Interval Tower SW5 and the South-west Defences: Excavations 1972-75

A. B. Sumpter and S. Coll
Interval Tower SW5 and the South-west Defences: Excavations 1972–75
By A. B. Sumpter and S. Coll

Introduction

The south-west defences of the legionary fortress (Fig. 22) have been the subject of numerous investigations in recent years which have revealed a succession of ramparts, walls, and ditches, spanning the whole period of the Roman military occupation of York (RCHMY 1, 6–25; Wenham, 1965; Frere, 1971). In the later Roman period, a rebuilding of the south-west defences incorporated multangular corner towers and six multangular interval towers. One of the interval towers, SW5 (numeration following RCHMY 1), lay on land at the corner of Museum Street and Lendal (Fig. 23) which has been progressively cleared of buildings since the late 1950s, prior to redevelopment. The tower was first located before 1842 and partly investigated on three subsequent occasions. A more thorough investigation began in 1960 when L. P. Wenham excavated much of the interval tower and located within it the north-eastern edge of the earliest defensive ditch (Wenham, 1965; brief summary in RCHMY 1, 17 and 19). The rear of the tower and the intervallum area were at that time inaccessible, and the cutting was back-filled for a surface car park. Wenham’s report is out of print, and it has been thought desirable, with his permission, to reproduce some of his discoveries here.

Development became imminent in 1971 and York Archaeological Trust and its predecessor the York Archaeological Working Committee, with the kind permission of the site owners, York City Council, began the further campaign of excavations described in this report. The main aims were to investigate the defensive ditches in front of SW5, to expose the whole of the interval tower, and to relate the stratification of the defences to that of the interior of the fortress. The ditches were sectioned in 1972 under the supervision of S. Coll. Later that year York City Council considered proposals for redevelopment of the site as a hotel. Through the co-operation of the City Planning Officer, the newly formed Archaeological Trust was able to negotiate with the chosen developers, Newham Properties Ltd of Middlesbrough, from an early stage, to obtain facilities for archaeological investigation. The proposed Forum Hotel was designed to cover most of the area on pile-driven foundations, with a deep basement obliterating archaeological layers over more than half the site. Newham Properties Ltd kindly granted permission to excavate, and showed sympathy towards the idea of preserving major Roman structures. In February–March 1973, limited trial trenching was carried out within the standing Museum Chambers by A. B. Sumpter. The demolition of that building was completed by April 1974, and excavations which commenced in May 1974 lasted for eight months, with the expenditure of some 190 man-weeks, also under the supervision of A. B. Sumpter.
The site (SE 60075202) is at an elevation of about 15m OD on a terrace rising steeply from the River Ouse, 110m to the south-west (Fig. 22). The natural subsoil, as shown by recent boreholes (Wimpey, 1973), is approximately 5m of glacially disturbed sand containing some limestone cobbles, overlying a similar thickness of boulder-clay; below this are laminated clays resting on sand.

The area lies across the south-west defences of the Roman fortress, midway between the porta praetoria and the west angle tower. Much of the latter still stands in Museum Gardens, with the adjoining curtain wall and the exposed outer footings of interval tower SW6. Nothing remains of interval tower SW5 above modern ground level, but parts had been revealed before 1842 and in 1901 (Wellbeloved, 1842, 49, pl. 1, fig. 1; Cooper, 1904, 10). Drain-laying destroyed some of the masonry between 1917 and 1923, when its position was recorded (Benson, 1919, 161, fig. 56; 1920, 352–4; and 1925, 170).

Historical records do not show early structures on the site itself, though noteworthy buildings are known close by (Fig. 23). St Wilfrid's church, possibly a pre-Conquest foundation, is thought to have been to the east (Davies, 1880, 44); and between this and the Ouse was an Augustinian friary (ibid., 48). The ruined 13th century chapel and crypt of the pre-Norman St Peter's,
Interval Tower SW5 and the South-west Defences

Fig. 23 Interval tower SW5 in relation to other ancient structures and modern buildings: (1) St Leonard's Hospital; (2) Assembly Rooms (1736); (3) site of St Wilfrid's church; (4) site of Augustinian friary. Details: (A) from OS map of 1852; (B) as at 1972. (Based on the Ordnance Survey map with the sanction of the Controller of Her Majesty's Stationery Office, Crown Copyright reserved)
later St Leonard's, Hospital are on the north-west side of Museum Street, which was formerly known as Finkle Street. In post-medieval times, this street was apparently bordered on the south-east side by modest houses; but 19th century road-widening removed the front portions of these, leaving only their rear premises and gardens extending back into the threatened area (D. M. Palliser, pers. comm.). About 1718, the mansion which is now the Judges' Lodgings was built on the presumed location of St Wilfrid's churchyard, and in 1736 the Assembly Rooms were completed (with portico replaced in 1828) to the north-east; both establishments survive in use. Towards the river, Lendal Chapel of 1816 has been converted into shops. The York Festival Concert Rooms were founded in 1824 on the north-eastern half of the excavation area (Crosse, 1825), and after drastic modifications and enlargement became Museum Chambers, a five-storey office building, with ground-floor facilities to continue public functions. Along the street frontages and behind them, over the south-western part of the site, a cluster of Victorian houses and shops developed, which with alterations and replacements remained in use into the 1950s.

All excavation records and finds are kept under the Trust and Yorkshire Museum accession numbers 1972-5; 1973-4; 1974-4. Accounts of the pottery and other finds from the site are to be found in *AY* 16 and *AY* 17 respectively.
Excavation of the Defensive Ditches
By S. Coll

Aims and Methods

The external ditch system of the fortress within the south-west part of the site was sectioned to determine its development and chronology. It was hoped that some uniformity in the south-western defensive arrangements would emerge through comparison with G. F. Willmot’s 1957–59 excavation adjacent to SW6 (unpublished; summary and drawing in RCHMY 1, 22, 24–5, fig. 17).

As no detailed plans of the demolished buildings were available, the extent of disturbance by modern cellaring was initially unknown. A hydraulic excavator was used to remove some 200m³ of demolition rubble up to 0.8m thick, at the north-west end of the car park. This revealed a series of brick wall foundations and cellars as deep as 2.6m, which did not allow an uninterrupted linear cutting. However, it was possible to place two trenches to give an almost continuous section 8.9m long, on opposed faces (Fig. 25, section ABCD). Of the remaining 5m to the fortress wall, 2.8m was accommodated on a slightly different alignment (section EF), and the profile was completed from Wenham’s 1960 excavation (Wenham, 1965, fig. 3).

Excavated Features

Roman occupation

The excavation revealed four phases in the construction, renewal and modification of the south-west defences. These corresponded in a general way with the four ditches found by Willmot in 1957–59, but there were differences in detail which are discussed below (pp. 63-4). The earliest ditch ran close to the curtain wall. Further south-west, the second, third and fourth ditches appeared to have been excavated along the same line, but had dissimilar profiles (Fig. 25).

The first ditch

This ditch was of shallow profile, with straight gently-sloping sides (Pl. XVIIIA). It was dug into the natural yellow-brown sand, beginning some 0.6–0.7m outside the fortress wall foundation. It was approximately 5m wide by 1.3m deep, the base lying at 12.40m OD. The natural sand forming its south-west edge was c. 0.6m lower than both its north-east edge and the south-west edges of the later ditches. The primary silting had come preponderantly from the south-west side. It was overlain by the remains of turf amongst and below much sand and gravel, apparently deposited from the north-east. At the top was a thick wedge of sand spreading over and beyond the south-west lip of the ditch. To the south-east, the polygonal front of interval tower SW5 had cut through the fill and into the subsoil, and it was possible for the first time to determine the dimensions of the bastion foundations and superstructure.

No evidence was found to date the filling of the ditch. The inner ditch was partly re-excavated by A. B. Sumpter in 1974 when SW5 was totally uncovered.
The second ditch

Only the south-west side and part of the base of the second ditch were found intact, for the north-east side was either re-used or destroyed by the third ditch. If the former was the case, this ditch would have commenced some 5.5m from the fortress wall, and would have had a shallow profile not dissimilar to the first one, except for a shovelling channel evident at the bottom. It would have been about 6m wide by 2m deep, with its lowest point at 12.10m OD. The homogeneous mixture of fine silty soil and sand contained in the second ditch, though intruded upon by the third ditch, could be seen to have occupied a vertical height of some 2m, so that it had probably filled the ditch completely.

Pottery in the fill appeared to date from the late 2nd to about the mid 3rd century.

The third ditch

The third ditch (Pl. XVIIIb) was cut into the fill of the second, removing evidence for the north-eastern edge of the latter, at 5.5m from the fortress wall. It would have been c. 0.5m from the bastion of SW5. The profile was steeper, and more pronounced to the south-west, giving a slightly asymmetrical appearance. The width was approximately 5.5m and the depth 2.4m, again with a marked shovelling channel at the base (11.70m OD). Its north-east edge, and therefore possibly that of the second ditch, cut through the sand layer levelling the top of the first ditch. Some clay in the lowest filling was overlain by silts with rubble and occupation debris.

To what depth this accumulated was unknown owing to the intrusion of the fourth ditch.

Evidence to date the remaining fill was absent.

The fourth ditch

The fourth ditch (Pl. XVIIIb) seemed to have made use of the same edges as its predecessor, but was excavated to a lesser depth of c. 2m at 12.00m OD. Apart from some fine sand laminations overlying the primary fill, the accumulation in the ditch was of one basic material, earth with some rubble and occupation debris. Its consistent nature meant that interpretation was retrospective and relied almost entirely on the completed sections. Minor variations were seen which, along with the vague horizons apparent in section, revealed two thick layers within the material. The lower layer had its source on the south-west side, while the upper one had entered from both sides with the main influx from the north-east. These two layers occupied a vertical height of 1.25m. The upper one contained a Huntcliff-type jar rim, usually dated after c. AD 360. A final deposit of soil and rubble sealed the whole of the ditch area, acting as a levelling layer and concealing all traces of the ditches.

Associated features

The final levelling of the first ditch also served as the ground surface to the north-east of the second ditch. Its upper half carried a concentration of root marks suggesting an open surface, though no turf or soil line was seen. This may have been removed for the construction of SW5 and the rebuilding of the fortress wall. Overlying it was a layer of compacted lime mortar and crushed Magnesian Limestone rubble 50mm thick, covering the area of the first ditch, though a modern building had removed any relationship with the fortress wall. Below this mortar, the
construction trench for the foundations of SW5 was first observed. Cutting the mortar were three post-holes between 0.25 and 0.50m deep along the edge of the interval tower foundations. The mortar layer, post-holes and foundations were all sealed by a large dump of soil abutting the outer face of the tower.

A layer of cobbles laid on the compacted natural sand was found on the level area to the south-west of the later ditches. It was heavily disturbed by modern intrusions but, whilst worn and patchy, it must once have formed a respectable surface. A modern wall lay between it and the later ditches.

Post-Roman occupation

The fourth ditch seems to have been neglected in post-Roman times and to have filled up completely (see above). A series of trenches, parallel to the north-east side of the ditch and cutting into it, were dug either just below or through the top levelling layer. One of them contained a sherd of St Neots ware, probably of Anglo-Scandinavian or Anglo-Norman date. The evidence will be described in *AY* 8.

The next event attested archaeologically on this part of the site was the construction of 19th century buildings, which had for the most part destroyed evidence of intervening periods. They had been repeatedly modified and reconstructed during the 19th and 20th centuries before final demolition in 1960.

**Interpretation and Discussion**

Roman occupation

*The first ditch*

The first ditch was presumed to have been in use during the 1st century AD, in the earliest period of the fortress. It was considered to have been deliberately filled, and though the operation could not be independently dated, the nature of the fill suggested that it occurred when the early rampart was cut back for the first stone wall, and the foundation trench for the wall was dug (pp. 66, 87). This might have been in the Trajanic period, if the wall was contemporary with the building inscription of AD 107–8 from the site of the *porta principalis sinistra* (*RIB*, 665; RCHMY 1, 111). The ditch was in the same position relative to the fortress wall as that excavated at SW6 in 1957–59 and of similar dimensions and character. There, Willmot dated the pottery in the filling to the early 2nd century and, from the nature of the profile and silting, postulated a double ditch (RCHMY 1, 25). The same possibility occurred at SW5. The lower elevation of the south-west lip could have been the result of erosion, to which an upstanding ridge between two ditches would have been susceptible; and the disposition of the primary silt corresponded with this. If so, the outer ditch had been completely removed by the later ones.

*The second ditch*

The second ditch, then, replacing the first further to the south-west, may have been contemporary with the first and possibly Trajanic stone wall. If so, it appeared to have enjoyed a long life, since pottery in the fill extended to about the middle of the 3rd century. The fact that
part of the fill formed the south-west edge of the third ditch may account for the nature of the soil. Vegetation and associated soil fauna would rapidly have colonized the area, and the ‘turning-over’ process would gradually have tended to erase laminations or tip lines, leaving the fine consistent fill which was encountered. It was not certain, therefore, whether the accumulation was natural or a deliberate operation. At SW6, by contrast, the inner or north-east side of the second ditch had survived, whilst the south-west side had been cut away by the third ditch.

The third ditch
The third ditch was thought to date from or after the mid 3rd century; either it or the fourth ditch could have been contemporary with the reconstruction of the fortress wall and the installation of the polygonal-fronted interval towers (pp. 88-9 below), though that event itself remains to be dated at all closely. The builders probably located the north-east edge of its predecessor but seem not to have tried to find the south-west lip, as they cut through the fill some 0.5m short of that edge. Although the initial stability would have been less than that of the previous solid edge which logically could have been expected, the laying-out may have been dictated by dimensions specified elsewhere. The ditch here appeared to have been dug slightly closer to the fortress wall than at SW6, though this might have been merely a localized irregularity. At SW6, the third ditch had a rather more shallow profile.

The fourth ditch
The fourth ditch, undated, was 0.3m shallower than its immediate predecessor. It appeared to have been the last attempt to refurbish the defences in Roman times. The primary fill marked the final albeit gradual abandonment of those defences, for the accumulation was uninterrupted by any further attempts to re-excavate the ditch. It was not clear what process had caused the filling, though this may have been gradual if the consistency was the result of re-working by soil fauna.

At SW6 the fourth ditch was also shallower, but it was said there to have been revetted with stone and turf; it lay slightly further to the south-west. The ditch seen in building work near SW3, for which a 4th century date was suggested, was on a similar line, 9.5m wide and 2.6m deep (Ramm, 1956, 81–2).

Associated features
The mortar layer which overlay the final levelling of the first ditch was interpreted as construction debris from SW5 and the rebuilt fortress wall. The three post-holes could have been for temporary scaffolding to build the tower. As noted above, this might have been contemporary with either the third or the fourth ditch. The cobbled surface south-west of the ditches fitted well with the profiles of both third and fourth ditches, and could have been contemporary with either or both. A similar feature was found at SW3, where it extended for at least 11m outside the ditch line, and also at the Bedern (Ramm, 1956, 82).

Post-Roman occupation
The trenches discovered along the inner edge of the fourth ditch, perhaps for palisades, seem to represent a further strengthening of the surviving Roman defence-line here in post-Roman times.
Fig. 22. Defensive ditch system east of internal tower SW: cross-section. For position see Fig. 24: central part of section, CIJ, shown reversed. Scale 1:40
Fig. 26 Early rampart south-east of interval tower SW3: south-east section (reversed). For position see Fig. 24. Scale 1:40
Excavation of Interval Tower SW5 and the Intervallum Area
By A. B. Sumpter

Introduction

The 1973 excavation comprising two trial trenches within the Museum Chambers building was severely restricted in scale by architects’ doubts over the structural loading on the sections. An extensive filled-in cellar 2.07m below floor level was encountered, inserted into the Festival Concert Rooms later in the 19th century, thereby cutting away most, if not all, post-Roman deposits. It was possible to remove only c. 1m³ of the brick cellar floor; however, by the use of excavation plans and dimensions from Davygate, York (Wenham, 1962), this was sufficient to locate a Roman masonry wall precisely, thus confirming the later intra-mural building line.

For the 1974 75 excavations it was decided to investigate as much of the threatened area as resources would permit. Full use was made of machinery in removing the heavily disturbed upper layers before manual excavation was carried out. For safety reasons no cutting was sunk within 4m of the Assembly Rooms’ rear wall, and examination of the Roman layers at the north-east end was limited in depth also, by a line projected 30° below the horizontal from the foot of the same rear wall. Modern levelling operations had left the north-eastern half of the site c. 1.25m higher than the south-western half. On the latter, c. 1m of recent back-fill and 19th century cellar debris was stripped by a JCB IIIc hydraulic digger-loader. Over the intervallum area, this machine emptied the rubble-filled cellar located in 1973. The intervening balk of older deposits was sectioned by hand before clearance by a Priestman Mustang 120 hydraulic excavator, which was also employed on further small-scale trenching. Below the cellar floors, 19th and 20th century drains had penetrated the earliest layers, and further interference came from seven concrete pile-pads, each 1.6m square, set into the natural sand to support the steel frame structure of Museum Chambers.

Approximately 700m³ of spoil by loose volume was removed, of which the bulk was deposited on site, and landscaped to provide a viewing platform for onlookers. During the summer of 1974, some 45,000 members of the public were admitted for a small charge to watch the work in progress, and were supplied with explanatory literature. A further 40,000 visitors saw the excavated site in the subsequent two years.

The plans for the proposed Forum Hotel from the first included proposals to incorporate the remains of SW5 in a position which would facilitate permanent public viewing. Though the hotel has yet to be built, it is still intended that as much as possible should be preserved in this way.

Excavated Features

Prehistoric occupation

No recognizably pre-Roman features were found. Possible prehistoric evidence consisted of five struck flint flakes with creamy-white patina, from the top of the sand subsoil within and to the north-west of SW5. They were without re-touch or any diagnostic element.
Roman occupation

Structures pre-dating Interval Tower SW5

Rampart

With the removal of the disturbed top material, much of the north-western baulk of the excavation revealed modern cellars along the Museum Street frontage, but on the less-disturbed south-east side a section through the lower part of the defensive rampart was obtained (Fig. 26).

This showed blocks of greyish earth 80 to 100mm thick giving the appearance of turves and clods stacked at front and rear, with an infilling of brown very sandy earth containing small pebbles, limestone fragments, and isolated clods. Within the lowest 10mm of this infilling, which rested on an earlier ground surface of brown-yellow sand, lay a uniform horizontal layer, 219, of mineralization, for the most part brown but in places black; this was between 3 and 6mm thick and extended the full surviving width of the rampart (4.80m). Some 0.25 to 0.30m above this ground surface and over much of the rampart width, the sandy earth merged into levelling material for a modern concrete floor. Near the back of the rampart, it was possible to expose in plan an area of the mineralized layer 219, c. 0.70 by 0.60m, revealing it to be the remains of parallel timbers running across and under the rampart (Figs. 26–7; Pl. XIXa). These were clearly if insubstantially outlined by a thin iron-pan in the sand, its fibrous texture resembling wood grain, though it was not certain whether logs or shaped baulks were represented. The three timbers exposed had mean breadths of 0.15, 0.12, and 0.20m; the spacing between them and part of a fourth was 70, 20, and 25mm. Towards the front of the rampart there was a small intrusion (220) into the turf stack, 85mm across and extending 65mm into the section; from its pointed shape it was presumed to be the base of a stake-hole.

At the front, the turves and clods were cut away on a curving profile by a feature (221) filled with variegated sandy earth, limestone fragments, and loose mortar, the curve of which met the top of the fortress wall foundation. This seemed likely to have been a construction trench, for within it a faintly discernible change to a similar but darker fill (222) may have indicated a robber trench, the wall itself having been removed down to its bottom course. In the small trench to the south-east of the main excavation (Fig. 24), the south-east section revealed two distinct cuts in the corresponding place, suggesting more strongly both construction and robber trenches. Owing to recent intrusions neither section retained Roman layers outside the fortress wall.

The back of the rampart was preserved as a vertical stack incorporating turves and clods of earth, 0.88m high and extending to within 0.30m of the modern ground surface (Figs. 26–7; Pl. XIXb). It seemed most probable that the original rear face survived here, the layers to the north-east having accumulated against it, though it was just possible that these layers were the fill of a feature which had cut away the rearmost turves, perhaps in connection with the sinking of the medieval well (100) further to the north-east. A strip c. 0.85 by 0.25m was excavated horizontally along the rear of the stack at 0.30m above its base. This remained inside the south-west brick foundation for the Festival Concert Rooms, which intruded through the stack (Fig. 26). The strip showed in plan rectilinear areas of grey and blackish earth, and was sampled for pedological examination. The results are described below.
The back of the rampart was 4.85m behind the inner face of the fortress wall. To the north-east, the section was extensively disturbed to a considerable depth by various intrusions, many containing medieval material, and it was not possible to recognize evidence for any later widening of the rampart.

No artefacts were recovered from the rampart, or from the construction or robber trenches for the fortress wall.

**Mr J. S. R. Hood** contributes the following report on the rampart materials and soils beneath:

The relevant section was examined in 1976. The subsoil exposed beneath the earliest occupation varied from a yellowish red (Munsell colour chart no. 5 YR 5/6) to brown/dark brown (7.5 YR 4/4) sandy loam. Charcoal found in these soils may have resulted from worm action, or, more likely, from upstream sources during fluvo-glacial deposition. The site appeared to have been levelled and stripped as there was no sign of an ‘A’ horizon. In some
places the natural had been redeposited in the levelling process. Between the natural and the primary rampart a distinct iron pan had formed in places; in plan it was evidently related to a former timber corduroy. A layer, 20mm thick, of a very dark grey (7.5 YR 3/0) sandy loam with charcoal flecks lay directly above this.

At the rear of the rampart was a vertical stack of ten assorted turves and clods. These showed considerable variation in thickness, colour, texture and organic status, suggesting that they originally came from a number of different areas. Some of them appeared to be turves, of ‘A’ horizon soil with a high organic content (10% carbon), whereas others were no more than clods of earth which had been cut from a ‘B’ horizon and had a low organic status (4% carbon). In texture they ranged from clay loams and silt loams to sandy loams, varying in colour from dark reddish grey (5 YR 4/2), dark grey (10 YR 4/1), very dark grey (5 YR 3/1) to black (7.5 YR 2/0), with a patch of yellowish red (5 YR 5/6) subsoil. The average thickness of the turves was 80mm in a range of 40–130mm. Complete horizontal measurements could not be obtained owing to later disturbance, but breadths varied from 0.26 to at least 0.31m, and lengths were a minimum of 0.26m.

It would be expected that a certain amount of soil would slip from a vertical stack of turves at least 0.88m high if it had been exposed to weathering for any length of time, but no evidence for any such silting was found. As there was no indication of a retaining wall against the turves, it may be that the mixed layers behind them were put in place as a tail to the rampart, when or soon after it was built. Alternatively the turves could have been cut back, possibly when the medieval well (100) was dug to the north-east. However, the dissimilarity between the fill of the well construction pit and the soils behind the rampart makes this second possibility less likely. Consolidation following the construction of the well had caused some slumping in the natural.

Fortress wall foundation

The top of the foundation for the fortress wall, c. 1.0m below ground level, was revealed over a length of 13.0m; 11.8m to the south-east, the small machine-dug trench confirmed the line of an additional 1.0m (Fig. 24). A further 3.6m to the south-east on the same alignment, limestone ashlars, apparently Roman, are incorporated into the footings of the 18th century brick wall bordering the garden of the Judges’ Lodgings.

Wenham’s fuller examination had shown that the foundation was trench-built in the natural sand, and comprised layers of mortar each about 0.10m thick, containing small limestone lumps and fragments. In cross-section it was almost rectangular, narrowing slightly towards the bottom; it was 1.10m deep, while the average breadth was 1.80m at the top and 1.35m across the base. No impressions from wooden shuttering were seen, in contrast to the wall foundation north-west of interval tower SW6 (RCHMY 1, 22). Wenham had also searched for but found no trace of wooden piles beneath the curtain wall, such as he had recorded in the clay subsoil between SW1 and the south angle tower (Wenham, 1961, 345–6, fig. 6, pl. 7). Within SW5 (Pl. XXIIIb), the top of the wall foundation had a noticeably smoother appearance than outside it.

The fragmentary superstructure remaining was considered to post-date this foundation, and is discussed below.

Timber interval tower

Two large rectangular post-pits were located within SW5; their fillings showed as areas of slightly darker sand, tinged reddish-brown, against the yellow natural sand, though this distinction was not always clear during their excavation (Fig. 28). The foremost, 154, was 0.86m wide,
Fig. 28 Timber tower: plan and section showing excavated post-pits and postulated positions for additional posts. (A) probable position of tower; (B) possible alternative position. Scale 1:80
and largely cut away by the cross-wall foundation between the fore-chamber and middle chamber of SW5; the second pit, 155, was entire in plan, measuring 1.24m by 0.94m by 1.02m deep (Pl. XXIb). Both had near-vertical sides and flat bases, and the latter showed a rectangular soil-mark 0.60 by 0.44m in the fill, implying the position of a vertical timber (Pl. XXIc). No stone packing remained in either.

These post-pits were considered to represent a six-post timber interval tower, similar to that discovered by Wenham in 1956 off Davygate, south-east of stone tower SW3. Their correspondence is discussed more fully below (p. 83), though it should be noted here that the four other postulated pits, which were not found, could all have been destroyed by later structures.

Fragmentary Roman pottery and glass, with flint flakes, from post-pit 155 were without datable characteristics.

**Intra-mural building**

North-east of SW5, and beneath the *intervalum* road surface thought to be contemporary with it, were seen faint traces of a rectilinear structure, 438, on the fortress alignment (Fig. 29). These consisted of strips of darker earth a few millimetres deep in the surface of the sand sub-soil; each was well-defined along one edge, but merged into the sand along the other. They might conceivably have been caused by horizontal timber beams. It seemed probable that levelling operations in the Roman period, perhaps for the *intervalum* road, reduced these soil-marks to the vestigial state revealed by excavation.

There were no associated finds.

**Gully**

A shallow linear gully (209), dug through the natural sand from south-west to north-east, was found within the rear chamber of SW5 (Fig. 29). It was irregular in profile, becoming shallower and slightly broader to the south-west: its depth varied from 0.26 to 0.10m, and its breadth from 0.32m to 0.40m. A length of 2.95m was excavated from the south-west end, which was cut away by the front cross-wall of the rear chamber, to the point where *intervalum* road metalling had been laid over its filling of slightly darker yellow-brown sand. Two rounded shallow depressions in the base of the gully were insufficiently well-defined to be interpreted confidently as post-holes or impressions.

Roman pottery from the filling consisted of small indeterminable fragments, but a bronze 'Aucissa' brooch was recovered, a type usually dated within the 1st century AD up to the early Flavian period.

**Shallow pits**

The surviving portions of three shallow pits were excavated immediately behind SW5 (Fig. 29). Pits 423 and 424, seen to a depth of 0.13m and 50mm respectively, were both cut by the rear wall of SW5; pit 429, c. 0.45m deep, had been partly destroyed by a trench for a modern drainage pipe. All had a homogeneous fill of brown sandy earth in the natural sand, but it was not possible to visualize the original extent of any of them.
Fig. 29 Structures in north-east part of site pre-dating interval tower SW5: plan, scale 1:80, and sections, scale 1:20
No material was recovered from pit 424; pits 423 and 429 both yielded a few body sherds in York legionary-type ware, which at present can only be assigned the broad date span of Flavian to Antonine.

Deep pits
Two intersecting pits, 207 and 208, had been dug some 1.8m deep into the natural sand close behind the rampart, on the south-east side of the excavated area (Figs. 26, 34). Their upper parts had been destroyed by a concentration of medieval pits, so that it was not possible to determine the level from which they had been sunk, nor was their mutual relationship apparent, owing particularly to the similarity of their variegated sand and earth filling. It seemed that partial collapse of the sides had occurred whilst they were open. Neither could be fully excavated, for pit 207 ran under the south-east section, and pit 208 underlay the foundation for the south-east side wall of SW5.

In the bottom of the latter pit lay two short lengths of timber, though without an obvious function in that position. They may have been worked, but decay had eliminated any signs. The amount of pottery recovered was small; it included rustic ware and samian dating from the late 1st and early 2nd centuries, with fragments of York legionary-type ware which might have been within this range or slightly later.

Intervalum road
Within the rear chamber of SW5 and cut through by its foundations were uncovered parts of what appeared to be a road surface, 218, running parallel to and behind the rampart (Fig. 29). A single layer of close-set water-worn pebbles commonly 70 to 100mm across, with a few smaller pebbles and limestone pieces, was bedded on flat lumps of limestone impressed into the natural sand. Slight changes in level across its surface may have represented road camber. The metalling had a maximum breadth of 1.95m and seemed to have been cut away at the edges, which were irregular, so that its original width could not be ascertained; part was obliterated by post-medieval pit-digging. It was not seen outside SW5.

Only one phase of construction was evident, though there may have been some patching. No wheel-ruts were perceptible, but trampled into the interstices and sometimes sealed by the surface were tile fragments, animal bones, and potsherds. The pottery included one piece of samian and York legionary-type ware jar rims dated between the late 1st and the early 2nd century AD.

Intervalum building
Three sides of the stone foundation for a rectangular building (223), externally 8.2 by at least 7.4m, were exposed, of which the remainder lay to the north-west of the excavated area (Fig. 30; Pl. XXIIb). The foundations were rounded lumps of limestone with glacial drift rocks (p. 81 below), in the order of 0.15 – 0.30m across. They were without bedding material, containing voids except where sand had infiltrated, and lay in a vertical-sided flat-bottomed trench, c. 0.65m wide and surviving to a maximum depth of c. 0.75m, dug into the sand subsoil. The structure stood just behind the line of the rampart and across the early intervalum road, of which some metalling survived within it, but the area of intersection had been removed by a
Fig. 30  Intervallum building underlying interval tower SW5: plan and section, scale 1:80; sections through foundations, scale 1:20. For position of main section see Fig. 24.
post-medieval intrusion. Interval tower SW5 had also interrupted the foundations, and it could be seen that the mortar of its north-west side had been poured around the foundation for the south-west wall of the intvallum building.

Three body fragments of York legionary-type jars with an amphora sherd came from the construction trench for the north-east wall, suggesting a construction date possibly in the later 2nd century or later.

Following removal of a recent cellar wall obscuring the north-west section, additional features were revealed within the area of this building, though cellars had removed any connection with the external walls. At c. 0.15m above the topmost foundations for 223 the section (Fig. 30; Pl. XXIIa) showed roughly horizontal closely-spaced bands of dark and charcoally earth, with a little loose mortar (225). Three features were cut through these layers and into the sand beneath. A wall (226) parallel to the defences was based on grey clay containing limestone rubble and water-worn pebbles, in a trench 0.46m wide by 0.31m deep. The superstructure was 0.54m across, with two surviving courses of Magnesian Limestone ashlers solidly mortared around a rubble core. This continued at least 0.42m back into the section. To the south-west, an adjacent stake-hole (228) was 50mm in diameter and 0.16m deep, filled with charcoally earth. Further south-west, a probable post-pit (227) was 0.34m across by 0.30m deep and extended 0.15m into the section, with a fill of greyish sand. These features were at the permitted limit of excavation and no further investigation to the north-west was possible.

Alongside and parallel to the section, the base of the foundation for another wall (224) remained, of clay with stones similar to wall 226, and c. 0.50m wide. It ran towards the north-east external wall for some 1.35m, but at the probable point of intersection modern brickwork had intervened, leaving it in isolation.

Interval Tower SW5 and contemporary structures

Fortress wall superstructure

The fragmentary superstructure of the curtain wall which remained was limited to part of the lowest course, immediately to either side of SW5. This appeared to be of one build with the interval tower walls. It was 1.60m wide, with a core of Magnesian Limestone rubble and mortar, faced by small ashlers of Magnesian Limestone. The latter were carefully tooled at the front, but irregularly dressed at the rear of the wall.

Stone Interval Tower SW5

This basically rectilinear structure stood astride the fortress wall, beyond which it projected as a hollow polygonal bastion (Figs. 24, 31; Pls. XX, XXVIII). Its total length was externally c. 20.2m on the longitudinal axis and its mean breadth within the fortress was 9.4m. The bastion was 9.8m across and projected c. 5m beyond the curtain wall. Two cross-walls divided the structure into three large chambers, and within the fore-chamber the top of the earlier fortress wall foundation seemed to have been deliberately smoothed. Most of the superstructure of SW5 had been robbed. Even the foundations had been heavily breached at the very front by modern drains and cellaring, but they were largely intact elsewhere, apart from limited damage by medieval pits and a recent drainage trench.
The foundations (Pl. XXIIIa) were solidly constructed of pitched layers of large water-worn pebbles with limestone lumps and fragments set in mortar. They were trench-built except around the eastern corner of the middle chamber, where they were not flush with the trench side. However, this was probably through localized collapse of the natural sand. They appeared to be of one build, apart from cross-walls 2 and 3 which butted up against the side walls. Similarly, on both sides SW5 abutted on to the foundations of the fortress wall. The tower foundations were almost rectilinear in section, and generally 1.4 to 1.6m across by 1.0 to 1.1m deep where exposed. Wall 3, which was 1.2m wide, was an exception, as was the polygonal front wall, 2.4m broad and sunk to an unascertained depth probably exceeding 1.7m through the filling of the earlier fortress ditch. The top of the foundations was some 0.15m below the ground surface on which the rampart had been built.

The superstructure of SW5 survived only in isolated patches within the fortress: three courses of facing-stones on wall 7 and wall 3; two courses on wall 5; and other small pieces of core alone, notably as a spine along wall 1. A thicker spread of mortar over the third course on wall 7 extended outside its facing. The polygonal front was better preserved, with six internal courses standing on the south side, and two to four courses on the remainder (Pl. XXIIIa, b). Both inside and out, the facing-stones were dressed ashlers of Magnesian Limestone, 0.10m high by 0.20 to 0.35m in length, mortared in well-laid horizontal courses. The tooling (Pl. XXVIb) was extremely clear on the internal faces, and survived also externally except on the south of the front, which was more weathered. In order to maintain the bonding, some ashlers had been cut to fit the angles of the polygon. The wall core was of limestone lumps and fragments with a few large pebbles set in mortar. The types of stone used are considered below (p. 80).

Even where the facing-stones had been totally robbed, it was generally possible to see the lines of the walls from the presence of fillets of mortar which had lapped up against them when in position (Pl. XXIa). However, some difficulty was experienced on wall 1 and wall 6, where these fillets were almost obliterated. It seemed from the mortar impressions that cross-walls 2 and 3 abutted against the side walls, though they may have been bonded in at a higher level.

The wall thicknesses, expressed here as mean values, were by no means standardized; the rear wall 1 and cross-wall 2 were the only pair with the same dimension, 0.74m, whereas cross-wall 3 measured 0.91m. On the north-west side, wall 5 with a breadth of 0.90m narrowed to the 0.68m of wall 4, and similarly on the south-east, the 0.98m wide wall 7 diminished to 0.78m for wall 6. The bastion had more massive sides averaging 1.92m across.

Although the foundations were laid so as to permit the placing of a regular symmetrical superstructure, the wall lines strayed considerably from uniformity. No two of the opposite walls were parallel, with the exception of wall 1 and wall 2, but these were parallel neither to wall 3 nor to the fortress wall. No reason could be seen for the change of alignment between walls 5 and 4, nor that between walls 7 and 6. The only intersections close to right-angles were the west and east inner corners of the middle chamber, and the junction between wall 7 and the curtain wall. The aberrations were such that the superstructure in places barely kept within the foundation edges. Since neither was rectangular, mean dimensions only can be given for the middle chamber, 7.6 by 4.9m, and the rear chamber, 7.8 by 5.1m. The bastion itself had probably been six-sided externally, i.e. designed as half of a regular dodecagon, though the amount of destruction
prevented this being confirmed. However, the actual structure was slightly asymmetrical, for no two of the corresponding sides or angles were exactly equal.

The remaining superstructure of SW5 was insufficient to retain signs of doorways. Within the rear chamber were a few scattered pebbles c. 20mm across, set in about 0.15m of brown sandy earth overlying the early *intervalum* road; these might conceivably have been remnants of bedding for a floor. But evidence for the type of flooring was absent, and with it anything in the nature of occupation debris, or any reliable sealing layer which could have afforded protection to material immediately pre-dating the building. The construction trenches referred to above, which were not fully taken up by foundations, yielded only small fragments of York legionary-type ware datable between the Flavian and Antonine periods.

To the north of the projecting front of SW5, and uncovered by S. Coll in 1972, was a spread of mortar cut by three post-holes which may have been contemporary with SW5 (pp. 63, 64; Fig. 31).

*Post-holes*

Within the rear chamber of SW5 were four small rounded depressions (175, 194-6), possibly post-holes, each between 0.22 and 0.30m in diameter and from 0.10 to 0.16m deep. They were filled with mortar and orange-brown sand, and cut through a c. 50mm thickness of dark brown sand overlying the natural yellow sand, in what seemed random distribution. There was no means of telling what level they had been dug from, nor whether they pre-dated or post-dated SW5. No artefacts were recovered from them.

*Intervalum road*

Abutting the rear foundation of SW5 at c. 30mm below the top of it, and presumed contemporaneous, was a surface, 651, of small pebbles in brown earth, which sloped down rapidly for 1.5m, levelling out on to the *intervalum* road surface, 646 (Fig. 32). This road (Pl. XXIVa) was laid directly on to the natural yellow-brown sand, and was a single layer of hard-packed small pebbles, including fragments of sandstone and tile, underlain by one layer of flat irregular limestone pieces as bedding. It was lightly cambered, more markedly on the north-east side, and bore noticeable traces of wear. Two wheel-ruts (Pl. XXVa) each about 0.18m wide, continuous over the 3.0m length exposed, were parallel and c. 1.45m apart, centre to centre. They showed signs of stone patching, as did other small areas of subsidence, but there was no evidence for more than one constructional phase. The sand immediately below was compressed into a very hard state. Though the road did not have precisely defined edges here, its width was taken as c. 5.8m.

Between the north-east edge and the adjacent intra-mural building line was a build-up of rough limestone slabs with rubble and crumbled mortar (652), which had suffered later damage but gave the appearance of having been an irregular sidewalk. It was some 1.35m wide and c. 0.15 - 0.25m above the road level.

Apart from a single fragment of 2nd century samian ware, no datable material was recovered from below or within these surfaces.
Fig. 31 External causes SW3 and contemporary structures: detailed plan. Scale 1:100
Fig. 22 Section through Roman layers in intervallum area north-east of internal tower SW5. For position see Fig. 24. Scale 1:40
Interval Tower SW5 and the South-west Defences

Culvert

Beneath and close to the north-eastern edge of the intervallum road, and almost parallel to it, ran a stone culvert, 416 (Figs. 31–2; Pl. XXVIIb). This had been constructed in a broad flat-bottomed trench 0.75m deep, of which the lowest 0.35m was filled with heavy rubble, earth, and clay. Flat irregular sandstone slabs (see p. 81 below) were laid over this, and a channel was formed by a single course of roughly cut limestone blocks to either side, without mortar, and 0.50m apart. The base of the channel was 0.5m below the road surface. The brown silty filling was darker and moister towards the base, and included large pieces of limestone; but separate construction and robber trenches could not be distinguished in the section. The intervallum road surface, though not so well-made as to the south-west, appeared to be continuous over the fill of the culvert, with no subsidence. In the absence of firm evidence for robbing, the culvert’s original form is uncertain; the question is discussed below (p. 89).

From the fill came a few potsherds datable to the late 2nd and/or early 3rd century, presumed to be residual, and 0.10m below the top, adhering to a sandstone slab, was found a bronze ‘antoninianus’ of Tetricus I (AD 270–73).

Intra-mural building

The external wall of a stone-foundated building bordered the sidewalk of the intervallum road (Figs. 31–2; Pls. XXIVa, XXVIa). It was c. 8.7m north-east of the rear wall of SW5, and 22.25m north-east of and parallel to the fortress south-west wall. Its construction trench (574) was vertical-sided, c. 0.70m deep by c. 0.75m wide, and contained limestone pieces with a few pebbles set in mixed red-brown clayey earth. Two lengths of this material were seen, interrupted by a modern concrete pile-pad. The foundation of an adjoining wall (620) approximately at right-angles was of a similar width, though here it included a higher proportion of pebbles in the clayey earth. It was seen for a length of 0.80m within the excavated area. Immediately above it lay a bronze coin of Valentinian I (AD 364–75). The line of the south-west edge of trench 574 was traced, with interruptions from medieval and later pits, to the south-east limit of excavation. South-east of wall 620 it was largely bereft of the clayey packing, and instead its fill was of blackish-brown earth with much crumbled mortar, initially raising doubt as to whether it represented the same structure. If it did, the length of the building, assuming its former presence where later features intervened, was at least 15.6m, and 620 would have been an internal wall.

The sole masonry (647) left on the wall-foundation 574 was 1.4m in length and two courses, 0.16m, in height. This had first been located by trial trenching in 1973. It was of very roughly dressed limestone blocks, 0.58m broad on the externally offset first course, and 0.50m across the second course. The structure had probably been mortared, though only decayed traces were present; it appeared to have been poorly built. The small area exposed inside the building retained no flooring in situ. Scattered pieces of thin sandstone slabs might have been remnants from a floor, though one was pierced as for roofing, and decayed mortar traces in medium-brown earth could conceivably have been the residue of bedding material.

At 1.20m north-east of the external wall lay a parallel trench (578) also vertical-sided, 0.32m deep by 0.60m across, filled with blackish-brown earth. Although it seemed likely to have been the foundation trench for an internal wall of the same building, no visible link existed in the
stratification. A length of 4.62m was excavated within the available area, yielding pottery which included Huntcliff jars (Gillam 163, dated AD 360–400 on the Northern frontier).

To the south-west of the building, wherever excavated to a sufficient depth, i.e. across the south-eastern half of the area, lay a disordered heap of limestone blocks (645), many roughly dressed, which were interpreted as tumbled masonry from the wall. They had fallen directly on to the sidewalk and intervallum road, and were spread in diminishing thickness up to 3 to 4m away from the wall, covering the surface over the culvert. The concentration was continuous to the south-east end of the foundation trench 574.

Excavation to greater depth in and around the building was prohibited for safety reasons, and no artefacts could be directly associated with its construction, but sealed beneath the tumble were two rims from Huntcliff jars.

**Structures post-dating Interval Tower SW5**

**Intervallum roads**

The *intervallum* road 646 already described was covered by dark brown earth (639) with a mean depth of c. 0.15m, which contained late 4th century pottery of Huntcliff and painted Crambeck types; it also overlay the tumbled masonry, 645. Above was a rough linear surface (638) on the same course as the *intervallum* road (Figs. 32, 34; Pl. XXIVb), composed of one layer
of limestone rubble with pebbles, including thin sandstone slabs, fragmentary tiles, animal bones, and late 4th century and residual potsherds. This was considered to be a roadway, though its irregular and uncambered surface contrasted markedly with the better-formed road which it apparently superseded. No rutting or obvious wear could be distinguished, and it was noteworthy that the numerous bones showed no signs of fragmentation. The roadway was on average 3.4m wide, and a 3.6m length was exposed. Contemporary structures were absent.

It was overlain by a further layer of dark brown earth (631) c. 0.10m thick, again containing late 4th century pottery, and supporting an exactly similar road surface (565), having the same course, breadth, materials, and construction (Figs. 32, 34; Pls. XXVb, XXVIIa). This was exposed for a length of 10m. Again, no contemporary features were found. This third superimposed road lay only c. 0.15m beneath the brick floor of a 19th century cellar, which had comprehensively removed all later deposits in the area.

From the layer of blackish-brown earth (549) separating the road surface and its margins from the cellar floor, besides Huntcliff and Crambeck pottery, 33 widely scattered coins were retrieved. These included a silver denarius of Septimius Severus and three late 3rd century bronze radiates, whilst the remainder were small bronzes of the 4th century, mostly dating from AD 330–78. Amongst other material around the interhallum was a bronze buckle of Hawkes Type IIB, previously found in deposits of the late 4th and 5th century (Hawkes, 1974, 389, cf. fig. 3, no. 7).

Pottery in the interhallum area included many late vessels, with some residual material. Huntcliff jars were ubiquitous, and at least nine other Crambeck types were present (Corder and Birley, 1937). Additional Roman occupation debris comprised objects of bronze, iron, glass, jet, and stone. This contrasted with the area in and around SW5 itself, which produced less pottery, only two late coins, and relatively few small finds.

**Anglian and Anglo-Scandinavian occupation**

A circular pit (421) 0.92m in diameter and 0.18m deep had been dug into the natural sand by the east corner of SW5, though only its base was intact. Before excavation it was thought to pre-date the interval tower, since in plan its curved outline was interrupted by the foundation. However, a section across the point of contact failed to clarify the relationship (Fig. 33). The uniform fill was of dark brown earth, containing potsherds mostly of 2nd century date. Amongst these was one fragment of grass-tempered ware of a type usually dated, in northern England at least, to the 5th or 6th century — though conceivably as early as c. AD 370. Another closely similar sherd was found in disturbed upper layers. The only other find of the Anglian period was a hand-made jar rim of Middle Saxon type, from a modern drainage trench in the late interhallum road area. (See AY 16/1.)

After removal of the cellar floor beneath the Festival Concert Rooms, a scatter of limestone pieces was revealed in the silt overlying the latest interhallum road. This rubble was successively recorded and carefully examined for any traces of late Roman or post-Roman structures without solid foundations, but none was found.

No features or artefacts were assignable to the Anglo-Scandinavian period.
Medieval and post-medieval occupation

Two fragmentary human crania found amongst surface building debris may have come from St Wilfrid's churchyard, presumed to be nearby, though there was no direct evidence of a cemetery within the site. The footings of one corner of a stone building were located at the northern extremity of the excavated area, and potsherds close by, whilst not firmly associated, were of 14th and 15th century date. For the most part, however, the medieval remains consisted of truncated pits and wells, with pottery spanning the 12th to the 15th centuries. The medieval remains will be described in AY 10.

On the north-eastern half of the site there remained the brick foundations of the York Festival Concert Rooms, with the foundation stone, laid on 28 July 1824, still in situ. The stone contained three coins of George IV, dated 1821–23. The orchestra pit of the Concert Rooms had been replaced later in the 19th century by an extensive brick-built cellar, subsequently back-filled with much ornately-moulded plaster presumably from the original décor. Further alterations to the building had occurred during the 19th and 20th centuries. The south-western half of the site, particularly along the Lendal frontage, revealed the foundations for small brick-built 19th century properties, underlain by numerous cellars. Some 20th century replacement and drain-laying were apparent. An account of the post-medieval remains will be presented in AY 13.

Building Stones

Mr P. C. Buckland contributes the following report on building stones from SW5 and nearby intra-mural structures.

A more general discussion of the building stones from Roman York has recently been published (Buckland, in AY 3/1, 32–7) and it is necessary to add only a few minor comments on the material from interval tower SW5. The rocks are described in stratigraphic order.

Magnesian Limestone

The facing-stones from the tower were largely of a compact white to yellowish-buff limestone with a microcellular texture and occasional small cavities (vugs) lined with crystals; they were indistinguishable from those used in Alignment 2 of the Church Street Roman sewer (AY 3/1). A similar source, amongst the highest beds of the Lower Magnesian Limestone, probably from west of Tadcaster, is probable. Among the rubble forming the core of the bastion's walls and in some of the ashlars, a more shelly dolomitic limestone was noted, containing the comminuted, decalcified remains of lamellibranchs, in which examples of Schizodus sp. were recognizable. Although fossiliferous bands occasionally occur in the upper subdivision of the Lower Limestone (Smith, 1974), it is probable that this material comes from lower in the succession, probably towards the base, and another source, slightly further west on the Permian outcrop, can be postulated. Without physical examination of large amounts of the stone from the tower, it is difficult to estimate relative proportions of the two stones but it would appear that the latter stone is very much in the minority, presumably a result of relative ease of transport, although the outcrop of the Lower Magnesian Limestone is sufficiently narrow, 11km at Tadcaster, for most of the succession to be reasonably accessible to transport down the River Wharfe and up the River Ouse.
Jurassic Sandstone

The use of a lustre-mottled sandstone for the floor of the culvert on the north-east side of the intervallum road contemporary with SW5 provides an interesting parallel with the Church Street sewer, where the same stone from the Middle Jurassic was used for the floor (AY 3/1). It has been suggested (ibid., 36) that the exploitation of this stone was incidental to that of an overlying freestone oolite but its utilization for similar purposes on these two sites could suggest that this flaggy, impervious sandstone was consciously selected for its properties, since it has a very restricted outcrop along the foot of the Howardian Hills and would not be easily located. The period of use is uncertain, and though the sewer and the culvert might have belonged to the same period of reconstruction within the fortress, the dating evidence from the two sites is inconclusive. The culvert on the Museum Chambers site produced a late 2nd to early 3rd century group of pottery, apparently residual (above, p. 77) and an 'antoninianus' of Tetricus I (270-73), while a similarly dated group of pottery was recovered from the fill of Alignment 1a of the sewer (AY 3/1, 37–46).

Pleistocene erratics

The footings for the rectangular intervallum building inserted into the back of the rampart between the end of the 2nd century and the period of construction of the polygonal bastion were composed of a selection of cobbles and boulders of varying size and degree of roundness. The majority were sub-angular to sub-rounded blocks of yellowish-brown Carboniferous sandstones with subordinate amounts of dark to light grey Carboniferous limestones. Two sub-angular blocks of greenish tufts, probably from the Borrowdale Volcanics of the Lake District, also occurred, as well as a boulder of Shap Granite and a chert pebble from the Carboniferous Limestone Series. A similar suite has been described by Gaunt (1970) from Quaternary deposits at Aldborough, further north in the Vale of York. The varied degrees of rounding, the angularity of some of the boulders, and the presence of ice scratches on several suggest that the material has been dug directly out of a till, rather than from a secondary accumulation of erratics in a fluvo-glacial deposit. Tills of the York Moraine form the bedrock beneath much of the city, apart from the alluvial terraces of the Ouse and Foss. This morainic debris varies considerably in lithology, from a sandy 'boulder-clay' through clayey gravels to finely bedded laminated clays. Archaeologists have tended to neglect accurate descriptions of the 'natural' underlying their sites and it is frequently inadequately glimpsed beneath a complex of archaeological features so that it is not possible to localize areas particularly rich in large erratics. It may be that the erratics were recovered in digging the defensive ditch around the fortress but the quantity suggests that they represent gange from some commercial exploitation of the till. A major military and civilian centre, Eburacum would have been served by several brick, tile and pottery manufactories, although only one has so far been located close to the fortress (EY Int. Rep. 1, 213). The clay-pits associated with this factory, certainly operating during the 2nd century, have been sectioned on Aldwark, near the east angle of the fortress, and the till here contains few large erratics, although a particularly large erratic block of Lower Magnesian Limestone was incorporated in the footings of the church of St Helen on part of this site. It is possible, however, that the footings of the intervallum building represent several years' accumulation of erratics, perhaps from several local clay-pits, and Aldwark need not have been the only possible source.
Interpretation and Discussion

Prehistoric occupation

Struck flint flakes were stratified in deposits of or pre-dating the earlier Roman period, though these did not conclusively demonstrate prehistoric occupation on the site.

Roman occupation

The earlier Roman deposits had been largely removed, probably for the building of SW5 and contemporary structures, whilst occupation layers within the interval tower had suffered from subsequent levelling. As a consequence, the stratification was limited, and it was not possible to link layers inside and outside the fortress. The excavated features have been grouped into broad periods, for the purposes of this report alone, but structures within a period were not always demonstrably contemporary and the schematic phase plans (Fig. 34) should be referred to with this in mind. Only a broad date range could be indicated for each period, and they have not therefore been related to the conventional postulated chronology for the fortress defences (RCHMY 1, 7-12; see also Stead, 1968).

Period 1

The rampart was of sandy earth, likely to have been upcast from the first ditch (p. 61 above), with a turf revetting in front and at the rear; the whole was based on a corduroy of timber baulks close-set across its line. It was probably a little over 4.90m broad, though it survived to a maximum height of only 0.88m. As the front face had been cut away, there was no evidence for external timber breastwork; however, the presumed stake-hole penetrating the turves could conceivably have survived from a superimposed palisade. Its position, relative to the fortress wall foundation, lay within 0.20m of the centre-line of the suggested palisade slot or marking-out trench at Coney Street, which cut the first rampart there (Ramm, 1956, 79; RCHMY 1, 22). It may be noted that at Malton stake-holes were discovered in the earliest rampart, of which the remaining height was only 0.75m (Wenham, 1974, 12).

The section obtained was but a few millimetres south-east of one previously examined (Wenham, 1965, fig. 3, A-B), but as it could be extended further into the fortress and also in part exposed horizontally, some re-interpretation was made possible. In particular, the surviving rampart here was seen as a single-phase structure. As the base of this rampart stood some 0.20m above the top of the adjacent foundation for SW5, it appeared that construction of the latter involved major earth removal, thus destroying earlier phases.

Of the four other rampart sections on the south-west front previously published in some detail, horizontal timbers have been encountered in two: to the south-east of interval tower SW3 off Davygate, one layer of strapping was seen (Wenham, 1962, 513, 561, pl. 20); and north-west of SW3 in Coney Street, two separate layers were assigned to different structural phases (Ramm, 1956, 79, pl. 9). The timbers adjacent to SW5 resembled most nearly the upper strapping in Coney Street, though they were closer-set; this was perhaps dictated by the need to stabilize a mass of sandy earth rather than clay. At Davygate the timbers were also compared by the excavator to the secondary ones in Coney Street, with the suggestion that an original rampart
there had been cleared away for the erection of a timber tower (Wenham, 1962, 512, 561–2, fig. 24). This has been doubted on the grounds that a gap exceeding 9.2m in width would not have been cut for a tower little more than 3.3m across (Frere, 1971, 17), but such an objection loses force when it is realized that 7.5m of that section was occupied by a turf foundation for the tower. On the present site, the rampart was close to another timber tower, so it is conceivable that Wenham’s suggestion may apply here, and that this rampart may have been entirely secondary. On the other hand, if it was an original construction and the timbers related rather to the lower layer in Coney Street, insufficient height remained for an upper strapping to have been preserved. The only dating evidence for an early south-west rampart came from Davygate, where pottery sealed under the rampart and beneath the timber tower was originally ascribed to c. AD 80–96 (Wenham, 1962, fig. 4, 509–12). It was this dating which initially led to the theory that an early rampart had been removed for the timber tower, since it conflicted with the received tradition that the fortress, substantially on its later lines, was founded under Petilius Cerealis in c. AD 71–72. Even though the conflict at Davygate becomes slightly less marked in the light of a recent re-assessment of the pottery (Gillam, pers. comm.), dating it as early to mid Flavian, it should be emphasized that firm evidence for a Cerealian foundation is lacking.

Although only two post-pits were found, the former presence of a six-post timber interval tower has been inferred by analogy with the Davygate excavation (Wenham, 1962, 511–15, 557–62; figs. 2, 23, 24; pls. 1, 3, 4, 17–19). There, four post-pits of similar dimensions and separation were seen, with squared oak stumps preserved in situ. Their position inside the fortress led Wenham to suggest a further pair in front of them, and at SW5 the foremost pit fitted this postulated front line. The two pits were therefore presumed to belong to a similar and contemporary timber tower. If this supposition is correct, the non-discovery of four other pits can be readily explained. These would have been obliterated, either by the foundations for SW5 or by later intrusions, whichever side of the recorded pair they lay. Since the adjacent south-east section did not show a uniform turf foundation cum revetment like that extending some 2m on either side of the Davygate tower, it is considered that the timber tower at SW5 probably lay to the north-west of the one side established (Fig. 28).

If a symmetrical disposition of such towers is assumed, the two known positions may be related to suggest the possibility that there were ten timber towers, possibly of Flavian date, along the south-west front, rather than the six previously mooted (RCHMY 1, 14). This would then be the eighth, and that off Davygate the fourth timber tower, counting from the south angle. The theoretical spacing between them would be c. 29.1m (about 100 Roman feet, using 11.66 inches = 1 Roman foot), as compared to c. 38.1m (about 130 Roman feet) for the late stone series—a development which might have resulted from the installation or improvement of ballistic weaponry. Such an arrangement would lend weight to the siting of the unseen part of the eighth tower as suggested above. In addition, it fits so well as to imply that an undiscovered Flavian north-west defence line, and a contemporary porta praetoria, coincided nearly enough with the locations of their later replacements (see below). It may be mentioned that no interval towers on the south-west front have been found which might date to the period between these two series.

Of the building traces beneath the later intervallum roads, little can be said. In this location, these slight remains might be part of an early barrack block. It is difficult to visualize the gully in the rear chamber of SW5, by its form, as anything other than a drainage channel. It may have
Fig. 34 Site of interval tower SW5: schematic phase plans
conducted water away from the timber tower or the back of the rampart, though there was no remaining link with any other structure. The early Flavian or pre-Flavian brooch in the fill raises the possibility that it pre-dated other features. The three shallow pits immediately behind SW5 had no obvious functional significance. Nothing was found to contradict the likelihood that these features in Period 1, the earliest on the site, all belonged to the late 1st century AD.

The disposition of Flavian timber interval towers along the south-west front

The timber tower off Davygate, excavated by Wenham in 1956–57, was 3.3m wide and 129.5m from the south-east fortress wall. The single side of the timber tower at SW5 excavated in 1974 was 100.4m from the north-west fortress wall. If the other side lay 3.3m to the north-west as suggested above, it was 97.1m from the north-west wall. Assuming that the next tower to the south-east of SW5 corresponded to that off Davygate, i.e. that it was 129.5m from the north-west wall, then the spacing between the two would be c. 29.1m, or c. 98.3 Roman feet (using 11.66 inches = 1 Roman foot). This compares with c. 38.1m, or c. 128.6 Roman feet between the polygonal stone towers. The centre-lines of the timber towers would be c. 32.4m, or c. 109.4 Roman feet apart.

The positions of other timber towers can be predicted by extrapolation. The nomenclature SW(T)1, etc. has been adopted.

<table>
<thead>
<tr>
<th>Predicted distance from</th>
<th>Predicted distance from</th>
</tr>
</thead>
<tbody>
<tr>
<td>inner face of south-east</td>
<td>inner face of north-west</td>
</tr>
<tr>
<td>wall to centre-line of</td>
<td>wall to centre-line of</td>
</tr>
<tr>
<td>tower</td>
<td>tower</td>
</tr>
<tr>
<td>SW(T)1</td>
<td>33.95m</td>
</tr>
<tr>
<td>SW(T)2</td>
<td>66.35m</td>
</tr>
<tr>
<td>SW(T)3</td>
<td>98.75m</td>
</tr>
<tr>
<td>SW(T)4</td>
<td>131.15m</td>
</tr>
<tr>
<td>SW(T)5</td>
<td>163.55m</td>
</tr>
</tbody>
</table>

It must be emphasized that these are only approximations: even if the reasoning is justified, there are likely to be tolerances in both Roman and more recent surveying.

The north-west and south-east walls of the fortress are taken to be 414.4m apart internally. The estimated distance between SW(T)1 and the south angle, equal to that between SW(T)10 and the west angle, is 32.3m; and subtracting the same spacing of 29.1m leaves 3.2m available for each angle tower. This lends some support to the idea that the Flavian south-west front coincided in extent with the later one, for early defences have previously been encountered on the south-east side, but not on the north-west side of the fortress.

The estimated distance between SW(T)5 and SW(T)6 is 84.0m. Subtracting the spacing of 29.1m between each tower and the gateway leaves 25.8m to accommodate the porta praetoria with its twin gate-towers. The porta praetoria at the Agricolan timber fortress of Inchthinil occupied the comparable breadth of some 22m.
Period 2

The rampart front had been cut away to insert a stone curtain wall; the first ditch was probably filled at this time and the second ditch dug further to the south-west (p.63). If it is assumed that the foundation exposed here was the first such foundation, then this was all that remained of the first stone wall. This contrasts with the situation at Coney Street, where the foundation carried a standing wall interpreted as belonging to two separate periods (Ramm, 1956, 80, 81, 84, fig. 11). It seems likely, however, that the original superstructure had been totally removed here to facilitate construction of the stone interval tower, as the small portion of surviving curtain wall appeared to be contemporary with SW5. The two deep pits were not closely dated. Their position, however, suggested that the rampart was then no broader than that described above.

The surviving early intervallum road was slightly further back from the defences than that encountered at the Davygate site (Wenham, 1962, 562–3, fig. 25), but allowing for the partial removal of the former, the two might have corresponded. The pottery in its surface suggested use during the late 1st to the early 2nd century, but there was no remaining stratification to connect it with any feature which might have been contemporary. The possibility cannot be excluded that this road was first laid in Period 1, and that the gully underlying it perhaps pre-dated the fortress.

The date range for Period 2 can only be suggested as embracing the late 1st century and the first half of the 2nd century.

Period 3

The extensive intervallum building with stone foundations had been built across the intervallum road described above. It was set close to the back of the early rampart; in fact, the short length of foundation which it had been possible to expose in 1960 was then interpreted, reasonably, as a rear revetment to that rampart. Despite the destruction of any linking stratification, the likelihood exists that the charcoal layers in the north-west section represented a floor surface or surfaces within this building. The incorporation of loose mortar into the surface around the ashlar wall cutting it implies that this wall may have been an internal modification, rather than a succeeding structure. This also applies to the wall on similar foundations at right-angles, and to both the post-hole and stake-hole seen in section. It has been suggested that the unexpected absence of bedding material between the stones of the external foundations might have been caused by earthworm action. In any case, their depth and substantial nature must have given a high load-bearing capacity. Had they carried ashlar walls resembling that in section, or perhaps even wider, then this was a significant structure of intended permanence.

Little is known of buildings between the intervallum road and the defences of the fortress, but it is worthwhile to compare the plans of one behind interval tower NW5, probably of the 2nd century, and another, undated, close to the north-east gate or porta decumana (RCHMY 1, 44–5). The absence of an intervallum road which might have been contemporary with this building, and the elevation of the floor level seen in section above the top of the foundation for SW5, again indicate Roman earth-moving operations presumed to have been site levelling for SW5.
In default of primary dating evidence, Period 3 can merely be said to lie within the range mid 2nd century to mid 4th century.

Period 4

The small surviving part of the curtain wall superstructure is considered to be a rebuild contemporary with SW5. The characteristics of its masonry correspond with those of the standing late curtain wall c. 90m to the north-west, which adjoins and is bonded into the west angle tower. The fortress ditch was probably recut during this period, either the third ditch or the fourth being contemporary with the rebuilding (p. 64 above).

The imposing scale, ambitious plan, symmetrical foundations and good-quality masonry of interval tower SW5 itself contrast with the asymmetry of its walls. No reason but human error could be seen though one is drawn to consider possible factors such as hasty construction, or the unavailability of skilled masons at a particular time. A similar situation at the east angle tower, which again lay askew on regular foundations, has been used as additional evidence for two phases of construction there (RCHMY 1, 31, fig. 23), but nothing lends support to this idea at SW5. The greater thickness of the front cross-wall compared to that of the rear cross-wall was presumably intended to withstand the lateral thrust of the rampart body, and suggests the absence or much reduced height of any rampart extending back alongside the rear chamber. It has been suggested that possible evidence for such an extended rampart was provided by the well-preserved external tooling on the south-east side wall adjacent to the rear cross-wall, leading to the conclusion that this wall face must have been covered soon after completion; however it was common Roman practice to commence building with dressed masonry below ground level. The rough spread of mortar projecting over the third course here also seems less likely to have been exposed to view. It has been pointed out that, particularly over a ditch, a polygonal bastion would have an advantage over a rectangular one in being less likely to subside outwards (Cullen, 1970, 239). The massive size of the polygonal bastion, though hollow, could have been intended to support and withstand the stresses imposed by heavy artillery. Nothing remained, however, to indicate the function of the rest of the building.

No positive signs of doorways were found, and the almost continuous mortar spine along the rear wall seems to preclude an entrance there, unless it was above the first course of masonry. At SW3 an internal doorway was located in the rear wall of the fore-chamber, at its south-east end (Wenham, 1965, 24, fig. 6; RCHMY 1, 16, fig. 11), but the corresponding position in SW5 was occupied by three courses of facing-stones.

This is the first of the masonry towers along the south-west front to be completely exposed, and it should therefore assist in predicting the plans of the other five in the series. Of these SW4 is not known to have been seen, while SW1, SW2, SW3, and SW6 have only been recorded in part during small-scale excavations and observation of building work (summary in RCHMY 1, 16, 17, 19; later work on SW1 and SW2, Radley, 1970; on SW3, Wenham, 1965). Nothing comparable has been found on the other three sides of the fortress, where the known interval towers are small internal rectangular structures.

In the absence of secure primary dating evidence for this rebuilding of the south-west defences, consideration must be given to polygonal towers elsewhere. Such towers on military sites are
usually thought to date between the late 3rd and the late 4th century, though not exclusively so. Several are known, but none closely parallels those at York, either in Britain or the other provinces. A recent survey (Butler, 1971) supported the traditional ascription to Constantius I, whilst allowing that the evidence is inconclusive, for few examples have been firmly dated. In Britain, polygonal bastions occur at the forts of Risingham, on the south gate, interpreted as a rebuilding under Constantius I, and Cardiff, which has not been dated. They are also known at two civil towns: Caerwent, where one tower was dated to after AD 333, and Cirencester, undated (Cullen, 1970, 238–9). Butler suggested that a single designer or unit preferring this plan was responsible for both York and Cardiff, for Caerwent, said to be a copy of the latter (Craster, 1973, 10), and for the following Continental examples: the Swiss forts of Tasgaetium, dated by an inscription to AD 294, and Montagny-Chancy, possibly built under Diocletian and extended under Valentinian I; and the fort of Kaiseraugst in Germany, undated. Nevertheless the need for excavated dating evidence for this period of the fortress at York, as for earlier phases, remains great.

Scholars have generally agreed on the impressive character of the late south-west defences. Professor Sir Ian Richmond wrote: 'No fortress front in the Empire was more splendid' (RCHMY 1, xxxiii). There has been less unanimity on the purpose or occasion of such emphasis on this front, whose naturally defended position seems superior to that of the other sides of the fortress. Theories advanced therefore divide into the practical — for instance the threat of raiders on the Ouse, or of civilian power in the colonia — and the prestigious or commemorative — perhaps the presence in Britain of Constantius I, the proclamation of Constantine I in AD 306, the possible installation of the Dux Britanniarum in the 4th century, or some unrecorded demonstration of Rome's military might. With the absence of secure dating, all suggestions remain speculative.

The associated structures behind SW5 — intervallum road, culvert, and sidewalk — were here exposed together to give a comprehensive picture of the arrangement, though all had previously been seen in part during small excavations elsewhere on the south-west front. The road had been repositioned further inside the defences presumably to accommodate the very large contemporary interval towers. There was no indication that the road surface had served for an unduly long period, and no silt had accumulated before the collapse of the adjacent building on to it.

The original structure of the culvert could not be fully established. Initially it was taken to have been the remains of a drain with side walls and lintel slabs, but if such walls had stood higher than the one course left, it seemed strange that robbing should have ceased at the bottom course. At Davygate, where some 22m of the culvert was exposed, short lengths included two and even three courses, but a 13m stretch again revealed only one course. This creates doubt as to whether the culvert was ever completed as first envisaged above, or whether it became merely a soak-away, the heavy rubble being put in the channel to aid drainage. In the latter case, the coin in its fill might imply that this phase was later than AD 270. Alternatively, if undetected robbing had occurred, which was most likely to have been in the Roman period, the lowest course may have been deliberately left so that the channel still functioned. Another possibility is that hasty robbing merely removed the visible stone, at a stage when the first course was obscured by silting.
The flimsy nature of the front wall of the intra-mural building suggested the likelihood of a timber superstructure. The front of barrack S, excavated in Davygate in 1956, also of roughly-dressed blocks with mortar, had been found standing c. 1.20m high; but there too the excavator commented on its poor workmanship (Wenham, 1962, 543, fig. 17). If the present wall was correctly believed to have been at least 15.6m long, then this was too great to represent a barrack block lying perpendicular to the defences, and it would also be difficult to fit in barracks parallel to the south-west front. The building was therefore considered to have had some other function, as previously forecast by implication (RCHMY 1, 40). If this was so, then the fortress layout in this period may have differed considerably from that at Caerleon and Chester. Though symmetry with buildings south-east of the porta praetoria might be expected, it should be appreciated that barrack blocks S, P, Q and R have been postulated from a minimum of evidence (Wenham, 1962, 573–5, figs. 2 and 29; RCHMY 1, 40–1, figs. 3 and 29).

From an archaeological viewpoint it was unfortunate that the construction of SW5 and the contemporary intervallum road had been the occasion for major earth removal, as already seen. This was logical for levelling purposes in that the natural ground surface along the south-west front dips downwards towards the south angle. The late Roman activity on this site thus removed much of the evidence for the earlier occupation. Such evidence is more likely to exist under the deeper strata to the south-east, if it has survived the intrusions of cellars and modern building operations.

As noted above, Period 4 should lie between the late 3rd and the late 4th century.

**Periods 5 and 6**

Following the demolition or collapse of the intra-mural building on to the adjoining roadway, which occurrence was dated to after c. AD 360 from the pottery, the nature of the overlying deposits favoured gradual accumulation rather than any sudden reconstitution of the area. Although a sub-standard intervallum road surface was laid over the accumulation, there was no apparent successor to the intra-mural building, nor did the road seem to have enjoyed much usage. A further period of structural inactivity again preceded some revival, with the laying of another identical intervallum roadway. The impression given was consistent with a decay of military order towards the end of the Roman period, as has been inferred in other excavations on northern military sites. Ceramic and numismatic material implied considerable late 4th century activity, which might have extended into the 5th century, and it has been established that Periods 5 and 6 relate to a time after c. AD 360.

**Anglian and Anglo-Scandinavian occupation**

Within this range, evidence for possible Anglian occupation in the area was restricted to three potsherds, one of them the latest object in a small pit. Most relevant levels, however, would have been destroyed by later operations. To the south-west of this excavation, a possible palisade on the line of the earlier ditches was thought to have been added to the defences in the 9th to 11th century (pp. 63, 64 above).
Medieval and post-medieval occupation

Although part of only one building was seen, presumably the rear of a Finkle Street (Museum Street) property, the number of pits containing 12th to 15th century pottery implied some density of local occupation. Most of the site may well have been vacant or gardens into post-medieval times, and utilized for rubbish disposal. The medieval remains will be described in AY 10.

The area was certainly occupied by smallholdings in the early 19th century (Crosse, 1825), though it became progressively more built-up after the foundation of the York Festival Concert Rooms in 1824. This establishment served as a musical and cultural centre throughout the Victorian era. Even after eventual conversion into Museum Chambers, with four floors of office accommodation, the ground floor was still used for York Festival events and other community functions until closure in 1973, after almost 150 years as a public centre. An account of the post-medieval remains will be given in AY 13.
Acknowledgements

York Archaeological Trust is most grateful to the owners of the site, York City Council in 1972–3, and Newham Properties Ltd in 1974, for permission to excavate. Particular thanks are due to Mr M. Cooper of Newham Properties and the consultant architect, Mr E. Trotter, for their help and interest throughout, and similarly to Mr E. Pearson, York City Planning Officer, and Miss J. M. Hargreaves, Deputy Planning Officer. The 1972 excavation was financed wholly by the Department of the Environment, while the later work also received major support from the Department, York City Council, the Yorkshire Counties and the Leverhulme Trust.

The staff of the City Architect’s Department advised on safety aspects; Mr J. R. Nursey of the City Engineer’s Department helped with the loan of surveying equipment; and the staff of the Clerk to the Council bore the restriction of their car park with great patience.

Mr D. Phillips, Director of the York Minster Excavation Group, gave advice and photographic help, and Mr R. Morris of the York Minster Excavation Group helped with the recording; Mr L. P. Wenham advised both in 1972 and 1973–5 on his own excavation on the site; Dr G. Simpson and Mrs K. F. Hartley helped with the pottery. Thanks are also owed to Mr L. P. Wenham, for much background information, and to Mr P. C. Buckland, Mr J. P. Gillam, Mr P. Hill, Mr D. Phillips and Dr Graham Webster for various invaluable suggestions.

The following excavation staff had special responsibilities in the 1972 work: Mr G. M. Foster (Surveyor); Mr M. E. Harrison (Draughtsman); Miss E. Storey (Finds Recorder).

Amongst the many colleagues without whom the 1973–5 excavations could not have been accomplished, special responsibilities were undertaken by: Dr D. M. Palliser (Historian); Mr B. Constantine, Mr J. MacIlroy (Area Supervisors); Mr J. C. Bailey, Mr D. Jeffrey, Mr R. Bartkowiak, Mr A. G. MacGregor (Photographers); Mr F. Covalt, Mr B. S. Ayers, Mr F. R. Raines, Miss H. Visser (Draughtsmen); Mr G. M. Foster (Surveyor); Miss L. H. Wren, Mrs J. R. Magilton (Finds Assistants); Mr C. H. M. Clarke, Miss J. P. Holdsworth, Mr J. S. R. Hood, Mr H. K. Kenward, Mr D. J. Rackham, Mr J. A. Spriggs, Mr J. B. Whitwell (Specialist Advisers).

Gratitude is due to all these, to the numerous excavators in both 1972 and 1973–5, and to everyone else who assisted in the work.

The drawings for this report have been prepared by Mr F. R. Raines. Photographs were taken as follows: Pls. XVII, XX and XXVII by Mr A. G. MacGregor, Pl. XVIII by Mr S. Coll, and the remainder by Mr J. C. Bailey. The blocks for Pl. XVIII were first published in EY Int. Rep. 1 and have been kindly loaned by the Society of Antiquaries. The summary was translated into French by M H. Gallinié and into German by Mrs K. Aberg. The report has been under the editorial supervision of Mrs V. E. Black. It is published with generous subventions from the Department of the Environment and Sessions Book Trust for which York Archaeological Trust is most grateful.
Summary

Excavations by York Archaeological Trust between 1972 and 1975 took place in advance of hotel construction on the known site of interval tower SW5, on the south-west front of the legionary fortress. Little stratification survived in Roman levels. The 1st century defences were a ditch and turf-revetted rampart, whilst two post-pits probably indicated a six-post timber interval tower and, with a similar tower discovered in 1956–57, provided the first evidence for the number and spacing of these. A replacement ditch further to the south-west may have accompanied the insertion of a stone wall into the rampart front, possibly in the early 2nd century. Subsequently a large stone building was erected behind the rampart and over the intervallum road. Probably in the late 3rd or the 4th century the external ditch was redeveloped, the curtain wall rebuilt, and the massive polygonal-fronted masonry interval tower SW5 incorporated as one of six similar towers along this front; it is the first to have been completely excavated. The repositioned intervallum road was flanked to the north-east by a stone-based culvert and a sidewalk, adjacent to a long stone building, probably not a barrack. While the latter was not replaced following its demolition after c. AD 360, the intervallum road was relaid twice with intervening periods of neglect. A small pit near SW5 contained late or post-Roman grass-tempered pottery. A possible palisade on the line of the external ditches might have supplemented the defences in Anglo-Scandinavian or Anglo-Norman times.

Résumé

De 1972 à 1975, le York Archaeological Trust a réalisé une fouille à l'emplacement de la tour SW5 préalablement à la construction d'un hôtel sur le site. Déjà localisée, cette tour faisait partie de la face sud-ouest du camp de la Légion. La stratification des niveaux d'époque romaine avait pour la plupart disparu.

Les organes défensifs du retraitement du 1er siècle sont constitués par un rempart de terre couvert d'herbe précédé par un fossé. Deux trous de poteaux suggèrent la présence d'une tour fondée sur six poteaux; la découverte de cette tour, après celle d'une autre semblable en 1956–57, fournit les premières indications quant au nombre et à l'espacement des tours de défense du retraitement primitif. L'établissement d'un rempart maçonné (au début du 2ème siècle ?) peut avoir été accompagné par le creusement d'un fossé remplaçant le premier plus au sud-ouest. Un grand bâtiment de pierre est alors construit à l'intérieur du camp, contre le rempart; ce bâtiment recouvre le tour de ville primitif. Vraisemblablement à la fin du 3ème siècle ou au 4ème siècle le fossé est recreusé, le mur d'enceinte reconstruit et la tour SW5, maçonnerie massive de plan polygonal, ajoutée avec cinq tours semblables le long de la face sud-ouest du rempart du camp. Elle fut la première à être l'objet d'une fouille systématique. Le nouveau tour de ville, déplacé, est bordé au nord-est par un caniveau dallé et un trottoir parallèles à un long bâtiment de pierre qui ne semble pas être un bâtiment de casernement. Alors que ce dernier n'est pas remplacé après sa démolition (vers 360 au plus tôt), le revêtement du tour de ville est refait à deux reprises; ces restaurations sont entrecoupées de périodes où l'entretien de la voirie n'est pas assuré. Auprès de la tour SW5 une petite fosse contient du
mobilier céramique attribuable d’après ses qualités techniques aux derniers temps de la présence romaine où à la période immédiatement postérieure. Soit à l’époque anglo-scandinaive, soit à l’époque anglo-normande, il est possible qu’une palissade alignée sur les fossés ait renforcé le système défensif.

**Zusammenfassung**

Abbreviations

Most abbreviations used are those recommended by the Council for British Archaeology but the following are used in addition. Bibliographical brief references used in the text are explained in the bibliography.

AY     The Archaeology of York
EY Int. Reps.  Excavations in York: Interim Reports
Gillam 1–350 Pottery form numbers in Gillam (1970)
RIB    R. G. Collingwood and R. P. Wright, The Roman Inscriptions of Britain (1965)

Bibliography

Benson, G., 1919. York 2, Later Mediaeval York from 1100 to 1603 (York; reprinted in An account of the City and County of the City of York, 2 vols., East Ardsley, 1968)
Benson, G., 1925. York 3, From the Reformation to the year 1923 (York; reprinted East Ardsley, 1968, see Benson 1919)
Cooper, T. P., 1904. York: the story of its walls, bars and castles (London)
Corder, P., and Birley, M. I., 1937. A Pair of fourth-century Romano-British Kilns near Crambeck, Antiq. J. 17, 393–413
Crosse, J., 1825. An Account of the Grand Musical Festival held in September 1823 in the Cathedral Church of York, Appendix 6, 22–3, with plan (York)
Davies, R., 1880. Walks through the City of York (London)
Hawkes, S., 1974. Some recent finds of Late Roman Buckles, Britannia 5, 386–93
Wellbeloved, C., 1842. Eboracum or York under the Romans (York)
Wenham, L. P., 1974. Derventio (Malton) (Huddersfield)
Plate XVII  Interval tower SW5. The site, looking north-east, showing York Minster and Assembly Rooms (top right). Scale unit 0.5 m
a The first ditch: section, looking north-west. Scale unit 0.1 m

b Later ditches: section, looking south-east. Scale unit 0.1 m

Plate XVIII Defensive ditches west of interval tower SW5
a  Timber corduroy under rampart. Scale unit 0.1 m

b  Section through rear of rampart, showing turf revetment. Scale unit 0.1 m

Plate XIX  Early rampart south-east of interval tower SW5
Plate XXIa  Interval tower SW5: foundation of north-west wall showing mortar fillets. Scale unit 0.1 m

Plate XXIb  Timber tower: post-pit 155. Scale unit 0.1 m

Plate XXIc  Timber tower: post-pit 155, partially excavated to show post-hole. Scale unit 0.1 m
Plate XXIIa  Intervalum building: north-west section showing probable floor and other internal features (223–8). Scale unit 0.1 m.

Plate XXIIb  Intervalum building: stone foundation 223, looking south-east. Scale unit 0.5 m.
Plate XXIIIa  Interval tower SW5: section through foundations of polygonal front. Scale unit 0.1 m

Plate XXIIIb  Interval tower SW5: junction with foundation of fortress wall. Scale unit 0.1 m
Plate XXIVa  Intervalium road 646, contemporary with SW5, looking south-west. Scale unit 0.1 m

Plate XXIVb  Penultimate intervalium road, 638, looking north-west. Scale unit 0.1 m
Plate XXVa  Intervallum road 646: detail showing wheel-ruts. Scale unit 0.1 m

Plate XXVb  Latest intervallum road, 565: looking north-west. Scale unit 0.1 m
Plate XXVIa  Intra-mural building contemporary with SW5, looking north-west. Scale unit 0.1 m

Plate XXVIb  Tooling on ashlars in front wall of SW5. Scale unit 0.1 m
Plate XXVIIa  Latest intervallum road, 565: detail of surface. Scale unit 0.1 m

Plate XXVIIb  Culvert 416 beside intervallum road. Scale unit 0.1 m
Plate XXVIII  Interval tower SW5. The site, looking south-west. Scale unit 0.5 m