

archaeological recording of the monastic
infirmary at Gloucester cathedral

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Gloucester Cathedral Archaeological Report 2001/G

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The Monastic Infirmary at Gloucester Cathedral

Introduction

In November and December 2001 a programme of consolidation and repair was carried out by Nimbus, historic building conservators, on the surviving remains of the infirmary in the north of the cathedral precinct at Gloucester. This report contains the results of archaeological recording that preceded and accompanied these repairs, following an archaeological brief laid down by Carolyn Heighway, consultant archaeologist to the cathedral (Heighway 2000a:3).

The brief required that the petrology of the building stones of the north and south elevations of the south arcade be recorded with the primary aim of distinguishing the 13th century work from that of the 19th century restoration, showing the coursing of the medieval and Victorian work.

Both faces of the west wall should be recorded and evaluated using rectified photographs as a base for drawings (Drawing Nos 1900/4069/00/08; 1900/4069/00/07); details of a recent excavation should be added to the results.

Drawings of the two freestanding pillars should be produced and positioned in a scaled relationship to one another with details of construction and alteration being recorded.

In addition a small excavation was undertaken in advance of the removal of soil, by Nimbus, from the north side of the wall that partially blocks the western two bays of the south arcade.

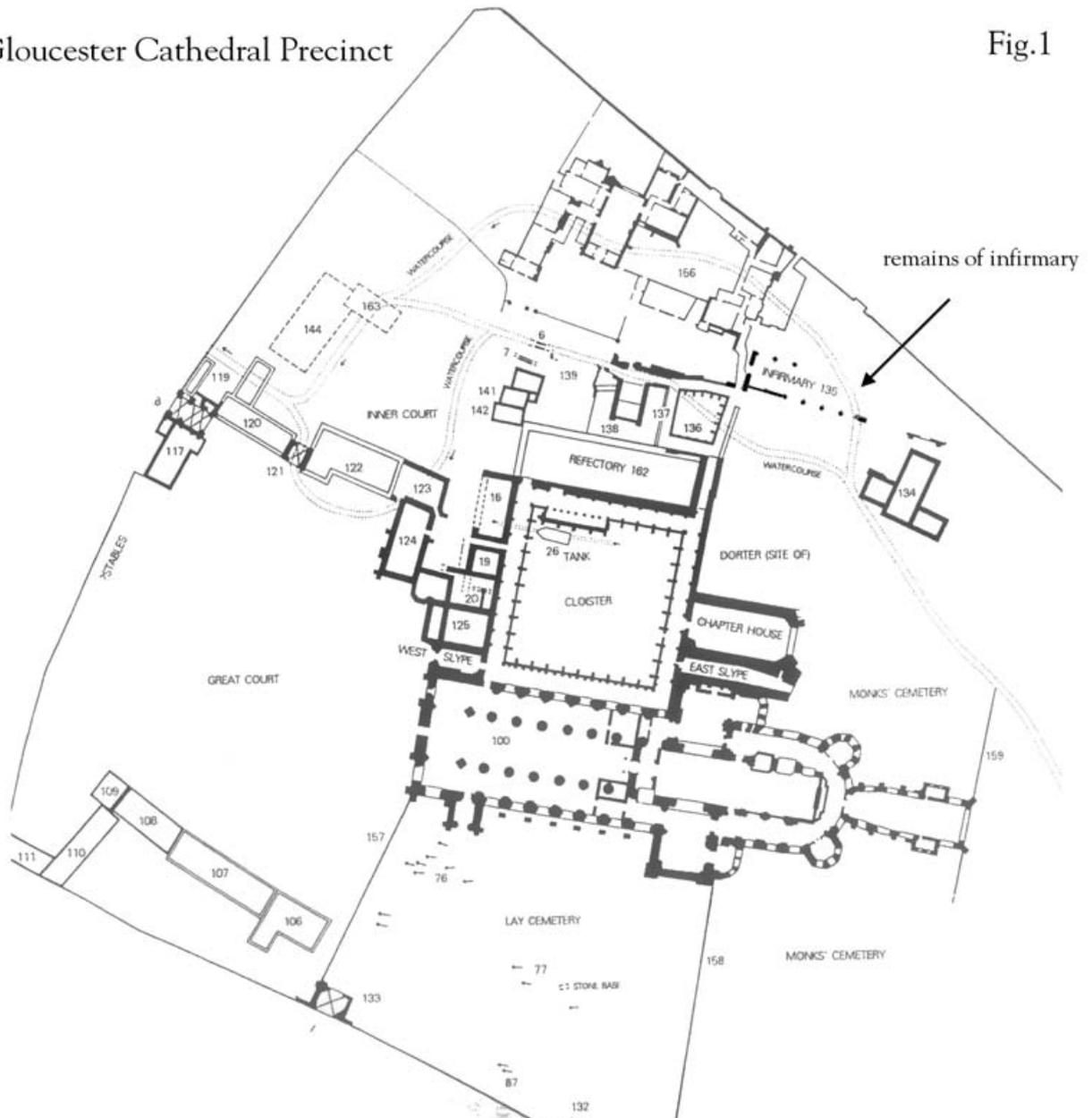
Site history

The remains of the infirmary are situated in the north of the cathedral precinct immediately north of the present playground of the King's School (Fig.1). They consist of six bays of the former south arcade with a south doorway at the west end, two freestanding columns of the former north arcade and a fragment of the west wall of the infirmary hall, including the west doorway.

Little is known about the site prior to the construction of the infirmary. A reference in the Chronicle of Gregory of Caerwent gives a date of 1184 for the dedication of a chapel to St. Brigid, the chapel is believed to have been later located at the east end of the infirmary raising the possibility of an earlier building on, or near, the site (Hare 1993: 43).

An early reference to the infirmary occurs in the Corporation Records where a deed of 1220 is witnessed by 'Helias of the Infirmary' of St Peter's Abbey along with three others described as 'servants of the infirmary' (Stevenson 1893, No.164). Helias was involved with a number of building and engineering projects at the abbey between 1220 and his death in 1237, including rebuilding the tower (c. 1222) as well as piping water from a spring in Matson (Welanders 1991:102; Fullbrook-Leggatt 1964:81) and it is tempting to ascribe the 13th century work to him. The infirmary does not appear in the list of his achievements in the abbey's *Historia* after his death (Hart 1863:28) but his involvement remains possible.

No date for the construction of the infirmary is given in the *Historia*. It has been dated, on the evidence of the architectural decoration on the surviving bays of the south arcade, to the mid 13th century (Welanders 1991: 112) and early 13th century (Verrey 1976:222; Morris 2001:144). The Infirmary Hall would have been around 49m in length, along its east - west axis, and 18m wide, assuming that north and south aisles were of equal width.



At its west end was an entrance opening onto a passage that connected the infirmary hall, and later the Abbots Lodging, with the main cloister. Parts of the south wall and the south east angle of the chapel at the east end of the hall, together with a buttress, are preserved in the north wall of a later medieval building now known as Dulverton House. These remains roughly align with the south arcade and allow the total length of the hall and the width of the east chapel to be calculated.

An entry in the *Historia* connected with the building of the new Abbots lodging places the infirmary garden to the north of the main hall in the space between the north aisle and the precinct wall (Hart 1863:46). The infirmarer's lodging was situated to the south of the infirmary chapel and presumably the table hall, kitchens and associated buildings would have occupied the space south of the infirmary hall, between the south aisle and the former dorter.

The remains of the infirmary suggest that it conformed to the typical plan for infirmary halls built in the 12th and 13th centuries, that is a central space divided into three aisles

by arcades of four to seven bays with the central aisle projecting at the eastern end. The inmates would have occupied the aisles, the east end served as a chapel and the plan resembled that of a parish church (Godfrey 1955:21; Gilyard-Beer 1976:42). The remains of monastic infirmaries with a similar plan and scale are preserved at, for example, Peterborough and Canterbury cathedrals (Reilly 1997: fig 3; Withers 1901:38).

Evidently much of the infirmary survived the dissolution. An entry in the cathedral records for the year 1630 describes 'the great waste room', a large room at the east of the 'firmary' that was used for archery practise, as being ruinous and in need of demolition, the building materials were to be salvaged for repairs to the church (Eward 1985: 38). The building referred to is presumably the east chapel of the infirmary hall. By the time of the Commonwealth Survey of 1649 an area of open ground, 21yds east-west, 10yds north-south, lay at the east end of the infirmary (*ibid* : 98), possibly the 'great waste room' after demolition.

The west end and parts of the arcades were enveloped by a succession of domestic structures that were built between the 16th and 18th centuries (VCH IV: 286, Welander 1991: 408). Two buttresses and the south east angle of the infirmary chapel were incorporated into the north wall of a late medieval building now known as Dulverton House.

A range of small tenements were built against the remains of the south arcade, these were known collectively as 'Babylon' and appear on 18th century maps of the precinct (Welander 1991: 394; pl.21), with a detailed plan made by J. Carter in 1807 (*ibid*: 407). Although these structures cover the area of the former south aisle of the infirmary Carter's plan shows that their internal walls are not related to its southern wall, so the south wall of the infirmary had been demolished before these tenements were erected. Also shown on Carter's plan is a vaulted passage of two bays approaching the western bay of the south arcade (Bay 1) from the south. The vaults suggest a medieval date and the construction of the passage would have necessitated the blocking of Bay 1 of the south arcade.

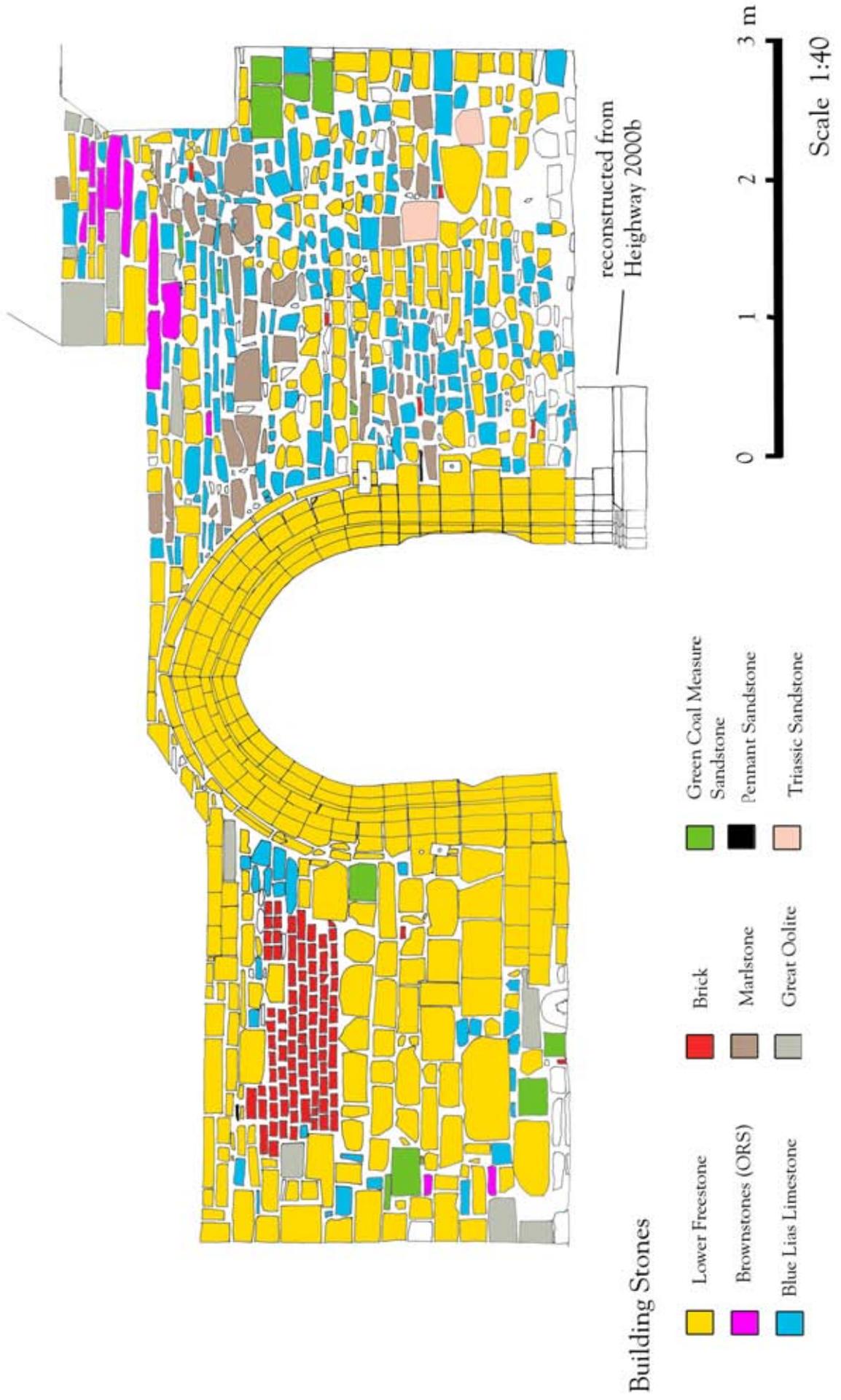
A number of monastic infirmaries were, after the dissolution, converted to domestic dwellings in a similar manner, for example the aisles of the infirmary at Ely were partitioned in the later medieval period, at the dissolution the central aisle was unroofed and served as a lane giving access to a series of canons' residences constructed in the former north and south aisles (Cocke 1986:77).

The numerous documentary references to alterations, demolition and repairs cited by Eward (1985) for the 17th and 18th centuries give an idea of the complexity of the building operations in Babylon and the infirmary in the post-medieval period. The Dean and Chapter were demolishing houses by the 1660s after complaints about residents assaulting cathedral staff and throwing dung at passers by (*ibid* :197). The dung probably came from the River Twyver which had been routed across the site in the 13th century and ran, as an open sewer, through the infirmary in the 17th and 18th centuries. However most of the references to building work are imprecise as to what work was being done and where, but give the impression of frequent repair and alteration on a small scale. Babylon was finally demolished in 1831 (VCH. IV: 288).

The arrangement of structures inside the west end of the infirmary is less clear; a plan of the 1760's (Welander 1991: 394) shows the two western bays incorporated into buildings that lay to the north and south, divided by a pathway that ran between them and passed through the west doorway. The Board of Health map of 1851 shows these western bays occupied by a single structure with its south wall following the line of the south arcade and its east wall running north-south between the pillars, second from west, of the arcades. This building is marked as the 'Registrars' or 'Registry Office', and must be the structure shown in a photograph of the south arcade taken around 1855 (Glos.Lib.

Gloucester Cathedral ~ Infirmary, west wall, west face

Fig.2



GL107.20). It was a four-storey structure facing east with a crenelated east wall of brick. The building was re-roofed, its stone tiles being replaced with ‘blue slate,’ in 1854 (GCL MS 53) and it was demolished in 1860 as part of the reordering of this part of the precinct that accompanied the rebuilding of the Bishop’s Palace (Hope 1897:105).

An entry in the architects report for 1862 reads: “Reparation of arches in Cathedral precinct near Little Cloisters, building new buttresses, taking down and rebuilding walls between arches, raising wall over three compartments and a new coping on. Do at an outlay of £61.5.10.” The work was done at a cost of £36.13.4 (GCL MS 53).

The arrangement of structures around the infirmary have altered little since the work of the 1860s. An excavation on the line of the north arcade uncovered the footings of a wall marking the former boundary with the Bishop’s Palace gardens (Guy 1984:4), this wall was rebuilt in its present position early in the 20th century. The excavation also revealed a brick wall 300mm thick at the former location of the third column from the west, north arcade. It crosses the line of the arcade then returns west and is probably the remains of a low garden wall associated with the Registrar’s Office. No traces of the demolished columns of the north arcade were found (*ibid*).

West Wall of the Infirmary Hall

The elevation drawings describe the surviving remains of the east and west faces of the west wall of the infirmary hall. The wall is 8.70m in length; north of the centrally positioned doorway it is 2.59m in height, rising up around the arch of the doorway to a height of 3.08m to the south. A 19th century buttress is built on to the southern end of the wall, the upper part of this buttress is not shown on the elevation drawings.

The following chronology is suggested for the west wall.

<i>Period I</i> ~ 13 th century	<i>Period V</i> ~ post-medieval
<i>Period II a</i> ~ undated	<i>Period VI</i> ~post-medieval
<i>Period II b</i> ~ later medieval	<i>Period VII</i> ~1860-2
<i>Period III</i> ~ later medieval	<i>Period VIII</i> ~20 th century
<i>Period IV</i> ~ post-medieval	

West Elevation (Figs. 2, 3)

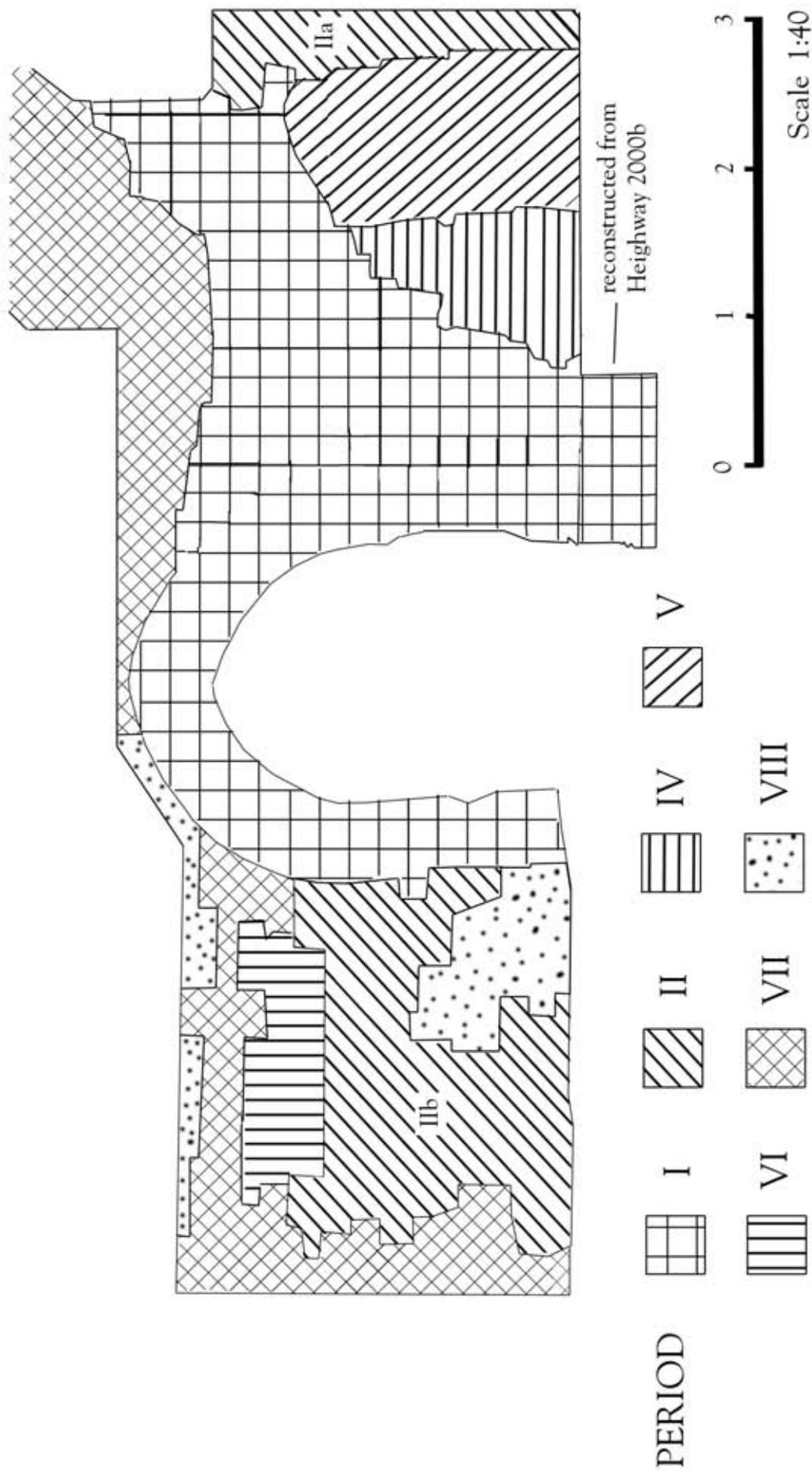
Period I

The period I masonry consists of the doorway mouldings and a stretch of wall to the south. The doorway mouldings run continuously around the jambs and heads of the arch uninterrupted by capitals and consist of an inner (soffit) roll flanked, on the diagonal plane, by two subordinate rolls divided by an angle fillet followed by a plain chamfer (Fig.4). A recent excavation showed that the jambs extend a further 0.6m below the present ground level (Heighway 2000b) giving an original height of 2.99m for the doorway. Part of a wall that formerly blocked the doorway was also revealed.

Photographs taken during this excavation show that the roll mouldings of the jambs terminate with circular double roll bases. These bases rest upon circular sub-bases, approximately 100mm in height, followed by a quirk then the lower, larger, roll whose diameter appears equal to that of the sub-base. The upper roll appears to be roughly half the size of the lower roll. The chamfer on the outer jamb, also shown on the photographs, continues down to the level of the sub-bases but is then interrupted by a horizontal chamfer cut into the top edge of the basal block of the jamb. This chamfered ‘plinth’ can be seen to continue southwards from the doorway. The plinth has a height of 220mm. The results of the excavation have been added to the west elevation.

Gloucester Cathedral ~ Infirmary, west wall, west face
 Interpretation

Fig. 3

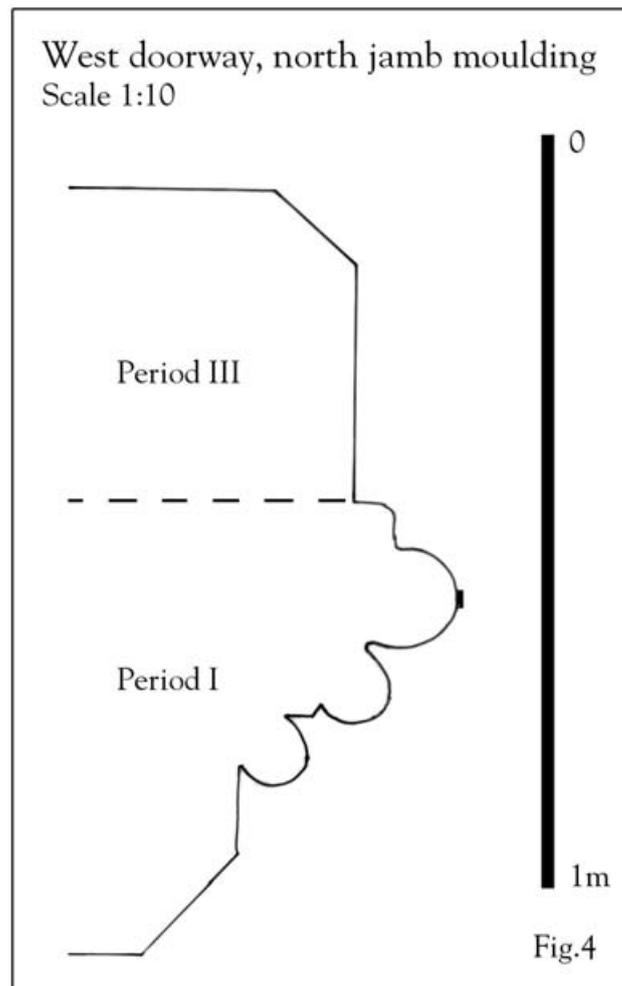


The arrangement of mouldings on this west face of the doorway differ from those on the original east face, or rear-arch, where the first subordinate roll and angle fillet can still be seen around the arch head. The remainder of the Period I mouldings on the eastern face appear to have been cut away in order to facilitate the insertion of a flattened two-centred arch, belonging to Period III, with a plain chamfer on the jambs and arch head (Figs. 4, 7). However in contrast to the inserted jambs and arch of the east face the chamfered blocks on the western face are in course with, and in places cut from the same stones as, the Period I roll mouldings and so are judged to be an integral part of the original doorway.

The head of the arch formerly possessed a hoodmoulding with a fillet and roll profile. This hoodmoulding is preserved on two stones on the north side of the arch; elsewhere it has been crudely cut back flush to the face of the wall.

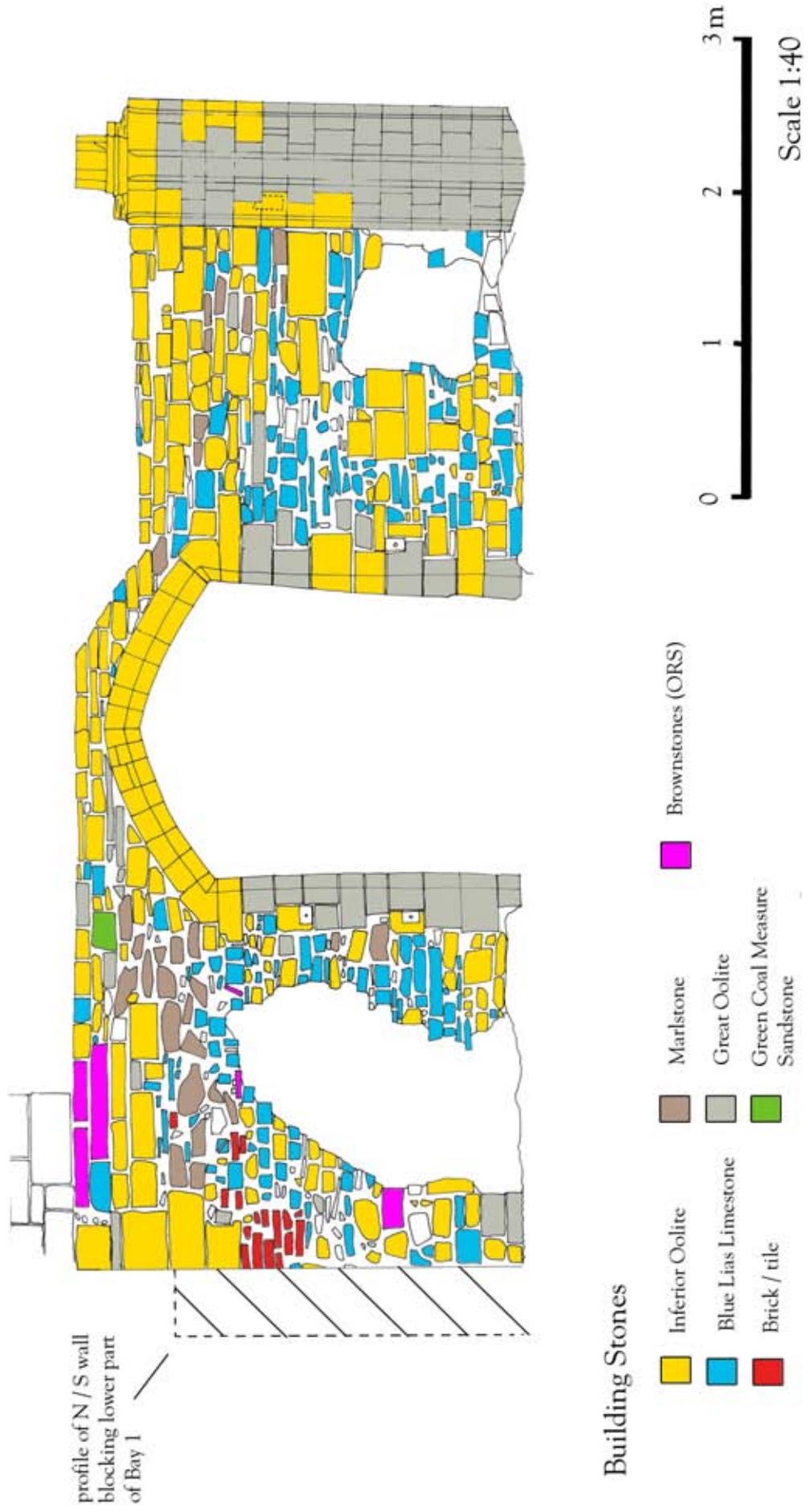
The doorway is composed of stone from the Lower Freestone formation of the Inferior oolite Group.

The Period I stonework, extending south from the doorway, consists of roughly coursed rubble. The coursing in the lower part of the wall corresponds with that of the stonework of the south jamb of the doorway. Above the level of the springing of the arch the courses become increasingly irregular, this is apparently due to the irregular size of the stone used in the upper part of the period I wall. A band of larger blocks of Marlstone mark the upper limit of the surviving Period I masonry, this band is also apparent at the same level on the east face of the wall and stone with a similar petrology is also present



Gloucester Cathedral ~ Infirmary, west wall, east face

Fig.5



in the Period I masonry of both north and south faces of the south arcade.

The masonry is primarily composed of roughly equal quantities of Marlstone, Blue Lias Limestone and Inferior Oolite, with four fragments of brick or tile, a piece of blue /grey Pennant Sandstone tile and a piece of green Pennant Sandstone.

The upper limit of the Period I masonry is formed by the boundary with 19th century stonework; evidently the wall was cut back and replaced at this level during the remodelling of the monument in the 1860s. To the south the Period I work appears to have been cut back for the insertion of the north jamb of a post medieval opening, the blocking of which also abuts the Period I work.

Period IIa

The Period II masonry is described under two headings, IIa and IIb: this is because the similar building materials suggest that the two areas of masonry could be related. The Period IIa stonework is located at the extreme south of the west face of the west wall. It forms a strip of stonework 2.4m in height and between 0.3m, at ground level, and 0.7m, at its upper limit, in width. It is composed of worked blocks of squared, cut stone up to 0.2m in height and 0.4m in length.

The stonework may be associated with the doorway at the west end of the south arcade, the east jamb of which is immediately south of the Period IIa masonry. The doorway has 13th century mouldings but, apart from the Period IIa stonework, is surrounded by masonry of Period VII and cannot be assumed to be *in situ*.

The Period IIa building materials are cut blocks of Lower Freestone with four comparatively large blocks of green Pennant Sandstone and three blocks of Blue Lias Limestone.

Period IIb

The Period IIb masonry is situated immediately north of the Period I doorway. The northern limit of the Period IIb stonework is formed by the boundary with the Period VII rebuild of the northern end of the wall. The masonry of this period rises from the present ground level, where it has not been replaced by a 20th century repair, and is terminated in its upper parts by post-medieval (Period VI) brickwork and 1860-2 (Period VII) masonry.

The stonework is primarily composed of blocks of squared, cut stone of various sizes, the largest being 0.75m in length by 0.35m in height, laid courses that are level at the bottom but which slope gently down to the south in the upper part. Where the Period IIb masonry meets the stonework of the Period I doorway the courses do not correspond. There is a mismatch of coursing where the Period IIb work meets the Period VII masonry at the northern end of the wall making the definition of the boundary between stonework of the two periods clear.

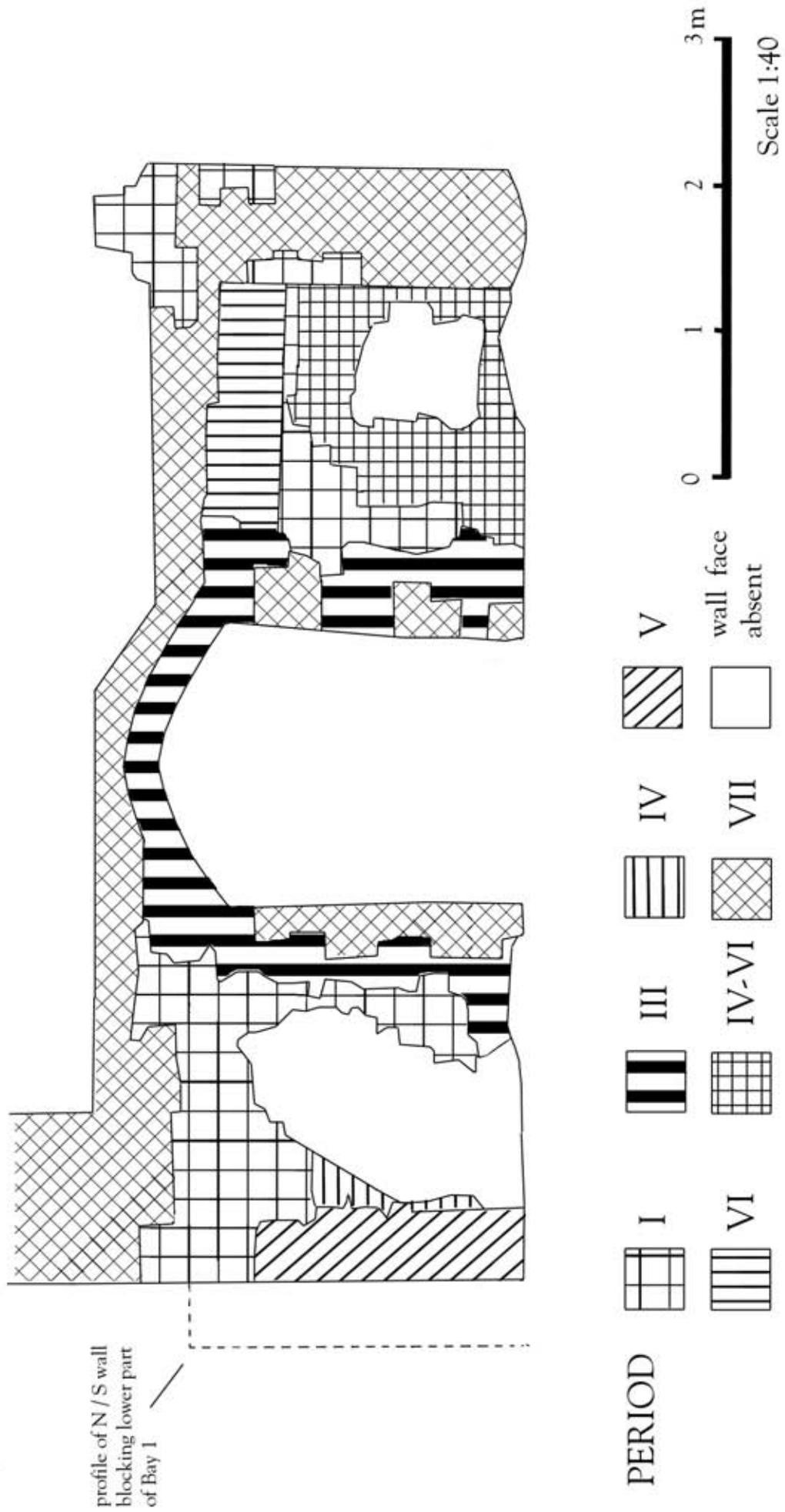
The Period IIb masonry appears to be associated with the creation of an opening, possibly a window, that was subsequently blocked by several courses of post-medieval brick. The blocking of this opening is less precisely defined on the east face of the wall at the equivalent height.

There are a number of indications that the building materials of Period IIb were salvaged from an earlier structure. The stones vary in size, shape and petrology; the majority of the stones are from the Lower Inferior Oolite Group, most from the Lower Freestone Formation with a lesser amount of Lower Limestone. This Inferior Oolite is supplemented by five pieces of green Pennant Sandstone, two fragments of brick, or tile, a number of pieces of Blue Lias Limestone and an elongated block of Great Oolite.

Additionally, in the bottom course, there is a roughly semi-circular piece of coarse, fossiliferous limestone, orange / brown in colour with a slot at its centre.

Gloucester Cathedral ~ Infirmary, west wall, east face
 Interpretation

Fig.6



Period IV

The masonry belonging to Period IV is in the lower part of the wall, south of the doorway. It describes a triangular area of the wall 1m wide at ground level, rising to a height of 1.6m at its apex and primarily consists of elongated blocks of Inferior Oolite and Blue Lias Limestone laid in level courses. The concentration of Inferior Oolite, particularly in the upper part, makes the stonework of this period conspicuous on the petrological drawing. The stonework, at the junction with Period V, projects from the surrounding masonry by around 50mm.

The period IV work appears to be associated with an opening made in the wall immediately to the south; the stonework forms the northern jamb of this, subsequently blocked, opening. The equivalent area of masonry on the east face of the wall was, at the time of recording, absent having fallen out c. 1990, the parts that do survive also preserve some slight evidence of this jamb.

Ascribing a precise date to the Period IV work is not possible; if Period IV is associated with the creation of an opening, this would have necessitated the removal of the west respond of the south arcade and, in view of the numerous alterations and repairs documented in the post-medieval period, a post-medieval date seems probable. The creation of this opening, and its subsequent blocking, is assumed to have been undertaken before the blocking of the opening on the north side of the doorway (Period VI) on the basis that the Period VI work is done using brick and this brickwork is, in turn, assumed to belong to the mid 18th / early 19th century erection of the Registrars Office, also in brick. If the opening, or the subsequent blocking, was part of the alterations associated with the building of the Registrars Office, brick would probably also have been used; whereas if it had been done afterwards (ie in the 1860s) then the character of the stonework would be expected to be more regular, such as the stonework blocking the two western bays of the south arcade. Therefore a date after the dissolution but before the late 18th century seems probable.

Period V

The Period V stonework is situated to the south of the central doorway and immediately south of the Period IV work. It has a maximum height of around 2m and a width of 1.1m. The masonry consists of a combination of materials apparently reused from Period I and II supplemented with other stone, for example two blocks of sandstone from the Sherwood Sandstone Group (Triassic), suggestive of a post-medieval date, as well as a single piece of brick or tile. The coursing, where any can be discerned, is haphazard and uneven which adds to the impression of a poor quality, utilitarian piece of stonework constructed from any materials that were readily to hand.

It is interpreted as the blocking of an opening created in Period IV. A similar phase of blocking is apparent in the equivalent part of the east face of the wall (Fig.6). As with the stonework of the preceding period it is not possible to assign a precise date for the work with any degree of confidence, other than to say that it post dates the post-medieval work of IV and predates the, probable, mid 18th / early 19th century date of VI.

Period VI

The Period VI masonry consists of a small area of brickwork in the upper part of the wall, north of the Period I doorway. It is approximately 1.6m wide and 0.5m in height. The bricks are laid in level courses without a recognisable bonding pattern.

The masonry is interpreted as the blocking of an opening made in the wall during Period IIb. The bricks, where complete, are of a comparable size and texture to those

used for the summerhouse in the nearby garden of the King's School; the summerhouse, or at least the materials from which it is built, is dated to the mid 18th century (Bradbury 2000:165).

It seems probable, therefore, that the Period VI brickwork was put up as part of the construction of the Registrar's Office, this brick structure was erected between 1760 and the early 19th century.

Period VII

The Period VII stonework is located in the upper part of the wall on both the north and south sides of the central doorway, where it has not been replaced by Period VIII repairs. Additionally, a strip of masonry forming the northern termination of the surviving wall face belongs to this period. It is largely constructed from freshly quarried stone of various lithologies, with a small quantity of reused material, laid in level courses and bonded with a hard, dark grey Portland type mortar. This mortar, along with the coursing and distinctive varieties of stone make the identification of the stonework of this period relatively secure.

South of the doorway the Period I facing stones appear to have been cut away and replaced during Period VII, the upward extension of masonry from this repair represents the lower level of a buttress (not shown in its entirety on the elevation drawing) built to stabilize the western end of the south arcade in 1862. The stonework in this lower buttress includes several blocks of Great Oolite and elongated slabs of Brownstones (Lower Old Red Sandstone). The Great Oolite is typical Combe Down Oolite originating from the South Cotswolds / Bath area and the Brownstones from the Forest of Dean. The presence of the Brownstones in the wall at this point is probably the result of the stone being used to repave the pathway between the south arcade and the King's School playground *c.* 1860 with surplus stone being used up in the buttresses. The buttress, and thus the associated masonry, are dated by documentary evidence to 1862.

The wall north of the central doorway is shown continuing NNE to the Bishop's Palace complex on the Board of Health Map of 1851. The buildings at, and north of, the west end of the infirmary were demolished *c.* 1860 and so the date of the northern termination of the wall must lie between 1860 and 1862, the latter date being the year that the Period VII remodelling was completed.

Period VIII

A small number of stones at the top of the wall above, and to the north, of the central doorway belong to Period VIII, as well as a larger repair adjacent to the north jamb of the doorway at the base of the wall. The blocks are of various dimensions but have been machined so that their perfectly flat faces and straight edges make the repairs easy to identify. The stone is a pale, fine grained Middle Jurassic oolitic freestone (possibly Clipsham) and is devoid of tooling marks. These repairs probably belong to the mid 20th century.

East Elevation (Figs. 5, 6)

The ruinous condition of the east face of the wall together with the amount of alteration and repair has made the interpretation tentative in certain areas, particularly the lower part of the wall, north of the doorway. Much of this part of the wall had become so buckled that it was necessary to remove and rebuild it along with the voids left by previous collapses on both north and south sides of the doorway.

At the southern end the lower part of the wall is abutted by a wall that fills the lower

part of the west bay of the south arcade. Above this are the mouldings of the south arcade. The north end of the wall is terminated by a half column forming the west respond the north arcade.

Period I

The Period I work is most clearly defined in the upper part of the wall face, south of the central doorway. The band of larger pieces of irregularly shaped Marlstone correlates with masonry of a similar character at the equivalent position on the west elevation. The three large ashlar blocks of Inferior Oolite at the upper levels of the southern boundary are adjacent to the former western respond of the south arcade, subsequently removed, and may have been associated with it. In this area the boundary with the Period VII work above and that with the Period III work to the north is clearly defined. The definition of Period I work in the lower parts of the wall face, both north and south of the doorway, is less clear.

Period III

The insertion of the jambs and head of a doorway into the east, or interior, side of the pre-existing Period I doorway is the work of Period III (Fig.7). The doorway has a plain chamfer running continuously around the jambs and head of a flattened two centred arch. Its insertion required the cutting away of some of the Period I mouldings on the east side of the pre-existing doorway leaving only the soffit roll, a smaller subordinate roll and what could be an angle fillet.

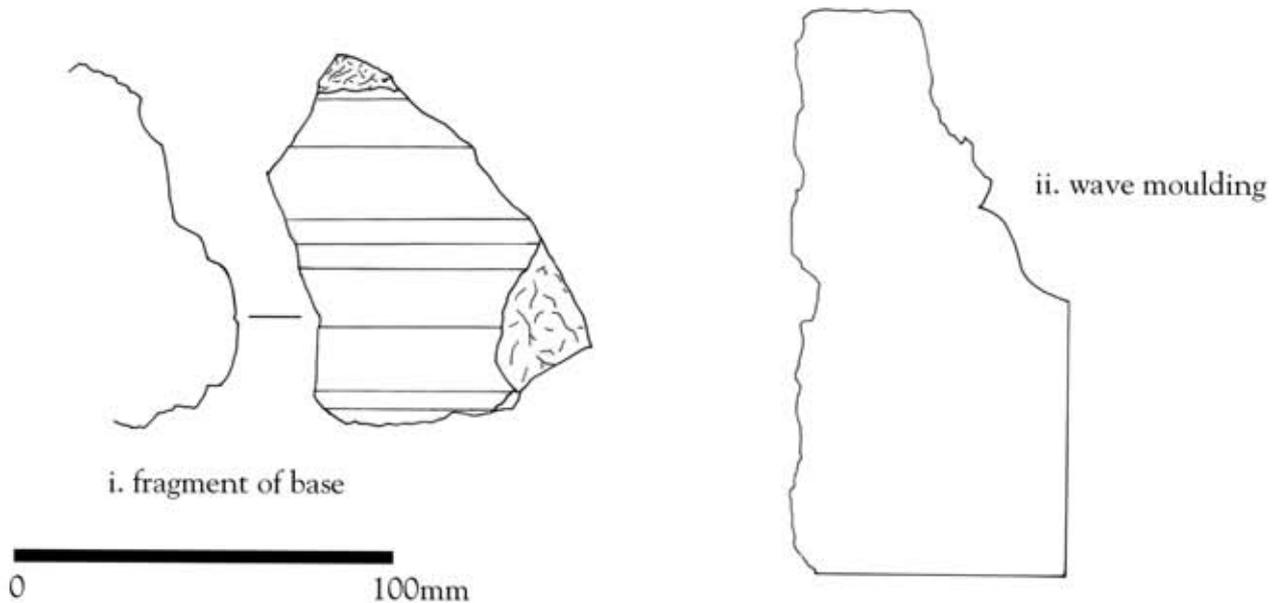
West doorway, south jamb / intrados

Fig.7



West wall ~ reused moulding fragments
Scale 1:2

Fig.8



Most, or all, of the jamb stones have been replaced during Period VII, however the head of the arch and the springers are late medieval (Period III) and show that the doorway was built using Lower Freestone. On the south side of the jambs and arch there is clear evidence, in the form of a strip of adjacent infilling masonry, of the doorway being inserted into the wall, in other words, at this point the wall face is earlier than the door mouldings.

Period IV

At the southern end of the wall there is evidence of a near vertical boundary in the masonry up to a height of around 1.8m above the present ground level. This feature is also present on the corresponding part of the west face where it is interpreted as forming the north jamb of a doorway shaped opening, the boundary on the east face is therefore assumed to be associated with this opening. The Period IV work lay on the north side of this masonry break forming the north jamb of the subsequently blocked opening. Much of the Period IV masonry has collapsed. What remains is composed primarily of roughly squared blocks of Inferior Oolite with some Blue Lias Limestone.

Period V

The Period V stonework is defined by the near vertical boundary referred to in the previous paragraph. It is a strip of masonry 1.8m in height, 0.5m in width; in its fabric are included Romano-British brick, post-medieval brick, ceramic tiles and irregularly sized and shaped Inferior Oolite, Blue Lias Limestone and a block of Brownstones (ORS). The two blocks of Great Oolite at the bottom of the wall may belong to this period or alternatively may belong to the Period VII repairs.

The Period V masonry is interpreted as the blocking of an opening created in Period IV. A similar arrangement is apparent on the west face of the wall and so the range of dates suggested for that context, post-medieval before c.1800, is followed for the Period V work on the east.

Period VI

North of the central doorway at a height of around 2m is the area of masonry assigned to Period VI. The definition and dating of the masonry belonging to this period are difficult. There is some evidence of an opening being made in the wall in the equivalent position on the west face of the wall so the Period VI stonework may be the internal blocking of that opening. It may, however, be possible that the Period VI masonry belongs to the mid 19th century repairs (Period VII).

It consists of roughly level courses of Inferior Oolite, Marlstone and Blue Lias Limestone with two pieces of Great Oolite. The Marlstone probably represents recycled Period I stone. A number of the blocks of Lower Freestone had worked faces, the remainder were roughly squared or unworked, this combination of stone types and finishes suggests that the building materials are reused.

Period IV-VI

This classification has been used for an area of stonework on the north side of the central doorway in the lower part of the elevation. The stonework was in such poor condition that it has not been possible to make an accurate assessment of it.

The face of the wall has buckled so that the larger blocks of worked Inferior Oolite, adjacent to the void, project from the line of the wall by 100-150mm. These blocks appear to be a repair that has subsequently failed. They have been re-pointed at least once in this buckled state which suggests that the problems with the wall at this point do not have recent origins.

The Period IV-VI masonry is composed of Inferior Oolite and Blue Lias Limestone, the lower half of the wall face was, during the course of the 2001 repairs, dismantled and rebuilt with Blue Lias Limestone from Somerset. Two pieces of stone with medieval mouldings were recovered from the lower courses of the dismantled wall (Fig.8), a fragment of Lower Freestone with part of a hollow moulding (Worked stone No. 327) and a fragment of Great Oolite with part of a wave moulding (Worked stone No. 328; Fig.8.ii). The former has well defined, fine vertical tool marks suggestive of a Romanesque date; the latter preserves a wave moulding as part of a larger, but lost, design. The wave moulding became popular in the Severn Valley after the 1320s (Morris 1978:23).

Period VII

The Period VII work on the east face of the wall closely matches that on the west. It extends up into the buttress at the southern end, and comprises a number of courses across the top of the elevation as well as strip at the northern termination.

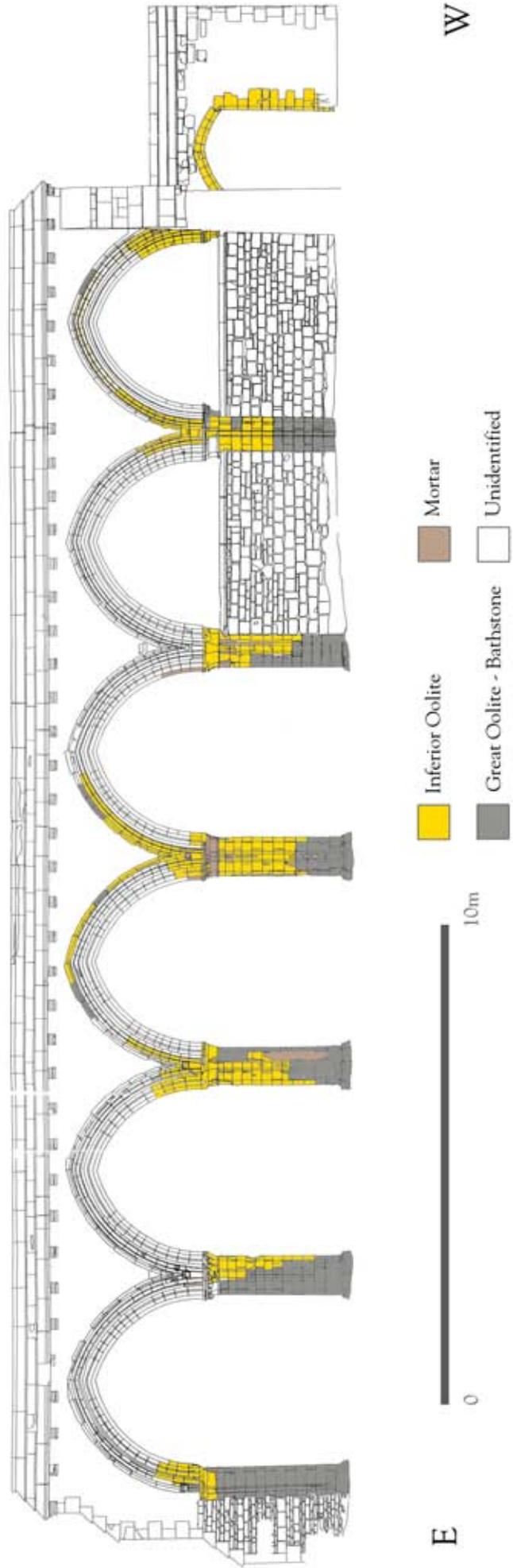
Below the buttress are a number of elongated blocks of Brownstones (ORS) as on the east face and the Green Coal Measure Sandstone is probably recycled from work of a previous period. The courses are level and regular with a hard but brittle dark grey mortar.

The pillar at the northern termination of the wall is what remains of the Period I west respond of the north aisle (see below, North Arcade). The extent of the Period VII repair to the pillar was defined by the use of Great Oolite stone from the Bath area, along with the finer finishing and less weathered appearance than the Period I stonework. The Period I courses and joints appear less regular than those in the stonework wholly of Period VII. Where Period I stonework was retained the Period VII work follows its course levels, however where no such constraints exist the courses are altered to a repeating pattern of joints and equal course heights.

The replacement of the jambs of the central doorway is also the work of Period VII.

Gloucester Cathedral Infirmary : south arcade, north elevation ~ petrology
 Scale 1:100

Fig.9



The Period VII jambstones are identified by their petrology, Great Oolite from the Bath area, finer finish and less weathered appearance. The interpretation drawing shows that three of the jambstones in the north jamb belong to Period III, these blocks are of Inferior Oolite and more weathered than the surrounding stones, but may have been reset in Period VII. It is not possible to determine whether the course heights, or the way in which the jambs are cut into the Period I mouldings, reproduce the Period III details or are wholly of Period VII.

Wall Core

The voids created by the collapse of the east face of the wall exposed the core in two places. The core was seen to be in a poor condition, readily crumbling away if probed and reduced to an orange sand in places. It is composed of irregularly shaped pieces of Inferior Oolite, Blue Lias Limestone and Romano-British brick and roof tile, some of which was retained. The foundation wall of the south wall of the infirmary is recorded as being laid on pitched Roman tiles (Heighway 1989:256).

A fragment of moulding was removed from the core on the south side of the doorway during the process of repair (Worked stone No. 329; Fig. 8.i). The moulding is a part of a base which, if complete, would have had a diameter of approximately 260mm at its maximum. It is therefore too small to have served as a base for anything other than a decorative column and may, for example, have been part of an engaged half column. It has a double hollow moulding, was turned on a lathe and is cut from Lower Freestone. The moulding appears to be Romanesque but, in view of its association with large quantities of Romano-British tile, an earlier date cannot be ruled out.

South Arcade

The south arcade was not included in the 2001 repairs and so scaffolding was not available to give access to the fabric. Detailed recording was therefore confined to the arcade columns, to the level of the capitals, above this point the interpretation is based on observations made from the ground or from high resolution digital images under magnification. The result is that, above the level of the springing of the arches, the determination of the petrology of the building stones and the interpretation of the structure in is incomplete.

A particular problem is the blackening of sheltered parts of the arch mouldings by tarry air borne pollutants. In certain areas the surface of the stonework has become encrusted with a thick layer of grime that has bonded to the surface of the stone, through the chemical production of gypsum (Honeyborne 1990:162); where the grime has cracked and peeled the surface of the stone has also become detached. This process is particularly marked on the intricately carved surfaces such as the capitals and is shown in detail on close up photographs. Much of the mouldings of the arches are obscured in this way and could not be assessed.

The arcade is 28.6m in length and 7.5m in height including the coping stones. The bays, measured between the columns, are between 3.5 and 3.6m wide. The columns are numbered 1 – 5 from west to east, the responds are referred to individually and the bays numbered 1 – 6 from west to east. The accessible parts of the arcade, ie. the columns and capitals, are assessed individually below followed by an overall assessment of the arcade.

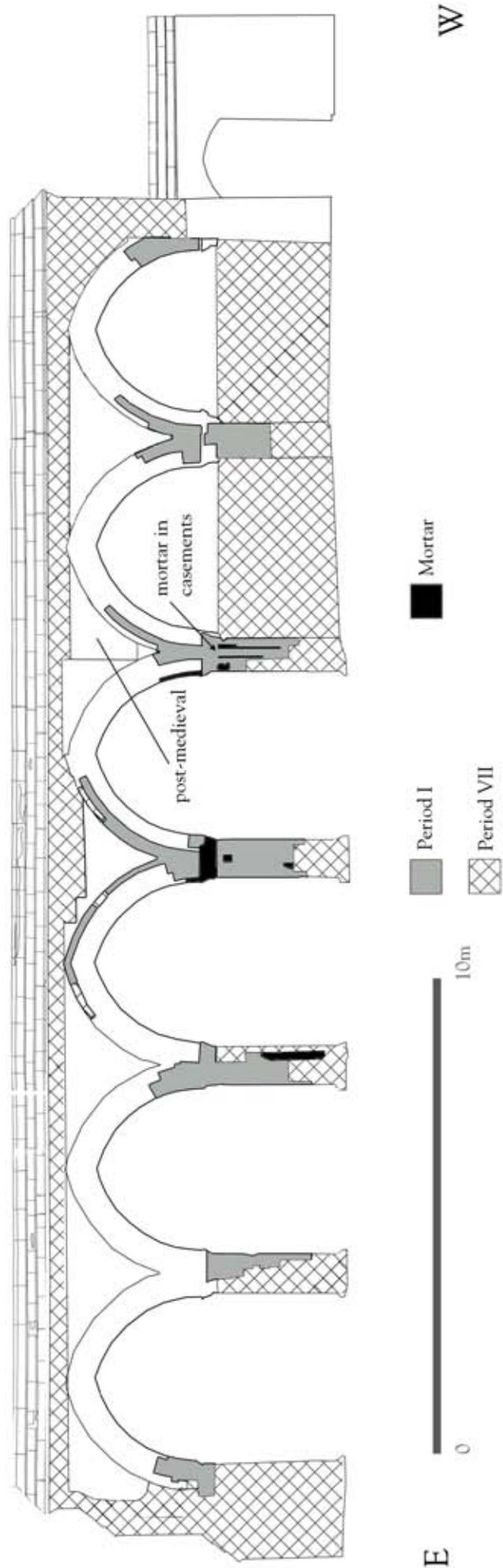
Description of columns and capitals (Figs. 9-12)

West respond

The capital has a circular abacus with an undercut hollow and a plain moulding. Below

Gloucester Cathedral Infirmary : south arcade, north elevation ~ interpretation
Scale 1:100

Fig.10



the abacus are three circular mouldings; the top is perished but appears to be plain, the bottom two are chamfered and decorated with foliage. The bell is plain except for three fillets, two of which survive, that continue up from the shaft interrupted by a roll at the neck. The south side of the capital has been roughly cut away with the cut forming a crude right angle as if to receive a stone or timber. This alteration to the capital may be related to the vaulted passageway shown approaching Bay 1 from the south in Carter's plan of 1807 (Welander 1991:407). A small fragment of the shaft remains attached beneath the necking, it has three fillets and the bottom edge rests on top of the copingstones that cap the Period VII wall filling the lower part of bay 1.

The capital is cut from a block of Lower Freestone (Inferior Oolite) whereas the abacus is Bath stone (Great Oolite) and therefore a Period VII replacement. The abacus appears to be an almost exact replica of the stone that it replaced in that it has been shaped to fit the earlier mutilation of the capital, the cut back face being neatly sawn.

The shaft, or respond, is obscured by the abutting Period VII cross wall. The respond differs from the attached half column found at the west respond of the north arcade or the east end of the south (Fig.13); no such column exists at the west respond of the south arcade where the capital is attached to a block with a flat face and what remains of the shaft shows that it was a slender (approximately 120mm), three fillet, freestanding column standing in front of a flat ashlar respond.

The capital itself shares several characteristics with other capitals in the arcade such as the arrangements of fillets on the bell and the small flourish of foliage on the rim of the mouldings and this, together with the simple, bold arrangement of deeply cut mouldings and absence of a wave moulding, suggest a date in the first half of the 13th century. Early English capitals with a similar profile are illustrated in Paley and Fawcett (1891;Pl X, 38, 40).

Column 1

The walls filling the lower halves of Bays 1 and 2 abut the column on the east and west. The column, unlike the others in the arcade, is asymmetrical in plan. On the west side are plain chamfers and a flat face. A fragment of a detached shaft protrudes from the coping of the abutting wall and is attached to the capital. The capital has a 13th century design similar to the corresponding capital at the west respond, although without the foliage. It is cut from Bath stone and so is a Period VII reproduction. The west side of the column has been included with the Period I work but there remains the possibility that it was altered to its present chamfered profile in the later medieval period.

The east side of the column follows the column design found in the remainder of the arcade, that is a projecting central shaft flanked by deep casements, in turn, flanked by two arc segments. These arc segments are divided from the flat and chamfer mouldings on the west side by small and larger half rolls. The larger roll continues up to the abacus, interrupted by a plain moulding at the necking, where it acts as the capital. The capital on the east side of the column is an undecorated bell which appears to belong to Period I but is too dirty to make a secure petrological identification.

The south side the column, including the capital unit and most of the abacus, was replaced during Period VII. On the north side the Period VII work extends to a height of 1.3m, above this the stonework is Inferior Oolite and assumed to be medieval in date.

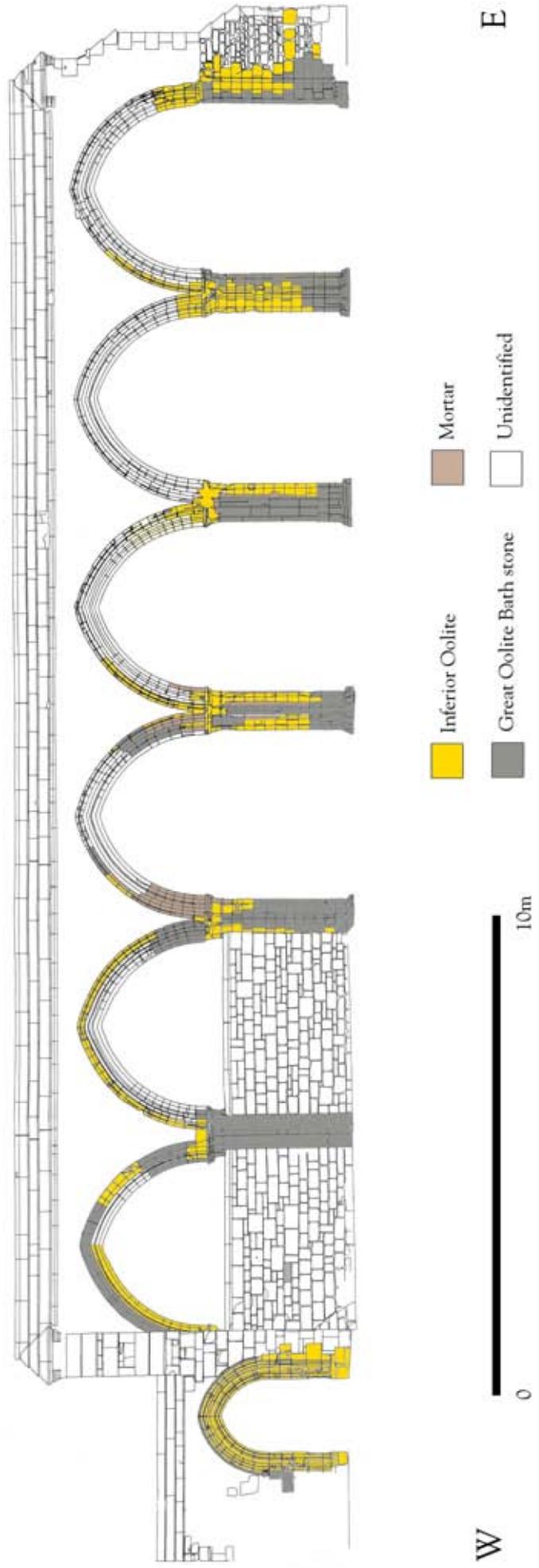
As with west respond there is some evidence for the alteration of the column as part of a putative remodelling of Bay 1.

Column 2

Column 2 is abutted on its west side by the Period VII wall filling the lower part of Bay 2. In plan the column profile has two axis of symmetry with four arc segments divided from

Gloucester Cathedral Infirmary : south arcade, south elevation ~ petrology
 Scale 1:100

Fig.11



projecting, filleted shafts by deep casements (Fig.15).

The south elevation shows that the column was almost entirely refaced up to the height of the capitals except for a few blocks at the abutment of the Period VII wall, suggesting that a wall stood between the columns 1 and 2 during the Period VII repairs. A greater number of medieval stones are shown on the north elevation, again on the west side of the column. The surviving medieval stones show that the medieval coursing was followed during the Period VII repairs.

Apart from sections of the plain moulding at the necking, which are in Bath stone, the capitals are cut from Lower Freestone (Inferior Oolite) and belong to Period I. Little decoration survives on the capitals, numerous foliage stems rise from the bottom of the bell but toward the top of the bell unit the decoration has weathered away. The capitals at the top of the south and east facing shafts show the foliage stems topped by small spheres, or blooms, with a knot motif on the projecting shaft. These are 20th century mortar repairs but subtle undulations on the surrounding stonework suggest that these repairs may accurately reproduce the original decoration.

A small excavation revealed the base of Column 2 completely (see below-Excavation); the results demonstrate that the visible parts of the base of Column 2, as well as the bases of all other south arcade columns, are cut from a shelly Bath type weatherstone and so belong to Period VII. The excavation also uncovered evidence of a wall abutting the column on its north side. Further evidence of this post-medieval wall is present on the column in the form of mortar and small fragments of stone that remain in the hollows of the casement mouldings on the north side of the column (Figs. 9, 16).

Column 3

In plan the column has the same profile as columns 2, 4 and 5 (described above-Column 2; Fig.14). At the base of the column the bottom three to four courses and base are cut from Bath stone so belong to Period VII. As far as it is possible to tell these repairs reproduced the medieval courses. Above the fourth course, on the north elevation, the stonework is original.

There are more extensive Period VII repairs on the south elevation; the southern projecting shaft has been completely replaced to a point 100mm below the abacus, above the third course the medieval system of coursing has been abandoned, for example the uppermost replacement stone is 0.8m in height. A further Period VII repair is evident on the south west arc: at a height of around 2m up to the necking a single stone replaces four courses of medieval masonry, and above the necking the bell unit of the capital is also replaced.

In addition to the Period VII repairs in stone the column has extensive mortar repairs. On the south elevation the mortar repairs flank the Period VII replacement shaft: here it is possible to observe that in places the mortar repairs extend over the Period VII work, confirming that the mortar repairs post date Period VII.

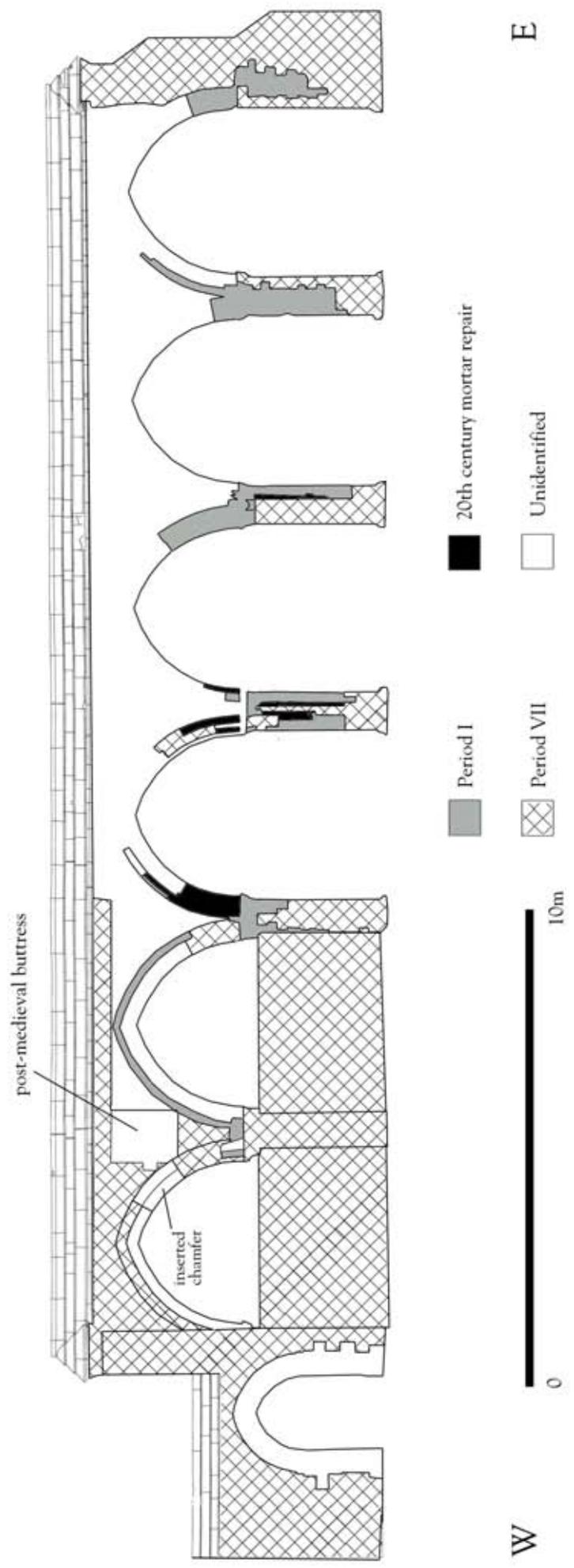
The medieval capitals survive at the top of the west, south and east projecting shafts; the bell units are plain except for a single fillet continuing up from the shafts below. The upper mouldings of the capital are preserved in places on the north side of the column; small diagonal strands of foliage are attached to the edge of the moulding above the bell following a similar design, albeit by a different hand, to the capital at the west respond. This foliage motif has been skilfully reproduced with the mortar repairs, for example on the moulding above the northern shaft.

Column 4

The plan has the same profile as columns 2, 3 and 5 (described above: Column 2; Fig.14). It was subject to extensive repair during Period VII; the base is a shelly Bath weatherstone

Gloucester Cathedral Infirmary : south arcade, south elevation ~ interpretation
 Scale 1:100

Fig.12



and the two courses above, also Period VII, follow the medieval course heights. Above this point the medieval coursing is lost with Period VII stones rising through up to four medieval courses. In this way almost the entire western half of the column, excluding the capitals, was replaced during Period VII. The column also has the post-Period VII mortar repairs.

The capital belongs to Period I with patches of mortar repair. The medieval stones are weathered so that few details of the decoration can be recorded other than that the overall shape of the unit follows the same general pattern found on the other capitals in the arcade. Evidently the mortar repairs formerly covered most of the capital but have since become detached and fallen away leaving the severely weathered Period I stones exposed.

Column 5

The plan has the same profile as columns 2, 3 and 4 (see above-Column 2; Fig.14). Both north and south elevations show that the eastern half of the column, along with the base, was mostly replaced during Period VII but, in contrast to columns 3 and 4, the medieval course heights appear to have been reproduced in the stone work of Period VII.

The capital unit is decorated with foliage. Stems rise from a roll moulding at the neck and culminate in broad leaves and a knot of stems that fill the upper half of the bell unit. The decoration has weathered away on the south elevation and what survives on the north elevation is caked in soot to the extent that much of the detail is obscured and a petrological identification was not possible.

East Respond

The eastern termination of the arcade is achieved by a half column attached to a Period VII buttress. In plan the profile of the half column is asymmetrical; it has a western projecting shaft flanked by deep casements and arc segments. These arcs are articulated to the wall face on the south elevation by a single roll moulding and a slight chamfer (Fig.13), whereas on the north elevation the articulation is achieved by two rolls, the first around 40mm, the second 100mm, followed by a slight chamfer.

This asymmetry is the result of the Period VII repairs, as the facing stones on the north elevation were entirely replaced up to, but not including, the capital unit during Period VII. Many of the facing stones of the south elevation were also replaced during Period VII. However a strip of medieval masonry is preserved at the junction of the moulded stonework with the Period VII buttress. Here it is evident that the arc is terminated by a single roll and slight chamfer. The evidence of the capital unit on the north elevation supports this observation; the capital is cut from Inferior Oolite and so is judged to belong to Period I, but only the larger of the two rolls transcends the necking and is incorporated in to the bell unit of the capital.

The half column is, therefore, dissimilar from the preceding four columns and this change in the design of the mouldings may indicate that the Period I arcade terminated at this point. The single roll and chamfer arrangement occurs in two other positions in the medieval stonework of the infirmary: on Column 1 where the extent of the Period I work is unclear, and on the west respond of the north arcade.

There is other evidence that supports the proposition that this half column represents the eastern limit of the south arcade. The capital units on the north and south faces of the column are cut from stones that extend a short way into the surrounding masonry of the Period VII buttress and both have ashlar stops. This means that the present half column respond could never have had the bi-axially symmetrical profile, in plan, of the preceding four columns as immediately east of the easternmost roll the face of the wall was, in the 13th century, flat.

South arcade, south elevation ~ west respond

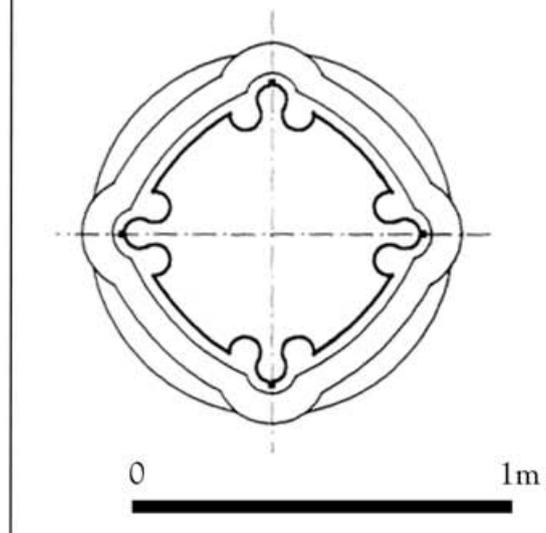
Fig.13



Column profile

Fig.14

Scale 1:20



Description of the South Arcade (Figs. 9-12)

It has been possible to identify the work of up to seven phases of construction and repair in the south arcade. The 13th century stones on the columns and arch mouldings are referred to as Period I as they share several characteristics with the 13th century (Period

I) doorway in the west wall of the infirmary. Similarly the repairs and rebuilding of the 1860s are referred to as Period VII as they correlate with the Period VII work on the west wall. Apart from the work of these two periods it is not possible to correlate the stonework of the south arcade with that in the west wall. The band of Marlstone in the east bays of the south arcade may relate to a band of the same stone in Period I of the west wall. The chamfered mouldings on the column and arch of Bay 1 may relate to chamfers inserted in the west doorway and Column 1 of the north arcade.

The phases outlined in the interpretation drawings (Figs.10, 12) are listed below in a suggested chronological order.

1. Period I : the 13th century stones in columns and arch mouldings.
2. Rubble wall face : in the spandrels; may belong to Period I in parts.
3. Inserted chamfers : Bay 1, south elevation
4. Inserted buttress : in spandrel above Column 1
5. Rebuilt rubble wall face : north elevation, associated with the east wall of Registrar's Office.
6. Period VII : 1860-2
7. 20th century mortar repair.

Bay 1

Bay 1 contains several features and anomalies not found in the other bays of the arcade. It has been suggested that the arch was rebuilt in the medieval period (Hope 1897:105) or in the 19th century (Morris 2001:145). The indicators of such a rebuilding include:

1. The outer order of moulding on the south elevation of the arch is chamfered whereas on the other arches the outer order consists of two roll mouldings.
2. The west respond differs from the Period I responds at the west end of the north arcade and the east end of the south arcade.
3. Column 1 is wider than the other columns in the arcade and possesses mouldings not present on the other columns in the arcade.
4. The masonry above the arch appears to contain work of different periods.

1. Chamfered moulding (Fig. 15)

The stones bearing a chamfered moulding on the outer order of the arch of the south elevation of Bay 1 are cut from Bath stone and therefore a part of the Period VII repairs except, that is, for eight stones of Inferior oolite, two at the springing point from Column 1 and six further up the arch on the east side of the apex. These six stones are at the point where the bottom corner of an ashlar panel, that occupies the upper part of the spandrel, meets the arch. It is possible to see that two of the chamfered stones have been cut away to receive the ashlars. At the equivalent point on the arch of Bay 2, where the ashlars meet the arch, the Period I outer order of the arch mouldings have similarly been cut away in order to receive the ashlars.

A photograph of the south aspect of the south arcade, taken between 1855 and 1860 (Glos. Lib. GL 107.20), shows that the ashlar panel is what remains of a buttress that extended up the south wall of the former Registrar's Office (demolished *c.*1860). The evidence of the photograph shows that Bays 1 and 2 have not been completely rebuilt, at least, since the mid 19th century and that the six chamfered stones of Inferior Oolite were in position *before* the buttress was installed. In view of this, and the fact that plain chamfers were inserted into the rear arch of the west doorway and Column 1 of the north arcade in the later medieval period, it is probable that the chamfered moulding in Bay 1 is the result of later medieval alterations and does not belong to the Period I design.

Fig 15. South arcade, south elevation: bays 1 and 2

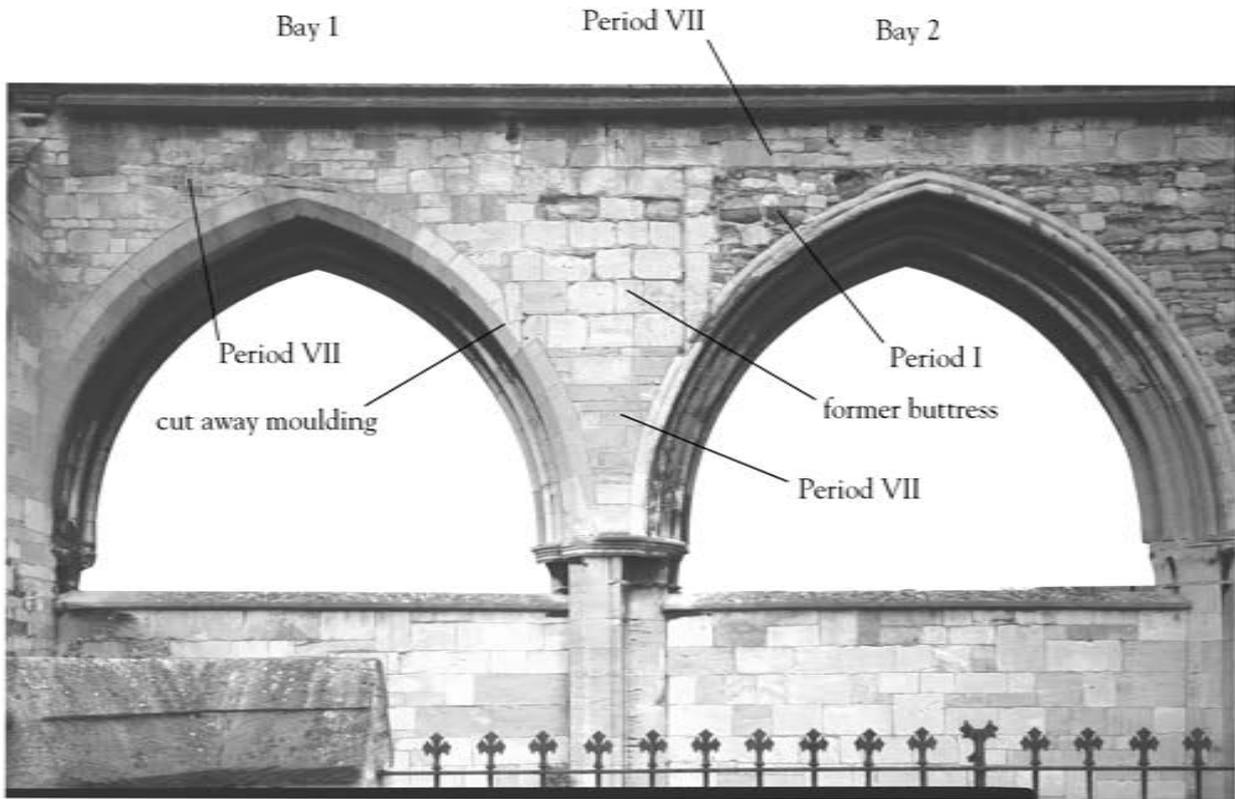
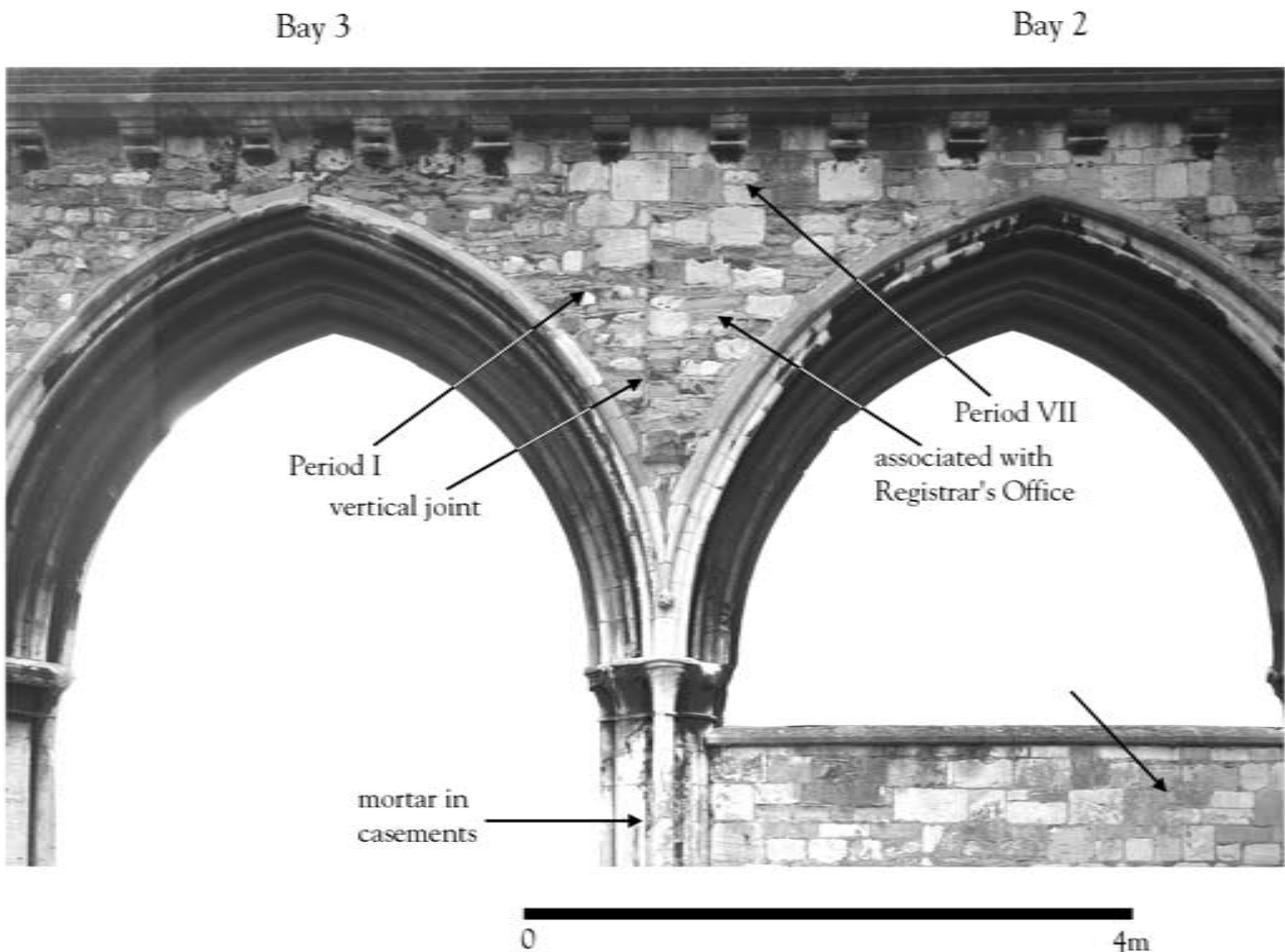


Fig 16. South arcade, north elevation: bays 2 and 3



2 & 3. West respond and Column 1 (Figs. 15, 16)

The column and respond mouldings of Bay 1 differ in several respects from the equivalent mouldings on the other surviving responds and columns. The significant differences are these: the west respond possesses no half column as do the other surviving responds, the mouldings on the west side of Column 1 consist of plain chamfers as opposed to the arc-casement-engaged shaft configuration found on the other columns; Column 1 is wider on its east-west axis than the other columns so that, for example, the drip moulds between the arches are connected by a short horizontal section of roll and fillet as opposed to meeting in a 'V' as they do on the other arches.

The west respond has been described above (Description of columns and capitals-West respond) but the salient points are these: the absence of the half column respond could be partially explained if the face of the north-south wall, to which it is attached, had been rebuilt a short distance to the east and the remaining parts of the column that were visible were removed or cut back flush to that face. However, although there is evidence of the rebuilding of the north-south wall and of alterations to the respond, the bell unit of the capital that tops the respond is completely circular in plan, in other words without being re-cut, for which there is no evidence, it could never have been engaged with the main body of the column. The Period VII capital on the west side of Column 1 is similarly detached with a freestanding shaft.

There is also a degree of uncertainty about the flat and chamfered face on the west side of Column 1. The chamfer and flat west face of the column deviates from the arc-casement-shaft arrangement found on the other columns, however the mouldings on the column differ from those found on the other columns in other respects. The surviving medieval stones on the north side follow, from east to west, an arc-small roll-larger roll design similar to that found on the east respond.

While it is possible that the chamfers could have been inserted in to the face of the column by a skilled mason intent on disguising his alteration, the insertion of the small and larger rolls would have required the dismantling and replacement of most of the column's facing stones; there is no evidence for this and so these roll mouldings almost certainly belong to the Period I phase of construction.

The drip moulding that runs the length of the north elevation of the arcade has a roll and fillet profile. This profile is also present on the Period I work of the west doorway, on the arcade columns and is a typical 13th century moulding profile (Morris 1992:8). The short section of horizontal moulding that connects the drip mouldings of Bay 1 and 2 appears to be the work of Period I, as the moulding appears identical to those that it connects.

If the remaining medieval drip mouldings in Bays 1 and 2 represent Period I work *in situ* then the arch could not have been completely rebuilt. On a more general level, it is unlikely that the medieval masons would dismantle an entire Bay only to reconstruct it in nearly every detail with only slight and subtle alterations.

4. Spandrels and masonry above the arcade (Figs. 15, 16)

The identification of an area of ashlar masonry in the spandrel between Bays 1 and 2, south elevation, as the lower part of a buttress from a photograph of the 1850s (Glos. Lib. GL107.20) has been mentioned above. The masonry below it, in the bottom half of the spandrel, is composed of over 50% Bath type Great Oolite, has sharply defined edges to the stones and is adjacent to a Period VII repair to the arch in Bay 1. It, therefore, belongs to Period VII as does the masonry above the arch and the buttress at the western termination of the arcade.

The extent of the Period VII masonry is equally clear on the north elevation, it consists of the west buttress and face of the wall west of the apex of the arch. East of the Bay 1 arch the Period VII work is confined to a horizontal strip of stonework at the very top of the wall. The ashlar in the spandrel between Bay 1 and 2 may be related to the ashlar buttress part of which survives at the equivalent position in the south wall.

To summarise the findings for Bay 1 of the south arcade: the arch mouldings, on both the north and south sides, contain medieval stones *in situ* and therefore the anomalies, listed above, for Bay 1 are not the result of the 19th century reconstruction.

It appears that Bay 1 was originally built with mouldings that differed from those found on the rest of the arcade. The heavy chamfer on the west side of Column 1 is judged to belong to Period I. The impression of it having been inserted in to the column is caused, in part, by the fact that the arcade's back is broken above Column 1, the resulting subsidence has caused the joints to open up at the top of the column. The capitals were supported on detached shafts in contrast to the remainder of the arcade where the shafts are connected to the main body of the column by deep casements.

The emphasis given to this side of Bay 1 by the different scheme of decoration may have been connected with an important entrance at the west end of the south aisle. An entrance in this position would be expected in a 13th century infirmary hall of such proportions.

The spandrel on the south side contains the remains of a buttress, post-medieval but pre-1860, together with masonry from Period I (13th century) and Period VII (1860-2).

Bays 2- 6

The moulded arch stones that have not been assigned to either Periods I or VII are too blackened to identify without close inspection or cleaning. They give the impression that much of the Period I stonework survives beneath the grime. The post-Period VII mortar repairs recorded on the columns and capitals was also identified on the arch mouldings of Bays 3 and 4.

Wall face

The masonry is composed of irregularly sized and shaped stones laid in uneven courses or randomly in the wall. Much of the rubble type stonework in the spandrels may belong to Period I.

A typical sample of the stonework contains approximately 50% undifferentiated Middle Jurassic Oolite limestone, 20% Blue Lias Limestone, 20% Marlstone, 10% unidentified stone. The masonry contains many pieces of isolated burnt limestone throughout suggesting that much of the stone was recycled from an earlier structure.

The Marlstone is restricted to a band that can be traced across Bays 4, 5 and 6 on both north and south sides of the arcade, so what remains in these bays belongs to a single episode of construction. A band of Marlstone with a similar suite of building stones occurs in the Period I masonry of the west wall of the infirmary.

A small number of fragments of brick or ceramic tile occur throughout the faces of both north and south sides. A rapid survey shows that brick of possible Romano-British date occurs throughout whereas the obviously post-medieval brick tends to be confined to either areas adjacent to Period VII work or in small areas of repair. An example of such a poorly defined repair is located in the spandrel above Column 3 on the south side of the wall where there is a concentration of larger blocks of Lower Freestone with worked faces and fragments of brick with a modern appearance.

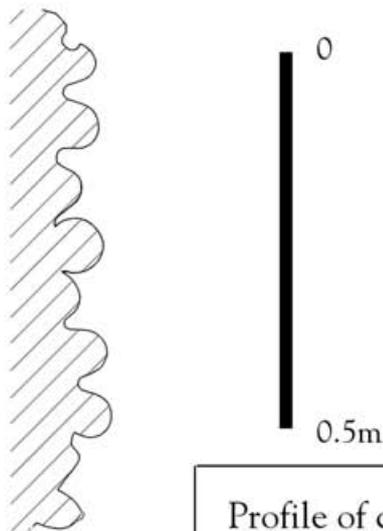
There is a vertical joint in the masonry in the spandrel above Column 2 on the north side of the arcade (Fig.16). If continued down to column level the joint aligns exactly with a casement moulding on Column 2 that marks the east face of a north-south wall spanning the arcade at that point; mortar from this wall still fills the casements on the north side of the column. It is probable, therefore, that the masonry to the west of the vertical joint is connected to either with the construction or demolition of the building that filled the western two bays of the infirmary hall in the post-medieval period (Registrar's Office).

Along with the Bath stone on the columns and arches the Period VII work includes a strip of masonry at the very top of the wall, the bottom course being level with the apex of the arch mouldings. On the south side this strip terminates above Column 2; on the north it extends the length of the wall to the Period VII stonework at the east buttress.

The Period VII work at the east buttress is defined, in the mouldings of the respond, by the use of Bath type Great Oolite and, in the face of the wall, by a break in the stonework extending from the arch moulding of Bay 6 to the top of the wall. The quoins and sloping weather stones in the buttress are cut from Bath type Great Oolite while the walling stone is composed of worked blocks of Lower Freestone supplemented with Blue Lias Limestone laid in level, regular courses.

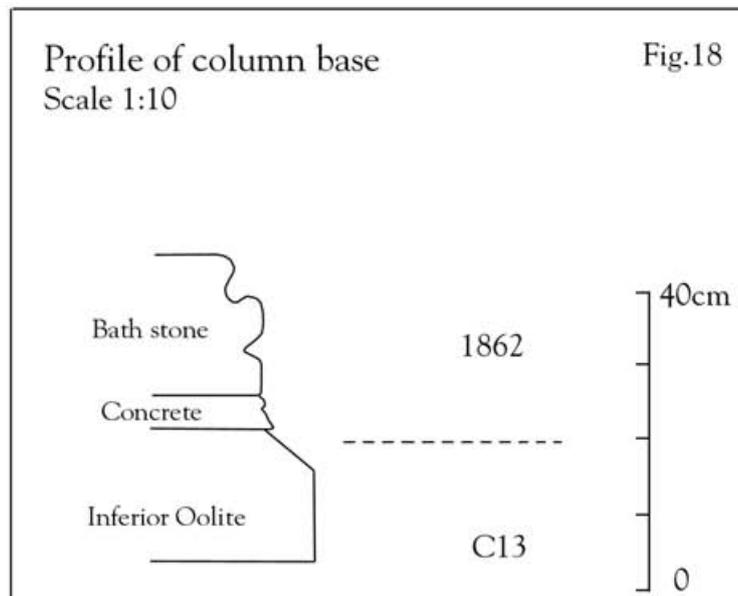
South door moulding
Scale 1:10

Fig.17



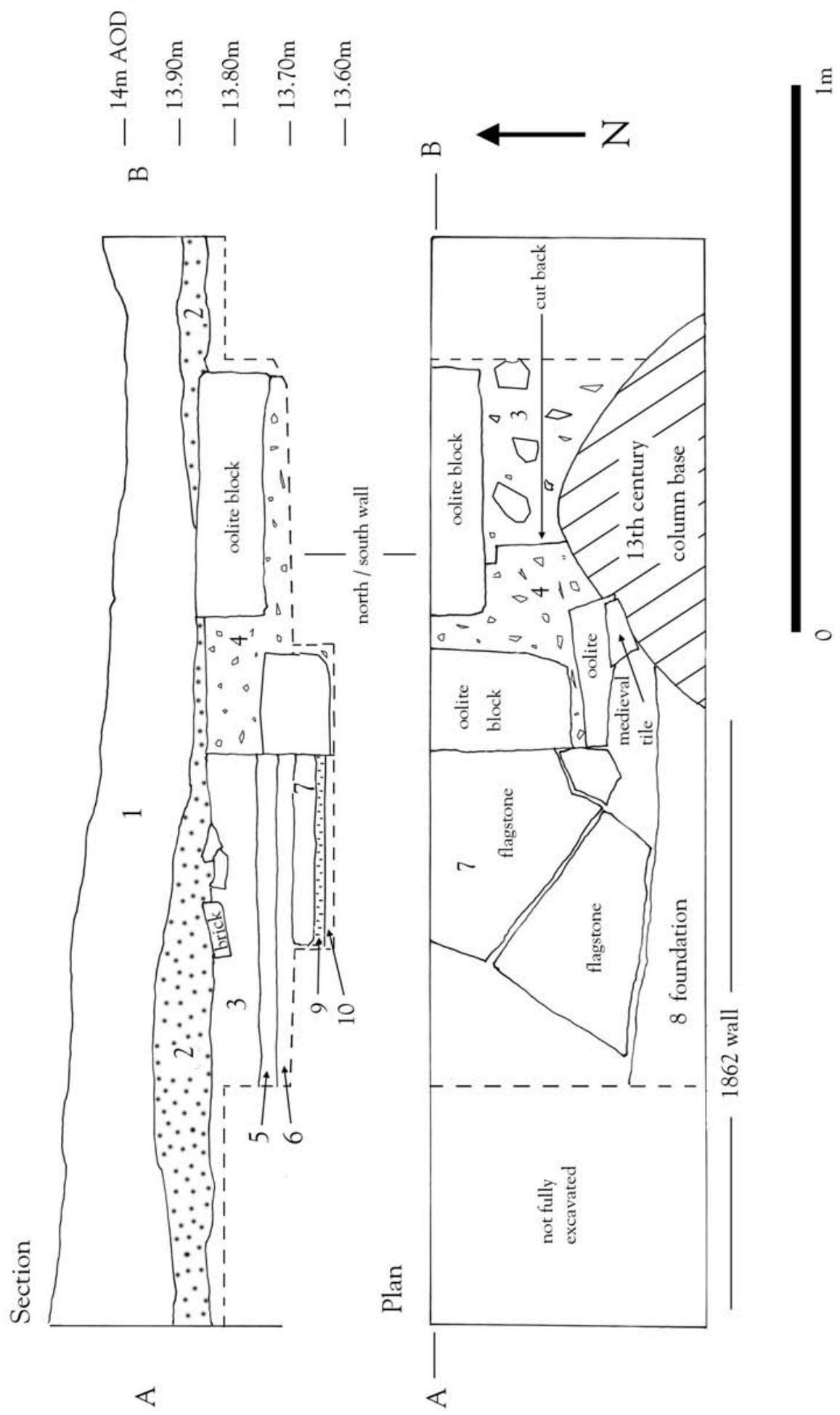
Profile of column base
Scale 1:10

Fig.18



Gloucester Cathedral Infirmary - Excavation by the South Arcade
 Scale 1:10

Fig.19



South Doorway

A medieval doorway with moulded surround is shown at the west end of the south arcade on the elevation drawings. The opening is 1.5m wide and 2.65m above ground level at the apex of its two centred arch. The mouldings rise without bases from a plain, stilted, 'sub-base' 350mm in height and run continuously around the jambs and arch on the chamfer plane, uninterrupted by capitals. The moulding profile (Fig.17) shows seven rolls, ranging in size from 50-75mm in diameter, arranged in a roughly symmetrical manner about the central, largest, roll. Some of the rolls are set back from the chamfer plane and undercut to differing degrees giving the composition a lively meandering quality typical of Early English work. One of the rolls has a beak which suggests, in Gloucestershire, a date sometime in the first half of the 13th century (Morris 1992:6).

The doorway has a small number of Period VII replacement stones in the arch, otherwise the stones are cut from Lower Freestone and are original. There are signs that the doorway may not be in its original position. It is surrounded by masonry of later periods; the doorway is shown several metres to the south of its present position in Carter's plan of Babylon (Welander 1991:407). Most significantly the doorway lay partially on the line of the former west wall of the south aisle suggesting that the aisle wall was demolished before the doorway was set in its present position.

The north face of the doorway, or rear-arch, has a depressed two centred arch with a single chamfer running continuously around the jambs and arch. It is cut from stone from the Inferior Oolite Group and resembles the late medieval doorway inserted in to the east face of the west doorway of the infirmary hall during Period III (Fig.5), for example the size of the chamfer, 120mm, is the same on both doorways. There are the remains of slots cut in to the north face of the jamb at 0.4m, 1.75m and 2.10m above ground level. The upper and lower slots are filled and partially obscured by mortar; the slot at 1.75m height is rectangular, 70x90mm, and 110mm deep.

The masonry surrounding the doorway is either wholly of Period VII (1860-2) or contains work of an earlier period much repaired during Period VII.

Excavation

Location

A trench was dug along the north side of the walls that block the westernmost two bays of the south arcade in order to make the lower parts of the wall accessible for re-pointing. The trench had the following dimensions, 8.6m east-west by 0.5m with a depth of around 30cm. A small area of the trench, by the base of the second column from the west, was excavated archaeologically (Fig.19)

13th Century Column Base

The excavation revealed the base of the column in full, showing it to have a total height of 400mm (Fig.18, 20.ii). It consists of a plinth with a chamfer followed by a bed of modern concrete, 80mm thick. Above the concrete is the upper part of the base decorated with roll and water holding mouldings. The stones forming the plinth are Inferior Oolite and are judged to be medieval, the chamfer is interrupted by the stop of a circular moulding; this circular moulding is on the vertical axis that structures the decoration of the column above. The concrete is modern and the moulded stones are cut from a Bath type Great Oolite weatherstone. Both concrete and Bath stone components belong to the repairs of the 1860's.

Excavation photographs

Fig. 20

north / south wall



stone floor II

i

north / south wall



ii

stone floor II

stone floor I

Stone Floor I

The earliest archaeological feature to be uncovered was a surface formed by Lias Limestone flagstones (Context 10) (Fig.20.ii). Only a small area was uncovered, around 300x300mm, showing the flagstones to be cracked and with an uneven surface that, at 13.64-13.67m AOD, is level with the bottom of the Period I column base. It is possible that context 10 is the remains of a medieval stone floor.

Stone Floor II

A second Lias flagstone floor overlays Context 10 in the form of a shallow bed of clean yellow sand (Context 9) and Blue Lias Limestone flagstones 40-50mm thick (Context 7) (Fig.20.i). Both of the stone floors appear to have been in place before the north-south foundation wall (see below) was constructed, as mortar from the wall has set around one of the flagstones. Another flagstone from this context continues beneath the foundation of the east-west wall (Context 8) that abuts the arcade column. The two stone floors cannot be dated with any degree of precision, they appear to be earlier than the north – south foundation wall (Context 4) which itself is post-medieval.

Foundation Wall

The other feature revealed by the excavation was the foundation of a wall (Context 4) that abutted the column on its north side (Fig.20). The wall is 0.7m thick and composed of blocks of Inferior Oolite and Lias Limestone set in a very hard brown mortar. One of the blocks of oolite was removed and showed several coats of red, black and pale blue paint on one face, a fragment of medieval glazed tile was also embedded in the mortar. The eastern side of the wall has been cut away where the wall abuts the column, in its place was a loosely compacted brown fill containing much mortar from the wall. The removal of the wall at this point would have been necessary for the 1862 restoration of the column base. The fragment of medieval tile and the hardness of the mortar point to the wall being post-medieval in date. It possibly dates from the raising of the brick front of the Registrars Office which dates to the late 18th – early 19th century.

Demolition

A layer of maroon clay or silt 40mm thick (Context 6) had accumulated on the latest flagstones followed by a layer of black organic fill (Context 5), again 40mm thick. Above Context 5 was a layer of material consisting of fragments of oolitic limestone, Lias Limestone, Brick and much grey slate in a loosely compacted brown fill. Contexts 5 and 6 are interpreted as having accumulated after the construction of the north-south wall (Context 4); Context 3 as demolition debris. The quantity of brick and grey slate suggest that it is material from the c.1862 demolition of the Registrars Office.

The ground was levelled off at approximately 13.85m AOD during the alterations of the 1860's. The gravel (Context 2) is 20th century and can still be seen around the bases at the east end of the arcade.

Excavation Contexts:

<i>Context</i>	<i>Description</i>	<i>Position</i>	<i>Date</i>
10	Lias stone surface	Below 9, cut by 4, 13.64-7mAOD	med-post med
9	Orange sand	below 7, cut by 4.	med-post med
7	Lias stone surface	Below 6, 8, cut by 4. 13.70mAOD	med-post med
4	N/S wall foundation	below 2, next 3,5,6, cuts 7,9,10	post-med
6	Maroon clay/silt	below 5, next 4	post-med

5	Black organic	below 3, next 4.	post-med
3	Demolition debris	below 2, next 4. 13.85mAOD	1862
8	E/W wall foundation	above 7.	1862
2	Gravel	below 1.	20 th century
1	Topsoil	-	20 th century

North Arcade

The remains of the north arcade are a half column and capital attached to the east face of the west wall as well as two freestanding columns, the two westernmost columns of the former arcade.

West Respond

The respond survives as a half column, of the same overall design and proportions as the Period I arcade columns, attached to and terminating the northern end of the west wall of the infirmary (see Figs. 5,6). The column is intact up to the bell unit of the capital, above this there are fragments of abacus and a block bearing arch mouldings. The column leans to the north with the top being 70mm north of the base. The column shares the arc-casement-shaft profile found on the columns of the south arcade with the exception that the north face has a miniature roll and an 80mm diameter roll moulding.

The Period I masonry includes the capital that has the same size and proportion as the capitals in the south arcade. The bell unit of the capital is undecorated and the fragment of abacus preserved above the east shaft, again, has the same profile as the abaci of the south arcade, but there is no foliage attached to the rim as with the west respond of the south arcade.

Evidence for the sub-division of the infirmary hall is preserved in the form of a slot cut in to the south side of the column at a height of 1.59m above ground level. The slot is rectangular measuring 200mm x 100mm and is cut to receive a timber aligned with the arcade. The slot confirms that the Period I stones are in situ and were not moved during the re-facing of the remainder of the respond in Period VII.

Most of the facing stones of the respond were replaced during Period VII, they accurately replicate the mouldings that they replaced. The Period I coursing is also reproduced by the Period VII repairs, except for the bottom six courses which belong to Period VII and where the course heights have been standardised.

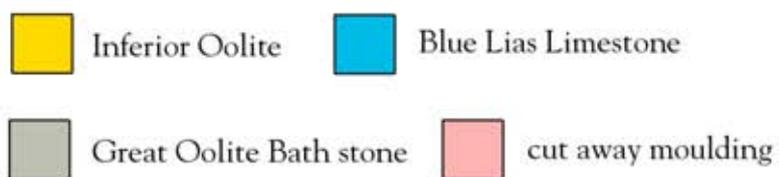
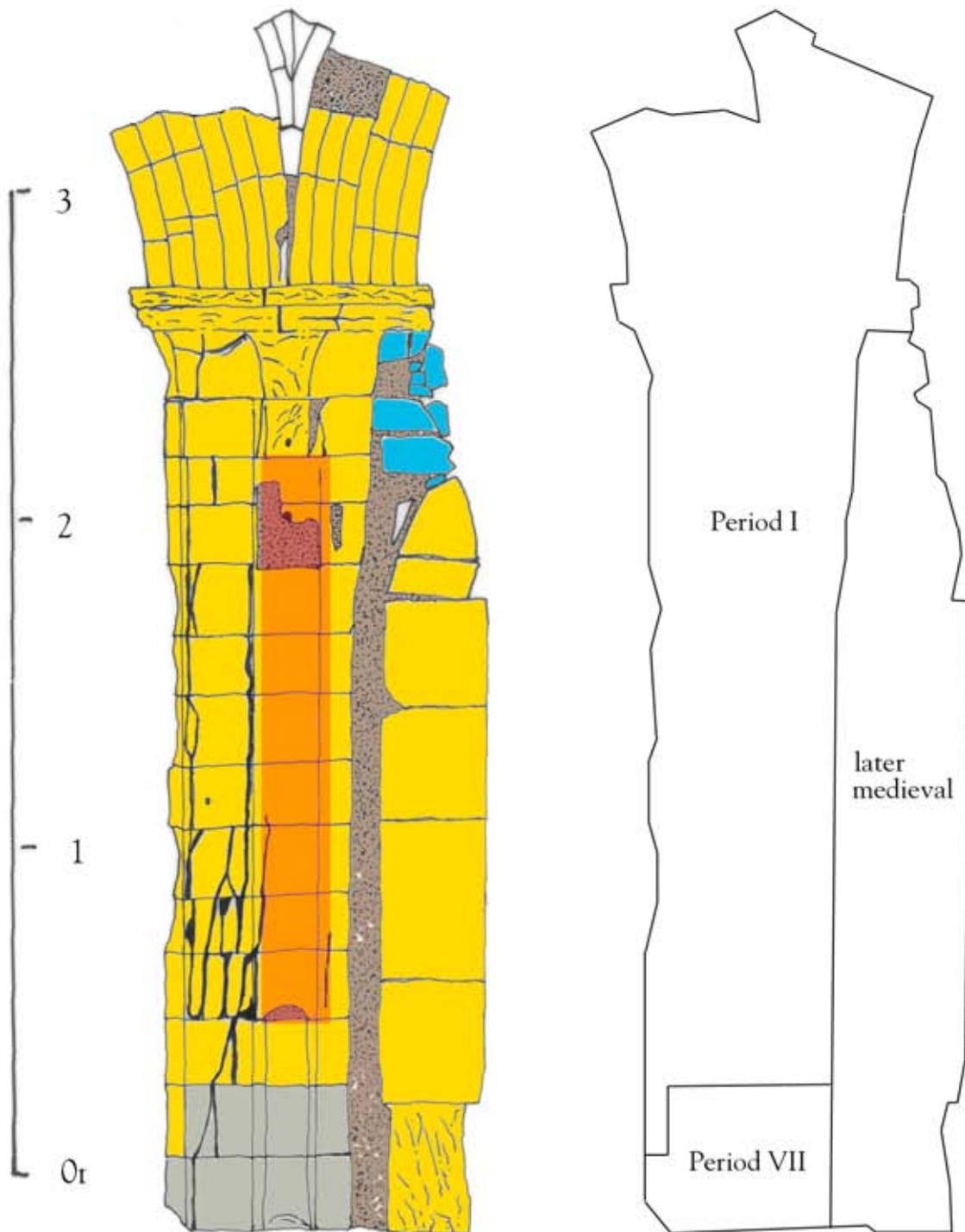
Column 1 (Figs. 21, 22)

Column 1 is the westernmost column of the north arcade. The column survives to its full height with three courses of arch mouldings extant on the abacus. It leans to the north east and contains masonry from three episodes of building and repair together with evidence for the fixing of screens between the columns of the arcade.

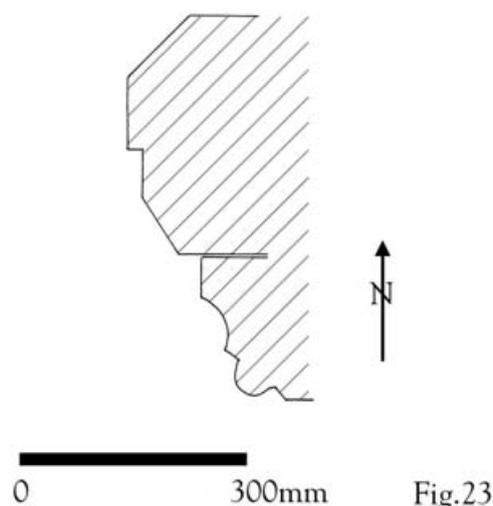
The column originally had the arc-casement-shaft moulding profile found on columns 2-5 of the south arcade. The moulding at the neck of the capital has weathered away; the bell unit is undecorated and what remains of the abacus has the bold, deeply undercut mouldings found on the south arcade. The column shafts do not have fillets and the base is concealed by the topsoil.

The arch mouldings springing from the abacus appear to be Period I work in situ. Unlike Column 1 of the south arcade the roll and fillet hoodmouldings of the arches meet in a 'V' shape, without the short horizontal connecting length of roll and fillet moulding. At the time of writing the arch stones were topped off with a bed of hard 20th century mortar.





Column 1, doorway moulding
Scale 1:10



Alterations to Period I stonework

The Period I stonework has been cut away in three places. The south elevation shows two slots cut into the arc and casement mouldings either side of the central shaft. The slots are 180-200mm in height, 1.62m above ground level and cut into the column at an angle as if to receive timbers spanning the bays of the north arcade. Both flat, cut back faces have mortar filled dowel holes 25mm in diameter. The central shaft between the slots has not been cut away so it would have acted as an end stop for the timbers preventing any lateral movement between the columns.

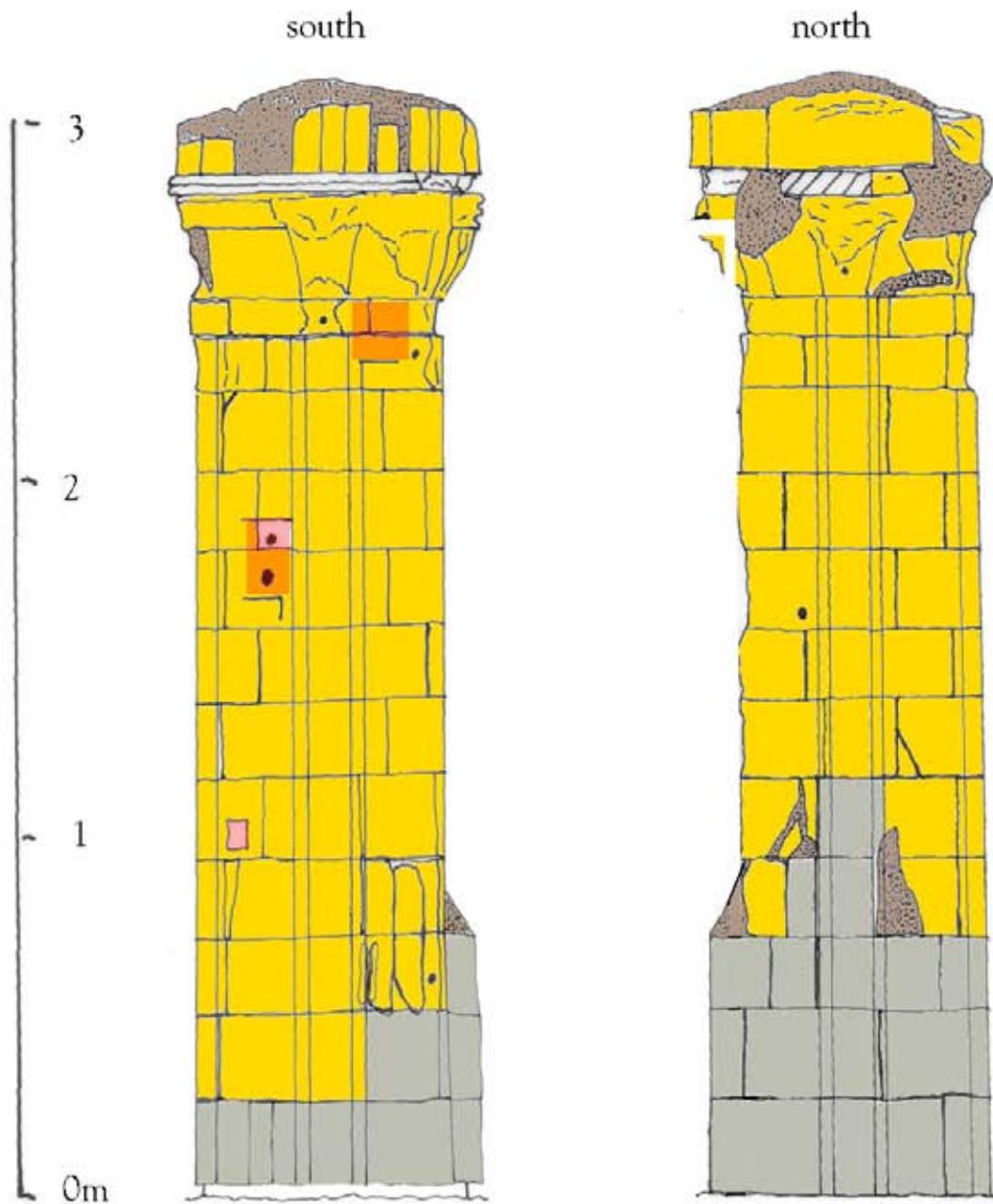
On the south side of the column much of the central projecting shaft and part of casement have been crudely cut back. The shaft survives on the bottom three courses and, at the top, on the course below the capital unit. Presumably these mouldings have been removed to facilitate the installation of a screen dividing the western two bays of the north aisle.

Inserted Doorway

On the west side of the column are the remains of a doorway to positioned to give access to the south aisle from the central space of the infirmary hall. The east jamb of the doorway survives with the springing stone of the arch and small amount of associated masonry. The mouldings on the south side of the former doorway have two hollows with a roll in the first, outer, hollow, followed by a step, chamfer and a second step, designed as a stop for the timberwork of the door (Fig. 23). On the aisle, or north, side of the doorway the mouldings comprise a flat and chamfer.

The roll and hollows ran continuously around the jambs and arch of the doorway, without interruption by capitals, and are terminated 0.55m above ground level by a rectangular block giving the moulding a stilted appearance. The bottom stone carrying the chamfer moulding has disintegrated, the stone above it has a slot, 70 x 30mm, cut into the flat inner face; presumably for a bolt.

The mouldings could date from the 13th to 15th centuries; a 13th century date has been suggested for the continuous moulding on the west doorway (Morris 2001:144) but it is clear that the inserted doorway was erected at a later date. It is possible that the doorway



- | | |
|---|--|
|  Inferior Oolite
Period I |  mortar repairs
20th century |
|  Great Oolite Bath stone
Period VII |  slots / cut away mouldings |

has been fabricated from reused materials of differing periods; the stones with the hollow mouldings have a different coursing from the chamfered stones and an elongated block, set on end, that is adjacent to the first course of roll in hollow bears the marks of a moulding having been removed from its flat face.

The doorway has been fixed to the west side of the column in a crude way with Blue Lias Limestone and oolitic limestone rubble set in liberal quantities of mortar. It should be noted that the rubble infill partially covers the slot cut into the Period I work, therefore the doorway was installed after the slot had ceased to be used.

The Period VII masonry on Column 1 consists of replacement stones in the bottom two courses of the Period I work, additionally the small portion of base protruding above the topsoil appears to be Period VII concrete.

Column 2 (Figs. 24, 25)

Column 2, the second column from the west of the former north arcade, survives to its full height with one course of arch moulding remaining on the abacus. It contains stonework belonging to Periods I and VII together with evidence for later medieval fixtures.

The column has the arc-casement-shaft profile used for the columns of the south arcade. Apart from the Period VII replacement stones at the bottom of the column, the stonework is all of Period I.

The capital and arch mouldings are severely shattered but what remains appears to be in its original position. The capital unit, in outline, conforms to the design found on other columns in the infirmary, traces of a fillet are preserved on the capital above the shaft on the northern face, the fragments of abacus that remain bear the bold circular mouldings found on the other Period abaci.

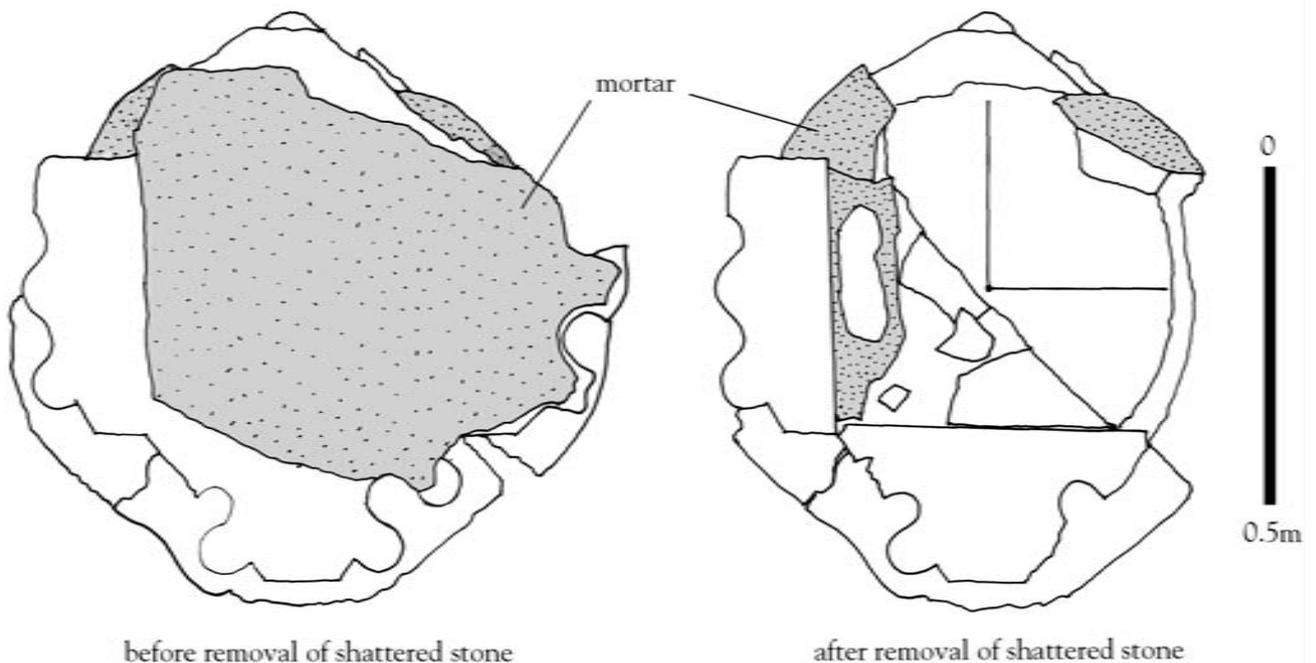
Much of the top section of the column was, before the 2001 repairs, held together by a layer of hard grey Portland type mortar. This mortar was removed during the process of repair along with the shattered stone. At the request of Ian Stainburn (architect to the cathedral) plan drawings of the top of the column were made before and after the removal of the shot stonework. Its removal revealed part of the top of the single stone from which the capital and lower unit of the abacus are carved. The surface of the stone had a fine, flat finish with a punch mark at the centre through which ran two lines, from capital to capital, dividing the surface into four. The lines were marked by fine, shallow incisions but were perfectly straight. They are marking out lines used by the mason whilst carving the piece.

Alterations to Period I stonework

A slot is cut in to the arc and casement moulding on the west side of the central southern shaft at a height of 1.64m above ground level. It is 200mm in height and, as with slots cut into the east respond and Column 1, it is cut into the column at an angle that suggests it were to receive a timber aligned with the arcade. There are two mortar filled holes on the cut back face. Also visible on the south elevation is a square slot cut into the southwest arc moulding 0.95m above ground level and 70mm deep. It is interpreted as further evidence for a timber structure in Bay 2.

Traces of a slot also remain in the two courses below the capital on the east side of the central southern shaft. It is 200mm in height, 25-40mm in depth and possibly associated with a structure spanning Bay 3 of the north arcade.

The west shaft and part of the adjoining casement and arc have been roughly cut away four courses from the base to the level of the capitals. It is not possible to be precise about the upper limit of the cut, as the column is too badly weathered. This cutting back of the shaft and adjoining moulding matches that performed on the north shaft of Column 1 and



may be related to a structure spanning Bay 3 of the north arcade.

Discussion

Although the sub-division of infirmary halls in the later medieval period is a widely-reported phenomenon (eg. Platt 1976:168; Thompson 1913:120), it has not been the subject of a study in its own right. Typically it involved the fixing of timber or masonry screens between the arcade columns, screening off the aisle, and between the columns and aisle wall, thus creating individual cells in each bay of the aisle. All classes of medieval hospital, from leper hospitals and hospitals for the poor sick to monastic infirmaries, were compartmentalised in such a way. Where it has been possible to date the practice it appears to be primarily of the 14th and 15th centuries. There are exceptions. For example the hall of the leper hospital of St. Nicholas, York, was partitioned by the 13th century (Gilchrist 1995:104), while the north arcade of the hall of St. Bartholomew's, Gloucester, was divided into individual compartments in the early 16th century (Hurst 1975:40).

The causes put forward to explain such alterations range from the relaxation of monastic rules concerning communality, declining numbers of inmates, and changes in domestic or liturgical function, to the acceptance of secular values by a monastic community (Coldstream 1986:45; Cullum 1993:12; Platt 1976:167).

The precise arrangement of the partitions varies from hall to hall. The Gloucester cathedral infirmary has evidence for screens only on what remains of the north aisle (Fig.26). Other examples of partitioned north aisles include the infirmary of St. John's, Winchester, where cubicles corresponding to the position of beds were also identified (Carlin 1989:29), and the hospital of St John, Cirencester, where excavations have shown slots and post holes marking the position of timber partitions in the north aisle (Leech and McWhirr 1982:201). A partition was introduced in to the west end of the north aisle at St Bartholomew's, Bristol, which has been interpreted as screening for a temporary kitchen (Price and Ponsford 1998:220). The western end of infirmary halls were occasionally

screened to provide accommodation for staff (Gilchrist 1995:19).

The infirmary hall at Rievaulx preserves evidence of the replacement of timber with masonry screening between the columns of the arcade together with a single jamb of a doorway associated with the masonry screen (Fergusson 1999:115). The parallels with the remains at Gloucester are obvious and extend to the imprecise dates for the consecutive phases of screening. At Rievaulx this is between *c.*1200-*c.*1500.

At Gloucester there is evidence of three types of alteration to the freestanding columns of the former north arcade associated with the installation of screens or partitions (Fig. 26). Slots cut in the south faces of the columns in order to receive timbers spanning the bays; cut back vertical mouldings on the north face of column 1 and the east face of column 2 and the remains of the masonry door jamb. The slots represent a first phase of screening in the hall. These timber screens spanned Bays 1, 2 and 3. Where the cut back mouldings and a slot occur on the same column face (e.g. column 2 east face) the slot is in a raised position suggesting that both the cutting of slots and the removal of vertical mouldings belong to the same scheme of timber partitioning of the hall. The westernmost bay of the north aisle (Bay 1N) formed a single cubicle; Bays 2 and 3 of the north aisle were screened from the central aisle, but not divided from each other, forming a larger space in the north aisle. This first episode of partitioning was confined to the north aisle.

A masonry screen containing a doorway with a moulded surround superseded the timber screen in Bay 1.

It is not possible to estimate the extent of the masonry partitions as they could be erected and removed without leaving any signs on the columns. Neither is it possible to suggest precise dates for the construction and demolition of the masonry screen. The moulded door jamb is later medieval, 13th to 15th century. Further research on the mouldings may allow a more precise date to be suggested, but even if this is the case it is not certain that the doorway is in its original position. It could represent a later medieval alteration to the infirmary or possibly be a part of the post-medieval division of the northern precinct, marking, as it did, the boundary between the Registrar's Office, in the central aisle, and the Organist's House which occupied part of the north aisle and land to the north. It is possible that the partition survived until the remodelling of the infirmary *c.*1860.

Summary

West Wall

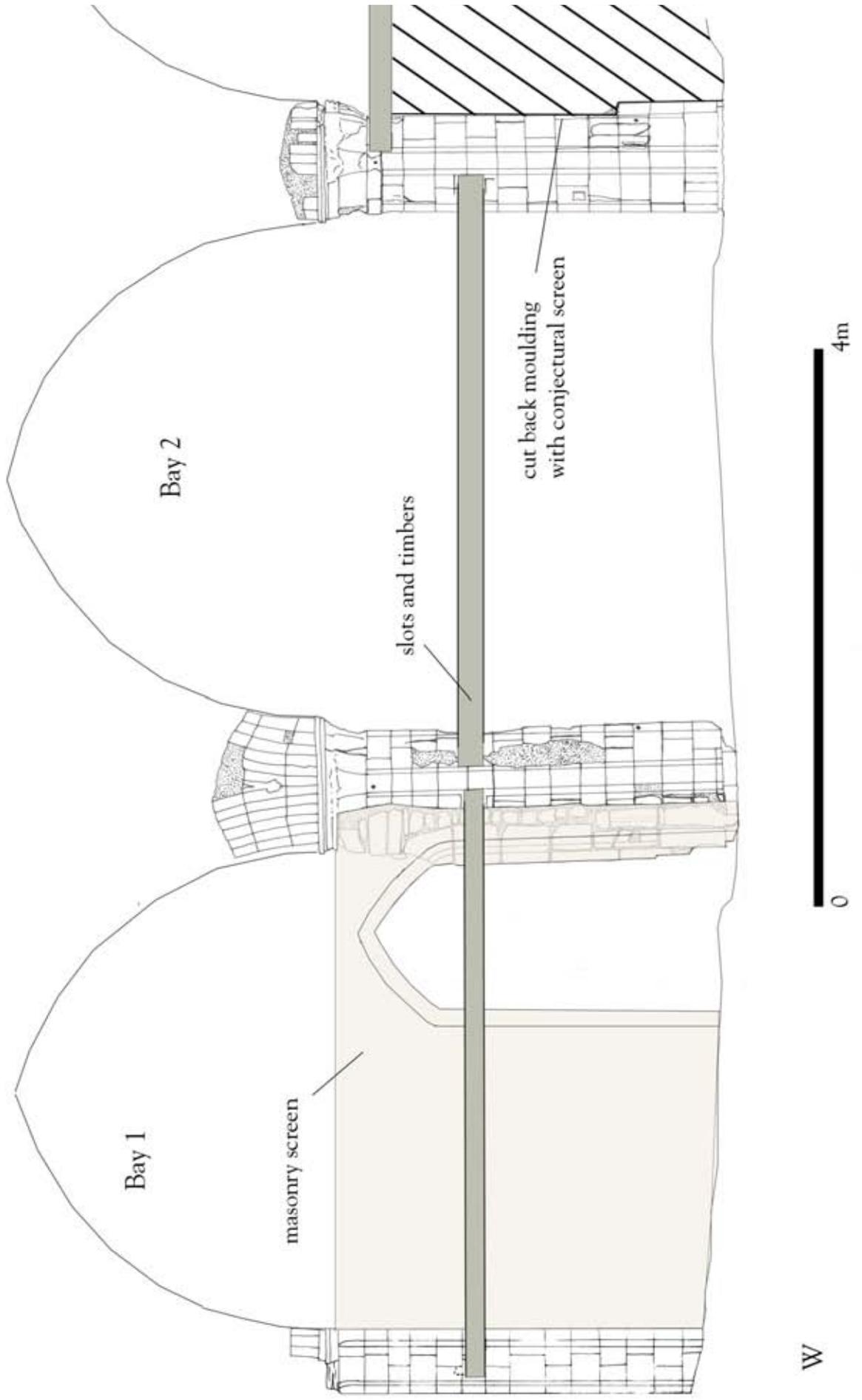
The west wall is composed of a complex patchwork of masonry from at least eight episodes of building, alteration or repair. The earliest work identified dates from the first half of the 13th century, and is best preserved on the west face where it includes the mouldings of the central doorway and parts of the wall to the south. The mouldings of the west doorway share a number of details with those of the south doorway and the south arcade suggesting that all three architectural features are of a similar, early 13th century, date.

The mouldings on the interior side of the doorway were replaced with a flattened two centred arch and jambs with a continuous chamfer during the later medieval period. This had the effect of increasing the lateral thrust being channelled into the masonry adjacent to the doorway and it is this, combined with the numerous alterations made to the east face, that eventually caused the failure of the east face of the wall at two points.

The rebuilding of the west face of the wall, south of the central doorway, may also belong to the later medieval period and appears to be associated with the creation of an opening, probably a window subsequently blocked with brick, in the upper part of the wall north of the central doorway.

Fig. 26

North Arcade ~ reconstruction of screens
Scale 1:40



At some point the west wall was pierced and a narrow, crudely constructed, doorway was created at ground level on the line of the south arcade. This necessitated the removal of much of the west respond of the arcade. The opening was subsequently blocked; a date between 1550 and 1800 is suggested for both the opening and blocking of this feature.

Prior to 1860 the west wall would have been three stories high; it was reduced to its present dimensions during the demolition and re-modelling of the area between 1860 and 1862. Several courses of masonry at the top of the wall are identified as belonging to this phase of construction as well as the northern termination of the wall on both east and west faces. The 20th century work is largely confined to two conspicuous areas of machine cut oolitic limestone, possibly Clipsham stone, on the west face of the wall.

South Arcade

The results of the archaeological recording show that much 13th century masonry survives, *in situ*, in the columns, arch mouldings and facing stones of the south arcade. This does not, however, include the bases, all of which were replaced, along with the bottom courses of the columns, in the 1860s. The small excavation adjacent to the second column from the west revealed the base in its entirety, showing that the 13th century chamfered sub-base survives below the soil level. Also exposed were two layers of Blue Lias Limestone paving approximately level with the bottom of the sub-base and therefore possibly representing the medieval floor of the infirmary hall.

Most of the 13th century capitals survive. The moulding profiles and overall shape of the capital unit is reproduced on each of the columns; the decoration ranges from stiff-leaf rising from fillets on the bell unit, to flourishes of foliage on the upper mouldings, to a simple fillet continuing up from the shaft below. Where it survives the 13th century stiff leaf resembles the stiff-leaf *in situ*, and reused, in the nave clerestory of the cathedral which is associated with the vault over the nave (AD 1242), while the capitals themselves are similar to those preserved in the Dark Cloister.

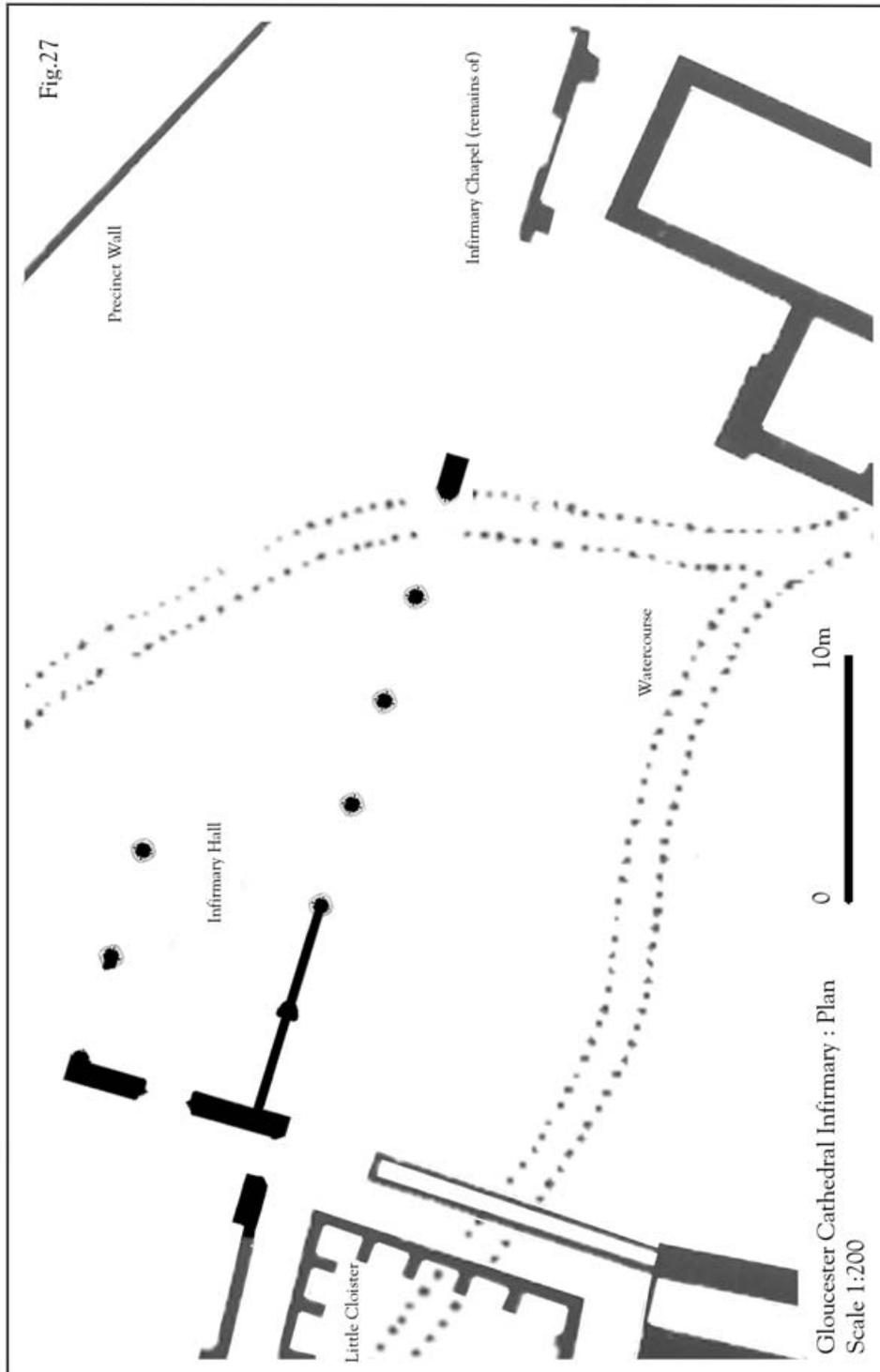
The mouldings on the present east respond suggest that the arcade terminated at this point in the 13th century. Some uncertainty remains about the mouldings in the western bay of the arcade. They differ in several respects from the other bays of the arcade, with chamfered mouldings on the column and the south side of the arch. While the survey shows that these chamfers are not the result of the 19th century re-modelling and are a part of the medieval structure, it is not entirely clear whether they belong to the 13th century or represent later alterations. The technical difficulties involved in inserting the chamfer into the column suggest that these chamfers belongs to the 13th century.

Enough of the 13th century stones remain in the columns to show that the south aisle was not partitioned into cubicles with timber screens in the medieval period, as was the west end of the north aisle.

Evidence was found for a north / south wall dividing the western two bays from the remainder of the hall in both excavation and analysis of the arcade, this would be the east wall of the Registrar's Office (demolished c.1860). Although it is known that the arches of the arcade were, until the 1830s, blocked with masonry, and the bays divided to form tenements, there is no evidence on the columns or in the spandrels of this arrangement.

North Arcade

The two freestanding columns and west respond of the former north arcade show that it matched the south arcade. Slots and cut away mouldings identified on the columns and respond preserve evidence of a succession of timber, then masonry, screens partitioning the north aisle from the central aisle and dividing the bays of the north aisle. No firm dates



could be established for the fixing and replacement of the screens. The timber screening must have been done before the decommissioning of the infirmary in the 16th century; archaeological parallels suggest a 14th century date. The fragment of masonry screen, preserved as a door jamb built against the westernmost column, could be medieval or post-medieval in date.

Archive

Worked Stone

- 327 ~ Fragment of hollow moulding. Lower Freestone. Context: Period IV-VI.
328 ~ Fragment of wave moulding (Fig.8ii). Great Oolite Group. Context: Period IV-VI.
329 ~ Fragment of base (Fig.8.i). Lower Freestone. Context: Period I wall core.

Drawing Archive

Drawing No.

1001. ~ Plan of infirmary; 1:50
1002. ~ Worked stone No. 329 (fragment of base); 1:1
1003. ~ Worked stone No. 328 (fragment of wave moulding); 1:1
1004. ~ Column 2 N, plan of capital unit before removal of defective stone; 1:10
1005. ~ Column 2 N, plan of capital unit after removal of defective stone; 1:10
1006. ~ Column 1 N, inserted door jamb mouldings; 1:10
1007. ~ West door mouldings; 1:10
1008. ~ South door mouldings; 1:1
1009. ~ Excavation plan / section; 1:10
1010. ~ West wall, east elevation; 1:20
1011. ~ West wall, west elevation; 1:20
1012. ~ South arcade, south elevation, petrology; 1:20
1013. ~ South arcade, north elevation, petrology; 1:20

Photographic Archive

Film Number 67

Exposure No.

0. South arcade, Column 5-east
1. South arcade, Column 5-east
2. South arcade, Column 5-north
3. South arcade, Column 5-north
4. South arcade, Column 5-north
5. South arcade, Column 5-west
6. South arcade, Column 5-west
7. South arcade, Column 5-south
8. South arcade, Column 4-east
10. South arcade, Column 3-east
11. South arcade, Column 3-south
12. South arcade, Column 3-north
13. South arcade, Column 3-north
14. South arcade, Column 2-south
15. South arcade, Column 2-south
16. South arcade, Column 2-south
17. South arcade, Column 2-west
18. South arcade, Column 1-east
19. South arcade, Column 2-north
20. South arcade, Column 1-north
21. South arcade, Column 1-south
22. South arcade, Column 1-south
23. North arcade, Column 2-west
24. North arcade, Column 2-south
25. North arcade, Column 2-east

26. North arcade, Column 2-north
27. North arcade, Column 2-north
28. South arcade, west respond-north
29. South arcade, west respond-east
31-36. South arcade, Column 1-excavation

Film No. 68

Exposure No.

2. South arcade, Column 1-excavation
3. South arcade, Column 1-excavation
4. South arcade, Column 1-excavation
5. South arcade, Column 1-excavation
6. South arcade, east respond-north
9. South arcade, east respond-south
17. Medieval tile fragment
28. Base moulding

Film No. 69

Exposure No.

- 1-10. North arcade, Column 1-south
11-14. North arcade, Column 2-south
15-24. North arcade, Column 1-south
25-28. North arcade, Column 2-south

Abbreviations:

Ants. J. ~ Antiquaries Journal.

GCL ~ Gloucester Cathedral Library.

GCAR ~ Gloucester Cathedral Archaeological Report. typescript reports copies in GCL.

Glos. Lib. ~ Gloucester Library (Gloucestershire Collection).

TBGAS ~ Transactions of the Bristol and Gloucestershire Archaeological Society.

VCH ~ Victoria County History.

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