0.2m beneath the surface.

Boreholes

The drilling rig excavated 22 bore holes behind the wall. Human bone was recovered from bore holes 26, 27, 31, 32 and 33 at depths of approximately 2m.

Vaults

Bore holes 18, 23, 25 all encountered voids in the ground at between 1.2m and 1.3m below the ground surface. The voids were interpreted as burial vaults, roughly 1m high from roof to ceiling, associated with the substantial pedestal monuments located along Temple Row West.

A trench 1m wide and 1m deep, was then excavated along the back of the churchyard boundary wall and exposed a series of brick-built features in section (F109-F119) that were interpreted as vaults or as the entrances for vaults (Figs. 10a and 10b).

Feature 109 (Fig. 10a) was located at the northern end of the trench and was buried approximately 0.3m beneath the surface of the churchyard. The structure appeared to be aligned east-west and consisted of two supporting walls of double brickwork, 0.8m apart spanned by an arched roof formed of a single course of brickwork. The end of the feature had not been blocked with brickwork and extended eastwards. The feature was interpreted as being the roof of a brick-lined shaft grave that had been backfilled.

Feature 109 was abutted to the south by Feature 110. Feature 110 (Fig. 10a) was 1.35m wide, was aligned east-west, and was spanned by an arched brick roof. The western end of the vault was partially sealed by three courses of brickwork butting against it. The brickwork did not extend to the top of the arch, leaving an opening to a rectangular void within extending 0.6m to the east. This was interpreted as being the entrance for a backfilled brick-lined shaft grave. A cut for the vault was visible in section to the south showing the vault to be later than Features 111, 112, 113 and 114 lying to the south.

Four features interpreted as being vaults, Features 111, 112, 113 and 114 (Fig. 10a), were located to the south of Feature 110.

Feature 111 was only partially exposed. It was at least 0.8m wide and 0.7m high from the base of the trench, with stepped brickwork on the southern side. Bore hole 18 was located just to the west of F111, It had revealed a void 1.3m beneath the graveyard surface and approximately 1m from floor to ceiling. A camera was lowered into the bore hole, showing a small brick built chamber with traces of white-wash on the

walls. This vault contained no evidence of human remains. It would seem that the brick structure (F111) visible in the section formed some kind of entrance from the eastern side into the chamber revealed by the bore hole.

Feature 112 was built of brick and measured 1m wide and 0.4m high from the base of the trench. Again the brickwork was stepped, narrowing towards the top. This was interpreted as being the entrance to a brick-lined shaft grave, with the wall visible in section butting against a buried arched roof to the east.

Features 113 and 114 were both brick built and measured 1m wide, 0.5m high from the base of the trench, and were cut through an orange-brown silty sand layer (5120). Also cut through this layer were Features 115 and 116; both were brick built, and F115 again showed the stepped brickwork.

Feature 115 was aligned east-west and was 1.6m wide at the base of the trench narrowing to 0.6m at the top, 0.6m above. The wall visible in section appeared to be the western end wall for a burial vault extending to the east. To the south of this lay Feature 116 which was 1.4m wide and 0.3m high from the base of the trench.

Both were overlain by a hard brown silt-sand (layer 5121) and cut into an orange sand layer (5122) to the south. Layer 5122 was then cut to the south by feature F164, a cut to accommodate F117.

Feature 117 was located under the Barras pedestal monument adjacent to Temple Row West. This feature was 2m wide and 0.9m high from the base of the trench, with an entrance blocked with bricks measuring 0.7m by 0.7m on the eastern side. A possible wall, 1.5m wide and two courses of brickwork high, abutted the vault on its southern side.

Feature 118 (Fig. 10b) was located 4.4m south of F117. It was 2.4m wide at the base of the trench and 0.6m high. Again the brick work was stepped, so that the top of the structure was only 1m in width. This was interpreted as being the western end wall of a burial vault that lay to the east.

Immediately to the south was F119 (Fig 10b). The excavation of the trench revealed an arched brick roof aligned east-west, buried 0.8m beneath the churchyard ground surface. The brick roof of the vault had been truncated on its western end by the widening of Temple Row West during the 19th century. Removal of the remaining eastern roof by machine showed the vault to be 2.5m by 2.5m in area and 1.6m deep from ceiling to floor. The churchyard boundary wall ran north to south over the centre of the vault supported by iron girders leaving the western half under the pavement of Temple Row West. Inspection of the vault showed the interior walls had been white-washed and that the vault had been emptied of any human remains, probably at the time of the road widening. The only artefacts remaining were two large slabs of slate each measuring 1.2m by 0.6m that probably formed part of a coffin stacking system (see Area H1, F124). The feature was backfilled to prevent future subsidence.

Feature 200 was located towards the centre of Area B (Fig. 9). It was a brick-lined shaft grave that was discovered after the stone slab covering the entrance gave way under the weight of plant machinery. The grave was aligned east-west and measured

2m long, 0.9m wide and at least 1.4m deep. The grave had been partly filled with collapsed material from above and appeared to have been subjected to an earlier episode of backfilling which included several broken grave markers. As a result of this the full depth of the shaft was unknown. The feature was completely backfilled after recording had taken place.

The drilling of Bore hole 38, close to Area B1 opposite the top of Temple Street, revealed F120, a brick-lined shaft grave located against the inside face of the churchyard boundary wall (Fig.9). The excavation of a trench behind the wall showed the shaft to be trapezoidal/coffin-shaped in plan. It was aligned east-west and was 2m long and 0.75m wide at the eastern end, widening to approximately 1m across the middle before narrowing again at the western end. The shaft was 2.8m deep and lined with bricks, with an arched brick roof, sealed 0.45m beneath the level of the churchyard.

During the drilling process the auger dropped from the drilling rig causing some disturbance to the interior of the shaft. The remains of several coffins were present at the bottom of the shaft (Plate 2). No human remains were visible. Two vertical rows of holes were left in the brickwork on each side of the shaft, each the size of the butt end of a single brick, corresponding with a hole on the opposite side. This was to allow for a stacking system whereby two wooden joists could be slotted into the wall on each level, on to which a coffin could be rested. Each level of holes was five courses of brickwork apart leaving a gap of 0.4m between levels, enough to accommodate a single coffin. The shaft grave could have accommodated seven coffins over its total depth. The construction cut for the shaft (F165) was visible in plan at the eastern end (Plate 3). Finds of human bone in the fill of the construction cut (5130) demonstrate that the shaft was a later addition to the churchyard, cutting through earlier graves. The cut of the shaft was later truncated by a trench (F166) cut to accommodate the repositioned boundary wall after the widening of Temple Row.

Area B1 (Fig. 9)

Area B1 was a path on the southern side of the Cathedral leading from Temple Row to the west door of St. Philip's.

The existing paving and kerb stones were lifted to reveal a layer of sand which overlay the orange-coloured natural sand. Trenches were then excavated down either side of the path to a maximum depth of 0.4m to accommodate a new kerb line, and a trench was excavated to a depth of 0.4m to lay a drainage pipe.

Burial Vaults

Excavation of the new kerb line along the western side of Area B1 revealed the roof of a burial vault (F196). The machine removed the top course of brick work from the wall at the western end of the vault; this exposed the top of the barrel roof against which the wall butted. As the vault had not been penetrated, no further work was possible apart from noting the location (Fig. 9).

The excavation of the new kerb line also revealed the foundations of brick built pillars evenly spaced at 1.5m intervals along both sides of the path area. The pillars were built of orange-red brick and measured 0.36m by 0.38m. They would have supported the iron fencing that lined the interior paths of the churchyard (see Fig. 6).

Human Remains

The excavation of a pit to accommodate a drain on the western side of Area B1 revealed human remains (Fig. 9; HB1-2). The skeleton of an infant HB2 (5024) was revealed approximately 1.2m beneath the level of the former path in the western side of the pit. The body was aligned east-west and had been buried in grave cut F126, in a wooden coffin with a lead lining that survived as a shadow in the sand. The body had been truncated at the base of the spine by a substantial brick feature (F127), which was possibly part of a vault or one of the surviving fence pillars.

Extension of the pit to the south to enable the excavation of the infant revealed the remains of a young adult (5023; HB1). The body of the adult was aligned east-west and was also buried in a wooden coffin with a lead lining that survived as a shadow in the sand. The grave cut for the burial (F125) cut the infant burial on its southern side. The adult burial was itself truncated from the base of its spine by F129, the construction cut for the brick feature (F127). All human remains were removed for examination.

Area C (Fig. 9)

Area C was a triangular grassed area and path, located on the southern side of the Cathedral.

The area was stripped of grass and topsoil to a depth of 0.2m and the paving was lifted from the path at the extreme north of the area to reveal a layer of sand foundation; no archaeological features were observed.

Burial Vaults

Three pits were then excavated to accommodate the storm drains against the southern wall of the cathedral. The pits measured 1.4m by 1.7m and revealed the roofs of burial vaults 0.7m beneath the level of the former path. The most westerly pit revealed the arched brick roof of a vault (F167). The roof was overlain by a light grey-brown coloured clay-sand material (5094) that had been disturbed by the laying of modern services.

The roofs of two other vaults were present at a similar depths in the other pits that were located further to the east along the southern wall of the Cathedral. Rapid flooding prevented further examination of these features, but the pits did confirm the presence of vaults along the southern wall of the church identical to the vaults discovered against the northern wall during the test pitting in 1999 (Patrick 1999). The roofs of all three vaults were intact and it was not possible to view the interiors.

Two more pits were excavated in the former paved area in the north-eastern corner of area C, both measuring 1.4m by 1.4m and 1.2m deep. The ground in this area was a orange-brown sand (5063) and contained a quantity of disarticulated human bone. The corner of a large buried brick structure was visible in the western section of one of the pits (F123). It was thought probably to be part of a vault associated with the pedestal monuments adjacent to it. The ground in this area had been heavily disturbed, either due to repeated burials or the construction of vaults.

Excavation of a pipe trench parallel with the path along the southern wall of the cathedral revealed a single headstone buried 0.2m beneath the topsoil (Stone 26).

Area C1

Area C1 was a path running from the south-eastern corner of the cathedral to Temple Row. The paving was removed to reveal a layer of foundation sand overlying the natural orange-red sand.

The excavation of trenches along either side of the path exposed the truncated bases of brick pillars, 22 on each side. Each pillar was 0.4m by 0.35m in plan, extending 0.8m beneath ground level and spaced at regular intervals of 1.5m. The pillars date from the mid 19th century and supported the iron railings that once lined the internal paths of the churchyard.

Burial Vaults

The Burial Vault of the Baldwin Family (Figs. 11 and 12; Plate 4)

Repeated use of heavy plant machinery in Area C1 ahead of the laying of the paving resulted in the partial collapse of the roof of a burial vault, Feature 193 (Fig. 9). The vault was located 16m north of the site boundary along the path. Several bricks from what appeared to be the arch of a barrel roof dropped into the void beneath, leaving a hole approximately 0.3m square in the surface of the path. It was possible to view the interior of the vault through the hole and initial inspection showed the vault to be in good condition and containing several lead coffins. The decision was taken to remove the roof of the vault for reasons of access and safety, and to record the archaeological remains before leaving them *in situ* and backfilling the vault so that paving could resume.

Method

The roof of the vault was exposed using a mini-digger to remove the modern stone laid as a foundation for the paving and the sandy soil that covered the arch roof. The soil was removed to the top of the vertical walls and extended somewhat to create a working area. A kango hammer was used to extend the existing hole so that the brickwork dropped onto an unoccupied area of the floor. Then scaffolding planks were placed through the hole to act as a chute to direct the falling material away from the lead coffins beneath. Once the opening was large enough, the vault was entered by means of a ladder. A platform, consisting of boards supported by acrow props, was erected over the coffins to protect them during further demolition of the vault roof.

The Vault

The vault (F193) was a rectangular brick-built chamber with a barrel roof, buried in a large rectangular cut (F194) approximately 0.25m beneath Path C1. The vault measured 2.75m by 2.75m in interior area with the crest of the roof being 2.55m from the floor. The barrel roof was two courses of brickwork thick and spanned from north to south, supported on the 1.5m-high northern and southern walls (Fig. 11).

The original entrance was located at the western end of the vault. It was a rectangular opening in the brick work, 1.45m above the floor and measuring 1.1m in width and 0.85m in height. It was not positioned centrally in the wall, being slightly off centre towards the south. After the last interment the entrance had been blocked up with

coarsely laid brick work (Fig. 11; 5168). Access through this opening to the vault would not have been possible due to the location of an adjacent lamp column.

The floor was entirely covered by unmortared bricks (Fig. 12; 5164) that had been laid face up directly on to the natural sand below. The floor was uneven and sloped towards the vault's eastern wall. The interior walls of the vault had been white-washed and it was evident from the tide marks that were visible that the vault had been flooded in the past up to a metre in depth (Plate 4). The base of the vault was still filled with a shallow depth of water of no more than 0.2m. This appeared to have gathered as a result of ground seepage and a leaking roof.

Examination of the contents of the vault after the removal of the roof showed that four lead coffins were present along with a single articulated burial without a lead coffin (Fig. 12).

Human Burial 22, Identity unknown

Human Burial 22 was located in the northeastern corner of the burial vault. It was placed tightly in the corner and blocked in by a lead coffin to the south. The position suggests that it was one of the first two interments in the vault. The remains had been disturbed by the flooding in the vault.

The skeletal remains were covered by what was left of a small wooden coffin (5169). The flooding of the vault had meant that the coffin had been below the water level for some time and had mostly decayed. All that remained was a thin sheet of waterlogged wood covering the chest area of the skeleton, two small coffin grips and a corroded fragment of a depositum or motif plate.

The skeleton was aligned east-west and was in good condition. The position of the remains suggested that the body was lying on its right side, possibly as a result of the body moving in the coffin as it was tipped at the time of the interment. However, the position of the bones could have been a result of disturbance caused by the flooding. Many bones were either in the wrong position or were missing completely and were not recovered. It is presumed that they had either been washed away and become lodged under the lead coffins or had disintegrated. The body was lying on a mat of waterlogged organic material that was probably the remains of the base of the coffin and material such as sawdust or rye that were often placed in coffins.

There was no clue as to the identity of Human Burial 22 within the vault.

Coffin of James Baldwin (5160)

The remains of James Baldwin were contained in a lead coffin shell aligned east-west and positioned close to the northern wall of the vault. The lead shell was 'fish-tailed' in shape, 0.5m across at its widest, 0.27m across at its narrowest and 1.8m in length. The lead shell measured 0.34m from the base to the lid, and was propped up at the head end by a brick positioned underneath it. The brick underneath was probably required at the time of interment to prevent the sextons trapping any fingers as they manoeuvred this weighty object into position. The shell had been soldered shut and still appeared to be sealed. The lid appeared to have been put in place and then the top edges of the four sides which over-hung were folded down on to the lid and soldered in place. This gave the shell a double-ridged border around its edge. The lid of the

shell and the sides had a lattice pattern inscribed upon them; whether this is deliberate decoration or a by-product of the manufacture of lead sheet is uncertain.

The lead shell would have originally been surrounded by a wooden outer case on to which the coffin grips, grip plates and depositum plate were attached. All that survived of the outer case of the coffin were traces of wood sandwiched between the base of the lead shell and the brick floor. The flooding of the vault meant that the outer case had decayed while immersed in water, leaving the grips and grip plates on the floor in the position where they fell. Six coffin grips with associated plates were found. They were made of brass and were well preserved. They were attached to the outer wooden shell by means of a bolt fed through from the outside with a nut on the interior. Fragments of wood were still attached in some cases, and the distance the nut had been screwed down the thread showed that the outer coffin case would have been 3cm thick.

The depositum plate was a brass shield found lying on the floor of the vault to the west of the lead shell. It had apparently washed off when the vault flooded and rested there when the water subsided. It was inscribed with the name James Baldwin, who died September 27th 1846 at the age of 58 years. It would seem from the way that the coffins were arranged in the vault that James Baldwin was probably the second interment in the vault and post-dated Human Burial 22 to the north.

Coffin of Mary Baldwin (5161)

The remains of Mary Baldwin were contained in a lead coffin shell aligned east-west and positioned towards the centre of the vault. The lead shell was 'fish-tailed' in shape, 0.57m across at its widest, 0.26m across at its narrowest and 1.77m in length. The lead shell measured 0.34m from the base to the lid. It was propped up at the head end by two bricks positioned underneath it, presumably for the same reason that James Baldwin's coffin was similarly propped. The shell had been soldered shut but had a 0.35m opening along the southern edge broken open by masonry falling upon it when the initial hole in the roof collapsed.

This lead shell had the best preserved evidence of an outer case of the four shells in the vault. Like the others the woodwork had almost totally decayed apart from parts of the base, but with Mary Baldwin's coffin a layer of dark cloth had been left overlying the lead shell. It appeared that the wooden outer case was covered in felt or a similar material, with an iron brace fitted over the case to secure the lid. A shield-shaped depositum plate was positioned on the lid over the felt and was inscribed with the name Mary Baldwin, who had died on the 14th October 1858 at the age of 69 years. Six coffin grips with associated plates that had been attached to the outer case were found around the lead shell on the floor in the positions they fell when the outer case disintegrated. They were well preserved, made of brass and styled in a similar way to the depositum plate.

Once the felt that had covered the outer case had been removed it was possible to examine the lead shell. This was constructed and decorated in a similar manner to shell of James Baldwin's coffin. The brass outer case depositum plate was lifted off to reveal a nearly identical lead depositum plate directly underneath bearing, exactly the same inscription.

The date of death and the position of the coffin in the vault suggests that this was probably the latest interment in the vault.

Coffin of John Baldwin (5162)

The remains of John Baldwin were contained in a lead coffin shell aligned east-west and positioned just to the south of the centre of the vault. The lead shell was again 'fish-tailed' in shape and measured, 0.48m across at its widest, 0.25m across at its narrowest and 1.84m in length. The lead shell measured 0.35m from base to lid and was propped up at the head end by a wooden beam aligned north-south, presumably serving the same purpose as the bricks under the other coffins. The shell had been soldered shut and still appeared to be sealed. The construction and decoration of the shell was similar to that of the other coffins.

The wooden outer case had decayed in a similar manner to the coffin of James Baldwin, leaving the six well-preserved brass coffin grips with associated grip on the floor in the position were they fell.

Only a fragment of the depositum plate was recovered. It appeared to be of a shield design and made of brass similar to the others recovered but it was broken so that only part of the inscription was legible, reading 'John Ba'. No date of death or age were found.

Coffin of Elizabeth Helen Baldwin (5163)

The remains of Elizabeth Helen Baldwin were contained in a lead coffin shell aligned east-west and positioned in the southwestern corner of the vault. The 'fish-tailed' shaped shell was 0.42m across at its widest, 0.24m across at its narrowest and 1.85m in length. It measured 0.3m from base to lid and was propped up at the head end by a brick. The shell had been soldered shut and still appeared to be sealed. In all other respects - the construction of the shell, the pattern of decay of the wooden outer case, the disposition of coffin grips on the floor - the coffin paralleled those of James and John Baldwin.

The depositum plate was a brass shield found lying on the floor of the vault to the east of the lead shell. It was inscribed with the name Elizabeth Helen Baldwin who died January 28th 1849 at the age of 21 years. It would seem from the position of the coffin and the inscription that this was the third interment in the vault.

The coffins of the Baldwin family and the bodies within them were left in place in the vault, which was backfilled and re-sealed.

Area D (Fig. 9)

Area D was a triangular-shaped grassed area on the southern side of the cathedral, bounded by Temple Row and Areas C1 and D1.

Burial Vaults

The drilling of Bore hole 43 adjacent to Temple Row hit an obstruction 0.95m beneath the surface of the churchyard. Excavation of the trench behind the churchyard boundary wall revealed a substantial concrete slab measuring 1.75m from east to west and at least 0.8m from north to south. A hole was knocked through the roof and confirmed the feature to be a vault.

Feature 122 was a burial vault built of brick that measured 1.75m east-west and 1.75m north-south. The boundary wall ran from east to west over the centre of the vault, supported by iron girders similar to F119 under Temple Row West in Area B. The northern half of the vault lay within the churchyard while the southern half lay under the pavement of Temple Row. The lowering of the churchyard ground level to accommodate for the widening of the road and the boundary wall had truncated the roof of the vault. The roof had been replaced by the concrete slab, reducing the internal height of the vault to 1.2m.

The interior of the vault had been heavily disturbed. Removal of the roof had also led to the collapse of the vault's eastern wall. A single coffin was visible within the vault, aligned east-west and lying approximately under the line of the boundary wall. The coffin was built of wood with brass fittings and was in good condition. Broken wood lying on the floor of the vault probably represented the remains of other interments or outer coffin cases that had disintegrated. No human remains were visible. A bricked-up entrance to the vault was visible in the northern wall. The vault was resealed after recording had taken place and all artefacts were left *in situ*.

Area D1 (Fig. 9)

Area D1 was a former paved path area leading from Temple Row to the southeast corner of St. Philip's Cathedral. Pits for drains and new kerb lines were excavated but no archaeological remains were present.

Area E (Figs. 9 and 13, Plate 5)

Area E was a triangular-shaped grassed area, including former car-parking spaces, bounded to the east by Area D1, to the west by Area E1 and to the south by Temple Row.

Human Remains

A sub-rectangular trench measuring 4.4m from east to west and 3.4m from north to south was excavated in the area of the former parking bays to accommodate a new pump house. The excavation revealed eight interments lying approximately 1m below the level of the former parking bays.

The area was initially excavated by machine prior to hand excavation of the human remains. During hand cleaning of the area prior to the excavation of the skeletons a single silver medieval coin was recovered.

Human Burial 14

Human Burial 14 (5131) was an adult inhumation aligned east-west in the eastern area of the trench. The skeleton was poorly preserved and many of the smaller bones had totally disintegrated or were represented only as a shadow. The body appeared to have been buried in a wooden coffin (5139), the outline of which was visible as a dark silty shadow in the sandy fill of the grave cut (5140). Some of the bones had a thin layer of lead pressed onto them, suggesting that the coffin had been lead lined. Heavily corroded coffin handles were found on the southern side of the coffin adjacent to the skull, pelvis and feet. The coffin was buried in a grave cut (F171) 1.95m long, 0.8m wide and 1.05 m beneath the surface of the former car parking spaces. The grave cut was coffin shaped, cutting grave cut F172 to the south the natural sand subsoil.

Human Burial 15

Human Burial 15 (5132) was an adult inhumation aligned east-west close to the northern edge of the trench. The skeleton was in a poor state of preservation and only the long bones of the arms and legs and the base of the skull and its mandible survived. The body had been buried in a wooden coffin (5149) approximately rectangular in shape, which was visible as a dark silty shadow amongst the fill of the grave cut (5148). Very thin and brittle pieces of lead were found with the remains of the coffin and pressed onto the bone, suggesting that the coffin was lead lined. Heavily corroded metal coffin handles were also present. Inside the coffin, on the right-hand side of the skull, was found a George III penny dated 1806. The coffin was buried in a grave cut (F174) that measured 1.65m from east to west and at least 0.7m wide. The base of the cut was 1m beneath the level of the former car parking bays. The grave cut an earlier, empty grave cut (F178) to the north and was then cut itself along its southern side by F175 containing Human Burial 16.

Human Burial 16

Human Burial 16 (5133) was an adult inhumation aligned east-west in the centre of the trench. The skeleton was in a good state of preservation with the exception of the skull which was absent due to truncation by later activity. The body had been buried in a wooden coffin (5151). The base of the coffin survived as a layer of black decayed wood under the body; it had a very distinctive 'fish-tail' shape, being very narrow at the eastern end so that the legs of the skeleton were pressed tightly together before broadening out around the pelvis then narrowing again around the shoulders. The whole area of the upper body was found to be covered in thin and brittle pieces of metal suggesting that the coffin was lead lined. Heavily corroded metal coffin handles were also present. Inside the coffin, on the right-hand side of the right femur, a brass button was found. The coffin was buried in a grave cut (F175) measuring 1.65m east-west and at least 0.7m wide. The base of the cut was not level and sloped from east to west so that the shoulders lay 0.12m lower than the feet. The grave cut F174 containing Human Burial 15 to the north and was cut itself along its southern side by F176 containing Human Burial 19.

Human Burial 17

Human burial 17 (5134) was an adult inhumation aligned east-west in the eastern area of the trench. The skeleton was well preserved with the exception of the ribs on the left-hand side which had almost totally disintegrated. The good preservation was probably due to the burial being slightly deeper than those around, which had been disturbed by later burials. The body had been placed in a coffin (5138) and then buried in grave cut F170. The human remains fitted tightly into the coffin so that the arms and shoulders were pressed hard against the sides. The coffin was built of wood, and surviving fragments showed that a thin metal lining was present on the inside. Some of the bones, particularly in the area of the chest and skull, had a thin layer of lead pressed on to them where the lid of the coffin had collapsed on to the body. During the removal of the bones a quantity of fabric was discovered preserved under the skull. This was probably the remains of either a shroud or the interior fabric lining of the coffin. Heavily corroded coffin handles were found on the northern side of the coffin adjacent to the hands and feet. The grave cut (F170) was 2.15m long and a maximum of 0.75m wide. The cut had been truncated above by later disturbance but survived to a depth of 0.25m with vertical sides and a flat base. It was backfilled with

a brown silty sand (5137). The grave was cut through the natural orange subsoil to the south and an medium brown, silty-sand deposit to the north. The north-west corner of the grave also cut the eastern end of F178, the cut for a grave that had already been emptied and contained only fragments of coffin and bone.

Human Burial 18

Human Burial 18 (5135) was an adult inhumation aligned east-west in the western area of the trench. The skeleton was in poor condition; the skull and the lower legs had been lost due to later truncation and the remaining bone was brittle and poorly preserved. The coffin (5145) was of wood, measuring 1.6m long, 0.45m wide and roughly rectangular in shape. Surviving fragments of the wood showed that a thin metal lining was present on the inside. A thin layer of lead was also present pressed on to some of the bones where the lid of the coffin had collapsed on to the body. In some areas the base of the coffin survived under the skeleton as a layer of black, decayed organic material. Coffin handles were found on the southern side of the coffin adjacent to the pelvis and leg. The coffin was buried in an irregular-shaped grave cut (F177), 1.9m long and 0.75m wide. The grave was cut through the natural orange subsoil to the north and a medium brown, silty-sand deposit to the south. Human Burial 16 truncated the grave to the west removing all of the lower legs except the right fibia. Truncation from above had also removed the skull.

Human Burial 19

Human Burial 19 (5136) was an adult inhumation, aligned east-west, close to the southern edge of the trench. The skeleton was largely complete, although the bone was brittle and poorly preserved. The body had been buried in a coffin (5146) and then placed in grave cut F176. The wooden coffin (5146) measured 1.85m long and 0.45m wide. The coffin wood survived under the skeleton as a layer of black, decayed organic material; fragments of the wood showed that a thin metal lining was present. A thin layer of lead was also present pressed on to some of the bones. Coffin handles were found, and the remains of a heavily corroded metal plate lay over lay the chest area. The coffin was buried in a coffin-shaped grave cut (F176), 2.1m long and 0.8m wide. The grave was cut through the natural orange subsoil to the east and the a medium brown, silty-sand deposit to the west. The grave cut Human Burial 16 to the north, and was itself truncated by Human Burial 20 to the south.

Human Burial 20

Human Burial 20 (5141) was an adult inhumation, aligned east-west, at the southern edge of the trench. The skeleton was incomplete, having been truncated by a modern drain at the western end that had removed the skull and shoulders. The bones that remained *in situ* were brittle and poorly preserved. The wooden coffin (5147) was visible in places as a shadow surrounding the skeleton. The area of the skeleton's chest was overlain by the remains of a grey-blue lead plate; coffin handles were also found although heavily corroded. The coffin was buried in a coffin-shaped grave cut (F173) measuring 2m by 0.7m. The grave cut F176 to the north, containing Human Burial 19, and F179, a coffin-shaped cut that was not investigated to the east. The area to the south of the grave comprised orange subsoil.

Human Burial 21

Human burial 21 (5145) was an adult inhumation, aligned east-west, in the eastern area of the trench. The rectangular grave cut (F172) was 0.5m wide and sloped down

from west to east; the uneven base of the cut had resulted in the burial being heavily truncated from above from the base of the spine upwards. The pelvis and the legs that survived were poorly preserved and extremely brittle. The body had been buried in a wooden coffin (5143), the remains of which were visible as a shadow around the bones; the surviving portion measured 1.2m long and 0.25m wide. The narrowness of the coffin meant that the knees of the skeleton were pressed tightly together. Surviving fragments of the wood showed that a thin metal lining was present. No coffin fittings survived apart from some corroded nails. The grave was cut into the orange subsoil, and was cut to the west by F179 and to the north by F171 containing Human Burial 14. Both F172 and F171 cut an uninvestigated brown silty sand deposit (5157).

Area E1

Area E1 was a paved path area leading from Temple Row to the southeast corner of St. Philip's Cathedral between Areas E and F. Pits for drains and new kerb lines were excavated but no archaeological remains were present.

Area F

Area F was a triangular-shaped grassed area in the south-eastern corner of the churchyard, bounded to the south by Temple Row and to the east and west by Areas F1 and E1 respectively.

Memorial Stones

The stripping of topsoil revealed a group of five headstones (Stones 12, 13, 14, 15 and 16), buried approximately 0.2m beneath the surface.

Four large stone slabs were removed from the grass behind the Christchurch Fountain in Area F. Holes had been drilled into the slabs, and semicircular grooves that had been worn into the stone suggested that these slabs once paved the entrance way into the churchyard.

Bore Holes

The drilling rig excavated 9 bore holes behind the Temple Row boundary wall. Human bone was recovered from Bore hole 62 at a depth of between 1m and 2m. Also recovered was a small stone sphere approximately 15mm in diameter, thought to be a gaming marble or similar.

Area F1

Area F1 was a path area leading from the corner of Temple Row and St. Philip's Place to the southeast corner of St. Philip's Cathedral. Pits for drains and new kerb lines were excavated; these revealed the foundations of the brick pillars which had supported the internal railings. No other archaeological remains were present.

Area G (Fig. 9, Plate 6)

Area G was the large grassed area forming the eastern part of the churchyard, bounded to the west by Areas F1, G1 and J, and to the east by St. Philip's Place.

Memorial Stones

The stripping of the topsoil close to St. Philip's Place revealed two memorial stones: Stone 1, an 18th century headstone, and Stone 2, a rectangular block of sandstone.

The latter had a marble panel inserted into one side and probably once formed part of a larger monument.

Vaults

Excavation work in Area G revealed the remains of seven burial vaults.

The first vault (F100) was located adjacent to St. Philip's Place. The stripping of topsoil in this area necessitated the lifting of a sandstone slab 1m square and 0.2m thick. The stone had been heavily abraded and no inscription was visible. The stone slab was a capstone covering the entrance to a narrow brick-built shaft measuring 0.5m north-south and 0.75m east-west. The shaft had been backfilled with a medium brown silty sand (5002) from which a single human rib was recovered. The excavation of the backfill revealed that the shaft opened up into a chamber lying to the west, 0.75m beneath the surface of the graveyard. The shaft was interpreted as being the entrance to a burial; no further excavation was carried out on this vault.

Feature 121 was a shaft vault uncovered towards the centre of Area G during excavation work. The vault was brick built and rectangular in plan, and had been covered by a single, large sandstone slab. The vault was aligned east-west, measuring 2.1m long, 0.7m wide and 1.7m deep. No burials were visible and it appeared that the vault had been emptied some time earlier. The only items in the shaft were the remains of several broken memorial stones, two of which had been painted with numbers. The stones were removed by machine. Further machining showed the vault to have had a simple earth floor on which the brick walls were standing. Excavation below this level produced a quantity of disarticulated human remains whose burial predated the vault's construction.

Feature 134 was brick-lined shaft vault uncovered on the far eastern edge of Area G, adjacent to St. Philip's Place (Plate 6). The vault was rectangular in plan and had been covered by a single sandstone slab. It was aligned east-west, measuring 2.1m long and 0.75m wide. The slab over the vault had collapsed into the shaft on to the single coffin visible. The coffin appeared to have been built of wood with strips of fine lead decoration covering the edges and the central end panel. The coffin was resting on iron joists which spanned the width of the shaft. The joists had been cut into the brickwork of the walls 1.5m down from the top of the shaft. The use of the joists as a stacking system suggested that further coffins were present in the shaft but were not visible from the top. The maximum depth of the shaft that could be measured was 1.84m onto the top of the debris at the bottom. No further excavation took place.

Feature 141 was a chamber vault uncovered on the far edge of Area G, approximately 3m in from the St. Philip's Place boundary. The structure was brick built with an arched roof spanning from north to south. Excavation to expose the roof of the vault showed it to extend 2.4m from east to west and a minimum of 1.4m from north to south. No evidence of an entrance was visible but it was likely to have been a rectangular opening in either the western or eastern walls that could be accessed from above. The style of the vault's construction and its dimensions were very similar to F124 in Area H1. The roof was left intact and it was not possible to view the interior.

Feature 142 was identified in the east of Area G, to the south-east of F141. The structure was a brick built-shaft vault, aligned east-west and located 3m from the St.

Philip's Place boundary of the churchyard. The shaft measured 2.2m long and 0.8m wide and had been backfilled with a mixed sandy material. The vault was not excavated beyond a depth of 0.8m and no human remains were found.

Feature 180 was uncovered close to F121 towards the centre of Area G during excavation work. The vault was brick built and rectangular in plan, and had been covered by a single, large sandstone slab. The vault was aligned east-west, measuring 2m long and 0.64m wide. The collapse of the capstone and the topsoil material that was over it into the vault meant that it was not possible to measure the true depth beyond 1.1m. No burials were visible and it appeared that the vault had been emptied some time in the past. Two vertical rows of holes were left in the brickwork on each side of the vault, each the size of the butt end of a single brick, corresponding with a hole on the opposite side. This was to allow for a stacking system whereby two wooden joists could be slotted into the wall on each level, on to which a coffin could be rested. Each level of holes was five courses of brickwork apart leaving a gap of 0.4m between levels, enough to accommodate a single coffin. Pressure on the brick work of the shaft was causing the walls to bulge inwards.

Feature 192 was a shaft vault located in the south-east corner of Area G close to the St. Philip's Place boundary of the churchyard. The shaft was coffin-shaped in plan, built of brick and aligned east-west. The vault measured 2m long and 0.8m wide across the shoulders of the 'coffin'. The shaft was 1.5m deep from the debris at its base to the arched brick roof that sealed it, 0.35m beneath the surface of the churchyard. The base of the shaft was filled with debris, most of which had come from the collapse of the roof. No human remains were visible although fragments of coffin were present at the northern end of the vault.

Area G1 (Fig. 9, Plate 7)

Area G1 was a path area leading from the corner of Colmore Row and St. Philip's Place to the northeast corner of St. Philip's Cathedral. Pits for drains and new kerb lines were excavated and revealed the brick pillars from the earlier internal railings that had been identified in the other path areas.

A trial trench which was excavated across the path to find the line of a drain pipe produced large quantities of disarticulated human remains. The ground below the path had been heavily disturbed and demonstrated that the area had been used for burial.

Vaults

A chamber vault (F195) was uncovered at the south-western end of Area G1 close to its junction with Area J. The structure was brick built with an arched barrel roof spanning from east to west. Excavation of a new kerb line had created a hole in the upper courses of the brickwork that sealed the vault's original entrance in its southern wall. The hole enabled viewing of the vault's interior but it was not possible to enter the vault and all recording was carried out from above.

The interior of the vault measured approximately 2.5m by 2.5m in area and 2.2m from floor to ceiling. The inside of the vault was white-washed and divided into two areas by a wall aligned from north to south, located 0.7m to the east of the vault's western wall. The wall was built of brick and measured approximately 1.45m in height. It appeared that two burials were present in the eastern area of the vault (Plate 7). The

burials had been bricked in, in a similar fashion to those seen in F124, Area H1. The lower burial had been sealed in by the partition wall to its west and a low wall to the east; a slate slab then appeared to have been laid over the top. The lower wall was built of brick, approximately 0.25m high, aligned north-south, parallel with the partition wall 0.75m to the west.

On top of this was a second burial, which again had been sealed in against the partition wall by a low wall to the east. The low wall consisted of three courses of crude brickwork, approximately 0.25m high, laid onto the slate roof of the lower burial. The upper burial had then been sealed in by laying mortar directly upon the coffin lid. The decay of the coffin wood had caused the mortar roof to collapse revealing the burial inside. It is possible that further burials were present to the west of the partition wall but this area could not be seen from the hole in the wall. The vault was resealed and its contents left *in situ*.

Area H (Fig. 9)

Area H was a triangular shaped grassed area bounded to the north by Colmore Row and to the south-west and south-east by Area H1 and Area G1 respectively.

Excavation of a foundation trench for the churchyard boundary wall uncovered a pit of re-deposited, disarticulated human bone. These remains had probably been placed here after being disturbed by an earlier episode of landscaping work.

Excavation of an electrical service trench along the pavement of Colmore Row, outside the existing churchyard wall, revealed disarticulated human bones.

Area H1 (Figs. 9, 14, 15, 16, Plates 8-20)

Area H1 was a path on the northern side of the churchyard leading from Colmore Row to the east end of the cathedral. Area H1 was bordered to the west by Area I and to the east by Area H.

Memorial Stones

Lifting of the paving slabs at the northern end of the path adjacent to Colmore Row revealed two headstones (Stones 18 and 19) with associated foot stones buried on top of one another.

Vaults

The Burial Vault of the Harrison Family

Excavation at the northern end of Area H1 to accommodate the foundations for the gate pillars revealed the brick-built roof of a burial vault, Feature 124. A hole in the roof had been created during machining allowing the interior of the vault to be viewed. It was apparent that there had been very little disturbance in the vault and that it was almost certain to contain human remains, although the exact nature of the deposits was uncertain.

The position of the vault was directly in line with the proposed new entrance to the churchyard from Colmore Row. The gates were to be hung between four large pillars, one of which was due to be sited directly over the vault. It was decided that the weight of the new pillar would be too great for the brick roof to support and the decision was

taken to remove the roof in order to enable an assessment of the vault's contents, with a view to removing the contents of the vault and backfilling the void.

Method

The roof of the vault was exposed by machine, removing the modern stone paving slabs and a layer of concrete 0.2m thick that overlay the brick work. The northern area of the vault's roof was still overlain by concrete that formed the pavement of Colmore Row, which could not be removed. The roof of the vault was rectangular in plan and measured 2.4m east-west and at least 2.2m north-south. The roof consisted of a flat brickwork surface covering a brick barrel roof spanning from north to south. A layer of sandy silt material was present between the two layers of brickwork to level the curve of the arch. The barrel roof comprised two courses of brickwork resting on the northern and southern walls, and butting against the eastern and western walls.

The roof was removed by hand with two people positioned on scaffolding planks spanning the arch. One person knocked the bricks with a hammer and chisel while another person caught the falling brickwork in a bucket to prevent it damaging the contents of the vault. The roof was demolished in strips across the span to reduce the chances of a collapse (Plate 8).

The removal of the roof confirmed the presence of burials and also showed that the floor upon which they were resting was artificial. The decision was made to empty the vault and backfill the void prior to the construction of the gate pillar. Because of the uncertainty over the soundness of the floor, it was decided on grounds of safety to enter the vault from the side. It was not possible to use the original entrance to the vault. This was a bricked up rectangular opening measuring 1.2m by 1m in the western wall, 1m above the upper floor level (Fig. 14; Plate 9). Access to the vault was eventually gained through the eastern wall. A stepped excavation on the eastern side of the vault, 3m by 3m in area and 3m deep and secured with shoring, enabled the hand demolition of the east wall.

The excavations to the east of the vault exposed three burials. Human Burial 3 was an adult buried 1.6m beneath the churchyard surface in a wooden coffin with a thin metal lining. The burial was heavily disturbed during the machining but the remains were gathered for later examination.

Human Burial 4 was an adult buried 2m beneath the pavement of Colmore Row. It was exposed in section before being covered by the shoring. The burial was recorded by the archaeologists on site but left *in situ* as any excavation would have meant undermining the pavement.

Human Burial 5 (Fig. 15) was a young child buried in a wooden coffin in a two-metre deep cut. The cut of the grave was much larger than was needed for the coffin, which was placed to one side occupying only a quarter of the area. The over-sized cut was probably necessary to enable the sextons gain the required depth.

All three graves were of a later date than the vault as they appeared to have been cut against its eastern wall.

The removal of the eastern wall provided a cross section of the vault and showed that two layers of burials were present. The lowest layer was laid on the brick floor while the second layer was placed on a slate shelf that extended over the whole of the vault's area supported by iron joists secured in the walls.

The Upper Level of Interments, Human Burials 6, 7 and 8

The interments on the upper level were the last to be placed in the vault. Three burials were present lying on the raised slate floor (Plate 10). The internal floor area of the vault was square, measuring 2.45m by 2.45m, and consisted of six slate slabs supported by four iron joists spanning the vault from north to south. The joists were fitted into slots cut into the brick wall, 0.5m above the lower floor level. Vertical grooves cut into the brickwork of the northern wall had allowed the joists to be dropped into place. The slate slabs rested on the joists but were not otherwise attached. The slabs were not of equal size; the four larger slabs measured 1.22m by 1m and covered most of the area but left a gap along the northern wall 2.45m long by 0.45m wide. This was covered by two further slabs measuring 1.22m by 0.45m; lack of even support from the joists underneath left these slabs unstable and liable to tipping.

Human Burial 7, Catherine Harrison

Human Burial 7 was the earliest burial on the upper level and lay against the southern wall of the vault (Fig. 15). The coffin seems originally to have been boxed in by means of a low wall supporting a slate roof. The wall (5035) was aligned east-west, to the north of the coffin and 0.4m from the southern wall of the vault. The wall only survived for a distance of 0.7m west from the eastern wall of the vault but a mortar scar on the slabs showed that it had once ran the full length of the vault. The wall was four courses of brickwork high and had been laid on the slate floor. It was crudely mortared together so that several of the bricks were not bonded at all. The wall appeared to have been truncated when Human Burial 6 was added in 1879. The slate slabs (5034) that formed the roof lay upon three metal joists that were aligned north to south, the southern ends fitted into slots in the vault wall with the northern ends rested on the brick wall. There were two slate slabs, each measuring 1.22m by 0.6m and 25mm thick. Both had been mortared in place around the edges. At some time the slate slabs had collapsed, partially crushing the coffin beneath. The western slab lay almost flat over the coffin while the eastern slab sloped from east to west, propped up by the remaining length of wall.

The slate slabs were lifted to reveal the coffin (5046). It was aligned east to west in the southwestern corner of the vault (Plate 11). The western end of the coffin had been squashed flat by the fallen slab while the eastern end was in better preservation and survived to 0.28m in height. The coffin was 1.75m long, built of wood with the exterior covered in cloth. It had a very distinctive 'fish-tail' shape, being very narrow at the eastern end, about 0.25m, and then broadening to 0.5m across the middle before narrowing to 0.25m at the western end. The lid of the coffin was decorated with three heavily corroded metal plates: a large central depositum plate with two smaller motif plates either side of it to the east and the west. The larger central plate had an inscription stamped in relief, just visible, that read 'The Dead Shall...'. The coffin was covered in fabric which was held in place with 'coffin lace' that decorated the edges of the coffin. Coffin lace was tin-dipped filigree stamped iron; it was a very

delicate trim displaying a floral design, possibly of palms. Six corroded iron coffin handles were present, three on each side.

The interior of the coffin appeared to have been lined with cloth as traces of material were present on the coffin lid and overlying the body. The bottom of the coffin seems to have been filled with an orange-brown coloured organic material which resembled tea leaves. These were thought to be wood shavings/sawdust or bran that was included in the coffin.

A leak in the roof of the vault in the southeast corner over HB 7 was noted from a water mark on the vaults white-washed wall. The water had kept the coffin wood and the 'wood shavings' moist.

The human remains were well preserved, with a quantity of soft tissue on the body as well as parts of the shroud (Plate 12). Adipocere had formed on several areas of the body, notably on the feet, hands, lower leg, hips, elbows, shoulders and jaw. Adipocere is white in colour and about the same consistency of soft cheese. It is formed as a result of the post-mortem chemical conversion of neutral fats by endogenous enzymes and micro-organisms. The skin survived in areas over the skull, where the eye lids were still visible, and also the torso where the skin still covered the rib cage. The legs and arms were almost entirely skeletalised.

Fragments of the shroud survived overlying the body. The shroud seemed to have been made of linen and appeared to have been quite ornate. The garment had sleeves and covered the full length of the body. It was gathered around the waist like a dress and was secured by a band of cloth and tied with a bow. The garment had ruffing around the neck along with what looked like a draw string. Cloth found under the skull suggested that the garment had a hood or that the body was buried wearing a cap. The front of the shroud was decorated by an area of horizontal pleats covering the chest, along with two vertical rows of rosette decorations running from the shoulder to the ankle.

A depositum plate with a name inscribed was later found on the lid of the coffin of Human Burial 6 that lay to the north of Human Burial 7. This identified the individual as Samuel Harrison, whose name was listed on a chest monument that lay to the east of the vault. The monument listed five other names and enabled the identification of most of the individuals present in the vault. The interment preceding Samuel Harrison's in 1879 was that of Catherine Harrison, who died on the 15th June 1870 aged 29 years, and she can be identified as Human Burial 7.

Human Burial 6, Samuel Harrison

Human Burial 6 was the second burial on the upper level of the vault (Plate 13). It lay to the north of Human Burial 7 and had also been sealed in by brickwork. The wall that blocked in Human Burial 7 (5035) had been partially removed to accommodate Human Burial 6 and a new wall had been built 0.8m to the north. This new wall (5039) was aligned east-west and divided the upper floor of the vault into two areas of approximately equal size. The wall was laid directly on to the slate floor and was four courses of brickwork in height, 0.45m. It was crudely built and curved out to the north where it had been built around the coffin that it enclosed.

The coffin that lay to the south of the wall was built entirely of wood and had been crushed by the collapse of the material that had covered it. The slate slabs that had covered Human Burial 7 to the south had been supported by three iron joists. These had spanned the coffin north to south, tied into the wall on the southern side and supported by the earlier brick wall to the north. After the removal of the wall, the joists appeared to have been rested on the top of the coffin of Human Burial 6 (5044). The coffin was covered in mortar. The mortar was laid directly onto the lid of the coffin so that several items of coffin furniture were bonded to the mortar along with several pieces of the wooden coffin lid that had not decayed. At either end of the enclosed area, where it was not possible to lay the mortar directly on to the coffin, stone slabs were used to span the gap between the slate slabs and the wall (5039). The combined weight of the slate slabs and the mortar was too great for the wooden coffin and resulted in the collapse.

Human Burial 6 was unusual in that the coffin and the body that it contained had been deposited with the head of the deceased at the eastern end rather than the western end that is traditional in most Christian burials. The body was contained in a high-shouldered traditionally shaped coffin. The coffin was built entirely of wood; the base was well preserved but the lid and the sides had been damaged by the collapse of the stone and mortar which overlay it. The coffin furniture was made of brass with six brass handles or grips and associated grip plates on the sides, and a breast plate or depositum plate on the lid. The depositum plate was revealed by the removal of the mortar layer. As this had been laid directly onto the lid of the coffin, when the wood decayed the plate was left encased in the mortar. The plate was also of brass and in the shape of a shield. The engraving revealed the coffin to be that of Samuel Harrison, who had died on September 11th 1879, aged 70 years. This positive identification led to the identification of the vault as being that of the Harrison family and confirmed its association with an impressive chest monument that probably had been originally sited over the vault and was later moved five metres to the east. The monument had six individuals listed upon it along with their dates of death and age at the time of death. From this it was possible to put names to the individuals that were present in the vault.

The body was completely skeletalised and no soft tissue survived. The bone in good condition apart from the skull, which had been damaged by the coffin collapse, and some of the ribs on the right-hand side which had disintegrated. Traces of cloth were visible over the chest of the skeleton and probably once formed part of a shroud. Nothing of the coffin lining survived, but like coffin 5046 that contained Human Burial 7, the base of the coffin seemed to have been filled with sawdust on to which the body was lain.

Human Burial 8, Hannah Harrison

Human Burial 8 was the third and final burial on the upper level of the vault (Plates 10 and 14). It was located on the northern side of the brick wall (5039) that divided the upper level into two areas. The coffin had been laid on the slate floor and was sealed with brickwork like the two earlier burials on this level. The coffin was placed in the corner of the northern area with the partition brick wall to the south, the wall of the vault to the east, and with a low wall (5041) surrounding it to the north and west. The low surrounding wall was 0.4m high and constructed of loosely mortared brickwork. The brickwork was three courses high except on the northern side close to

the vault wall, where it was a single course on top of two large limestone blocks. The brickwork was laid tightly around the coffin, closely following its outline. The coffin was then sealed in by means of mortar being laid directly onto the lid of the coffin. Further mortar (5040) was then laid to seal the gap between the new structure and the partition wall (5039). While the mortar was still soft a wreath was laid onto burial and was partially set within it. The wreath consisted of an iron ring with wire wrapped around it; some foliage did survive but was extremely delicate.

The wood of the coffin inside the brick shell had decayed and collapsed leaving the thin crust of mortar forming the lid of the burial. Falling masonry from the creation of the initial hole when the vault was discovered had broken a small opening in the mortar.

Working out from this small hole, the mortar was removed to reveal the coffin (5048) inside. The lid of the coffin had collapsed onto the body and the two sides had fallen in and on top of the lid. The coffin was built of wood without a felt outer covering; it had six well-preserved brass coffin grips with associated grip plates and a brass depositum plate. The depositum plate was inscribed, showing the remains to be those of Hannah Harrison, who had died on February 14th 1890 at the age of 51 years.

The remains of the coffin were removed to reveal the skeleton beneath (Plate 14). The human remains had been completely skeletalised and were in good condition. Two short spirals of wire were found amongst the ribs; the wire appeared to have been wrapped around something with a small diameter and was interpreted as being the remains of a floral tribute that had been included in the coffin.

The Lower Level of Interments, Human Burials 9, 10, 11, 12 and 13

Once burials 6,7 and 8 had been excavated the six slate slabs that made up the floor were removed along with the four iron joists that supported them. This revealed the presence of a further five bodies lying on the lower floor of the vault (Fig. 16; Plate 15). The floor was built of unmortared bricks laid face up. An area of the brick floor was lifted and this showed that the bricks were laid directly onto the undisturbed natural sand below; no further remains were present.

Human Burial 9, Eliza Ann Harrison

Human Burial 9 was the first to be excavated from the lower level and was located in the southern half of the vault (Plate 16). The body was still covered by the remains of its coffin. The coffin (5050) was built of wood and covered with a light brown coloured fabric that was probably felt. The coffin wood had decayed causing it to collapse over the body. The coffin appeared to be 'fish-tail' shaped with three corroded iron grips with associated decorated grip plates on each side. The lid of the coffin was decorated with a shield-shaped depositum plate inscribed with the name of Eliza Ann Harrison, who died in 1853 aged 47 years. In addition to this were two brass motifs at each end of the lid. The one on the western end displayed a pedestal urn with a palm plant, while that at the eastern end was a scene of a woman weeping while leaning on an urn. All three of these plates were in good condition and the brass still displayed evidence of its original sheen.

The remains of the coffin were removed to reveal the skeleton, which was lying on its back with the skull however turned to face the right shoulder. The limbs and skull

were in good condition but the bone in the area of the chest and pelvis was badly preserved and appeared to have been crushed. The body was lying on a mat of organic material that consisted of the decayed base of the coffin and wood shavings, along with roots that had grown through the gaps in the brick floor.

Human Burial 10, Selina Harrison

Human Burial 10 was located in the southeastern corner of the vault (Plate 17). The coffin (5052) had almost totally decayed; traces of wood with a fabric covering were still present along the left-hand side of the body. Also present were six coffin grips with grip plates, the depositum plate and two motifs. All of these were heavily corroded and no name was visible on the depositum plate.

The remains of the coffin was removed to reveal the skeleton of a child which was lying upon its back with the skull straight, the legs brought together at the knees and the arms with the elbows out. The right hand was found to be clutching a water-smoothed pebble. The body was identified from the inscription on the nearby family monument as 9-year-old Selina Harrison, as Human Burial 10 was the only body in the vault which represented a child of that age. Sequentially, Selina Harrison's was also one of the first bodies to be placed in the vault and her's was the second name to be listed on the monument, dying on November 18th 1845. The remains were completely skeletalised and the bone was in good condition. Like Human Burial 9, the body was lying on a mat of organic material that consisted of the decayed base of the coffin and wood shavings along with roots that had grown through the gaps in the brick floor.

Human Burial 11, William Harrison

Human Burial 11 was located in the southwest corner of the vault. The coffin (5054) was small, measuring 1m in length, and was initially assumed to be the absent lid of the coffin of Human Burial 10 (5052). Later examination showed this 'lid' to be a child's coffin (5054) that had been squashed flat sandwiching the delicate skeletal remains inside.

The coffin was 'fish-tailed' in shape and built of wood. The wood had decayed causing the coffin to collapse so that the lid dropped onto the remains inside. Traces of fabric were again present on the outside, suggesting that the coffin was originally covered in felt or a similar material. The fabric appears to have been held in place by 'coffin lace'. Three metal plates were present on top of the lid: a central depositum plate and two motif plates, one at the head end and one at the feet. The plates were badly corroded but the motif plates seemed to show scenes similar to those on the coffin of Eliza Ann Harrison, with classical urns and palms. No name was visible on the depositum plate but the inscription on the family monument suggested that this was William Harrison, who died May 21st 1846 at the age of two years. This was the earliest burial listed on the monument. The most interesting feature of the coffin was discovered when the motif plate at the head end was removed. It was found to have been covering a small clear glass panel that measured 14cm by 14cm through which were visible the crushed remains of the child's skull (Plate 18). It seemed that the coffin of William Harrison was equipped with a window in the lid through which the deceased could be viewed. Two down-sized coffin grips with coffin grip plates were present on each side of the casket.

The coffin lid was removed to reveal the skeletal remains. The bone was in extremely poor condition and survived as tiny fragments forming a shadow on the mat of organic matter comprising the decayed base of the coffin and roots that had grown through the floor. The bone that had survived best was the remains of the skull which had been preserved under the glass panel.

Human Burial 12, Identity unknown

Human Burial 12 was located towards the centre of the vault. The coffin (5056) was built of wood which had decayed and then collapsed. This left the skeletal remains covered by the fabric that had been used to cover the coffin wood. The material covering the coffin was well preserved and similar to that found on the coffins of Human Burials 9 and 13. It was light brown in colour but had almost certainly faded. The fabric was held in position by round-topped upholstery nails rather than the strips of 'coffin lace' found on the later coffins.

The coffin furniture consisted of a central depositum plate with two motif plates at the eastern and western ends and six coffin grips with six grip plates, three on each side. All of the furniture was heavily corroded and no name was visible on the depositum plate. The plate was a central shield which appeared to have a reflective silver-coloured surface beneath the corrosion that was surrounded by a floral border. The motif plates were similar in design to those found on the other coffins. The plate at the foot end displayed a woman weeping whilst leaning against a pedestal urn, and the motif at the head end showed a pedestal urn containing a palm.

Removal of the remains of the coffin revealed the skeleton, which was lying on its back with the skull turned to its right (Plate 19). The condition of the bone was varied, with good preservation of the skull and lower body whilst the ribs and pelvis were decayed. The remains seem to have been affected by root disturbance growing through the floor, particularly in the area of the chest. Again the remains were lying on a mat of material which seemed to consist of the decayed base of the coffin and the wood shavings that had been included in the coffin. Judging from the position of the body, the coffin was not of the 'fish-tail' shape but of the shouldered type still in use today.

There was no clue as to the identity of Human Burial 12 within the vault and no name is listed on the family monument.

Human Burial 13, Identity unknown

Human Burial 13 was located against the northern wall of the vault. The coffin (5058) appeared to be rectangular in shape and was built of wood which had decayed and then collapsed. This left the skeletal remains covered by the fabric which had been used to cover the coffin wood. The material covering the coffin was well preserved and similar to that found on the coffins of Human Burials 9 and 12. It was light brown in colour but had almost certainly have faded. The fabric was held in position by round-topped upholstery nails.

The coffin furniture was almost identical to the furniture of the coffin of Human Burial 12 (5056). It consisted of a central depositum plate with two motif plates at the eastern and western ends and six coffin grips with six grip plates, three on each side. All of the furniture was heavily corroded and like Human Burial 12 no name was

visible on the depositum plate. The plate was a central shield which appeared to have a reflective silver coloured surface beneath the corrosion which was surrounded by a floral border. The motif plates were similar in design to those found on the other coffins.

Removal of the remains of the coffin revealed the skeleton which was lying on its back with the skull turned to its right (Plate 20). The condition of the bone varied immensely, with good preservation of the legs, feet and hands whilst the upper body had totally disintegrated, with only the top of the cranium and some vertebrae remaining. There was no obvious reason for the variation in preservation of Human Burial 13. Once again, the remains were lying on a mat of material which seemed to consist of the decayed base of the coffin and wood shavings.

There was no clue as to the identity of Human Burial 13 within the vault and no name is listed on the family monument.

Discussion of the Remains of the Harrison Family by Megan Brickley

Preservation of the skeletal material was very variable, both within and between skeletons. As far as possible levels of bone preservation were recorded using the system of 'weathering stages' published by Behrensmeyer (1978). In seven of the eight individuals scores ranging from 0 (no weathering of cortical surface) to 5 (cortical surface missing and deep cracking and splitting of bone) were recorded across the skeleton. In the eighth case (HB11), the bone present had almost all disintegrated to a powder. Much of the destruction of the bone appeared to be caused by the formation of crystals within the bone structure, expansion and crystal growth causing cracking and disintegration (Plate 26). Crystal growth and poor preservation of bone tended to occur on bones or parts of bones that would have been at the bottom of coffins, generally below a 'tidemark' on the bone. These factors tend to suggest that poor preservation of bone from the site is associated with contact with coffin fluids. A similar type of crystal growth was found during analysis of skeletal material of the same date from Christ Church Spitalfields, London (Molleson and Cox 1993). Analysis of crystals from Spitalfields demonstrated that most of the minerals present were brushite, but no significance was found in terms of the age/sex of individuals affected or time of year burial took place (*ibid.* 15-16).

The completeness of the skeletons recovered was variable, from being almost complete to very few skeletal elements remaining. Details of completeness are given in Table 1 below.

Completeness	Skeleton Numbers
<25%	HB7, HB11, HB13
25-50%	
50-75%	HB6, HB9, HB10
>75%	HB8, HB12,

Table 1. *Completeness of individuals excavated from the vault.*

The Sample

Eight individuals is too small a sample to allow statistical analysis or in depth comparisons with other sites of this period. However, the sample is sufficiently small to allow most of the data gathered to be presented and broad comparisons drawn with

other sites. The gathering of this data and its retention in an archive will be valuable for any future analysis of skeletal material dating to this period from Birmingham.

Age/Sex Determination

Although the age and sex of some individuals was known from the coffin plates recovered from the vault, analysis of the skeletal material was carried out without reference to this information. The results of these analyses are presented in the table below.

Skeleton no.	Sex Determination	Actual Sex	Age Determination	Actual Age
6	Male	Male	60+	70
7	Female ??	Female	Adult (>22 years)	29
8	Female	Female	50+	51
9	Female	Female	Adult (>25 years)	47
10	Unknown	Female	8-11 years	9
11	Unknown	Male	2-4 years	2
12	Male	Unknown	50+	Unknown
13	Male??	Unknown	60+	Unknown

Table 2. *Age and sex determination derived from skeletal analyses compared to information derived from coffin plates.*

Determination of the age of an individual from visual examination of skeletal and dental material is difficult. The difficulty of determining age at death increases when growth and development of the skeleton has ceased, at approximately 30 years of age, and degenerative changes across the skeleton are used. The determination of age at death was undertaken using the methods set out in 'Standards' (Buikstra and Ubelaker 1994). However, cranial suture closure was omitted, and in addition to the other methods described general 'degenerative' changes across the skeleton were also taken into consideration.

The lack of precision in the age determination of HB7 and HB9 were due to very poor preservation of bone. In the case of HB11 bone preservation was very poor and in this case dental development alone was used to determine the age of the individual.

Prior to the onset of puberty the determination of sex from skeletal and dental remains is difficult, and relies on comparison of measurements derived from the permanent dentition that may be present with a known reference sample. The very small sample from this site meant that it was not possible to determine the sex of the sub-adults from dental measurements.

Stature

In three of the adults excavated stature was calculated from femoral length; the long bones of the other three adults were not sufficiently well preserved to allow this calculation. The formula used for the calculation of stature were the tables for white males and females presented in Trotter and Gleser (1958). There is considerable error involved in the calculation of stature in this way and this is partly reflected in the range of error presented in Table 3 below. The figures presented are almost certainly not the actual height of the individuals when living, but this type of analysis does allow broad comparisons to be made between sites and through time.

Skeleton number	Sex	Stature
6	Male	171.5 +/- 3.27 cm
8	Female	154.38 +/- 3.72 cm
12	Male	170.65 +/- 3.27 cm

Table 3. *Stature estimation.*

The statures obtained for individuals from St. Philip's are broadly in line with those from Christ Church Spitalfields, where mean stature for females was found to be between 154.04 and 158.52 (depending on the bone used), and 167.91 and 170.27 for males (Molleson and Cox 1993, 24). However, more data would be required to explore any real differences or similarities between the groups.

A summary of metric data derived from analysis of this skeletal material is available in Appendix 2, and full data is contained in the site archive at Birmingham University Field Archaeology Unit.

Dental Health

Only five of the individuals excavated had well preserved alveolar bone and dentition. However, overall dental health does not appear to have been good. All individuals assessed had carious lesions and often the entire crown of a tooth had been destroyed. In such cases, holes relating to abscess formation were observed on the alveolar bone. Unlike Christ Church Spitalfields, no evidence of restorative dental work was recorded. Basic data recorded from the dentition is presented in Appendix 2.

Selina Harrison (aged 10) had 16 erupted teeth at the time of her death. None of the teeth present had carious lesions and there was no alveolar resorption or dental calculus present. In the case of the other sub adult, William Harrison aged two, the bone and dentition were too poorly preserved to allow complete recording. However, again there was no evidence on those teeth present of any carious lesions.

Pathology

The detection of pathological change within the skeleton is difficult as conditions have to be relatively long standing for changes to be manifest in bone tissue. Therefore, pathological changes recorded from the skeleton almost certainly do not represent the all the conditions an individual may have suffered from during life. In particular many infectious diseases, which would have been a serious health risk during the time period in which these individuals lived (prior to antibiotics), would not be detectable from the skeleton.

Pathological changes were recorded in four of the individuals excavated. The most common condition detected was osteoarthritis; changes linked to this condition were present in four individuals. Osteoarthritis was only recorded as present when eburnation (polishing of the bone due to loss of cartilage) was present.

Samuel Harrison (aged 70) had changes related to osteoarthritis present on the bones of both his hands and both his feet as well as his left knee. Hannah Harrison (aged 51) and HB12 (male 50+) also has osteoarthritis of the feet. In addition, in both these individuals some of the bones of the spine were affected. Eburnation was recorded in the right knee of HB13 (male?? 60+) and also on the bones of the right hand.

Other pathological changes were also recorded in HB12 and HB13. Osteochondritis dessicans was recorded on the medial condyle of the left femur. This condition is thought to be due to trauma to the joint and is more commonly observed in males than females. The bones of the lower leg were slightly bowed and this may be due to rickets (vitamin D deficiency during childhood). Lack of vitamin D results in poor mineralisation of the bone, which may then bow under the weight of the body. Rickets would have been very common in urban areas during the period that these individuals lived.

Osteomyelitis, a serious infection of the bone, was present around the right knee joint in HB13 (Plate 27). There are a number of causes of such an infection, but completeness and preservation of this individual are not good enough to allow a possible cause to be suggested in this case. However, the joint would have been swollen and painful during life and the presence of a cloaca on the bone indicates that pus may have drained from the infection through an abscess on the leg of this individual.

The Harrison Family: Documentary Research

Research into the background of the Harrison family was carried out at Birmingham Central Library using parish records for St. Philip's, the burials register for St. Philip's, the census of 1851 through to 1891, and other sources including nineteenth-century trade and Post Office directories of Birmingham.

The records consulted showed that Samuel Harrison (HB6) was married to Eliza Ann Harrison (HB11) and that four of the other burials (HB 7,8,9 and 10) were their children.

Samuel Harrison died in Birmingham aged 70 years on the 11th September 1879; he was the second from last burial in the vault, and was laid to rest four days later on the 15th September. His exact date of birth was unknown but would have been circa 1808/1809. An entry in the Baptism Records of St. Martin's Church, Birmingham show that a Samuel Harrison, son of William and Catherine Harrison was baptised there on the 31st July 1809. The later use of the names William and Catherine for two of Samuel and Eliza Ann's children would seem to suggest a family link, and that this child was the same Samuel that was laid to rest at St. Philip's seventy years later. The details of Samuel's early life are unknown but it is likely that he would have been married to Eliza Ann by the time of the birth of their first child in circa 1835.

Eliza Ann Harrison died on the 8th November 1853 aged 47 years and was interred in the family vault one week later on the 15th November. The exact date of Eliza Ann's birth is uncertain but would have been circa 1805/1806, making her at least two years Samuel's senior.

The records also show that Samuel and Eliza Ann Harrison had at least five children, the remains of four of whom were present in the family vault;

Selina Harrison (HB9) was the eldest of the children, born around 1835/1836. She died at the age nine years on the 18th November 1845 and was interred in the family vault four days later on the 23rd November.

Hannah Harrison (HB8) was the second eldest child and was born in Birmingham on the 5th September 1838. She died in Aston, Birmingham, aged 51 years on the 14th February 1890. She was the final interment, deposited in the vault four days later on the 18th February (Plate 28).

Catherine Harrison (HB7) was the third child, who according to the 1861 census of Birmingham was born in Kinver, Staffordshire, on the 26th September 1840. Catherine died on the 15th June 1870 and was interred in the family vault six days later on the 21st June.

The fourth child was called Samuel Harrison and was born on the 7th September 1842. Nothing more is known of Samuel as he was not interred with the others in the family vault.

William Harrison (HB10) was the youngest child and was born around 1843/1844. He died on the 21st May 1846 aged two years and was interred ten days later on the 31st May.

The 1861 census form gives Catherine Harrison's place of birth as being Kinver in Staffordshire. This perhaps suggests that the family were living there at the time of her birth in September 1840, but this is not certain. By 1842 the Harrisons appear to be living in Birmingham. The Baptism Records for St. Philip's show that three of the children; Hannah, Catherine and Samuel junior were baptised together in the church on the 27th December 1842. The record gives the families address as being Legge Street in the parish of St. Mathew, Duddeston. The census of 1841 gives no record of the Harrison family living there, so it could be that this was a very recent move.

The next reference to the family is in the churchyard burial records at St. Philip's. Here they record the dates of the burials of Selina Harrison, aged nine, on the 23rd November 1845 and of the burial of William Harrison aged two years on the 31st May 1846. Both entries in the burial register give Tipton as the place of abode, but no record of the family is present on the 1851 census.

The 1842 baptism register from St. Philip's had listed Samuel Harrison's profession as being a victualler, and by 1851 he had a business at 99 Tenant Street, Birmingham. The business was a public house called the 'Exhibition Vaults' that by the 1860s had been renamed 'The Exhibition Gin Palace'. Evidence of Samuel Harrison's business here comes mostly from Birmingham's Trade and Post Office directories. The first listing of him at this address is in 'White's Birmingham Directory' of 1851. The 1851 census of Birmingham has no mention of the Harrison family living at 99 Tenant Street although a Mary Harrison was working as a barmaid in the pub at this time.

The 1861 census shows that the Harrison family was living at number 100 Tenant Street, adjacent to the business. Eliza Ann, the mother, and two of the children, Selina and William, were dead by 1861 but Hannah and Catherine are listed. Hannah Harrison is listed as unmarried, 22 years old, a publican by profession, born in Birmingham and as being the head of the household. Also at this address was Catherine Harrison, who is listed as unmarried, aged 20 years, of unknown profession, born in Kinver, Staffordshire. A servant called John Davis, unmarried, aged 27 and

from Redditch, Worcestershire is also listed at the address. No mention of Samuel Harrison is made in the census even though he appears to have lived and worked here until circa 1871. This is possibly due to the fact that he was away the night the census was carried out, either by chance or otherwise as it was not uncommon at this time for people to travel to deliberately avoid the census.

The census of 1871 shows that the Harrisons were no longer living in Tenant Street. Catherine would have died in 1870 and Hannah had moved on. Samuel Harrison had remarried by this time and lived with his new wife, Fanny, running a pub called the 'White Swan' at 230 Sherlock Street, Birmingham, along with two domestic servants, Ann Rainsford aged 28 and Richard Bartlett aged 20.

Samuel Harrison died on the 11th September 1879 at The Beeches, Pershore Road, Edgbaston, Birmingham. He left an estate valued at £7000 to Fanny, his widow.

Hannah Harrison died on the 14th February 1890 at 6 Sutton Street, Aston, Birmingham. She was a spinster, and left her personal estate totalling £143. 15s. 6d to Eliza Sophia Poole of 22 George Street, Balsall Heath.

The fate of Samuel Harrison junior is unknown and it would seem that he either outlived his parents and siblings and was not buried in the family vault, or died as an infant prior to the construction of the family vault.

Analysis of the skeletons of the two unknown burials (HB12 and HB13) in the Harrison vault, suggested that they are an elderly man and an elderly person of unknown sex. The position of the two coffins on the lower level of the vault also suggests that they were possibly the first two burials in the vault and certainly pre-date the burial of Eliza Ann Harrison in 1857. It could be that they are Samuel Harrisons parents, William and Catherine Harrison.

Area I

Area I was a triangular area located on the northern side of St. Philip's Cathedral.

Excavation of a service trench along the north wall of the Cathedral, maximum depth 0.5m, revealed small quantities of disarticulated human bone and a large white polythene bag containing two black polythene bags. Within one of these bags were two inscribed copper-alloy plaques (Plates 24 and 25) together with coffin handles and fittings, and within the other bag a small quantity of disarticulated human bone. The plaques commemorate Charles Gore, first Bishop of Birmingham, and George Gardiner, Archdeacon of Aston (died 1925).

The contents of the white polythene bag were presumably deposited during earlier works in the churchyard, probably within the last 15 years.

Both plaques are decorated at the ends with an identical interlocked fleur-de-lis motif and they clearly form a pair. The Gore plaque has four holes for attachment along the top and bottom; the longer Gardner plaque has five holes top and bottom. There is no indication of where, or to what, these plaques were originally mounted.

The first plaque (Plate 24) measures 84cm by 32cm and bears the inscription in relief:

IN·GRATAM·MEMORIAM·LABORVM
ATQVE·EXEMPLI·CAROLI·GORE·S·T·P
PRIMI·EPISCOPI·de·BIRMINGHAM
HANC·TABVLVM·PONENDAM
CVRAVERVNT·CLERVS·ET·CIVES
A·S·MCMXIII

(In grateful memory of the works and example set by Charles Gore, S.T.P., first Bishop of Birmingham, this tablet was erected under the care of the clerics and people, AD 1913.)

The second plaque (Plate 25) measures 90cm by 32cm and bears the inscription in relief:

A·S·M
VEN^{LIS}·GEORGII·LAVRENTII·HARTER·GARDNER·A·M
PER·SEPTEM·ANNOS·ARCHIDIACONI·ASTONENSIS
NATVS·EST·DIE·I·DECEMBRIS·A·S·MDCCCL
OBIIT·DIE·20·SEPTEMBRIS·MCMXXV

(To the venerable George Laurentius Harter Gardner, A.M., for seven years Archdeacon of Aston. Born on the 1st December AD 1850, died 20th September 1925.)

Area II

Area II was a path on the northern side of the churchyard leading from Colmore Row to the west end of the Cathedral. Area II was bordered to the west by Area A and to the east by Area I.

No archaeological observations were made in this area.

Area J

Area J was the large expanse of paving at the eastern end of the church. The paving was lifted in this area and several gullies were excavated. These contained a quantity of disarticulated human bone. No other archaeological remains were recorded.

8.2: Memorial Stones (Plates 21 and 22)

A major aspect of the Cathedral Square project was the restoration of the churchyard's surviving memorials and monuments. In addition to the 124 memorial stones that survived above ground, the stripping of topsoil and turf and the excavation of gullies revealed a further 26 memorial stones that had been buried or turfed over in previous landscaping schemes. In many cases, burial had greatly aided their preservation. Each monument was recorded using written description, drawing and photography.

Stone 1, Feature 102

Rectangular sandstone headstone with semicircular central feature. Headstone broken off 1.05m from the top, 0.8m wide, found buried in Area G adjacent to St. Philip's Place. Memorial to John Wyatt and his wife Marabella who died in November and February 1776 respectively.

Stone 2, Feature 103

Rectangular sandstone block, 0.92m long, 0.32m wide and 0.36m high found buried in Area G adjacent to St. Philip's Place. A single marble panel, 0.03m thick, had been added to the long side. No inscription was present but a rectangular scar on the top of the block suggests that this was probably part of a pedestal monument.

Stone 3, Feature 104

Round-topped, sandstone headstone with slightly curved top, measuring 1.85m tall and 1m wide, found buried in Area A adjacent to Colmore Row. Memorial to Joseph Roberts and his wife Catherine, and also Thomas Rutherford and his wife Mary who died between October 1799 and September 1857. Memorial thought to date to 1809.

Stone 4, Feature 105

Round-topped, sandstone headstone with slightly curved top, measuring 1.94m tall and 0.95m wide, found buried in Area A adjacent to Colmore Row. Memorial to members of the Bellamy family who died between September 1800 and June 1836. The memorial is thought to date to 1820, with the text carved in two round topped text panels. The stone is decorated with a central flower surrounded by vines, deeply carved at the top of the stone. Towards the base of the stone, beneath the text panel, was a band of inscribed palm-leaf decoration that would previously have been displayed just above the ground level when the stone was vertical

Stone 5, Feature 106

Triangular-topped sandstone headstone, 2m tall and 0.85m wide, found buried in Area A adjacent to Colmore Row. Memorial to Mary Morton and her husband Richard Morton, who died December 1828 and May 1838 respectively. Richard Morton is described as a 'Surgeon of this town'.

Stone 6, Feature 107

Flat, sandstone, ledger-style monument, 1.4m tall and 0.6m wide, found buried in Area A adjacent to Colmore Row. Memorial to William Warner, his wife Elizabeth and their children who died between August 1809 and October 1835. The stone dates from 1835, when William Warner was the last interment.

Stone 7, Feature 108

Round topped sandstone headstone, 2.2m tall and 0.95m wide, found buried in Area A adjacent to Colmore Row. Memorial to the same Warner family as above on Stone 6, with the exception of William Warner, the father. Stone dates to 1809 with the text arranged in two pointed top text panels.

Stone 8, Feature 148

Flat-topped sandstone headstone, 0.95m wide but broken off 0.6m from the top, found buried in Area B close to the corner of Temple Row and Temple Row West. Memorial to the family of Samuel and Ann Horton, the first of whom died in May

1817. The stone dates to 1817 but the break in the stone means that the text is incomplete.

Stone 9, Feature 149

Triangular-topped sandstone headstone, 2.2m tall and 1.1m wide, found buried in Area B adjacent to the corner of Temple Row and Temple Row West. The stone is heavily worn and the inscription is illegible but traces of floral decoration are visible at the top.

Stone 10, Feature 150

Sinuuous-topped, red sandstone headstone, split diagonally across its length, surviving 1.1m tall and 0.8m wide, found buried in Area B adjacent to the corner of Temple Row and Temple Row West. Memorial to George Booth and other unknown members of his family. Text arranged into two columns with an engraved rose motif decorating the top of the stone.

Stone 11, Feature 151

Angular fragment of sandstone headstone, measuring approximately 1.35m tall and 0.82m wide, found buried in Area B adjacent to Temple Row West. No names or dates visible, only an inscription referring to the deceased as a 'good wife and sincere friend'.

Stone 12, Feature 152

Sinuuous-topped sandstone headstone, 1.8m tall and 0.85m wide, found buried in Area F adjacent to Temple Row. Memorial to Richard Jefcoate, who died as a child in 1779 aged two years and four months; the inscription continues about a further individual, James, but the text then becomes illegible.

Stone 13, Feature 153

Sinuuous-topped sandstone headstone, found in Area F adjacent to Temple Row. Memorial to Phoebe Price, who died on the 5th of September 1815, aged 75.

Stone 14, Feature 154

Sinuuous-topped sandstone headstone, found buried in Area F adjacent to Temple Row. Memorial, to Rachel Taylor who died 22nd April 1772. Stone is decorated with a floral and trumpet motif at the top.

Stone 15, Feature 155

Flat ledger sandstone monument, measuring 1.85m long and 0.65m wide, found buried in Area F adjacent to Temple Row. Memorial to John and Elizabeth Cooke and their four daughters and two sons, who all died between 10th March 1828 and 6th December 1833.

Stone 16, Feature 156

Flat ledger sandstone monument, measuring 0.85m by 0.45m, found buried in Area F adjacent to Temple Row. Memorial to Charles Hodgkins and dated to 1838.

Stone 17, Feature 157

Flat ledger sandstone monument, found buried in Area F adjacent to Temple Row. Memorial to Thomas and Ann Evans who died in April 1830 and March 1834 respectively.

Stone 18, Feature 130 (Plate 21)

Triangular-topped sandstone headstone, found buried in Area H1 adjacent to Colmore Row. Memorial to the two daughters and son of Thomas and Mary Broadhead, who died between January 1847 and March 1852. The headstone is well-decorated; the main text panel of the stone is divided top to bottom by a intertwined ribbon and floral motif tied in a bow at the top. The triangular pediment area is then divided off with a rope motif running across the top of the stone, within which is a deeply inscribed circular winged cherub with rays of sunlight radiating from it. The text is inscribed on the left-hand column, while the right hand column is empty.

Stone 18 was buried overlying Stone 19. An accompanying footstone was buried nearby.

Stone 19, Feature 131

Rectangular vertical sandstone headstone, with semicircular central feature with concave shoulders, found buried in Area H1 under Stone 18. Memorial to George Taylor and his wife Jane, who died on 1st March 1847 and 5th November 1851 respectively. Carved spiral decoration present.

Stone 20, Feature 158 (Plate 22)

Pedimented sandstone headstone, measuring 1.8m tall and 0.9m wide, found buried in Area B adjacent to Area B1. Memorial to Horatio James Cockings who died in February 1845 and his brother Howard Edgar Cockings who died January 1854, aged five years and four months respectively. The presence of metal pegs in the pediment area probably demonstrates that the monument once had fittings that have since been lost.

Stone 21, Feature 159

Sinuus-topped sandstone headstone, found buried in Area B close to Area B1. Memorial to George Barlow and his parents Elizabeth and Benjamin, dating from 1818.

Stone 22, Feature 160

Flat-topped slate headstone with semicircular central feature, found buried in Area B, close to Area B1. Memorial to Thomas Fetherson and his wife Elisabeth, dated to 1736. Barely visible traces of carved decoration on the semicircular central feature.

Stone 23, Feature 161

Sinuus-topped sandstone headstone with concave shoulders, found buried in Area B adjacent to Path B1. Memorial to Richard Moore, Oglethorpe Wakelin and Alderman Dr Alfred Baratt, who died in 1809, 1857 and 1909 respectively.

Stone 24, Feature 162

Triangular-topped slate headstone with accompanying initialled footstone, found buried in Area B. Memorial to the children of James and Elizabeth Foster, William, who died 19th January 1832 aged two years, and Ann who died 21st May 1846 aged 19 years. The makers mark shows the stone was made by W. Taylor of Weaman Row.

Stone 25, Feature 163

Rounded-topped sandstone headstone, found buried in Area B. Memorial to James Hines, sexton of the parish, and his wife Betty, who died 9th January 1858 and 13th February 1855 respectively.

Stone 26, Feature 168

Sinuus-topped red sandstone headstone, measuring 1.22m by 0.74m, found buried in Area C. Memorial to Ann Hadley, wife of Thomas Hadley, who died December 31st 1762 aged 21.

8.3: Discussion of the memorials

Grave monuments offer extremely valuable evidence for past generations, telling us of attitudes to life and death, the social structure and the beliefs of their communities. It also demonstrates changing fashions in design and the changing techniques of the stone masons. The churchyard monuments offer a unique record of named individuals from the past and the communities to which they belonged. The monuments to these individuals tell us about their hopes and fears, social strategies and ambitions, occupations and personal tragedies. They open up a direct link to a significant proportion of the past population, the ordinary as well as the elite, offering the opportunity to learn about their lives as well as their deaths (Mytum 2000), although children and the poor are often under represented.

St. Philip's Churchyard is thought to have been used as a burial ground from around the time that construction commenced on the church. Only a few monuments from the early part of the 18th century survive today. Some chest tombs were present on the surface, while headstones from this period have been revealed by excavation. In Britain, monuments from the early 18th century and before are rare; this is possibly due to early memorials being built of wood or may simply be because the idea of permanent grave markers had not yet taken hold.

The most common type of surviving early monument is the headstone of either the flat top or Bedstead type. The Bedstead type is so called because its top mirrors forms used in contemporary chairs and bedsteads. Local carpenters and joiners at this time were also often undertakers and coffin makers, prior to the development of undertaking as a separate profession. The bedstead type often comes in pairs, with the larger stone acting as the headstone along with a smaller footstone, although the latter are often lost. Sometimes a horizontal slab links the two vertical slabs, an example of which is present in Area F at St. Philip's. The image of the bed and its association with eternal rest is a prominent feature on these monuments, although the inscriptions do not refer to sleep and sentiment (Mytum 2000). Many of the inscriptions from this period refer directly to the body and its decay, along with themes of corruption and judgement. The Thomas Fetherston memorial from 1736 is the earliest surviving headstone at St. Philip's, demonstrating the rustic bedstead style. The dedication

'Here lieth the Body of' illustrates the preference of the time for themes of mortality. Although decoration and inscriptions changed, the bedstead style of headstone remained popular through the remainder of the 18th century and its influence was still evident in the 19th-century and early 20th century.

The late 17th and early 18th century saw the growth in popularity of Baroque styles of monument. These co-existed with the more rustic forms of monument, such as the Bedstead type, but are not thought to indicate wealth but merely regional preferences. The Baroque style of the architecture of St. Philip's Cathedral sets a precedent for the churchyard and it is not surprising to see Baroque-style tombs. If they do not demonstrate wealth, they probably do demonstrate people displaying their sophistication in accepting new ideas. The best example of a Baroque grave monument at St. Philip's is the Vaughton tomb, a marble chest tomb of 1722 in Area G, illustrated on the 1732 north prospect of the church. The tomb is brick built on the interior with a marble slab on top and moulded marble panels around the exterior. The use of marble and the skill in execution point to this being a particularly high status monument.

The Baroque and Bedstead designs are followed in the 18th century by a revival of neo-classical styles. The revival of Classical styles had grown in architecture throughout the 18th century and gradually appeared in grave monuments. Headstones such as the memorial to Horatio James Cockings, Stone 20 (Plate 22) demonstrates the use of neo-classical architectural devices such as pediments. Urns and columns were also popular, as were elements such as cherubs absorbed from earlier styles. The neo-classical style was long lasting, covering the rest of the churchyard's life as a burial ground.

The later 18th century brought a greater standardisation of design. Masons began specialising in grave monuments, and the growth of popularity for grave markers led to it becoming an industry in its own right. Several of the stones display masons marks with addresses in Birmingham, and with the town's rapid growth in population over this period it became a centre of production.

The 19th century saw a growth in the size of headstones and other monuments, in step with the growth in popularity for the marking of graves now that the idea was fully established. Elaborate monuments were no longer just the domain of the wealthy, resulting in a rush of monuments used to demonstrate status. This led to other styles, such as Egyptian and Romanesque. The Egyptian style was particularly popular as the Victorians shared a fascination with death with the ancient Egyptians. The style is particularly evident at St. Philip's with the Egyptian styling of the Lines family monument adjacent to Temple Row West and the obelisk of the Burnaby memorial.

The cessation of burial at St. Philip's in the 1850s meant that the Gothic revival of the 1860s that is well-represented in many of Britain's large metropolitan cemeteries is limited to a single pointed-topped headstone in Area B.

The monuments offer a great deal of information on attitudes to life and death and how these change through time. The mortality phase was in decline by the 18th century, but although mortality symbols like hourglasses, skulls and scythes are not present at St. Philip's, mortality inscriptions referring to physical decay are present,

the Fetherston headstone (Area B) being the best example. The presence of Baroque styles with their generally optimistic images of cherubs and flowers of remembrance shows a change in attitude, with the emphasis moving to the positive fate of the soul rather than the decaying fate of the body. Inscriptions also change, becoming more personal and affectionate towards the deceased, listing relationships and qualities.

The role of gender in the social structure is also apparent: the male head of the family is often the first name to be listed on the monument regardless of whether he was the first to die. It seems likely that a monument was often only erected with the death of both the wife and husband, so that the male head of the family was celebrated in the design of the monument. The headstone of Mary Morton (Stone 5) is one of many cases where the wife was the first to die and is the first to be listed on the monument, but is listed in specific reference to her husband, in this case Richard, 'a surgeon of this town'. The Warner family stone (Stone 7) is actually replaced by a second stone (Stone 8) so that the father who died last after his wife and children could be listed first.

The inscriptions on the memorials also show the variety of professions that would be expected in a rapidly expanding industrial town of the 18th and 19th centuries. Professionals such as surgeons and lawyers are present, as well as craftsmen like gun-makers and artists. This may not be an accurate cross-section of the community as it is not a representative sample. There is little surviving evidence of the poor, who certainly would have made up a large proportion of the parish. It is obvious reading the inscriptions that death in childhood was a common occurrence in 18th- and 19th-century Birmingham. Children, like the poor, are also often underrepresented by monuments, and it is an unusual aspect of St. Philip's that there are a number of impressive headstones that are dedicated solely to children, albeit almost certainly the children of wealthy parents demonstrating their loss. But this also makes it apparent that sudden death affected the rich and poor alike, and it gives an idea of the widespread disease and unsanitary conditions in which many lived. The ledger slab commemorating the Cooke family (Stone 15), discovered near Temple Row, tells a particularly tragic story where the father John Cooke, his wife Elizabeth, their four daughters and two sons all died over a period of five years and nine months between 10th March 1828 and 6th December 1833. John Cooke, by the time of his death aged 46, had outlived all four of his daughters, losing three of them in a three month period in 1830. Other tragedies are also apparent, notably the deaths of John Heap and William Badger, who were killed during the construction of the Birmingham Town Hall in 1833. They are commemorated by a broken classical fluted column, positioned near Temple Row, reflecting the architecture of the Town Hall and symbolising lives that have been cut short.

9.0 REPORT ON THE ARTICULATED AND DISARTICULATED HUMAN BONE *Megan Brickley*

9.1 Articulated Burials

In total eighteen inhumed individuals were excavated and each was assigned a burial number. A further two individuals were excavated as discrete burials but not given a burial number.

The quality and type of information that can be derived from the examination of inhumed human skeletal material is dependent on the completeness of the skeleton and the level of preservation of the bone. Four categories were used to describe the amount of bone present (<25%, 25-50%, 50-75% and over 75%). Although crude, the data derived from such scores gives an overall impression of the completeness of the skeletal material. Full information on exactly which skeletal elements were present is available in the recording sheets completed for each burial. The level of preservation of the surface of bones excavated was recorded using the weathering stages published by Behrensmeyer (1978). The results of analysis of completeness and preservation are presented in Tables 1 and 2.

< 25%		25-50%		50-75%		> 75%	
Number	%	Number	%	Number	%	Number	%
14	78	1	5.5	1	5.5	2	11

Table 4. *Level of completeness of articulated skeletons.*

Weathering Stage	Number	%
0	1	5.5
1	4	22.2
2	3	17
3	0	0
4	0	0
5	1	5.5
Variable Stages		
1-2	1	5.5
1-5	4	22.2
2-5	1	5.5
3-5	1	5.5
4-5	2	11.1

Table 5. *Levels of preservation in articulated skeletons. 0 = good preservation, 5 = very poor preservation.*

Analysis of completeness and preservation demonstrated that many of the individuals were very partial (some were represented by just a couple of bones). The second factor that emerged was that preservation was very variable across skeletal material and that many individuals were very poorly preserved (0 = good preservation, 5 = bone surface completely destroyed). These two factors will have implications for the amount of detailed information that can be obtained from this skeletal material. A small amount of hair was preserved in an area of metal staining on the skull of one

individual (HB22). Preservation of hair in such circumstances is not unusual in skeletal material of this date.

Demography

Sex determination.

The determination of sex in the adult sample was carried out in accordance with the various criteria published in Buikstra and Ubelaker (1994). The most sexually dimorphic areas of the skeleton are the pelvis and the skull (*ibid.*, 16). Where possible features of both these skeletal areas were documented.

The features of the pelvis that were used in the determination of sex were the greater sciatic notch, the shape and size of the pubis, sub-pubic angle and concavity, the shape of the medial aspect of the pubis and the ventral arc. The presence or absence of the pre-auricular sulcus was also recorded. However, it was not considered that this feature was highly diagnostic. In addition to the features listed above, the size and shape of the sacra were also recorded (Bass 1995, 113-114). All regions of the skull and mandible listed as being sexually dimorphic by Buikstra and Ubelaker (1994, 20) were recorded. These are the nuchal crest, mastoid process, supra-orbital margin, glabella and mental eminence. In all cases, the scoring criteria set out in Buikstra and Ubelaker were followed.

As yet, no reliable method has been published for the determination of sex in sub-adult (below 16 years) human skeletal material. Therefore, no attempt was made during the analysis of the sample to determine the sex of individuals that fall within this age category.

A possible sex was recorded in only half of the adults examined. Of the individuals whose sex could be determined, five were recorded as male (2 were recorded as possibly male) and two female (both were recorded as possibly female).

Age determination

Due to the limitations of the methods used to determine age at death in human skeletal material, particularly adults, individuals were assigned to broad age categories. The age categories employed for sub-adult individuals were those set out in Buikstra and Ubelaker (1994): infant (birth – 3 years), child (3 – 12 years), adolescent (12 - 20 years) and juvenile (where a more precise age category could not be determined). The ageing techniques used to determine age at death in the sub-adult sample were as follows: tooth development (figures in Ubelaker 1989), diaphyseal length (Ubelaker 1989, Sundick 1978), and epiphyseal fusion (Scheuer and Black 2000).

The increased difficulty of ageing adult skeletal material meant that very broad age categories, young adult (20-35 years), middle adult (35-50 years) and old adult (50+ years) were employed. The category 'adult' was used when insufficient information was present to allow an individual to be assigned to one of the categories above.

Age determination was carried out using some of the techniques set out in Buikstra and Ubelaker (1994). These are auricular surface changes (Lovejoy et al. 1985); ossification of the sternal end of the fourth rib (Iscan et al. 1984; 1985); and changes at the pubic symphysis (Brooks and Suchey 1990). Cranial suture closure was not

used, as this technique has been shown to be unreliable. Where possible the skeletal area required for each of the techniques used was examined and scored. However, poor preservation and incomplete skeletal material meant that many individuals could not be assigned to a precise age category. The results of the age determination are presented in Table 3 below.

Infant		Child		Adolescent		Juvenile		YAD		MAD		OAD		Adult	
no.	%	no.	%	no.	%	no.	%	no.	%	no.	%	no.	%	no.	%
1	5.5	3	16.7	0	0	0	0	1	5.5	0	0	0	0	13	72.3

Table 6. *Number and percentage of individuals from each age category. YAD = young adult, MAD = middle adult, OAD = old adult.*

The results show fewer sub-adults than expected, as there would have been high levels of infant mortality during this period. However, many of the articulated skeletons contained intrusive material from other burials and amongst this material were a number of bones from infants and children.

Pathology

Many of the pathological conditions that leave traces on human skeletal material require that the bone surface be well preserved in order that they can be observed and recorded. Very few pathological conditions were observed in the articulated skeletal material from St. Philip's, and this is probably a direct result of levels of completeness and surface preservation. For example no cases of osteoarthritis or periosteal new bone formation, the two commonest conditions recorded in archaeological bone, were present.

The only type of bone pathology recorded was that which was sufficiently robust to still be observable despite poorly preserved bone surfaces. In two cases, very large osteophyte formation was recorded around joint margins. Large osteophytes are more likely to survive in conditions of poor preservation. In two cases fused joints were recorded, both left and right sacro-iliac joints (HB16, adult male) and the joints of one finger in another adult male (HB17). One case of rickets, vitamin D deficiency, was recorded in one of the sub-adult individuals (HB5). Severe bowing was observed in both femora. Rickets, which is linked to poor diet and housing conditions, is known to be widespread from sites of this period (Brickley *et al.* 1999). A couple of teeth with dental caries were recorded, but so few teeth and surrounding bony areas were present that this data will not be reported here. Full information is available in the recording forms completed for each individual.

9.2 Disarticulated Human Remains

During excavations, a quantity of disarticulated human bone was recovered. As with the articulated burials, levels of preservation were not always good so the potential level of information that could be obtained was restricted and thus limited recording was undertaken. Fuller analysis was carried out on skeletal material previously excavated from St. Philip's (Brickley 1999).

The minimum number of adult individuals recovered during excavation was calculated using a variety of bones, but the largest number was obtained from the proximal femur. A minimum of thirteen adults was obtained from this bone. In addition, examination of sub-adult remains revealed that there was at least one

additional infant, two children and one adolescent, giving a total of 17 individuals. However, it is likely that the true number of individuals represented by the human bone excavated is much larger than this.

The proportion of individuals within the different age categories is similar to that obtained from previous analysis of disarticulated material from St. Philip's Cathedral (Brickley 1999), but the number of sub-adults is slightly lower.

Pathology

Pathological conditions are very difficult to interpret in disarticulated human bone material as often the whole skeleton is required for a differential diagnosis to be suggested for any abnormalities seen. In this case, interpretation is particularly difficult as the surface preservation of bone was very poor in many instances.

Rickets was also represented in this sample, with one child's femora recorded as displaying a degree of curvature that is suggestive of rickets. One of the other bones from a child (probably not the same individual) also displayed a possible pathological condition. The internal surface of a frontal bone was covered by extensive periosteal new bone formation. A bony reaction of this nature may be related to a menigeal infection, but without more of the skeleton of this individual it is not possible to be sure.

One case of osteoarthritis was recorded, and this was in the acetabulum of an adult. The joint was enlarged and the sample small, so it was not possible to determine which side the affected joint was from.

One interesting, but non-pathological, case was a 'pipe groove' in the maxillary teeth of an individual. Such grooves are caused by habitual smoking of a clay-stemmed pipe. Abrasive minerals within the pipe stem wear a groove in the teeth. This type of groove has been noted previously in skeletal material of this date (Brickley *et al.* 1999).

Overall, the picture presented by the analysis of both the articulated and disarticulated human bone is of an intensively used urban cemetery. The cases of rickets indicate that diet and housing were probably inadequate, at least for a certain proportion of the individuals buried.

10.0 DISCUSSION

The most notable feature of the churchyard was the number of burial vaults that were uncovered by the groundworks that were not previously known about. The structures discovered fitted broadly into two categories: vaults and brick-lined graves. A vault is defined as a subterranean chamber built of stone or brick capable of housing a minimum of two coffins side by side with an internal floor to ceiling height of not less than 1.74m. Anything narrower that was not capable of housing two coffins side by side was defined as a brick-lined grave, which could be several metres in depth to allow for the stacking of coffins inside (Litten 1991).

The construction of burial vaults in churchyards became popular in the late eighteenth and nineteenth centuries, and this is very evident at St. Philip's. When the church was

built in the early eighteenth century it was equipped with a large crypt under the building. At this time city churches commonly provided places of burial in their crypts at the discretion of the rector and upon the payment of a fee. Due to Birmingham's rapid expansion during this period the provision of burial space for the town's growing elite was under pressure, and before long the crypt of the church was full. This would have led to the construction of the vaults outside the church in the churchyard. The earliest vaults in the churchyard at St. Philip's appear to have been built against the northern and southern walls of the church, but with time these too became full. The vaults in the churchyard were constructed by first excavating a pit and then building the two springer walls to support the roof. Shuttering was then erected inside the vault over which the brick barrel roof was built. Once the roof was completed the shuttering was removed and the two abutting end walls were added leaving an entrance hole. The interior was then white-washed to amplify the natural day light entering through the access hole.

Vaults and brick-lined graves were often constructed in areas that had already been used for earth burials. This was most clearly demonstrated at St. Philip's by Feature 120, a brick-lined grave where a human skull was found in the back fill of the cut for the shaft (Plate 3). The pressure to find new space for burials was demonstrated in the trial trench excavated across path Area G1. This revealed human remains and a high level of ground disturbance to a depth of two metres. This was unexpected as maps of the area had shown the paths through the churchyard had remained broadly the same since the eighteenth century. It would appear that the pressure on space for burials had increased greatly in the nineteenth century and this resulted in the use of the previously unused path areas for the construction of burial vaults, such as those of the Baldwin and Harrison families. Figure 9 demonstrates a concentration of vaults under the path areas of the churchyard and around the periphery of the churchyard. This latter concentration might explain the closure in 1839 of the path around the inner edge of the churchyard known as Bachelor's Walk.

The growth in popularity of grave monuments amongst the lower social orders in the eighteenth century is thought to be responsible for the rise in the popularity of burial vaults (Litten 1991). The construction of family vaults were an expression of social status and those who could not quite afford a vault probably opted for a brick-lined grave. The overcrowding of churchyards at this time would also have resulted in the frequent disturbance of human remains during the cutting of graves. This was seen as an affront to the dignity of the deceased and so the attraction of a permanent resting place was also likely to have been prominent in people's minds. In 1842 the burial register for St. Philip's shows that 632 individuals were buried in the churchyard and this annual total was by no means exceptional.

The excavation prior to the construction of the pump house in Area E demonstrated the high density of the earth burials in St. Philip's churchyard. Several of the burials that were excavated showed evidence of truncation due to the intercutting of graves. It was apparent that this uppermost horizon of burials was the latest layer of surviving graves, and that judging from the hand cleaning of the surfaces other burials were located beneath. The find of the 1808 penny in a grave from this horizon dates the burials to the early nineteenth century and supports the theory that the southern area of the churchyard was closed first as a result of its overcrowding.

If the sample of burials present in Area E is representative of what lies beneath other areas of the churchyard, then we can estimate that thousands of burials remain intact at St. Philip's.

All human remains excavated from St. Philip's had been buried in coffins. The flat-topped shouldered coffin that remains in use today first arrived in the late seventeenth century and was furnished with handles and fittings normally used for domestic furniture. At this time coffins were made by local carpenters and it is not until 1700-1725 that the funeral furnishings trade establishes itself. This particularly took hold in growing urban areas such as Birmingham, where craftsmen woke up to the potential profits of going into undertaking on a full time basis.

The period that St. Philip's churchyard was in use for saw undertaking established as a profession along with the massive growth of the funeral furnishings industry, which by the early nineteenth century had centred itself on Birmingham. The 'Wrightson and Webb' Directory of Birmingham for 1846 lists nine coffin furniture manufacturers and six coffin makers in the town. By 1875 the Post Office Directory of Birmingham lists nine coffin furniture manufacturers along with forty five undertakers in the town.

Four basic types of coffin were recorded at St. Philip's:

- (a) Single-cased, wooden, velvet-covered coffins.
- (b) Single-cased, wooden, velvet-covered, lead-lined coffins.
- (c) Triple-cased coffins.
- (d) Single cased, wooden, French-polished coffins

The single-cased wooden coffin was the standard type used for earth graves but at St. Philip's was also present in the Harrison family vault, F126. These coffins were usually covered in black velvet which was held in place by round topped brass upholstery nails. Fragments of coffins like this were recovered from the test pits excavated in Temple Row in 1999. By the early nineteenth century the use of brass upholstery nails had been superseded by 'coffin lace'; this was not lace at all but tin-dipped filigree-stamped iron sold in rolls and used to decorate the edges of coffins. The best example of this decoration was the coffin of HB7, Catherine Harrison (Plate 12).

The single-cased wooden coffin with lead lining was also predominately found in the earth graves. These were usually velvet covered and almost identical to the type listed above except for the presence of a thin lead lining nailed to the interior faces. This design of coffin was first introduced in the early nineteenth century and the coffins found with the burials in Area E were mostly of this type. Traces of the lead lining was usually found pressed over the bones where the coffin had collapsed over them.

The only treble-cased coffins found at St. Philip's were those found in the Baldwin family vault, F193. This was the traditional type of coffin used for deposition in vaults or crypts, and their use was usually specified by the church authorities to prevent the smell of the decomposing bodies leaking out. The three elements of the treble coffin were the inner quarter-inch-thick elm 'coffin', into which the body was placed, which was then enclosed in a lead 'shell'. The lead shell would usually have been produced by a plumber as few undertakers would have had the resources to fashion such an

item. The shell was constructed by lifting the coffin with the body in it on to a sheet of lead. The sheet of lead was then cut to shape and the sides folded up into position and soldered shut. A lid was then added and soldered into place. Several men would then have been needed to lift the lead shell using webbing and place it in an outer case. The outer case was again usually built of elm and covered with velvet. In the Baldwin vault flooding had caused the outer cases to decay but traces were still present. No multiple-cased coffins were present in the Harrison vault, which is unusual, and it may be that the family's fortunes declined after they had had the vault and monument built (Plate 23). It may also explain why the bodies were bricked in and mortared over to prevent any foul odours in the absence of lead shells.

The single-cased French polished coffins were only present on the upper level of the Harrison vault, containing the remains of Samuel and Hannah Harrison (HB6 and 7). This type of coffin was first introduced in the 1870s and is still widely used today.

Most of the coffin furniture that was recovered was heavily corroded sheet iron that was probably manufactured locally. The only brass coffin furniture that was recovered was found in the burial vault of the Baldwin family and on the French polished coffins of Eliza Ann, Samuel and Hannah Harrison. Tin-dipped, stamped coffin furniture was only identified on the coffins of the two unknown interments in the Harrison vault and in both cases it was in very poor condition.

Although the sample of human remains recovered was small, analysis showed that the population suffered particularly from very poor dental health, osteoarthritis and rickets. The presence of rickets in particular demonstrates the poor living conditions and sanitation that would have existed in eighteenth- and nineteenth-century Birmingham. There was a high level of child mortality and many of those who survived into adulthood still died relatively young. The skeletal pathology thus indicates that the reality of living conditions for many people in Birmingham would have been in marked contrast to the idealised image of the city presented in, for example, Figure 2.

The only evidence of pre-church activity on the site, complementing a single sherd of medieval pottery recovered on an earlier occasion, was a medieval silver coin found in the topsoil during the excavations in Area E.

11.0 CONCLUSION

The watching brief undertaken at St. Philip's demonstrated that the churchyard is an area of high archaeological potential with an equally high degree of preservation. The work that was undertaken represented only a small sample of the churchyard's total area but produced important results on the health and lives of the past population of Birmingham, and the rites of burial that were followed. The results of the work at St. Philip's will be supplemented by forthcoming work on the churchyard of St. Martin's in the Bull Ring that should shed more light on Birmingham's past population and provide a comparative source with other post-medieval urban burial sites in Britain.

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Appendix 1: Brief for archaeological watching brief

BIRMINGHAM CITY COUNCIL
DEPARTMENT OF PLANNING AND ARCHITECTURE
Brief for *archaeological watching brief* during development around St
Philips Cathedral, Birmingham(NGR SP 0700 8720; SMR 01205 and others)
V.16 18.08.1999

1. Summary

Works around Birmingham Cathedral are likely to expose and disturb archaeological deposits. This brief is for an *archaeological watching brief* to observe and record any archaeological features exposed by the works.

2. Site location and description

The site is bounded by Colmore Row, Temple Row/Temple Row West and St Philip's Place. The former burial ground around the cathedral is bounded by a low wall and consists of lawned areas crossed by paths and containing some gravestones and monuments. The graveyard originally extended slightly further to the north, west and south. The boundary of the area for which the archaeological watching brief is required is shown on the accompanying plan as "Contract boundary".

3. Planning background

Landscaping proposals include the following works which may expose and disturb archaeological remains:

- (i) Tree planting within and around the cathedral grounds
- (ii) Construction of a boundary wall
- (iii) Addition of gate piers and pilasters to boundary wall
- (iv) Construction of paths
- (v) A water tank
- (vi) Installation/refurbishment of services
- (vii) Site furniture

4. Existing archaeological information

An archaeological desk-based assessment undertaken in February 1997 in accordance with a brief prepared by Birmingham Cathedral's Archaeological Consultant considered written records, historic maps and illustrations, archaeological records and geotechnical records. It showed that the grounds around the Cathedral were used for burial from the construction of the Cathedral in 1711 until its closure in 1856. It is estimated that up to 80,000 people were buried here. Between about 1840 and 1900 the original boundaries of the burial ground were altered by the widening of the surrounding streets. Works in Temple Row to the south-east of the cathedral in April 1998 revealed intact burials in land formerly part of the burial ground. An archaeological watching brief was carried out in February and March 1999 during test-pitting for proposed tree-planting in Temple Row and Temple Row West, outside the present churchyard but within the former burial ground. This indicated that the

graveyard originally extended 4m-6m under the present pavement and road surface, and that there was a high density of burial with a mixed degree of preservation. Before the construction of the Cathedral its site was open land. The only archaeological evidence for pre-Cathedral activity is a single sherd of medieval pottery.

5. Requirements for archaeological work

The results of the desk-based archaeological assessment have been considered by the Cathedral's Archaeological Consultant and the City Council's Planning Archaeologist. The Cathedral's Fabric Commission has also been consulted.

If the Cathedral's burial ground was likely to contain intact burials with in-situ coffin fittings and accompanying objects and intact vaults, a detailed archaeological investigation might provide important information on the health, lifestyle and life expectancy of part of Birmingham's 18th- and 19th-century population and contemporary burial practices, independent of but complementary to the documentary record. However, it is considered likely that, because of the density of burials and previous landscaping works, most of the burials will now consist of disarticulated bone. There may be some intact burials and surviving burial vaults, but the vaults are likely to have been disturbed. The extent of reworking of the ground through successive burial and landscaping means that any evidence for pre-Cathedral land use will consist of objects rather than intact deposits.

Ground disturbance as part of proposed landscaping is therefore likely to expose the following:

- (i) Disarticulated human bone from disturbed burials;
- (ii) A very few intact burials;
- (iii) Disturbed burial vaults;
- (iv) A very few intact burial vaults;
- (v) Objects formerly part of burials, such as coffin fittings;
- (vi) The footings of the former boundary wall, where the extent of the graveyard has been reduced;
- (vii) Objects relating to land use before the construction of the church and burial ground.

The information provided by these remains is likely to consist of the following:

- (i) Confirmation of the density of burial and the extent of disturbance through intercut graves and previous landscaping;
- (ii) The sex, stature, health, lifestyle and age of death of any individuals surviving as intact burials;
- (iii) The construction details of burial vaults;
- (iv) The type of coffin fittings, which are likely to be products of Birmingham's brassworking industry;
- (v) The construction details of the boundary wall;

(vi) The use of the site before the 18th century.

The information listed above relates not only to the church and burial ground but also to life, death and industry in Birmingham in the 18th and 19th centuries and to the history of land use in this part of Birmingham. It is therefore important that surviving archaeological remains are properly recorded, but because survival is likely to be fragmentary and detailed information is not likely to survive, it is considered that the most appropriate mitigation measure to ensure proper recording of archaeological remains is a watching brief by an archaeologist during ground disturbance.

6. Stages of work

(i) Appropriately skilled and qualified archaeologists are to be on site while all the landscaping works listed in Part 3 above are being undertaken.

(ii) All groundworks are to be observed and archaeological features and deposits are to be recorded by written description, drawing and photography.

(iii) Except for (v) below, no excavation is to be undertaken by the archaeologist beyond cleaning exposed deposits for better definition.

(iv) Disarticulated bone is to be retrieved and retained for reburial which will be arranged by the Cathedral authorities.

(v) If any intact burials are encountered, then the area in which they are exposed is to be enlarged to enable manual excavation of the entire burial by the archaeologist and in-situ specialist examination. Following recording, the bones are to be removed and retained for reburial which will be arranged by the Cathedral authorities.

English Heritage have advised that "intact" for the purposes of this brief is an essentially complete skeleton to which can be assigned either immediately or with reference to burial records, a name and date.

(vi) Disturbed or intact burial vaults are to be recorded and disarticulated bone or intact burials dealt with as in (iv) and (v) above.

(vii) Objects formerly part of burials, such as coffin fittings and personal effects, and objects relating to pre-Cathedral land use are to be retrieved as they are revealed during construction operations or cleaning. All finds are to be cleaned, marked and bagged at the end of the watching brief, and any remedial conservation work undertaken.

(viii) Fragments of memorials exposed during groundworks are to be recorded as they are exposed. Fragments not meriting retention will be reburied.

(ix) A report is to be produced on the results of the archaeological watching brief, as described in Part 11 below. An assessment of the potential of the results for further analysis is to be undertaken and a programme of post-fieldwork analysis is to be agreed with the City Council's Planning Archaeologist and the Cathedral's Archaeological Consultant.

The programme of works for the landscaping scheme as a whole is attached. It is envisaged that works requiring archaeological observation will occupy 100

working days within the main contract works period. Works will be taking place at various locations within the contract boundary and on occasions archaeological observation will be required at more than one location at one time.

The archaeological contractor will also be required to attend a pre-start meeting.

7. Staffing and Codes of Practice

The archaeological watching brief is to be carried out in accordance with the Code of Conduct, Standards, Guidelines and practices of the Institute of Field Archaeologists, and all staff are to be suitably qualified and experienced for their roles in the project. It is recommended that the project be under the direct supervision of a Member or Associate Member of the Institute of Field Archaeologists. Arrangements should be made for the attendance of a human bone specialist when required.

All work on site is to be undertaken in accordance with Home Office and Cathedral guidelines for work in closed burial grounds.

The following code of practice will apply to human remains:

- (i) All human remains will be treated with full respect at all times;
- (ii) Where burials are under excavation they will be screened from public view;
- (iii) All human remains will be reinterred as appropriate by the cathedral authorities, following the completion of archaeological recording and scientific analysis, which shall not be unduly delayed;
- (iv) Excavated burials that could be associated with a memorial identifying the individual will be reinterred in association with that memorial.

8. Project proposal

The archaeological watching brief must be undertaken in accordance with the project management framework advocated in English Heritage's *Management of Archaeological Projects* (MAP2). Potential archaeological contractors should submit a written scheme of investigation and quotation for the works listed in part 6 above, with details of methods and staffing, to the Project Coordinating Consultant, who will be advised by the City Council's Planning Archaeologist.

The written scheme of investigation will be used in the evaluation of tenders for the project. The written scheme of investigation must also be submitted to the Cathedrals Fabric Commission before work commences.

Manual excavation of intact burials, as described in 6(v) above, in-situ specialist examination as described in 6(v) above, and recording of vaults, as described in 6(vi) above, will be classed as additional services and remuneration will be on a time charge basis. A schedule of costs for post-fieldwork analysis will follow an assessment of the potential of the results and agreement of a programme of post-fieldwork analysis with the City Council's Planning Archaeologist and the

Cathedral's Archaeological Consultant, as described in 6(ix) above. Post-fieldwork analysis beyond that required to produce the report described in part 11 will be classed as additional services and remuneration will be on a time charge basis.

9. Monitoring

The archaeological watching brief must be carried out to the satisfaction of the Director of Planning and Architecture, Birmingham City Council, and the Provost and Council of Birmingham Cathedral. It will be monitored on their joint behalf by the Planning Archaeologist of Birmingham City Council, who will consult with the Cathedral Archaeological Consultant.

10. Liaison and Site Instructions

The archaeological contractor must liaise with the Project Coordinating Consultant, Works Contract Administrator, other design team members and Client Representatives, to ensure that a proper and workable schedule is maintained. The archaeological contractor shall be empowered to instruct the Works Contractor to temporarily cease works on any particular part of the site to enable archaeological recording, or to transfer operations to another part of the site if the stoppage is likely to be greater than one hour. The archaeological contractor will be required to record details of all stoppages of greater than 15 minutes duration and submit the details to the Contract Administrator on a weekly basis. The Works Contractor must make any particular part of the site safe for archaeological recording to take place, on instruction from the archaeological contractor. Any instructions to the Works Contractor on site other than those described in this paragraph can only be given through and by the Works Contract Administrator.

11. Reporting

The results of the watching brief are to be presented as an analytical written report, containing appropriate illustrations and a summary of finds, and an assessment of the potential of the results for further analysis, as described in 6(ix) above. The report is to be completed within six weeks of completion of the watching brief. 20 copies of the report must be sent to the Project Coordinating Consultant for client distribution and copies must be sent to the City Council's Planning Archaeologist, the Cathedral's Archaeological Consultant, and City Council Archives.

12. Archive and finds deposition

The written, drawn and photographic records of the watching brief must be deposited with an appropriate repository within six months of completion of post-fieldwork analysis, following consultation with the Planning Archaeologist and the Cathedral's Archaeological Consultant. Human remains will be reinterred by the Cathedral authorities, as described in 6(iv), 6(v), 6(vi) and 7, above. All finds recovered during the watching brief will be the property of the Provost and

Council of Birmingham Cathedral. Advice on an appropriate repository will be given by the Planning Archaeologist and the Cathedral's Archaeological Consultant.

13.Publication

The written report will become publicly accessible, as part of the Birmingham Sites and Monuments Record, within six months of completion. The contractor must submit a short summary report for inclusion in *West Midlands Archaeology* and any other appropriate journal.

**DIRECTOR OF PLANNING AND ARCHITECTURE
BIRMINGHAM CITY COUNCIL**

Date prepared: 24 February 1998. Revised: 18 August 1999.

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Broad Street

Birmingham B1 2NA

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Appendix 2: Data relating to analysis of human remains from the Harrison family vault

Skeleton no.	Cranial Index	Platymeria left	Platymeria right	Platycnemia Left	Platycnemia right
6	-	89.7	93.99	77.74	71.35
7	-	-	-	-	-
8	76.67	85.34	86.66	73.72	79.04
9	-	-	-	-	-
10	-	-	-	-	-
11	-	-	-	-	-
12	68.39	86.2	81.3	65.01	67.4
13	-	-	-	-	-

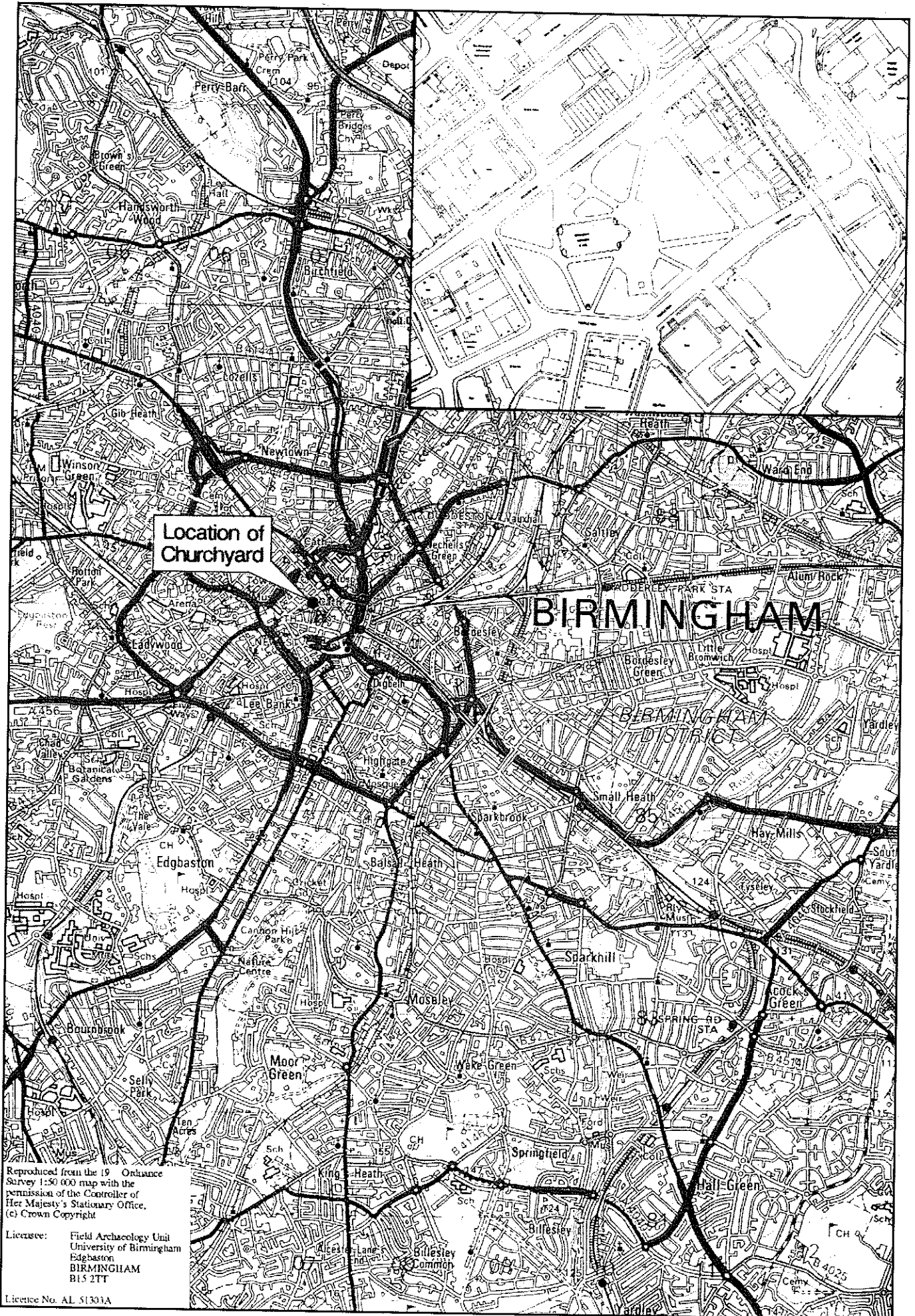
Table 1. *Metric data*

Skeleton no. Age/Sex	Post mortem loss	Ante mortem loss	Carious teeth	Alveolar resorption	Dental calculus
6 (male 70)	14	8	3	-	-
8 (female 51)	0	8	2	Medium	Medium
9 (female) 47	1	4	3	Medium	Slight
12 (male) 50+	0	5	2	Medium	Medium

Table 2. *Dental pathology. - = too fragmentary to record. Alveolar resorption and dental calculus recorded following the system in Brothwell 1994.*

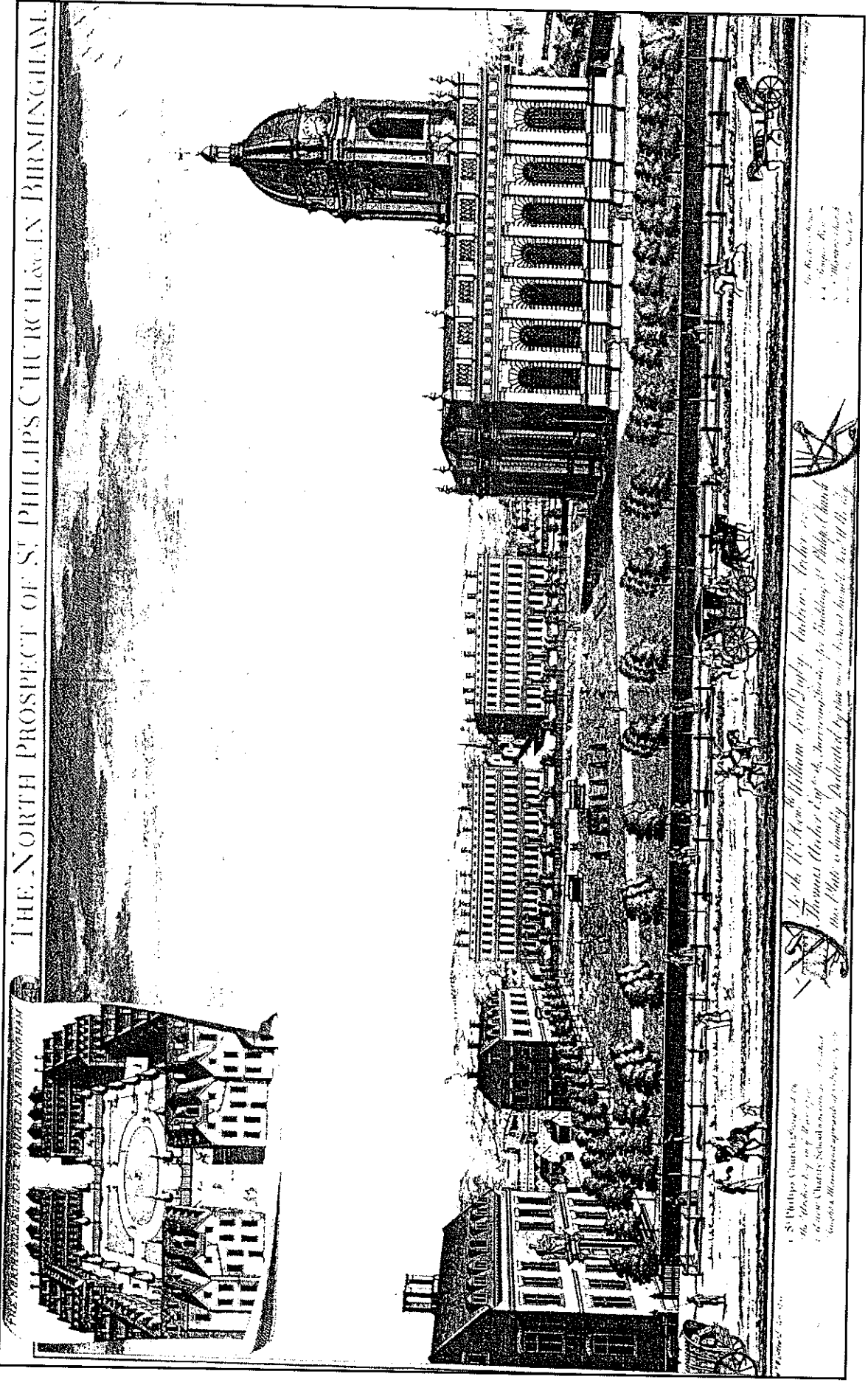
Skeletal area	Left	Right
Hand	1 out of 3	2 out of 4
Foot	3 out of 4	3 out of 6
Knee	1 out of 5	1 out of 5
Spine	2 out of 3	

Table 3. *Prevalence of different skeletal regions affected by osteoarthritis.*

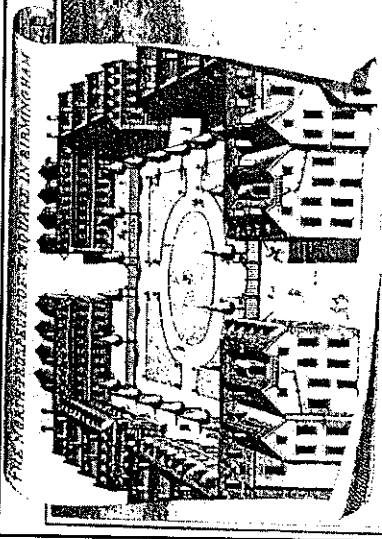


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 Edgbaston
 BIRMINGHAM
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Fig.1



THE NORTH PROSPECT OF ST. PHILIP'S CHURCH & IN BIRMINGHAM



THE NORTH PROSPECT OF ST. PHILIP'S CHURCH & IN BIRMINGHAM

By the Rev. Wm. W. ...
 Thomas ...
 ...

To the Rev. Wm. W. ...
 Thomas ...
 ...

St. Philip's Church, ...
 the ...
 ...

Fig. 2

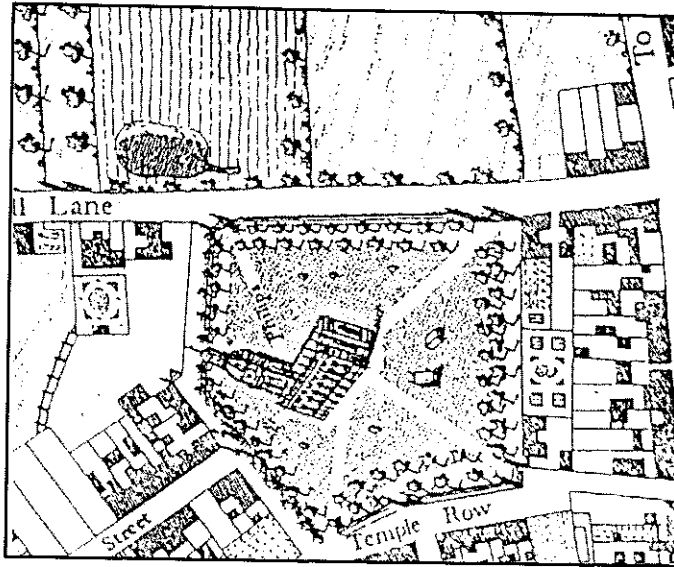


Fig.3 (1731)

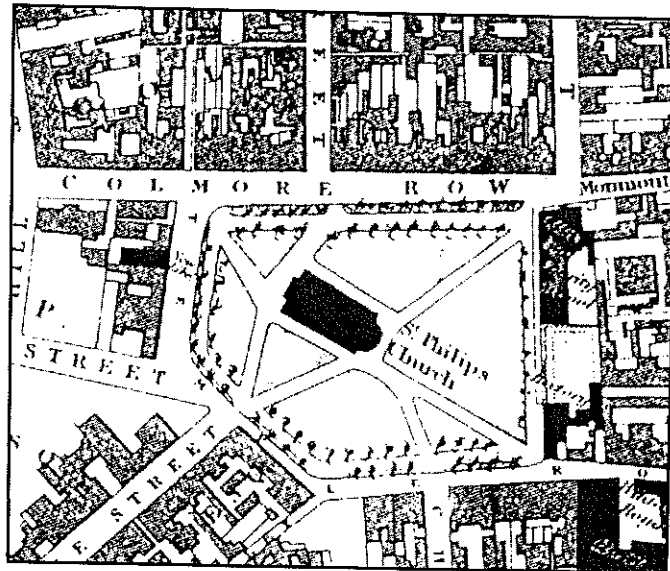


Fig.4 (1824-25)

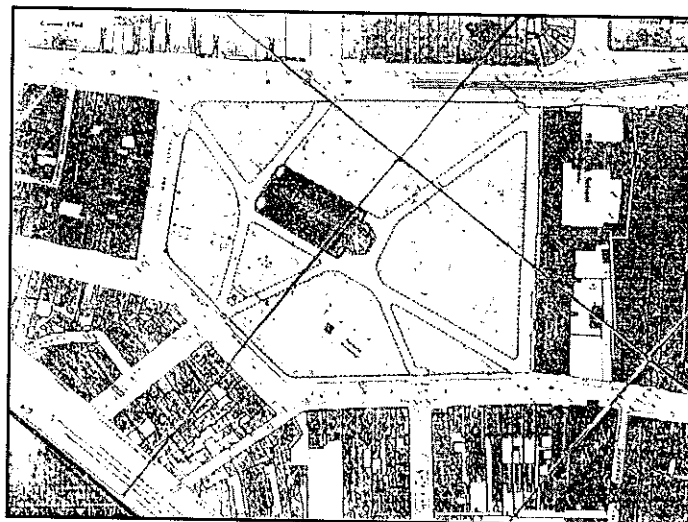


Fig.5 (1889)

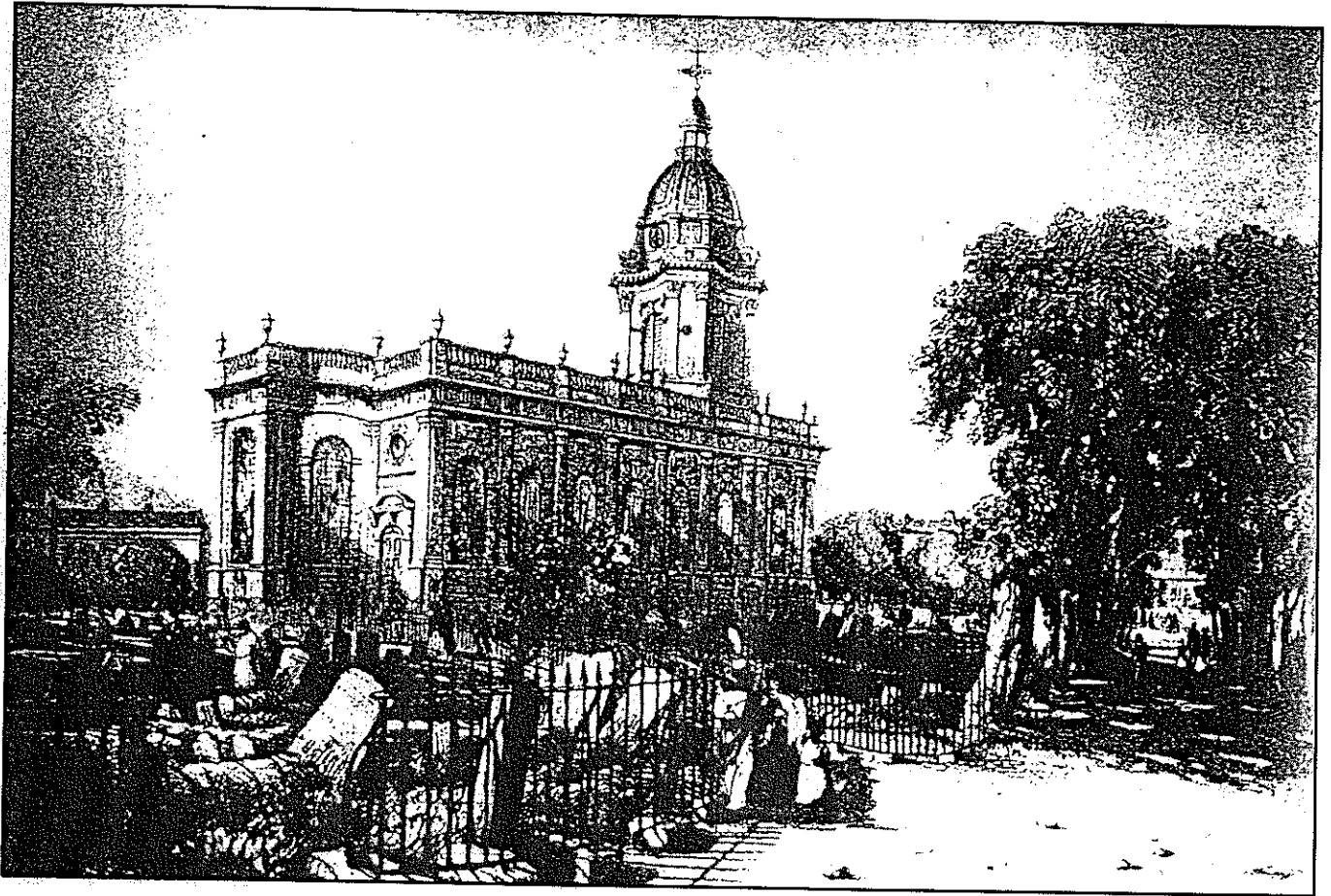


Fig.6

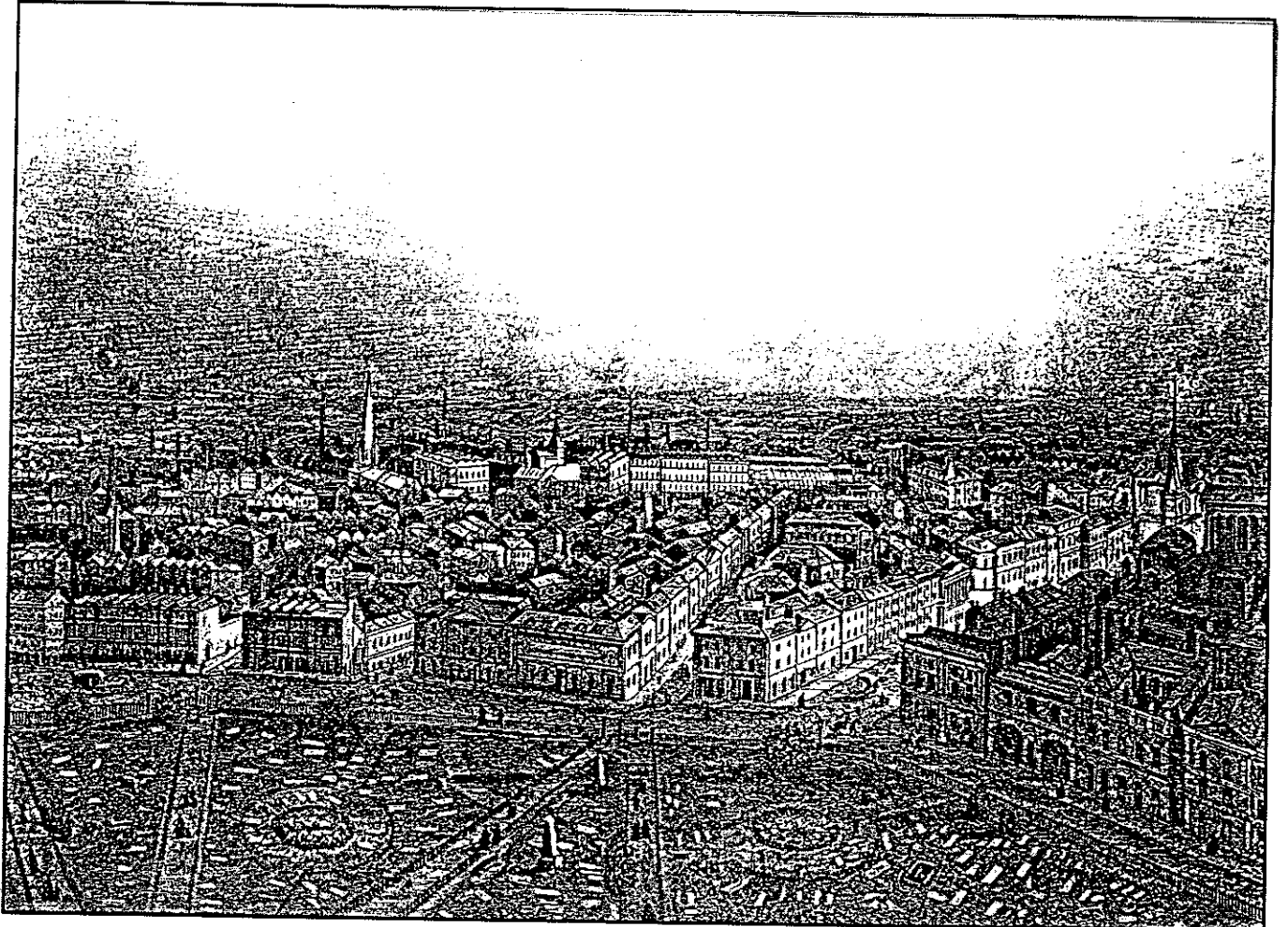


Fig.7

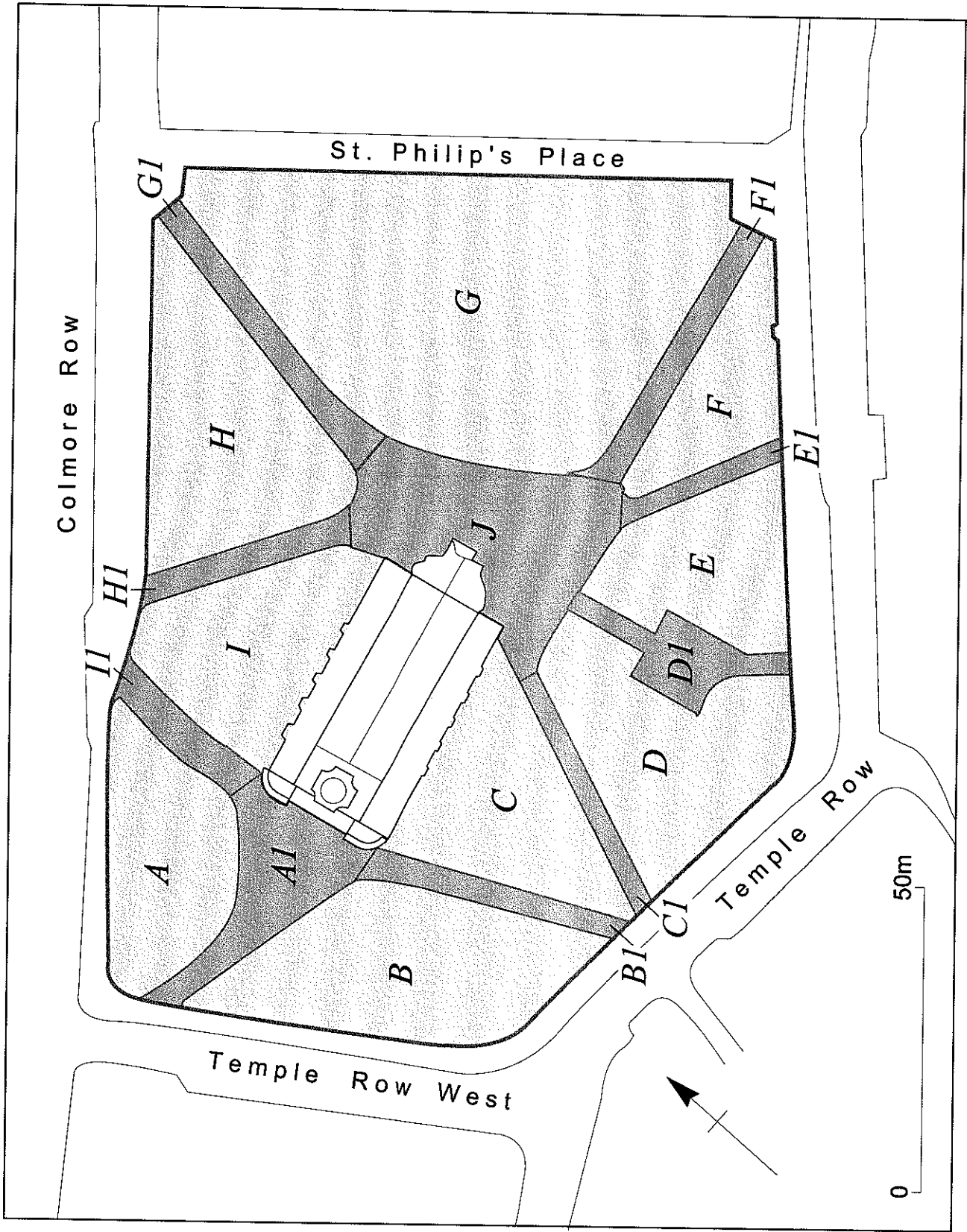


Fig.8

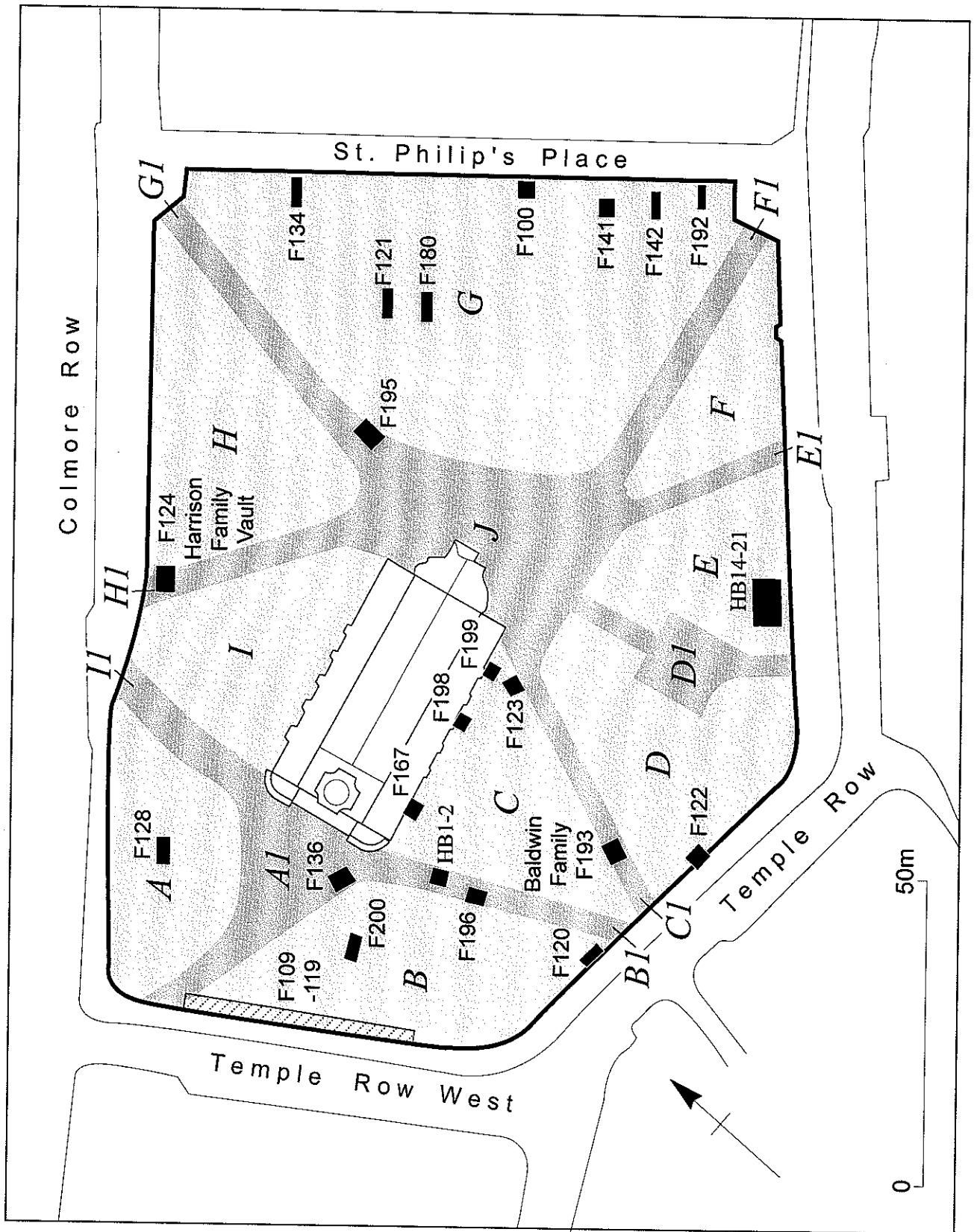


Fig.9

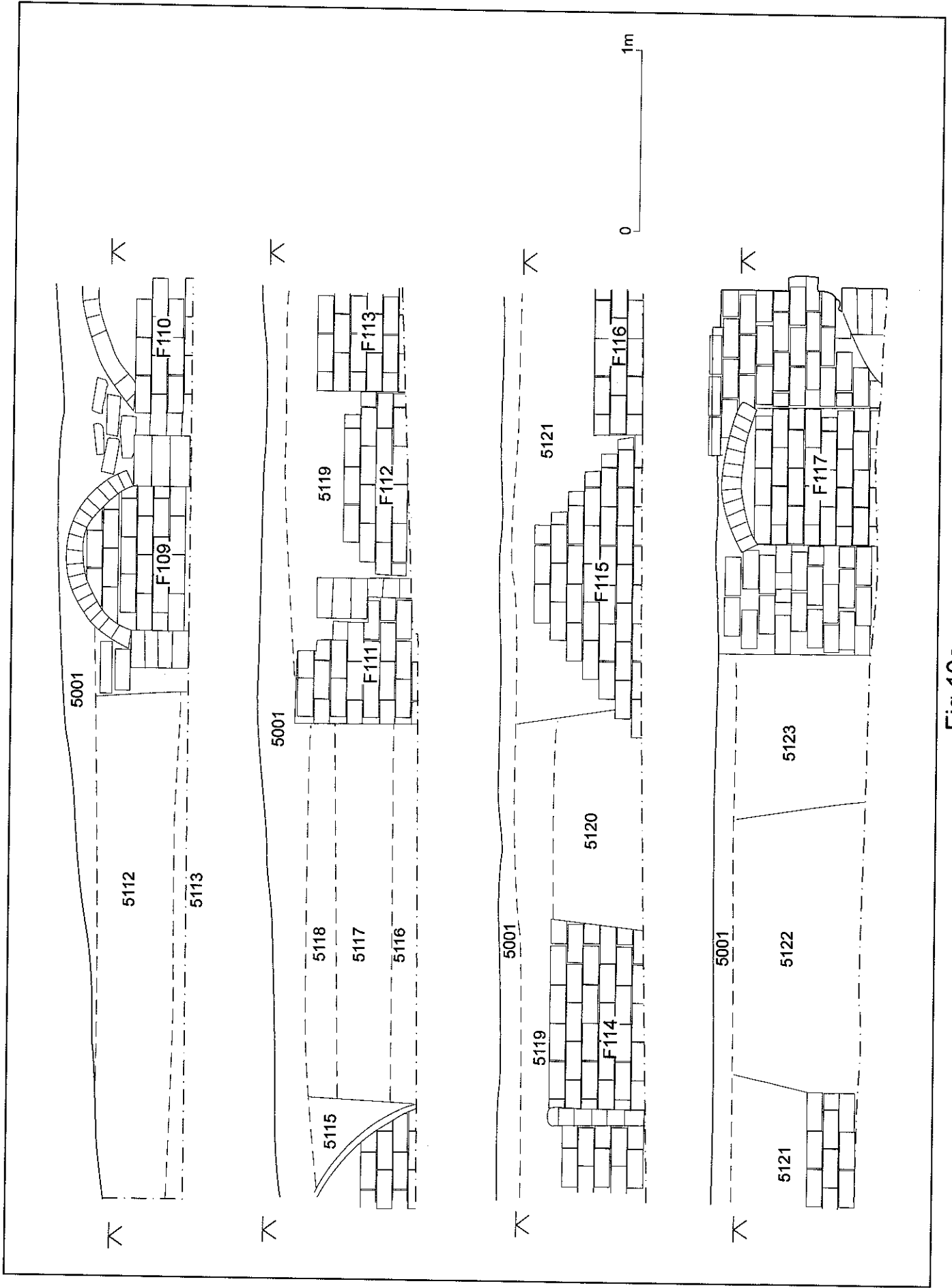


Fig. 10a

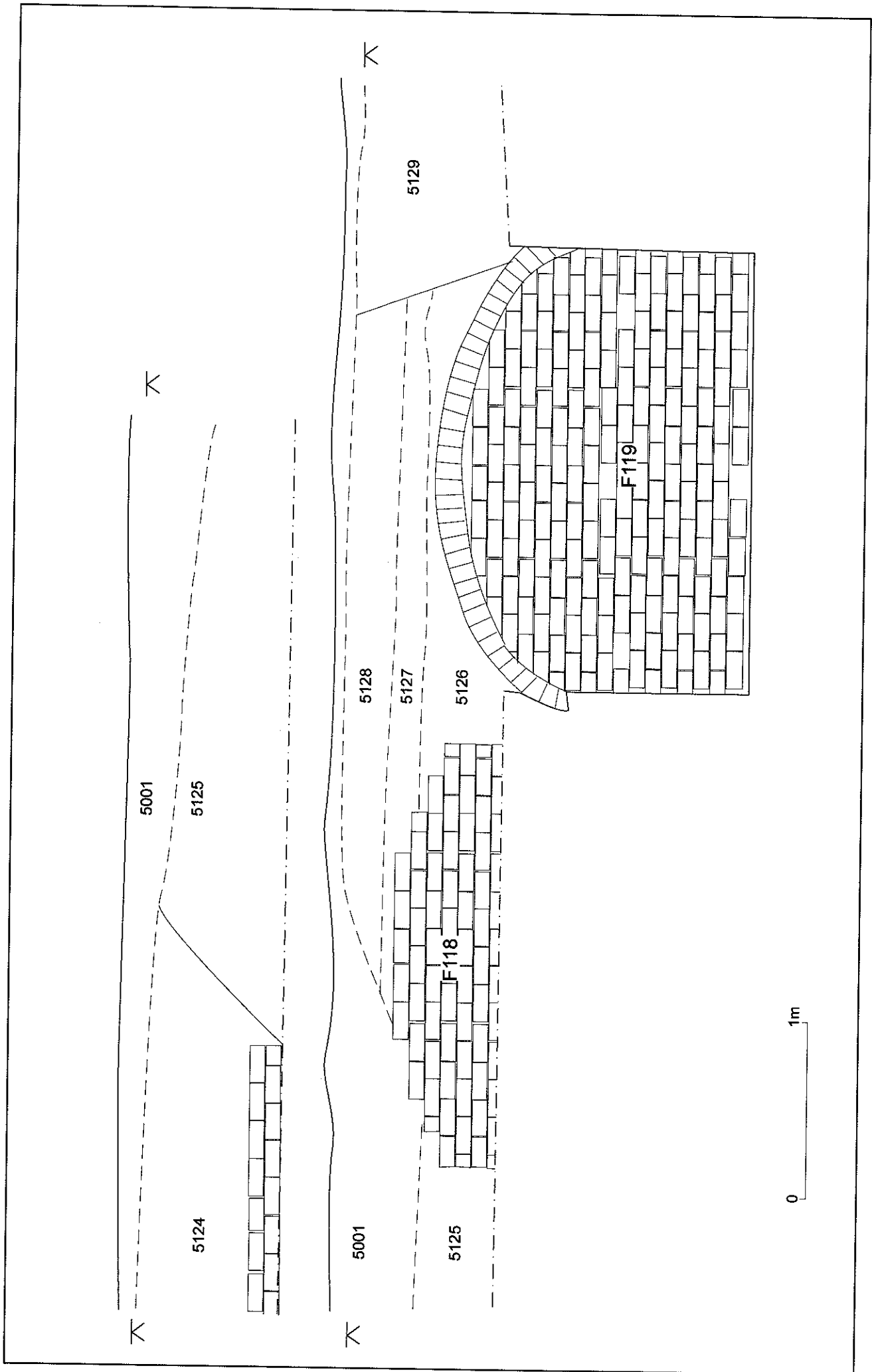


Fig.10b

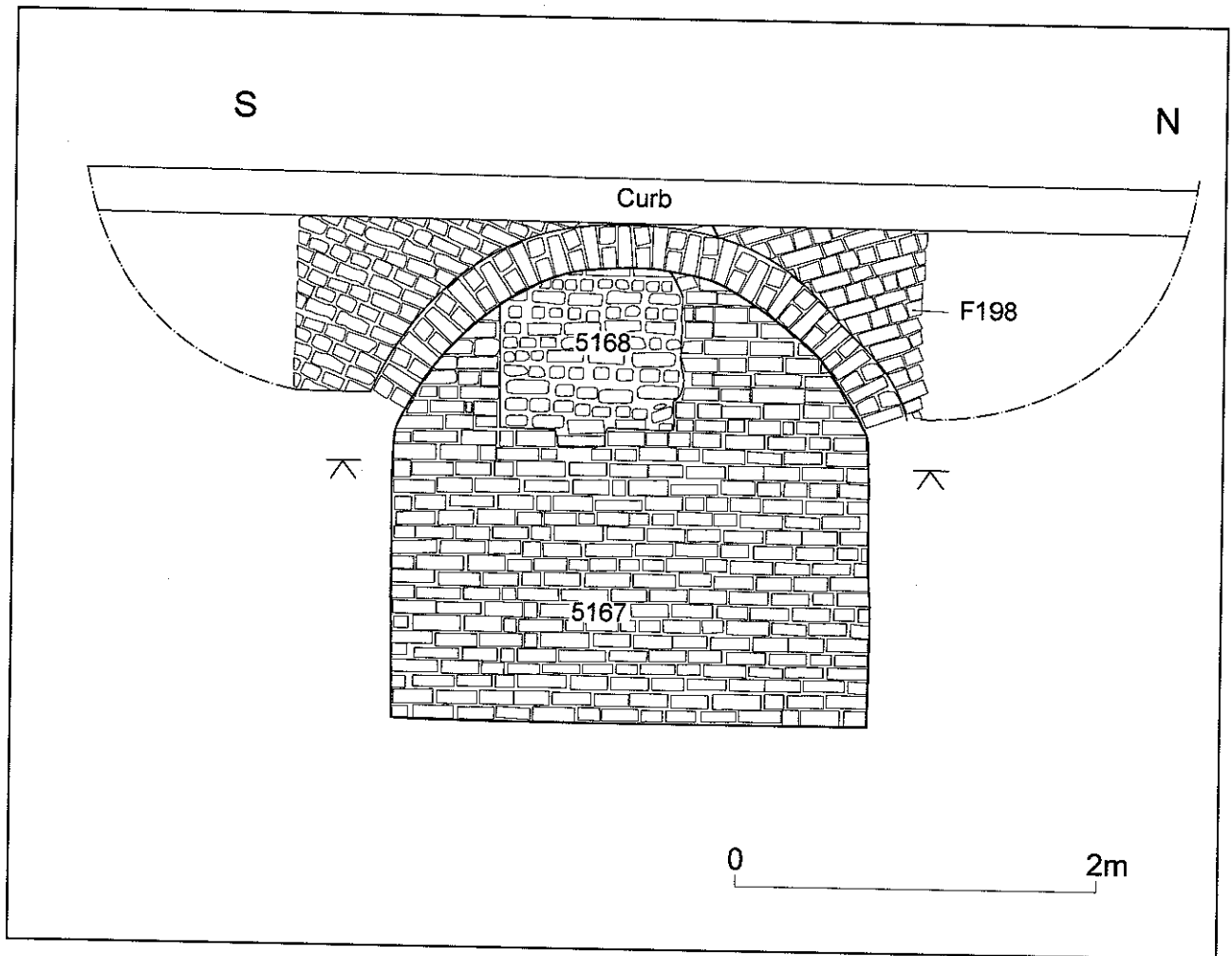


Fig.11

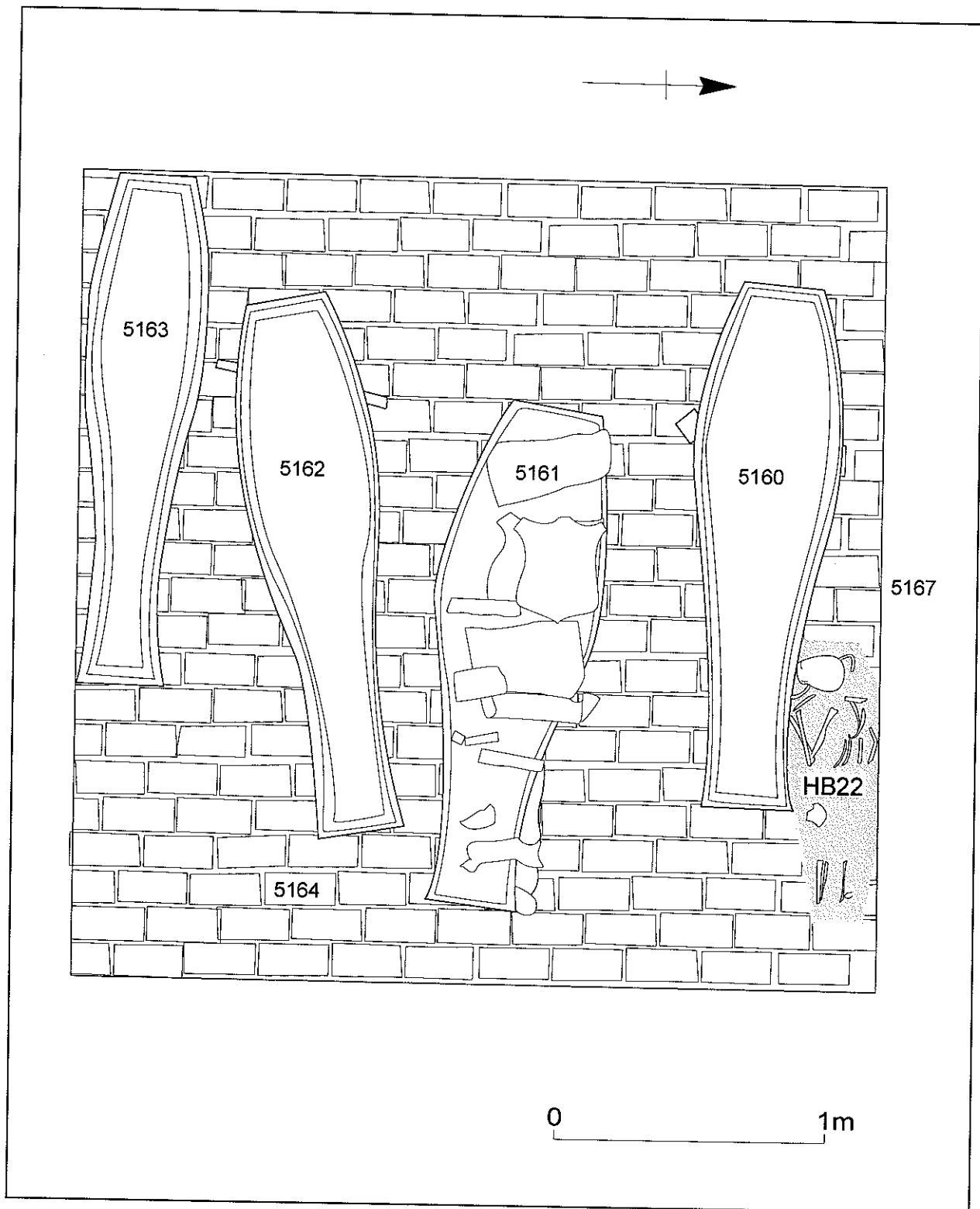


Fig.12

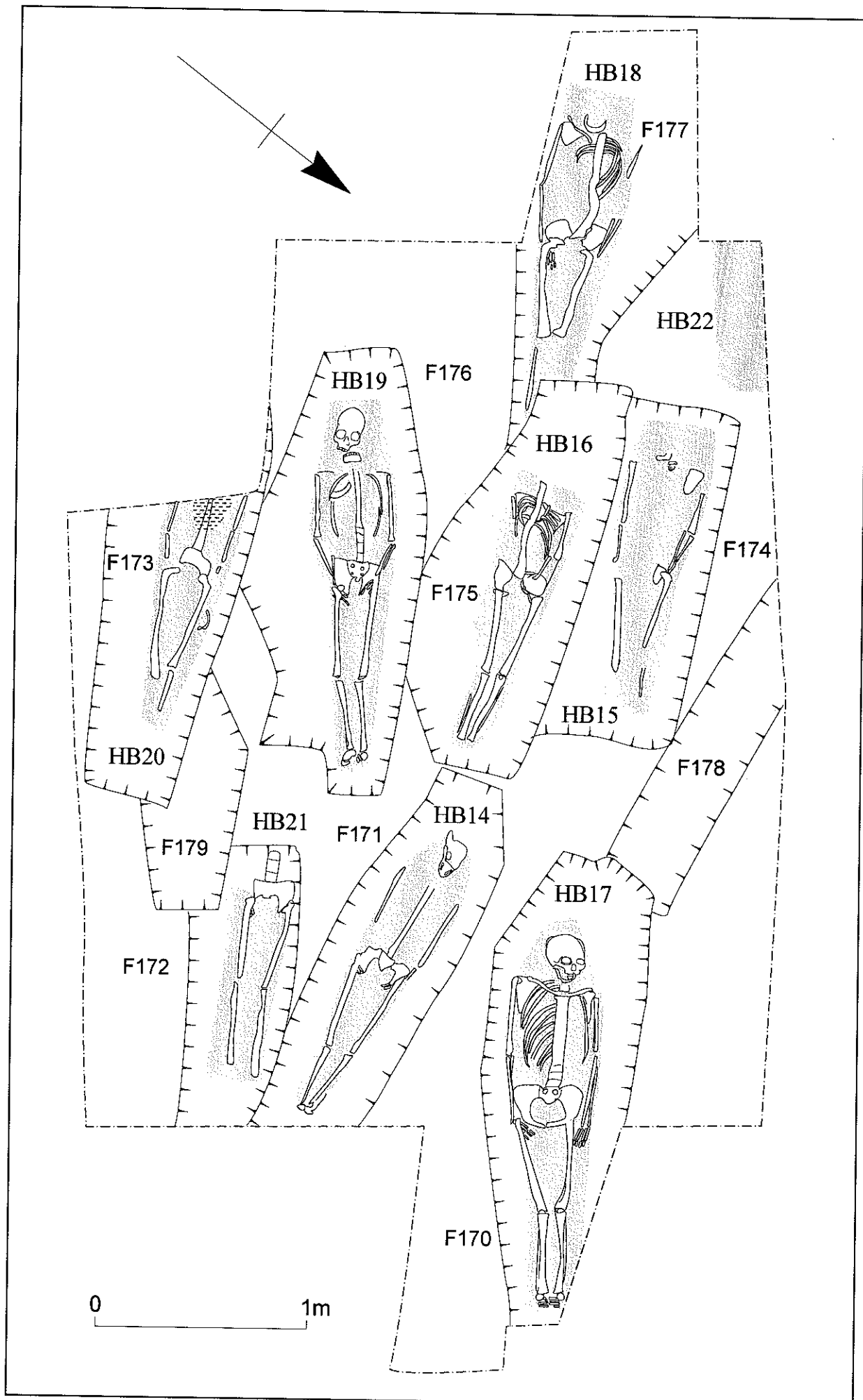


Fig.13

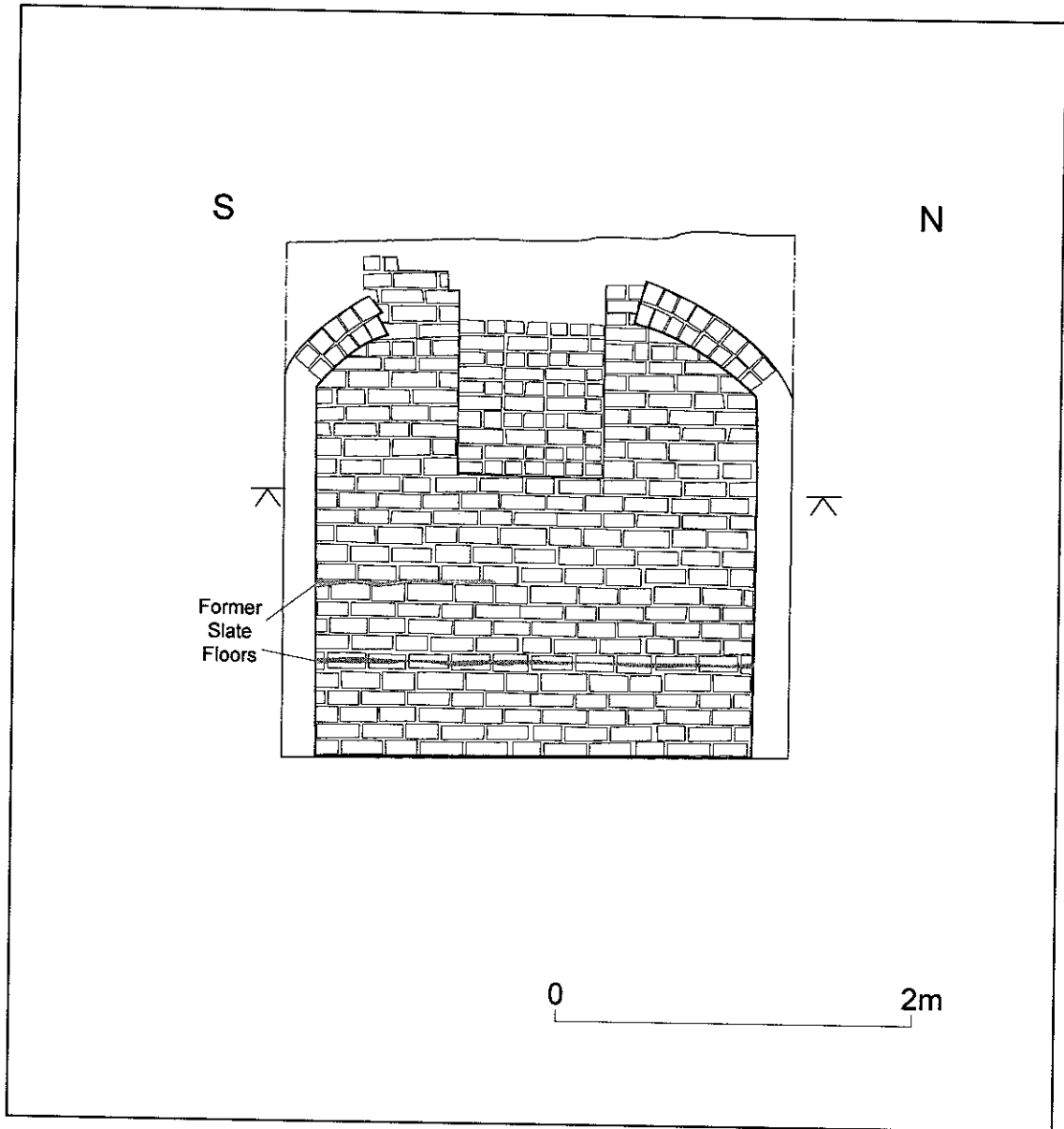


Fig.14

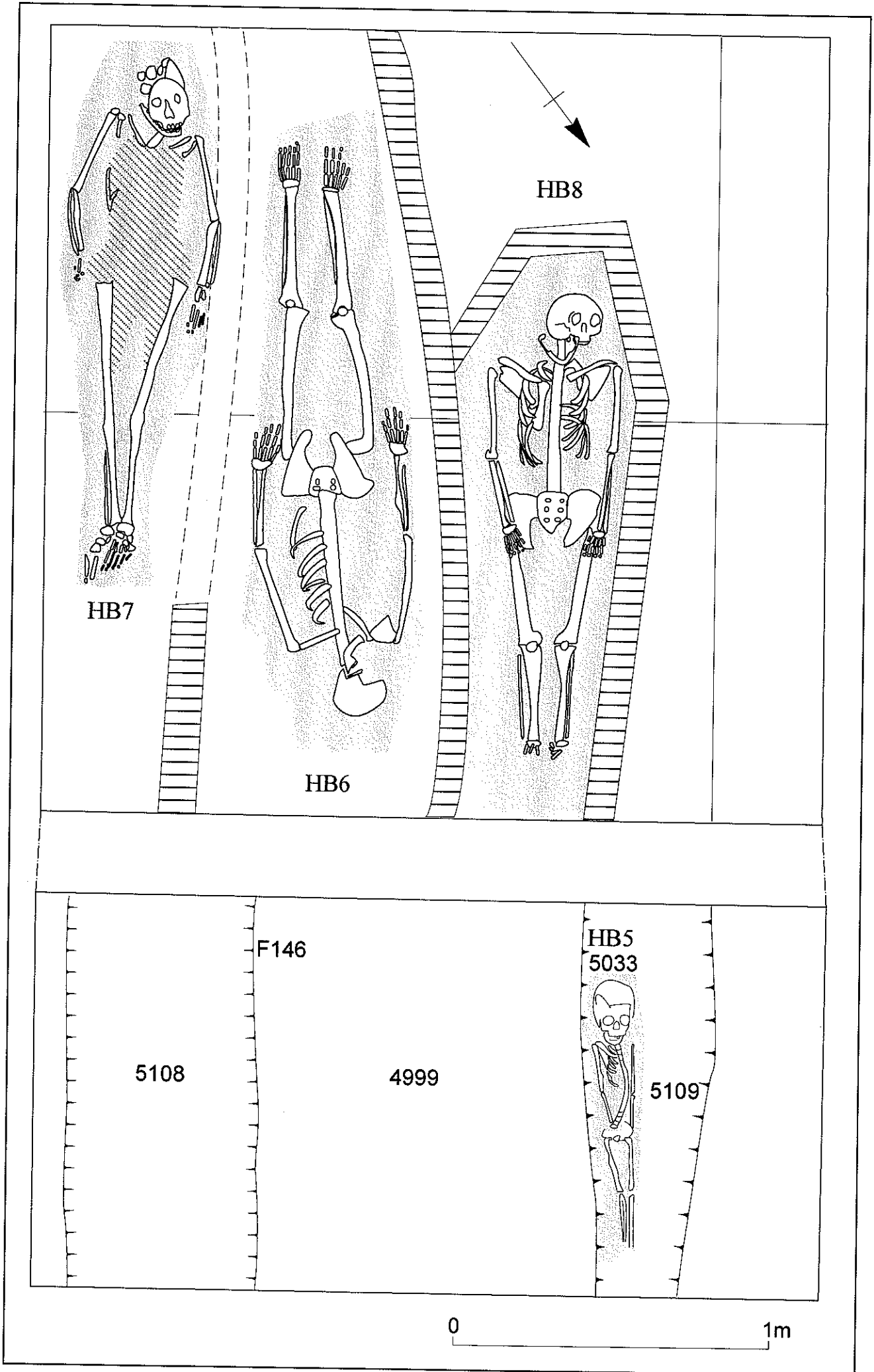


Fig.15

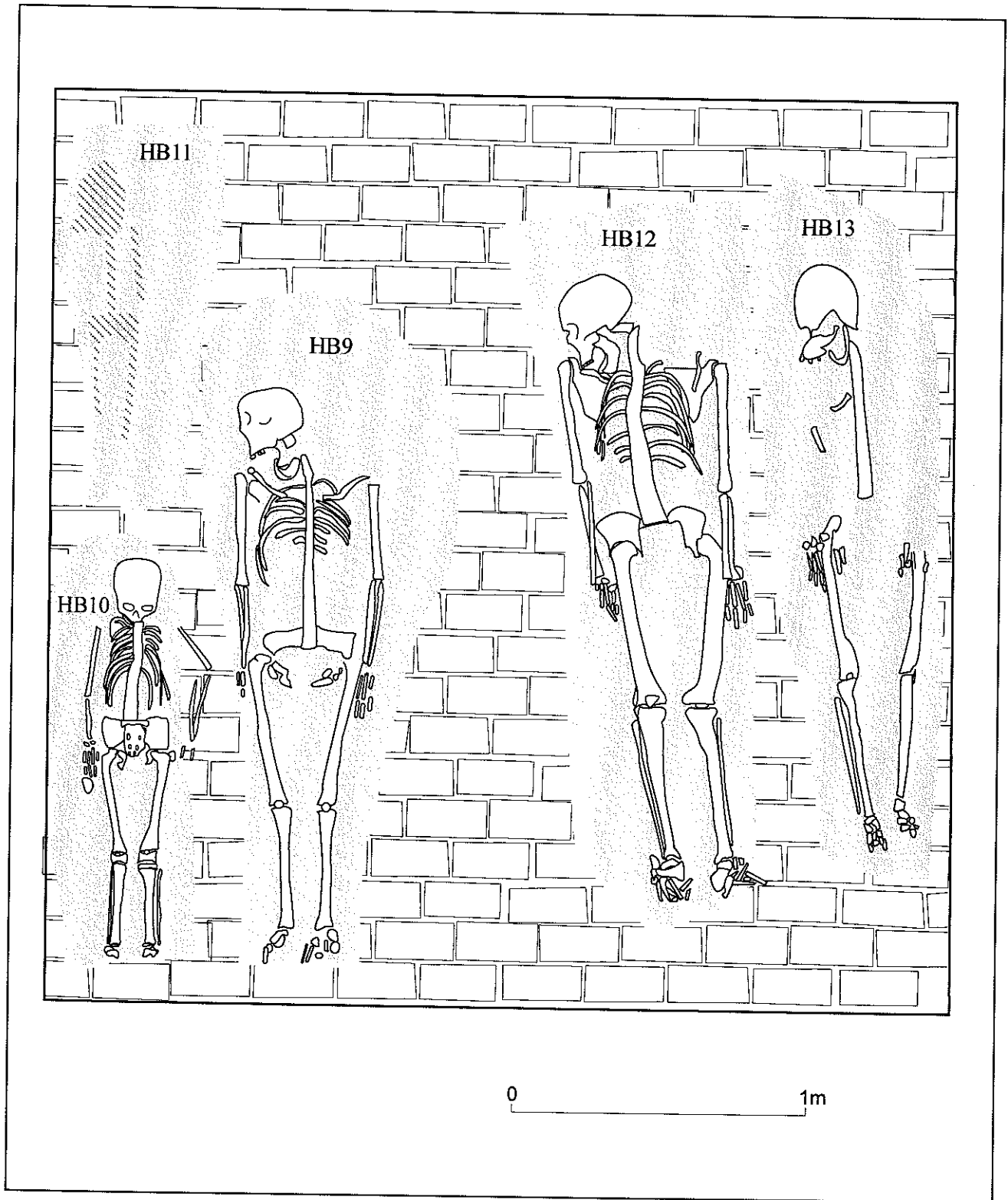


Fig.16



Plate 1 Removal of grave monuments in Area A



Plate 2 Interior of bricklined grave in Area B

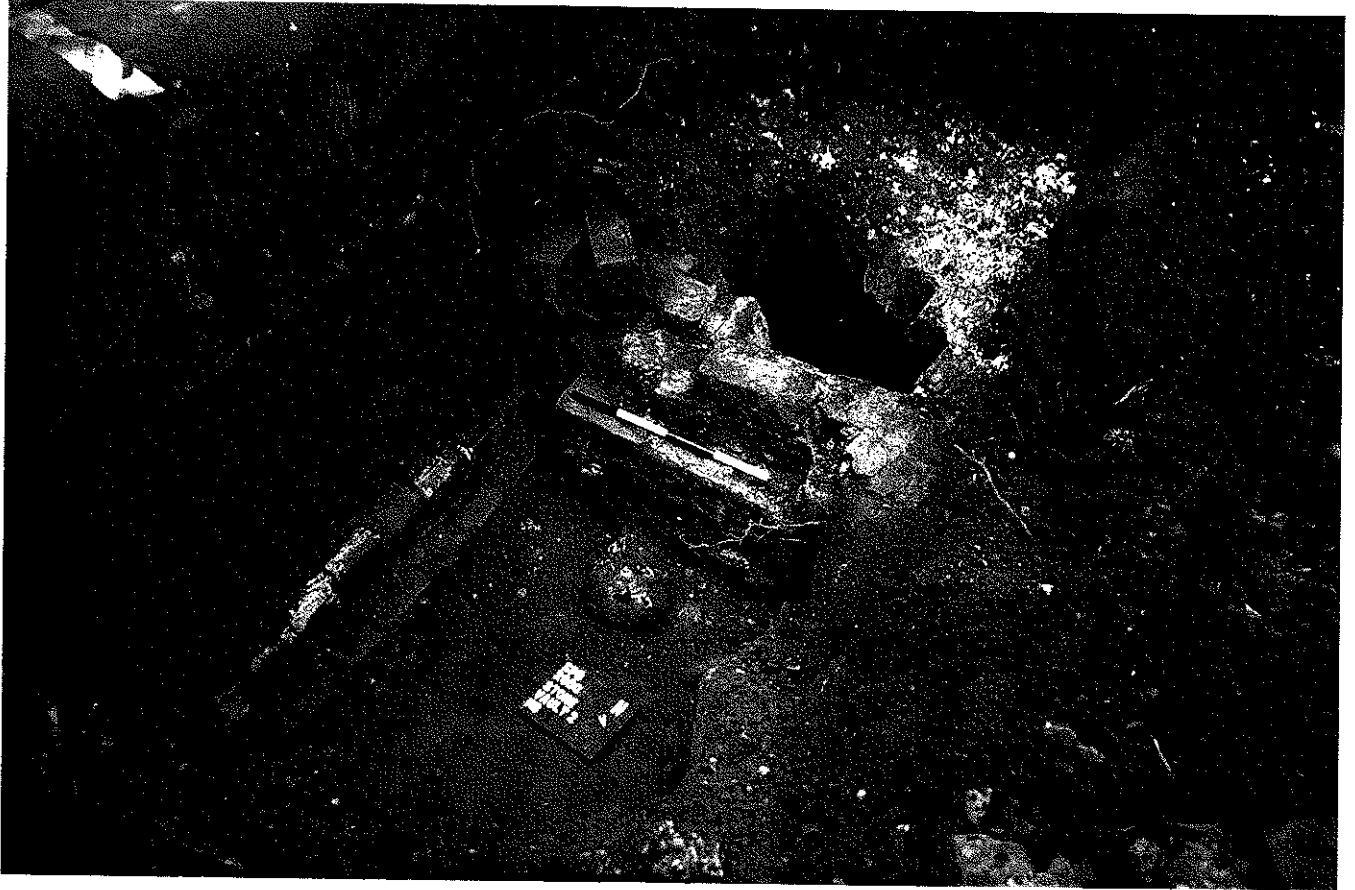


Plate 3 Exterior of bricklined grave Area B

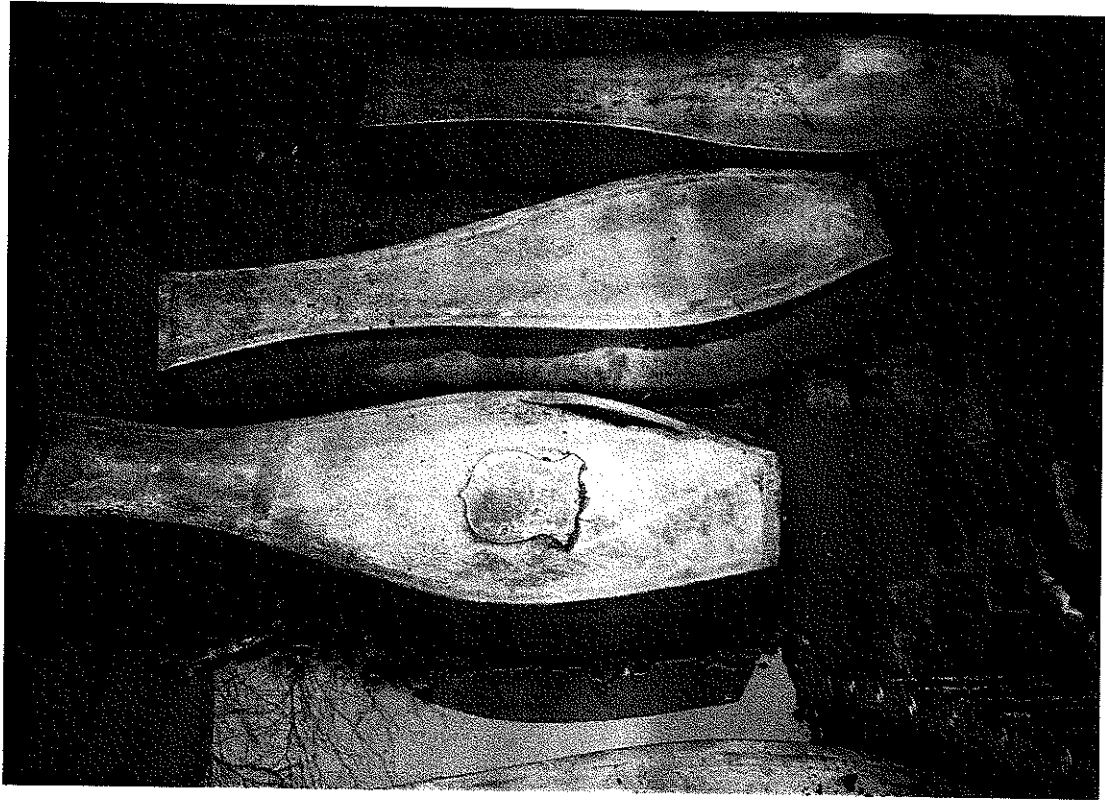


Plate 4 Interior of Baldwin family vault



Plate 5 Burials in Area E

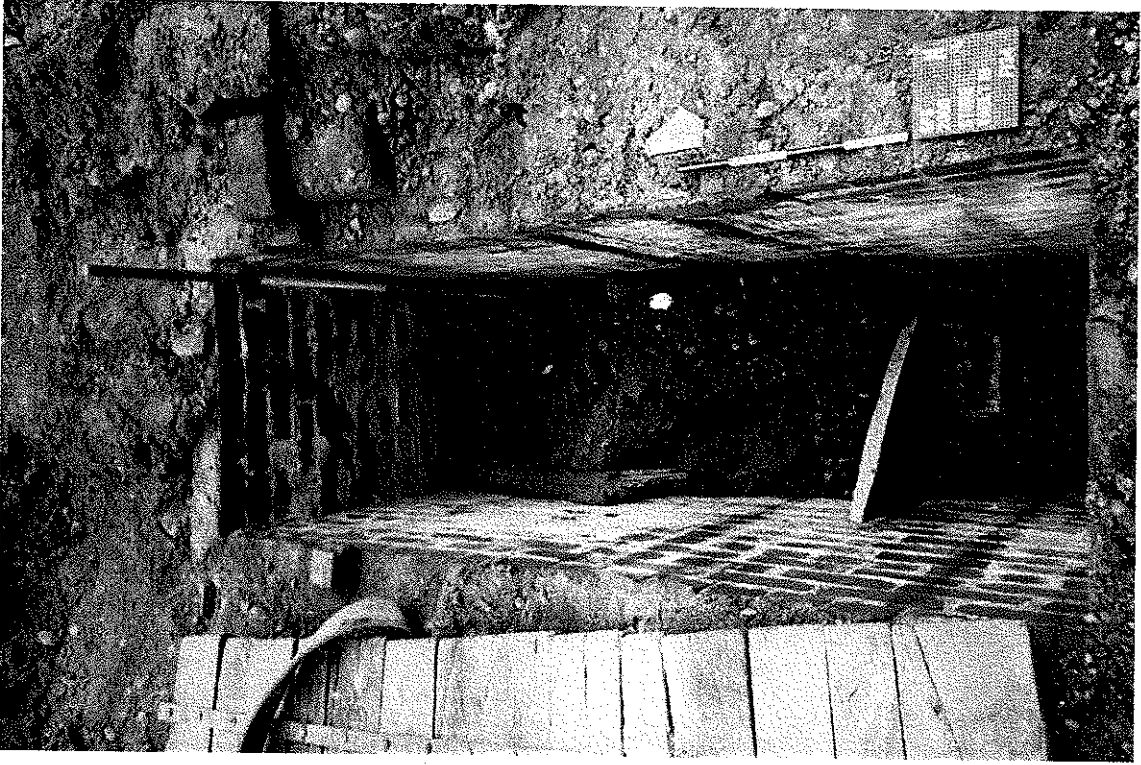


Plate 6 Bricklined grave Area G



Plate 7 Interior of vault feature 195, Area G1

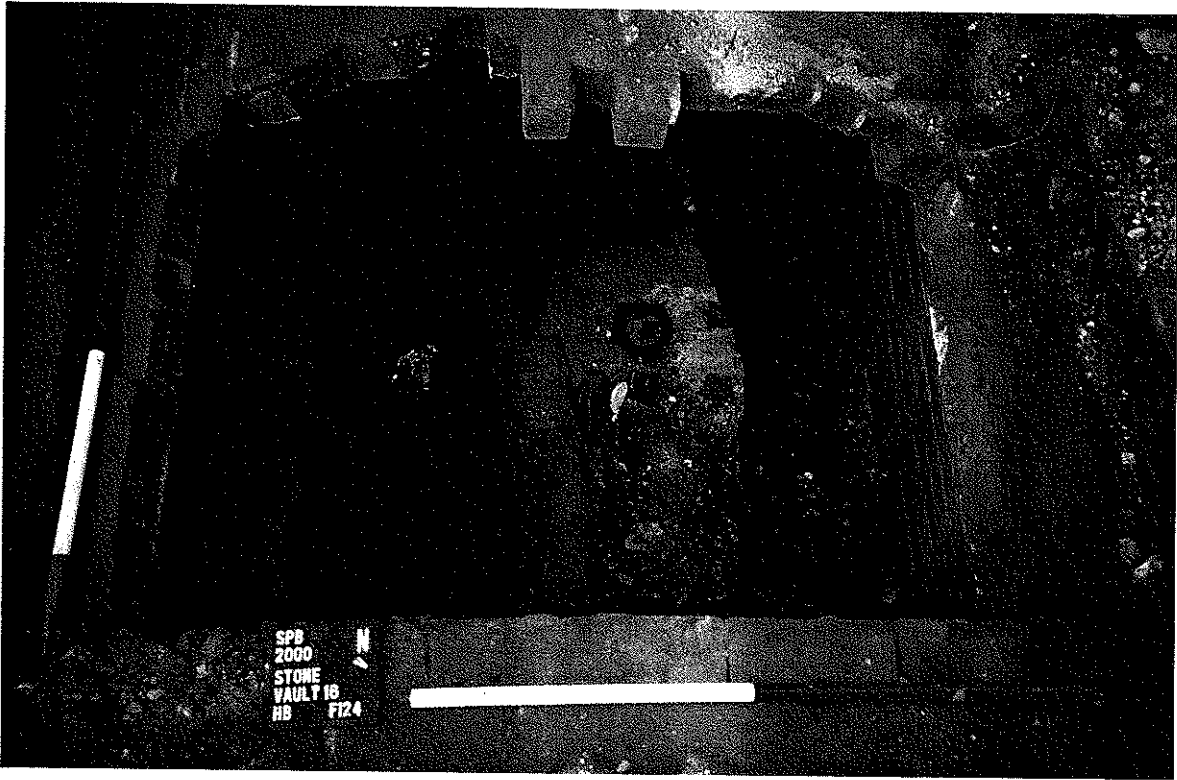


Plate 8 Removal of the roof of the Harrison vault

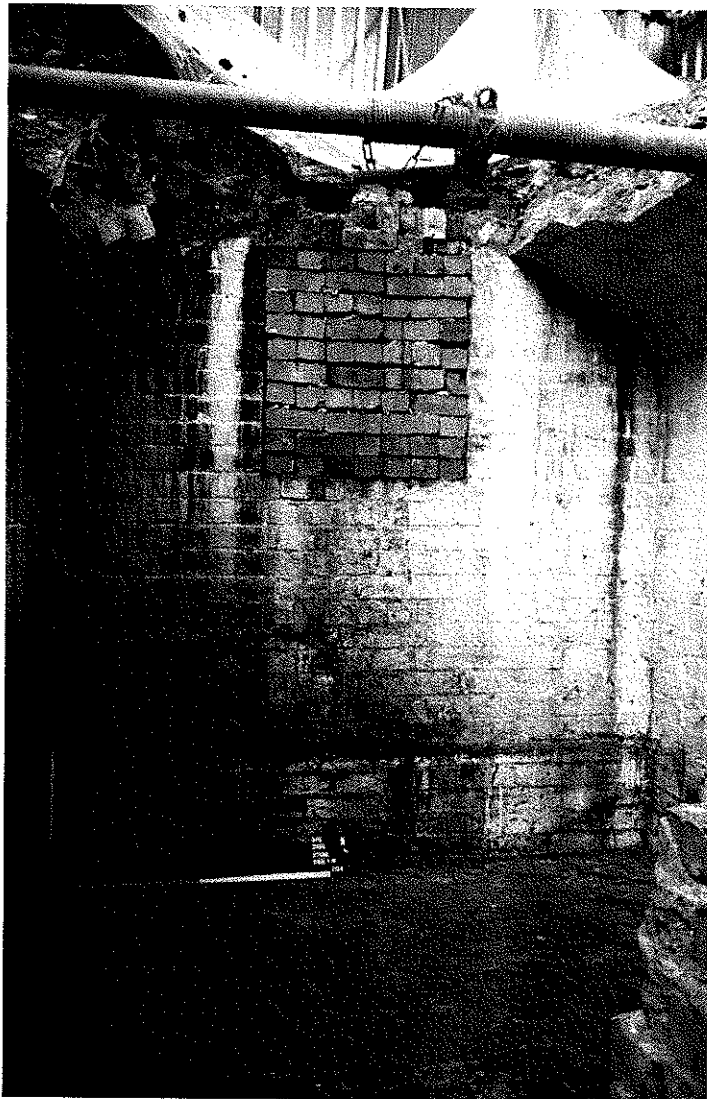


Plate 9 West elevation of Harrison vault



Plate 10 Upper level of Harrison vault



Plate 11 Coffin of Catherine Harrison



Plate 12 HB 7, Catherine Harrison

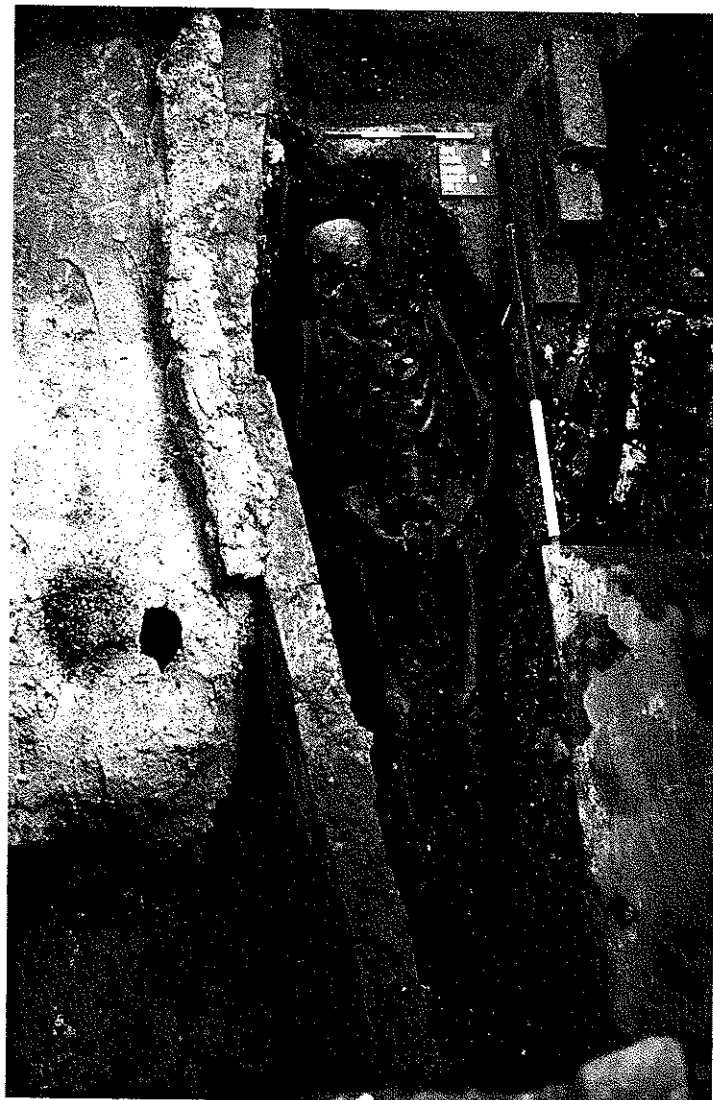


Plate 13 HB 6, Samuel Harrison



Plate 14 HB 8, Hannah Harrison



Plate 15 Lower level of Harrison family vault



Plate 16 HB 9, Eliza Ann Harrison



Plate 17 HB 10, Selina Harrison

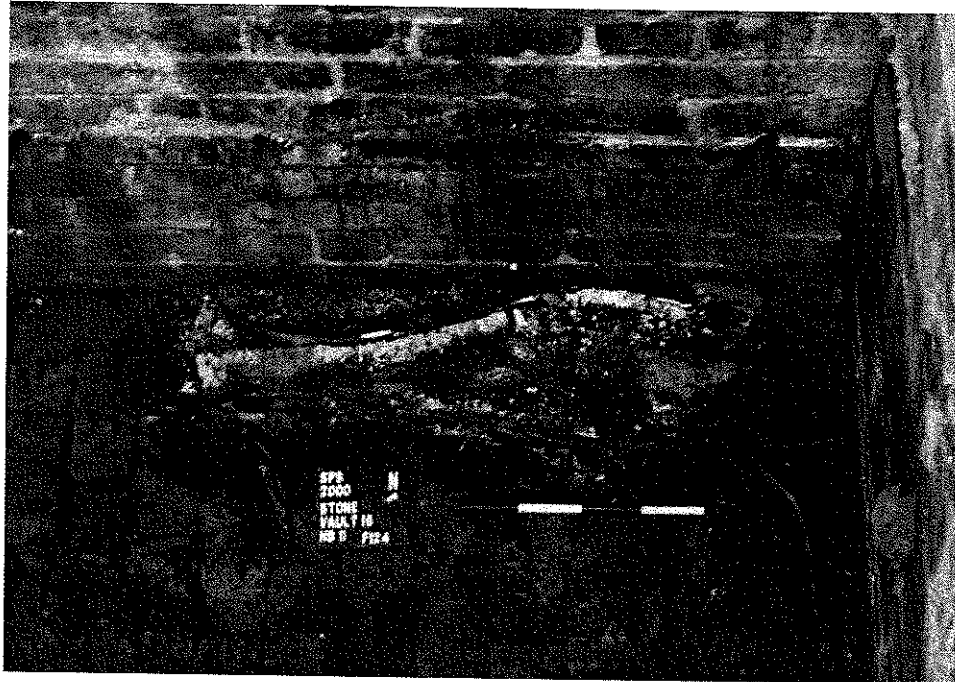


Plate 18 HB 11, William Harrison



Plate 19 HB 12

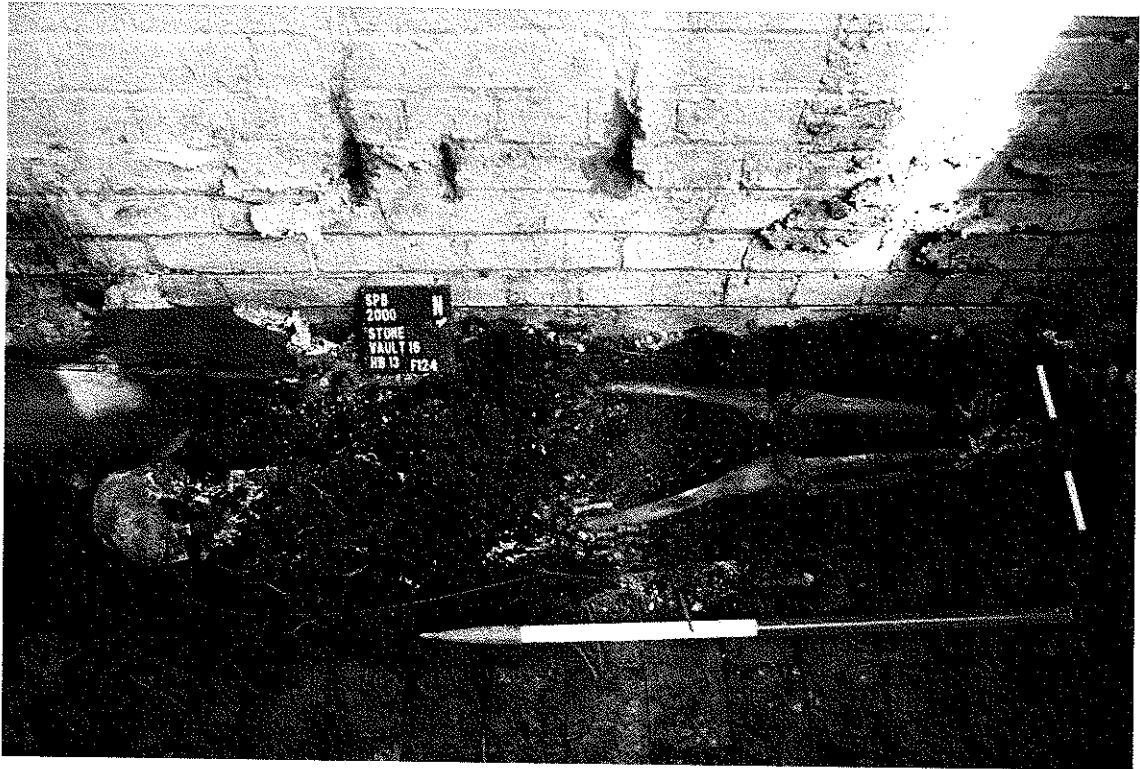


Plate 20 HB 13

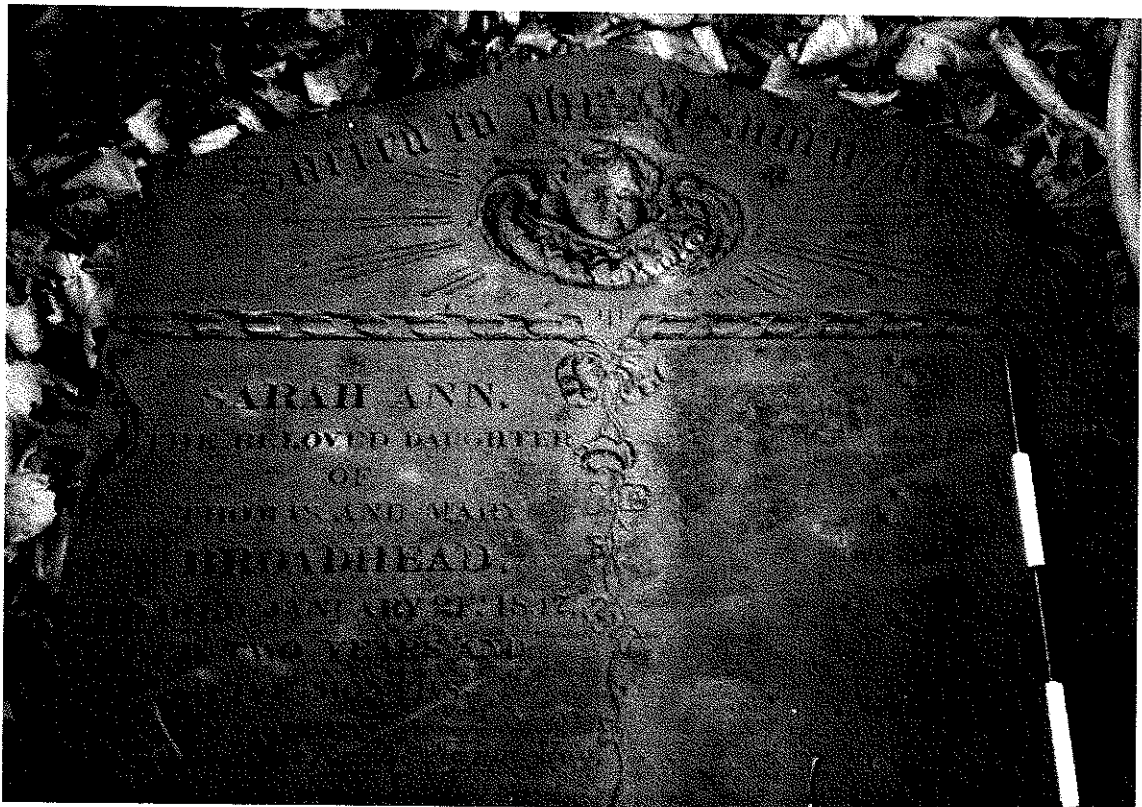


Plate 21 Stone 18



Plate 22 Stone 20



Plate 23 Harrison family monument



Plate 24 Gore plaque

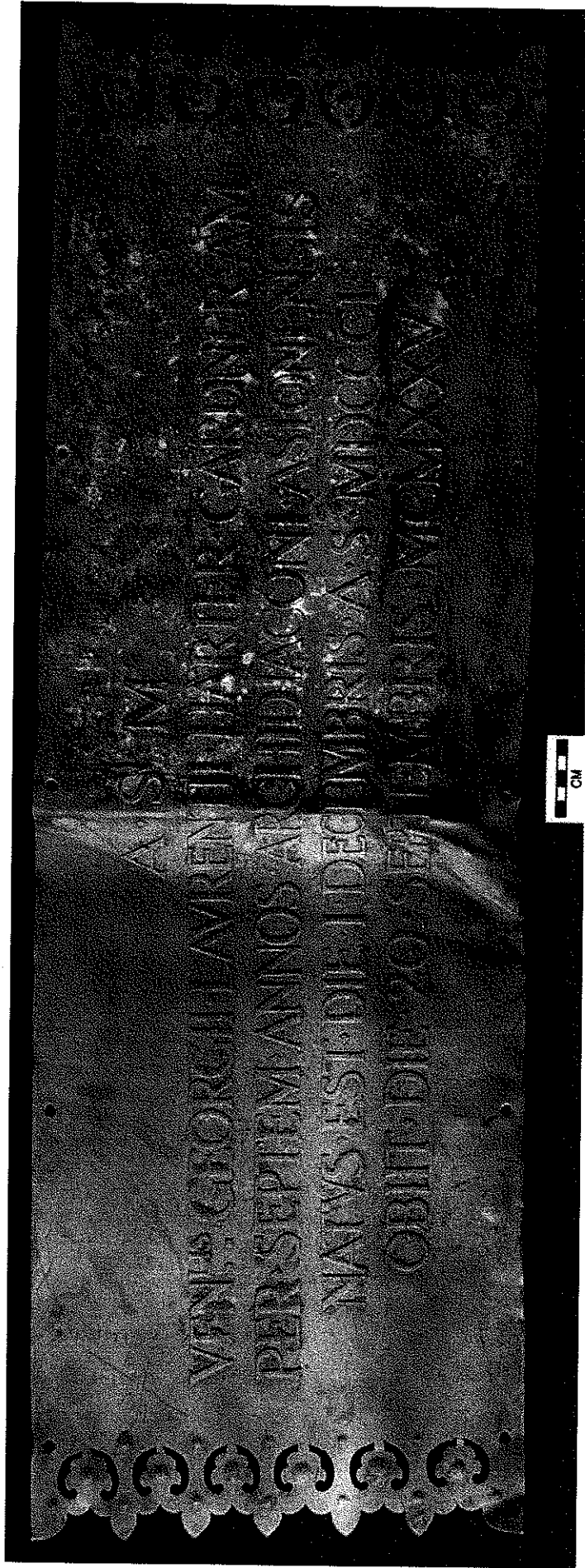


Plate 25 Gardner plaque

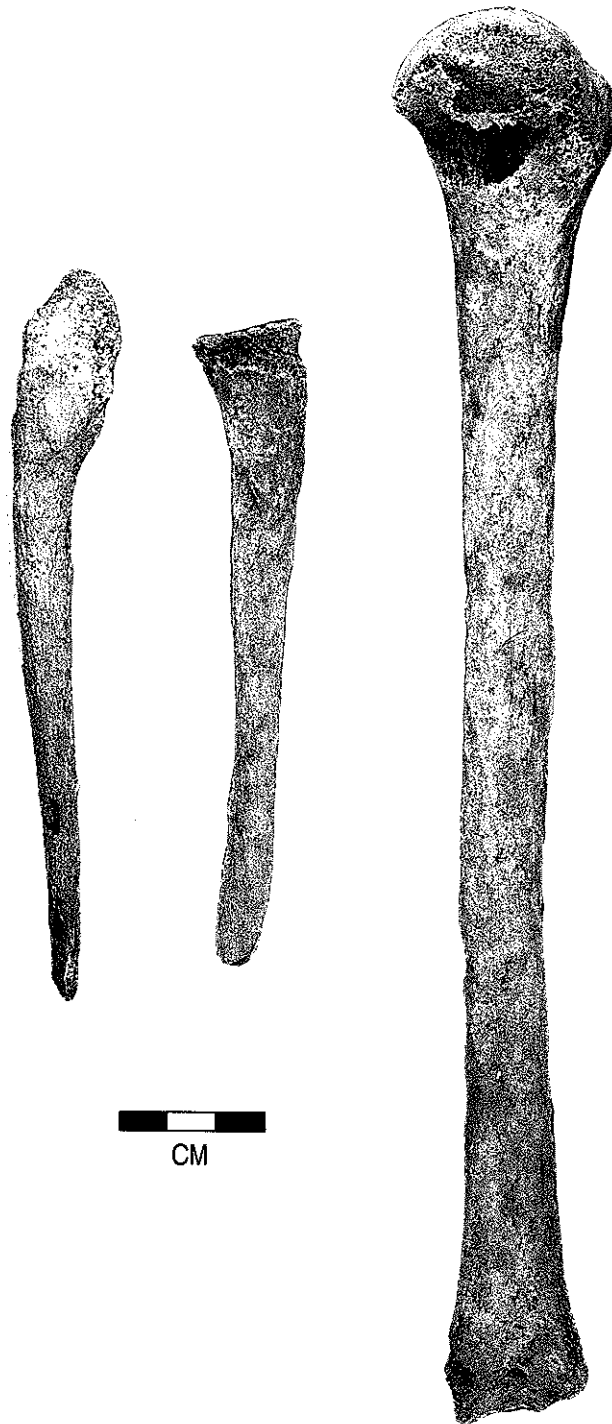


Plate 26 Example of poor bone preservation, right arm of HB 9



Plate 27 Changes associated with osteomyelitis around the right knee joint of HB 13

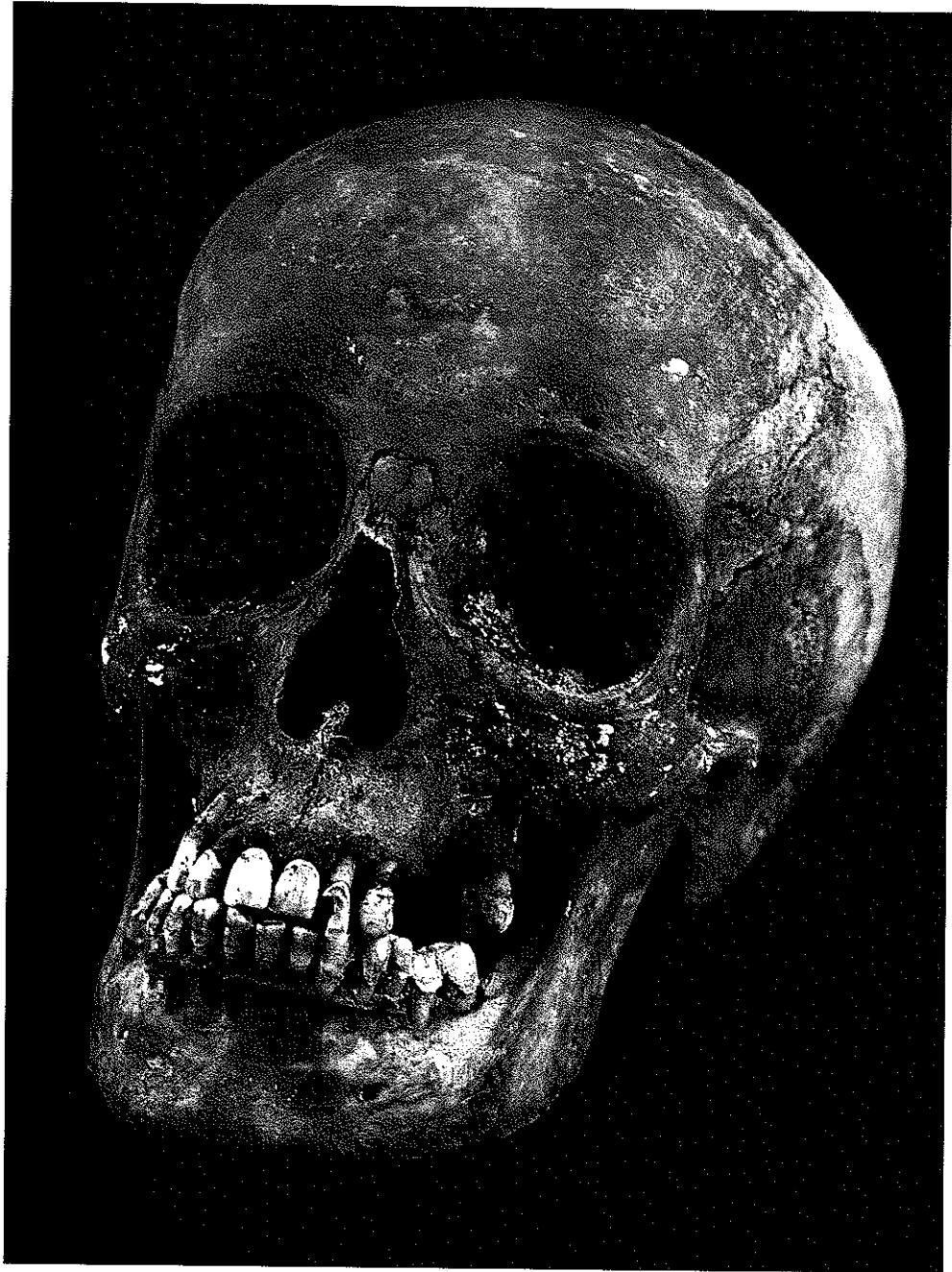


Plate 28 HB 8, Hannah Harrison