IV
The Roman Fort at Halton Chesters: A Geophysical Survey

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INTRODUCTION

THE Roman fort of *Onnum* was built on the line of the Roman Wall, and is situated some fifteen miles west of Newcastle upon Tyne, in the parish of Great Whittington. The fort is situated immediately to the east of a deep ravine, known as the Fence Burn, on a natural ridge *c.* 185 O. D. It commands extensive views south towards the Tyne valley, and to the west along the Roman Wall towards the Portgate. The view to the north is more limited, whilst the view to the east is obscured by Down Hill, 0·8 km away (Blood and Bowden 1990). The site is situated on glacial boulder clay overlying limestone formations (*GSGB* 1977).

The fort is located in two adjacent fields divided by the B6318. The field to the south is further divided by a north–south carriageway leading to Halton, with an ornamental entrance onto the highway. The field to the north has been cleared of stone since 1802–3 and has been extensively ploughed; no internal features are visible except as parch marks in a particularly dry summer. The field to the south has not recently been ploughed, and is partly used as pasture land. The mounds and depressions of structural features and later excavation trenches are well defined. These features were recorded in a detailed topographical survey by the Royal Commission on the Historic Monuments of England in July and August 1989 (Blood and Bowden 1990). There are no modern buildings within the interior, nor any upstanding Roman masonry. Well defined broad ridge and furrow is present to the south and east of the site.

It is important to place the fort within its archaeological and historical context. The fort is the fifth along Hadrian's Wall from Wallsend, and is situated between Rudchester to the east and Chesters to the west. The fort at Corbridge lies to the south, and Dere Street crosses the Wall *c.* 1 km to the west through the Portgate.

The Roman place-name of *Onnum*, known from the Ravenna list, is preferred to the name of *Hunnum* from the *Notitia Dignitatum* (Birley 1961). The second century garrison is unknown; Birley suggests that the "Hadrianic plan provides for a cavalry regiment" (ibid., 170), whilst Breeze and Dobson suggest a *cohors quingenaria equitata* (1991, 244). The third century garrison and that recorded in the *Notitia Dignitatum* is the *quingenaria ala, I Pannoniorum Sabiniana* (ibid., 250).

The fort was built during the governorship of Aulus Platorius Nepos no later than 126, but it is considered to have been abandoned during the decade before 150. The site was possibly reoccupied in the 170s, although there is evidence of destruction, which also occurred at Rudchester and Corbridge, during the next decade. It was extended and remodelled in the early 3rd century, during the Severan reconstruction of the Wall. There is further evidence of rebuilding in the late 4th century when timber buildings were built over rubbish deposits on new alignments.

The archaeological history of the site has been summarized by Birley (1961, 170–2) and Daniels (1978, 84–9). The major excavation on the site by Simpson and Richmond in 1935–6 (1937, 151–70) located the east, west, and north gates, and identified barracks and other buildings in the north eastern section of the *praetentura*. An inscription was found by the west gate (*RIB* 1427) which recorded its erection under the Emperor Hadrian and the gov-

ernor Aulus Platorius Nepos. Significantly it was found that the Wall ditch had been excavated and then filled in, before the fort was constructed; this had resulted in substantial masonry in the foundation walls to the east and west gates. The excavations by Jarrett in 1956–9 (1959, 177–90) in the south western portion of the fort, and Gillam in 1960–1 (Taylor 1962) in the area of the granary and possible hospital, have not been fully published.

THE SURVEY (FIGS 1 AND 2)

The survey was carried out by Jonathan Berry and formed the basis of a dissertation (Berry 1995) which contributed to an MA degree in Archaeological Survey, at the Department of Archaeology, University of Durham. Ellen Hambleton and the co-author assisted in the fieldwork. The survey was carried out in July 1995.

An archaeologically dedicated Geoscan FM36 fluxgate gradiometer was used to produce a sub-surface image of the site; the instrument used allowed this to be achieved efficiently. The site was divided into a grid matrix of 30 m by 30 m boxes. It would have been preferable to rotate the axis of the grid matrix substantially away from that of the fort to minimize artificial bias introduced by the sampling direction, but the site's position in relation to the B6318 and the adjacent field boundaries determined that the main matrix was aligned north–south.

The traverses were walked at 1 m intervals with 0·5 m sample intervals, in a parallel fashion to enable a high standard of raw data to be obtained. Similarly, the traverses were oriented north–south, parallel with the earth's magnetic field to enhance the detection of archaeological anomalies. A 1·0 nT sensitivity was used. The magnetometer was used to measure and record the magnetic field gradient, and the zero drift was logged at the end of each grid to enable the correction of magnetic drift which travels with time, and particularly with variations in ambient air temperature.

The data was downloaded into Geoplot 2·01, and is presented in its processed form, using half-tone shade plots. The raw data has been processed by the application of a Gaussian Low Pass Filter. Whilst data processing is conducted at the expense of altering the original raw data, this function has been applied to smooth cosmetically the graphic image, and to enhance large scale, weak archaeological features.

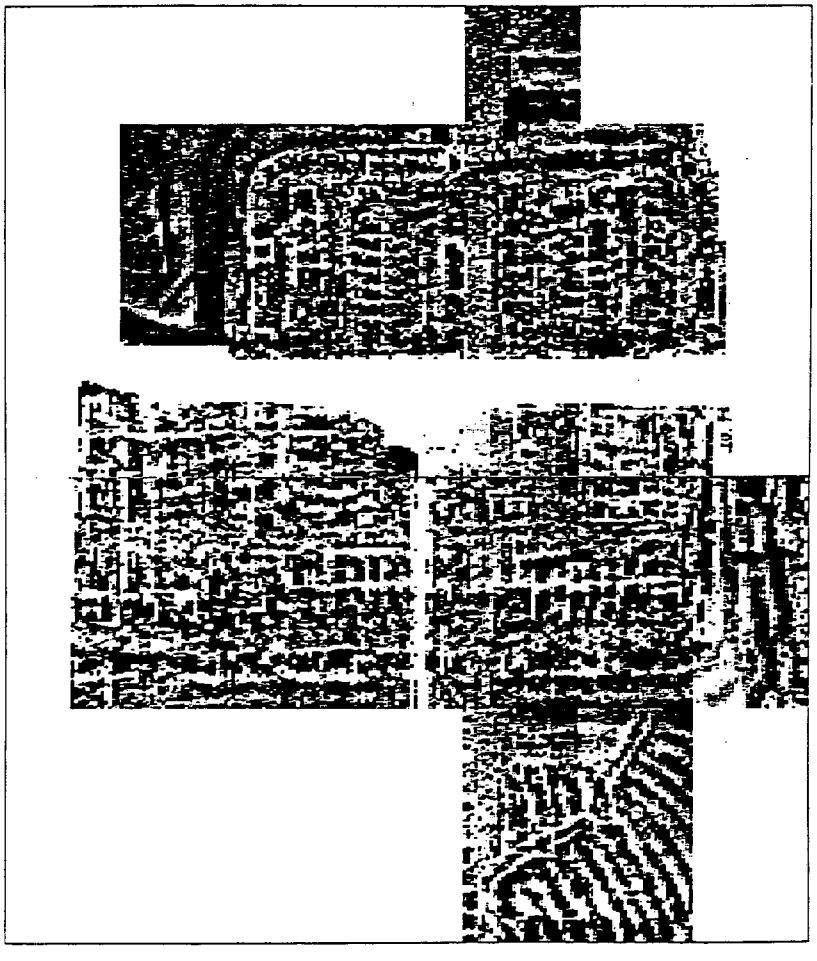
INTERPRETATION (FIG. 3)

The Defences

Evidence of two ditches can be seen to the north and north-west, (2) and (3). These defences comprise an outer ditch 3 m wide with an inner ditch *c.* 7·5 m wide, separated by a *c.* 6 m space. There was a *c.* 6 m berm between the inner ditch and the fort wall. The return of both of the inner ditches up against the north gatehouse can be clearly seen, so preventing access on to the berm, together with the stopping of the outer ditch just short of the line of the causeway. The apparent asymmetrical returns of the inner ditch suggests that the east portal was blocked when they were dug. Simpson and Richmond (1937, 162) had found during the course of the 1936 excavations that all structural remains east of the *spina* had been removed. Evidence of the inner ditch can also be seen to the south and south-eastern section of the defences (3).

Both the inner and outer ditches return around the western side of the fort, with the inner ditch joining up with the Wall ditch (1). The Wall ditch is not parallel to the east–west axis of the fort and its extension. A channel of unknown purpose would seem to connect the Wall ditch in the western ditch to the northern part of the fort.

Jarrett (1959, 183) showed that the southern section of the Hadrianic western rampart within the area of the extension had two ditches and located the inner lip of the outer ditch *c.* 5 m from the outer face of the rampart wall. The ditch was *c.* 4 m wide. This places the outer lip to the ditch *c.* 19 m from the rampart wall, as compared to *c.* 22·5 m to the northern defences.



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Units	Absolute		

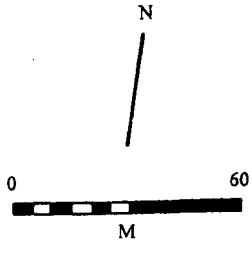
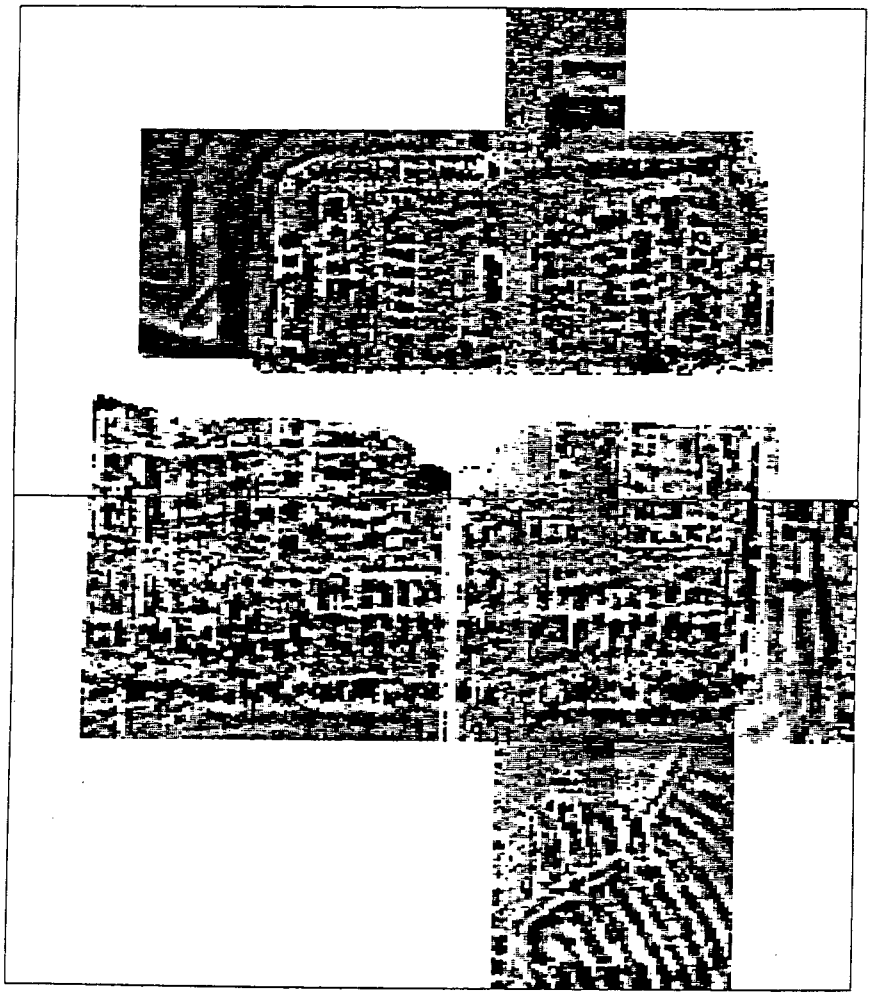
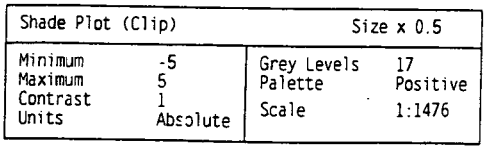


Fig. 1 Raw magnetometer results.





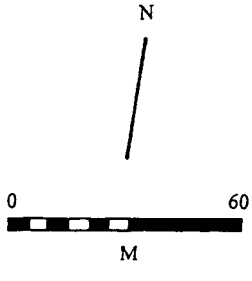


Fig. 2 Processed magnetometer results.

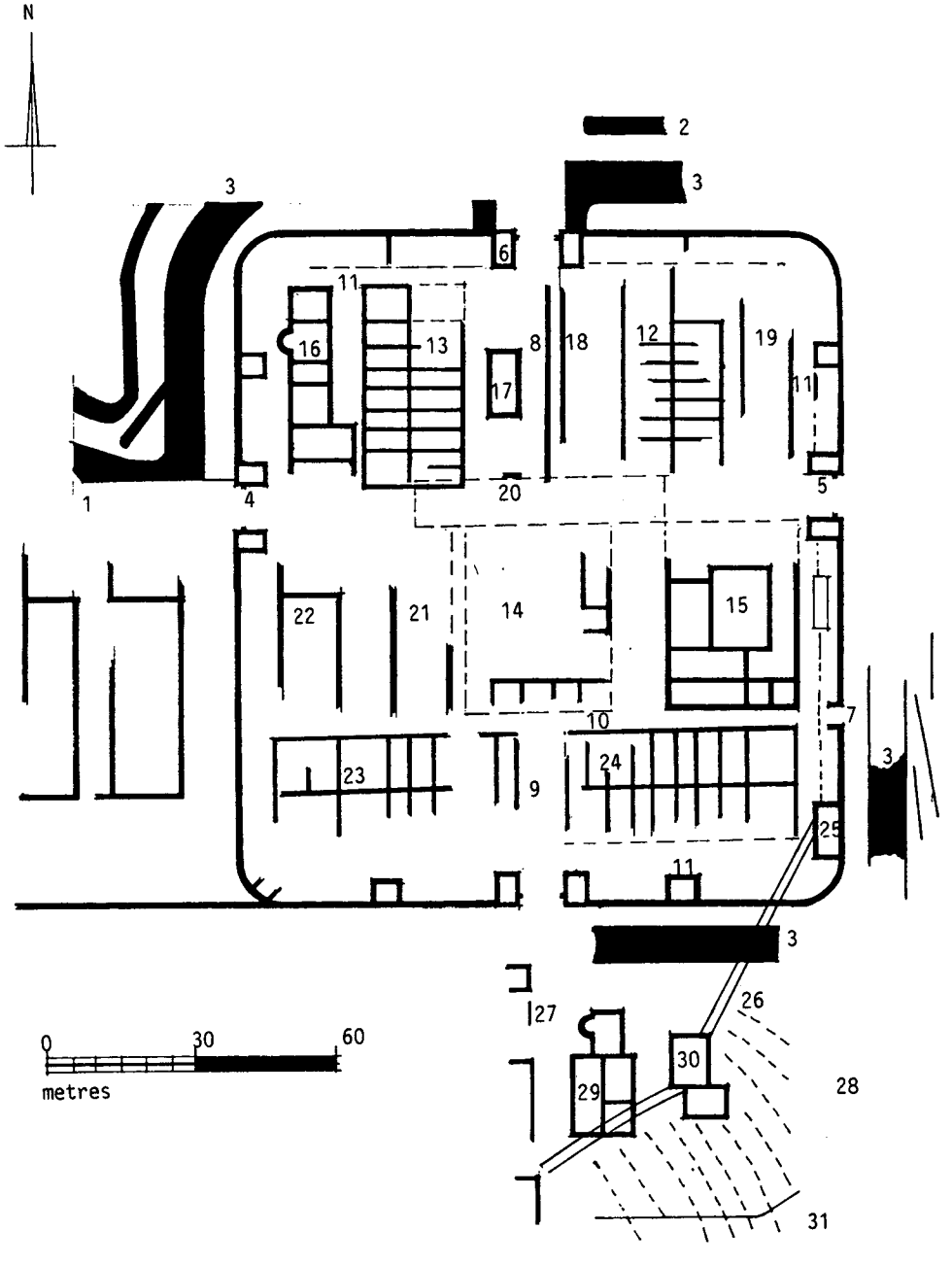


Fig. 3 Interpretation.

Comparisons of ditches from other forts *per lineam valli* are limited. Petch cut a section through the eastern defences at Benwell (Petch 1927, 145), and found two ditches 6 m wide separated by a 1·5 m space, with a berm of 3 m. Simpson and Richmond found a similar arrangement to the western defences of the same fort, with the exception that the inner ditch was 7·6 m and the outer ditch 3 m (Simpson and Richmond 1941, 8); a situation very similar to that found at Halton Chesters.

Little research has been carried out on the ditch systems of forts, and the recent work at South Shields has proved that the sequence of ditches was extremely complex (Bidwell and Speak 1994, 127–44). Recutting and replanning of the ditches had taken place there on many occasions, for a ditch section cut through clay sub soil had a limited life. No conclusion can therefore be drawn on the dating of the ditches, except that it is probable that the final arrangement was based on the Hadrianic two-ditch configuration.

The stone rampart wall is revealed strongly as a negative feature and can be identified over much of its length. The north and west wall of the first extension are beneath modern field boundaries. The positions, if not the entire structure of the interval and angle towers can be elucidated, particularly in the north field. The south-east angle-tower contains the characteristic bi-polar readings of a kiln or bread oven. The interval tower to the north (7) is aligned with the *via quintana*, and was probably the Hadrianic lesser east gate, as traces of a road can be seen to project east beyond the fort wall. Features of unknown function were built into the turf backing to the stone rampart wall; these could have been ovens, latrines, or small buildings.

The north guardchambers to the east and west gates (4) and (5) can clearly be identified. Simpson and Richmond (1937, 157–8) found that blocking of the portals had occurred to both gates; this could account for the absence of a causeway across the ditches to the west gate. A strong, thermoremnant, bi-polar anomaly (6) represents the position of the west tower of the north gate, and is probably indicative of a ground floor kiln or bread oven as attested in the ramparts at Housesteads (Crow 1995, 36–7). The east tower and water tank have not been detected, thus matching the lack of excavated evidence.

As the inner ditch returns up against the north face of the guardchambers to the north gate, this gives rise to two conclusions. If the guardchamber was structurally complete, it would have been necessary to form foundations to the external walling abutting the ditch to a depth at least equal to the ditch, for which there are no known parallels. Exposed foundations would have given rise to instability of the structure, leading to eventual collapse. Alternatively it is possible that the return ditches were dug at the end of the Roman period, or in the sub-Roman period, when the gate was in a state of collapse.

The south gate and south-west angle tower have both been located. The latter is a weak feature overlain by later structures, indicative of the removal of its superstructure. There is no evidence of the lesser west gate and interval tower.

The course of the ditch from the extension to the south gate was not surveyed, although the topographical evidence suggests that it was substantial. The ditch can be observed to the south-east of the south gate; it does not return across the berm, and is 6·5 m wide. The ditch can be seen to turn north, but its course is distorted by the later ridge and furrow; however, the known width of the berm would allow a reasonable reconstruction.

INTERIOR OF THE FORT

The Street Pattern

The general street arrangement within the fort, which faced north, followed the traditional pattern for a Hadrianic fort. The streets are identifiable as linear anomalies of −1 to +1 nT. The *via principalis* is overlaid by the B6318, and cannot be identified. The *via praetoria* (8) can be seen to continue beyond the outer ditch, where aerial photographic evidence shows it to fork to the north and north-

east (Birley 1961, 172); the geophysical evidence shows the road probably aligned to the north-east.

The east and west gates (4) and (5) have not been set out directly opposite each other in the east and west walls but with the western gate being positioned more to the south. This has the effect of causing both the *via principalis* and the *via quintana* to run on a slight southerly deviation to the east–west axis. This deviation can be seen in most of the buildings in the *retentura*, with the major east–west walls following the alignment; the north–south walls however seem to follow the true axis.

The exact position of the south gate is assumed in the interpretation by placing it across the north–south road entering the fort. From Simpson and Richmond's report (1937, 157–64), it is possible to calculate the overall widths of the gates to be *c.* 19 m.

The later alterations to the buildings in the north-east section of the *praetentura* fronting the *via praetoria* (ibid., 166) project into the eastern side of the original line of the road, reducing its width to *c.* 1·8 m. This would seem to support the blocking of the east portal of the north gate at a relatively early date.

The *via decumana* (9) can be traced from a point *c.* 60 m south of the south fort wall, parallel to and *c.* 15 m east from the lane to Halton. It joins the *via quintana* (10) *c.* 34 m north of the south fort wall, on the presumed central axis of the *principia*. Some 15 m to the east another north–south aligned street dog-legs around the *principia* to join the *via principalis*. An *intervallum* street (11) can be seen linking the interval towers together. Many of the streets within the fort and extension have not been identified.

A wide space would seem to have been formed between the *principia* (14) and the *praetorium* (15), with the street itself running alongside the *principia*. It is possible that this is as a result of a later reduction in the size of the *praetorium*.

The Praetentura

The buildings to the *praetentura* are clearly defined. To either side of the *via praetoria* can be seen evidence of a double barrack block, each *c.* 20 m wide by at least 45 m long, with their southern ends beneath the B6318. The barracks were positioned *per strigas* (12) and (13), with a spine wall dividing the *contubernia*; the larger rooms for the officers' quarters were positioned adjacent to the *intervallum* road. It is likely that Hadrianic stables were sited adjacent to the barracks. Whilst it is not proposed to discuss the size of the garrisons, it can be seen that each barrack block would seem to accommodate two rows of 8 *contubernia* placed back to back. The form of the barrack block is similar to that seen at Benwell (Simpson and Richmond 1941, 25–30).

The eastern half of the *praetentura* has been subject to excavation, and an interpretation of the buildings has been presented by Simpson and Richmond (1937, 162–8). The two parallel walls to the east of the *via praetoria* do not match the position of the two walls found by the excavators in 1936 (ibid., 165). The westernmost of these walls, built over the earlier line of the *via praetoria*, would seem to confirm and reflect the closing of the eastern portal. The west wall of the stores building exists to the east of this, the building measuring *c.* 5·5 m wide and *c.* 40 m long (18). It would seem possible that building (12) includes the remains of later chalet-type buildings over it (ibid., 166–7). A building of unknown purpose (19) is recognizable east of the Hadrianic barracks building; this is in the approximate position of the possible barracks excavated by Simpson and Richmond (ibid., 166). The building fronts the *intervallum* road.

In the third century a bath house was erected on the western side (16), probably overlying a Hadrianic stable or store. This was identified in the 19th century and a plan drawn by John Dobson (Daniels 1978, 87); with its aid, most of the rooms can be ascertained. The rooms to the south are the least well defined; there are no bi-polar anomalies to suggest the position of furnaces.

A strongly defined building (17), *c.* 7 m wide by at least 15 m long, is situated to the west of the *via praetoria*. This building may extend

further to the north and south; its function is unknown but it is possibly contemporary with the later building on the east side of the road.

The positive linear anomaly aligned along the south end of the north field between the north towers of the east and west gates can be identified as the former Wall ditch, particularly as it joins with the fort ditch where it returns on its western course. The forehall has not been identified.

The Latera Praetorii

Much of the *principia* is, unfortunately, located beneath the junction of the B6318 and the lane leading to Halton, and the large bi-polar anomaly from the cattle grid at the end of the lane obscures more. There are few traces of this building, possibly because it was one of the best sources of finest stone, although the plots indicate occasional internal walls. The south-east corner can be inferred from the street running north from the *via principalis*—whilst the negative area to the east of the cattle grid anomaly probably represents the courtyard area and eastern ambulatory, with possibly the cross-hall and the rear range of five rooms to the south. If one assumes that the building is set out symmetrically on the axis of the *via praetoria*, its width can be calculated as *c.* 30 m; the length can be estimated at *c.* 39 m, assuming that the front wall abuts the *via principalis*. Simpson and Richmond established that a forehall was constructed in front of the *principia* (ibid., 168–70) and from Richmond's papers, (The Richmond Archive on Roman Britain, Ashmolean Library, Oxford), it has been calculated that it was *c.* 48·77 m long by *c.* 9·14 m wide (20), with the length west of the *via praetoria* being *c.* 22·15 m. By plotting this information on the geophysical survey, it can be seen that the eastern end of the forehall would probably bear on the western wall of the *praetorium*, and its western end finish midway along the front elevation of the granary; its length would probably be sufficient to cover the north door. Its width would encompass the whole of the *via principalis*, and it must have gained support on its southern side from the buildings abutting the *via principalis*, a series of piers supporting the northern side.

The *praetorium* can be identified with its central courtyard and surrounding ranges of rooms. If it is assumed that the front elevation abuts the *via principalis*, its length would be *c.* 39 m, equal to that of the *principia*; its width measures *c.* 28 m. The plot shows a series of ill-defined ranges of rooms around a central courtyard, *c.* 10 m wide by *c.* 14 m long, which appears to contain a central building of unknown date or function. The position of the granary cannot be identified with complete confidence, although slight evidence of walls on the survey does fit in with its known position (21), west of the *principia* as found by J. Gillam. From the evidence of Gillam's excavation the granary was seen to be 10·4 m wide by a calculated 41·15 m long. If the granary is to fit in the *latera praetorii* the main body of its length must equal that of the *principia* and *praetoria* at *c.* 39 m. There is no reason, however, why a loading bay could not have projected onto either of the streets to the north or south.

The building at the west is possibly the hospital (22).

The Retentura *and extension*

Two Hadrianic barrack blocks can be seen (23) and (24) aligned *per scamna*, placed symmetrically to each side of the *via decumana*. Both these back-to-back barracks would appear to comprise of two sets of 8 *contubernia* and the eastern block was *c.* 20 m wide overall by at least 50 m long. A latrine was sited in the south-east corner at the lowest part of the fort (25); the drain running from the latrines can clearly be seen running south-west (26).

No interpretation is offered for the buildings in the extension to the fort.

The Vicus *and area south of the fort*

The road from the south can be seen running up to the fort (27), with buildings built right up to its edge on its western side. From this it would seem that the *vicus* extended to the west

and also to the south, probably as far as a known wall. Medieval ridge and furrow is clearly defined (28) and terminates at the drain (26).

The drain (26) appears to consist of two parallel stone walls *c.* 3 m apart with a positive magnetic fill; it can be traced from the latrine by the south-east angle towers to the road leading to the south gate. No drains could be ascertained within the fort. To the east of the road on the line of the drain can be seen two buildings (29) and (30). That to the west (29) is almost certainly a bath house, with the hot room to the north with its apsidal projection, and the *apodyterium* and latrine to the south. The form of the bath house bears a similarity to that found at Great Chesters (Gibson 1903, 46). The use of the building to the east (30), *c.* 7 m wide by *c.* 16 m long, is harder to deduce but what does seem clear is that the drain changes direction to pass through the length of the northern section of this building. It is possible that this building was an additional latrine, perhaps built for the use of the extension to the fort. The size is comparable to that in the south-east angle at Housesteads which is *c.* 6·5 m wide by *c.* 11 m long. If a new latrine was constructed it would seem sensible to connect it to the main drain to the fort, so as to ensure that it was regularly flushed.

The Vallum

The survey was fortunate to detect the *vallum* ditch (31) on the edge of the southernmost grids, underlying the ridge and furrow. It consisted of an east–west aligned linear feature, with a high magnetic susceptibility. The eastern section can be seen to swing to the north-east. The ditch is 64 m south of the south fort wall and this matches the location on the 1936 Halton Chesters plan (Simpson and Richmond 1937, Fig. 1). The northern bank was not detected.

CONCLUSION

The survey has quickly and economically established the general planning arrangement of an important Wall fort about which comparatively little is known. The location within the fort of the four Hadrianic double barrack blocks, with what appears to be 16 *contubernia* in a block, gives rise to speculation as to the size of the garrison. The survey was designed to include the main features of the defences. These have been identified, together with the fort and Wall ditches, and also a small portion of the Vallum ditch. Unfortunately, due to the siting of the B6318 road and the carriageway to Halton, the buildings within the *latera praetorii* have not been traced so clearly. However, it has been possible to positively identify the *praetorium*, and calculate the approximate depth of the *latera praetorii*.

Only an interpretation of limited accuracy can be established, and hence only a tentative reconstruction is offered; excavation is the only certain method of verification. The interpretation has no doubt been further confused by post-depositional activities, such as stone robbing, agriculture and excavation which have affected the preservation of the structural remains, which are variable across the site. The geophysical method cannot distinguish between different phases of construction, and provides a composite plan of all the features within the instrument's depth range. Smaller stone features and those not made of stone, or below the range of detection, have been omitted at the recording stage. Any late fourth century wooden buildings have not been discerned at the sample interval and sensitivity chosen.

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