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Bearsden

A Roman Fort on the Antonine Wall

David J Breeze

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Chapter 3

THE EXCAVATIONS

In 1971 the Ancient Monuments Branch of the Department of the Environment (now Historic Scotland) learned of proposals to redevelop the grounds of 31–37 Roman Road, Bearsden. Permission was sought from the owners, Miller Homes (Northern) Ltd, for a trial excavation and readily given. Excavations took place for an initial four weeks in the summer of 1973 and the results proved to be so promising that the work was extended for a further three weeks. In view of the delay in commencing building work on the site, Miller Homes generously granted permission for further excavations to take place each summer until 1979 when they disposed of the site to Woodblane Developments (Scotland) Ltd who kindly agreed to the continuation of excavation for a further season (illus 3.0.1). The excavations north of Roman Road in advance of redevelopment exhausted all the available area in that part of the site. It was considered that it would be useful to examine part of the south half of the site in order to be able to establish further and wider conclusions concerning the history and layout of the fort. Accordingly Bearsden and Milngavie District Council were approached for permission to excavate in the grounds of their property, Maxholme, 14 Roman Road. Permission was immediately granted and excavations took place there in 1977–9 at the same time as rescue work was proceeding on the north side of Roman Road. The bath-house, discovered in 1973, was generously excluded from the proposed development by Miller Homes, and donated to the state by Woodblane Developments Ltd. Further excavation took place in 1979–82 on the bath-house and the adjacent latrine in advance of consolidation. As a result, excavations were conducted for a total of a little over 26 weeks.

A total of 5,000m^2 (0.5 ha = 1.25 acres) of the fort, the annexe and areas outside the defences were subjected to archaeological investigation over the ten seasons, 1973–82 (illus 3.0.1). The area of the fort and annexe as measured over the rampart is 16,000m^2, and over the ditches 17,680m^2, so the area excavated represents the equivalent of rather less than one-third of the military enclosure. The main areas unexamined were the south-western part of the fort and the southern half of the annexe. Subsequently, evaluations and rescue excavations took place in the latter area; the work usefully provided an additional line for the rampart between the fort and the annexe but otherwise reported only insubstantial remains (Duncan & Leslie 2003; Will & Sneddon 2010; Becket 2012).

Certain constraints restricted activity. All the trees on the site were protected by Tree Preservation Orders. This not only prevented the investigation of certain areas where problems might have been answered, but restricted mobility on site; the use of machinery in some areas was not possible (illus 3.0.2). Further, all areas had to be backfilled at the end of each season. The clay subsoil at times hampered work, in particular investigation of the ditches, as water was slow to drain and the clay quick to harden in the sun. A final difficulty, of rather a different nature, arose through the terracing of the house gardens in the Victorian period. It gradually became clear that agricultural activity on the site had denuded the higher parts of the site, towards the north as recorded by Roy (1793: 159) and caused a build-up of soil in the lower areas, mainly immediately to the north side of Roman Road (illus i). Victorian builders had then created terraces using red clay in front of the houses. This was not at first apparent, not least because the red clay used was so similar to the natural subsoil of the site, and it took some time to determine in each garden where the obscured Roman levels lay in relationship to the 19th century terraces. While the clay dump hampered progress in this way, and also because its weight had led to the squeezing of the old ground surface over the tops of post-holes, it had a considerable beneficial effect elsewhere for buried beneath, and, thus protected by the terrace in front of 35 Roman Road, lay the bath-house still surviving up to ten courses high.

Beneath the Victorian terracing, and generally over the site, earlier truncation of the Roman layers, presumably through ploughing, was such that floor levels rarely survived. Some road surfaces remained, but no floors within buildings, with the exception of one small fragment in one room in building 7 and the courtyard in building 11. Stratified features were therefore few. They included the drains and gulleys within the fort, some pits and post-holes, and some floors in the bath-house and latrine. Most of the stratified pottery was found in the levels relating to the abandonment of the fort and is not noticeably different from the unstratified material. In view of the short life of the fort no attempt has been made to date the phases as the pottery will not allow such precision. The pottery from Bearsden by weight (excluding amphorae) formed about a fifth of all the pottery from the Antonine Wall forts, excluding Camelon (Swan 1999: 451–62).

The area of the bath-house was offered to the state in 1973 as a public monument. As a result, its excavation was not

Illustration 3.0.1
The excavated areas in relation to the features existing in 1973.

completed that year. The building was protected by a wooden superstructure. By 1979, after the site had changed hands, agreement had been reached about the way ahead and as building work started on the housing development, the cover was removed and the full excavation of the bath-house and the surrounding area commenced (illus 3.0.3). The excavation continued not only as the bath-house was being consolidated but as the houses were being constructed round the area of the bath-house and latrine, causing a different form of constriction on archaeological activity, and the inadvertent destruction of part of the latrine by the builders.

3.1 TOPOGRAPHY AND GEOLOGY OF THE SITE

The Antonine Wall, which here formed the north rampart of the fort and annexe, was built along a ridge which ran east to west, falling to the east from the high point of the fort (illus 3.1.1). From this high point the land dropped steeply to the south to a fairly level plateau on which the south half of the fort sat: there was a slight rise towards the south-east quarter of the fort where the headquarters building was to be placed. A depression, apparently natural, south of building 7 appeared to be part of a broad natural gulley running east–west a little to the north of the modern road

Illustration 3.0.2
Excavating the north granary.

Illustration 3.0.3
The final stages of the excavation of the bath-house were undertaken in 1982 while the building was being consolidated (right) and the flats were being built out of sight to the left and below with the builders' encampment top right.

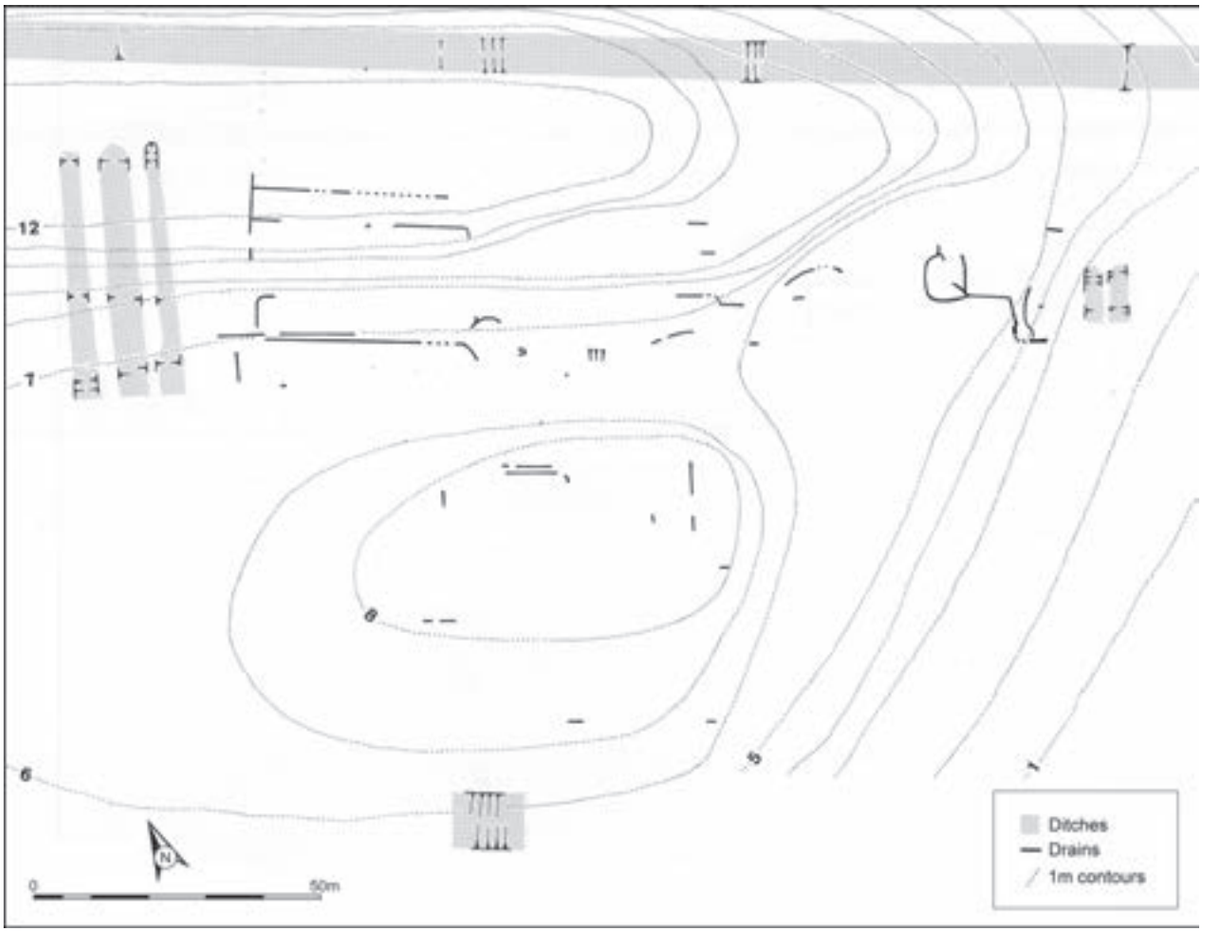

Illustration 3.1.1
Map of the contours and drains.

and draining to the east; the contours hint at this. Thus the ground within the fort varied in height by as much as 6m.

The land within the annexe generally also sloped from north to south and from west to east. The ground continued to fall to the east of the annexe and more steeply south of the fort. It also fell steeply to the north into the valley of the Manse Burn.

The subsoil was boulder clay, generally red in colour. In one area (under the west rampart) a brown earth soil survived overlying the boulder clay (4.1).

3.2 THE FORT

The enclosure which contained the fort and the annexe measured 152m east–west by an estimated 113m north–south over the ramparts (neither north nor south rampart was located) and covered 1.72ha (illus 3.2.1). Within the ramparts, the measurements were 143m by an estimated 104m, 1.48ha. As it gradually became clear during the excavations, this large enclosure was divided into two on a ratio of about 2:1 while the internal buildings were being erected. The western area remained the fort, 102m east–west over the ramparts, 93m within (1.15ha/0.95ha), while the eastern part became an annexe measuring 54m east–west over the ramparts, 45m within (0.61/0.47ha).

3.2.1 The defences

There were two elements to the defences, the ditches and, inside them, the rampart. The ditches surrounded the whole enclosure, the northern also serving as the ditch of the Antonine Wall. A separate rampart separated the fort from the annex.

3.2.2 The ditches

The ditches were sectioned on every side, often in difficult circumstances owing to the depth of overburden and the general restrictions of the site. Similar difficulties sometimes resulted in the sections remaining uncompleted.

The north ditch was traced across the site from north of the annexe east ditches to beyond the west fort ditches. Two sections were machine cut in 1973, a third hand dug in 1974, while smaller trenches to trace the ditch further west were machine

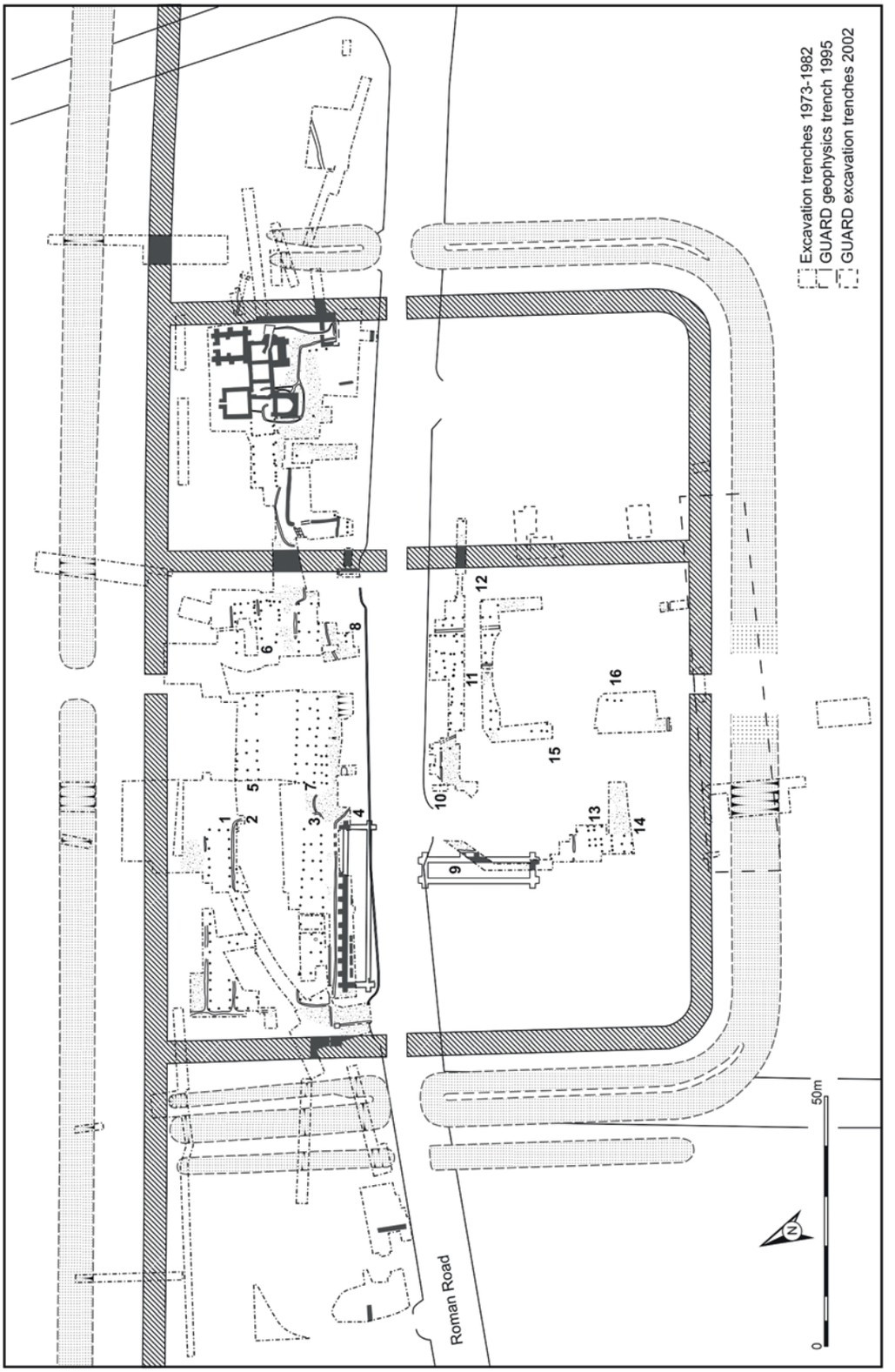

Illustration 3.2.1
Plan of the fort and excavated areas.

Illustration 3.2.2
The north ditch section looking west.

cut in 1975. In these two western trenches the north lip of the ditch was not located: here the ditch passed so close to the steep south bank of the Manse Burn that part of the ditch had been eroded.

In 1974 a small area was opened in order to try to locate a causeway outside the putative position of the north gate (section E–E on illus 1.2). The ditch here was found to be at least 6.5m wide (illus 3.2.2 and 3.2.7). Opposite the east rampart of the fort it had widened to 7.2m (section F–F), and north of the east annexe ditches to 8.3m (illus 3.2.7). The profile revealed an irregular slope of about 45° on the south, with a rather steeper slope to the north; the ditch was a little over 2.5m deep. At the bottom of section E–E lay a deposit of 'organic' material (illus 3.2.2 and 3.2.7). Elsewhere this overlay a deposit of fine grey silt. It seems possible that the position was the same in this trench, but here the silt was not recognised owing to the difficulty of distinguishing it from the natural clay into which the ditch had been excavated and from which it had come. The u -shaped profile may therefore be false: it is possible that the profile should be V-shaped, as in section D–D. Over the 'organic' deposit lay silt of varying colours and consistencies, generally coarser than the fine silt usually accumulated in the bottom of the ditches. The silt merged into brown loam, and over this lay Victorian infill.

Illustration 3.2.3
The outer west ditch looking south.

Illustration 3.2.4
The outer annexe ditch looking south.

Section F–F was not 'bottomed' owing to problems with water. However, the upper silts and superimposed levels were located. The ditch here had been dug a little to the south of the valley of the Manse Burn with the result that a narrow ridge or glacis had been left between the ditch and the valley, and still survived in spite of later erosion.

Three ditches were located on the west side, and sectioned at three points, though the bottom was not always reached (sections A–A, B–B, C–C on illus 1.2). All three ditches varied in width, profile and depth, both from each other and along their own length (illus 3.2.3, 3.2.5 and 3.2.8). However, the outer lip of each ditch was almost parallel to the west rampart of the fort, which may suggest the location of the marking out line. The outer ditch widened from 2.8m just south of the butt-end to 3.7m and then 4.7m a little to the north of the putative causeway outside the

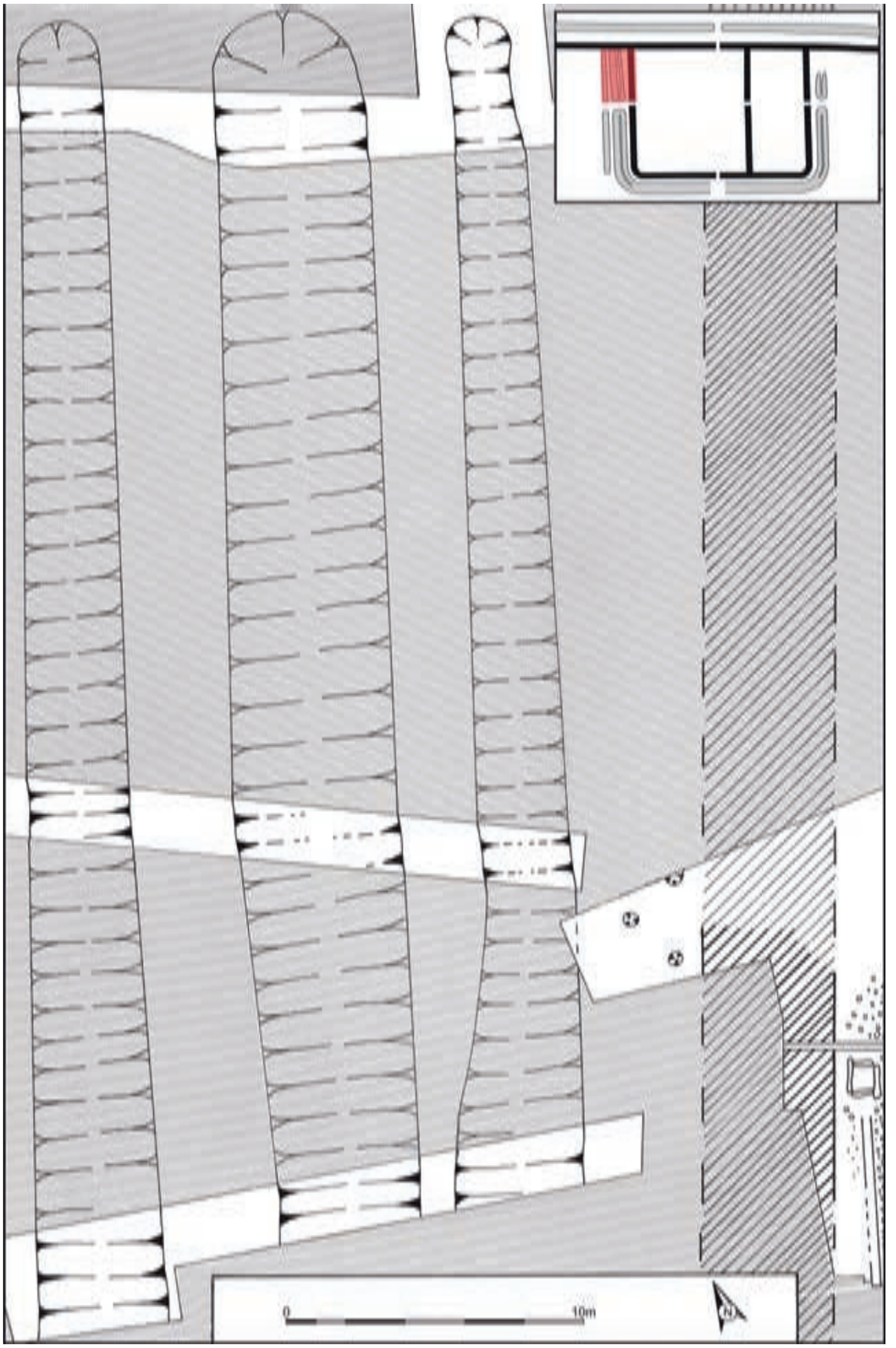

Illustration 3.2.5
The west ditches in plan.

Illustration 3.2.6
The south ditch section looking east.

west gate of the fort. The middle ditch, 3.5–4m to the east and the most regular, widened from 5.3m to 5.5m before narrowing to 5m. The inner ditch was even more irregular. Placed 2.8m to the west of the middle ditch for the northern 30m, it was only about 2.8m wide, but it then broadened to 4.4m at the expense of the spine between these two ditches.

The outer ditch was the same depth, 2.2m, in both sections across it, though narrowing to the north and therefore gaining steeper sides: the outer slope was longer than the inner (illus 3.2.3). The middle ditch was also 2.2m deep in section C–C, but only 1.4m in section A–A, presumably because it was approaching the butt-end. The inner ditch was 1.55m deep in both sections A–A and C–C but again was steeper to the north owing to the narrower dimensions.

The fill of the three ditches varied somewhat along their length. In the section just north of the putative causeway outside the west gate the fine silt at the bottom of each ditch, 400mm–750mm deep, was covered by the 'organic' deposit, 800mm–1m thick, and this in turn was below a grey-brown silt, coarser than the lower level of silt, and merging into the layer of brown loam which uniformly covered the ditches and the spines between them. In Section B–B only the outer ditch was 'bottomed'. Here the fine silt was 750mm thick, the same depth as further south, but the 'organic' layer was reduced to 150mm, while the upper coarse silt had thickened to 1m. In section A–A no 'organic' debris was found, the silts merging into each other, though in both the inner and middle ditches there was less silt, while the brown loam above was more stony than further south.

In section C–C, a little north of the presumed causeway leading out of the west gate of the fort, a quantity of metal objects was recovered from the lower fine silt about 300mm from the bottom of the middle ditch (11.3.1.1–6; 15–61; 11.3.2.97; 102; 105–8; 11.3.3; 115; 122–31; 11.3.4.158); a quern was found in the outer west ditch (5.2.2.3). These objects were all found at the same level and appeared to have entered the ditch at the same time (13.4; 13.5 and 13.6 for analysis of the contents of these three ditches).

The north butt-ends of the east ditches of the annexe were located, but were not emptied: both ditches were 3m wide at this point. 8m to the south a complete section across the outer ditch was excavated (Section D–D on illus 1.2). 3.5m wide, the ditch sides sloped steeply to a depth of 2.4m (illus 3.2.4 and 3.2.7). The bottom 1.3m of the ditch contained dark grey silt, and above this was a shallow 'organic' deposit, 280mm thick. Above this lay further, coarser silts. Analysis of the 1.3m of fine silt in the bottom of the ditch demonstrated that this contained food debris, and had clearly accumulated during the life of the fort (13.2, 17.2 and 18 for analyses of the contents of this ditch).

The south ditch was sectioned at one point, opposite the putative position of the south gate of the fort (section G–G). It was 9.7m wide, measured to a break in slope, but thereafter it continued to slope up, more gradually, to the presumed position of the south rampart (illus 3.2.6 and 3.2.7). Measured from the south lip, the ditch was 2.7m deep, and from the north 3.3m. The fill was similar to other ditches, with a fine grey silt at the bottom, 'organic' layer above, coarser silt, of various hues of grey, blending into brown loam (see 13.7 for analysis of the contents of this ditch). This ditch was considerably deeper than any other ditch and in width approximately equal to any two of the west and east ditches.

No evidence was found in any ditch to suggest that it had ever been cleaned out during its life; though conversely none was found to suggest that it had not. The metalwork in the middle west ditch, most likely deposited there when the fort was abandoned, lay within the fine lower silt, with no break noticeable in the silting pattern above.

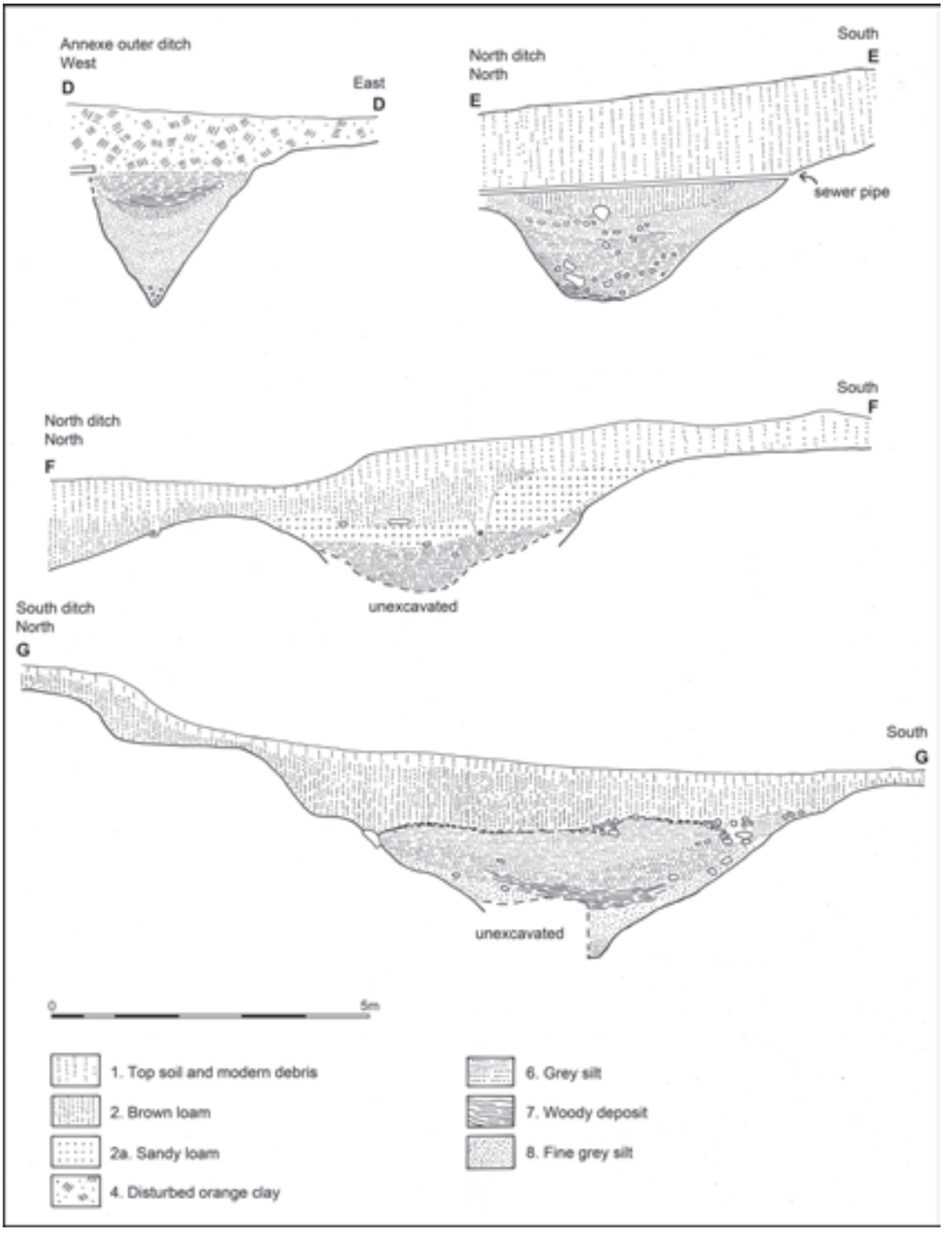

Illustration 3.2.7
Sections of the north, east and south ditches.

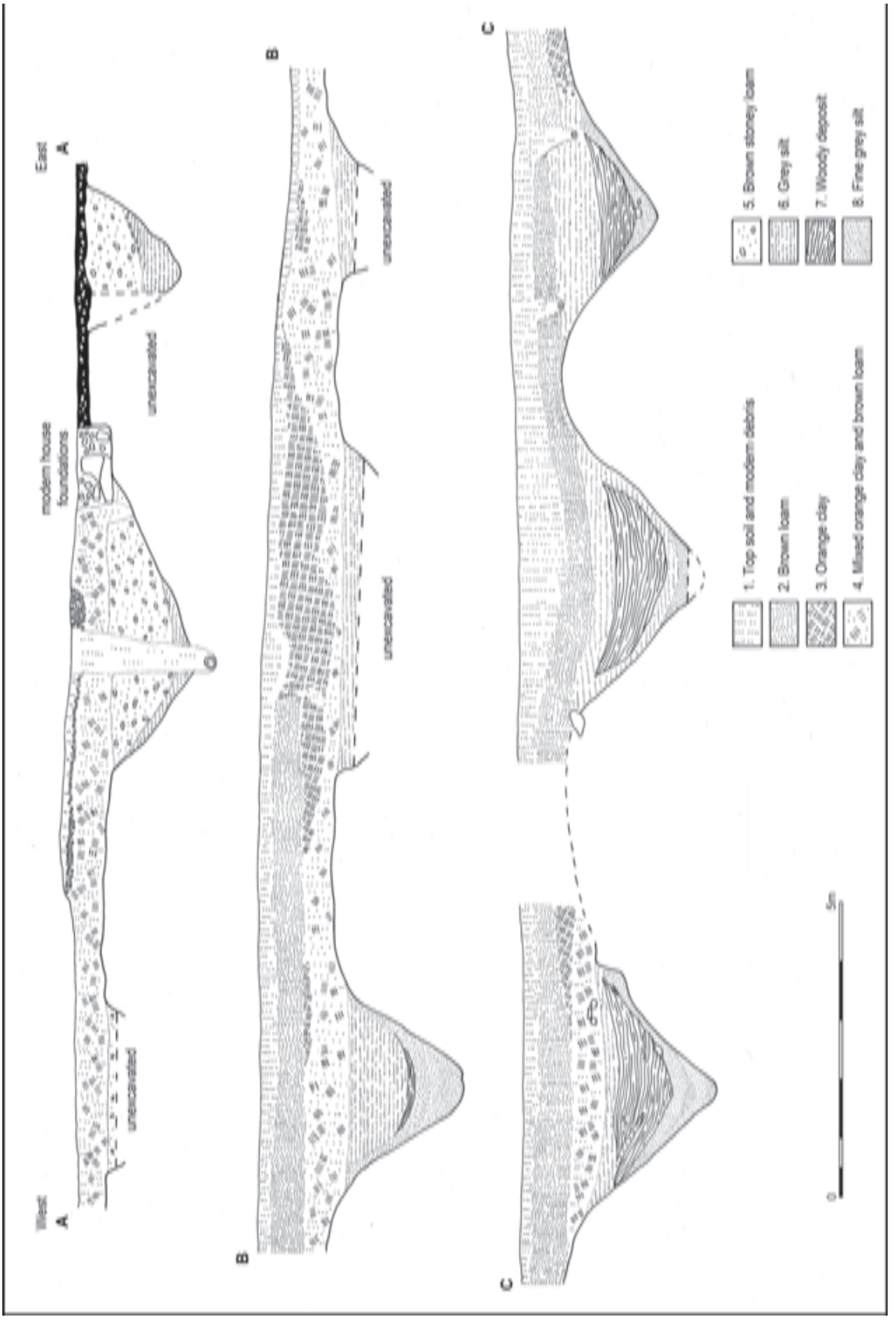

Illustration 3.2.8
Sections of the west ditches.

Comment

The variety and nature of the ditches require consideration, but this is undertaken in the general discussion section. The report on the geophysical survey along the south ditch is in Section 3.5.

3.2.3 The rampart

Complete sections across the ramparts of the fort were made at only three points, one to the west and two to the east, so general comment must be limited in scope.

The north rampart was sought in three trenches but nowhere survived. At one point, north of the north end of the east annexe ditches, the subsoil was noticeably harder and more compacted than the surrounding area. This strip, running east–west across the trench, was about 4.3m wide while the north edge lay 9m south of the south lip of the Antonine Wall ditch. This would be the appropriate position for the rampart.

The south rampart was not located. Macdonald recorded that it had been removed when the garden was laid out; a terrace wall now sits on its site (Macdonald 1911: 163; 1934: 325). A 10m length of the west rampart was traced northwards from Roman Road, though a complete section, 1m wide, was determined at only one point (illus 3.2.9). The rampart base was 4.5m wide, and was formed of rough stones of varying sizes from 400mm long downwards, though with an average size of 150mm × 200mm, bordered by roughly dressed kerbs of sandstone blocks, all set into the natural red clay (illus 3.2.10). At one point a brown forest earth soil survived below the rampart base (see 4.1 for analysis of the soil and 13.8 for analysis of the turves). The base was crossed by a drain, described below. Turfwork survived on the stone base up to a maximum height of 300mm. Up to three layers of turf, each 80mm–100m thick, were preserved. In two areas the turfwork was sufficiently well preserved to allow accurate measurement of the individual turves (illus 3.2.11). At one point three turves, rectangular in shape, measured 400mm–450mm × 300mm–350mm. Elsewhere, the turves were

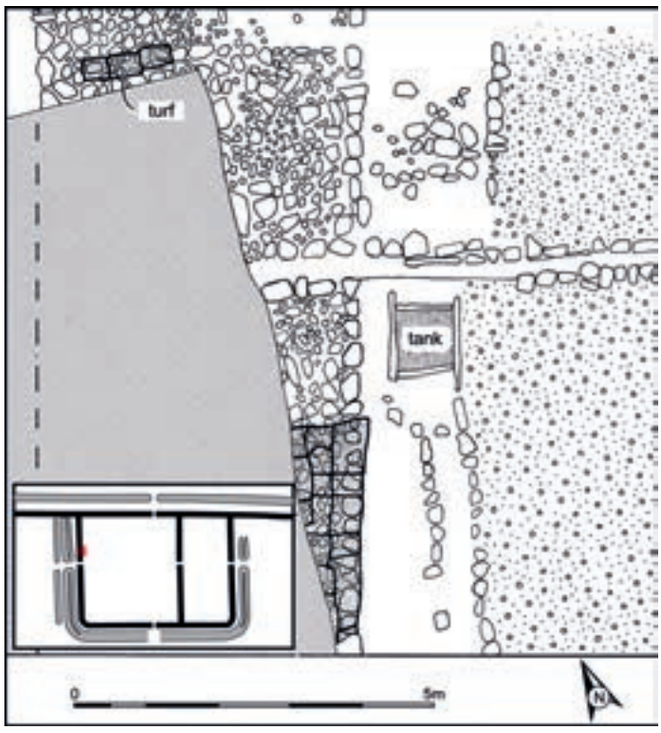

Illustration 3.2.9
Plan of the west rampart of the fort, the surviving turves, and the intervallum.

Illustration 3.2.10
The west rampart of the fort (to the right), water tank and intervallum road looking south.

Illustration 3.2.11
The turves of the west fort rampart.

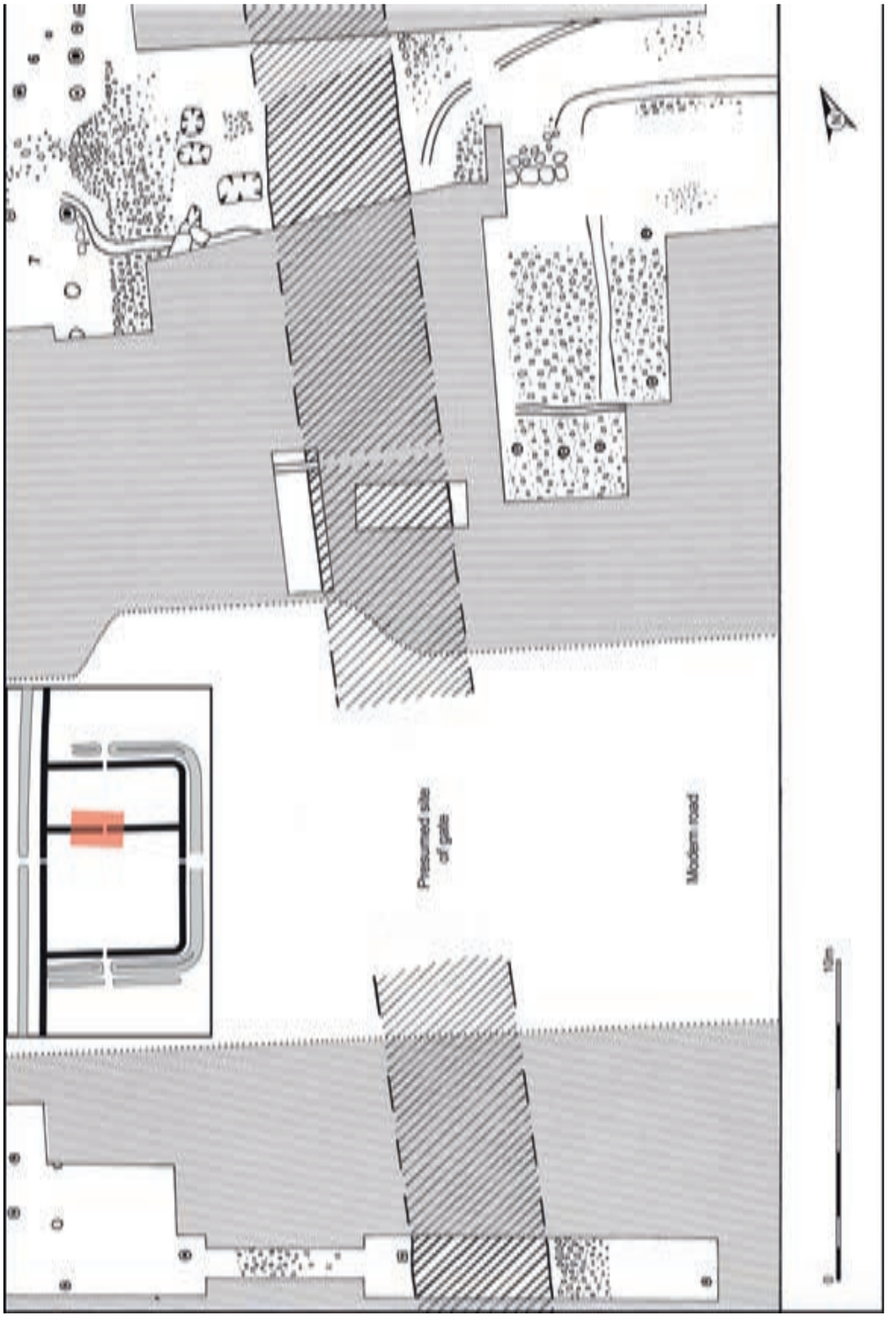

Illustration 3.2.12
Plan of the rampart between the fort and the annexe, the intervallum and adjacent areas of the annexe.

Illustration 3.2.13
The rampart base between the fort and the annexe south of Roman Road and east of the headquarters building with its covering of turf looking south with the path to its east.

Illustration 3.2.15
The rampart base between the fort and annexe north of Roman Road with the area of burning to the east, looking west.

more irregular in shape. They were laid in rows, the eastern about 450mm wide, the second, less regular, varying from 250mm to 380mm. The smallest turf measured 250mm × 280mm and the largest 450mm × 840mm; the average was about 400mm × 320mm.

The east rampart was located at three points, but full sections were only achieved at two (illus 3.2.12). To the south of Roman Road it was 4.35m wide and, to the north, also 4.35m but narrowing 3m further north to 4.2m. The rampart base was constructed in the same manner as the west rampart, with stones of similar size and shape. Only the barest skim of turf survived (illus 3.2.13 and 3.2.14). North of Roman Road a layer of burning covered a rough cobble surface to the east of the

Illustration 3.2.14
The rampart base between the fort and the annexe south of Roman Road and east of the headquarters building looking south with the path to its east following removal of the turf.

Illustration 3.2.16
The cobbling under the burning north of Roman Road.

Illustration 3.2.17
Turf and wood of the fort/annexe rampart.

rampart. It was up to 120mm thick and about 1.5m wide (illus 3.2.15 and 3.2.16). Analysis of this material demonstrated that it contained willow, alder and hazel branches, 10mm to 15mm in diameter (13.8). A small amount of fallen turfwork overlay the burning. At one point, immediately north of Roman Road, a fragment of wood lay parallel to the rampart, but it was very soft and proved impossible to lift (3.2.17).

A complete section across the east rampart of the annexe was only achieved at one point, though a stretch of the inside face of the rampart was uncovered over 19m. The complete section was by the latrine. Here the rampart was 4.5m wide, the same width as the west fort rampart, and built in the same manner as elsewhere. The stones were embedded in the natural red clay and over them turfwork survived to a height of 400mm (see 13.8 for an analysis of the turves). 15m to the north, the eastern 2.7m of the rampart base was examined in a small trench. Here no part of the base was preserved, but a drain through the rampart survived (illus 3.2.18); see below.

3.2.4 Internal roads

Intervallum road *(via sagularis)*

A metalled surface, the intervallum road, ran round the whole of the fort within the rampart. It was not always possible to relate this road to the rampart, usually because either the rampart or the road had been destroyed. There was some evidence surviving, however, to suggest that the road was separated from the rampart by an open space.

Along the inside of the presumed position of the north rampart the very denuded remains of the intervallum street at least 2.7m wide survived. It can be calculated that its southern edge will have lain about 8m south of the rampart. On the south side of the fort the intervallum road was 1.8m wide west of the site of the *via decumana*, while to the east the road was separated by at least 4m from the rampart. This space was occupied by two small pits and two post-holes, possibly part of a building placed in the shelter of the rampart.

On the west side of the fort (the *praetentura*) the intervallum road was 3.2m wide north of building 4, widening opposite this building to 7m (illus 3.2.19). A gap of 1.5m to 1.7m was left between the road and the rampart. This was crossed by a drain, north of which lay a few stones, while to the south lay a water tank (illus 3.2.20). This measured 800mm north–south by 860mm east–west on the west side, narrowing to 720mm on the east. The sides were formed of four slabs placed on edge, with the two north–south slabs longer than the east–west stones. The floor was of clay and the joints were luted with clay. There was no visible entry to or exit from the tank. Two conjoining fragments

Illustration 3.2.18
The outfall of the drain through the east annexe rampart east of the primary bath-house.

Illustration 3.2.19
The west intervallum looking north with the water tank.

of the lower stone of a quern were recovered from the rampart tumble in this area (5.2.2.4).

On the east side of the northern part of the fort the intervallum road was about 2m wide, but was placed 3m from the inside edge of the rampart, the intervening area containing three pits and a small patch of cobbling (illus 3.2.21). A quern was incorporated into the metalling to the east of building 7 (5.3.1).

On the east side of the southern part of the fort the scattered remains of the intervallum road, 2.1m wide, ended 3.7m west of the rampart. A small patch of burning, possibly from the destruction of the fort, lay on the old ground surface, in the intervening space,

Illustration 3.2.20
The water tank looking west.

Illustration 3.2.21
The east intervallum looking south (left) with the path between buildings 6 and 7.

while a post-hole was located immediately behind the rampart, suggesting that a building may have lain here.

Several sections of the intervallum road were bounded by gulleys. Those along the inside of the north and west intervallum roads were associated with the internal buildings. However, the gulley along the south intervallum lay on the rampart side, which here was the downhill side of the road. There was no gulley along the east intervallum road.

Illustration 3.2.22
The junction of the *via praetoria* (left) and the *via principalis* (right) looking east, with the post-holes of the west wall of building 7 beyond.

Illustration 3.2.23
The *via decumana* looking east.

Other roads

The main east–west road across the fort presumably lies under the modern Roman Road. This, the *via principalis*, from the accounts of the antiquarians, also formed part of the Military Way along the Antonine Wall. Running north towards the north rampart, and the putative position of the north gate, was the *via praetoria* (illus 3.2.22). This was located in one area, between buildings 3 and 7: further north the road did not survive. The road at this point was at least 3.8m wide. It was bounded on the west side by a drain, and was crossed by a second drain. Running south from the centre of the fort was the *via decumana*, 9.2m wide at its widest point east of building 14, but probably only about 7.8m wide east of building 13 (illus 3.2.23). There was also a metalled strip 6.3m wide to the south of building 12, which may have been the *via quintana* (illus 3.2.24).

Minor roads, or paths, were noted between several buildings. One left the intervallum road approximately at a right angle to pass between buildings 6 and 7 (illus 3.2.21; 25). It was traced for 11m, and was up to 1.7m wide. Another lay along the south side of building 7, and was also about 1.7m wide. A third lay between buildings 3 and 4, and consisted of a lightly metalled path up to 2m wide.

Inside the west rampart of the annexe a metalled surface was recorded both north and south of Roman Road (illus 3.2.14; 16).

Illustration 3.2.24
The road south of building 12 looking south.

Illustration 3.2.25
The path between buildings 6 and 7 looking south.

It was formed of cobbles overlain with smaller stones and gravel and defined along its west edge by rough kerbing, leaving a gap of about 200–300mm between the cobbles and the base. To the south the cobbled surface was 1.7m wide, but further north it was more irregular. Here the metalling was crossed by a drain, leading south-west from the bath-house to turn and apparently run parallel to the east rampart of the fort, presumably emptying into the gap between the rampart base and the cobbled path though the point of junction did not survive.

Comment

There was little uniformity in the width of the roads. The intervallum street, fully sectioned in five places, varied in width from 1.8m to 3.2m, excluding the area opposite the north granary (building 4), where it attained a width of 7m, presumably to aid access to the building. The *via praetoria* was at least 3.8m wide, but probably not much more, while the *via decumana* was over twice as wide: the road behind building 12 lay between these two extremes. The smaller paths between individual buildings were all just short of 2m wide.

The strip of metalling south of building 12 was originally interpreted as the *via quintana* because it was in the correct location while to the west there appeared to be a gap between buildings 11 and 15. The proposal that these two buildings formed part of a single structure, the headquarters building, casts doubt on this interpretation (for further discussion see Comment to buildings 10, 11 and 15).

None of the roads or paths occupied the full space available between buildings or between ramparts and buildings. The gap between the intervallum road and the rampart varied between 1.5m and at least 4m, and may have been up to 5m wide along the north rampart. Apart from several small pits of indeterminate function, a water-tank and patches of cobbles, there is some indication that buildings may have occupied this area. The gap between the internal roads and buildings was no more than 2m, and generally much less. In only one instance did the road surface lap against the outside wall of a building, the north granary. No ovens were found in the intervallum space.

The construction of the roads

The roads were all built in a similar fashion. A layer of water-worn cobbles formed the bottoming and smaller stones lay on top, reducing gradually to a gravel surface, though in places the surface was formed of crushed sandstone fragments.

Frequently, the road surface had been destroyed. The average thickness of the road was 300mm from base to surface. The road to the west of building 4 (the granary) was especially thick; the layer of cobbles, which included very large stones at the base, was 400mm deep, and the smaller stones and gravel 140mm thick. The more substantial nature of the road here indicates the location of the loading bay of the granary.

The paths were constructed in a similar manner to the roads, though they were of lighter build. The path south of the western two-thirds of building 7 was formed of a single layer of yellow sandstone fragments. The east end of the path was more substantial, having a bottoming of cobbles.

3.2.5 Drains and gulleys

Water was carried off the fort in either an open gulley or a drain (illus 3.1.1 and 3.2.27). The former were generally about 400–500mm wide and 100mm deep, and the drains 100–150mm wide and the same in depth.

In the north half of the fort an open gulley was located along the northern (uphill) side of each building, though frequently it did not survive throughout its whole length. Most of these gulleys were simple channels dug into the clay and were not lined, nor covered. These are distinguished separately on the plans. Other channels may be more correctly described as drains. These were mostly lined with roughly dressed sandstone blocks, though in one case – the drain immediately north of building 4 – water-worn cobbles were used. Occasionally the capstones over these drains survived. These gulleys or drains flowed either west or east to the intervallum roads or to the *via praetoria*, thence turning south, and then turning again to pass through the rampart. At this point the channel was lined with stones and capped. The drain through the west rampart, but no other, was floored with flat stones.

A drain passed through the annexe rampart towards its northern end. It was 220mm–300mm wide and 300mm deep. Built of roughly dressed sandstone blocks, it was two courses high and the east end was supported by three courses of stone. The drain discharged its contents into a channel, 1m wide and 550mm deep. It was traced for 2.7m in a south-easterly direction, remaining the same width, but deepening to 850mm. Over half the fill of the channel was fine silt, dark in colour, below brown loam.

In the southern half of the fort drains or gulleys were provided alongside buildings 9 and 11 and across the centre of the fort, while a drain led out of the courtyard of building 11.

Many of the gulleys were choked with burnt wattle and daub, together with broken pottery and pieces of metal, relating to the destruction of the fort.

Comment

The steep slope of the ground in the northern half of the fort, combined with the clay subsoil, demanded the use of a considerable number of drains, or what might be regarded as storm gulleys as much as normal drains. The flow of water may account for the greater width of the gulleys over the drains.

3.2.6 Open spaces

Large gaps were left between buildings 2 and 3, between the north intervallum and building 5, between buildings 5, 6 and 7 and between buildings 7 and 8 and the *via principalis*. In the first two, possibly three, cases the gap probably resulted from the steep slope of the ground in the northern half of the fort. However, a different reason operated in the last example. Two intrusions were located between building 7 and the *via principalis*, though it was not possible to explore either fully.

To the west lay the eastern butt-end of a depression 1.5m long (within the trench), 1.5m wide and 800mm deep. If the depression had extended as far west as the west end of building 7 it would have been 4m long, though, as the width of the *via*

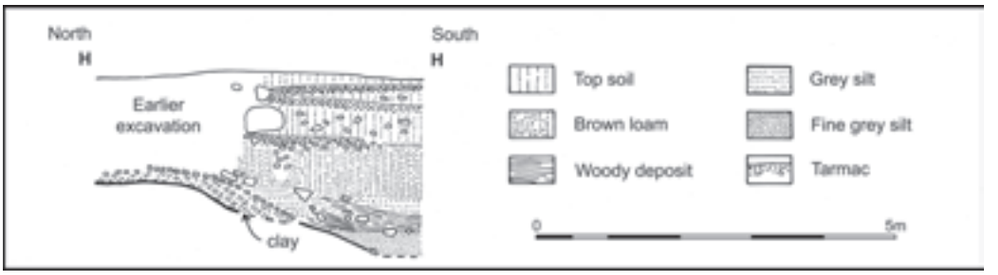

Illustration 3.2.26
Section across the depression between building 7 and the *via principalis*.

praetoria is not known here, it may have been a little longer. The fill was predominantly coarse sandy silt mixed with dressed stones. The ground surfaces around the depression were metalled and cobbles and gravel formed the sides of the depression for the upper 300mm. To the east lay a larger depression, running east–west through the excavated area. This was traced for a distance of 5m, though only the northern half of the depression was located (illus 3.2.26). It can be calculated to have been about 6m wide, and was 1.05m deep. Assuming a space of about 3m between this depression and that to the west it may have been as long as 18m.

The metalling to the south of building 7 extended up to the north lip of the depression and about half-way down the northern slope. The bottom 200mm of the depression was fine grey silt and above that lay an 'organic' deposit (see 13.3 for analysis). A thin deposit of silt lay on this merging into brown loam.

Comment

Although the western depression contained stone debris, it is unlikely to have been excavated as a demolition pit; rather the existing depression was used as a convenient deposit for stones from the nearby granary.

Illustration 3.2.27
General view of building 1 looking south-east.

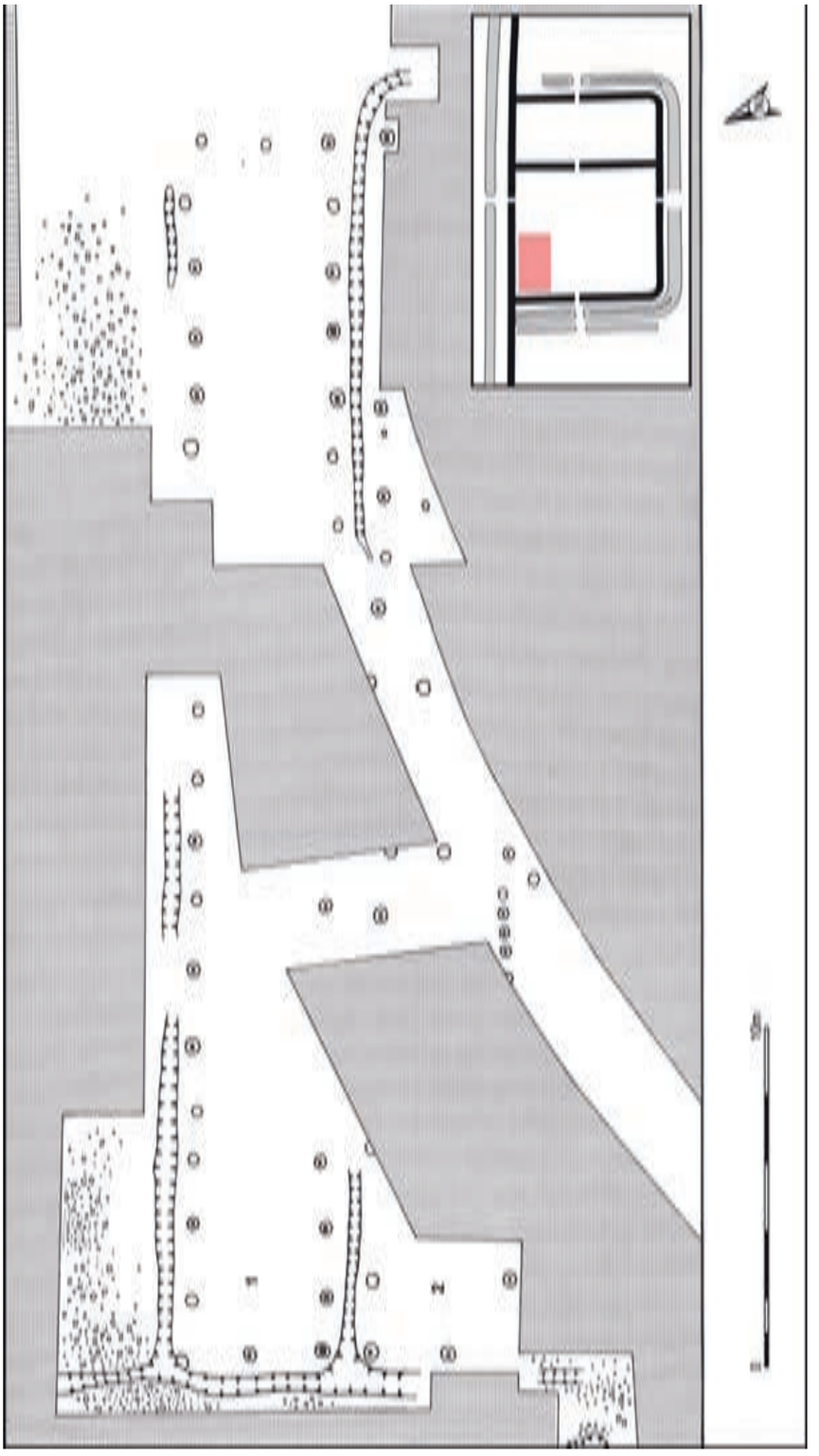

Illustration 3.2.28
Plan of buildings 1 and 2.

A sample taken from the eastern depression indicated that it had probably stayed open during the occupation of the fort, and the fact that the metalled surface extended down the northern slope lends support to this.

Both depressions lie on the line of the slight valley extending westerly through the annexe and into the fort. It is possible that they formed part of that valley. One or both depressions may have been used for water storage and this suggestion gains credibility from the metalling on the sides of both which supports a requirement for access.

3.2.7 Internal buildings

The post-pipes indicate that the structural timbers were 100mm–120mm square. The addition of daub to the wattles would have thickened the walls to perhaps 200mm. In view of this uncertainty, measurements are usually given from centre-to-centre of the post-pipe or post-hole.

Building 1

A timber building measuring externally 36.2m × 4.4m, except for the east wall which could be no longer than 4.05m (illus 3.2.27; 3.2.28 and 3.2.29). The posts were from 1.7 to 2.3m (average 1.9m) apart, and with no internal partitions found in spite of a considerable part of the building being examined. No internal floor survived. A gulley, probably always open, ran along the north side of the building, and flowed westwards into another gulley passing down the west side of buildings 1 and 2. Fragments of a drop hinge were recovered from the gulley (11.3.3.100). A coin of Trajan was found at the western end of the building (12.3).

Comment

Structures of this nature in Roman forts are usually interpreted as stores buildings.

Building 2

A timber building measuring externally 36.2m × 4.2m at the west end, though apparently narrowing to 3.9m towards the centre (illus 3.2.28). Relatively little of this building was examined and the interpretation of the remains as relating to a single building must remain a presumption. The spacing of the posts was not as regular as in most of the other timber buildings. It ranged from 1.7m to 2.3m mostly, but with 1.3m and 0.9m recorded in the north wall, while in one section of the south wall six post-holes were found where three might have been expected. Traces of internal subdivisions survived in the form of two definite, and one possible, post-holes. The two confirmed post-holes were 5m apart, a wider spacing than in the barrack-blocks, but this eccentricity matches the spacing in the external walls. The possible post-hole lay to the east. It did not lie at right angles to the north wall of the building and had no stone packing, simply a gravelly fill. The middle post-hole was doubtful because it was not fully excavated owing to lack of time.

The west end of the gulley between buildings 1 and 2 flowed west into the north–south gulley. The east end, traced for 13m from its western end, ran eastwards, turning south at the north-east corner of the building to pass along the edge of the *via praetoria*.

Illustration 3.2.29
The west end of building 1 looking east.

Comment

The existence of internal sub-divisions hints at the identification of this building as a barrack-block, but the irregular spacing of the post-holes is unusual and in general there are too many imponderables to allow for certainty of identification.

Building 3

A timber building 34.4m long and varying in width from 4.2m at the west end to 4.6m in the middle to 3.6m at the east end (illus 3.2.30). The posts in the north and south walls were set between 1.5m and 2.0m apart (average: north wall 1.7m; south wall 1.6m) though some of the posts in the internal partitions were 2.3m apart (illus 3.2.31). The building was divided into a series of

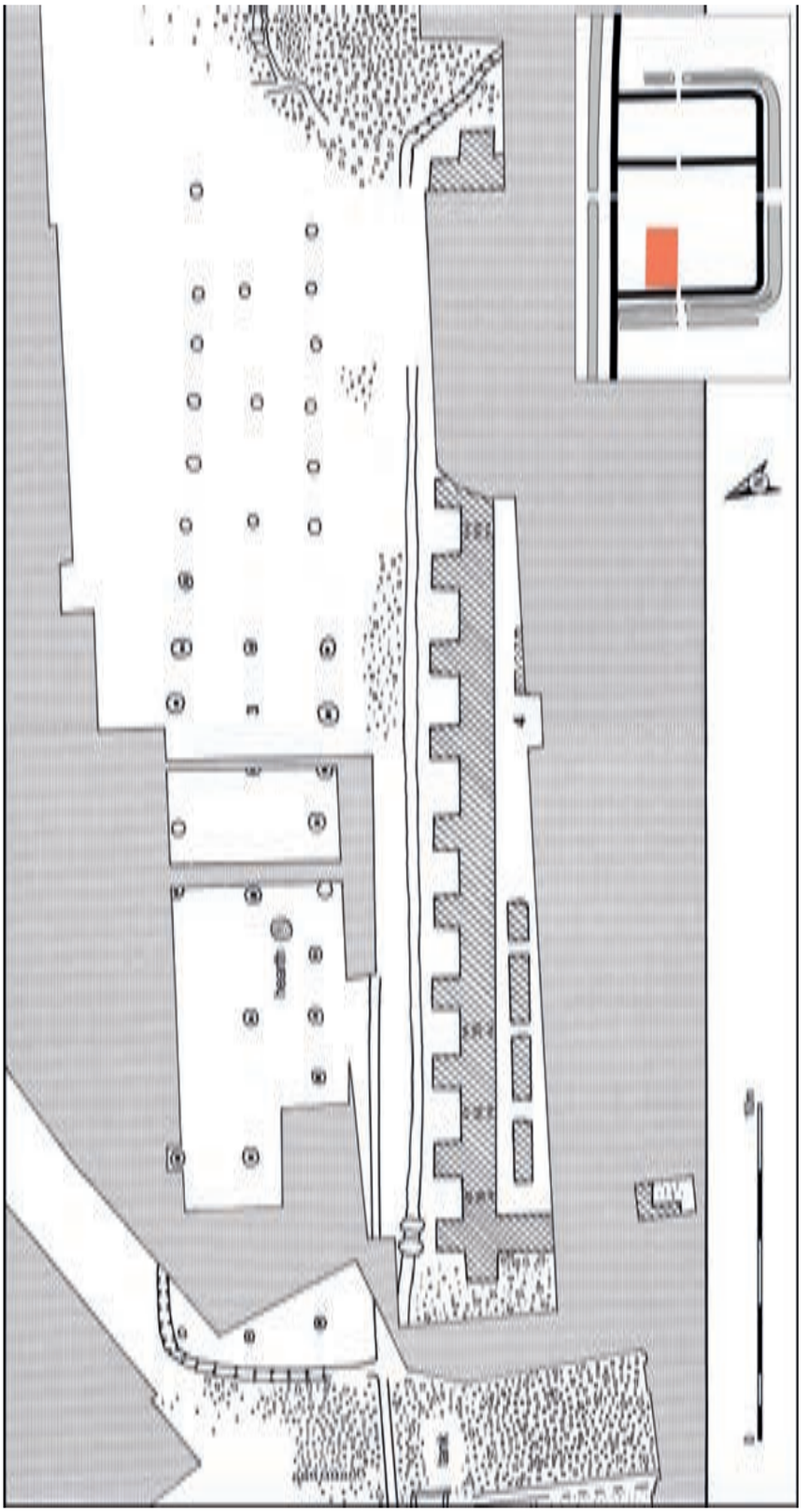

Illustration 3.2.30
Plan of buildings 3 and 4.

Illustration 3.2.31
A post-hole in building 3.

rooms: seven internal post-holes were recorded, and an eighth is presumed to lie beneath a baulk (the rooms were numbered from west to east 0–8). As the building narrowed from west to east, the rooms varied in size (table 3.1). The third room from the west (room 2) contained a hearth set into the base of a globular amphora (illus 3.2.32); it contained a fragment of samian, of window glass, and a coin, probably a *denarius* of Mark Anthony (7.1.2.9; 9.2.58; 12.1). The officer's quarters (room 0) produced fragments of a glass vessel and room 1 of a glass ?flask (9.2.32; 9.2.5).

An open gulley was noted outside the north wall of the building at the north-west corner but it did not reappear to the north of the east half of the building (illus 3.2.33). Another gulley was recorded outside the south wall of the building, and again this did not appear to run along the whole length of the block. The northern gulley lay very close to the north wall of the building, as in buildings 1 and 2, but the southern gulley was set at a distance of 1.5m from the south wall of the building. A possible bench anvil was found in the gulley to the west (11.3.1.90) and possibly part of a staple to support a drop hinge in the gulley to the north-west of the building (11.3.3.118).

Illustration 3.2.33
The north-west corner of building 3 showing the corner post-hole, drain and a patch of cobbling.

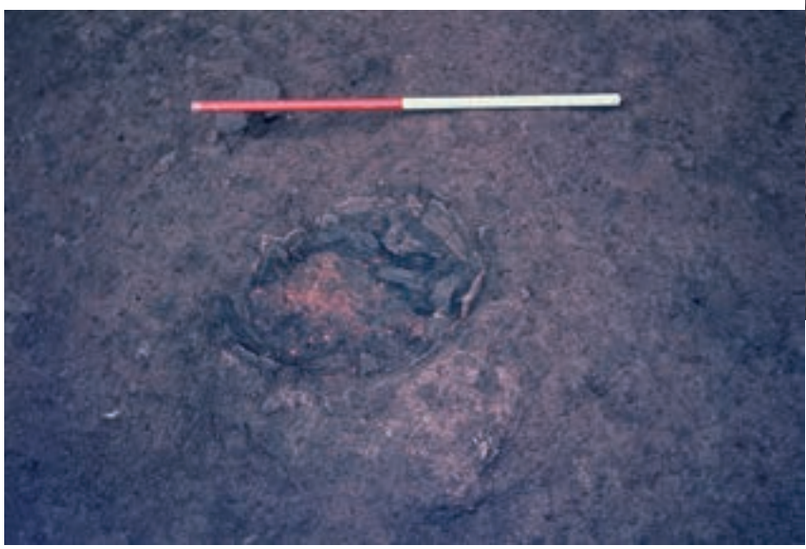

Illustration 3.2.32
The hearth in the base of an amphora.

Table 3.1
Building 3: the size of the rooms

	From post-hole centres
0	5.2m × 4.0m = 20.8m²
1	4.0m × 4.3m = 17.2m²
2	3.5m × 4.3m = 15.0m²
3	3.6m × 4.0m = 14.4m²
4	3.5m × 4.4m = 15.4m²
5	3.6m × 4.2m = 15.2m²
6	3.4m × 3.4m = 11.2m²
7	3.2m × 3.4m = 10.9m²
8	3.0m × 3.3m = 9.0m²

Illustration 3.2.34
The north wall of the north granary looking west.

Comment

This building would be best interpreted as a barrack-block, with an officer's room at the west end and eight smaller rooms for the soldiers. The greater distance between the building and the gulley to its south in comparison to the north suggests that the building faced south.

Illustration 3.2.35
The north wall of the north granary looking south.

Building 4

A stone building, 32.7m × 5.5m externally (excluding buttresses), with walls varying in thickness from 0.9m to 1m (illus 3.2.30). Most of the north wall of the building was examined, and part of the interior by this wall, but otherwise only the north-east and south-west corners were located (3.2.34 and 3.2.35). Eleven buttresses were located along the north wall and a further three can be interpolated. The north wall continued at both ends in the form of a buttress, and presumably the same arrangement was followed on the south wall. A 2m length of the west wall south of the north-west corner was examined and no buttress was found: it seems probable therefore that there were only two buttresses on the west wall. This wall was set back from the intervallum street, while the east wall came right up to the *via praetoria*: it would appear therefore that the building was entered from the west, so the arrangement of buttresses on the east wall may not have been the same as on the west.

The buttresses, placed at intervals varying from 1.3m to 1.65m along the north wall, ranged in width from 880mm to 1m and in length from 780mm to 1m. In the three spaces between the four western buttresses were vents through the wall (illus 3.2.36). These vents, 100mm–140mm wide, started above the second course up and were at least three courses high. Both walls and buttresses were placed on clay and cobble foundations. The foundations of the walls were two cobbles deep, bonded with soft grey clay, while the foundations of the buttresses were three cobbles deep (about 200mm and 350mm respectively). Masons' chippings, mixed with soft grey clay, extended halfway up the second course above the foundations both inside and outside the building, and over this lay a layer of hard reddish-brown clay approximately 100mm thick.

The walls and buttresses survived in places up to five courses high. They were built of dressed sandstone blocks varying in length from 230mm to 410mm, and tapering back into the wall by 220mm to 420mm. The lower four courses had a uniform height of 160mm, but the fifth course, where it survived, was 220mm high. The joints were up to 150m wide. The occasional diamond-broached stone was used in the wall. This form of construction might best be described as coursed rubble (Hill 1981). The core of the wall was formed of rough sandstone pieces, up to the size of the facing stones, bonded in clay.

Illustration 3.2.36
The western end of the north granary looking south; the vent between the two buttresses is visible.

Within the building all or part of four short, low walls were located, 470mm–540mm from and parallel to the north wall. From the west, these were 1.8m, 1.9m, 2m and at least 1.2m long, and measured 600mm–660mm in width. The west wall survived to a height of three courses, 260mm. All these walls were more roughly built than the main walls of the building. The breaks between the dwarf walls were placed opposite the vents through the main walls. A layer of burning, 100mm thick, covered the red clay surface around the low walls and between them and the main walls (this was analysed, but with no result). There was, however, no trace of burning on the walls themselves. No evidence survived to indicate the form of flooring of the building.

To the north of the building lay a drain or gulley. Placed between 100mm and 300mm north of the buttresses, it measured between 300mm and 450mm in width and 160mm at its deepest. The drain lay wholly within the layer of red clay laid down over the masons' chippings. Along the edge of the drain, though not uniformly, lay waterworn cobbles, of various sizes and shapes. Opposite the west buttress of the north wall two capstones survived. These rested on roughly dressed stones, placed on top of the cobbles lining the drain. At the west end the drain continued in a westerly direction to pass through the intervallum road and the fort rampart. At the east end it turned in a south-easterly direction to cross the *via praetoria* (illus 3.2.37).

Illustration 3.2.37
The east end of the north granary looking south.

Comment

The plan of this building and the form of construction indicates that it was a granary. The floor, of timber or stone, would have rested on the low internal walls. It is likely that the deeper fifth course marked the top of the vents, the purpose of which was to introduce air to the space below the floor in order to help keep the food stored there dry and fresh.

Thirty fragments of tile were found in and around the building with a further 20 in the adjacent part of building 3 to the north. The implication would appear to be that the roof of the granary was of tile.

The capstones at the west end of the north wall are noteworthy. Open gulleys elsewhere within the fort were not lined with stones, which might be taken to imply that this drain had been covered throughout its length with capstones. However, the purpose of such a drain might be thought to have been to collect water draining from the roof and carry it away and so would have been open; perhaps the drain only had capstones at this particular point in order to aid foot or vehicular traffic in this area. It has already been noted that the substantial road at this point suggests the location of the loading bay at the west end of the granary.

The rubble from the granary yielded an inscription recording building work by the century of *Quint.* of the Twentieth Legion (5.2.1.1) and a quern (5.3.2.2), and the drain to its west an intaglio carved with a shrimp (10.2).

Building 5

A timber building 35.8m × 4.2m externally, though widening to 4.6m for its 4m long western section (illus 3.2.38). It was not possible to investigate all this building, two sections of the eastern part of the building being unavailable. The west end of the east part of the building examined failed to yield traces of post-holes. There had been modern disturbance of the ground here and as a result Roman features could have been removed; alternatively building 5 may have been two buildings.

The spacing of the posts in the western half of the building ranged from 1.6m to 2m. Three internal posts were

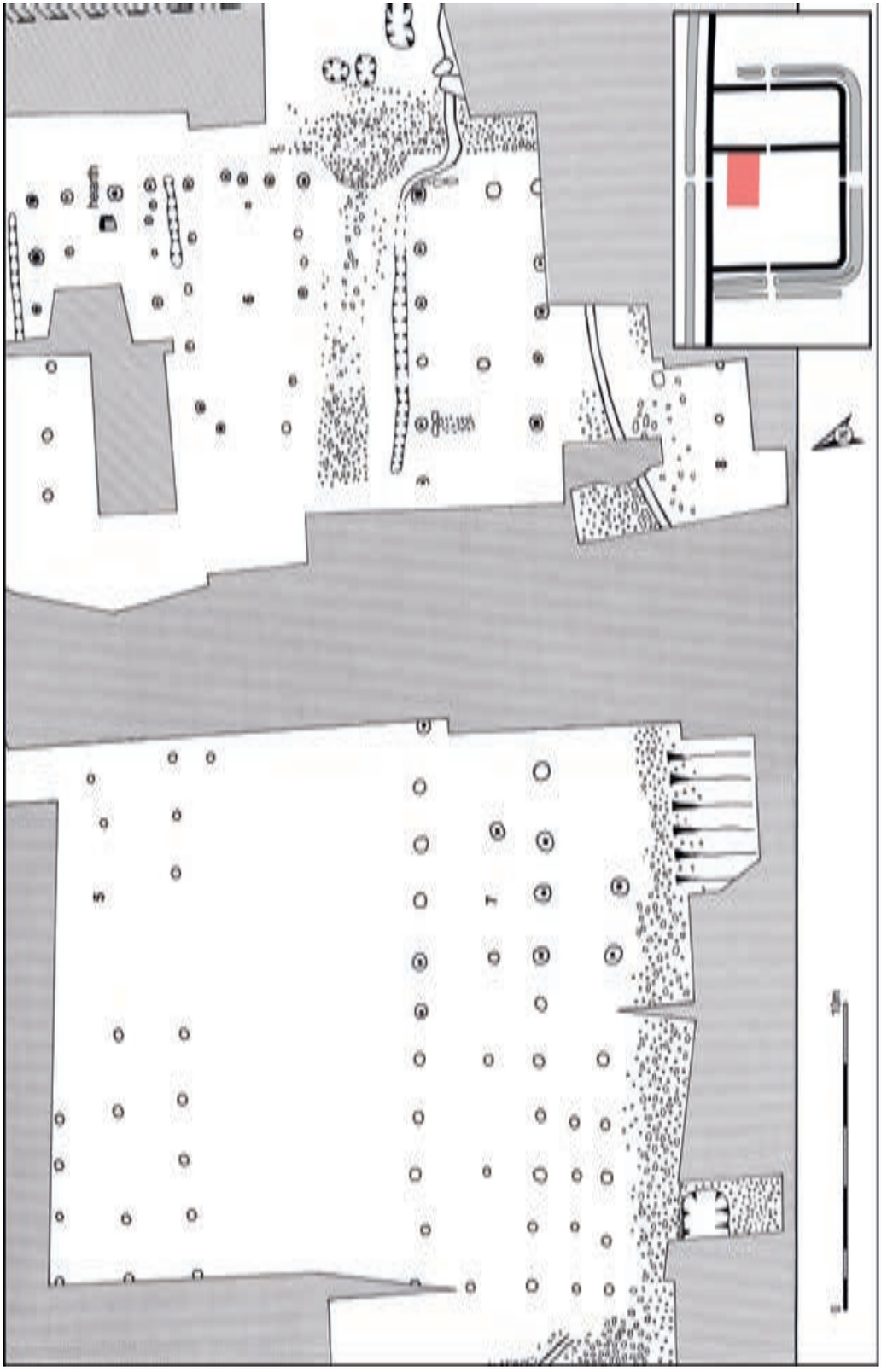

Illustration 3.2.38
Plan of buildings 5, 6, 7 and 8.

Illustration 3.2.39
The hearth at the east end of building 5.

noted, suggesting the existence of internal partitions, though irregularly spaced. The posts at the eastern end of the building were set closer together, with four posts instead of the normal three forming the end wall of the building. The distance between the posts varied from 1.1m to 1.9m. In the western part of this eastern end of the building, three possible post-holes were noted on the line of the north wall. These were no more than vestigial clumps of stones, which could have been the bottoms of post-holes. Within the eastern end of the building was one post, pointing to the existence of an internal division or structure, and a small hearth. This hearth was formed of a base stone, embedded into the surface of the natural clay and four upright stones surrounding it, two of which survived (illus 3.2.39); it contained a fragment of samian (7.1.2.12). There was a single post-hole to the south of the building on the line of an internal partition.

A gulley was located on the north side of the eastern end of the north wall of the building. It was severely reduced in size, and did not extend beyond the end of the building.

Comment

The main problem with the interpretation of this building is the random nature of the partitions. While one 'room' was of normal width, the two each side were half the width. The single post-hole south of the building, in other circumstances would have been interpreted as evidence for a verandah.

Building 6

A timber building measuring externally 8.6m × 2.85m at the west end, widening to 3.9m at the east (illus 3.2.38). Careful examination failed to reveal any westward continuation of the lines of post-holes, with the single exception of a post-hole on the line of the north wall beyond the limit of those plotted on the plan. However, no post-hole closing the west end of the building was found. It is assumed that this was a shorter building than usual, the whole of it being revealed in the excavated area.

The distance between the posts varied considerably from 0.9m to 2.1m, the spacing being most irregular in the south and east walls. There were five posts in the east wall rather than the more usual three, though the second one south was only about half the normal depth, 180mm in contrast to 370mm–400mm. A single post-hole was located within the building.

Comment

The building was unusual in being so small and irregular. Various possibilities may be offered: it may not have been completed; it was part of the officer's quarters of building 5; it was a small stable or storehouse.

Building 7

A timber building, 36.2m × 4.2m externally, with posts set at intervals of 1.6m–2.0m in the north and south walls, with the exception of one long gap of 2.4m; the average between the post-holes was 1.85m (illus 3.2.38). All the building, with the exception of a central strip 7.5m wide, was excavated (illus 3.2.40). The building was divided into rooms, on the same lines of building 3, numbered from east to west 0–8 (table 3.2). A small patch of gravel floor survived in room 1. Most of the western half of room 0 was covered with a pink packed clay, partially overlain by burnt daub. Fragments of a glass cup or small bowl and part of a glass handle were found in this room, a coin in room 1 (12.6) and pieces of a glass flask or jug in room 6 (9.2.1; 17; 4).

Illustration 3.2.40
Part of building 7 looking south-west.

Table 3.2
Building 7, the size of the rooms

	From post-hole centres
0	5.4m × 3.7m = 20.0m²
1	3.8m × 3.6m = 13.7m²
2	3.9m × 3.6m = 14.0m²*
3	3.9m × 3.7m = 14.5m²*
4	3.7m × 3.7m = 13.7m²
5	3.9m × 3.8m = 14.8m²
6	3.2m × 3.7m = 11.8m²
7	3.5m × 3.7m = 12.9m²
8	3.7m × 3.4m = 11.6m²

* The figures for these rooms have been interpolated

South of the western end of the building lay two rows of post-holes. The northerly row consisted of four post-holes, each opposite one of the main uprights of the building, while the southerly row contained seven post-holes, again opposite the main uprights: an eighth post-hole had probably existed, but was not located. The gap between the building and the southern row varied from 2.1 to 2.6m and the intermediate row was placed a little south of the central point of the gap.

South of the post-holes lay a metalled surface, generally formed of small sandstone pieces. This metalling approached closer to the eastern end of the building. Here, part of a drain survived, leading in a south-westerly direction from Room 0, and forming the south-east edge of the metalling. The drain was choked with burnt debris, which included rushes.

A gulley was traced along the outside of the north wall of Room 0. This turned southwards round the north-east corner of the building, before resuming an easterly course to pass through the intervallum road and the rampart.

Comment

This building is best interpreted as a barrack-block containing an officer's quarters at the eastern end and eight smaller rooms. The clay area within the officer's quarters may have been a floor, though this might seem unlikely in view of the gravel surface in the adjacent room.

The main additional row of post-holes at the west end of the building may have supported a verandah and the lack of a gulley immediately outside the south wall of the building may support this interpretation, though in that case it would be expected that the posts continued along the length of the building. The second row of posts may have been a replacement or an additional support for the building. The wider gap between the building and the gulley to its south compared with that to the north suggests that the building faced south.

Building 8

Two post-holes were located, 1.85m apart (illus 3.2.38).

Comment

These may have formed part of a small building between building 7 and the *via principalis*. However, the building could not have extended over the whole space between the intervallum road and the *via praetoria*, owing to the existence of two open depressions in the west part of this area. The post-holes were dug into the clay fill of the pre-Roman east–west depression.

Building 9

A stone building, only partially examined, and calculated as measuring 22m north–south by 5.5m east–west, excluding the buttresses (illus 3.2.42). The building was only located at two points, the south-east corner and the middle of the east side, in both places a buttress being revealed (illus 3.2.41). The east

Illustration 3.2.41
The south granary looking south.

Illustration 3.2.42
Plan of buildings 9, 13 and 14.

wall of the building was 1.05m thick and the south wall 1.1m. The buttresses were 1.62m apart, 1m wide and projected from the main wall by between 900mm and 1.05m. The walls and buttresses were constructed of sandstone blocks, similar in size and dressing to building 4. Only one course of wall, at most, survived, and this was placed upon a clay and cobble foundation. At the south-east buttress the only surviving facing stone projected for 130mm beyond the line of the foundations.

No walls or structures were discovered within the building, though an L-shaped mortar-filled trench, possibly a foundation, was attached to the inside of the east wall. This projected for 800m into the building and then turned south, this arm being 2.6m long. The east–west section was 800mm wide, and the north–south length 240mm: the depth varied from 50mm to 220mm. At the south end of the building a layer of cobbles, 1.3m wide ran parallel to, and 200mm north of, the south wall of the building. This strip of cobbles had well-defined edges, and was similar in construction to the foundations of the walls. Elsewhere a small patch of cobbles was noted, and here and there lay small areas of burnt debris. Two small, shallow (200mm deep) pits were also recorded.

Comment

The plan of this building proclaims its function as a granary. The strip of cobbles inside the south wall of the building may have been the foundations for a wall placed in the wrong location and/or subsequently moved, perhaps the south wall of the granary, or, as Geoff Bailey has suggested to me, it may have been related to the loading bay.

Building 10

This area lay in the centre of the fort (Bearsden 2), where, it might be expected, the headquarters building would have sat (illus 3.2.1; 3.2.44). Little of the area was available for excavation. At the north-east corner of the gap between buildings 9 and 11 lay a narrow open space surrounded by rhododendron bushes and conifers: this area was partially examined in two seasons and then in an effort to understand the surviving features was completely stripped in one season, together with small additional corners. The area contained a number of post-holes, a drain and a gulley, both running west-east.

Four post-holes lay in a line running north–south on the east side of the area (illus 3.2.44). Two post-holes were only 400mm apart. The southerly of the pair, which had a better stone packing than its neighbour, was clearly the primary post-hole for it was equidistant, 1.75m, from the next post-holes in the row and it lay below the fill of the east–west drain. The appropriate distance to the south, where a further post-hole might have been expected, was cut through by a modern field drain. A number of 'stake-holes' were also recorded in this area but they made no pattern. Nine such holes were recorded, each about 100mm–120mm deep and 100mm or less in diameter.

The post-holes of the second row were on an east–west alignment extending westwards from the centre post-hole of the north–south alignment; they were at the 'double distance' apart, 3.66m and 3.8m. The central post-hole lay on the northern edge

Illustration 3.2.43
Part of building 10 looking north showing the relationship between the post-holes and the gulley.

of the drain but was not covered by an edging stone so its post could have been contemporary with the drain. It was covered by a small patch of burning. A further post-hole lay 1.2m north of this middle post-hole.

The presence of stone packing in several post-holes, and in one instance a post-pipe measuring 100mm × 120mm, demonstrates that timbers once stood in these post-holes and had not been removed by rocking to loosen them.

In the southern part of the area damaged cobbling with some overlying gravel survived. The cobbles extended eastwards up to the west wall of building 11. Smaller patches of cobbles and gravel were noted to the north of the drain, including to the east of the most easterly row of north–south post-holes.

Running east–west through this area were a drain and a gulley (illus 3.2.43). The drain, which fell to the east, varied in width from 1.4m to 2.5m, and was formed of roughly dressed sandstone blocks, about 250mm × 300mm × 150mm high, laid on the clay sub-soil. The fill of the drain varied. In one section it consisted of compacted brown sandy gravel; elsewhere a patch of burnt daub overlying the drain and the area immediately around it also formed the fill of the drain; while in a third place the drain was filled with loose silty soil. A number of Roman pot sherds were recovered from the drain. At one point three small flagstones covered the compacted brown sandy gravel filling the drain. It continued for 1.4m westwards from the most westerly post-hole hinting that there may have been one or more posts to the west.

About 1m south of the drain, and not quite parallel to it, ran a shallow gulley, some 250mm wide and between 20mm and 50mm deep. This was traced for a distance of 10m, both west and east ends within the trench unfortunately being damaged by

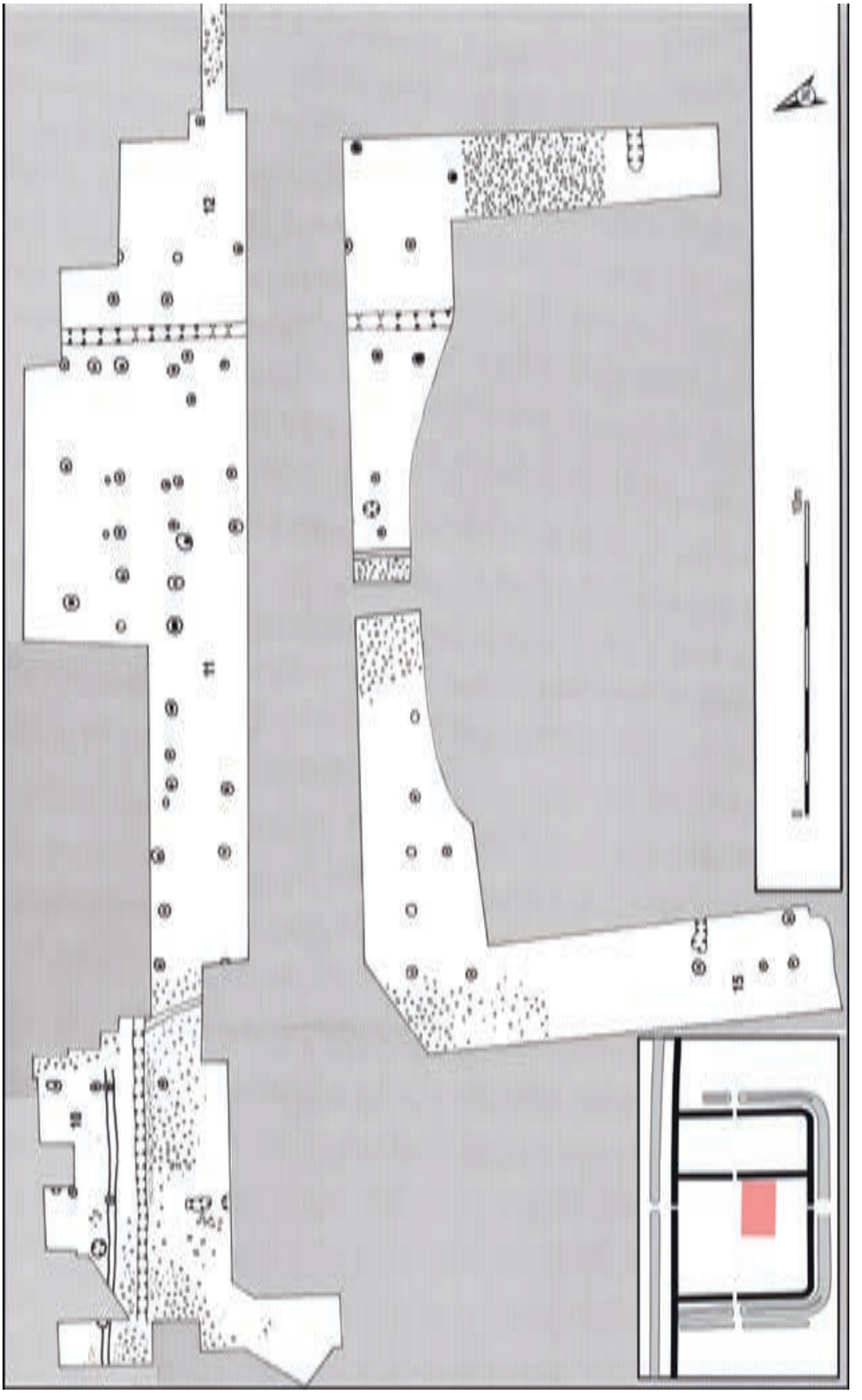

Illustration 3.2.44
Plan of buildings 10, 11, 12 and 15.

later disturbances. Two slight depressions, 3.2m apart, were noted within the gulley, 100mm and 140mm deep. No function can be suggested for this gulley, which, in view of its insubstantial nature, is unlikely to be structural.

Comment

The posts running through this area presumably form part of a timber building. All that can be said about the lay-out of this building is that it was aligned with the other fort buildings. The gulley may have been an eavesdrip along the southern wall of the building. Cobbling survived south, north and east of the post-holes and gulleys. The remains of the building were too fragmentary to allow any interpretation of its function. Further comment lies in the discussion of building 15.

Illustration 3.2.45
General view of the building 11 looking west, with two post-holes of building 12 in the foreground.

Building 11

Three areas, little more than trenches, were opened up south of Roman Road in the centre of the large enclosure (3.2.1 and 3.2.44). Their size and location were governed by the adjacent modern features, the car-park, the trees and shrubs and the north boundary wall of Maxholme (illus 3.2.45). The pattern of the post-holes was interpreted as belonging to two buildings, 11 and 12.

The northern area was distinguished by a complexity of post-holes with the three main lines running east–west but others north–south (illus 3.2.45 and 3.2.46). Many post-holes were the normal 1.8m–2m apart, but 1.4m separated some. Two substantial posts in the centre of the main east–west row were 2.6m apart. An unusual feature was a small additional post beside four uprights. This area was bounded to the west by an area of cobbling and to the east by a gulley. The area to the south and west contained a main row of post-holes aligned east–west, but with two post-holes further south. The clay surface contained many small stones, but an area of sporadic cobbling at the north-west corner of the trench did not extend east of the post-holes. At the east end of the trench was a second area of cobbling.

Running through the right-angular area to the west, on a roughly north–south alignment were two modern intrusions up to 190mm deep, containing modern glazed pottery and interpreted as possible bedding trenches. These were not deep enough to have definitely removed all traces of post-holes should they have been present on this line, but none were found. The main line of four post-holes aligned east–west was continued by a possible post-hole, much shallower than the other main post-holes, differently filled and, although in line, not at the correct spacing.

The right-angular area to the east contained a number of post-holes, the eastern edge of the presumed building being defined as a continuation of the north–south gulley noted to the north. At the west end lay a patch of cobbles bounded to the east by a gulley.

Comment

The complex of features in these three areas was interpreted during the excavation as a timber building consisting of three ranges surrounding a courtyard of gravel edged by an eavesdrop, measuring 19.2m east–west at its northern end and 19.80m to the south. It is unfortunate that the restrictions on the areas excavated resulted in so many problems of interpretation.

The west range was 3.6m wide at the north end and 3.9m at the south and at least 8.3m long. This may have formed one room, or have been divided into two: the evidence lay under trees. There is some evidence to suggest that the range continued southwards. One post-hole was at the correct distance to the south of the western external wall, but a second post-hole on the eastern wall was only 1.1m south. This, however, was only slightly smaller than the 1.3m between two post-pipes on the eastern wall of the building and elsewhere within the building. Unfortunately, modern intrusions obscured the possible site of a post-hole in the western wall; indeed they may have removed three post-holes. Against that was the relative shallow depth of the modern cut and the fact that the post-holes ought to have lain on the edge of the intrusion and have been at least partly visible, as was the post-hole towards the northern end of the intrusion. It is not clear, therefore whether 'building' 15 formed part of building 11.

Illustration 3.2.46
The north-west corner of building 11 looking west.

The eastern range was of the same dimensions as the western, though as the post possibly forming its north wall was eccentrically placed, the room may have continued to the north wall of the building. Again, a single post-hole on the outer wall of the building and south of the east–west partition suggested that it extended further to the south.While it could not be ascertained that the whole of the north range was uncovered, what survived was sufficient to indicate a range 3.6m wide, the difference being that this range was divided longitudinally.

There is some evidence to suggest that the south limit of the building lay on a line with the south end of building 12. To the south of building 12 a strip of cobbling was interpreted as a road surface. This would be in the appropriate location for the *via quintana*. Support for this interpretation lies in the gap between the west walls of buildings 11 and 15 where no post-holes were found, coupled with the fact that the suggestion that they were removed by modern intrusions is not wholly satisfactory. The northern range had its own complications. It appeared to contain a longitudinal partition and the addition of smaller post-holes adjacent to the main uprights. The two northern corner posts of the veranda were paired by such small post-holes on the inside of the colonnade, and three of the four posts forming the south wall of the north range were similarly paired. The subsidiary post-holes were both narrower and shallower than the adjacent main uprights. Geoff Bailey has suggested to me that they may have held door frames. To the east the exterior wall of the building, towards its northern end, seems to have contained more post-holes than usual. Two post-holes, 1.6m apart, lay 2.15m parallel to and outside the east wall of the building. These post-holes were of average depth. The existence of these posts might suggest the presence of an upper storey at that point, but otherwise, their function is unknown.

Four post-holes survived which indicated that the east and west ranges of the building surrounded a veranda. The two posts were missing which would have confirmed that the veranda also ran along the north range. In the south-east corner one stone kerb survived, bounding the gravel surface of the courtyard, with an eavesdrip beyond.

The (main) entrance to the building from the courtyard appears to have lain in the centre of the putative north veranda for the gap between the two centre posts was greater than normal at 2.6m with the spacing to each side about 1.4m.

There was considerable variation in the depth of the post-holes in the building. Generally the deepest were those forming the verandah colonnade. This might suggest that they supported a greater length of roof on one side of a ridge running along the centre of each wing. However, elsewhere there was no clear relationship between load-bearing and depth of post-hole, so the suggestion must remain unproven.

No pits, hearths, or other features were located within the building.

In the absence of internal features the only clue to the function of this building lies in its plan. The courtyard arrangement and its position in the central range of the fort and to the right of the normal location of the headquarters building at first suggested that this was the commanding officer's house. However, even the smallest commanding officer's houses normally appear to have contained four ranges of rooms round a courtyard, not three. In plan, the closest parallel to this building is the workshop at the legionary fortress of Lambaesis in North Africa though the two buildings are very different in size. Both buildings consist of three ranges round a courtyard, and this arrangement is reflected in the workshop at Inchtuthil in Perthshire, where, though, there is a wing of different plan along the fourth side of the courtyard (Johnson 1983: 184, figs 138 and 139). The conclusion was therefore reached during the excavation that this building was likely to have been a workshop, notwithstanding the lack of evidence for industrial activity within it.While the post-excavation work was being undertaken, Geoff Bailey suggested that the structure examined was the courtyard of a headquarters building placed in the centre of the original enclosure (Bearsden 1). Further discussion of this interpretation is below under the comments on building 15.

Building 12

A timber building measuring 3.8m east–west by at least 11m north–south, with the post-holes 1.9m apart (illus 3.2.44). One

internal feature was noted, a post-hole situated by the east wall towards the south-east corner. An open gulley lay between buildings 12 and 11 and between the gulley and building 12 were two post-holes, 1.7m apart. A single post-hole appears to mark the southern wall of the building and its interpretation as such was strengthened by the existence of a metalled surface 6.3m wide to its south (illus 3.2.24). It is not impossible, however, that the post-hole and the metalling lay within the building, though this is unlikely in view of the fact that the metalling appeared to extend beyond the line of the projected eastern wall of the building.

Comment

The building is devoid of features which might aid interpretation. Similar long narrow buildings are usually interpreted as storehouses.

Buildings 13 and 14

The area of these putative buildings was excavated over two seasons in difficult conditions among the greenhouses of Maxholme (illus 3.2.42). The surface was very compacted making recognition of the post-holes difficult and this was compounded by the unusually narrow diameter of many of the post-holes and the frequency of modern post-holes and other intrusions (omitted from this plan). Furthermore, while lines of post-holes can be recognised, their interpretation is fraught.

All definite and possible post-holes are included on the plan. The possible post-holes included four shallow examples which were aligned with other definite features, rendering their interpretation as post-holes more acceptable. Six east–west lines of post-holes were recorded. These fell into two groups. The southern two rows were the normal 1.6m apart, while the four northern rows were only about 1m apart. The two northern rows ended within the area of the excavation, not continuing up to the west baulk, in spite of the lack of modern intrusions. The four south rows appeared to continue westwards under the baulk. A single post-hole lay 2m to the north of the northern row, and a further 1m to the north lay a shallow east–west gulley, broken at one point, where two lines of stones led south.

To the east of the post-holes lay a road surface. At one point this was overlain by a thin layer of burnt wattle-and-daub (illus 3.4.47). There was a clear edge to this, on a line with the second row of post-holes from the south. Elsewhere, three areas of metalling survived, though all were badly decayed. One lay between the third and fourth rows of posts, the second around the middle post-hole of the sixth row and the third just south of the gulley and to the east of the eastern row of stones.

Comment

These rows of post-holes do not clearly define one or more buildings. There is some indication that two buildings are represented by the post-holes, insofar as the posts in the two buildings are differently spaced and there is metalling between the two groups. However, the burnt wattle and daub, presumably the remains of a wall, lines up with the second row from the south and may indicate that this is the edge of the building. As it overlies the road, it is likely to be the east wall of building 14. The two southern rows may therefore represent one building. The close spacing of the third row from the south is similar to that in building 13 and therefore may be part of that, notwithstanding the metalling between the third and fourth rows from the south. The northern collection of post-holes is reminiscent of the plan of a timber granary, the closely spaced post-holes containing the supports for a floor.

In conclusion, it is not possible to be certain about the extent of buildings 13 and 14 though the two groups of posts do appear to represent two buildings.

The metalling to the east of building 14 was interpreted as the *via decumana*. It was 9.2m wide, appropriate for one of the major roads of the fort. The metalling between buildings 13 and 14 would therefore be a path leading off the *via decumana*.

Building 15

Four post-holes forming a right-angle were located to the south of building 11 (illus 3.2.44). To the east of the most northerly post-hole lay an irregular depression which extended eastwards under the baulk. It was 600mm wide and 180mm deep and contained dark grey soil flecked with charcoal and flecks of orange burnt daub and was overlain by a patch of burnt daub.

Comment

The posts may be part of a building running east–west. Such a building must have been a minimum of 3m wide, but it did not extend into the trench 7.5m to the south. Traces of the building were also sought in the next trench to the east, though without success. Here a depression, 440mm wide, lay immediately south of the metalling south of building 12 in the eastern part of the trench. Filled with grey-brown clayey soil, it was covered by large

Illustration 3.2.47
The *via decumana*, following the removal of the burning, with the post-holes of building 14 beyond, looking west.

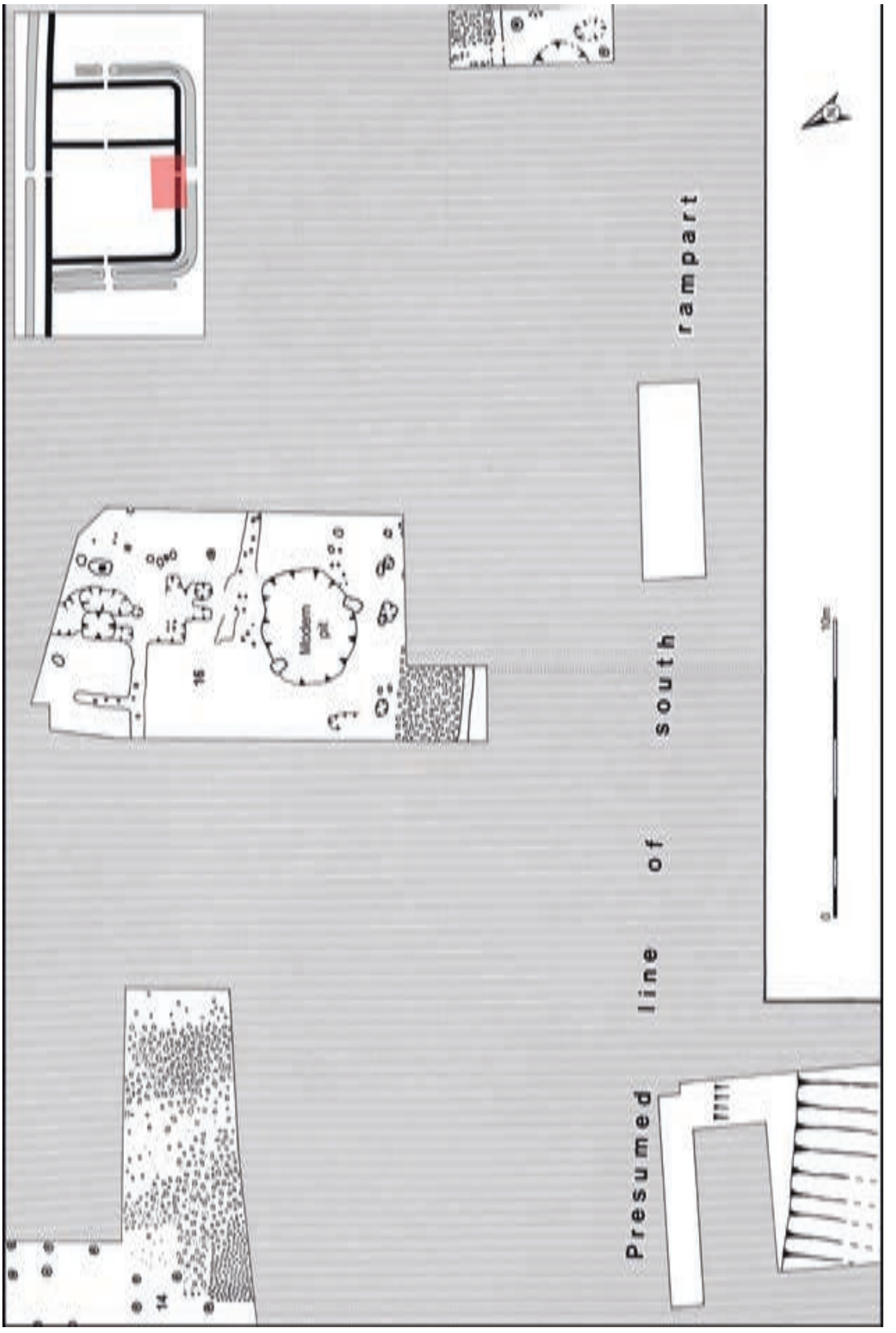

Illustration 3.2.48
Plan of 'building' 16 and the south intervallum.

rounded stones. It did not appear to have been part of a building, and perhaps could be interpreted as a gulley. The *via decumana* presumably formed the furthest possible limit of the building to the west.

The alignment of the irregular ?gulley on the most northerly post is suggestive of a construction trench, but its contents gave no indication of its function, though the charcoal and daub in its contents may suggest a late date.

Comment on buildings 10, 11 and 15

The linking of building 11 and 15 as proposed by Bailey has much to commend it. The corner termed 'building' 15 is due south of the west wall of building 11. The northern post-hole of building 15, Bailey suggests, could define the north wall of the range of rooms at the rear of the headquarters building. There is ample space between buildings 11 and 15 for a cross-hall. The overall dimensions of the building would have been 23.5m north–south by 19.7m east–west.

There is clearly a courtyard in the normal position for a headquarters building. The unusual feature here is that it appears to be surrounded by ranges of rooms to the west, east and north. At Mumrills, Balmuildy and Cadder the courtyard is flanked on two opposing sides by such ranges, but not on the north. Bearsden would therefore be unique. A further suggestion by Bailey may deal with this point; this is that the most northerly post-holes do not form a northern range but were part of a forehall which extended to the west to embrace building 10. A forehall usually consisted of a central nave with an aisle to each side and the location of the post-holes in both areas would allow such an interpretation. This proposal is discussed further below (21.3.6).

Building 16

This was the largest area examined in the south-east corner of the fort (illus 3.2.48). Clear evidence was found for Roman activity, but no recognisable buildings were located. The Roman levels were damaged by a large pit, field drains and modern services.

North of the modern pit and in the centre of the trench lay an area of decayed stone rubble. Consideration was given to this being the floor of a building, but on excavation it proved to correspond closely to the areas of pits and gulleys, and may have survived through subsidence into these: it did not appear to have any structural significance. There were some small patches of burnt debris here, but the concentration of burning was greater south of the pit.

Removal of the stone debris and the burning revealed pits and gulleys at the north end of the trench, and several distinctive small pits at the south end (illus 3.2.48). Towards the north-west corner of the trench lay a gulley running east–west with, at right angles, a smaller gulley running north. Both contained a similar fill, dark soil with stones, decayed rubble and burnt debris. Both also contained stake-holes ranging in diameter from 50 to 80mm. If these were construction trenches, it is unlikely that they were original in view of their filling. No substantial post-holes, which it might be thought would have been required for a building, were located, and it seems possible that the stakes supported a fence.

A third gulley, lying immediately to the north-east of the large modern pit, also contained a mixed fill of dark soil with some burnt daub and charcoal. There were also several stake-holes in it and, at the east end, two possible post-holes.

The northern part of this area also contained several small pits, the larger about 1m square and 700mm deep. These pits contained dark soil, stone rubble and frequently burnt daub and charcoal.

The pits in the south part of the trench were different. They were smaller, but deeper, one achieving a depth of 760mm, and the proportion of burnt material was much higher than in the other pits (illus 3.2.48 and 3.2.49). The fill of four of these pits consisted wholly of burnt material including charcoal and daub. One pit, measuring about 600 by 680mm and containing a burnt fill, had a deeper and smaller pit in the corner with the same

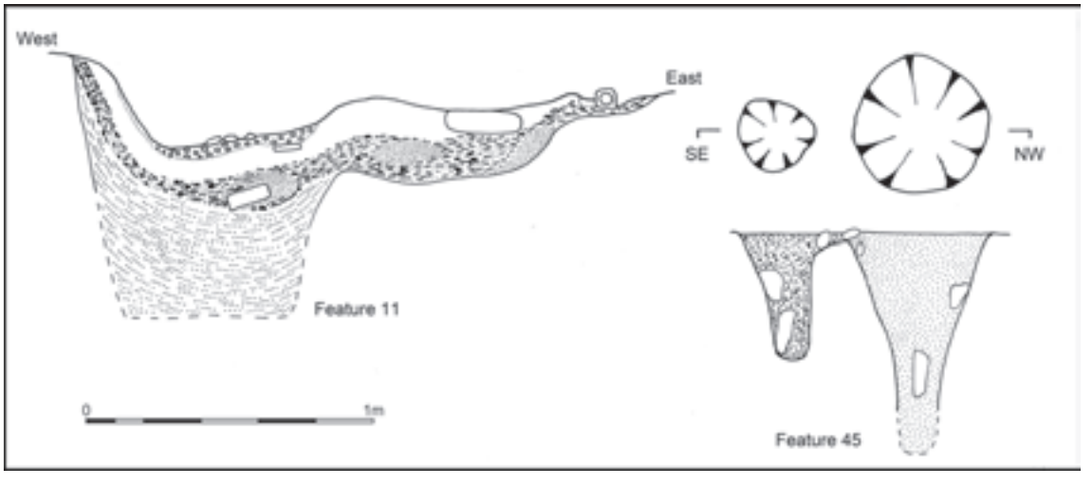

Illustration 3.2.49
Section of pits in 'building' 16.

fill. A little to the east, two adjacent deep pits contained, in one case, grey soil, and in the other a grey/black soil with burning.

Comment

No positive buildings could be identified in this area, though the occurrence of stake-holes in trenches may point to the existence of fences or palisades. The many small pits indicate some activity, but the precise nature of that activity could not be determined. The pits in the north part of this area are reminiscent of those recorded during the laying out of the gardens, described as being 'from 30 to 36 inches [760mm–914mm] in diameter and similar in depth. In the bottom there was usually or always some ashes or charred wood' (Macdonald 1911: 164; 1934: 325). Macdonald considered that they were probably post-holes and suggested that 'the description … is given from memory after the lapse of a good many years', and therefore possibly wrong.

3.3 THE ANNEXE

3.3.1 The bath-house

This building was discovered in 1973 and immediately offered into the care of the Secretary of State for Scotland (illus 3.3.1 and 3.3.2). As the developers did not wish consolidation to proceed until their plans were more advanced the building was placed under a protective cover. This was removed in 1979 when excavation of the building resumed and consolidation commenced. The excavation took two seasons to complete and thereafter small-scale examination continued sporadically for a further two years as required in advance of consolidation and when the area in care was extended to include the whole of the changing room (illus 22.37–22.39). The consolidation, landscaping and interpretation of the bath-house and latrine has been discussed elsewhere (Breeze 1983b; 1984a: 64–7).

The primary bath-house

Immediately north of the hot room of the heated range (the *caldarium*), an earlier stone structure was located in 1979 and excavated in 1980. This proved to be part of an earlier bath-house (illus 3.3.3, 3.3.4 and 3.3.5).

The room measured internally 4.24–4.3m east–west, above the offset – it widened slightly to the south – by 4.88m–5.08m north–south, widening to the east (illus 3.3.4). There was an offset 40–100mm wide on the inside face of the east wall, above the seventh course up. Elsewhere only two buttresses survived to sufficient height to retain evidence for offsets. Nevertheless it seems probable that some walls and buttresses were insufficiently wide to be reduced any further in thickness by offsets. The impression is that the construction of the walls commenced in a rather haphazard fashion, and then the correct internal size for the room was obtained by the judicious use of offsets: the maximum variation in the width or length of the room was 4%.

A short wall projected into the building on both the west and east walls. Externally there was a buttress in the middle of the east and west sides and two buttresses at each corner, with the exception of the south-west corner where there was only one. The lack of a buttress in the north wall is readily explained by the presence of a furnace. The lack of a buttress in the south wall is probably to be associated with the absence of a south-projecting buttress at the south-west corner and indicates that the intention was to attach the room to a building extending in a southerly or westerly direction. The construction of the later bath-house to the south may have destroyed buttresses in the south wall.

The foundations of this room were nowhere examined. The walls survived to a maximum height of ten courses, seven of which were below ground level (illus 3.3.7). Although the south wall had been severely robbed, at least one course of masonry still remained and this was not removed. The walls below ground level were built within a construction trench rarely 150mm wider than the wall itself. On the west side of the room, however, an irregular scoop, about 1.4m wide and 300mm deep had been excavated outside and along the wall in order to facilitate building.

The walls varied in thickness, below the level of the offset, from 670mm to 980mm. The east wall, above the offset, was 800mm wide. The buttresses projected from 720mm to 880mm from the main walls, and ranged in width from 780mm to 960mm. All walls were built of dressed sandstone blocks. The core was formed of sandstone pieces bonded with clay. Most courses had a uniform height of 200mm, but some were thinner. The beds were generally less than 10mm wide, but the joints were less well prepared and might be twice as wide. Longer stones were employed at the corners, some being the complete length of the buttress. Nearly all the stones used in this room were diamond broached. The standard of masonry displayed in this room was the highest seen on the site. Nevertheless this work is still best described as coursed rubble (Hill 1981).

The north wall was broken for what was clearly a furnace (illus 3.3.5, 3.3.7, 3.3.8 and 3.3.9). The sides of the opening were formed by large sandstone blocks measuring 650mm × 500mm × 250mm thick. To the west the first stone of the arch survived. Projecting northwards from both sides of the opening were the cheeks of the furnace, each formed of stones similar in size to those flanking the opening itself.

Two short walls, facing each other, projected into the room from the east and west walls. Smaller than the external buttresses, the western measured 700mm × 550mm wide, and the eastern 550mm × 660mm wide.

The natural clay, which lay at the level of the sixth and seventh courses up, was intermittently covered with mason's chips. Resting on these, a little to the south of the centre of the room, was a hearth (illus 3.3.10 and 3.3.11). This was formed of two base slabs, now fractured, and two or three smaller stones with small slabs set on edge forming the kerb. The base slabs lay on a skim of burnt debris which in turn overlay wedges of clay about 15mm thick used to level up the hollows below. Burnt debris lay within and around the hearth, up to a depth of about 100mm. A samian sherd was found below the flags and a further two, together with a sherd from a mortarium made by Sarrius, in the burnt debris (7.1.2.45; 46; 47; 7.3.7.49). Fragments of flagons lay on the floor of the room and in the robber trench

Illustration 3.3.1
A general view of the bath-house in 1973 looking south-east.

Illustration 3.3.2
A general view of the bath-house in 1973 looking north-west.

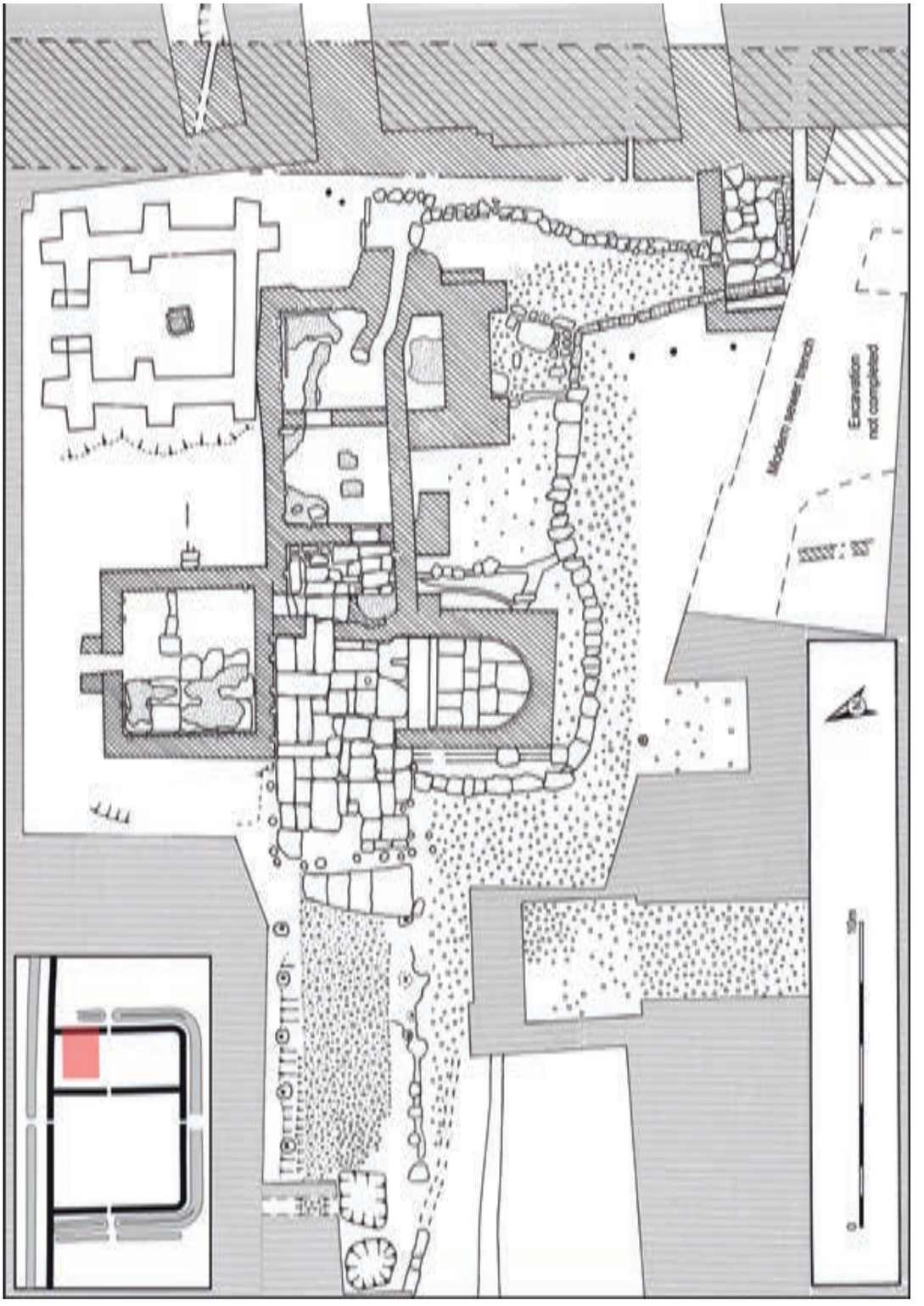

Illustration 3.3.3
Plan of the bath-house at floor level.

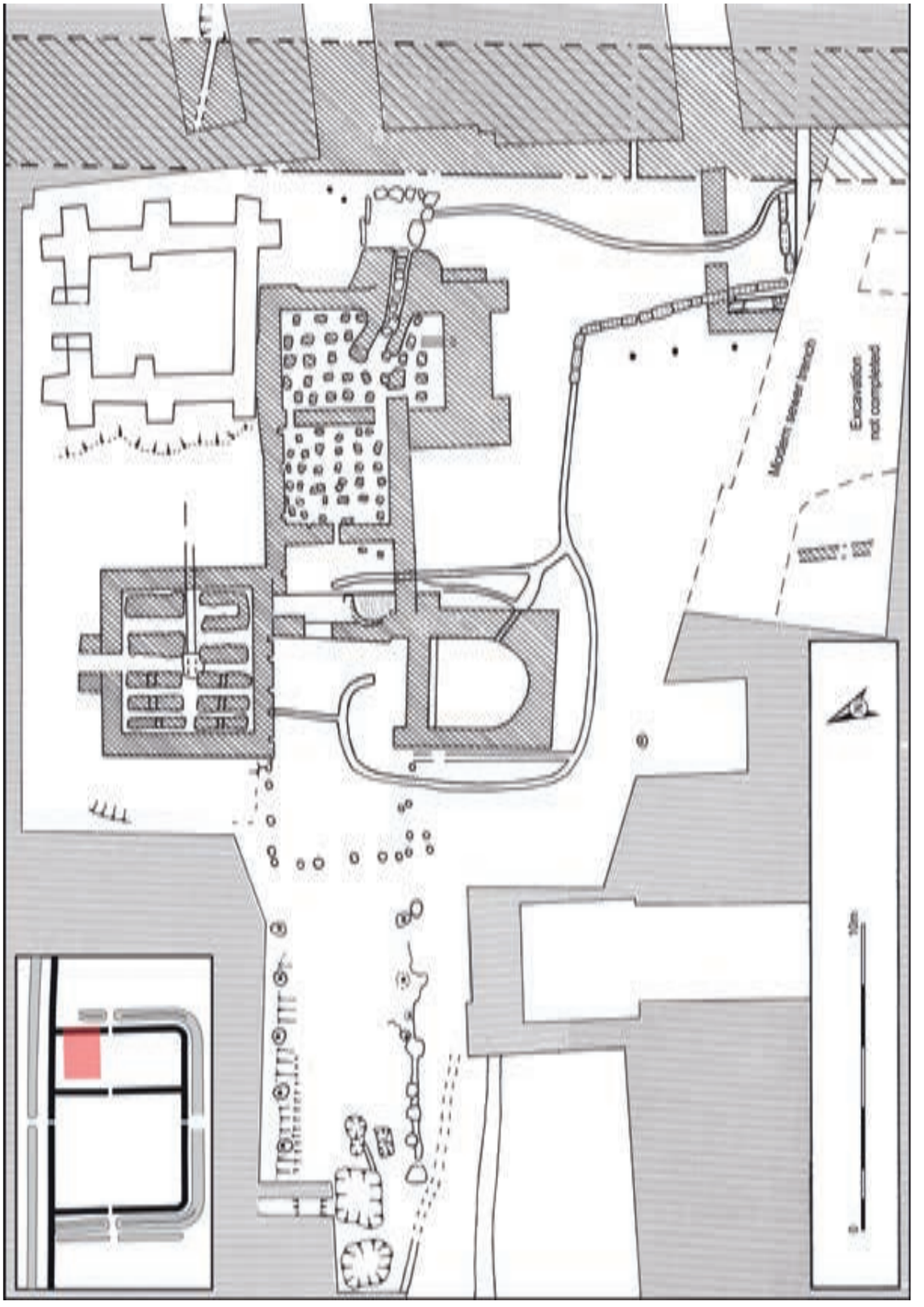

Illustration 3.3.4
Plan of the bath-house at basement level.

Illustration 3.3.5
The primary bath-house looking south following completion of the excavation.

Illustration 3.3.6
The north-east corner of the primary bath-house.

of the south wall, while the burnt debris included fragments of glass and the shank from a button and loop fastener (7.2.3.2; 3; 9.2.39; 40; 11.1.9). The south wall had been robbed down to the bottom course in places, and the southern parts of the east and west walls were robbed down to the third course up. The robber trenches were filled with sandstone chips, lying in grey clayey soil at the bottom and, above an iron pan level, in sandy soil (illus 3.3.27). This debris, consisting of packed sandstone chips and discarded dressed stone also filled the construction scoop to the west of the building. Finally, a layer of rubble covered the site of the room up to a thickness of 400mm–500mm. The rubble contained 38 voussoirs, 14 complete with the others damaged (5.2.2)

Comment

This was clearly intended to have been a heated room. The great depth of the walls, coupled with the external buttresses, at first suggested the possibility that this was to have been a watch-tower, but the discovery of the opening in the north wall, undoubtedly a furnace, indicated its function. The discovery of the voussoirs explained the existence of the buttresses; the roof of the room was a barrel vault of the type favoured by the

Romans in bath-houses. The fact that many of the voussoirs were found broken suggests that the roof had been erected before the building was demolished. However, the room was not completed for the basement had not been excavated. Instead, before that event took place plans were changed and the room put to a secondary use before demolition. The secondary use would appear to have been as a shelter, possibly even mess room. Although no cooking debris was recovered from the burnt material in and around the hearth, the presence of fragments of a flagon in the debris and of a second in the fill of the robbed wall suggests drinking. The room was then demolished, most stones being removed for use elsewhere, and debris left on the site. Thereafter the area seems to have been abandoned and not re-used by the Romans.

While the building has been referred to as a room, it is possible that it contained two rooms divided by the internally

Illustration 3.3.7
The stoke-hole in the primary bath-house looking south.

Illustration 3.3.8
The stoke-hole of the primary bath-house looking west.

projecting walls. These may have marked a division between a hot room to the north and a warm room to the south (Bailey 1994: 302). The hot room would have been unusually small, even for an Antonine Wall fort, while no such walls appear in other bath-houses on the Wall.

The secondary bath-house

The main bath-house contained seven rooms, eight if the hot bath is considered as a separate room (illus 3.3.3 and 3.3.4). It was built of both timber and stone, the two westernmost rooms being constructed of timber. The land sloped from north to south and from west to east. Use was made of this by the builders. The hot dry room and the heated range were excavated into the north slope, while the cold bath to the south was built up from the original ground surface. The floor of the changing room was laid directly on the subsoil, being excavated into the slope on the north side. All the floors sloped a little to the east, which also aided the shedding of water. The main entrance to the bath-house appears to have been from the west, where a gravel path, 700mm wide, led to the north-west corner of the building. The stone walls were all bonded with clay.

Illustration 3.3.9
The stoke-hole of the primary bath-house looking east.

Illustration 3.3.10
The primary bath-house looking south showing the burning around the hearth.

Illustration 3.3.11
The hearth in the primary bath-house.

The bath-house was cruciform in plan. The main axis was 28m long externally, and the width varied from 4.5m at the west end to 5m at the east (minus the hot bath). The main spine fell into three roughly equal-sized parts: the changing room, cold room and heated range. The hot dry room and the cold bath were placed approximately in the centre of the building, to each side of the cold room. As the purpose of each room is self-evident, they have all been named rather than given arbitrary numbers.

The changing room (apodyterium)

This room was of timber throughout. It measured 9m or 10m by 4m. Two phases were recognised in this room, but building in individual post-holes rather than construction trenches prevented the satisfactory elucidation of its development.

Only one phase was found in the north wall, which contained five main timbers. These were embedded in well-constructed post-holes, up to 640mm deep, 1.7m–1.9m apart, with a gap of 2.2m between the east post and the east wall of the room (illus 3.3.12). The post-holes lay about 500mm north of the north edge of the internal gravel floor, the four west examples being placed on the steep slope rising to the north.

The south wall exhibited two phases (illus 3.3.13 and 3.3.14). Five post-holes of the first phase were traced, 2m–2.3m apart, and traces survived of a possible sixth. No packing stones were visible on the surface at any of these post-holes and excavation demonstrated that they contained a fill of brown soil and the occasional stone, but with no post-pipe visible. It would appear that the timber upright had been removed from each post-hole, assuming that it had ever been inserted. A small trench ran along this line. About 150mm wide and 70mm deep, it passed over the top of one post-hole indicating that it was later. Only four stake-holes were noted in this trench, two central and two towards the south side.

The second phase in this wall was represented by post-holes containing well defined post-pipes, at least at its eastern end. These post-holes were 1.6m–1.8m apart, though the gap between the east post-hole and the wall between this room and the cold room was 2.2m, all distances being similar to those in the north wall. The two west post-holes cut into the earlier trench.

The west wall of the room was less easy to locate (illus 3.3.4). Two intrusions lay on a line drawn between the west post-holes of the north and south rows. The more southerly was a roughly rectangular-shaped hollow, filled with stone rubble and dark brown soil and containing a central depression 240mm deep, but no post-pipe. To its north lay another small scoop, 80mm deep, cut to the east by a second hollow, 160mm deep: a short length of stone drain, damaged at its west end by a pit, led into the south-west corner of the earlier scoop. These two juxtaposed hollows lay below a secondary gravel floor, which also overlay the edge of the southerly intrusion; this feature was also overlain by the burnt daub. Neither intrusion was convincing as a post-hole; the southerly possibly meriting description as a socket. No other features were found which could be interpreted as forming part of the west wall of this room and no traces of a sleeper wall were recognised in the gravel floor.

In the southern part of this room three separate layers were recorded. On each side of the south wall, and extending a little way to the north and west, lay an area of crushed sandstone: neither phase of the south wall was covered by this surface. To the north the crushed sandstone gave way to a thin layer of gravel, little more than 10mm thick. Both the crushed sandstone and the gravel lay directly on the natural clay, and both were covered in the south-west part of the room, and beyond it to the west, by a deposit of burnt daub, also little more than 10mm thick. This in turn was overlain by a second layer of gravel, in which were embedded, at the east end, the remains of four slabs.

To the north the gap between the straight north edge of the gravel and the row of post-pipes was 600mm–700mm (500m in one instance where a post was out of line) and 600mm–800mm to the south. Both layers extended westwards beyond the west post-hole of the north wall for a distance of 1m, but lined up with the westerly presumed post-hole in the south wall, ending in a straight line immediately to the east of the eastern pit. There must therefore be a possibility that this was the western end of the room.

At the east end of the room, the north edge of the flags was nearly coincidental with the line of the gravel surface, but the southern flag projected beyond the gravel, extending beyond the adjacent post-pipe by a matter of 100mm, that is the width of the wall, and with the southern edge lining up with the edge of the flags in the cold room. Accordingly, unless the floor had been laid before the wall was constructed above it, the flag would appear to indicate the position of a doorway.

Outside the northern half of the west wall lay a path. Formed of gravel and 700mm wide, with a slight camber, its north side was aligned on the north wall of the changing room. To the south of the path and west of the changing room lay two pits. The west pit was almost rectangular, 1.5m × 1.8m and 400mm deep; the east was more irregular in shape, tending to circular with a diameter of 1.5m and about 200mm deep. The fill of both was similar, dark brown soil containing charcoal flecks, small chunks of concrete and daub, and fragments of tiles, totalling about 210 from the two pits. The west pit contained three sherds of pottery and several fragmentary iron objects (7.2.3.110; 114;

Illustration 3.3.12
The changing room in 1973 with the flags beside its eastern wall, and the flags of the cold room beyond.

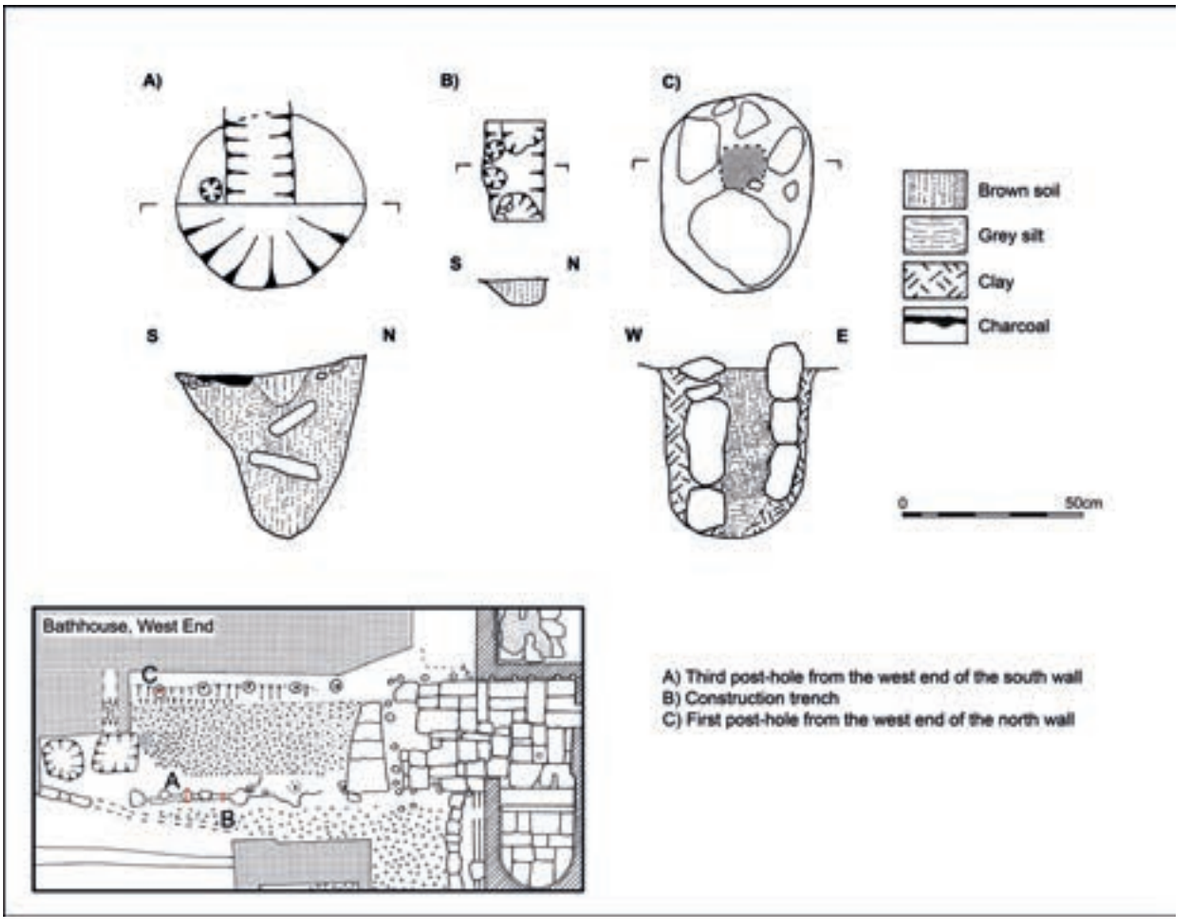

Illustration 3.3.13
Post-holes in the changing room.

243; 11.3.3.117; 146; 223). A drain crossed to the south of the pits and south-west corner of the changing room falling in a ESE direction but was not identified elsewhere. A coin dating to 153–5 was found in the back-fill over the south wall of this room (12.9).

Comment

Two phases in the floor and two rows of post-holes in the south wall were identified, but only one row in the north wall. There are some indications that the two rows of post-holes in the south wall are not contemporary. First, the west post-hole of the north wall lines up with the west post-hole of the second phase of the south wall, while the spacing of the post-holes in the north wall and the second phase of the south wall are similar, but different from the spacing in the first phase in the south wall. The lack of post-pipes in the post-holes of the first phase of the south row suggests that timbers were either removed or never inserted. Thus the north wall could be contemporary with the second phase of the south wall. Second, the two possible post-holes (-sockets?) on the line of the west row line up with the west post-holes of the north row and second phase of the south row. However, both intrusions are overlain by the upper gravel floor, which may form a third phase. It is possible that the two putative post-holes on the line of the west row never held timbers (they may, of course, not even have been post-holes), their life falling entirely within the period of modification. The secondary gravel floor could then be linked to the replacement of the south row. The existence of burnt wattle and daub between the two gravel floors, thereby indicating the existence of walls which had been demolished, however, renders this possibility unlikely.

A further problem concerns the relationship between the gravel floor and the post-holes. The floor does not extend up to either the north or south walls, but leaves a gap averaging 600mm–800mm wide. The unusual relationship is emphasised by the position of the north wall on a slope above the gravel surface. Geoff Bailey has suggested (pers comm) that the reason for these gaps is that the intervening space was occupied by furniture, such as benches or lockers. If this was the case, the earlier phase in the south wall may relate in some way to such furniture.

It was not possible to determine the west wall of the room with certainty. Although there was a clear west edge to the gravel, no post-holes were found on this line. It is possible that a baulk covered the most westerly post-hole on the north wall. In the face of this uncertainty, the length of the room could be either 9m or 10m.

The existence of a gravel path leading westwards from the north-west corner of the room would suggest the location of a door. The row of flags in the south-east corner of the room points to the existence of a second door here. This is supported by the way that the southern flag extends beyond the wall of the room and the gravel surface beyond this point. This door would have provided a quicker route to the latrine (see below).

The cold room (frigidarium)

This room measured internally 7m × 4.5m. The walls at the west end of the room were of timber, but of stone over the eastern half: the floor was flagged. A multitude of post-holes created difficulties in detailed interpretation, though the basic outline of the room is not in doubt (illus 3.3.3).

The west wall, that dividing the changing room from the cold room, had a slightly wider gap between the central post-holes

Illustration 3.3.14
The south wall of the changing room of the bath-house.

Illustration 3.3.15
The west end of the bath-house in 1973 looking north-west showing the changing room, cold room, cold bath and hot dry room.

Illustration 3.3.16
The threshold of the door between the cold room and the first warm room.

than to north and south suggesting the location of the door, 1m, or a little more, wide.

Along the north wall lay one row of post-holes, 900mm apart, and this spacing, though not so regular, was continued along the stone wall forming the east part of this north wall, that is the south face of the hot dry room, as far as the west wall of the first warm room. These five sockets were marginally larger than the post-pipes, ranging from 110mm × 120mm to 155mm × 170mm. The distance between these post-holes was about half that normally recorded on the site. At the west end of this row lay two post-holes a mere 400mm apart.

The south and west walls of this room both contained more post-holes than usual, the average spacing being 900mm. At the south-west corner there were two additional post-holes outside the building. The general arrangements are clear if the reasons elusive. Two periods have been identified on spacing grounds. The east half of the south wall formed the entrance to the cold bath (see below). The east wall of the cold room is of stone and forms the party wall with the first warm room.

The floor of the cold room was of flags of various sizes and thicknesses (430mm–820mm); a sherd of samian was found below the floor (7.1.2.48). The flags extended into the doorway of the first warm room. One slab was cut away at the south side to allow for the door jamb (480mm × 90mm × 25mm deep): no seating survived for a northern jamb (illus 3.3.16). On the north side of the room the flags were laid directly onto the natural clay. As the ground sloped to the south, the southern two-thirds were levelled with clay and masons' chips up to 100mm thick: this material covered a drain.

Illustration 3.3.17
The drain below the floor of the cold room looking north.

A stone containing a star-shaped hole was situated 1m east of the centre of the cold bath. This provided access to a drain, which started off running north, but turned in an arc to exit from the building to the west of the cold bath, continuing outside the west wall of the room to turn east towards the latrine (illus 3.3.17, 3.3.18 and 3.3.19). The drain started off two courses high, but the courses thickened and just beyond its junction with a second drain it gained an extra course. At its start it was 260mm deep, sloping to 520mm where it left the room. The cover slabs were laid on a thin skim of clay overlying the top course: the drain had a flagged bottom. The upper fill of the drain contained brown soil, decayed plaster and stone chips to a depth of 120mm; the lower fill was gravel. A second drain joined this main drain under the floor of the cold room. This drain led from one of the sockets in the north wall of the cold room. The drain was one course deep for most of its length, though it grew to two courses at its south end. It was covered by thin and broken slates. Above these was a

Illustration 3.3.18
The drain below the floor of the cold room looking south.

Illustration 3.3.19
The cold bath in 1973 looking east with the drain leading south from below the cold room in the foreground.

60mm layer of clay and a second cover, of sandstone. This seems to have been a repair. There was no flagged bottom to this drain. A third drain, one course high and with a flagged bottom, ran, at a higher level, along the outside of the west wall of the cold room and appeared to have drained the cold room (illus 3.3.19 and 3.3.20).

The floor of this room was covered in rubble and burnt debris, amongst which were two halves of an uninscribed altar, a fragment of a bench end or moulded plinth, fragments of a flagon, a glass fragment, an intaglio of Minerva, and a coin of Hadrian (5.2.1.4; 5.2.3.55; 7.2.3.1; 9.2.38; 10.1; 12.5).

Comment

This room lay in the centre of the bath-house and is usually called the cold room; the cold bath opened directly off the room. The line of timber uprights along the south face of the hot dry room requires comment. One possible explanation is that the walls of this room were higher than those of the surrounding rooms so that clerestory lighting could be provided. This might account also for the additional posts in the north, west and south walls of the room. Perhaps the multiplicity of posts could reflect two periods: it was not possible to determine if this was the case owing to the placing of the uprights in individual post-pits.

Illustration 3.3.20
The cold bath in 1973 looking north showing the steps into it and the drains to the left.

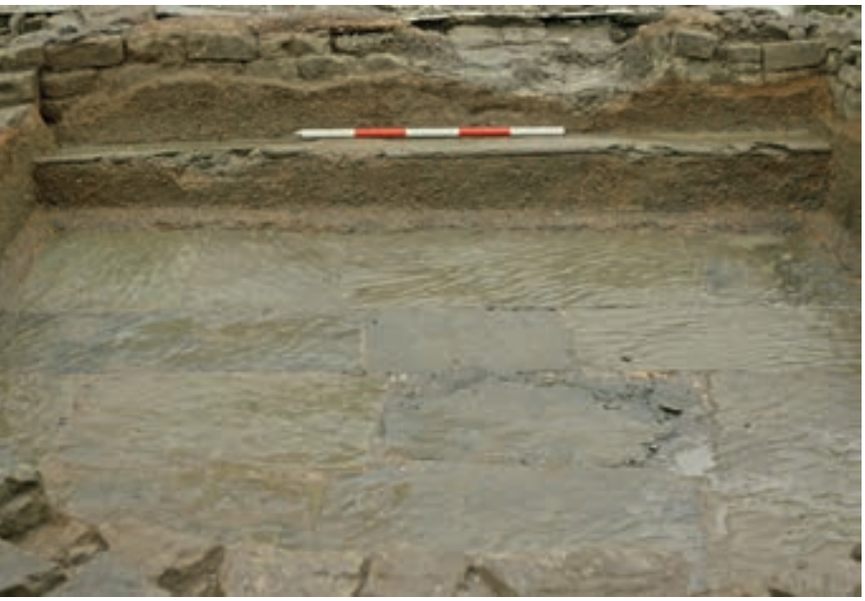

Illustration 3.3.21
The cold bath in 1980 looking north with the plaster visible.

Another possibility is that the whole of the room was originally built in timber as part of a simpler bath-house to which the hot dry room was later added and its southern wall wrapped round the posts.

The bottom fill of the drain may have accumulated during the occupation of the bath-house and the upper layer following its abandonment.

The cold bath

This apsidal room opened off the cold room (illus 3.3.19 and 3.3.20). The space within the bath measured 3m × 3m. The walls stood a maximum of five courses high and varied in thickness, 600mm to the west, 700mm to the north, 800mm to the south, and 900mm to the east, though here reduced in thickness by three offsets to 600mm, that is the same size as the west wall. They contained many stones dressed with diamond broaching.

On the north side two steps, set back from the front of the sidewalls, led down into a pool about 700mm deep. The threshold to the bath was one course higher than the floor of the cold room. Along its surface was a layer of *opus signinum* containing many amphora fragments. There was a step down of 460mm to a second step of slate 240mm wide. This was 300mm high, but as the floor of the bath sloped from west to east its height varied by 60mm.

The floor of the cold bath was of slate flags and the walls coated with *opus signinum* 20mm thick, with a quarter-round moulding 70mm–80mm in radius between walls and floor (illus 3.3.21 and 3.3.22). The rough surface of the plaster suggested that a finer outer surface had disappeared. The outlet (160mm long by 80mm high) lay in the south-east corner and, on excavation, was found to be plugged by a lump of clay. A drain covered by a flag led through the wall and then south to the main drain from the cold room (illus 3.3.23).

Illustration 3.3.22
The cold bath in 1980 looking south with the outlet visible to the left.

The bath was choked with rubble, which included the head of a female, possibly Fortuna, the bolster from an altar, a stone bearing a decoration of leaves and a fragment of a bench top (5.2.1.6; 5.2.1.5; 5.2.1.9; 5.2.3.50).

Comment

There can be no doubt that this was the cold bath.

Illustration 3.3.23
The cold bath in 1980, detail of the outlet.

Illustration 3.3.24
The heated range in 1973 looking west with the hot room in the foreground with its furnace to the left, the two warm rooms, cold room and cold bath (far left) beyond. The wall-jacketing is in position in the hot room while a bench end stands in the second warm room with the seat lying beside it.

Illustration 3.3.25
The heated range in 1980 looking east following excavation and prior to removal of the lower flagged floor of the first warm room.

Illustration 3.3.26
The north wall of the heated range looking west with the primary bath-house to the right.

The heated range

The three rooms of the heated range were built in different masonry to the hot dry room and cold bath (illus 3.3.24 and 3.3.25). The stones were not as well dressed and none bear the diagonal broaching of the stones of the other two rooms – and of the primary bath-house. The east end of the north wall was not faced and was perhaps built against the existing south wall of the primary bath-house; only this section was observed, being visible from the emptied robber trench of the south wall of the earlier building (illus 3.3.26, 3.3.27 and 3.3.28). The stones varied considerably in size from 140mm × 120mm to 320mm × 50mm to 570mm × 170mm. The occasional boulder was used as a facing stone. On the north wall of this range there was an offset above the third course on the inside face, with the floor level two courses above the offset.

The west end of the heated range bonded awkwardly with the hot dry room to the north and the cold bath to the south (illus 3.3.3).

The north wall of the heated range and the south wall of the hot dry room did not form a continuous line but overlapped. The narrowed north wall of the first warm room continued past the south-east corner of the hot dry room but with no facing stones on its north side. The facing stones of the south wall of the hot dry room stopped short of the south-east corner of the room.

The south-west corner of the heated range (the first warm room) was bonded with the north-east corner of the cold bath, the south wall of the heated range continuing up to the line of the top offset of the east wall of the cold bath, the arrangement being complicated by a kind of buttress in the external corner (illus 3.3.2). The floor of the hypocaust of the heated range was formed of sandstone fragments set in clay. This material also appeared to serve as the foundations of the adjacent walls. It is possible, therefore, that a raft of this material had been laid across this area before building commenced. It should be noted, however, that there was a step down of 80mm between the second warm room and the hot room.

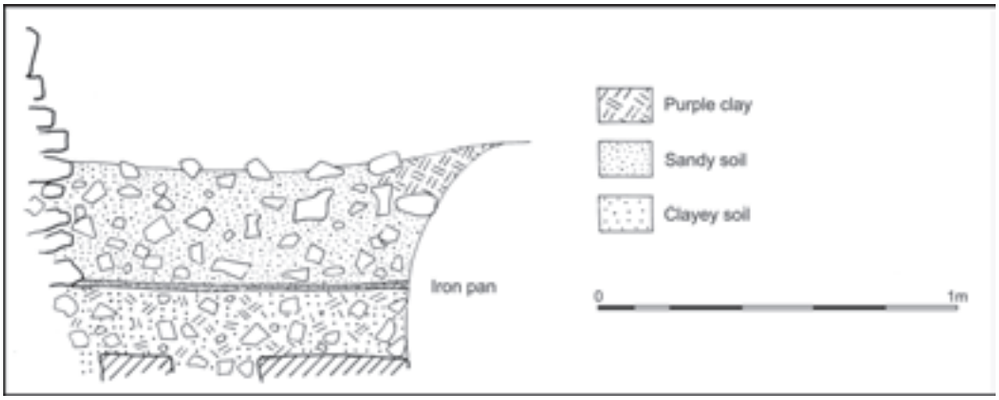

Illustration 3.3.27
Section across the south wall of the primary bath-house.

Illustration 3.3.28
The north face of the north wall of the heated range.

Illustration 3.3.29
The niche in the first warm room looking west with the unfinished 'daisy' visible to the right.

The first warm room (tepidarium)

This room measured internally 3.5m × 2.5m. The walls varied in thickness from 580mm to 770mm. The west wall was placed on the west side of a base 1m wide below floor level. At its south end the base supported a semi-circular niche, and this may have been the reason for its construction. This west wall separated the first warm room from the cold room. The door between the two lay towards the north end of this wall and has already been described (illus 3.3.16). The south end of the west wall of the room was bonded with the north-east corner of the cold bath, but the north end butted against the south wall of the hot dry room.

The north end of the wall between the first and second warm rooms was bonded with the north wall of the building, but the south end butted against it neighbour. The door in this wall lay towards the south end of the east wall. A hot air channel 170mm wide lay approximately in the middle of the east wall: its top was a little above the level of the floor. A flue, 110mm wide and 140mm deep, rose vertically up the north wall from the offset course. A drain, three courses high and with a slate bottom, led southwards from the room to join the drain from the cold room already described (and see below). It contained fine brown silty clay and two fragments of glass (9.2.9; 41). One projecting stone was recorded, on the east wall, the second stone north of the south-east corner, two courses above the second period floor: it projected 50mm. It did not appear to have been displaced as the core behind it was intact.

There were three phases to this room. The room had originally been provided with pillars to support a raised floor: only two pillars survived, both in the south-east corner. The semi-circular niche belonged to this period (illus 3.3.29). It was slightly recessed into the main west wall: its north wall projected into the room. The floor of the niche was formed of *opus signinum* retained at its outer edge by rough stones and at the rear by a small fillet: a small fill of clay separated the fillet from the surrounding wall of the apse. At the north-east corner of the niche was a small stake-hole.

At an undated time the floor was lifted, most of the pillars removed, the hot-air channel blocked and the basement filled with clay to a depth of 700mm (illus 3.3.30, 3.3.31, 3.3.32 and

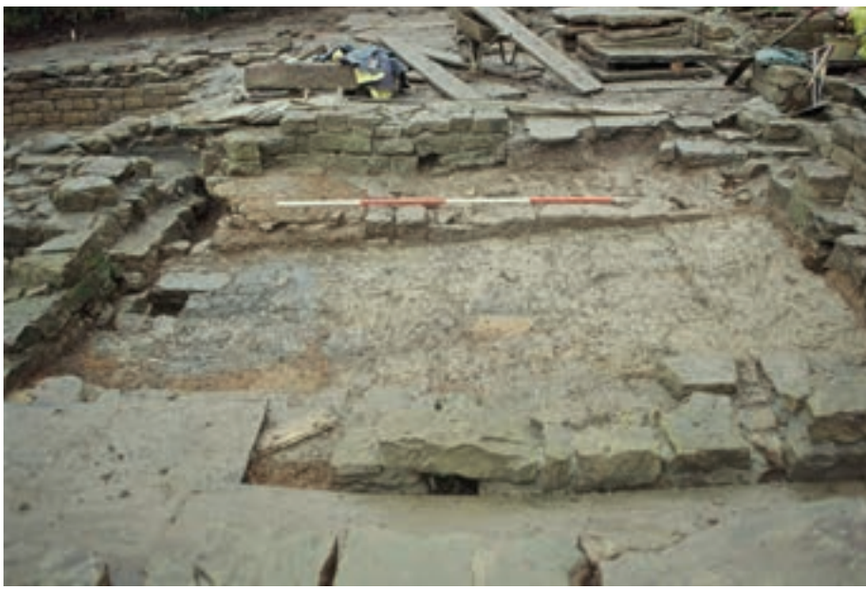

Illustration 3.3.30
The first warm room following lifting of the flag floors showing the clay fill looking west.

Illustration 3.3.31
The first warm room following lifting of the flag floors showing the clay fill looking south.

Illustration 3.3.32
The first warm room following removal of the clay fill looking south.

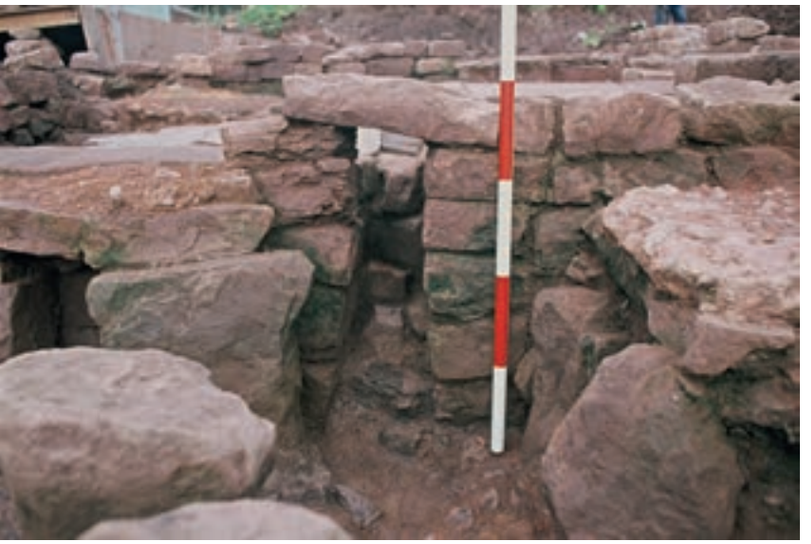

Illustration 3.3.33
The channel between the second and first warm rooms looking west showing the blocking.

3.3.33). The floor was replaced, or a new floor laid (3.3.25). The niche went out of use, with its north wall demolished, its bottom course forming part of the new floor. The flags forming the floor were of yellow sandstone or slate and were generally smaller than those in the cold room. One included a unfinished drain cover in the shape of a daisy. At the west entrance there was a step down of 160mm from the cold room, and a further drop of 50mm at the eastern edge of the broad foundation wall. Thereafter the floor sloped towards a depression in the south-east quarter of the room, presumably the result of subsidence. Against the north wall of this warm room lay a large stone, 1.2m × 320mm × 210mm high. It showed no obvious signs of wear, but was rounded at the front; it may have served as a low seat. A coin of Antonine Pius was found in a chink between two flags (12.8).

Subsequently a new flagged floor was laid, bringing the level up to that of the adjacent cold room. Owing to the unevenness of the earlier floor, the make-up for the new floor varied in thickness up to a maximum of 300mm. The packing was of grey and red clay and included much charcoal, decayed plaster and *opus signinum* as well as some fragments of amphora. The new floor was composed of flags, flat stones and hard grey clay. It was covered with a shallow layer of stone debris.

Comment

This room had originally formed part of the heated range, but sometime during its life had gone out of use as a heated room. Its subsequent function cannot be determined: it may have simply become a passage. The replacement of its floor may have been due to subsidence of its predecessor.

In its first phase the room contained a niche in the south-west corner. This may have held a water-basin or a statue, perhaps of Fortuna, a head possibly of her being found in the adjacent cold bath. A flue in the north wall would have helped create a through-draught. One flue would hardly have heated the walls and it is possible that the box-tiles located in a rubbish pit were used in this room and discarded at the end of phase 1. The lack of wall-jacketing in the second warm room, however, renders this unlikely.

The second warm room (tepidarium)

This room measured internally 3.5m × 3.1m (illus 3.3.3). The walls varied in thickness from 550mm to 700mm. The entrance to the room lay in the south-west corner (illus 3.3.34). The threshold was a large slab which contained no slots for jambs, but a shallow runnel had been carved across it to take surface water from the first into the second warm room. There were three flues in the north wall of the room, and one in the west wall about half-way between the central channel and the north wall (illus 3.3.35). The south wall was badly robbed and no evidence of flues survived. The flues were about 100mm wide and 150mm deep; the western went down to the top of the bottom course of the wall. There

Illustration 3.3.34
The threshold of the door between the first and second warm rooms.

Illustration 3.3.35
The second warm room looking north. The collapse in the north wall is around the wall flue.

were no certain projecting stones in this room. One fragmentary iron T-shaped clamp and a second possible example were found between the pillars (11.3.3.139; 140).

The east wall was separated from its north and south neighbours by hot air channels. The north channel was 380mm wide and probably 420mm high from two flags which rested on the ground to the floor level. No cover stones survived here but the fourth course up on the south side of the channel was corbelled out as if to support the covering stone of the channel. The south channel was 340mm wide.

The door into the hot room lay immediately south of the north channel (illus 3.3.36). It had a monolithic threshold, with no checks for jambs. A gap of 80mm, however, on the south side may have accommodated a door jamb. The threshold stone had a wide shallow groove, about 160mm wide at the top and up to 40mm deep, just south of the centre, presumably for drainage. No evidence survived on the south side, but two stones projecting from the north wall of the bath-house suggest that the dividing wall may have been bonded into the north wall.

The pillars, resting on the basement floor of sandstone fragments set in clay, were all sandstone monoliths 540mm high, with the exception of one which was composed of superimposed stone slabs (illus 3.3.35 and 3.3.41). The floor survived in the north-west and north-east corners. It consisted of flagstones up to 100mm thick on which rested *opus signinum* 50mm–60mm thick and which butted against the walls of the room. The combined thickness would bring the floor surface almost to the level of the threshold which is 200mm above the top of the adjacent pillar. A fillet of fine *opus signinum* placed 70mm–100mm out from the wall may indicate the thickness of the wall plaster (illus 3.3.39). A stone bench end still stood in the north-west corner of the room, probably only slightly out of position, with the stone seat lying beside it (5.2.3.51; 52; illus 3.3.37).

The basement floor was covered with a soft silty black material mixed with decayed plaster and *opus signinum*. Above this lay debris from the collapse of the building. The walls of the north channel were heavily burnt and blackened.

Comment

This room had apparently continued throughout its life as a heated room. There was no wall-jacketing as the *opus signinum* floor extended to the walls of the room. There were, however, three flues in the north wall of the room.

The hot room (caldarium)

Measuring 3.5m × 3.1m internally, this is the same size as the second warm room (illus 3.3.3). The hot bath abutted the south side of this room and the furnace lay to the east. The north-east

Illustration 3.3.36
The threshold of the door between the second warm room and the hot room.

Illustration 3.3.37
The second warm room looking west with the bench end standing and the seat beside it.

Illustration 3.3.38
The second and first warm rooms looking west following removal of the bench end and seat.

corner was slightly thickened on its east side. The walls ranged in thickness from 550mm to 750mm.

The pillars in this room were usually 620mm high (one was 700mm), the basement being slightly deeper than that in the adjacent warm room. Several pillars were very burnt, discoloured and very friable. Two small, badly damaged fragments of flooring survived in the north-west and north-east corners. The floor at the north-east corner was 14mm thick. The flag at the north-west corner, 13mm thick, was overlain by a second flag which was surfaced with *opus signinum*, but this relationship may have been the result of the collapse of the building rather than reflooring.

In the north-east corner of the hot room there survived five flags of the wall-jacketing (illus 3.3.42, 3.3.43 and 3.3.44). The flags were held out from the wall by projecting stones and were held in by iron T-shaped clamps (11.3.3.132; 133; 138). One such clamp was recovered from the space between the flags forming the wall-jacketing and the north wall of the room. The bases of the flags

Illustration 3.3.39
Detail of the floor of the second warm room looking south.

Illustration 3.3.40
The hot room and the second warm room looking west.

were 210mm below the top of the *opus signinum* which lapped up to their bases and they rested, not on the pillars themselves, but on chocking stones which in turn lay on top of the pillars. The surviving projecting stones on the north and east walls stuck out 70mm and 100mm; none survived on the other walls. The upright flags were only roughly dressed and were of varying sizes, ranging from 380mm to 960m across.

A deep layer of soot covered the bottom of the basement. Over this lay rubble from the collapse of the building. In the rubble were found two stone bench ends, of a different type to that in the second warm room (5.2.3.53; 54). The rubble fill of the room yielded fragments of a jug (7.2.3.204).

Comment

This was the hottest room in the sequence owing to its position next to the furnace. It was the only room in the heated range to be provided with wall-jacketing, remarkably some of the flags still surviving. Thus, in this room the floor and the walls would have been heated. The damaged state of the pillars (which was one reason why they were reburied when the building was laid out for display) is a reminder of the heat produced in Roman bath-houses. The thicker floor of this room may have reflected the greater heat generated here.

Illustration 3.3.41
The second warm room looking south.

Illustration 3.3.42
The hot room looking north showing the wall jacketing in position.

The hot bath (alveus)

The hot bath lay immediately south of the hot room (illus 3.3.45). It measured 2.5m by 1.25m. The walls were particularly thick and with the south wall, 1.5m wide but only surviving to a height of four courses, buttressed to the south. The wall between the hot room and the hot bath was broken by two flues. Monolithic sandstone pillars, 750mm high and now heavily burnt, supported the floor which was formed of flags about 50mm thick and *opus signinum* 110mm thick. No evidence survived of the arrangements for leading the water into the bath. The area below the floor was filled with rubble. The rubble covering the bath contained a coin of Antoninus Pius dating to 154–5 (12.7).

Comment

The unusual width of the walls of the hot bath, the provision of buttresses and thickness of the floor all presumably related to the requirement of the bath to hold considerable quantities of water. It may be presumed that there was a step up into the bath similar to that at the cold bath.

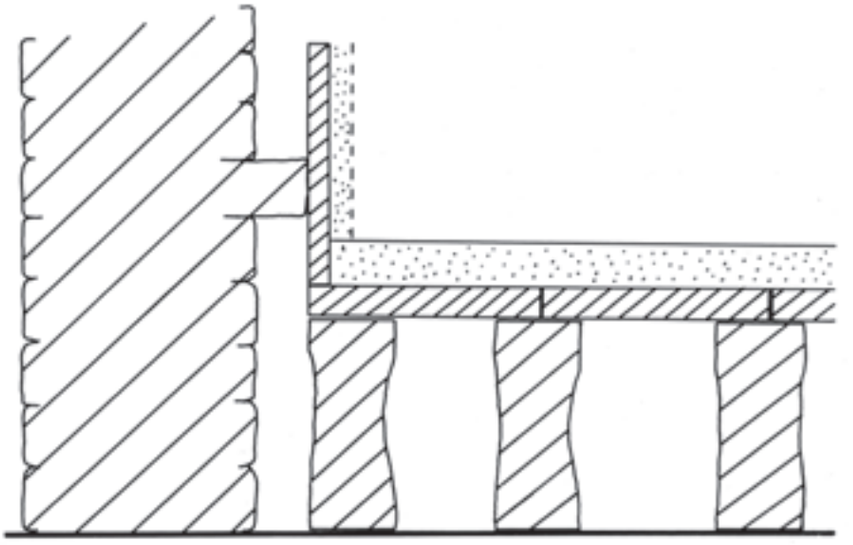

Illustration 3.3.43
A sketch showing the arrangement of the heating in the hot room. Drawn by Tom Borthwick.

Illustration 3.3.44
The hot room looking north with the furnace passage in the foreground.

Illustration 3.3.45
The hot bath and the hot room with the furnace centre left, looking south in 1973.

The furnace (praefurnium)

Immediately east of the south-east corner of the hot room lay the furnace (illus 3.3.46 and 3.3.47). It consisted of a channel, 550mm wide and 4m long, leading towards the centre of the hot room, flanked by walls roughly constructed using sandstone blocks and occasional natural boulders, especially in the lower courses. This stonework is bonded together with fire-reddened clay. The flue extended up to 1.2m beyond the east wall of the bath-house with which it is bonded. A large stone slab (670mm × 650mm × 120mm) standing at the mouth of the furnace was probably a fallen lintel. The base of the furnace was roughly flagged for its eastern 3.5m.

Butting up to the east side of the cheeks of the furnace was a stone-lined furnace chamber. It was defined on the north side by two sandstone slabs standing on edge, on the east side by large natural boulders; a large sandstone slab leaning against the south side could be a fallen lining stone, but could have fallen from elsewhere – if it is a side slab, there is no apparent entry point to the furnace house. A drain led south from the furnace house.

The stoke-hole area was filled with tumbled stonework, clay and sooty material; the burnt material spread to the south, to which it was partly carried by the drain.

Illustration 3.3.46
The furnace chamber in 1973 looking west.

Illustration 3.3.47
The furnace chamber after excavation.

Illustration 3.3.48
The hot dry room in 1973. Note that the flags do not reach the walls, nor the plaster the edge of the flags; the projecting stones to hold out the wall-jacketing are also visible.

Illustration 3.3.49
The hot dry room looking west in 1973.

Comment

The wide cheeks of the *praefurnium* may have been to support the boiler heating the water for the hot bath.

The hot dry room (laconicum)

This lay north of the cold room. It was almost square, measuring internally 4.75m × 4.25m (illus 3.3.1, 3.3.48 and 3.3.49). The walls survived to a maximum height of eight courses. They were more uniform in thickness than other rooms, varying from 650mm to 680mm, and were bonded with clay. The stones were more regular in size than those used in the rest of the building, ranging from 200mm × 140mm to 300mm × 140mm. Many of the stones had been carefully dressed. Patterns of tooling varied and included diamond broaching, diagonal continuous lines, diagonal broken lines and vertical broken lines. In general, the stones were very similar to those used in the primary bath-house. The north corners of the room were constructed with alternate long quoins.

The north wall was broken for the stoke-hole (illus 3.3.50). This was 570mm wide at base with the side walls 600mm wide and 700mm long butting against the north wall of the room.

Illustration 3.3.50
The hot dry room looking north during consolidation with the floor removed to show the arrangement of the dwarf walls below. The sockets for the timber uprights along the south face of the south walls are visible in the foreground.

Illustration 3.3.51
The hot dry room looking south during consolidation.

Large and small voussoirs were used in the arch. The floor of the stoke hole was flagged. There was little trace of burning here.

The floor of the room was supported on low stone walls, 580mm high (illus 3.3.50, 3.3.51 and 3.3.52). These dwarf walls were arranged in two rows, five in the north row and six in the south, separated by a gap running east–west varying between 300mm and 500mm wide (illus 3.3.52). A gap 100mm–120mm was left between the dwarf walls and the main walls of the room. In the east half of the room the walls were arranged so that the end of one wall faced a gap between two walls in the other row; this arrangement was not replicated in the west half of the room. The walls in the east half of the room were also wider than those to the west, the width of the walls in the whole room varying from 800mm to 450mm. There was a lateral gap approximately in the middle of each dwarf wall to aid the circulation of air (illus

3.3.52; these were not noticed during the consolidation of the east half of the room and were presumably filled in at that stage). The two dwarf walls in the south-east corner were joined to form a u -shaped structure. The central four dwarf walls had been placed over a flag covering the end of a drain which continued eastwards under the wall of the room until it disappeared. The east wall of the hot dry room had broken its back over the drain (illus 3.3.53). The drain stood three courses high and was surfaced with flags. The natural clay formed the base. It contained silt including a few small stones. Flags appeared elsewhere on the ground surface between the dwarf walls.

The west half of the floor of the room survived and three flags of the east half (illus 3.3.48). The flags were all of sandstone, with the exception of one which was slate. The flags did not extend to the wall, but left a gap varying from 70mm to 100mm on the west side and 120mm on the north. The only exception to this was the second flag from the west on the south wall which touched the wall of the room suggesting that this was the location of the door. Some *opus signinum* plaster survived on the flagstones. The plaster nowhere reached the edge of the flags, leaving a margin of about 30mm.

Projecting from the inside wall of the room, in the second course above the floor, were a number of stones. On the north wall there were three west of the stoke-hole, projecting 110mm, 100mm and 90mm; one missing immediately east of the furnace and then two surviving, projecting 110mm. On the west wall five stones survived, projecting 90mm, 60mm and 90mm. Only one stone, at the south end, remained on the east wall; there were none on the south wall. An iron T-shaped clamp was found in the basement between two of the dwarf walls (11.3.3.141).

The natural slope of the ground had been cut away to the north and west to provide a level platform. The Roman surface was covered in charcoal fragments below a fill of tumble including many facing stones and fragments of burnt daub. Rubble, with a small amount of burnt debris, also covered the floor of the room. Two fragments of platters were found unstratified in the room (7.2.3.73; 76).

Comment

This was a single heated room and therefore presumably was the hot dry room (*laconicum* or *sudatorium*). The existence of the stones projecting internally, the gap between the floor and the walls, and the margin round the edge of the *opus signinum* all point to the previous existence of wall-jacketing similar to that in the hot room originally sitting on the edge of the flags forming the floor. As in the hot room, five sides of the hot dry room would have been heated. No evidence for the form of the roof was found.

No threshold into the room survived. Towards the western end of the south wall one flag nearly touched the wall face, but there was no wider gap between the timber sockets in the south face of the south wall to suggest the location of a door. The u -shaped dwarf wall in the south-east corner of the room may point to the location of the entrance, being provided to support a greater weight above. The entrance would therefore have led out of the first warm room.

Illustration 3.3.52
The southern row of dwarf walls in the hot dry room looking west showing the vents through them.

The 'buttress'

A rectangular block of stonework abutted the south wall of the bath-house about half-way between the cold room and the hot bath and opposite the wall between the first and second warm rooms (illus 3.3.2 bottom right). It was built of rough sandstone blocks with a rubble core and survived no higher than two courses. As found, it only touched the south face of the bath-house wall on the west side; on the east side it stopped about 300mm from it. This is probably due to robbing; the

Illustration 3.3.53
The blocked drain under the east wall of the hot dry room looking west.

adjacent bath-house wall was also badly robbed. The feature sits on its own sandstone foundations on a podium of earth about 150mm–200mm above the surrounding level. A sherd of samian was found in the rubble core (7.1.2.57).

Comment

The structure appears to be secondary. The bath-house wall is poorly constructed at this point and it is possible that the addition was built to provide support and was therefore a buttress. Another possibility is that this was the base to support a water-tank.

Drains

Six drains led south from the bath-house to the latrine (illus 3.3.4). One exited from the cold room (illus 3.3.17, 3.3.18 and 3.3.54), one drained the cold bath (illus 3.3.23), another the first warm room (illus 3.3.32) while one drained the furnace beside the hot room (3.3.47). These drains were generally two or three courses deep, though the main drain from the cold room was five courses deep, ranging in depth from 250mm to 540mm and in width from 140mm to 340mm; most had flagged bottoms. The fill was generally gravel, silt and brown soil, though the drain from the furnace contained much burnt material towards its north end. The drains from the bath-house combined into one main drain which turned into an open channel for the last part of its course to the latrine (illus 3.3.55, 3.3.56 and 3.3.57). To the south-east of the cold bath this drain had subsided into an earlier pit.

Illustration 3.3.54
The area to the south of the cold bath looking north showing the covered drain leading south from the cold room to the latrine.

General comment on the bath-house

The main bath-house at Bearsden contained the usual range of facilities: changing room; cold room off which opened the cold

Illustration 3.3.55
The area south of the heated range with the gulley from the cold bath to the latrine.

Illustration 3.3.56
The drain leading south from the bath-house to the latrine at the point where it moves from being a covered drain to an open gulley.

bath and the hot dry room and heated range, itself consisting of two warm rooms, a hot room, and a hot bath. There appeared to have been two entrances to the bath-house, one at the northern end of the west wall of the changing room where there was a narrow path leading from the fort, and a second in the south-east corner of the same room where a line of flags would appear to have marked a door. The door between the changing room and the cold room lay in the middle of the wall between the two. The doors in the heated range were placed so that they did not form a single line. The entrance to the first warm room lay in the north-east corner, that to the second warm room in the south-east corner, and with the door to the hot room in the north-east corner. This arrangement may have been to prevent a through-draught, but was probably simply to aid movement as doors opposite each could have led to congestion.

Examination of the relationship of the primary bath-house to the heated range led to the conclusion it was still standing when the new range was built. The north face of the hot room did not appear to have been built free-standing but against something, and that was unlikely to be the loose fill of the robber trench of the south wall of the primary bath-house, but rather the wall itself. The differences between the simply dressed and more irregularly sized stones of the heated range and the better dressed stones of the hot dry room and the cold room have also been noted, as has the similarity between the stones in the walls of the hot dry room and those of the primary bath-house. This suggests that the stones of the earlier building had been reused in the hot dry room, and, to a lesser extent, in the cold bath.

The existence of a hearth within the primary bath-house on top of the interior clay unexcavated by the Roman builders, but beneath the rubble debris which covered this area, suggests that this building served as a mess-room for a period. The conclusion is that after the decision had been taken to move the bath-house, the existing building served as a shelter for the soldiers who had started work on the new building immediately to the south. Later the earlier building was demolished and the stones used to construct the hot dry room, with others used in the cold bath; of course it is not possible to know how the upper courses were completed nor whether other stones already dressed for use in the remainder of the previous bath-house were available.

The problems with interpreting the building are: the junctions of the heated range with the hot dry room and the cold bath, and the sockets for posts in the south face of the hot dry room. The sockets in the south face of the south wall of the hot dry room stop at the west wall of the heated range. It could be argued that they are a continuation of the north wall of the changing room, but it is difficult to see the necessity for them in view of the existence of the adjacent stone wall. Their existence implies a phase in the bath-house when the hot dry room did not exist. The sockets line up with the centre of the north wall of the heated range, while those of the south wall of the changing room similarly line up with the centre of the south wall of the heated range. This implies an original construction consisting of a heated range of three rooms with a timber cold room and changing room. yet, such an interpretation is complicated by the junction at the south-east corner of the hot dry room and the north-west corner of the heated range. The west half of the north wall of the first warm room was not built on the same alignment as the rest of the heated range but used the south wall of the hot dry room in an awkward junction. The implication is that the hot dry room was already standing or was contemporary with the first warm room. yet, the hot dry room does not appear to have been a free-standing structure as its south-east corner was not completed, a facing stone being missing from the east end of the south face of the wall where it is embedded in the north wall of the first warm room.It is not easy

Illustration 3.3.57
The path to the latrine looking south.

to determine the sequence at the junction of the hot dry room and the first warm room, but as the line of posts along the south face of the south wall of the hot dry room are best explained as forming part of the north wall of the timber changing room, the preferred explanation is that the hot dry room is an addition to the plan, its construction coinciding with the completion of the western end of the heated range, or that when it was constructed the north-west corner of the heated range was rebuilt. The suggestion that the hot dry room was added while the bath-house was being constructed gains support from the use of the diamond-broached stones of the primary bath-house in its construction. Alternatively, the awkward junction was the result of a botched job.

The south-west corner of the heated range and the north-east corner of the cold bath are bonded, which suggests that the cold bath was part of the original plan for the bath-house; the

Illustration 3.3.58
The latrine looking west from above.

Illustration 3.3.59
The latrine looking west.

Illustration 3.3.60
The latrine looking east.

junction is somewhat complicated by the existence of offsets and an external 'buttress', but the bonding is clear.

The original plan for the bath-house would therefore appear to have consisted of a long row of rooms aligned west–east with a cold bath to the south and this was amended by the addition of a hot dry room to the north

3.3.2 The latrine

Various drains and a path led to the latrine (illus 3.3.57). The metalled path was traced round from the south-west corner of the changing room to the south-east corner of the hot bath where it turned south to the entrance of the latrine. The path survived best immediately to the north of the latrine. Only here did its gravel surface remain. The path was nearly 2m wide and at its south end, beside the latrine, overlay the drain from the stoke-hole at the eastern end of the bath-house.

The latrine measured 5m by about 4.4m externally (illus 3.3.3, 3.3.58 and 3.3.59); the south wall had been destroyed so a slight element of doubt surrounds the north–south measurement. The eastern side of the building was formed by the west face of the east rampart of the annexe. The north wall extended 200mm–300mm over the rampart kerb. The latrine wall did not lie directly on the kerb stone, but on a layer of yellow/brown clay mixed with sandstone fragments 200mm thick which overlapped the edge of the kerb stone and which in turn lay on top of the underlying grey clay into which the rampart kerb had been cut (illus 3.3.62).

The walls of the latrine varied from 600mm to 700mm thick. They were formed of roughly coursed rubble. The entrance into the building lay in the north wall. It was placed 1.5m from the

inside north-west corner and was 1m wide. The threshold was formed of three flags.

The entrance led into a paved area measuring about 3m × 1.5m. Between this paving and the west and south walls of the building lay two channels. Immediately inside the walls of the building lay the main channel. That on the west side was only about 50mm deep and a maximum of 400mm wide, with a slabbed floor. Although the south channel had been damaged by the modern sewer pipe, it could be determined that it also was shallow but was not flagged, its base being natural clay. This channel passed through the rampart in a well-constructed drain with a flagged bottom, sides two courses high supporting cap-stones.

Inside the latrine, and inside the sewage channel, lay an open channel cut into a series of long stones. This was fed by the open drain or gulley into which the five drains from the bath-house de-bouched, passing through the north wall of the latrine between the north-west corner and the entrance. Beneath the end of the channel, on the inside of the north wall of the latrine, a tile had been positioned at an angle so as to throw water into the channel below. It may be that the tile was able to be manoeuvred so that water could be directed into the main sewage channel or the open channel.

The floor of the latrine was bedded in orange/brown clay, in which lay, on the south side, masons' chips. The drain leading south from the stoke-hole was cut through this clay (illus 3.3.4). It entered the latrine under the door, crossed the building diagonally and sinuously to exit into the main channel at the south-east corner. This narrow drain was roughly constructed mainly with water-worn stones or rough boulders; it was 120mm deep. The bottom 70mm–100mm were filled with gravel, the upper 50mm thick orange/brown clay with charcoal flecks. There were no separate cap-stones; the flags above appeared to have been bedded in clay laid over the top courses of the drain.

Underlying the whole of the latrine was grey clay. This is similar to the grey clay found to the west of the latrine and may be the fill of the depression recorded inside the fort south

Illustration 3.3.61
The drain through the annexe rampart which carried the sewage into the ditches.

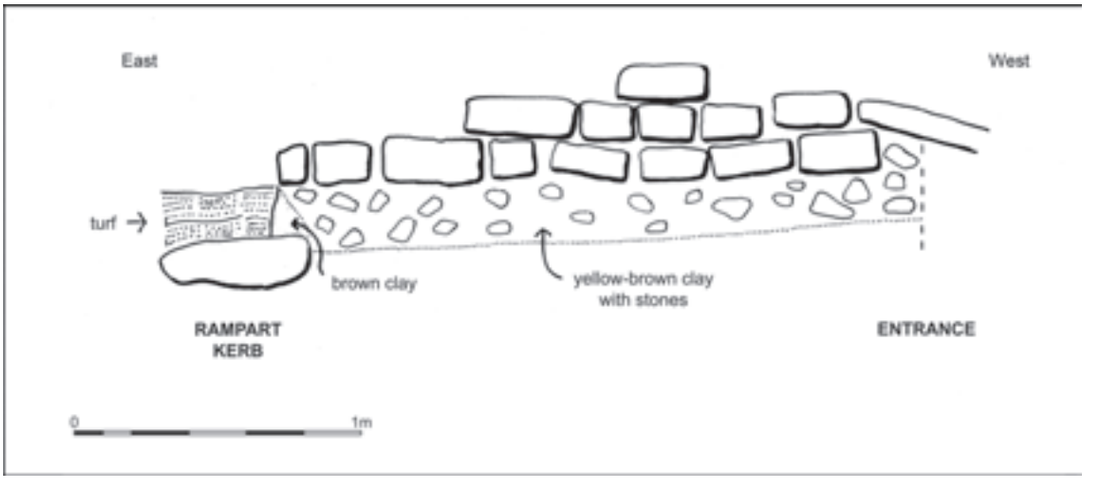

Illustration 3.3.62
Section along the north wall of the latrine.

Illustration 3.3.63
The area between the fort/annexe rampart and the bath-house south of the changing room looking north.

of building 7. Under the flagstones was found a fragment of a mortarium (7.3.6.5).

Immediately over the slabs forming the floor of the latrine was a soggy charcoal layer typically 20mm–30mm thick. It included wood originally 240mm in diameter and therefore presumably a structural timber, smaller roundwood of alder, hazel and willow, presumably the remains of wattle, and clay-covered burnt rushes, all possibly from the roof (13.9.8). The ghost traces of two charred planks 120mm wide were observed towards the south side of the latrine. The layer of charcoal was covered by a thin layer of rubble, lying thicker to the west end than beside the rampart. The main channel contained gravel, the normal fill at the bottom of the drains.

Illustration 3.3.64
The drain between the bath-house and the fort/annexe rampart.

Comment

This building is placed at the lowest point of the annexe. There can be no doubt that it is the latrine. It conforms to the normal plan and internal arrangements (Mann 1989). The only unusual feature is the shallowness of the main channel which was clearly the sewage channel. This would have been covered by seating of timber or stone. The two channels in the latrine were fed by water from the bath-house. The sewage channel passed through the rampart and emptied its contents into the annexe ditch. It is usually presumed that the second channel contained the water for washing the material used for cleansing (for further discussion see 21.4.2). The material on the floor contained rushes which are likely to have come from the roof.

3.3.3 The annexe south of the bath-house

The area north of Roman Road, bounded to the west by the rampart between the fort and the annexe, to the north by the bath-house and to the east by the annexe rampart, was examined over several seasons, though with little success. The path leading to the west wall of the bath-house has already been noted. There was also a gravelled surface to the south of the changing room which continued to the latrine. The only gap was to the south-west of the changing room. It is possible, however, that the presumed second door in the south wall of the changing room led to the path south of the bath-house and on to the latrine.

The area immediately south of the heated range and between the east wall of the cold bath and the west wall of the hot bath was hard bare clay containing the occasional cobble. Immediately to the south of the hot bath was a distinctive area of cobbles and flagging with clear west and east boundaries (illus 3.3.55). The west boundary was a long stone set on edge and worn on its upper surface, possibly as a result of pedestrian traffic. Its southern end coincided with the point that the drain changed to an open gulley formed of cut stones.

The area immediately to the south and south-west of the changing room of the bath-house was formed of soft silty grey clay and was very spongy: it may have lain over a continuation of the depression recorded to the west in the fort (illus 3.3.63). To the east of this area, and south of the easterly end of the changing room, the grey clay was more solid and contained many stones forming a rough surface (illus 3.3.65). In the western area, at a distance of 2m south of the changing room, parallel to it, and continuing westwards lay a channel 10m long, turning at right-angles to the south at the west end (illus 3.3.64). This defied interpretation. To its south, in a later season, a further length, which may be part of the same channel, was recorded to the east (illus 3.3.65). This ended at an east–west gulley and to the south of this gulley lay three post-holes 1.5m and 1.2m

Illustration 3.3.65
The cobbling south-west of the bath-house.

Illustration 3.3.66
The cobble foundation to the west of the latrine looking north.

apart. Two further, isolated post-holes, were recorded east of the north–south gulley. Both areas yielded considerable quantities of pottery.

South of the latrine a short length of cobbling, 550mm wide and running east–west, was located in a small trench. To the south-west of the latrine a second length of clay and cobble foundation, 2.5m long and 400mm wide was located, aligned roughly NNW by SSE. Its north half was one cobble thick and the south half two cobbles thick (illus 3.3.66). To the east lay a 40mm thick layer of yellow clay with small blocks of yellow

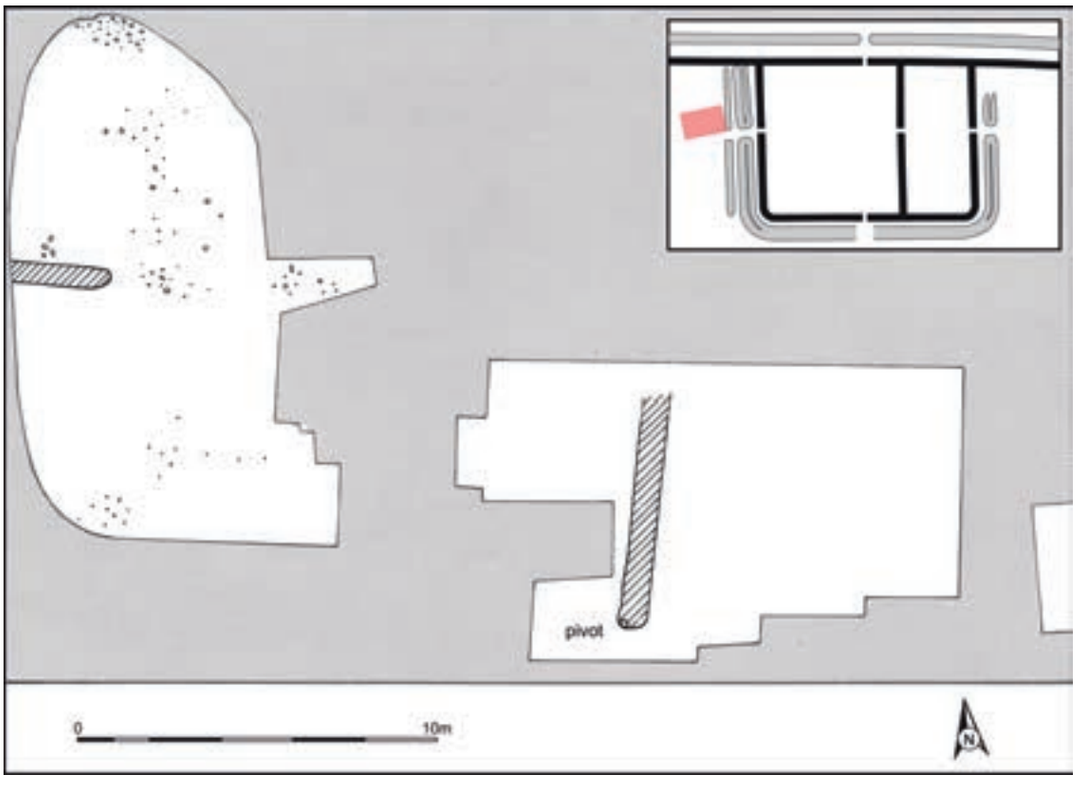

Illustration 3.4.1
Plan of the area west of the fort.

sandstone resting on a layer of dark grey soil of similar thickness. This in turn lay on the grey clay which appeared to form the fill of the east–west depression. This grey clay continued to the west of the clay and cobble foundation and accordingly, if the section of clay and cobbles formed the wall of a building, it is likely that its interior lay to the east.

About 1m west of the main drain into the latrine lay a line of three post-holes. The north two were 1.2m apart and the south two were 2m apart. No other post-holes were located in this area and there was no hint at their function.

The existence of a path to the east of the fort/annexe rampart has already been noted (3.2.4). This was the only feature located in the southern half of the annexe Below this section of the path lay three sherds of samian (7.1.2, 90; 91; 92).

Comment

The remains in the annexe other than the two principal buildings were enigmatic. No coherent buildings could be constructed out of the fragments of clay-and-cobble foundations, post-holes and patches of cobbles recorded here. The ground towards the south end of this area, beside the modern road, was low-lying and was presumed to form part of the depression already noted within the fort south of building 7. Nevertheless it still seems to have been utilised. Evidence from both north and south of Roman Road indicated the existence of a path running north–south immediately along the outside face of the fort/annexe rampart.

3.4 EXTRA MURAL ACTIVITY

Areas to the west, east and south of the fort and annexe were examined for traces of possible extra mural activity.

West of the fort, two lengths of clay and cobble foundation were located (illus 3.4.1). One section, 650mm wide, ran approximately east–west. It was traced for a distance of 2.7m where it continued into the baulk. The other lay approximately north–south, projecting 7.5m into the excavated area (illus 3.4.2). It was slightly wider than the western length. At its south-west corner lay a stone with an indentation cut into the top; it was interpreted as a pivot (illus 3.4.3).

Several fragments of Roman pottery were found in the two excavated areas, some glass chips and a small fragment of late medieval green glazed pottery was recovered from the surface of the east clay and cobble foundation (7.1.2.95–7; 7.3.6.106; 9.2.33,

Illustration 3.4.2
The clay and cobble foundation west of the fort looking south.

Illustration 3.4.3
The pivot stone in the clay and cobble foundation.

together with some body sherds not listed in the published report).

Three areas investigated in the area east of the annexe failed to reveal remains of any structures; the only discovery was a gulley leading roughly west-east, and some pottery (7.1.2.98–101).

South of the fort, two areas were examined. One area was opened up on the steep slope beyond the south ditch and a second at the bottom of the slope in the grounds of Jubilee Gardens. No traces of ancient structures were found in either locality.

Comment

Intensive excavation failed to reveal other sides to the presumed wall foundations located west of the fort. It is possible – assuming that these are parts of buildings – that the other walls were founded on timber beams resting directly on the ground, or in some other manner which has left no trace. No evidence was recovered which would indubitably determine their date. Their proximity to the fort is suggestive and the only fragment of non-Roman pottery apart from 19th- and 20th-century material found here, could have sunk through the soil before its descent was further prevented by the foundation. It seems likely therefore that the two foundations are Roman.

3.5 RESISTIVITY SURVEY

IAIN BANKS

In April 1995 GuARD was commissioned to undertake a resistivity survey to determine whether the ditch on the southern side of the fort was crossed by a causeway for access to the fort (Banks 1995). The survey was conducted using a Geoscan RM15 resistivity meter and readings were taken at 1m intervals across four 20m grids orientated east to west along the whole width of the gardens to the south of Maxholme (illus 3.2.1). The grids were truncated on the southern edge by a path and hedge, so that the actual surveyed grids were more like 20m × 17m. Conditions were not ideal, there being substantial root systems along the edge of the path from well-established trees, while the soil of the lawn seemed quite loose underfoot. This led to an expectation of generally low resistance across the entire survey area. It was hoped nonetheless that any causeway would be significantly different in consistency from the silts of a ditch fill that the presence or absence of a causeway would be relatively apparent (illus 3.5.1).

Illustration 3.5.1
The geophysical survey.

The results were stored and processed through Geoplotv2, a standard geophysical programme. Analysis consisted of an x –y interpolation on the data, one plot presented as a greyscale and the other as a dot-density plot.

Results and interpretation

As expected, the general levels of resistance across the survey were very low, with the highest reading as low as 161.5 ohms. As the plot shows, the main effect shown by the survey is the creating of the banking leading down into the garden level from the level of the house. Apart from this, the soil at the eastern end of the survey appears to have been more consolidated than the rest of the survey area. Nonetheless, three areas of interest are apparent. The first is a linear anomaly on the eastern end of the survey area that runs through the higher resistance soils; this appears to be a pipe and is probably part of the services of the modern building.

The second is an area of higher resistance which lies in the centre of the plot and partially in front of the steps down to the lawn but covers a large area. The third is a narrower strip of higher readings towards the western end of the survey. Either of these could have been the causeway, the higher readings indicating a firmer soil more resistant to electrical conduction.

The central anomaly covered a width of about 24m and seems reasonable for a causeway across the ditch, taking into account sites such as Cardean where the eastern gateway had a causeway of 23m width and the northern a causeway of 30 m (Jones 1975: 110).

The western anomaly is smaller and appears to be about 6m–8m wide. The most reasonable explanation for this anomaly is that it represents one of the trenches from the excavation, the location of which it appears to match.

The conclusion of this report must remain tentative because the conditions of the survey were not ideal. A seismic survey might work better in the conditions although the degree of disturbance means that good results could not be guaranteed. However, the resistivity survey did indicate alterations to the nature of the soil, demonstrating that, irrespective of the alterations to the soil through landscaping, there were areas which differed in the degree of their conductivity. Whether this represents the archaeological features sought would require confirmation through trial trenching, but the anomalous readings in the centre of the plot appear to correspond to the extent which might be expected for the causeway across a fort's ditch.