

Excavations at the Roman fort of Crawford, Lanarkshire

by Gordon Maxwell

INTRODUCTION

The existence of a Roman fort in the neighbourhood of Crawford, although suspected by General Roy,¹ was not proved until 1938 when excavation carried out by Dr J K St Joseph² on a site lying about 400 yds N of the village on the right bank of the Clyde put the matter beyond all doubt. The fort (NGR NS 954214) occupies a moderately strong position on a narrow plateau of hard glacial gravel protected on the south by the Clyde, and on the E and W by the Camps Water and Berries Burn respectively; access to the site from the N would have been impeded in Roman times by marshy ground (fig 1). Strategically, however, it was of great importance. At this point the Roman roads from Annandale and Nithsdale met, the latter probably crossing the Clyde to the SW of the site; the route then left the valley of the Clyde, avoiding the gorge-like defile between Crawford and Abington, and climbed northward over the Raggengill Pass to rejoin the Clyde just to the S of Coldchapel. The siting of the fort must also have been influenced as much by the presence in the area of a considerable native population³ as by the need to observe regular intervals between the garrisons guarding the Roman road network. It may be noted that the importance of the site was still recognised in medieval times when Crawford Castle, originally a seat of the Lindsays, but later ceded to the Douglas family, was built 50 yds to the S of the Roman site.⁴ Doubtless from this time onward the fort was used as a quarry for the construction or repair of the castle and its associated buildings. The evidence for prehistoric use of the site is discussed below (pp 187–8).

In the spring of 1961, with the assistance of Dr Anne S Robertson, the author supervised a trial excavation in the SW corner of the fort as part of a training course in the techniques of archaeological investigation. Participants in this course were drawn from senior pupils attending the Fife County Schools Easter Camp at Abington. The results of the first season's work were so promising that excavation continued for the next two years on the same limited scale, although now with the assistance of the senior pupils and staff of Lanarkshire Education Authority schools. In 1964 the author joined the staff of the Royal Commission on the Ancient and Historical Monuments of Scotland and was authorised to continue the excavation of the site as part of the preparatory field-work for the forthcoming *Inventory* of Lanarkshire. The primary object of the investigation was to recover the plan of the fort and its defences, and ascertain when the site was in use. However, the fort at Crawford is of such an unusual size, smaller than most forts that are associated with quingenary cohorts,⁵ and yet much bigger than a fortlet, that it was also considered desirable that at least a little should be learned about its internal layout. Accordingly excavation was continued until the autumn of 1966, usually with the assistance of fellow officers of the Commission, but in the final season with a team of diggers drawn largely from the

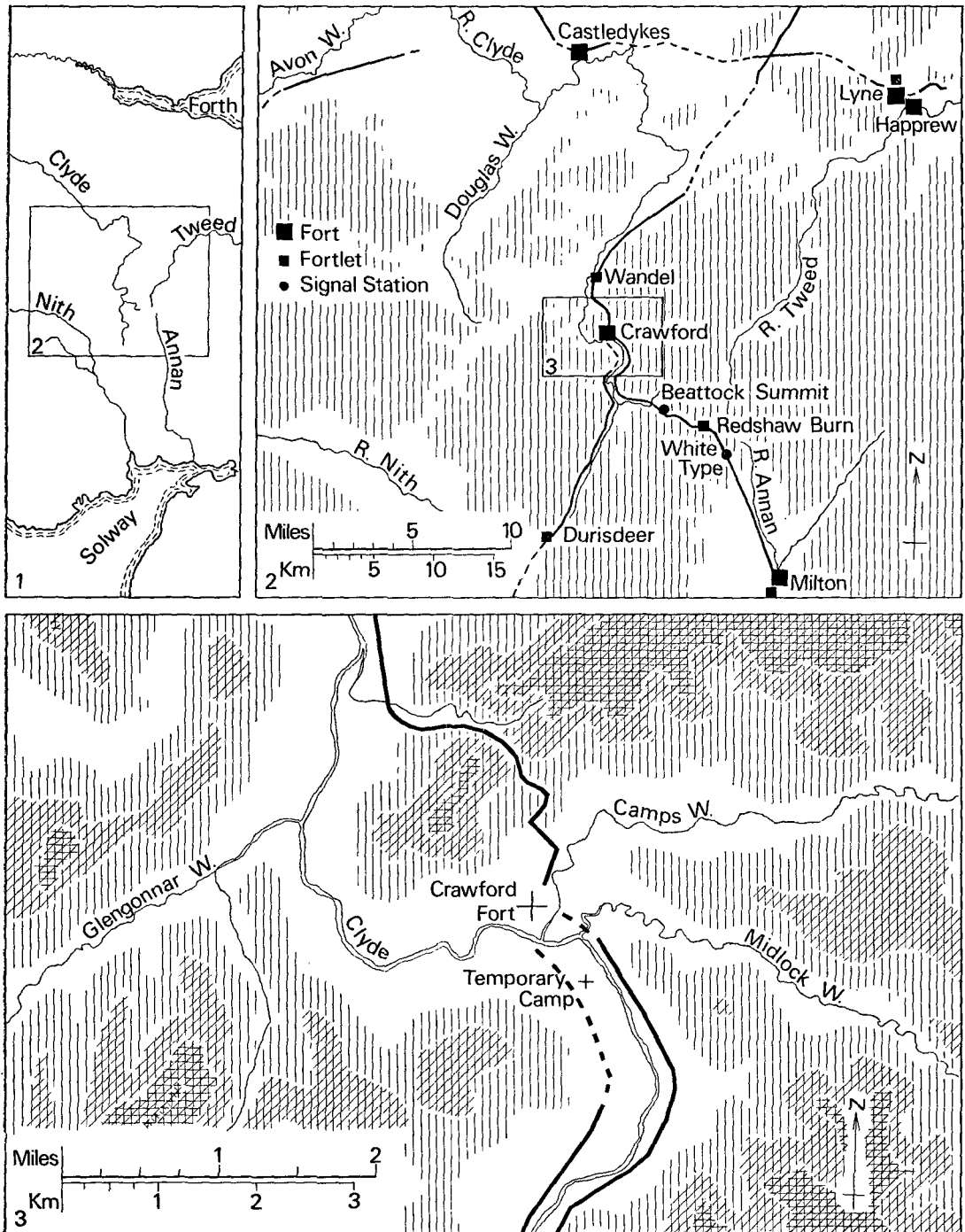


FIG 1 Location maps

Extra-mural Class in Archaeology at Edinburgh University. The present report is thus the result of 17 weeks' work in the field with a small labour force spread over six years. I am indebted to the Commissioners for permission to publish the material derived from the last three years' work in advance of the abbreviated description of the whole excavation to be given in the *Inventory*.

THE EXCAVATION

Although the defences of the fort are much denuded, it seemed, on superficial examination of the ground, to be an easy matter to define their limits. The position of four angles of the fort appeared to be clearly visible and the artificial scarping of the edge of the plateau was very conspicuous; however, it was soon discovered that these were only relative guides to the position of the defences. The fort had in fact undergone at least two major alterations, and the visible quadrilateral platform, as described above, represented on the N and E sides the line of the intervallum street of the last period, while on the S and W the crest line appeared to have been altered by recent agricultural operations. It was further discovered that the depth of the defence works was as much as 190 ft in places, a remarkable extent for such a small fort. Consequently it was impossible to obtain a complete section on the S and E sides, where the defences had been interrupted or obliterated by a modern road, the medieval castle and the outbuildings of Castle-mains farm, while the W half of the available ground was encumbered with a kitchen garden and several trees. It was, moreover, difficult to follow with a probe the course of any but the outermost ditches, as their profiles had been obscured by deliberate re-filling or re-cutting in Roman times. Nevertheless it proved possible to establish that there were three major phases in the development of the fort's defence system. In the first phase the fort measured 380 ft from E to W by 225 ft transversely over a turf or earth rampart about 18 ft in thickness. Immediately beyond this lay two ditches, the inner being about 8 ft wide, the outer 10 ft. A third ditch, measuring about 8 ft in width, was separated from these by a distance of 32 ft on the N front, where it ran more or less parallel to the inner ditches, and by as much as 85 ft on the W, where it followed a divergent course.

In the second phase there was practically no alteration in the thickness of the rampart or the area enclosed, but the ditch system was subjected to a fairly drastic overhaul. The inner ditch was re-cut to approximately the same width and depth as before, but the outer was completely dug away, being replaced by a ditch measuring 20 ft in width: this seems to have been of normal V-section except in the southern half of the W front where a mid-rib was left standing by the Roman diggers. The outermost ditch was re-cut and although its width seems to have varied, in general it was widened to about 14 ft.

In the third phase the defences were largely re-cast. Although the length of the fort remained the same the width was increased by filling both the inner ditches on the N and S fronts and building a new rampart on top of them. The external dimensions of the fort were now 300 ft from N to S by 385 ft transversely. The outermost second-period ditch was re-used, although it did not require to be re-cut, and a new ditch was dug beyond it at a distance of about 40 ft on the W; on the N front, however, the new ditch diverged from the older until it was as much as 85 ft to the N of it. Near the NW angle the space between the ditches was apparently filled with obstacles. The detailed evidence for this interpretation of the fort's history follows immediately.

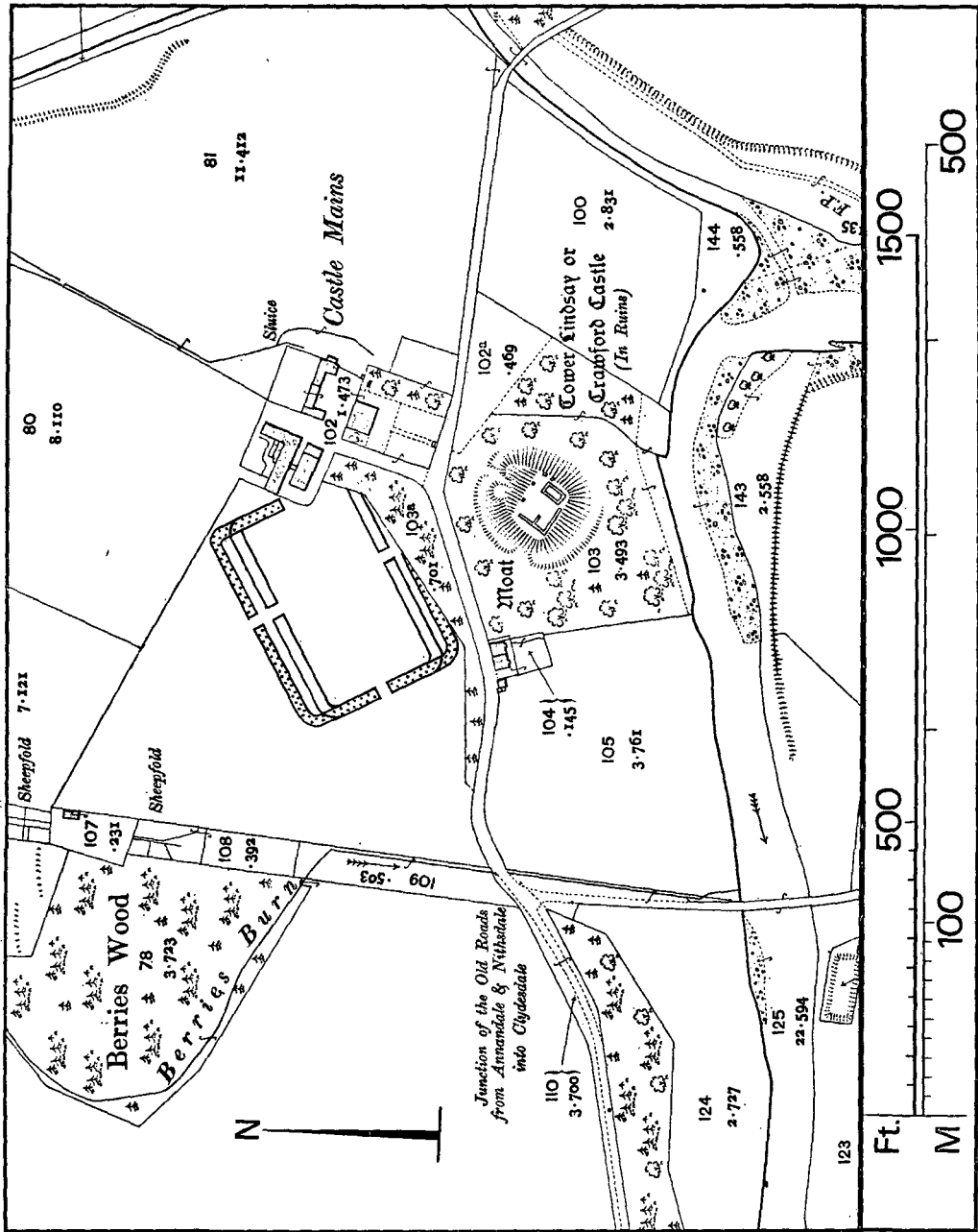


FIG 2 Site map

The Northern Defences (figs 4 and 5, pls 14a-15a)

For the reasons stated above this was the only side on which it proved possible to obtain a continuous section through the defences, and even here the task, already formidable by reason of its sheer magnitude – the total length was over 170 ft – was made more difficult by persistent bad weather.

First Period. At the S end of the section the intervallum street of the first period was preserved for a length of 10 ft. It consisted of a 6 to 9 in layer of natural gravel overlying two bands of grey and yellow clay – an unusual but not unparalleled arrangement in the construction of a Roman road.⁶

Of the composition of the rampart which stood to the N of this intervallum road, very little can be said as only the rear part has survived, and that only to a height of about 10 in. The material used was a fine brown earth which subsequently slipped back, or was cast down, to cover the N half of the road. However the front of the rampart, which was removed at the beginning of the second period of occupation, was probably built of clay, and the total width will have been in the neighbourhood of 18 ft. About 24 ft to the N of the outer edge of the intervallum street was a ditch whose counter-scarp face exhibited an unusual step, an indication that the ditch might have been re-cut. Although the stratification of filling material in the ditch did not immediately confirm this hypothesis, the evidence recovered from sections on the S and W fronts put the matter beyond doubt (see *infra*, p 155). In this case the ditch had most probably been re-cut, but in the second period of its use, no doubt as a result of routine cleaning operations, the soft clayey filling of the first ditch through which the scarp face of the second was cut, had been removed and the old profile revealed; originally it had been V-shaped and measured about 10 ft wide and 4 ft deep. In the first period of the fort a second ditch, of similar shape and dimensions, lay about 6 ft to the N, but no trace of it remained in the section because a much larger ditch was dug in approximately the same position at the beginning of the second period. The early outer ditch survived only at the gateways of the succeeding fort where the course of the larger ditch was broken for an entrance. At a distance of 29 ft beyond the larger ditch lay the outermost ditch of the first period, originally measuring about 7 ft by 3 ft; in the intervening distance the old land-surface was covered with a layer of clean yellow gravel which varied from 12 to 18 in in thickness, and it is reasonable to assume that the gravel was obtained in the course of cutting the ditch system of the earliest fort. When it was silted up to a considerable depth, the third ditch had also been re-cut, but in this case the re-cutting appears to have damaged the earlier profile only slightly.

Second Period. The second phase saw the reconstruction of the rampart in approximately the same position as the first, but we can say very little about its composition as the re-casting of the northern defences in the third period entailed the levelling of the Period II structures.

It seems probable, nevertheless, from the large amounts of clay and peaty turf found in the fill of the inner ditch of the second period on all sides of the fort, that these materials were used extensively in the upper parts of the rampart. About the lower part we can be more certain. The outer edge of the earlier rampart was cut away to allow the insertion of a roughly kerbed stone foundation 5 ft broad; traces of clay found in the interstices of this foundation suggest that it supported a clay cheek or revetment. The position of the back of the rampart could not be precisely located, but a width of about 21 ft seemed to be indicated. The intervallum street was resurfaced with a compact layer of cobble and gravel measuring 6 in in depth and extended a further 3 ft to the N. Beneath this layer was sealed a *denarius* of Nero dating to AD 65–8, but whether it was dropped in the Flavian period or at the beginning of the Antonine, it is impossible to tell (see p 183).

Immediately to the N of the rampart the inner ditch of the first period was re-cut leaving a distinctive step on the counter-scarp face, and beyond this in turn there was a ditch, some 16 ft wide and 7 ft deep, with a slightly sagging V-profile. The gravel derived from this ditch was spread in a fairly uniform layer extending from the outer lip for about 22 ft to the N and immediately overlying another level composed of three separate elements, peaty turf, dense

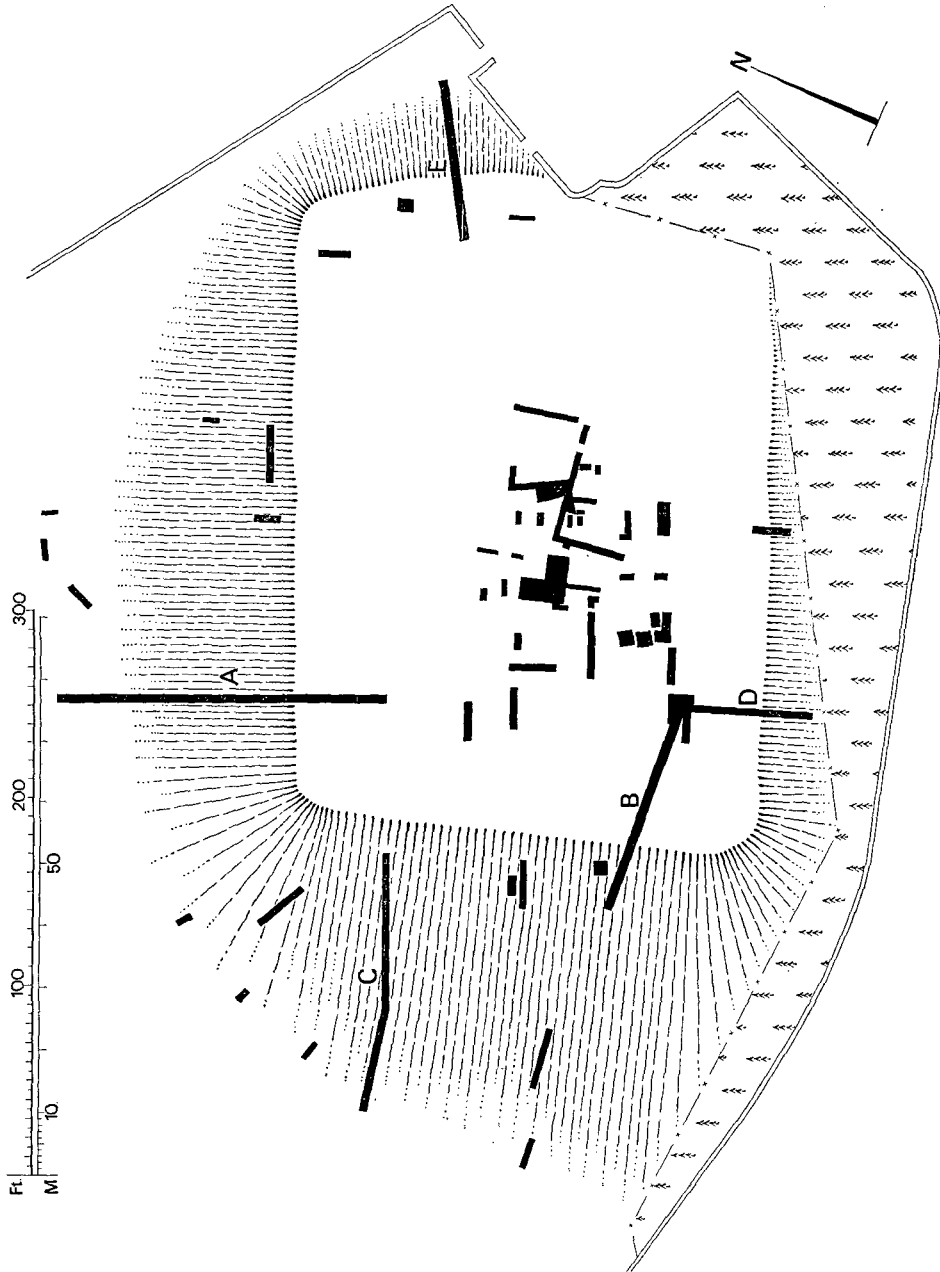


FIG 3 Excavation trenches, major sections lettered

grey clay, and a confused mass of dark soil, greyish clay blocks and charcoal. Although these elements were quite distinct it was clear that they had been deposited at the same time, and from their nature it seems probable that all derived from an earlier turf and clay rampart demolished at the end of Period I and cast forward over its own ditch system. The band of mixed clay and dirty gravel which extended N from the outer lip of the third ditch represents the upcast obtained after a re-cutting of that ditch when it was choked with silted material.

The piling of the upcast in a bank on the outer lip made the third ditch a slightly more formidable obstacle in its second phase than in its first, with a depth of about 3 ft 6 in and a width of 11 ft. One more point that might be made is that, in the re-cutting of the outermost ditch, the profile had been slightly altered. It was no longer a true V-shape, the inner face being considerably longer than the outer and the bottom more rounded. The appearance was rather more 'Punic' than previously.

Third Period. A drastic overhaul of the N defences now took place. The rampart of the earlier phase was levelled, and the presence of a layer of carbonised debris and large angular blocks of stone immediately above the southern half suggested that the extra space thus obtained was used for the erection of buildings (see *infra*, p 176). The inner ditch was completely filled with peaty turf and a mixture of clay, small stones and earth, and then given a levelling layer of yellow gravel, probably dug from the upper scarp face of the large ditch, which was also carefully filled, but in a rather distinctive way. To begin with, a small platform of stones was built in the N half of the bottom of the ditch and above this ten courses of turf blocks were laid. If the blocks originally measured 6 in in thickness, the standard measurement indicated by Vegetius, the top of the pile of turves would then have been on a level with the lips of the ditch. A thin layer of gravel was now spread over the turves and a corduroy base of birch branches (pl 14) carefully laid along the rear edge of the pile.⁷ At this point the rearward half of the ditch was filled, firstly with a little gravel, but for the most part with irregularly chopped blocks of grey clay until the level of the top of the turf stack had been reached. On this carefully constructed base the rampart of the third phase was now erected, measuring about 20 ft in width, the front 7 ft or so being made of turf and the rest of clay and earth. It is a striking if not unique example of the engineering skill and foresight of the Roman army. The material used for filling the rear half of the ditch had naturally come from the demolished rampart of the second phase, over whose levelled remains a new intervallum street, about 18 ft wide, was now constructed. Two sherds of a cooking-pot in black-burnished fabric and the base of a samian bowl (f. 37; see *infra*, p 190) were found in the bottoming of the street; both vessels can be assigned to the middle of the second century AD. Between the S edge of the third intervallum street and the N edge of the second there was a gap of about 9 ft, across which was spread the scatter of angular boulders mentioned above. It should be noticed that there was little or no silt in the bottom of either of the inner ditches when they were so painstakingly filled by the Roman engineers. In other words it seems unlikely that the second and third phases at Crawford were separated by a long interval of time.

The third ditch of the earlier periods now became the inner ditch of the last, separated from its rampart by a berm 25 ft wide; in all likelihood there was as little silt in this ditch as in the inner two and no re-cutting would have been required. It was, however, necessary to maintain the depth of the defences by digging another ditch, a major obstacle, measuring 15 ft in width by 5 ft in depth. In the platform about 35 ft broad, which was left between the two ditches, there were traces of a system of shallow pits and a gully (pl 15a), varying between 9 in and 1 ft in depth, which ran parallel to the outer ditch and may therefore be associated with it. In the time available it was impossible to explore this feature fully but it seems not unreasonable to interpret it as part of a series of obstacles designed to break up an attack on the fort from this quarter. Such features have been noted at Rough Castle on the Antonine Wall⁸ and more recently at Gatehouse of Fleet and Glenlochar in Kirkcudbright.⁹ It was noticed that the outermost ditch was set at a slight angle to the other three ditches, which were all parallel. Probing established that the same divergent course was followed for about another 50 ft to the E, at which point it stopped. Subsequent excavation here showed that there was a gap, *c* 25 ft in

width, for a heavily-metalled roadway, which had apparently issued from the N gate of the fort heading in a north-westerly direction. The course of the road beyond this point was not traced, but there can be little doubt that it continued curving round the W end of the fort and finally led to a ford or bridge across the Clyde not far from where the modern road-bridge stands. On the E side of the gap the outermost ditch was seen to have been set forward a further 10 ft, although probing revealed that its alignment ran roughly parallel to that followed to the W of the gap.

At the end of Period III both the ditches were allowed to fill with natural silt; the site was disturbed by no subsequent occupation in the Roman period, although a scatter of small fragments of green-glazed pottery found above the fully-silted outermost ditch testifies to activity in the medieval period.

The Western Defences (figs 3, 4 and 6)

On this side, although it was impossible, for the reasons stated above, to cut one continuous section through the defences, a complete profile of the system can be reconstructed from two complementary trenches. The picture which emerges after a study of these sections is significantly different in its structural detail from that drawn above, although the historical interpretation is exactly the same.

First Period. On the W, as on the E front, the ramparts of the three periods occupied approximately the same position, although it appears to have been necessary on each occasion to reconstruct the rampart's outer face. Section B (fig 6)¹⁰ shows clearly the resulting complexity of structure. The rampart was basically tripartite. The rearward 10 ft, which consisted of dark peaty soil, was subdivided into two roughly equal parts 'keyed' into each other, as it were, the forward half being lighter and more obviously layered, the other heavier, wetter and much more homogeneous; both lie immediately on top of a Roman humus level varying from 9 to 6 in in thickness. On the E this part of the rampart abuts against the W end of the lowest intervallum road, which is about 16 ft wide and has a maximum thickness of one foot; the tail of the rampart was overlain by the upper, and later, levels of the road. The rampart and the lowest road level were thus clearly contemporary and belonged to the earliest period of occupation, for which a date in the late first century AD is suggested by the fragments of a ring-necked flagon and a mortarium of that period which were found immediately on top of the lowest intervallum road (see *infra*, p 193). The eastern limit of the intervallum road is marked by a fairly shallow slot, 1 ft 6 in wide and about 1 ft 3 in deep, in which stood the W wall of Flavian Building VI; beyond this to the E extended the disturbed clay-and-gravel floor level of that building, itself overlain by the yellow clay floor of the Antonine Building IV, the position of whose W side-wall was indicated by several dislocated building-stones.

It is impossible to be certain about the precise width of this rampart since the entire forward section was removed in the course of reconstruction at the beginning of the second period; the matter was further confused by the discovery that the section had been cut across a timber tower, measuring approximately 11 ft square. The corner of the pit in which one of the tower's four uprights had stood is shown in the section, overlain by the band of clay used in the front face of the second-period rampart. However, in the course of further investigation of the tower structure, which is discussed below (see p 163), a discontinuous layer of grey and white clay was discovered immediately above the filling of the post-hole pit but *beneath* the secondary face, suggesting that the original rampart had extended at least as far as that point with an outer face or revetment of clay to ensure the stability of the looser peaty earth core. The width of the whole rampart was probably not more than 18 ft, as on the N front. At a distance of

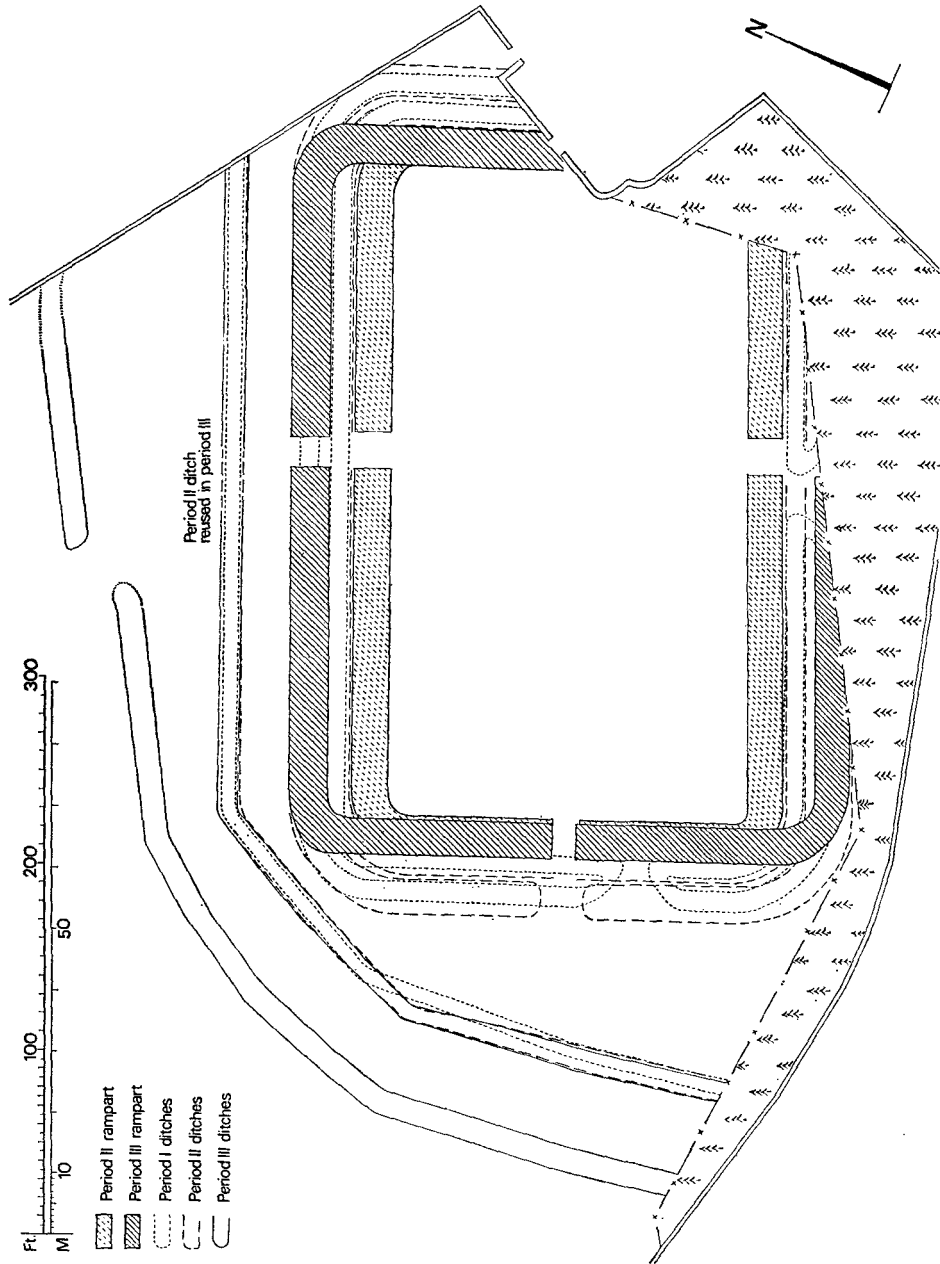


FIG 4 General site plan

just over 21 ft W of the outer edge of the intervallic street in the section illustrated in fig 6 there was a ditch measuring 8 ft in width and 3 ft in depth. It was V-shaped and more than half filled with homogeneous heavy wet peat above which there had been laid a dense gravel-and-clay layer about 9 in thick. At two other points on the W front where sections were dug the evidence was different (section C, fig 6; see fig 3). In both cases at this point a ditch measuring from 9 to 10 ft in width and 4 ft in depth had been filled with grey clay and subsequently re-dug

in such a way that a notch or step was cut in the counter-scarp face of the primary ditch. At some time later this secondary ditch was filled with the same kind of homogeneous black fill noticed in the ditch of section B. It is therefore extremely probable that the innermost ditch in section B belonged to the second period of occupation and no re-cutting was visible because in this area the earlier ditch had been interrupted at an entrance (see *infra*, p 163). Elsewhere on the western front, however, the ditch pursued the same course relative to the early rampart as it had on the N. Of the early outer ditch which lay about 6 ft further W there was no trace in sections B and C because it had been dug away in entirety by the large outer ditch of the second period, and it survived on the W front only where a gap was left opposite the *porta decumana* of the second-period fort. Here its measurements were 10 ft wide by 3 ft 6 in deep, and it had filled with natural silt to the depth of a little more than 1 ft 3 in when the first re-occupation took place.

The examination of the western ditch-system could be continued only as far as the outer lip of the large second-period ditch in section B, but the sequence could be followed further in section C (fig 6). Lying immediately above Roman humus level and extending for a distance of about 16 ft beyond the outer lip of the large secondary ditch was a hard yellow gravel layer, some 9 in thick, which was doubtless derived from the upcast of the two early innermost ditches. This feature was noticed on the northern front where it was thicker and extended 13 ft further. It is interesting to note, however, that the Roman humus layer, which is of fairly uniform 3 to 4 in thickness beneath the gravel, is barely 2 in thick immediately to the W of it: the indications were that the gravel had been shaved off at this point for a distance of a little more than 10 ft, before re-appearing, less homogeneous and looser than before, but still unmistakably the same yellow gravel. It had most obviously been removed from its former position and cast forward, spilling over the inner lip of another ditch which lay about 60 ft W of the innermost ditch of the first period. The ditch was V-shaped in profile, measuring about 7 ft in width by 2 ft 9 in in depth, and a glance at the section sufficed to show that it had been deliberately filled with shoots of clay and dirty gravel, thrown in from one side, and with the thick layer of yellow gravel, mentioned above, thrown in from the other; beneath this there was a thin layer of silt, at the most about 2 in deep. Clearly the ditch had been filled while the fort was still occupied, or not long after its abandonment, as ditches cut in this type of subsoil would quickly have become choked with silted material had they not been subject to regular cleaning and attention.

At a distance of 1 ft 6 in to the W, there lay yet another ditch 7 ft wide and 2 ft 9 in deep. At an early stage of the excavation it was uncertain whether both or only one of these belonged to the first period, for it will be remembered that on the N front in the same relative position, there was only one ditch, re-cut at the beginning of the second period. Subsequent investigations, however, showed that the easternmost, which had been deliberately filled, belonged to the first period and the westernmost to the second; although at this particular point the ditches of the two periods pursued a separate course it was apparent that, in general, they were wholly or partially concurrent. As will be seen from fig 9 the outermost ditch of the first period runs parallel to the rampart on the N but to the S of the NW angle it diverges until, at a point where it meets the steep bank bordering the flood plain of the River Clyde, it lies at a distance of more than 110 ft beyond the outer face of the first-period rampart. The area thus enclosed appeared at first sight *oddly irregular*, and it was tempting to interpret it as defining either an *annexe* or an early temporary encampment; but it soon became clear that no rampart or palisade had ever been associated with the ditch nor was there any sign of occupation immediately within the area enclosed by it. It must therefore be considered as an additional line of defence belonging to the early fort, similar in its irregularity to the defences of the fortlet at Haltwhistle Burn,¹¹ on the Stanegate, and to those at Greensforge, Staffordshire.¹²

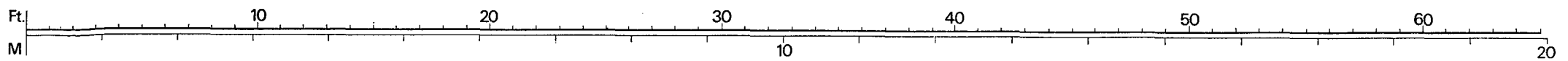
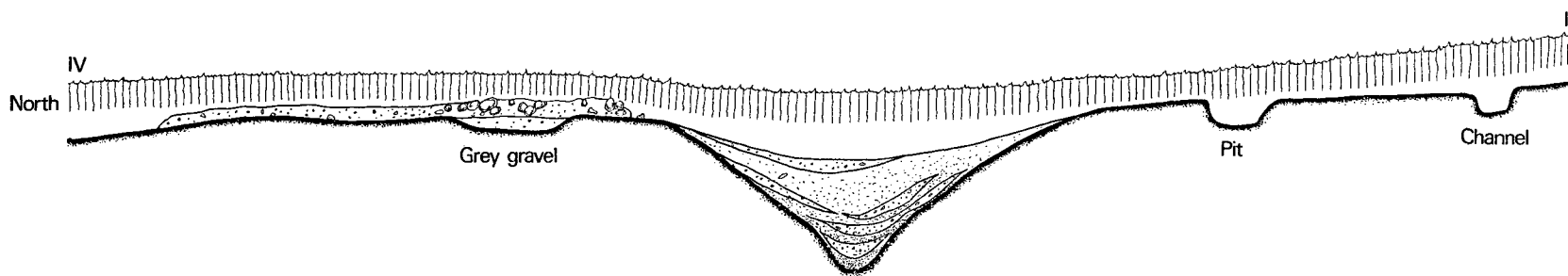
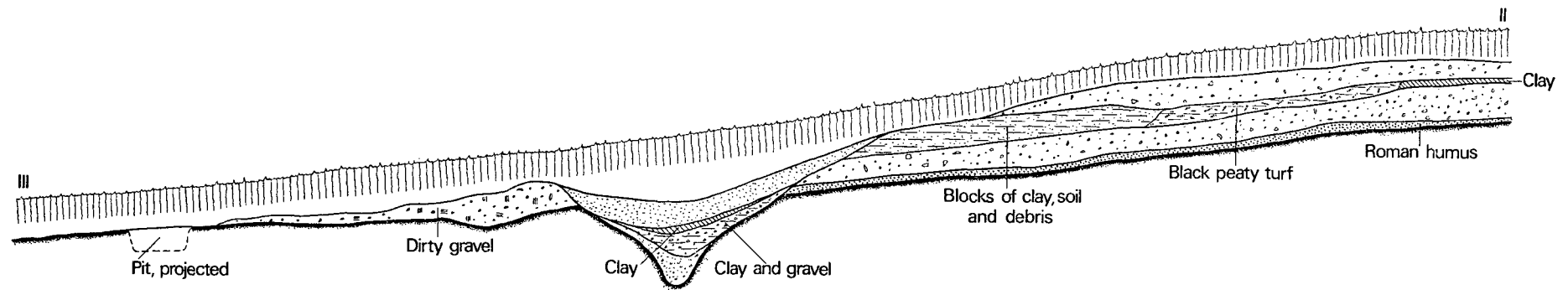
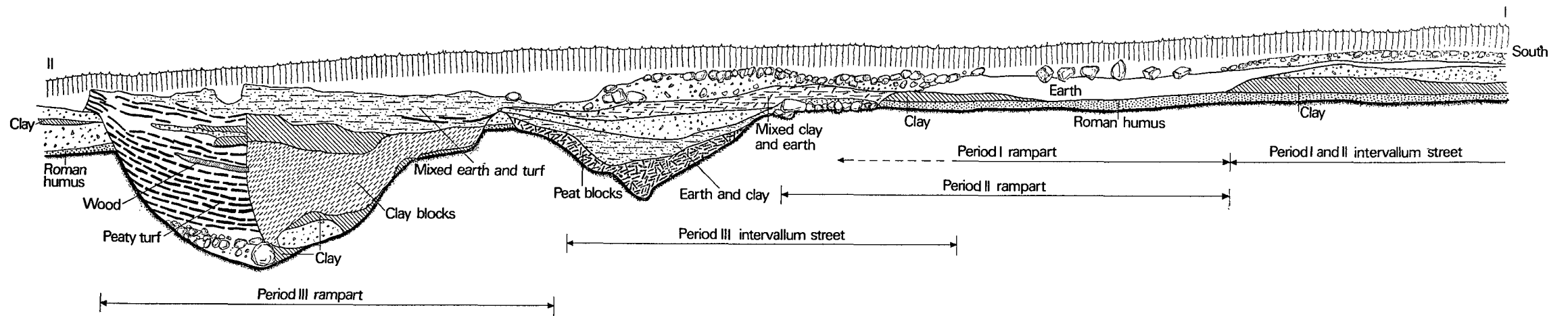


FIG 5 Northern defences: section A

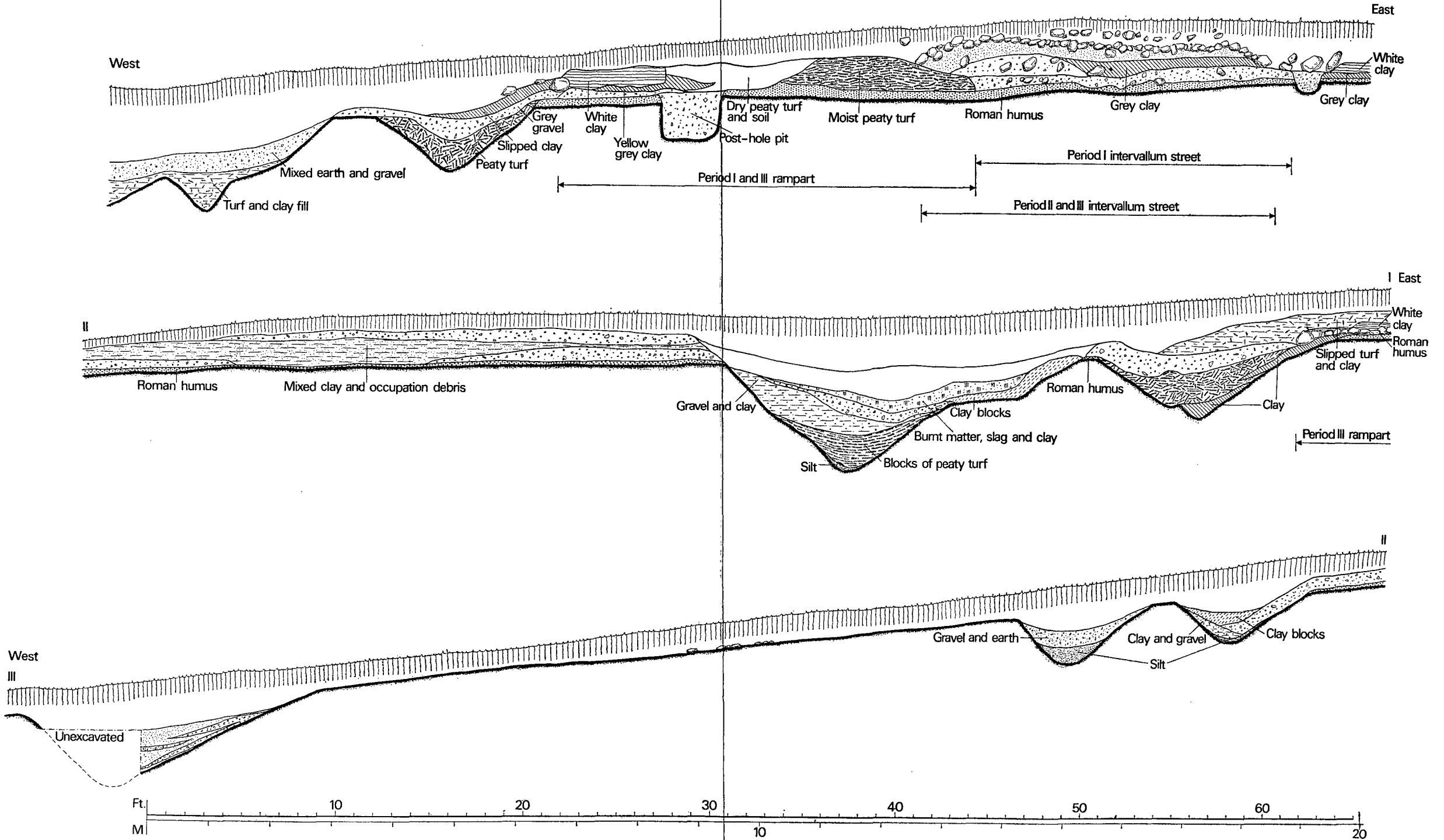


FIG 6 Western defences: section B top, section C middle and bottom

It only remains to note that at the end of the first period both the inner and outer ditch seem to have been deliberately filled. This apparent slighting of the defences may well be associated with the level of disturbed material discovered immediately above the earliest intervallum road in section B. On top of the W half of the road there was a mound of stones and yellow gravel slightly overlying the back of the rampart, while the rear half was buried beneath a layer of soft dark grey clay from 4 in to one foot deep, which was clearly deposited at the same time as the mound of gravel, presumably at the end of the first period of occupation. The reason for such destruction is difficult to determine, but the pile of gravel suggests that possibly timbers were being dug out of their post-holes and the clay can only have come from a disturbance in the body of the rampart.

Second Period. The alterations on the western front in the second period were similar to those on the N, as section B clearly reveals. Above the disturbed material on the lowest intervallum, there was a layer of brown soil and gravel capped by the bottoming and upper cobbling of the second intervallum street. This level was covered with a thin but persistent scatter of charcoal and it seems likely that it derives from an oven situated nearby but not actually located in this section. On the surface of the charcoal spread there was discovered a small fragment of the rim of a dish in black-burnished fabric belonging to Gillam's category 1, datable to some time between AD 140 and 170, with a bias towards the earlier limit.¹³ The road, whose width was almost 17 ft, overlay the rear of the original rampart. In the re-building of the second period, however, the front of the early rampart had been removed. Although the junction between the old and new material was difficult to locate in the body of the rampart, since both consisted in the middle section of similarly laminated peaty earth, the earlier was rather moister and of a darker colour; it was also possible to see where the Roman humus level had been cut into during the reconstruction work. The new material contained a fragment of a samian cup (f. 27; see *infra*, p 191).

The rampart was re-faced to a probable thickness of about 6 ft, with yellowish-grey clay, which served as a revetment for the less stable earthen core; a spread of greyish gravel from 4 to 6 in thick was laid just inside the lip of the inner ditch to receive this revetment. The width of the whole rampart will have been about 17 ft.

A very short distance outside the outer edge of the rampart lay the innermost of the second-period ditches; this has already been described and it only remains to point out that the ditch had been deliberately filled with dark peaty turf before any silt whatsoever had collected in its bottom. Two feet beyond lay another, much larger, ditch measuring 20 ft between the lips and a maximum of 4 ft 6 in in depth; in the middle of the ditch was a comb or spine about 2 ft in height. It could be seen that the ditch contained a deliberate filling of blocks of turf and clay thrown into the unsilted ditch filling it to a depth of 2 ft 6 in; the filling contained part of the rim of a second-century mortarium (see *infra*, p 193).

In section C the sequence was broadly similar, although there were two interesting differences in detail. Firstly, the innermost ditch could be seen to have been the result of re-cutting, and secondly the profile of the large outer ditch had been more or less V-shaped – more regularly than might appear at first sight, for the upper half of the inner face of the ditch was cut away in the re-modelling of the defences at the end of the second period. The original width of the outer ditch was about 17 ft and its depth 6 ft; the filling comprised blocks of clay and black peaty turf, and there was no natural silt. A certain quantity of occupation debris was mingled with the turf and clay fill, the most interesting items being a shoe, in a tolerably good state of repair, and the head of a wooden mallet (see *infra*, p 188). The moist conditions had also preserved on the top of this in-fill much humbler items, such as tiny twigs and wood chippings, representing,

doubtless, the waste material from building operations at the beginning of the third period. Of more direct importance, however, was the discovery, in the body of the clay and turf fill, of wall- and base-fragments of a cooking-pot in black-burnished ware.

There was an interval of approximately 47 ft to the W between the outer lip of the large ditch and the inner edge of the outermost. Across most of this there was spread a confused mass of clay, gravel and occupation debris (i.e. charcoal and burnt daub) which probably derived from the defences and interior of the early fort and was deposited at the end of the first period or the beginning of the next. No datable material was recovered from this level, but fragments of a rusticated jar and mortarium stamp (*infra*, pp 192-3), found in loose soil immediately to the W, probably derive from it and indicate its Flavian origin. Above it a dense layer of yellow gravel, representing the up-cast from the largest second-period ditch, had been spread to a maximum depth of 9 in and for a distance of 26 ft beyond the outer lip. Approximately 2 ft W of the outermost ditch of the Flavian period, which was now almost completely choked with a layer of silting above the deliberate infill, there was dug the last ditch of the second period. At this point it measured about 7 ft wide and 2 ft 9 in deep, the slope of the counterscarp being twice as steep as the scarp; the filling consisted of natural silt. When the ditch was sectioned in trenches situated to the NE and SW it was found to be slightly broader and deeper, having been re-cut through the fill of the earlier ditch. Its course was in general the same as that of the outermost Flavian ditch (fig 4) except in the area cut by section C, where the secondary ditch continued the alignment of the flattened W corner for another 40 ft beyond the earlier turning-point before itself inclining to the S.

Third Period. The significant difference between the defences on the N and W in the last period of occupation is that the rampart of the western front occupied the same general position as its two predecessors, whereas on the N the whole system was moved forward almost 35 ft. It would appear that the intervallum road of the last period was largely the road of the previous period re-used and, where necessary, repaired or patched, but the upper levels, being so close to the present field-surface, have been partially disturbed by ploughing and the evidence cannot be considered definite. Fortunately the picture was much clearer in other respects.

The second-period rampart was given a new outer facing of white clay measuring about 5 ft in thickness, to receive which the earlier clay front was cut away and a single line of stones inserted as an outer kerb (see section B, fig 6); elsewhere a band of boulders at least 5 ft wide was laid as a regular foundation for the outer face (see section C). The width of the final rampart was a little under 20 ft. The inner large outer ditches were now packed with dark black peaty turf or blocks of clay (the source of this material presumably being the old facing of the second-period rampart), and across the old innermost ditch a layer of gravel was cast, thus providing a hard berm extending for 11 ft in front of the new rampart. In section C this gravel was dug out of the inner face of the large ditch and some of it was cast forward across the ditch itself, sealing the clay and turf fill. There was no need, however, to take elaborate precautions with the fill of this large ditch since it did not, as on the northern front, have to support the weight of the rampart. In fact at some subsequent time it was used as a rubbish dump, a confused mass of clay being tipped into its inner half and a layer of burned clay, charcoal and metal working slag spread quite thickly over virtually the whole width of the ditch-hollow.

The inner ditches having fallen out of use, the former outermost ditch now became the inner line of defence, but, there being apparently little or no period of abandonment between the second and third phases of the fort's history, no alterations were required in either its course or profile. Nevertheless, it was now necessary to dig another ditch which lay just over 40 ft W of the inner ditch and followed a course parallel to it. In section C the ditch's profile was slacker

than on the northern front and slightly shallower, being just over 4 ft deep and almost 14 ft broad. Both ditches were allowed to fill with silt over a long period at the end of their useful lives, exactly as happened on the N.

It is obvious that the evidence gained from sections dug through the western defences agrees very well with what we have already learned about the northern front. There were three main periods of occupation, the first belonging to the late first century AD, the other two to the middle of the second century; little time appears to have elapsed between the last two occupations. The major difference lies in the fact that the rampart of the third period was not advanced on the W as it was on the N.

The Southern Defences (figs 4 and 7)

For the reasons given above it was not possible to cut a complete section through the defences on this side. Nevertheless, the picture that emerged was substantially the same as that already drawn in the preceding pages.

First Period. Once again the superimposition of later structures made it difficult to give precise limits to the defences of the earliest occupation, although their approximate position could be at least suggested. The intervallum street was represented by a layer of hard yellow gravel measuring 16 ft in width and 9 in in maximum thickness. Its northern limit was marked by a steep-sided slot, 1 ft 6 in wide and 1 ft 10 in deep (see section D, fig 7); this is a foundation trench for a timber building of the first period. The trench had been half filled with loose gravel, probably the original packing material which held secure the individual uprights of the timber framework, and then sealed with a plug of hard yellow clay. However, although the S side of the trench presented a smooth vertical face the opposite side was rather irregular, and it is not unreasonable to assume that this irregularity was caused by demolition parties digging out the timbers at the end of the occupation (see *infra*, p 169). Immediately to the N of the trench and just above the Roman humus level lay a mass of partly burned clay mingled with fragments of charcoal and burned daub. The dismantled building and the intervallum street were covered by a thick layer of loose brown earth, in character very similar to the material constituting the bulk of the first-period rampart on the northern front. It is, indeed, very likely that this layer, too, derived in large part from the earliest rampart, as it continued for a further 7 ft S of the intervallum street, at which point it overlay a band of greyish clay. Beyond this the material became more peaty and more obviously layered, while clay was again present in the body of the rampart and on top of the old ground-surface. It seems extremely probable that this body of material represents the first-period rampart attenuated by decay or deliberate demolition before re-use in the ensuing period. Its width will have been about 20 ft and its construction similar to that noted elsewhere on the site, with clay revetments enclosing an earthen core.

The inner ditch, too, told the same story as before, for it had been packed solid with a light grey clay, doubtless deriving from the outer revetment of the rampart, and re-cut. In its first form it measured approximately 10 ft in width by 3 ft 6 in in depth. In a section dug through the defences some 90 ft to the E, the early inner ditch had been packed with dirty grey gravel, in which a piece of samian bowl (form 29) of first-century date was found (see *infra*, p 189). Of the middle and outermost ditches there was no trace because the former had been obliterated by the digging of the large ditch of the second period, and the latter, which would have lain far beyond the S end of this section, had probably been destroyed by the construction of the modern road and the medieval castle.

Second Period. The opening of this period saw the repair of the decayed or demolished early rampart in such a way that the bulk of the old rampart was used as the body for the new,

the width of the whole now being 20 ft. A new outer face of clay was inserted on a foundation measuring 5 ft wide and made of rounded boulders packed together with gravel. A well-cobbled intervallum street, some 16 ft wide, was laid on top of the tail of earthen rampart-material about 10 ft further S than the previous street. On the N side of the street a thin but distinct layer of gravel with occasional cobbles rammed into its surface extended for approximately 10 ft stopping short at an area of disturbance 3 ft 6 in wide. On the far side of this, and at the same level, was a sharp-edged boulder and the beginning of a layer of clay and small stones – the floor of one of the barrack buildings discussed below (see p 175). It would seem that the disturbed area marked the position of the S end-wall of the building.

Immediately to the S of the rampart lay two ditches, the inner one being fairly shallow, 12 ft wide by 3 ft deep, cut through the fill of the earlier ditch. It, too, had been deliberately filled with a confused, but solid, mass of dark peaty turf and clay. The outer ditch, of which only half appears in the section drawing, was much larger and probably measured about 16 ft in width by 6 ft in depth, with a sagging V-profile. Its filling was most curious and bore comparison with that of the large ditch on the northern front, for, although the materials used were different, the purpose appeared to have been the same.

Third Period. Here, as on the northern front, the last period saw a thorough-going alteration of the defences with the rampart pushed forward as much as 35 ft. The extra space thus gained was used for the extension southwards of the barrack building mentioned above, and in section D the new S wall of the building can be seen founded upon the cobbling of the previous intervallum. In the occupation debris associated with it were several fragments of black-burnished ware, while almost half of a corniced-rim beaker in Castor ware was found buried under the tumbled core-material from the W wall of the same building. A terminal date for its occupation in the period AD 165-170 has been assumed (see *infra*, p 179). The reason for the advancement of the rampart by as much as 35 ft, when the increase in the length of the barrack was only 18 ft, is clear when one considers the ground available. The site of the previous rampart had been covered by the new intervallum, a boulder and gravel layer extending from the S edge of the old intervallum for a distance of *c* 17 ft. To have built the rampart immediately to the S would have meant either setting its outer face on the very lip of the deep middle ditch, or else, if it had extended further S, breaking its back on the spine of natural gravel left standing between the two inner ditches. In the event, the Roman engineers chose to move the site of the rampart even further S and build it, as on the N, wholly over the large ditch, having filled the ditch first with massive boulders to minimise subsidence, and then with a thick layer of peat blocks. The rampart consisted of an earthen core, with a well-built inner revetment of turves. Unfortunately it appears that the peat blocks of the infill were compressed by the superincumbent weight more than the engineers expected and, as the section drawing shows, the rampart sank in the middle, while the inner revetment slid forward and down. The slope of the ground at this point, which is greater than on the other three sides of the fort, would naturally have made the rampart even more unstable.

Over the inner ditch which had been deliberately filled, but not covered by the rampart, there lay an intermittent scatter of gravel and small stones. It seems probable that this was left as an open area during the third period.

The Eastern Defences (figs 3 and 7, pl 15b)

It was possible to cut only a partial section through the defences on this side, as the field in which the outer ditches lay was inaccessible owing to agricultural operations. Nevertheless the evidence, however curtailed, was largely in agreement with that already obtained on the

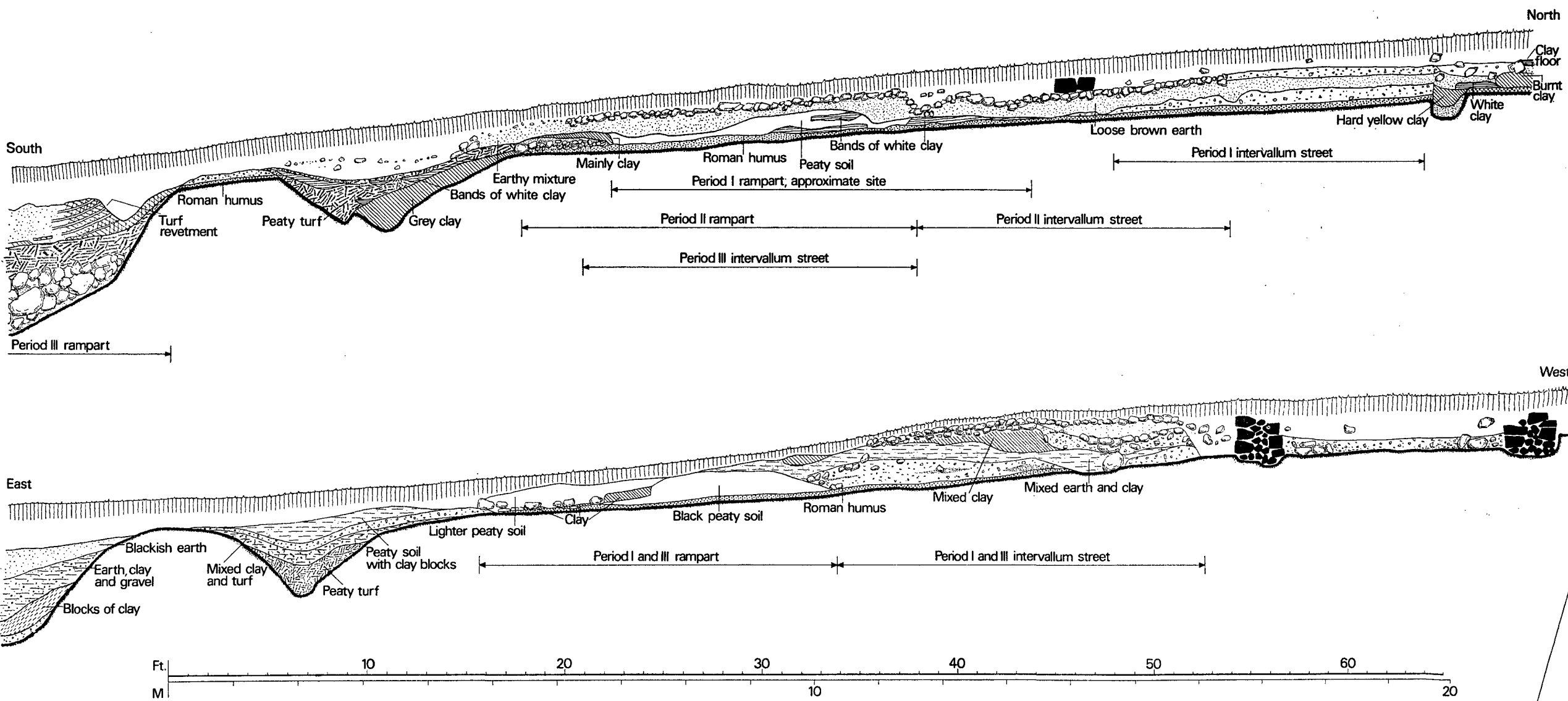


FIG 7 Southern and Eastern defences: section D above, section E below

other sides of the fort. Section E shows clearly that the sequence of structures here was the same as on the western front.

First Period. The bulk of the rampart consisted of dark peaty earth lying immediately on top of the Roman humus level. At the rear (i.e. on the W) this had been slightly overlain by the lowest level of the intervallum street, while at the front it had been cut away to permit the insertion of a clay cheek and stone foundation. It seems quite probable that this represented at least the rear two-thirds of the Flavian rampart, whose original width, if we assume that its outer face consisted of a turf or clay cheek of the same approximate size as the later revetments, would have been about 18 ft. There were no visible traces of the inner ditches of the first period both having been removed by the subsequent re-cutting observed on the other sides of the fort. The only point of difference in this section is that no tell-tale notch has been left in the face of the innermost ditch. It is likely, nevertheless, that the size of both was about the same, 10 ft wide by 3 ft deep. The earliest intervallum was represented by a heavy band of gravel and cobbles which measured 1 ft 1 in in maximum thickness and overlay Roman humus for a distance of about 12 ft from the rear edge of the rampart. To the W of this point not only the street but also the Roman humus level had been cut away, probably in the course of demolition of the first-period fort, and consequently the inner edge of the intervallum was no longer visible; its original width was probably between 18 and 20 ft. Farther to the W the subsoil had been cut back slightly into the slope to provide a level floor for the later stone building, with the result that the first-century occupation level had been removed. That there had been an earlier structure in this position was suggested by the presence of a shallow slot, about 1 ft in width and 8 in deep, representing the originally much deeper post-hole trench of a timber building. Further investigation undertaken some 30 ft to the N of section E, where it had not been necessary to prepare a levelled area for the secondary stone structure, revealed the same trench in a better state of preservation, cut to a depth of over one foot into the old ground-surface, with a 4½ in thick clay and gravel floor extending on top of subsoil from its inner or W edge. It was also noted that the building to which it belonged stopped short of, and was clearly contemporary with, the intervallum of the earliest period on the northern front.

Second Period. The ensuing period saw the erection of a building, whose timber framework rested on footings of stone, immediately beside the intervallum street. It measured 11 ft 6 in wide, inside walls 2 ft 8 in thick; the natural gravel subsoil had been cut away to a depth of over 9 in to receive the footings of the more westerly wall. As there was no sign of any clay or gravel floor having been laid inside the building and the natural gravel surface itself seemed very loose, it was assumed that a raised wooden floor had been constructed, and as excavation progressed it was possible to identify the arrangements made by the Roman builders for supporting such a floor (see *infra*, p 176). A new intervallum street, 17 ft in width, was constructed at a much higher level than before, the previous street surface having been covered by a confused mass of dark peaty earth and clay. There can be no doubt that this material came from the early rampart and as a result of some deliberate slighting of that structure, but whether by demolition gangs of the first period or building parties of the second cannot now be determined.

The rampart was now given a new outer face of clay, the old material being cut away for the insertion, as the section drawing shows. The matter is somewhat complicated by the fact that the new revetment was itself almost entirely cut away in the third period for a second re-facing of the rampart, traces of clay being preserved only beneath and to the rear of the final kerbing (pl 15b). However, the thin band of yellow gravel, cobbles and flat stones which served as an outer kerb to the second-period revetment survived under the larger boulders of the later revetment foundation. The width of the second rampart was thus seen to have been

18 ft. A new ditch system was now dug, completely removing all traces of the earlier defences: the inner ditch was V-shaped and measured *c* 11 ft in width and 3 ft 9 in in depth, while the large outer ditch probably attained a width of 16 ft and a depth of 5 ft.

Third Period. The final phase in the fort's history affected internal structures intervallum street, rampart, and ditches. The stone building seems to have undergone a fairly drastic overhaul, of which the re-building of the wall-footings was the most important feature, a thinner wall, 2 ft 3 in as against 2 ft 8 in, being constructed upon the old foundation courses (pl 16a); there may also have been some internal alterations. A small fragment of a Castor-ware vessel and a few sherds of black-burnished ware were found under tumbled core-material from the E wall of the building.

The only alteration to the intervallum street was the addition of an extra layer of large cobbles and grit to fill up a hollow near the rear edge, where the second-period road surface had subsided. Both inner ditches had been deliberately filled up, the larger with blocks of clay and a mass of mixed clay and gravel, the smaller mainly with dark peaty turf over which had been cast a confused band of clay and lighter coloured turf. The innermost ditch had then been sealed with a levelling layer of yellow gravel which extended over the inner lip of the ditch and underlay the new massive stone kerb and foundation of the final re-facing to the eastern rampart. The new foundation was more than 6 ft wide and the total width of the new rampart about 19 ft. Just enough rampart material had survived above the stone foundation to indicate that the revetment in this phase was constructed, at least in its lower courses, of blocks of peaty turf, as it was on the northern front.

The important points which emerge from this study of the fort's defences are as follows: firstly, the evidence on all four fronts supports the view that the fort experienced three major periods of occupation, the first being datable to the late first century AD and the others to two barely separable periods extending from about AD 140 to 170; secondly, the assembled evidence shows that the overall area of the fort in the first and second periods remained fairly constant at approximately 2 acres, whereas in the third period, by increasing the breadth of the fort over the ramparts to 300 ft, the area was increased to about 2.66 acres; thirdly, it proved possible to identify at least three distinct structural phases in the internal buildings of the fort and relate each to the appropriate period of the defences.

The Entrances and Streets (figs 8, 9, 11 and 13)

Although it had been possible to determine the position of all the gates of the second- and third-period forts, as well as at least two of the Flavian fort, no detailed examination was made of any one of these. Nevertheless, several points are worthy of comment.

The first entrance of the earliest period to be recognised was that situated near the middle of the S side; its approximate location was indicated by the discovery of the junction point where the outer Flavian ditch curved in to meet the inner ditch on the SW side of the entrance. At an early stage in the excavation it was thought that this marked the position of one of the *portae principales*. Subsequent investigation, however, proved this hypothesis to be wrong, for it was discovered that a timber building had been erected in the earliest phase in the middle of the fort, straddling the line which the *via principalis* would have followed if aligned on this gate.

Now as this building (No. I on fig 9) faces directly towards the S entrance and has been identified as the headquarters building (*principia*) of the Flavian fort (*infra*, p 165), it follows that the entrance itself must be the *porta praetoria*, and the *via principalis* would run along the front of the central timber building from E to W, i.e. parallel to the long axis of the fort. As the

discovery came late in the series of excavations it was impossible to test this second hypothesis adequately with the spade, but earlier trenches had shown that there was an extensive metallated surface on the S side of the *principia*. Furthermore, if the alignment of the presumed *via principalis* is produced as far as the W rampart it can be seen that the road would have passed through the defences immediately north of the timber structure mentioned above (p 154). The discussion of the significance of this structure has been deferred until now. In view of the proximity of the tower to the S angle and the extreme shortness of this side, absolutely as well as relative to the length of the fort, it seems much more reasonable to interpret the structure as a gate tower than as an interval tower. Moreover, a comparison of the inner-ditch sections on the W front

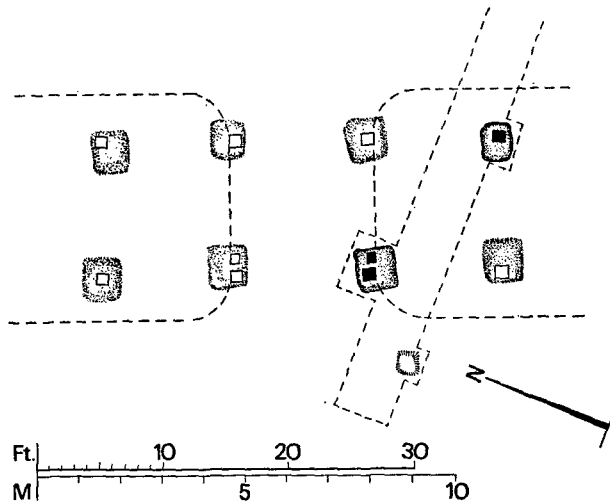


FIG 8 Flavian West gate, suggested plan

showed that immediately opposite the tower there was no trace of the re-cutting carried out in the second period, nor was this feature present in another section, which lay barely 10 ft N of the tower. The evidence has suggested that there had been a gap in the innermost early ditch at the precise point where the *via principalis* would have crossed the line of the defences. In further support of this it may be noted that at both of the second-century entrances which could be exactly located the Flavian inner ditch appeared to be unbroken, while trenches dug across the later *via decumana* failed to recover any trace of an earlier street under it or to either side of it. Other trenches tended to confirm the suspicion, aroused by this discovery, that the disposition of streets, and therefore gates, in the Flavian fort was markedly different from that obtaining in the second century.

Although very little of what we may now recognise as the Flavian *porta principalis dextra* was uncovered during the excavations, it is possible to offer a partial reconstruction of the original plan (fig 8). The remains comprise the pits and post-holes marking two opposed corners of the S gate-tower. The NW pit was sub-rectangular in shape, measuring 3 ft 4 in by 3 ft, and 2 ft 8 in in depth; it contained the well-preserved impressions of two square posts, the outermost measuring almost 12 in across, the other, which lay only 4 in away, about 9 in. The SE pit, which appeared to be of less regular shape, measured 3 ft by 2 ft 7 in and a little over 3 ft in depth; it had originally held a single square post of about 12 in section. It was clear that the larger posts represented the main members of a tower, about 11 ft 6 in square over all, whose

lower half had been occupied by the rampart terminal on the S side of the gate; on the analogy of the E gate at Inchtuthil¹⁴ and the S gate at Hod Hill,¹⁵ the smaller post was intended to support the frame for the heavy doors. Consideration of the size of the fort and relative narrowness of the *via principalis* would lead us to expect a single portal of the same general width as the tower, with a second tower crowning the rampart terminal on the N side of the entrance. A spread of burnt daub and charcoal which was found immediately above ground level on the N side of the setting of two post-holes suggests that the upper parts of the towers and possibly the wall-walk above the gate were protected by wattle-and-daub screens. There are no exact parallels to the reconstructed plan, but useful comparisons may be made with the S gate at Lyne,¹⁶ the S gate at Slack¹⁷ and probably the N gate at Ilkley.¹⁸ As the width of the rampart was greater than the depth of the gateway by about 7 ft, it would have been necessary to decrease the former before it impinged upon the entrance passage; it seems likely that this was done quite sharply as at the SE gate of The Lunt, Baginton,¹⁹ where the gate was also set back some 5 ft from the outer rampart-face. It remains only to draw attention to a fairly shallow square pit, situated on the berm before the S gate-tower; it measured about 1 ft 9 in in width by somewhat less in depth, and part of its W side had been cut away by the digging of the innermost Antonine ditch. Unlike the other pits it contained no post-impression, but had been loosely filled with large stones and gravel. Its position clearly precludes the interpretation that it formed part of the gate structure while its relationship to the Antonine ditch shows that it must pre-date that period of occupation. The most likely explanation must be that it is a derrick-hole comparable to those found at Oakwood²⁰ and Fendoch.²¹

There are no close parallels in N Britain for the type of layout represented by Flavian Crawford. Neither the practice fort at Cawthorn, Yorkshire,²² nor the Agricolan site at Amble-side in Westmorland,²³ both of which appear to lack a normal *retentura*, affords sufficiently clear evidence of internal layout. The closest analogies are in fact provided by Hod Hill, Dorset,²⁴ and a number of early forts in Holland which are typified by Valkenburg I.²⁵ In both these examples the *via principalis* is aligned on the long axis of the fort and there is no *retentura* or *porta decumana*. Such an arrangement appears to represent a tradition which is Claudian in origin, although Crawford I and Cawthorn D show that it survived into the late first or early second century. The disposition of buildings inside the Flavian fort at Crawford is discussed below (p 165).

In the second century the road and building alignments were re-orientated through an arc of 90° to the E and the internal layout became orthodox. The *porta praetoria* on the E is now largely covered by outbuildings of the modern farm; its position is nevertheless made certain by the discovery of the course of the *via praetoria*, which had a width of 20 ft at the point where it was examined. The site of the *porta decumana* is fixed more or less certainly by the discovery of the terminal of the large second-period inner ditch on its N side and the metalled causeway leading out from it over the filled innermost ditch. It was also possible to verify this with a section across the *via decumana* which proved to be just under 12 ft in width. The position of the *porta principalis dextra* has been deduced from the observed course of the *via principalis* which is about 19 ft wide; the *porta principalis sinistra* was located by a trench cut in 1965 which not only revealed the terminals of the large ditch beside the Antonine I causeway, showing that its width was just over 28 ft, but also revealed two of the pits in which the outermost timbers of the Antonine II N gate had stood. These were 10 ft apart, one on either side of the entrance passage, and were of irregular shape, measuring 3 ft 6 in in depth by 2 ft 6 in in greatest width. The irregular shape of the pits was the result of the timbers having been dug out at the end of the last period of occupation. It was easy to see how each pit had been dug into on one side,

while the remaining sides were undamaged. The pits had been partly filled with the large boulders that had once probably served as packing-stones and were then levelled off with a mixture of dirty gravel, small blocks of rampart clay and rubbish. This last included a fragment of a crucible, which had been used in the working of brass (see *infra*, p 198) and two fragments of a cooking-pot in black-burnished ware. There was no trace of burning either in the fill of the pits or on the surface of the roadway. In short the evidence suggested that the gate had been deliberately dismantled prior to the evacuation of the fort for the last time. Signs of similarly painstaking demolition work, presumably carried out by Roman troops, were subsequently discovered in the headquarters building. The implications of this evidence are discussed in the concluding pages of this paper (see *infra*, p 180).

The Buildings inside the First-century Fort (figs 9 and 10)

Period I. The nature of the investigation of the fort at Crawford did not permit the recovery of a complete plan of the interior, even in the latest period of occupation whose remains were tolerably well preserved. The buildings of the Flavian period were particularly difficult to trace because they had been interrupted or destroyed by the later Antonine structures and did not at first appear to adhere to any standard plan; in fact only the two central buildings (I and II on fig 9) could be examined in any detail. Nevertheless, it had been considered worth while to attempt a partial reconstruction of the plan of the earliest fort using the tenuous pieces of evidence available, if only because that plan appears to be so unusual.

Buildings I and II. We have already seen from our examination of the entrances that the fort faced S, the *via principalis* running parallel to the long axis of the fort and the *porta praetoria* being situated in the middle of the S side. Building I, which stood at the junction of the *via principalis* with the *via praetoria* and occupied a central position in the fort, must be recognised as the headquarters building. It was extremely small, measuring only 30 ft in width by 32 ft in depth with a portico or verandah 8 ft deep on its S side. The building was constructed of timber, and had, apparently, been demolished at the end of its life; it was nevertheless possible to recover its plan by tracing the construction trenches in which the main uprights of the timber frame had stood. There was no evidence that these had been slotted into a horizontal sleeper, as occasionally occurs in Roman timber structures; impressions left in the packing of the trenches suggested that the uprights were almost square in section and about 6 in in thickness. The building comprised a room, or possibly a suite of rooms, 12 ft deep, which ran along the full width of the building at the rear; in front of this there was an open courtyard, 12 ft square and heavily gravelled, with open porticoes or ambulatories 8 ft deep on three sides. The plan is undoubtedly that of a very small *principia* with the customary suite of rooms at the rear of the building and a porticoed courtyard in front; the *basilica* or cross-hall appears to be absent, unless it is represented by the rear portico of the courtyard. The building was obviously far too small for the purposes of routine administration of a full cohort, and is in fact the smallest *principia* of orthodox plan so far discovered in Roman Britain. Building II lay on the same alignment as Building I about 15 ft to the W; its remains consisted of five parallel construction trenches measuring 30 ft in length, symmetrically arranged so that the intervals between the two outer trenches were both just over 4 ft while the two inner intervals measured almost exactly 8 ft, the total depth of the building being 30 ft. On the S side there was a verandah 10 ft wide on a level with that of the *principia*. The style of construction, implying the need for raised, well-ventilated flooring is that frequently employed in timber granaries, and it would be reasonable to identify the building as a granary for just this reason; its position beside the headquarters building would also support such an interpretation. However, it must be pointed out that the

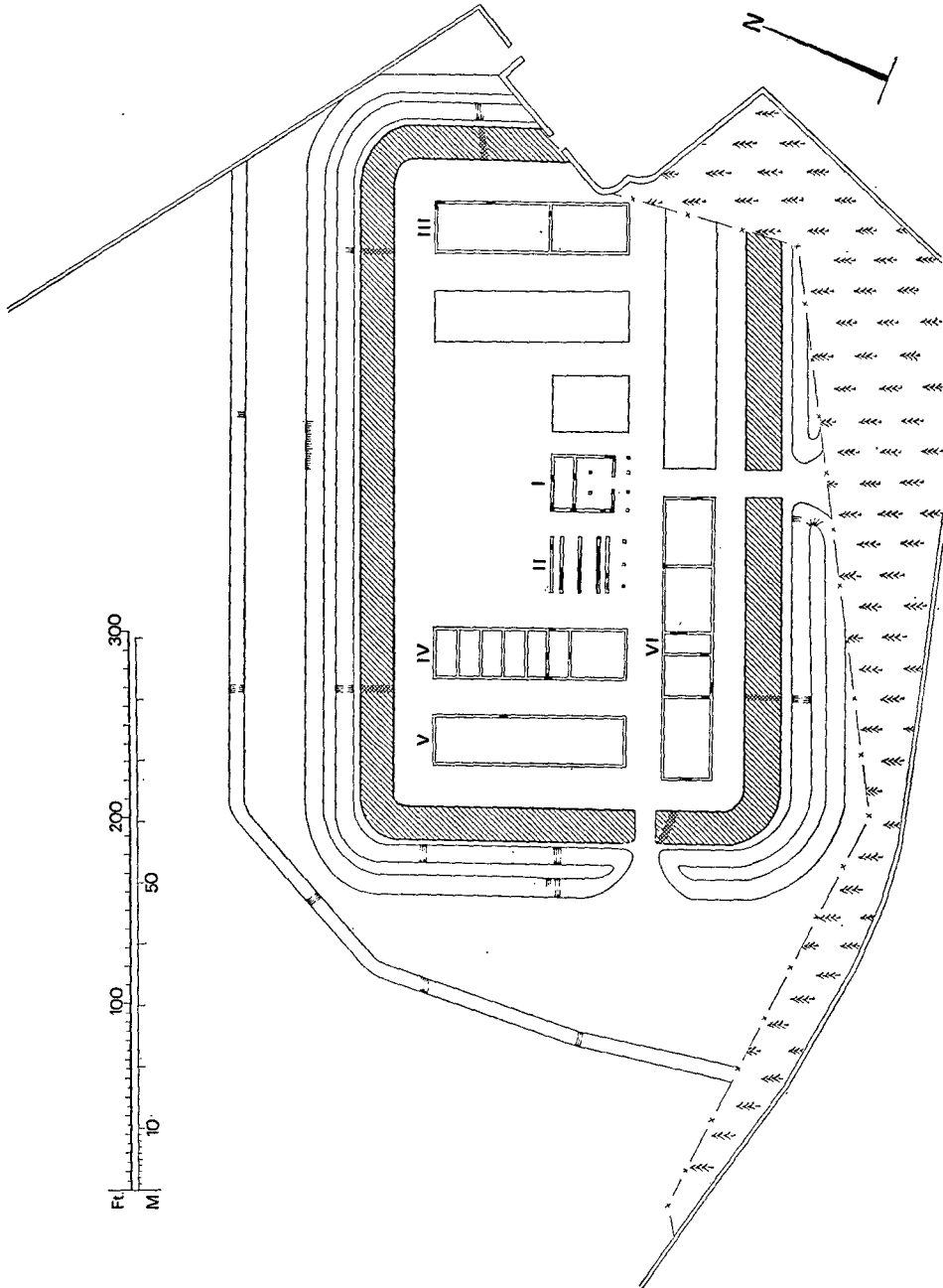


FIG 9 The Flavian fort, tentative reconstruction

wide intervals between the three inner trenches are greater than is normally found in timber granaries of this type of construction; at Fendoch, for example, the largest interval was 5 ft and the average about 3 ft.²⁶ The internal area of about 900 sq ft is comparable with that of the granary at Rough Castle (*c* 1,050 sq ft)²⁷ and closely approaches that of the second-century granary in Crawford itself (*c* 1,000 sq ft).

Although it is impossible to be certain about the superstructure of either building, it is clear that their stout framework consisted of timber uprights about 6 in square, standing, without sole plates, in construction trenches which averaged about 1 ft 10 in in depth and a little over one foot in width. The abundant traces of burned clay and charcoal found in the area of the *principia* suggested that its walls were composed of panels of wattle and daub, whereas the complete absence of such a deposit on the site of the granary led to the conclusion that this building was covered with weather-boarding – a less expendable material and one more likely to be salvaged if this was at all possible (see below).

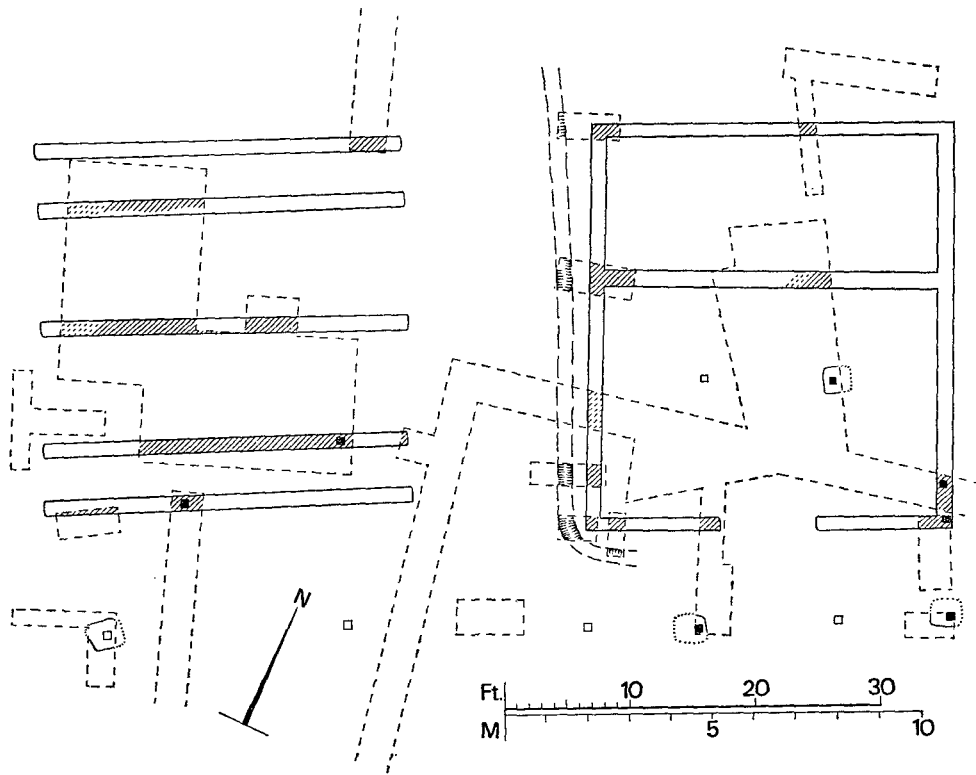


FIG 10 The Flavian headquarters building and granary

Whatever uncertainty there may be about the use or construction of these buildings, there can be no doubt about the manner of their destruction. There was ample evidence to show that they had been carefully and systematically demolished. The upper filling of the construction trenches had clearly been disturbed when the timber uprights were pulled out bodily, and in several places it was possible to see where the vertical face of the trench had been cut away by the spades of the demolition party. It seems probable that the main timbers and boarding of building II were preserved for use elsewhere, while the useless wattle-and-daub panels and scantling of the *principia* were torn down and burned on the spot. In several places the disturbed construction trenches of the latter building were seen to be choked with blocks of unburnt daub scattered during the demolition work and finally sealed with a thick layer of charcoal and baked clay.

Very few relics were recovered during the examination of these buildings and fewer still could be used to date the structures. Perhaps the most significant find was the small fragment of a samian cup (form 27) found along with a bent nail in the mouth of a drainage channel which ran parallel to the W wall of the *principia* and was associated with it. Other finds of late first-century date were found in the layer of grey charcoal-flecked soil spread across the site of Building II after its demolition (see *infra*, pp 191-2).

Buildings III-VI. Although the remaining structures inside the first-century fort have not been examined in such detail and consequently no complete plans have been recovered, in view of the unusual nature of the fort's street-plan it has been considered appropriate to examine their probable relationship to the overall layout.

Building IV, which lay 18 ft W of Building II, was about 27 ft in width and, like Building III in the NE angle of the fort, probably extended to the N as far as the intervallum street; if, as is most likely, it extended in the other direction as far as the *via principalis* the total length would have been a little over 100 ft. Although only two internal divisions were discovered, the fact that these defined a room measuring 11 ft 6 in in depth by about 27 ft across the width of the building – an area corresponding closely to that occupied by the average *contubernium* in an auxiliary fort – suggests strongly that Building IV is a barrack. There was just enough space for five more *contubernia* of similar size between the above-mentioned room and the N end of the building, but it is difficult to see how such divisions could be fitted into the remaining 30 ft on the S. Building V lay 18 ft W of IV and was separated from it by a gravelled street; its dimensions were probably the same as those of Building IV. Building III, which lay in the N angle of the fort, was represented only by the NE corner, a section of the E wall and the partition between the fifth and sixth *contubernia* from the N end. If we assume that the width of Building III, like that of IV and V, was about 27 ft, it is interesting to note that its W wall would have lain exactly the same distance from the *principia* as did Building V on the other side. Such apparent congruity tends to confirm the assumptions made, for it would indicate that the builders of the fort had adopted a regular and probably symmetrical plan, as would be expected in this context. If Building III is allowed the width suggested, the remaining unexplored ground between it and the *principia* could have accommodated a fourth barrack-block of identical dimensions as well as a small *praetorium* of the same 30 ft frontage as the *principia* and *horreum*.

Building VI was represented by various sections of construction trench in the SW half of the *praetentura*; not enough of it was cleared to demonstrate beyond doubt that only one building was involved. The total area covered measured approximately 150 ft by 27 ft and such internal divisions as were discovered seemed to be set at an average interval of 11 ft 6 in, with the result that there was space for exactly 13 rooms of this width. The area available for building in the NE half of the *praetentura*, on the other hand, did not measure more than 140 ft in length – sufficient space for only 12 rooms. Accordingly it does not appear that the buildings in the *praetentura* followed the pattern of the barracks in the *retentura* and their purpose cannot be understood without a re-examination of the latter structures. The key to the problem lies in their size and number. The type of barrack-block represented by Buildings III-V is too small for the accommodation of a normal auxiliary *centuria* of eighty men, whose quarters might be expected to extend to between 120 and 175 ft. Furthermore, even if the entire length of each were divided into *contubernia* there would be space for little more than eight rooms, and it seems more probable that the buildings comprise only six *contubernia* with a larger room, or suite of rooms, at one end. Barracks of this design are quite unsuitable for centuries of infantry, but they do exactly suit the *turma* of thirty-two troopers,²⁸ sixteen of which units are found in an *ala* of cavalry and four in a *cohors quingenaria equitata*. On this assumption five of the *contubernia* in each barrack

would have held six troopers, the sixth would have housed the two *principales*, or junior NCO's, while the larger space at the end would have been assigned to the *decurio* in charge.

We may therefore suggest that the Flavian garrison at Crawford consisted of four *turmae* of cavalry, or at least 132 officers and men. The purpose of the buildings in the *praetentura* now becomes apparent, for these must reasonably be identified as the stables. The total area available for stabling is just under 8,000 sq ft, a figure which approaches closely the internal capacity of a four-*turma* stable at Benwell, and exceeds that of the stable at Gelligaer. If six mounts were assigned to each of the thirteen stalls which Building VI was estimated to contain, the whole block could have provided stabling for seventy-eight horses, while the twelve-stalled building which could be accommodated in the other half of the *praetentura* would have held seventy-two. The resulting total of 150 is sufficiently close to the figure of 138 horses required by the full suggested garrison (one for each of the 128 troopers and *principales*, two for each *decurio* and the commandant). The extra stall in Building VI may perhaps represent the stabling accommodation reserved for the commandant and possibly his staff. The remaining stalls could thus have been evenly allotted on the basis of six to each *turma*. The Flavian garrison of Crawford was clearly a vexillation of a larger unit, and as such may be regarded as further evidence of the manpower shortage which was the natural result of the Agricolan annexation of N Britain.²⁹ There is no way of identifying with any degree of certainty the unit to which it had originally belonged, but it seems reasonable to assume that the cavalry complement of a *cohors quingenaria equitata* would have been more easily detached from its parent body than a small vexillation of an *ala*. Indeed, it would appear that in the course of preparation for Trajan's Parthian campaign a large number of composite regiments were stripped of their mounted elements in order to form a large cavalry *vexillatio*.³⁰ While no single regiment in Britain during the Flavian period can be shown to have lacked its complement of horse, it may be more than a coincidence that the length of the main axis of Crawford I narrowly approaches that of Slack and Ilkley, both of which were garrisoned by part-mounted cohorts and exhibited entrances similar in form to the suggested W gate at Crawford.

Whatever its source there can be little doubt that a garrison of this nature would have been most appropriate for the rigorous duties of patrolling and maintaining communications in the rough country of Upper Clydesdale.

The fate of Buildings IV and VI appeared to be similar to that of I and II. There were extensive layers of burnt wattle and daub immediately overlying the floors of these structures, sometimes to a depth of 6 in or more; the presence of bent nails in this debris suggests such careful demolition as took place in the *principia*. Although no datable relics were recovered from the barracks or stables a spread of occupation debris immediately outside the S end of Building IV contained two small fragments of samian vessels (form 29) and no fewer than three coins, an *as* of Vespasian, a *sestertius* of Titus under Vespasian (both AD 77/78) and another, also of bronze, but not identifiable. A fourth coin, identified as an *as* of Domitian (AD 86), which was discovered in the demolition layer above the Flavian intervallum street to the S of Building VI, indicates even more closely when the first fort was abandoned (see *infra*, p 184).

The Buildings inside the Second-century Fort

In this period the fort faced E, and its layout assumed a more orthodox form, exhibiting both a *retentura* and *praetentura*, in which the buildings were disposed *per scamna*, that is, at right-angles to the major axis of the fort. All the buildings in the central range appeared to be mainly stone-built, whereas the others probably consisted of a timber and wattle-panelled superstructure set in dwarf-walls of stone.

The Principia (figs 11 and 12). Occupying a central position and fronting on the *via principalis*, the headquarters building measured 59 ft by 67 ft over all; its main walls, which had been 3 ft in average thickness and had rested on clay-and-cobble foundations, were very poorly preserved, being nowhere more than one course in height. Long stretches of the wall had been completely removed, and the plan of the building in these parts could only be recovered by tracing the foundation trenches. From the first it seemed unlikely that stone-robbing in recent times could have accounted for such widespread destruction and, in the event, in the few places where the remains had been covered by a deeper accumulation of soil, it was possible to show either that no robber-trench had ever existed or that, when the wall was demolished and the core-material disturbed, the debris had spilled on to the floor of the building. Furthermore, the presence of bent nails in debris from the *sacellum* and cross-hall, as well as the discovery immediately to the S of the *principia* of two pits filled with angular blocks of stone, doubtless derived from the wall facings, would seem to indicate that the demolition of the building occurred at the end of Period III and probably as part of a programme of deliberate dismantling of the fort's installations by the Roman garrison. We have already seen that the N gate was also dismantled at this time (see *supra*, p 164).

The internal layout of the *principia* in both periods conformed with the standard pattern for such buildings. The forward part consisted of a heavily-gravelled courtyard about 30 ft square, flanked on the N and S by a portico 12 ft deep. A series of post-holes belonging to the S colonnade, whose chock-stones were still *in situ*, appeared to indicate that in Period III the portico was supported by timber uprights measuring about 6 in in thickness and separated by an average interval of 7 ft 6 in; intermediate posts situated half-way between the main timbers may have secured light wooden or wattle screens, whose existence is suggested by the shallow slot connecting three of the post-holes. An earlier setting of posts, probably in use during period II, was represented by two roughly circular post-holes measuring about 11 in across and lying on the same alignment as the setting just described. One of these lay between an intermediate and a major member of the later arrangement, too close to either to be contemporary with them; the other had been cut into by the easternmost post-hole of the period III portico and was thus clearly earlier. It would thus appear that in period II the portico was supported by four main uprights set at an average interval of about 9 ft. It is noteworthy that although the porticoes showed two distinct structural phases the courtyard itself did not seem to have been resurfaced, the original 12-in thick layer of gravel having served throughout the life of the building, as did the more lightly gravelled floors of the porticoes.

The only other features noticed in the excavated area of the courtyard were two post-holes, lying just over 4 ft inside the E wall of the *principia*, and a shallow channel 5 in wide and little more than 1 in in depth which ran parallel to the wall on the W side of the courtyard at a distance of 3 ft from it. While it is difficult to be certain what purpose was served by the former features, it seems most likely that the latter represented the eaves-drip from the sloping roof of the *basilica* or cross-hall, which lay immediately to the W.

Running the full width of the building and measuring 15 ft in width, the *basilica* was the fort's hall of assembly where courts-martial and other formal ceremonies were convened under the supervision of the commandant. A setting of boulders which abuts against the W wall of the *basilica* near its mid-point appeared to be the remains of a rectangular foundation measuring 5 ft by 4 ft; its purpose is uncertain but it may have been the base on which a statue or altar originally stood.³¹ Two roughly-dressed blocks of stone were found amongst a layer of debris overlying the latest floor of the *basilica* about 6 ft from the N end-wall (pl 16b). The fact that no examples of mason's work have been found in any other part of the *principia*, or the fort as

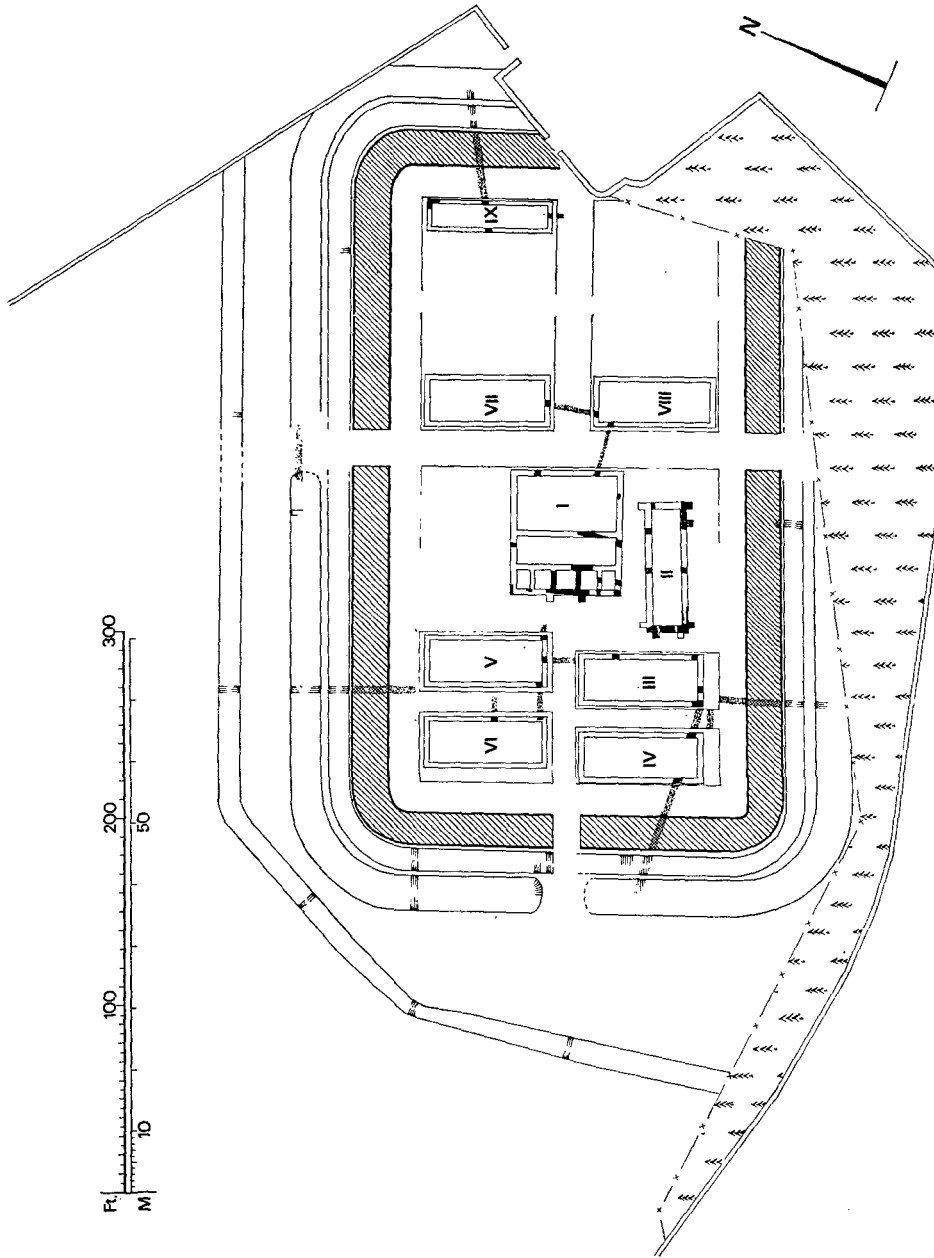


FIG 11 The Antonine I fort

a whole, suggests that these two belong to a structure of particular importance, probably the *tribunal*, or dais, on which the commandant would take up his position when dispensing justice.³² Two floor-levels were noted in the cross-hall during excavation, the upper a thin layer of gravel, the lower of clay. No sherds of pottery or coins were found between these levels, but the upper surface was covered by an intermittent spread of debris containing a fragment of a mortarium made in the Hartshill-Mancetter factories and dating to AD 140–180 (see *infra*, p 193).

The rear part of the *principia* consisted of the usual suite of five rooms, the central one of which was the *sacellum* or regimental chapel, measuring just under 10 ft in depth and 11 ft 6 in in width. The remaining rooms were of a similar depth, but varied in width; those immediately adjoining the *sacellum* were 9 ft wide, while the end rooms were only 7 ft. The partition walls between the rooms lay on foundations similar to those beneath the main walls, but were only

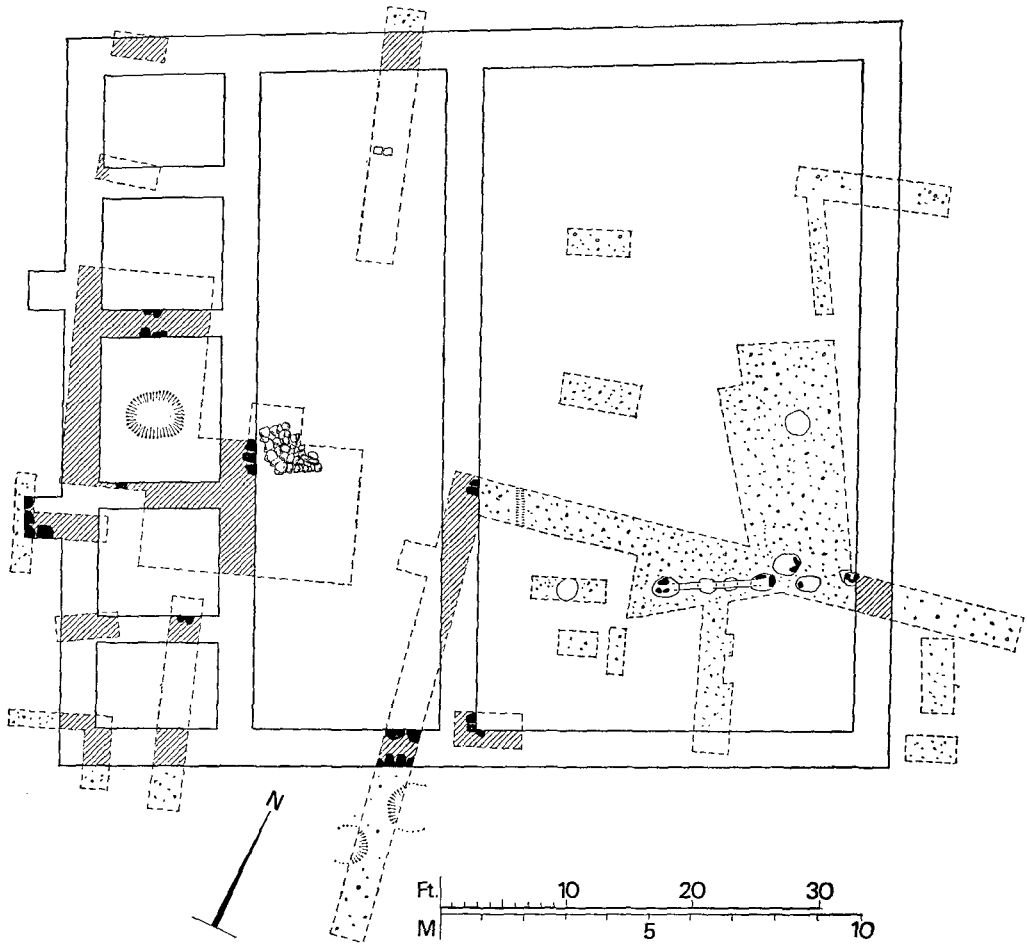


FIG 12 The Antonine headquarters building

2 ft 3 in thick. As the *sacellum* not only housed the regimental standards and other objects of veneration but also came to be used as the fort strong-room where the garrison's pay and savings could be stored, it is interesting that two denarii of Trajan (AD 112-117) and Hadrian (AD 119-138) were found among the debris which overlay the upper floor-level of that room; another denarius of Trajan (AD 112-117) was found just below modern turf-level on the line of the E wall of the *principia*. The floor of each of the rooms examined was a mixture of gravel and clay, and there appeared to have been no such re-surfacing or repairing as was noticed in the cross-hall.

A shallow pit which had been dug in the floor of the *sacellum*, probably during the final demolition, contained several fragments of window glass and a quantity of burnt daub; more

glass was found lying on the floor of the rooms on either side of the *sacellum*, in the cross-hall and in the S portico (see *infra*, p 189), while a thin scatter of burnt daub was also noticed overlying the upper floor of the cross-hall. Assuming that the burnt daub derived from clay-plastered wattle panels, it is uncertain what part of the structure of the *principia* this material represents, although it is more likely that it may have come from some internal partition than from upper parts of the main walls of the building.³³ Two arrowheads, which were also found amongst the final debris in the *sacellum*, probably came from the *armamentaria*; a third was found in the uppermost level of Building IX (see *infra*, p 186).

One more detail falls to be noticed. During excavation an external buttress was discovered on the wall of the *principia* about 18 ft 6 in from the S corner of the building; examination of the foundations at this point demonstrated quite clearly that it was part of the original build. Although no other buttresses were found, symmetry of plan would demand that there was at least one more on the W wall, about 18 ft 6 in from the W corner.³⁴ Thus positioned, they would have served to counter the heavy downward and outward thrust of a pent-roof covering the suite of five rooms at the rear of the *principia*. It therefore seems unlikely that the roof-level of the *sacellum* was higher than that of the flanking rooms, as was probably the case at Fendoch³⁵ and in stone-built headquarters buildings where the rear wall of the *sacellum* projects beyond the line of the main building-wall.

The Granary (fig 11, II; pl 15c). The *horreum* or granary lay a little over 10 ft to the S of the *principia* and about 17 ft W of the *via principalis* towards which it faced. It measured 70 ft by 22 ft over walls at least 3 ft thick and was heavily buttressed on all sides except the E, thus giving wheeled vehicles less restricted access at the granary entrance. The walls of the building, which rested on massive foundations of clay and cobble, appeared to be better preserved than those of the *principia*, surviving in the excavated portions to a maximum height of 1 ft 6 in in three courses. There was no evidence to indicate whether the building had been demolished at the end of the last period or allowed to fall into decay, nor was it possible to demonstrate that it had undergone any alteration or repair. Nevertheless, it is most probable that its history was the same as that of the *principia*; its foundation trenches had obviously been cut through the layer of burnt wattle and daub from Building VI of the Flavian fort, while amongst the tumbled stones from its walls fragments of second-century coarseware vessels were recovered (see *infra*, p 195).

The internal area of the granary (c 1,000 sq ft, almost identical with that of the granary at Rough Castle) represents the total grain-storage capacity of the fort, for we must assume that the unexcavated area to the N of the headquarters building is the site of the *praetorium*, or residence of the commanding officer. Accordingly it may be taken as an indication of the size of the garrison of Crawford in the first Antonine period, and, as such, should be compared with the total storage-capacity available at forts whose barrack accommodation is known or may be inferred with reasonable accuracy. At Cadder³⁶ and Balmuildy³⁷ on the Antonine Wall, both of which could have held a quingenary garrison, the total capacity amounted to about 1,700 sq ft and 2,150 sq ft respectively; the single granary at Bar Hill,³⁸ where the presence of quingenary regiments is attested by inscriptions,³⁹ had an internal area of about 2,100 sq ft. The milliary forts of Fendoch and Housesteads on the other hand each had granaries enclosing a total area of about 3,300 sq ft.⁴⁰ It would thus appear that the grain-storage capacity of Antonine I Crawford was appropriate to a vexillation not exceeding half of a quingenary cohort, or about 250 men.

The Barracks (figs 11 and 13, III-VIII). The barracks of the Antonine fort in both its phases were more slightly built than the granary or headquarters building. They appear to have

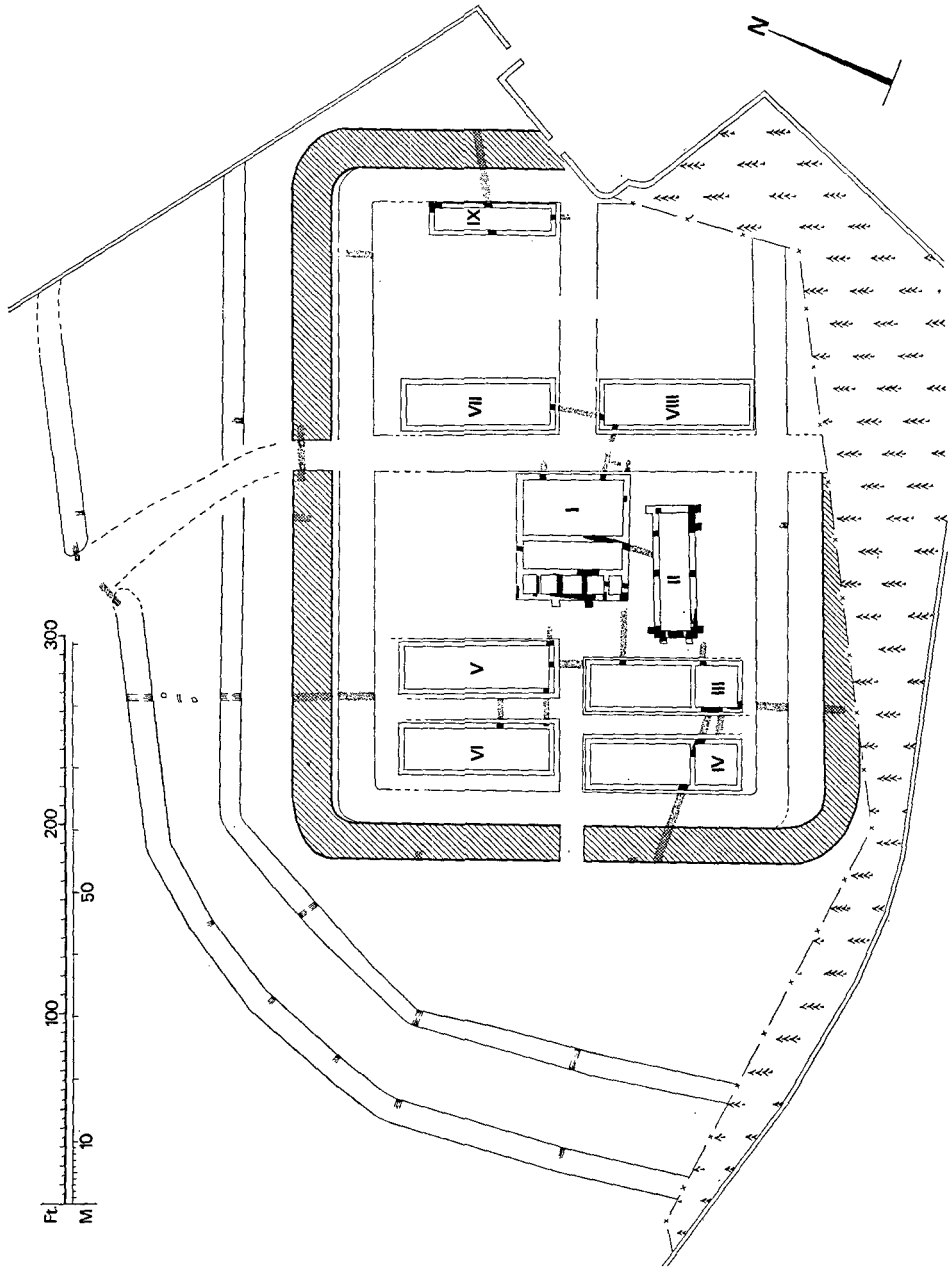


FIG 13 The Antonine II fort

been mainly timber-framed with walls made of wattle and daub, but unlike the barracks and stables of the first-century fort, the lower parts of the structure were encased and supported by dwarf-walls of rubble masonry. This technique was used by Roman engineers to protect the main members of timber-framed buildings from damp-rot, and there were two basic methods of application: the uprights could be tenoned into horizontal timber sills, which were bedded upon carefully-levelled dwarf-walls, or else the lower parts of the uprights could be enclosed

by a low wall, which thus supported the framework in much the same way as a post-hole trench, yet without exposing it to the risk of destruction by damp-rot.⁴¹ The latter method was seen to have been used in Buildings V and VI and can be inferred for the remaining barracks, although their remains, where sectioned, were seldom in a good state of preservation and never more than two courses or about 1 ft in height. Indeed in many places the course of the walls was indicated solely by a band of tumbled core-material and facing stones measuring from 3 ft to 4 ft in width; the original thickness of the walls varied from 2 ft to 2 ft 6 in.

In the first Antonine period the *retentura* contained four barracks measuring on average about 28 ft by 65 ft over all; they were disposed *per scamna*, each pair being separated by a heavily-metalled roadway some 10 ft in width. No internal divisions belonging to this period were discovered. In the *praetentura* only Buildings VII and VIII have been tested by excavation, but, assuming that their dimensions are the same as those just described, the unexplored area on the N side of the *via praetoria* between Buildings VII and IX could accommodate exactly three more barracks – one double and one single block, separated by a 10-ft wide street. A similar arrangement on the S side of the *via praetoria* would bring the total number of barracks in the *praetentura* to six and the fort's full complement would thus have been ten.

There are no exact parallels to Buildings III–VIII in Antonine I Crawford, unless one compares them with timber structures of similar size at Raeburnfoot, Dumfriesshire,⁴² for, while their width closely approaches the average for centurial barracks in an auxiliary fort, their length clearly precludes the possibility of them having housed a full *centuria*. Indeed comparison with excavated examples of normal auxiliary barracks, which range from *c* 175 ft to 120 ft in length,⁴³ suggests very strongly that the barracks at Crawford accommodated half a *centuria* apiece⁴⁴; thus, if we are correct in our estimate of the number of barracks, the full garrison of Crawford in the first Antonine phase could have amounted to five centuries, or about 400 men.

There are, however, two obstacles to this line of argument: firstly, as has been noted above (p 173), the capacity of the granary is not appropriate to such a large garrison; secondly, a garrison of five centuries must be a vexillation of a larger unit and if it is derived from a quingenary cohort of six *centuriae* it represents an unusual fraction; however, if it is derived from a milliary cohort of ten *centuriae*, the accommodation would seem to have been excessively cramped, for regiments of this strength rarely appear to have been housed in barracks less than 150 ft in length.⁴⁵ The conclusion seems unavoidable that the Antonine I garrison was, as in the Flavian period, a vexillation of a *cohors quingenaria equitata*, probably half. Four blocks would have sufficed to accommodate two *turmae* of thirty or thirty-two troopers each and their mounts, half the cavalry complement of a composite regiment; the remaining six blocks would have held three *centuriae* of sixty men apiece, half of the infantry complement.⁴⁶ The total garrison strength would thus have been 240 men, a number for which the known granary-capacity would have been adequate. By comparison the granary-capacity of Antonine Birrens, which was garrisoned by units more than four times as big as the estimated garrison at Crawford,⁴⁷ amounted to *c* 5,000 sq ft.

Only two part-mounted quingenary cohorts are known to have been stationed in Scotland during the Antonine period, the *cohors II Thracum* at Mumrills⁴⁸ and the *cohors III Gallorum* at Castlehill⁴⁹; there is no reason to believe that either regiment was vexillated at this period. The only other fort in Britain known to have been garrisoned by a vexillation of a composite quingenary regiment is Drumburgh, at the W end of Hadrian's Wall, which the *Notitia Dignitatum* associates with the *cohors II Lingonum*.⁵⁰

The alterations which were made to the defences in the second Antonine period have

already been described; their effect was to increase the width of the fort by approximately 70 ft, although the length remained the same. In general the layout of the fort was unchanged, but whereas the earlier Antonine principal buildings remained in use with only minor modifications, the barracks were now extended to a length of about 82 ft.⁵¹ The purpose was almost certainly to enable the fort to accommodate a larger garrison, belonging to a regiment in which the strength of the individual centuries was nearer 80 men than 60. If that was so, then it would also have been necessary to increase the grain-storage capacity of the fort by building another granary; space for this would have now been available to the S of the known granary or to the N of the presumed position of the *praetorium*. Apart from this the arguments already applied to the problem of the Antonine I garrison are equally valid in the quest for their successors. The only units which can be conveniently vexillated in such a way that they occupy the equivalent of five barrack- or stable-blocks are milliary or composite quingenary infantry regiments. As it is most unlikely that the fort would have been increased in area solely to allow another *cohors quingenaria equitata* to occupy it with more spacious quarters, it follows that the succeeding garrison may well have been half of a *cohors milliaria peditata*; that the vexillation may have been half of the infantry complement of a *cohors milliaria equitata* is possible but less likely.

It is therefore highly significant that the *cohors I Tungrorum*, the only milliary infantry regiment whose presence is attested in Scotland during the Antonine period,⁵² was at one period stationed at Castlecary, which was too small to hold much more than half the unit. Although little is known about the layout of the barracks even in the second Antonine period it appears that the SE ends of Buildings III and IV were occupied by a room 23 ft 6 in square, a space so much larger than that normally allotted to a single *contubernium* that we may be justified in recognising it as the centurion's quarters; the remaining space in these blocks would have been occupied by four *contubernia* measuring about 11 ft by 23 ft internally, while Buildings V and VI could each have accommodated exactly six more of the same dimensions, thus giving a total complement of ten. The suggested arrangement bears close comparison with the Hadrianic barracks of Housesteads,⁵³ which were designed for an unidentified milliary cohort and were later occupied by the *cohors I Tungrorum*.

The barracks contained comparatively few datable small finds which could be associated with one or other period of the Antonine occupation (see *infra*, p 179); a large majority of these were fragments of pottery vessels of black-burnished ware, mostly beaded-rim cooking-pots and flat-rimmed platters or bowls. The latest sherds are of Castor ware and include more than half of a corniced-rim beaker with barbotine decoration, the so-called hunt-cup, which cannot have reached the site much before AD 170; this piece was found on the surface of the floor of Building III immediately below the tumbled debris of its W wall and can thus be associated with the very last phase of occupation. There are, however, few sherds of black-burnished ware from this or any part of the fort that can be assigned to Gillam's category 2.⁵⁴

Building IX (fig 11, IX). In the NE corner of the fort beside the *intervallum* street lay Building IX; it measured about 66 ft in length and 16 ft 6 in in width, over walls which were about 2 ft 8 in in thickness as first constructed. There was evidence that the structure had been more stoutly built than the barracks; for the walls were originally 6 in thicker on average than those of Buildings III-VIII and in places appeared to rest upon a shallow foundation trench filled with clay and cobbles. A curious feature of the interior of the building was a stone-built channel from 6 to 8 in wide and about 6 in deep, which was observed running parallel to the E wall at a distance of about 3 ft 9 in from it and interrupting a partition wall. While its purpose could not be ascertained without further excavation, it betrayed a close similarity to the channels in the *sacellum* of the *principia* at Croy Hill, which were interpreted as sleeper-trenches,⁵⁵ and it

is possible that here too the purpose was to support a raised wooden floor. In the angle between the partition wall referred to above and the E side-wall of the building there was a rectangular setting of stones whose W limit continued the alignment of the stone-built channel; a deep deposit of wood ash which overlay the setting suggested that it may have served as a hearth.

There was a certain amount of evidence to indicate that the building had undergone repair or alteration: the W side-wall had at some time been reduced in thickness to about 2 ft 3 in, the lowest three courses of the earlier broad-wall being retained as a foundation (fig 7 and pl 16a), and it is possible that a line of large blocks of stone lying on the floor beside a partition wall may represent an attempt to strengthen it. A more probable indication that the structure was erected in the first Antonine period and continued in use throughout the second, is the fact that although its length is the same as that of the Antonine I barracks, the debris covering its floor-level contained a fragment of a Castor-ware beaker.

The amount of iron-working slag also present in the debris brings us to a consideration of the use to which the building was put. Because it was much narrower than Buildings III–VIII and was not increased in length at the beginning of the second Antonine period we may assume that Building IX was not a barrack. The presence of such quantities of slag and the possible existence of a hearth against one wall make it probable that it served as a workshop in which metal-working, involving the use of iron, and possibly brass (see *infra*, pp 197–8), was carried on. The presence of deposits of iron slag in the filling of the large Antonine I ditch on the W front and in the disturbed post-hole pits of the Antonine II N gate, as well as the discovery of crucible fragments in different parts of the site, suggest that the output of the fort's workshops may have been considerable.

CONCLUSIONS

While the dating evidence for the various phases of occupation at Crawford agrees in general with that obtained from other Roman sites in Scotland, there are two respects in which it appears to differ significantly: firstly, there is nothing to prove that the first-century occupation was prolonged much beyond the middle of the ninth decade, and secondly very little later Antonine coarse pottery was to be found in the buildings of the last occupation. Admittedly in both cases we are dealing with a very small number of stratified finds, but the absence of any trace of structural alterations to buildings or defence-works of the first period would tend to support the hypothesis that Crawford was an Agricolan foundation, built in AD 80 or 81 and abandoned, like Easter Happlew⁵⁶ and possibly Castledykes,⁵⁷ and Gatehouse of Fleet⁵⁸ soon after AD 87. Moreover, the fact that the wooden buildings of Agricolan Crawford were carefully dismantled, their main timbers being considered capable of further use, shows that the occupation cannot have continued for the whole of the Flavian period. The matter is, however, put beyond speculation by the fact that an *as* of Domitian minted in AD 86 and two bronze coins of Vespasian (see *infra*, pp 183–4) could be directly associated with the demolition of the first-period fort, as they were all discovered in the debris-layer immediately overlying Flavian street-levels. Not very much worn when lost, the coins invite comparison with examples of a similar date and mint condition which constitute the main terminal dating-evidence for the Agricolan sites at Inchtuthil,⁵⁹ Newstead⁶⁰ and Stracathro.⁶¹ It would seem possible, therefore, that the re-organisation of the northern *Limes* which followed the withdrawal of the *Legio XX* from Inchtuthil *c* AD 86 may have involved not only the strengthening or refurbishment of such forts as Newstead, Dalswinton, Glenlochar, Oakwood and Milton, but also the abandoning of smaller posts, like Crawford, Gatehouse of Fleet and perhaps Castle Greg,⁶² nor is there any certain

evidence that the larger forts of Castledykes or Easter Happrew were re-occupied or replaced in the late Domitianic period.⁶³ Presumably at this time the vexillations which had manned the small forts and fortlets were re-united with their parent regiments and the whole frontier defence force re-organised so that garrisons of maximum strength and mobility could be stationed in those regions where the threat to security was greatest, i.e. the triangular area whose angles are Newstead, Glenlochar and Corbridge. To the N and W of this zone only a very few sites, Loudoun Hill, Castlecary and (?) Ardoch, are believed to have been then occupied, although it must be remembered that the small number of forts in this category may reflect the lack of archaeological research as much as a hypothetical Roman evacuation.

That Crawford was next occupied in the middle of the second century is proved by the presence of Antonine coarse pottery and samian, and it is more than likely that this re-occupation was associated with the campaigns of Lollius Urbicus in or around AD 140. The fort was now given an orthodox layout, although without increasing its size, and its new garrison was probably half of a composite mounted regiment. It is interesting to speculate why Crawford was not made big enough to accommodate a full regiment. One explanation may be that the shortage of manpower resulting from heavy troop concentrations in the area of the Antonine Wall compelled the Roman army once more to use vexillated garrisons. Another explanation – already suggested by S N Miller⁶⁴ – is that Crawford was garrisoned by half a quingenary regiment, the rest of which was detached for duty in adjacent fortlets in Clydesdale, Annandale and Nithsdale. The system to which these fortlets belong has been shown to originate in the first Antonine period, although the individual sites appear to have been modelled on the milecastles and the mile-fortlets of Hadrian's Wall.⁶⁵ The size of their garrisons will have varied from site to site, but probably averaged about forty men; in view of the suggestion that the garrison at Crawford in the first period was a *cohors equitata* it is significant that at least two of the nearby fortlets may have been occupied by part-mounted units.⁶⁶ It would however be improbable that all of the fortlets known in SW Scotland were manned by detachments of the Crawford garrison, if only because they are spread over such a wide area. Moreover, on the assumption that at any given time half of the cohort remained in garrison at Crawford, the number of men available for detached service would not have been sufficient to man more than five or six fortlets. The *territorium* or area of jurisdiction allotted to Crawford may therefore have contained the fortlets of Wandel, Redshaw Burn, Milton, Durisdeer, Carronbridge and Kirkconnel, together with such road-side signalling installations as may have been associated with them.⁶⁷

It is impossible to ascertain the precise duration of the first Antonine occupation of Crawford, but the evidence suggests that it was relatively short and may well have come to an end c AD 154–158 when the Brigantes, the most powerful confederacy of tribes in N England, are believed to have been in a state of unrest. Whatever the actual date, there can be no doubt that the interval between the two Antonine occupations was extremely brief, for the inner Antonine I ditches on the NW and SE fronts contained little or no silted material when they were deliberately filled to provide a foundation for the extended defences of the last period. As similar evidence of a brief interval between the two Antonine occupations was recovered at Newstead,⁶⁸ it is reasonable to expect that most of the other forts in S Scotland were abandoned and re-occupied in the same short space of time, many of them doubtless in the same peaceful and deliberate manner as Crawford.⁶⁹ The most probable occasion for such a re-allocation of the frontier garrison is not an assault by Caledonian tribes, nor even a panic reaction to internal revolt, but a cool re-appraisal of the political situation in Brigantia; actual troop movements need not have taken place until two or three years after peace had been restored. Now, if the unrest which prompted this review can be associated with coin types of c AD 155 showing Britannia subdued

and with an inscription referring to reinforcements for the Roman army in Britain under Julius Verus,⁷⁰ the garrisons of the Scottish forts need not have been withdrawn, or re-allocated, until AD 157 or even 158, at which latter date we know Birrens was re-built to accommodate the *cohors II Tungrorum*⁷¹ and a sector of the curtain of Hadrian's Wall was under repair.⁷² Moreover, it would be reasonable to assume that the changes of frontier policy which were then made would have been reflected in the revised order of battle, and, while it is clearly impossible to reconstruct such a list, there are sufficient indications of the new troop dispositions to allow a general picture of the revised policy to be built up. For example, Ardoch and at least one of the forts on the Antonine Wall appear to have accommodated smaller garrisons,⁷³ while Broomholm, possibly Carzield⁷⁴ and Raeburnfoot as well as some of the south-western fortlets⁷⁵ were abandoned; legionary troops were replaced at Newstead by a large cavalry unit, and may well have been withdrawn from other sites which they occupied in the first Antonine occupation. On the other hand Crawford was strengthened, a new fort was built at Lyne, possibly to house a *cohors milliaria equitata*,⁷⁶ and the striking power of the Newstead garrison, now probably an *ala milliaria*, was greatly increased. However, although there is no evidence that building activity in Scottish forts continued beyond the end of the reign of Antoninus Pius, it is clear that on Hadrian's Wall and in the Pennines generally reconstruction or refurbishing of auxiliary forts started at least as early as AD 158 and continued until the governorship of Calpurnius Agricola.⁷⁷ Consideration of the number of troops available in Britain at this period has led some to doubt whether Scotland could have been adequately garrisoned, while so many sites in N England were apparently being prepared for new occupation, and it has been suggested that Scotland was in fact abandoned in AD 155 and not re-occupied until the campaign of Ulpus Marcellus in 184.⁷⁸ Attention has however also been drawn to the scarcity on Roman sites in Scotland of examples of samian ware made after AD 160, although such types abound in the Period 1b level on Hadrian's Wall.⁷⁹ The conclusion would seem to be obvious; if the evidence of the samian is accepted, it follows that either the second Antonine occupation of Scotland came to an end not long after AD 160, or late Antonine garrisons in Scotland received supplies of pottery differing markedly from those reaching forts in N England. The former alternative would seem to be more probable, and would accord well with the evidence of Crawford, where the lack of late Antonine black-burnished-ware (see *infra*, pp 193–6) appears to indicate a relatively short secondary occupation, although the presence of sherds of Castor ware shows that the evacuation did not take place much before 170. While similar evidence of a brief occupation in the second Antonine period was forthcoming at Lyne,⁸⁰ and possibly Glenlochar,⁸¹ and Loudoun Hill⁸² there is reason to believe that some forts, particularly those on the Antonine Wall, were at least held, if not fully garrisoned, for a little longer;⁸³ how much longer is not certain, but it may be that much of Scotland was evacuated by 175, rather than at some time in the reign of Commodus.⁸⁴ The explanation of such disparity between the terminal dates of Crawford or Lyne and forts on the Antonine Wall may be explained by the nature of the policy which appears to have been adopted in 158; for it seems clear, in view of the evidence of rebuilding of the Pennine forts under Marcus, that the decision had been taken to re-instate the Hadrianic frontier. What occurred in Scotland from that time onward may have been no more than a selective running down of garrisons and installations in the forward area together with the temporary provision of extra strong-points and mobile units in the vicinity of those areas affected by the Brigantian revolt.

The role of Crawford in the second Antonine period must be seen in the context of a partial disintegration of the fortlet system. For as there is no evidence either of the construction of new fortlets or of any increase in the size of existing fortlets, it is difficult to believe that the augmented

garrison at Crawford, now possibly 400 strong, was intended to do other than increase the security of an important nodal point in the Roman road-system. Accordingly it is less likely that the unit of which part was stationed at Crawford during the later Antonine period also supplied the garrisons for the neighbouring fortlets.

Between 165 and 170 the fort was finally abandoned, apparently as part of a deliberate withdrawal which left ample time for a thorough and tidy demolition of the installations on the site. If at the same time and in immediately succeeding years the same kind of withdrawal was taking place at other sites in S Scotland the 'bellum Britannicum' which threatened to break out in the early 170s⁸⁵ may have been the response of hostile tribes from beyond the Antonine Wall to whom the growing weakness of the frontier defences was an invitation to invade. Before many years had passed the invitation had become too compelling to decline.

NOTES

- 1 *Military Antiquities of the Romans in Britain*, 61.
- 2 *The Roman Occupation of South-Western Scotland*, Miller, SN (ed), 113 f.
- 3 The southern slopes of Castle Hill to the NW of the Roman fort are occupied by at least five pre-historic habitation sites: a fort (951218), a settlement (945215), a homestead (952220) and two enclosures (944215, 946216).
- 4 Wilson, J A, *A Contribution to the History of Lanarkshire*, II, 272 ff.
- 5 A fort intended to accommodate a *cohors quingenaria* would normally occupy from 3.0 to 3.5 acres (measured over the ramparts); Brough on Noe, however, with an area of just over 2 acres, was garrisoned by a full quingenary cohort (*Derbyshire Archaeol J*, LXXXVII (1967), 154-8).
- 6 For evidence of similar constructional technique in sections of Roman road at Turf Law, Berwickshire, and on the Gask Ridge, Perthshire, cf *DES* 1964, 24; *ibid* 1967, 37.
- 7 The use of horizontal timber strapping to ensure the stability of an earthen or turf rampart is attested on various sites; for an example at Caer Sŵs and York, cf *The Montgomery Collections*, vol. 59, pts 1 and 2 (1965-6), 112 ff; *ibid*, 60, pts 1 and 2 (1967-8), 64; RCHM, *The City of York: Eboracum*, 12 f, pl 12.
- 8 *PSAS*, xxxix (1904-5), 456 ff.
- 9 *DES* 1960, 29; *J Rom Stud*, xli (1951), 60.
- 10 This trench, the first to be cut through the fort's defences during the excavations of 1961-66, was laid out at right-angles to the visible scarp on the SW side of the fort; as this feature does not exactly follow the alignment of the SW defences a slightly oblique section was thus obtained. The measurements relating to the ditches and rampart observed in this section, where they appear in the text, represent the true measurements, not the apparent dimensions visible on the section wall (fig 6).
- 11 *Archaeol Aeliana*, v (1909), 213 ff.
- 12 *Antiquity*, xl (1966), 300 ff.
- 13 cf *Current Research in Romano-British Coarse Pottery*, (CBA Research Report 10), 67 ff.
- 14 *J Rom Stud*, xlii (1954), 84.
- 15 Richmond, I A, *Hod Hill*, II, 71.
- 16 *PSAS*, xxxv (1900-1), 176 f.
- 17 *Yorkshire Archaeol J*, xxvi (1922), 13 f.
- 18 *ibid*, xxviii (1926), 159 f.
- 19 *Trans Birmingham Archaeol Soc*, 83 (1969), 65 ff; *J Rom Stud*, lxi (1969), 217 f.
- 20 *PSAS*, lxxxvi (1951-2), 94 f.
- 21 *ibid*, lxxxiii (1938-9), 115 ff.
- 22 *Archaeol J*, lxxxix (1932), 70 ff.
- 23 *Trans Cumberland Westmorland Antiq Archaeol Soc*, xxi (1921), 2 ff.
- 24 Richmond, I A, *op cit*, 66 f.
- 25 Van Giffen, A, *Jaaresverlag XXV-XXVIII, XXXIII-XXXVIII Van de Vereniging voor Terpenonderzoek, De Romeinse Castella in de dorpsheuvel te Valkenburg aan de Rijn (ZH), Praetorium Agrippinae*.

- 26 *PSAS*, LXXIII (1938-9), 129 ff.
- 27 *ibid*, xxxix (1904-5), 474 ff.
- 28 If the *turma* comprised thirty troopers (cf Cheesman, G L, *The Auxilia of the Roman Imperial Army*, 26 f) the six *contubernia* would have held five troopers each; see also Davies, R W, in *Epigraphische Studien*, 4, 110 f.
- 29 There is evidence that the fort at Birrens in the Flavian period may have been too small to have accommodated more than a vexillation of a cohort (*DES* 1967, 21).
- 30 Cheesman, G L, *op cit*, 113; *CIL*, III, 600; cf also *J Rom Stud*, LIX (1969), 53 ff; *Archaeol Aeliana*, IX (1932), 207.
- 31 As in the *principia* at Brough-by-Bainbridge (*J Rom Stud*, LIX (1969), 207 f).
- 32 cf *Archaeol Aeliana*, XIII (1936), 221 ff.
- 33 The alternate layers of 'powdered brick', and black material containing scraps of wood and a number of small nails which filled the cellar of the *sacellum* at Old Kilpatrick may be evidence of similar partitions (Miller, S N, *The Roman Fort at Old Kilpatrick*, 26).
- 34 Examination of the S corner of the *principia* was inconclusive owing to later disturbance, but it seems unlikely that a buttress was built there.
- 35 *PSAS*, LXXIII (1938-9), 126 f.
- 36 Clarke, J, *The Roman Fort at Cadder*, 41 f.
- 37 Miller, S N, *The Roman Fort at Balmuildy*, 26 ff.
- 38 Macdonald, G and Park, A, *The Roman Forts on the Bar Hill*, 40 ff.
- 39 *RIB*, 2167, 2169-70, 2172.
- 40 cf Nash-Williams, V E, *The Roman Frontier in Wales* (2nd edition, M G Jarrett, ed), 160 ff.
- 41 Richmond, I A, in *Studies in Building History*, Jope, M (ed), 24.
- 42 *Trans Dumfriesshire Galloway Natur Hist Antiq Soc*, xxxix (1960-1), 24 ff.
- 43 The barracks at Cadder measured 120 ft in length (Clarke, J, *op cit*, 48 ff), those at Old Kilpatrick measured up to 175 ft (Miller, S N, *The Roman Fort at Old Kilpatrick*, 15 ff).
- 44 For half-century barracks at Martinhoe, Devon, and Gatehouse of Fleet, Kirkcudbright, see Fox, A, in *Studien zu den Militärgrenzen Roms* (Vorträge des 6. Internationalen Limeskongresses in Süddeutschland), 17 f and *DES* 1961, 35.
- 45 cf *Archaeol Aeliana*, XLVII (1969), 19, 27 ff.
- 46 Cheesman, G L, *op cit*, 28 ff.
- 47 *PSAS*, xxx (1895-6), 112 f; *RIB*, 2092-4, 2097, 2100, 2104 etc.
- 48 *RIB*, 2142.
- 49 *ibid*, 2195; for a recent estimate of the size of Castlehill, cf *J Rom Stud*, XLI (1951), 61 f.
- 50 cf Birley, E, *Research on Hadrian's Wall*, 209 ff.
- 51 The barracks are closely matched in respect of length by those at Gatehouse of Fleet (*DES* 1961, 35).
- 52 *RIB*, 2155, and possibly 2135, but cf *Archaeol J*, cxxv (1968), 96 f.
- 53 *Archaeol Aeliana*, xxxviii (1960), 61 ff; *ibid*, xxxix (1961), 279 ff. The presence of arrowheads in the *principia* and Building IX at Crawford makes it possible that the last garrison was part of a *cohors sagittariorum*; it has already been suggested that such a regiment formed the original garrison at Housesteads (*ibid*, XLVI (1968), 284 ff).
- 54 cf *Current Research in Romano-British Coarse Pottery*, (CBA Research Report 10), 67 ff.
- 55 *ibid*, LXXI (1936-7), 41 ff.
- 56 *ibid*, xc (1956-7), 93 ff.
- 57 *J Rom Stud*, LVI (1966), 269 f.
- 58 *DES* 1961, 35.
- 59 *J Rom Stud*, XLIX (1959), 104.
- 60 *PSAS*, LXXXIV (1949-50), 6 f.
- 61 *DES* 1969, 2; *PSAS*, 103 (1970-1), 131 f.
- 62 The fortlet of Castle Greg (RCAMS, *Inventory of Midlothian and West Lothian*, 140) occupies approximately the same area as Gatehouse of Fleet and is nearly twice as big as the average Antonine fortlet. The absence of a road linking it with forts on the Clyde or the Forth suggests that, like Easter Haprew (*PSAS*, xc (1956-7), 101), it may have been built and evacuated before the construction of the road system in the late-Domitianic period.
- 63 Castledykes may well have been unoccupied during the later Flavian period, but it seems most

- unlikely that, as was suggested in *J Rom Stud*, LVI (1966), 270, a new fort was then built on less favourable ground more than one mile to the NE. Evidence for a Flavian II occupation at Lyne consists of a fragment of first-century samian; however, in view of the recent up-dating of ultimate S Gaulish wares from Montans (cf Wachter, J S, *Excavations at Brough-on-Humber 1958-61*, 129) too much weight should not be put on the testimony of a single sherd; see also note 76.
- 64 *The Roman Occupation of South-Western Scotland*, 220.
- 65 The sites at Burnswark, Durisdeer, Milton (South) and possibly Dalmakethar appear to be descended typologically from milefortlets of the Cardurnock type (*Trans Cumberland Westmorland Antiq Archaeol Soc*, XLVII (1948), 78 ff); other fortlets, including those on the Antonine Wall, betray a greater affinity to milecastles on Hadrian's Wall although they seem to favour a square rather than a short-axis or long-axis plan (cf Birley, E, *op cit*, 98). For evidence of a *centuria* in garrison at Barburgh Mill, see *Britannia*, III (1972), 304 f.
- 66 Finds of horse-equipment were made at both Milton and Durisdeer (*Roman Occupation of South-Western Scotland*, 106, 126).
- 67 e.g. the watch-tower at Beattock Summit (*DES 1966*, 47) which, although not dated to the Antonine period by any finds, seems from its low-lying position to be better suited to the surveillance of the road system in conjunction with the fortlets than long-range signalling.
- 68 *PSAS*, LXXXIV (1949-50), 14.
- 69 *ibid*, xciv (1960-1), 97 f.
- 70 *RIB*, 1322.
- 71 *ibid*, 2110.
- 72 *ibid*, 1389.
- 73 For Ardoch see Crawford, O G S, *Topography of Roman Scotland*, 35 ff; for Old Kilpatrick see Miller, S N, *The Roman Fort at Old Kilpatrick*, 58.
- 74 *Trans Dumfriesshire Galloway Natur Hist Antiq Soc*, xxiv (1947), 70, 77 f.
- 75 Lyne fortlet appears to have been superseded by the large fort (*PSAS*, xcv (1961-2), 208 ff); the site at Burnswark was overlain by a practice-camp, while Wandel, if ever completed (*DES 1966*, 47), does not appear to have been in use for more than a brief period.
- 76 *PSAS*, xcv (1961-2), 217. Since this was first written it has been shown, on the evidence of samian ware, that the large fort at Lyne was probably built in AD 140 (*Britannia*, III (1972), 44-5).
- 77 The evidence is conveniently summarised in Frere, S S, *Britannia*, 156.
- 78 cf *Bonner Jahrbuch*, 170 (1970), 194.
- 79 See now *Britannia*, III (1972), 1 ff.
- 80 *PSAS*, xcv (1961-2), 217 f; see note 76.
- 81 *Trans Dumfriesshire Galloway Natur Hist Antiq Soc*, xxx (1951-2), 16.
- 82 *ibid*, xxxix (1960-1), 48.
- 83 Macdonald, G, *The Roman Wall in Scotland*, 479; *PSAS*, 103 (1970-1), 133.
- 84 *ibid*, 245; The *denarius* of Crispina of c AD 180 which was found at Newstead need not necessarily be associated with the Antonine II occupation. Recent inspection of the samian from Newstead by Mr B R Hartley has revealed the presence of early third-century material. Of more significance is the absence from the otherwise complete coin-series from Traprain Law of coins of the emperors Marcus Aurelius, Commodus, Pertinax, Severus and Caracalla (*PSAS*, xciv (1960-1), 161-2).
- 85 *Scriptores Historiae Augustae, Marcus*, xxii, 1.

ABBREVIATIONS USED IN THE CATALOGUE OF SMALL FINDS

<i>Balmuildy</i>	S N Miller, <i>The Roman Fort at Balmuildy on the Antonine Wall</i> (1922)
<i>Bar Hill</i>	G Macdonald and A Park, <i>The Roman Forts on the Bar Hill, Dumbartonshire</i> (1906)
<i>Birdoswald</i>	I A Richmond and E B Birley, 'Excavations on Hadrian's Wall in the Birdoswald - Pike Hill Sector, 1929', <i>Trans Cumberland Westmorland Antiq Archaeol Soc</i> , xxx (1930), 169 ff
<i>Brough</i>	P Corder and T Romans, <i>Excavations at the Roman Town Brough - Petuaria 1937</i> (1938)
<i>CGP</i>	J A Stanfield and G Simpson, <i>Central Gaulish Potters</i> (1958)
<i>Camelon</i>	D Christison, <i>et al</i> , 'Account of the Excavation of the Roman Station of Camelon . . . in 1900,' <i>PSAS</i> , xxxv (1900-1), 329 ff

- Camulodunum* C F C Hawkes and M R Hull, *Camulodunum* (1947)
Cardurnock F G Simpson and K S Hodgson, 'The Coastal Mile-Fortlet at Cardurnock', *Trans Cumberland Westmorland Antiq Archaeol Soc*, XLVII (1948), 78 ff
Castledykes A S Robertson, *The Roman Fort at Castledykes* (1964)
Duntocher A S Robertson, *An Antonine Fort, Golden Hill, Duntocher* (1957)
Forden Gaer F N Pryce and T Davies Pryce, 'The Forden Gaer, Second Interim Report', *Archaeol Cambrensis*, 1929, 100 ff
Gillam J P Gillam, *Types of Roman Coarse Pottery Vessels in Northern Britain* (1968)
Hod Hill I J W Brailsford, *Hod Hill, Volume One: Antiquities from Hod Hill in the Durden Collection* (1962)
Hofheim E Ritterling, *Das Frührömische Lager bei Hofheim in Taunus* (1913)
Ilkley B R Hartley, 'The Roman Fort at Ilkley: Excavations of 1962', *Proc Leeds Philosoph Lit Soc*, xii, 2 (1966), 23 ff
Knorr R Knorr, *Töpfer und Fabriken verzierter Terra Sigillata des ersten Jahrhunderts* (1919)
Langton P Corder and J L Kirk, *A Roman Villa at Langton, near Malton, E. Yorkshire* (1932)
Malton II P Corder, *The Defences of the Roman Fort at Malton* (undated)
Mumrills I G Macdonald and A O Curle, 'The Roman Fort at Mumrills, near Falkirk', *PSAS*, LXIII (1928-9), 396 ff
Mumrills II K A Steer, 'Excavations at Mumrills Roman Fort', *PSAS*, xciv (1960-1), 86 ff
Newstead J Curle, *A Roman Frontier Post and its People* (1911)
Old Kilpatrick S N Miller, *The Roman Fort at Old Kilpatrick* (1928)
Ovilava P Karnitsch, *Die Reliefsigillata von Ovilava* (1959)
Richborough V B W Cunliffe ed, *Fifth Report on the Excavations of the Roman Fort at Richborough, Kent* (1968)
Trentholme L P Wenham, *The Romano-British Cemetery at Trentholme Drive, York* (1968)
Wroxeter I J P Bushe-Fox, *Excavations on the Site of the Roman Town at Wroxeter, Shropshire, in 1912* (1913)
Wroxeter II J P Bushe-Fox, *Second Report on the Excavations . . . at Wroxeter, Shropshire 1913* (1914)
Wroxeter 1923-7 D Atkinson, *Report on the Excavations at Wroxeter (The Roman City of Viroconium) in the County of Salop 1923-1927* (1942)

THE FINDS

*The Coins*¹

Nine Roman coins were found during the excavations of 1961-6. They were all submitted to Dr Anne Robertson of the Hunterian Museum, University of Glasgow, who kindly reported on them in the following terms.

- 1 From the surface of the Flavian intervallum street on the N front.
 Denarius of Nero AD 54-68 Undated, c AD 65-68
 AR Size 18 mm. Wt. 1.89 g. Axis ↓
Obv. [NERO CAESAR] AVGVSTVS (l. up, r. down)
 Head of Nero, laureate, bearded, r.
Rev. IVPPIter [CVSTOS] (l. up, r. down)
 Jupiter, naked to waist, seated l. on throne, holding thunderbolt and sceptre
 Mint of Rome
 C 119 RIC 45 BMC 74-76 HCC 28
 Much worn
- 2 From the first-century debris layer immediately S of Flavian Building IV.
 As of Vespasian AD 69-79 COS VIII AD 77-78
 AE Size 26 mm. Wt. 6.66 g. Axis ↓
Obv. [IMP CAES] VESPAS [IAN AVG COS VIII P P] (l. to r.)
 Head of Vespasian, laureate, r., globe at point of neck

Rev. IVDAEA CAPTA (l. up, r. down)

S C (in exergue)

Jewess seated r. on cuirass at foot of palm-tree, head propped on l. arm which rests on r. knee

In front and behind, shields

Mint of Gaul (Lyons ?)

C 240 RIC 762 BMC 845 HCC 183

Corroded, not much worn

3 From the same level as no. 2.

Sestertius of Titus (under Vespasian) AD 72-79 COS VI AD 77-78

AE Size 35 mm. Wt. 20.90 g. Axis ↓

Obv. T CAES IMP AVG F PON TR P COS VI CENSOR (l. to r.)

Head of Titus, laureate, bearded, r., globe at point of neck

Rev. ROMA (l. up)

S C (l. and r. in field)

Roma, helmeted, in military dress, standing l., holding Victory and vertical spear

Mint of Gaul (Lyons ?)

C 184 RIC 772 BMC 855 HCC 58

Corroded, not much worn

4 From loose soil immediately to W of Antonine Building IX in Section E.

Denarius of Titus AD 79-81 TR P VIII IMP XIII COS VII P P Late AD 79

AR Size 18 mm. Wt. 1.87 g. Axis ↓

Obv. IMP TITVS CAES VESPASIAN AVG P M

(r. to l., outwardly)

Head of Titus, laureate, bearded, r.

Rev. TR P VIII IMP XIII COS [VII P P] (l. to r.)

Rostral column surmounted by statue of male figure, radiate, standing front, holding spear and parazonium

Mint of Rome

C 272 RIC 10 BMC 13

Corroded, not greatly worn

5 From the layer of debris overlying the Flavian intervallum street immediately below the E wall of Antonine Building III.

As of Domitian AD 81-96 COS XII AD 86

AE Size 28 mm. Wt. 10.62 g. Axis ↓

Obv. IMP CAES DOMIT AVG GERM COS XII CENS [PER P P] (l. to r.)

Head of Domitian, laureate, bearded, r., aegis at point of neck

Rev. [FOR] TVNAE AVGVSTI (l. up, r. down)

S C (l. and r. in field)

Fortuna, draped, standing l., holding rudder and cornucopiae

Mint of Rome

C 122 RIC 333 BMC 386-8 HCC 147

Corroded, very little worn ^{1a}

6 From the same level as nos 2 and 3.

Fragment of a small brass coin, possibly a Flavian As.

7 From the floor of the *sacellum* of the Antonine *principia*.

Denarius of Trajan AD 98-117 COS VI AD 112-117

AR Size 19 mm. Wt. 2.16 g. Axis ↙

Obv. IMP TRAIANO AVG GER DAC P M TR P [COS VI P P] (l. to r.)

Bust of Trajan, laureate, r., slight drapery on l. shoulder (l. up, r. down)

Rev. S P Q R OPTIMO PRINCIPI [ARAB ADQ in exergue]

Arabia, draped, standing l., holding branch over camel walking l., and a bundle of canes (?)

Cf. C 26 (but rev. camel, not ostrich), RIC 245, BMC 474-6, HCC 160-161

Corroded, not much worn

8 From loose soil above the NE corner of the Antonine *principia*.

Denarius of Trajan AD 98-117 From portrait probably COS VI (AD 112-117)

AR Size 17½ mm. Wt. 1.94 g. Axis ↓

Obv. Probably IMP TRAIANO AVG GER DAC PM TR P COS VI P P

Bust of Trajan, laureate, r., slight drapery on l. shoulder

Rev. [S P Q R OPTIMO PRINCIPI]

Mars, helmeted, naked except for cloak round waist, advancing r., holding transverse spear and trophy over l. shoulder

Cf C 372, RIC 270, BMC 415-17, HCC 146-7

Much corroded, not much worn

9 From the same level as no. 7.

Denarius of Hadrian AD 117-138 COS III AD 119-138

AR Size 20 mm. Wt. 2.43 g. Axis ↓

Obv. Probably HADRIANVS AVGVSTVS

Head of Hadrian, laureate, r. (slight drapery on l. shoulder?)

Rev. Probably COS III

Concordia (?), draped, seated l., holding patera

Cf C 328 (but *obv.* with slight drapery on l. shoulder ?), RIC 172d, BMC 391-2, HCC 125-6

The coin has a heavy deposit on its surface, but does not seem to be much worn

Objects of bronze (fig 14)

- 1 From the surface of the gravelled berm in front of the Antonine II W rampart. A small fragment probably constituting about one-quarter of a bronze ring of oval section, measuring c 0.2 in thick and 1.1 in diameter; its purpose is unknown.
- 2 From loose soil over the SW angle of the Antonine granary. An incomplete object comprising a moulded stem c 1.0 in long and 0.3 in maximum diameter with a small shank at one end and a cross-bar, c 1.25 in long, with two projecting arms at the other; its use is uncertain but it may possibly have served as a guide-loop for a piece of horse harness.
- 3 From the debris layer overlying Flavian Building VI. Several very badly corroded fragments probably of a small bell. The stump of what may have been its attachment loop measures about 0.3 in across; when entire, the bell, if such it was, would not have measured much more than 0.8 in across the mouth. Such bells are commonly found on Roman sites and may have been originally attached to the harness of horses, not necessarily cavalry mounts; cf *Langton*, fig 18, 13; *Castledykes*, p 161, no. 14.

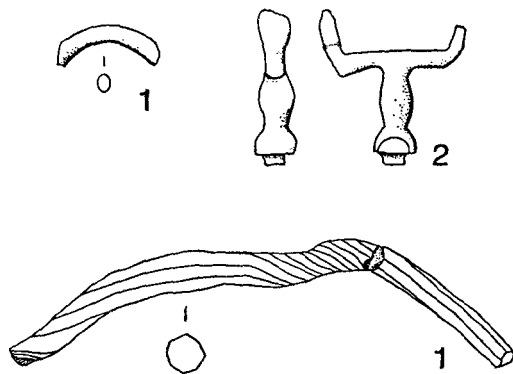


FIG 14 Objects of bronze (above) and lead (below), numbered as in catalogue (1:2)

Objects of iron

- 1 From loose soil above the Antonine II intervallum street on the S front. A very badly corroded object with pyramidal head, c 2.2 in long, resembling a *pilum*-head, although the possibility of it being a spear-butt or even the shank-terminal of a carpenter's bit should not be ruled out; cf *Hod Hill I*, G 17; *Newstead*, pl LIX, 12 and pl XXXVII, 19; *Mumrills I*, fig 125, 26.

- 2 From beneath Antonine cobbled layer immediately S of Flavian Building IV. A spearhead in very poor state of preservation, the surviving part being just over 6 in long; the dimensions of the blade were probably about 4.5 in long by 1.1 in wide; cf *Newstead*, pl XXXVII, 7.
- 3 From the final demolition-pit in the floor of the Antonine *sacellum*. An arrowhead of hollow-sided-triangular section, 2.1 in long, averaging 0.65 in across the barbs; much corroded, found with fragments of window glass; cf *Hod Hill I*, 6, B107; *Bar Hill*, 115 ff; *Newstead*, pl XXXVIII, 1-7.
- 4 From the upper level of debris inside Antonine Building IX. An arrowhead in most respects similar to no. 3 above, 1.7 in long and 0.6 in across the barbs.
- 5 From the final layer of debris overlying the floor of the Antonine *sacellum*. An arrowhead similar to nos 3 and 4 above, 1.8 in long and 0.6 in across the barbs. Found with run lead and the remains of three iron nails ranging from 0.6 to 1.4 in long; at least one of the latter was apparently bent by extraction.
- 6 From the upper filling of the Antonine I middle ditch on the W front. A bolt, 5.4 in long and 0.6 in maximum diameter; purpose unknown.
- 7 From the final layer of debris overlying the floors of the rooms on either side of the Antonine *sacellum*. Three nail-fragments ranging from 1.1 to 1.3 in long; the shanks appear to be of rectangular section and are all slightly bent.
- 8 From loose soil over the forecourt of the Antonine *principia*. A fragment of a nail, 2.5 in in overall length, the shank being of approximately square section, 0.2 in across, and markedly bent.
- 9 From the debris layer overlying the Antonine I rampart on the N front. A fragment of a heavy bolt 2.4 in long, with a spatulate head cf *Castledykes*, pl 8, 12.
- 10 From the same level as no. 9 above. A fragment of a fairly heavy nail, 2.4 in long, the shank being slightly bent.
- 11 From beneath the tumbled stones of W wall of Antonine Building III. A nail-fragment, 1.4 in long, the surviving part of the shank being unbent.
- 12 From the layer of debris overlying Flavian Building VI. Three fragments of nails, ranging from 1.0 to 1.3 in long; the shanks of all were bent and one had traces of charcoal adhering to it.
- 13 From the surface of the floor of Flavian Building VI. A fragment of a nail measuring 1.1 in long; the shank, which is slightly bent, has traces of burned wood adhering to it.
- 14 From beneath the Antonine cobbled layer immediately S of Flavian Building IV. Several nail-fragments, the best preserved having a bent shank 2.3 in long.
- 15 From the upper filling of a drain immediately to the W of the Flavian *principia*. A fragment of nail, 1.5 in long, the shank, which is of rectangular section, being sharply bent.

Objects of lead

- 1 From beneath the Antonine I *intervallum* street on the N front. A curved strip of lead of varying octagonal section, 0.4 in in maximum thickness and about 6 in long. The strip appears to have been twisted in two places, but whether this is intentional or accidental is uncertain. It may have served as the handle or stem of a lamp-holder; cf *Newstead*, pl LXXIX, 5 and 7.
- 2 From beneath the Antonine I *intervallum* street on the W front. A curled strip diminishing in width from 1.1 to 0.4 in, originally about 2.75 in long and of a fairly constant thickness of about 0.2 in. In view of the mutilation and subsequent corrosion of the object, its purpose is difficult to ascertain, but it may represent the side or handle of a lead lamp-holder; cf *Newstead*, pl LXXIX, 4 and 9.
- 3 From beneath layer of debris overlying the Flavian *principia*. Hemispherical playing-man measuring 0.75 in in average diameter and 0.45 in in height. It was found with the glass paste playing man described below (p 000, no. 11); cf *Newstead*, pl XCIII, 12, 21-22 etc. Although it is conceivable that the piece served as a weight (its present weight of 24.7 gm being reasonably close to that of the Roman *uncia*), its association with the counter makes it almost certain that, latterly at least, it was used for gaming.
- 4 From loose soil immediately to the S of the W end of the Antonine granary. An irregularly shaped lead disc, probably a weight, measuring 0.75 in in diameter and 0.45 in in thickness; it weighed 24.2 gm; see no. 6 below for comments.
- 5 From loose soil above the N end of Antonine Building IX. A thin disc, reasonably flat on one side, the other side bearing the impressions of the apparently square-headed implement used to hammer it flat; the average diameter is 1.9 in, the thickness about 0.15 in, and the weight 54.4 gm.

- 6 From the N edge of the Antonine *via praetoria*. A well-made disc, 1.1 in in average diameter, 0.3 in in thickness and 47.2 gm in weight.

Although items 4, 5 and 6 have all been subject to a fair amount of damage and wear, it is clear that they have originally served as weights for use with scales. No. 5 approaches very closely the equivalent of two Roman *unciae* (c 55.5 gm), while nos 4 and 6 fall short of the equivalents for one and two *unciae* respectively to an extent which, although appreciable, is not without parallel in the field of Roman weights and measures; cf *Newstead*, 309 f; *Hofheim*, 66, fig 26. It may also be noted that the weight of the hemispherical piece, no. 3, corresponds fairly closely with a weight from *Newstead* (cf *Newstead*, pl LXXXII, 17) as well as with no. 4 above.

Certain unstratified fragments of lead found during the excavation at Crawford were submitted to Dr Hugh McKerrell of the Research Laboratory of the National Museum of Antiquities of Scotland,² who reported as follows:

A fragment of the partially corroded lead was carefully cleaned down to fresh metal and a small sample was weighed, dissolved in nitric acid and made up to a precise volume with deionised water.

The silver content of this solution was determined by atomic absorption spectrophotometry and the corresponding silver content of the lead was calculated as $0.0010 \pm 0.0003\%$.

Values for the silver content of Roman lead can be as high as 0.05% and the low value would certainly seem to indicate that desilverisation had taken place. However it is not at all impossible that the silver content of the lead was at this level without desilveration and whilst the result obtained certainly indicates desilverisation it cannot be regarded as proof positive.

The nearest source of lead to Crawford is the Leadhills field, only three miles distant to the SW. It seems more than likely that, if the area was being worked in Roman times, Crawford would have played a not inconsiderable part; cf *Castledykes*, 167 f.

Objects of stone (fig 15, pl 16b)

- 1 From the make-up level of the floor of Antonine Building III. About one-third of an upper quern stone of local material, originally bun-shaped in section and measuring about 10 or 11 in in diameter and just over 4 in in maximum thickness. It is remarkable in that the grinding-face is slightly convex.
- 2 From the Antonine II level at the N end of the cross-hall in the *principia*. Two roughly rectangular blocks of sandstone (pl 16b), one measuring about 13.5 by 10 by 4.75 in, the other about 13.5 by 10.5 by 4.0 in. The first has been finely dressed on one of its major faces, and less well on the other, while one edge exhibits a pronounced bevel. The other stone, which is roughly dressed on both major faces and bevelled on two adjacent edges appears to have served as a corner stone in the structure to which it belonged, probably the *tribunal* (see *supra*, p 170). The former stone seems to bear two letters (?) I V on its smoothest face, but whether this represents a tally-mark incised before the building of the structure or merely the chance crossing of two lines of stone-dressing is difficult to determine.

Both blocks appear to be composed of Carboniferous Sandstone,³ a rock which is not found locally; the possibility arises that the structure to which they belonged was important enough to merit the import of suitable stone from distant quarries.

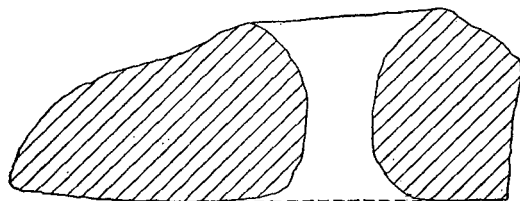


FIG 15 Quernstone (1:4)

Objects of flint or chert

- 1 From loose soil over the Antonine intervallum street on the W front. An end-scraper of greyish-white flint with steeply flaked working-edge.

- 2 From loose soil over the Antonine II intervallum street on the N front. Part of a much-abraded struck flake of veined grey chert with no evidence of use.
- 3 From the old ground surface beneath the W rampart in section B. Over thirty pieces of dark grey veined chert varying in size from irregularly-shaped lumps measuring about 2.0 by 1.0 by 0.75 in to tiny flakes and scraps no more than 0.3 in long; the majority are flakes measuring about 0.75 by 0.6 in, none with any definite secondary working.

The items were found scattered over a fairly restricted area, not more than about 3 ft across, and it seems clear that they represent waste material from tool-manufacture. The site – a low gravel plateau immediately overlooking the flood-plain of the Clyde – is similar to others on the banks of the Clyde and Tweed where Mesolithic industries have flourished⁴; cf also *Castledykes*, 153 f. The end-scraper (no. 1), however, would lie most readily in a Bronze Age context, and it is also possible that the waste material is to be associated with activity in the second millennium BC.

Objects of leather (pl 17)

The moist conditions obtaining in the peaty fill of the middle Antonine I ditch on the W front proved extremely favourable for the preservation of organic materials. Among the items recovered from this level in Section C were the following:

- 1 The remains of a left shoe (*calceus*) comprising: two parts of the upper, each exhibiting three lace-loops, but lacking the heel, which appears to have been cut off cleanly with a sharp instrument; the inner sole, measuring 9.6 in long and 3.65 in in maximum width, with the first of the outer soles and a tongue-shaped stiffening layer at the heel attached to it by means of narrow thongs; two shaped strips which were originally stitched to the inner side of the upper and were designed to give added strength around the lace-eyelets. The individual parts were found together, crushed flat by the superincumbent mass of infill; the thread which originally held them together had perished. No hob-nails were found attached to the soles, but the leather itself was speckled with a deposit of vivianite.

The shoe belongs to a well-known category of Roman shoes represented at the forts of Bar Hill⁵ and Newstead,⁶ as well as on the continent.⁷ In style it was very similar to examples found at Balmuildy⁸; its size would be appropriate for either a man or a woman.

- 2 A strip of leather measuring 11.9 in long and varying from 0.9 to 2.3 in wide. It has been stitched along one side, but it is impossible to identify the type of garment or equipment to which it belonged. A similarly shaped but larger piece found at Balmuildy was described as a neckband.⁹

Objects of wood (pl 18).

In the waterlogged peaty fill of the middle Antonine I ditch on the W front (section C) among the objects of organic material which survived in almost pristine condition was a block of wood, shaped roughly in the form of a rectangular prism. It measured approximately 4.8 in long, by 2.75 in in average breadth and from 1.2 to 1.7 in thick. As shown in the illustration, it had been pierced by a rectangular hole measuring 1.7 by 1.1 in, which contained when first discovered a piece of a rounded stave, 3.3 in long and just under 1 in in diameter; one end of the stave had been cut obliquely with a sharp instrument, while the other terminated in a ragged fracture.

The ends of the block of wood had originally been sawn off square, but were later subjected to a slight degree of wear by pounding or hammering. Clearly at some time, the block must have served as a mallet, and indeed its general appearance, if not its size, invites comparison with the mallet found at Newstead.¹⁰ If it was so used, it must have been by a carpenter engaged in light work with a chisel or gouge.

It should however be noted that the stave found in the hole of the mallet-head cannot be the original haft, as it was both too small and of the wrong cross-section. Another curious feature is the shallow longitudinal furrow or groove which appears in the middle of one of the block's major faces. This has no obvious connection with the object's use as a mallet, and may indicate that such use was secondary, the wood perhaps deriving originally from the framework of a timber building.

Objects of glass and glass paste (fig 16)

- 1 From loose soil to the W and S end of Antonine Building III. Fragment of a ring-pendant or bangle of translucent light green glass with opaque white looped inlay (Kilbride Jones Type III, F)¹¹; original diameter probably c 2.0 in. Such objects are commonly found on native and Roman sites between Tyne and Forth.

- 2 From the body of the Antonine II rampart on the N front. Corner fragment of a rectangular bottle in thick, light green glass; part of a raised oval or circular moulding can be seen on the base.
- 3 From the floor of Antonine Building V. Small fragment of light green glass, probably from wall of rectangular bottle.
- 4 From loose soil in the S portico of the Antonine *principia*. Two small fragments of light green window-glass; average thickness 0.15 in (cf no. 7 below).
- 5 From the upper level of the cross-hall in the Antonine *principia*. Fragment of fairly thick, light green glass, probably from wall of rectangular bottle.
- 6 From the same level as no. 5. Fragment of thick, light green glass, probably from shoulder of cylindrical bottle about 6 in in diameter; cf *Newstead*, fig 36.
- 7 From the debris layer overlying the floor of the *sacellum* in the Antonine *principia*. Over forty fragments of light green window glass measuring from 0.10 to 0.20 in in thickness¹²; each piece has a more or less level matt undersurface and a glossy upper surface, often exhibiting slight undulations. The assemblage includes eight pieces from the edge of a window pane as well as one corner-piece. The edges exhibit the well-known thumb-shaped or U-shaped cross-section, which would indicate that the glass was cylinder blown.¹³ The corner-piece bears small indentations which may represent the marks of the implement used to uncurl and flatten the blown cylinder in the final stages of the manufacturing process.
- 8 From beneath Antonine cobbling to the S of the granary. Fragment of thick, light green glass, probably from the wall of a cylindrical bottle (cf no. 6 above).
- 9 From the debris layer overlying the Flavian granary. Fragment of thick, light green glass, probably from the base of a rectangular bottle.
- 10 From loose soil between the S ends of Antonine Buildings III and IV. About one-third of a blue 'melon' bead of vitreous paste, about 0.7 in in axial length. Such beads are commonly found on Roman military sites throughout Britain; cf *Newstead*, 336 f.
- 11 From the debris layer overlying the Flavian *principia*. A bun-shaped playing-man of white vitreous paste; average diameter c 0.65 in, height c 0.25 in. The item was found along with the lead hemisphere described above (p 000, no. 3), which may also have been used as a playing-man; cf *Newstead*, pl XCIII, *passim*.

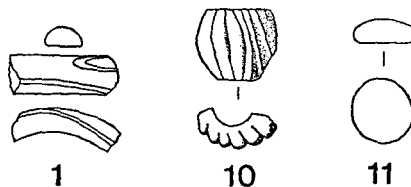


FIG 16 Objects of glass and glass paste (1:2)

The pottery

Only a relatively small number of datable stratified sherds were found during the excavations, and many of these were small or badly worn – specimens of samian ware being particularly poorly preserved owing to the somewhat acid nature of the soil.

The following list consists of all the identifiable stratified sherds with a representative selection of significant pieces from an unstratified context. The presence of an asterisk after the number of any item indicates that it has not been illustrated.

Samian Ware – Decorated (fig 17)

Form 29

- 1 From the fill of the innermost Flavian ditch on the S front. Wall fragment showing part of the lower frieze of decoration consisting of joined semicircular festoons enclosing spirals with rosette-terminals; a trilobate pendant and rosettes separate the festoons; the upper border is represented by a wavy line.

Although an exact parallel is difficult to find, the motif is, in general, common among S Gaulish potters (cf Knorr, Taf. 37g and *Richborough V*, p 153 no. 26). Mr B R Hartley suggests a date of c AD 65-75.¹⁴ The piece is presumably a survival.

- 2 From immediately above subsoil to the S of Flavian Building IV. Small wall-fragment showing the central moulding and bead-row with part of a scroll design below. Date: Flavian.
- 3 From the same level as no. 2 above. Small wall-fragment showing the central moulding and bead-row with part of a scroll design. Date: Flavian.
- 4 From loose soil above the Antonine II intervallum street on the S front. Small wall-fragment showing the central moulding and bead-row. Date: Flavian.

Form 30

- 5* From beneath clay floor of the Antonine granary. Small badly-worn wall-fragment, possibly form 30. Relatively hard fabric, good glaze. Date: ? Flavian.
- 6* From debris layer immediately overlying the Flavian granary. Small much worn wall-fragment from just below rim with inner face exhibiting horizontal flutings. Date: ? Flavian.
- 7* From the easternmost post-hole of the S portico of Antonine *principia*. Three conjoining fragments of rim with inner face exhibiting horizontal flutings. Date: ? Flavian.

Form 37

- 8 From the surface of the cobbled area to the W of the Antonine *principia*. Two conjoining fragments of base and wall, the internal diameter of the footring being c 2.0 in. The decoration consists of a vine-scroll with interspersed circles, a motif very popular in the middle of the second century in the hands of the potters Cinnamus, Paternus and Laxtucissa (cf *Newstead*, p 225, 4 (Cinnamus); *Ovilava*, Taf. 70, 2 and Taf. 73, 7). Date: Antonine.
- 9 From the upper debris level in Antonine Building IX. Small, very worn wall-fragment, possibly showing part of belly and rear legs of galloping horse with the foot of its rider; similar to type used by Sacer, a Central Gaulish potter operating c AD 125-150 (*CGP*, 161 ff). Mr B R Hartley suggests that it may be South Gaulish, although not from La Graufesenque, possibly Montans; found with fragments of Castor ware (*infra*, p 193, no. 10*) and black-burnished ware (*infra*, p 191, no. 22). Date: ? Early Antonine.
- 10* From beneath the Antonine II intervallum street on the N front. Fragment of base with footring, the internal diameter being c 2.5 in; both the inside and lower edge of the footring show distinct concavity of profile, and the lower edge is tilted up quite sharply (cf *CGP*, pl 168, 15). Date: Antonine.
- 11* From the floor of Antonine Building IX. Small rim-fragment with more or less rectangular hole for lead rivet used in the repair of the vessel; rim diameter uncertain but probably c 9 in. Date: Antonine.
- 12* From the same level as no. 11 above. Small rim-fragment; diameter uncertain but probably c 9 in. Date: Antonine.

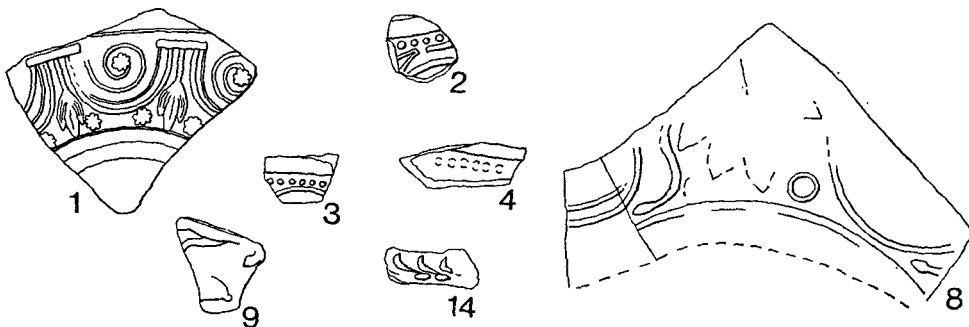


FIG 17 Decorated samian ware (1:2)

Miscellaneous

- 13* From the floor-level of Antonine Building IV. Wall fragment possibly from form 29 or 37 showing part of a scroll design; reasonably hard fabric and bright glaze, but very much worn. Date: ? Flavian.

- 14 From the same level as no. 13 above. Very small wall-fragment from form 29 or 37 showing part of a narrow basal wreath of uncommon design; cf *Wroxeter II*, pl XIV, 16; *Camelon*, fig 10. Date: ? Flavian.

Samian Ware – plain

Form 27

- 15* From Antonine I rampart material in the wall of section B. Small rim-fragment with typical rounded undercut rim and internal groove just below rim; diameter uncertain.
- 16* From the upper fill of the channel immediately to the W of the Flavian *principia*. Small fragment of rim and wall, with external and internal groove just below level of rim; diameter c 3.5 in.
- 17* From loose soil above the SE corner of the Antonine granary. Small rim-fragment with incised line on inner face just below level of rim; flattening of upper part of outer rim surface gives it a nearly triangular section; diameter c 3.5 in.
- 18* From loose soil above the S end of Antonine Building III. Small rim-fragment with internal groove below rim; diameter uncertain but possibly near 5 in; very badly abraded.

Form 33

- 19* From loose soil above the N wall of the Antonine granary. Small rim-fragment exhibiting internal groove, just below lip and marked external concavity; diameter c 4.75 in. Date: Antonine.

Forms 18/31 or 31

- 20* From between tumbled stones of W wall of Antonine Building III. Small fragment of the footring of a platter, form 31 or 18/31; outer diameter of footring c 4 in; found with sherds of black-burnished ware (*infra*, p 195, no. 12). Date: ? Antonine.
- 21* From surface of Antonine II intervallum street on the E front. Small rim-fragment of a platter, probably form 18/31R; diameter uncertain, probably c 9.5 in; found with wall fragment of black-burnished cooking-pot (*infra*, p 195, no. 20). Date: Antonine.
- 22* From upper level of debris in Antonine Building IX. Two small conjoining fragments of the base of a platter, of form 31 or 18/31, exhibiting internal rouletting and the incised letter V or Λ (see *infra*, p 197); found with fragments of black-burnished bowl and cooking-pot (*infra*, p 196, no. 39 and p 195, no. 16). Date: Antonine.
- 23* From beneath gravel layer which seals the filled Antonine I middle ditch on the W front. Two small conjoining fragments of base and upper part of the footring of a platter, form 31 or 18/31; internal diameter of footring about 2.5 in; found with fragments of a black-burnished cooking-pot (*infra*, p 195, no. 23). Date: Antonine.
- 24* From between the tumbled stones of the W wall of Antonine Building III. Small rim-fragment of a platter, probably form 18/31; diameter c 11 in; found with fragment of a black-burnished bowl or platter (*infra*, p 196, no. 36). Date: Antonine.

Mortaria (fig 18)¹⁵

- 1 From the layer of debris overlying the Flavian intervallum street on the W front. About one-quarter of a vessel in friable orange-buff fabric with variegated grit; diameter c 12 in. The rim is incomplete but the rudimentary bead suggests kinship with Bushe-Fox's types 10–18 (*Wroxeter I*, fig 19); cf also *Brough*, fig 15, 22. Date: ? Flavian.
- 2 From immediately above subsoil to the E of Flavian Building V. Rim fragment in very friable sandy buff fabric with mainly white trituration grit extending over the rim; diameter uncertain but c 9 in; profile resembling *Forden Gaer*, fig 18, 1; poor fabric similar to nos 5, 6 and 7 below. Date: Flavian.
- 3* From the make-up levels of the floor of the Cross-hall in the Antonine *principia*. Small wall-fragment in soft orange-pink fabric with fairly large opaque white trituration grit. Date: probably Flavian.
- 4 From the layer of debris immediately overlying the Flavian granary. Fragment of rim and wall in coarse greyish-buff ware with variegated trituration grit extending over rim; burnt; diameter c 12.5 in. 'Possibly made in NE England; if so, c AD 95–120, but not certain'; cf *Richborough V*, pl LXXXVII, 37. Date: ? Flavian.

- 5 From the same level as no. 4 above. Small rim-fragment in sandy buff fabric with orange-pink core; diameter unknown; flat rim with small bead. 'From Gillam 239; manufacture of some of these forms in Gallia Belgica is possible, but the vast majority are from Britain, and there is every likelihood that many, if not all, in this fabric were made in SE Britain, perhaps Kent. Date: c AD 70-100.'
- 6 From the layer of debris immediately overlying the Flavian *via principalis* in front of the granary. Flange fragment from Gillam 239 in sandy buff fabric with white trituration grit extending over rim; diameter unknown; fabric and source the same as no. 6 but a different vessel. 'The extreme friability of nos 5, 6 and 7 is very often noticeable in mortaria from this pottery which have been in acid soil for a long period. Date: c AD 70-100.'
- 7* From the upper fill of the channel to the NW of the Flavian *principia*. 'Several small wall-fragments of similar fabric to nos 5 and 6. Date: c AD 70-100.'
- 8 From loose soil between the middle and outermost Antonine I ditches on the W front. 'Rim-fragment in hard buff ware exhibiting the last two letters of diagonal stamp,]V 2, from die A of Albinus who worked in potteries near Watling Street between Verulamium and London c AD 65-95. The die and form suggest that it was *not* one of the latest products. More than 250 stamps of Albinus are known from sites throughout England, Wales and occupied areas of Scotland (Inchtuthil, Castledykes, Newstead, Loudoun Hill (3), Camelon (2).) No other potter is attested by as many as 100 stamps!' Date: Flavian.
- 9 From the filling of the Antonine I innermost ditch on the S front. Four conjoining wall- and rim-fragments, three conjoining base-fragments in hard smooth pink-buff fabric with ochre core; variegated trituration grit; base diameter c 4.3 in; rim diameter c 12 in. 'This piece could have been made in N Britain and if so, is probably early second-century; it does not fall into any easily recognisable category'; cf *Balmuildy*, pl XLII, 36. Date: ? Hadrianic-Antonine.

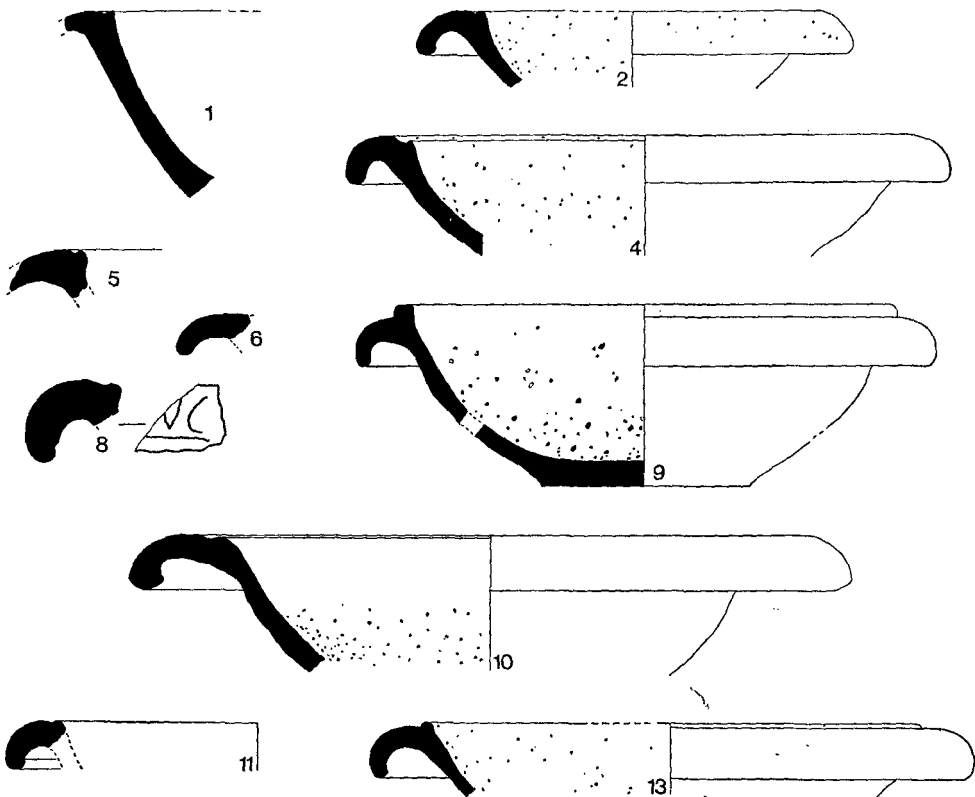


FIG 18 Mortaria (1:4)

- 10 From upper occupation levels in the Antonine *principia*. Thirty-one fragments of wall, base and rim in smooth hard buff fabric; variegated trituration grit, much worn; rim diameter *c* 15 in; base diameter *c* 6 in. 'Hartshill-Mancetter potteries; a form particularly favoured by Iunius Loccius and Loccius Pro -. Date: AD 140-180.'
- 11 From the filling of the Antonine I middle ditch on the W front. Rim fragment in hard yellow-cream fabric; no grit visible; diameter *c* 10.5 in; cf *Mumrills I*, fig 91, 5. Date: Antonine.
- 12* From the surface of the Antonine II intervallum street on the W front. Base fragment in fairly hard pale yellow-buff fabric with variegated grit. Date: ? Antonine.
- 13 From loose soil above Antonine intervallum street on the W front. Rim fragment in fairly hard pinkish buff fabric with a grey core and variegated trituration grit extending over rim; diameter *c* 12.5 in probably; badly abraded; cf *Old Kilpatrick*, pl XIX, 15; *Balmuildy*, pl XLI, 23. Date: Antonine.

Flagons and Jars (fig 19)

- 1 From the layer of debris immediately overlying the Flavian intervallum street on the W front. Seven fragments constituting most of the rim, neck and ribbed handle of a ring-necked flagon in hard pinkish orange fabric with grey core; cf *Newstead*, fig 33, 1-4; *Wroxeter 1923-7*, fig 44, A22; *Malton II*, fig 2, 1. Date: Flavian.
- 2 From the 'lower layer of rubbish' below the floor of Antonine Building IV.¹⁶ Small rim-fragment of ring-necked flagon in hard buff fabric with grey-brown core; cf *Wroxeter I*, fig 17, 1. Date: probably Flavian.
- 3* From below Antonine clay layer immediately S of the W end of the Antonine granary. Base fragment of coarse pink fabric with internal grooving and pronounced footring, possibly from a flagon; cf *Old Kilpatrick*, pl XXI, 17. Date: ? Flavian.
- 4* From the layer of debris overlying laid gravel in the verandah of the Flavian *principia*. Two small fragments of the wall and neck probably of a narrow-necked jar of sandy buff ware with red-orange core; moulding at junction between neck and wall and grooving on shoulder visible. Date: ? Flavian.
- 5 From beneath the Antonine II rampart cheek of the W front. Small very worn rim-fragment, probably from a narrow-necked jar or flagon in buff fabric with darker surface; diameter uncertain, but probably *c* 2.5 in; cf Gillam 22 and *Wroxeter I*, fig 17, 5. Date: ? Flavian.
- 6 From the layer of debris overlying the *via principalis* in front of the Flavian granary. Rim fragment, probably of a wide-necked jar, in hard orange fabric with light grey core; rim diameter uncertain, but probably *c* 7.5 in; the rim profile is uncertain because of damage, but a strip of raised clay on the neck may be the result of intentional rustication; found with fragments of mortarium of 1st-century date (*supra*, p 192, no. 8). Date: Flavian.
- 7 From loose soil between middle and outermost Antonine I ditches on the W front. Rim fragment of a jar with everted rim in hard grey fabric with darker slip; diameter *c* 6 in; the fragment exhibits a shallow external groove 1 in below the neck and traces of rustication; cf *Ilkley*, fig 9, 8. Date: Flavian.
- 8 From loose soil above the SE corner of the Antonine granary. Small rim-fragment of a narrow-necked jar in gritty grey fabric with traces of buff slip; diameter *c* 4 in; for shape cf *Duntocher*, fig 16, 15. Date: ? Antonine.

Beakers and Cooking-pots (fig 19)

- 9 From between tumbled stones from the W wall of Antonine Building III. Several conjoining fragments composing about one-third of a small corniced-rim beaker in Castor ware, with barbotine decoration, the so-called 'hunt cup'; cf Gillam 84/85. Date: Antonine, not much before AD 170 (see *supra*, p 176).
- 10* From the upper level of debris inside Antonine Building IX. Very small wall-fragment of a beaker in Castor ware with barbotine decoration; found with wall fragments of black-burnished ware cooking-pot (*infra*, p 195, no. 22) and fragment of samian ware (p 190, no. 9). Date: as for no. 9 above.
- 11 From the surface of the floor of Antonine Building IV. Two conjoining rim-fragments and a wall fragment of a short-rimmed cooking-pot in black-burnished ware, exhibiting rivet-holes made during repair of the vessel; diameter *c* 4.5 in; cf *Wroxeter 1923-7*, fig 46, C6. Date: Antonine.

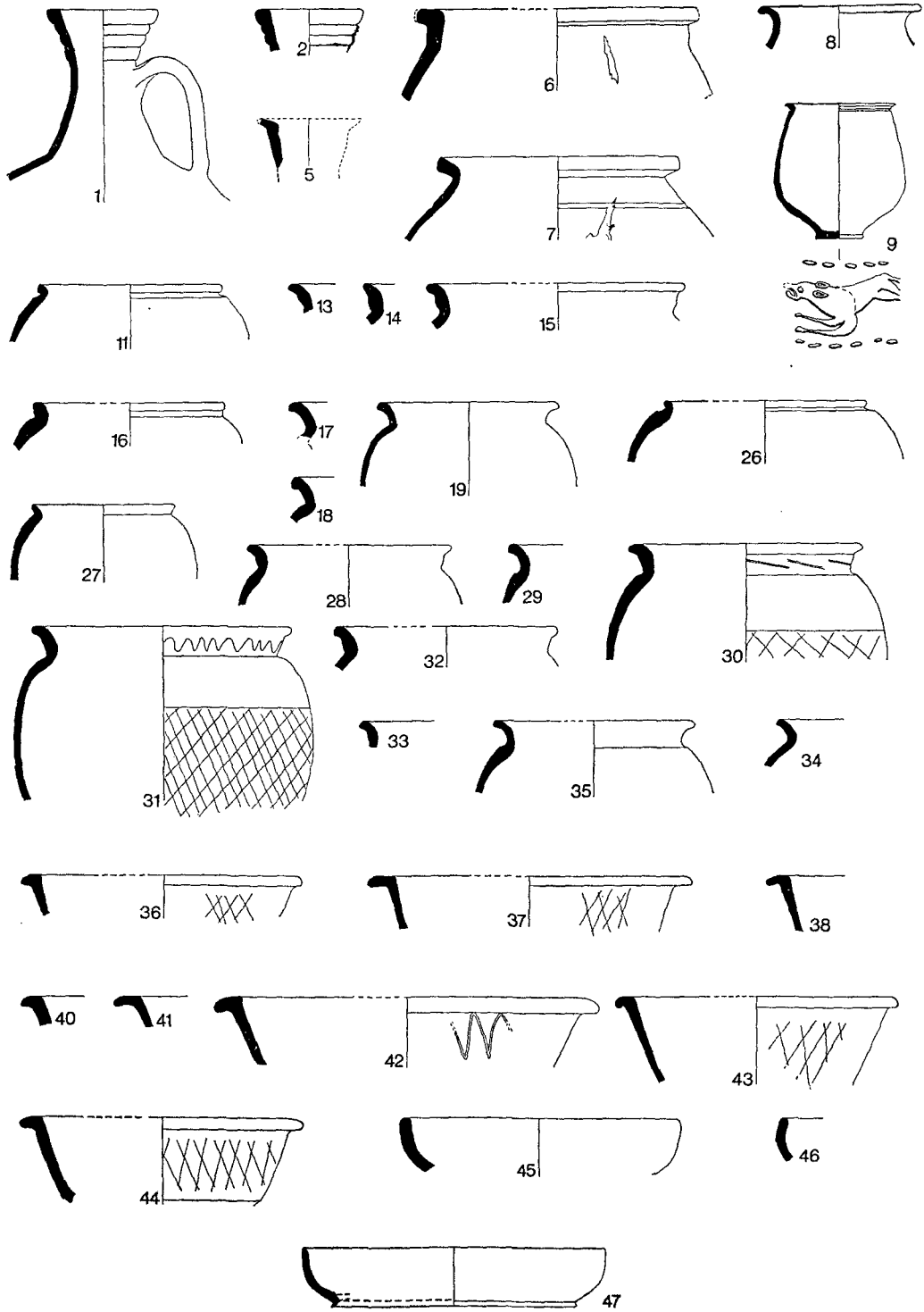


FIG 19 Coarse ware (1:4)

- 12* From the same level as no. 9 above. Several small wall-fragments of a cooking-pot in black-burnished ware; found with fragment of footing of samian platter (*supra*, p 191, no. 20). Date: probably Antonine.
- 13 From the Antonine II intervallum street on the S front. Very small, badly abraded rim-fragment of a cooking-pot in black-burnished ware, with fairly upright beaded rim; diameter uncertain; cf *Mumrills II*, fig 11, 7. Date: Antonine.
- 14 From below the Antonine I intervallum street on the N front. Two very worn fragments of the rim and wall of a cooking-pot in black-burnished ware, the rim being of fairly upright beaded profile; diameter uncertain; cf Gillam 122. Date: Antonine.
- 15 From the Antonine II intervallum street on the N front. Rim fragment of cooking-pot in black-burnished ware, the rim being of fairly upright beaded profile; diameter uncertain, but probably c 6.5 in; cf Gillam 119. Date: Antonine.
- 16 From the same level as no. 10 above. Rim fragment and three lattice-decorated wall-fragments of a short-rimmed cooking-pot in black-burnished ware; diameter uncertain, but probably c 4.75 in; cf Gillam 118; found with fragments of samian platter (*supra*, p 191, no. 22) and rim of black-burnished bowl or platter (*infra*, p 195, no. 38). Date: Antonine.
- 17 From the same level as no. 13 above. Small rim-fragment of a cooking-pot in black-burnished ware with cavetto rim and wavy line decoration on the neck; diameter uncertain; cf *Mumrills II*, fig 12, 36. Date: Antonine.
- 18 From the same level as no. 13 above. Small rim-fragment of a cooking-pot in more friable black ware with greyish core; the rim is similar to that of no. 17, immediately above, but slightly less curved; soot-encrusted; diameter uncertain. Date: Antonine.
- 19 From the same level as no. 10 above. Six wall-fragments and one rim-fragment of cooking-pot in coarse orange-brown ware; the rim exhibits an everted flaring profile and there is lattice decoration on the wall; rim diameter c 4.5 in; cf *Trentholme*, fig 29, 8; *Mumrills II*, fig 12, 36. Date: Antonine.
- 20* From the surface of the Antonine II intervallum street on the E front. Very small wall-fragment of cooking-pot in black-burnished ware exhibiting lattice decoration; found with rim fragment of samian platter (*supra*, p 191, no. 21). Date: Antonine.
- 21* From beneath tumbled stones of N wall of Antonine granary. Wall fragment of a cooking-pot in fine orange-brown ware exhibiting lattice decoration. Date: probably Antonine.
- 22* From the same level as no. 10 above. Two wall-fragments, of a cooking-pot in black-burnished ware, one exhibiting lattice decoration; found with a fragment of a Castor-ware beaker (*supra*, p 193, no. 10) and a fragment of samian ware (*supra*, p 190, no. 9). Date: probably Antonine.
- 23* From below the gravel layer sealing the filled Antonine I middle ditch on the W front. Two fragments of the wall and base of a cooking-pot in black-burnished ware, one exhibiting lattice decoration; found with basal fragments from a samian platter (*supra*, p 191, no. 23). Date: probably Antonine.
- 24* From the easternmost post-hole of the S portico in the Antonine *principia*. Small worn wall-fragment of a cooking-pot or beaker in black-burnished ware; found with rim fragments of samian bowl, form 30 (*supra*, p 190, no. 7). Date: probably Antonine.
- 25* From the floor of Antonine Building V. Fragment of base of a vessel, probably a cooking-pot, in black-burnished ware. Date: probably Antonine.
- 26 From loose soil above the S end of Antonine Building III. Small rim-fragment of a cooking-pot in black-burnished ware, with short beaded rim; slightly soot-encrusted; diameter probably c 5 in. Date: Antonine.
- 27 From loose soil above the W end of the Antonine granary. Six conjoining rim- and wall-fragments of a short-rimmed cooking-pot or beaker in black-burnished ware; rim diameter c 3.5 in; cf *Birdoswald*, fig 15, 35. Date: Antonine.
- 28 From loose soil in the same area as no. 26 above. Three small rim- and wall-fragments of a cooking-pot in black-burnished ware with fairly upright beaded rim; neck soot-encrusted; diameter probably c 5 in. Date: Antonine.
- 29 From loose soil in the same area as no. 26 above. Rim fragment of a cooking-pot in black-burnished ware with plain outcurving rim; diameter uncertain; cf *Castledykes*, fig 42, 3. Date: Antonine.
- 30 From loose soil immediately to the E of Antonine Building IX. Nine fragments (six conjoining) of the rim and body of a soot-encrusted cooking-pot with fairly upright beaded rim; the body exhibits lattice decoration, the neck a pattern of oblique scoring; rim diameter c 5.75 in; cf *Mumrills II*, fig 11, 12. Date: Antonine.

- 31 From loose soil above the N end of Antonine Building IX. Eight fragments (five conjoining) of the rim and body of a cooking-pot in orange gritty ware with dark inner surface; the rim is beaded and fairly upright; decoration consists of a lattice pattern on the body and a wavy line on the neck; rim diameter *c* 6.5 in; cf *Mumrills II*, fig 11, 9. Date: Antonine.
- 32 From loose soil in the same area as no. 31 above. Three fragments of the wall, rim and base of a soot-encrusted cooking-pot in black-burnished ware; rim fairly upright; rim diameter uncertain but probably *c* 5.5 in; cf *Trentholme*, fig 27, 6. Date: Antonine.
- 33 From loose soil in the same area as no. 27 above. Very small rim-fragment of a cooking-pot in black-burnished ware with plain outcurving rim; diameter uncertain. Date: probably Antonine.
- 34 From loose soil to the E of Antonine Building VI. Rim fragment of cooking-pot in black-burnished ware with plain outcurving rim; diameter uncertain; cf *Trentholme*, fig 28, 11. Date: Antonine.
- 35 From loose soil above the S end of Antonine Building IV. Rim fragment of cooking-pot in black-burnished ware with plain outcurving rim; diameter probably *c* 5 in; cf *Balmuildy*, pl XLV, 1-4. Date: Antonine.

Bowls and platters (fig 19)

- 36 From between tumbled stones of the W wall of Antonine Building III. Rim fragment of a flat-rimmed bowl or platter in black burnished-ware with lattice decoration; rim diameter uncertain but probably *c* 7 in; cf *Balmuildy*, pl XLVII, 9 and *Mumrills I*, fig 101, 22; found with rim of samian platter (*supra*, p 191, no. 24). Date: Antonine.
- 37 From the surface of the Antonine II intervallum street on the S front. Two conjoining rim-fragments of a flat-rimmed platter in black-burnished ware; rim diameter uncertain, but probably *c* 8 in; cf Gillam 308; *Cardurnock*, fig 12, 28. Date: Antonine.
- 38 From the surface of the Antonine II intervallum street on the N front. Very badly worn rim fragment of a flat-rimmed platter or bowl in black-burnished ware; diameter uncertain; cf *Cardurnock*, fig 12, 28. Date: Antonine.
- 39* From the upper layer of debris inside Antonine Building IX. Small very badly worn rim-fragment of a flat-rimmed platter or bowl in black-burnished ware; lattice decoration on body; diameter uncertain; possibly similar to *Mumrills II*, fig 11, 17; found with fragments of samian platter (*supra*, p 191, no. 22). Date: Antonine.
- 40 From loose soil above the Antonine intervallum street on the W front. Rim fragment of a flat-rimmed platter or bowl in black-burnished ware with lattice decoration on body; diameter uncertain; cf *Balmuildy*, pl XLVII, 7. Date: Antonine.
- 41 From loose soil in the same area as no. 35 above. Rim fragment of a flat-rimmed platter or bowl in black-burnished ware with slight traces of lattice decoration on body; rim diameter uncertain but possibly *c* 9.5 in; cf *Castledykes*, fig 47, 13; *Cardurnock*, fig 12, 34. Date: Antonine.
- 42 From loose soil above the W end of the Antonine granary. Rim fragment of flat-rimmed bowl with wavy decoration on the body; rim diameter uncertain but probably *c* 9.5 in; cf *Mumrills II*, fig 11, 14. Date: Antonine.
- 43 From loose soil in the same area as no. 42 above. Rim fragment of a flat-rimmed platter or bowl in black-burnished ware with lattice decoration on body; rim diameter *c* 7 in; cf *Castledykes*, fig 47, 10. Date: Antonine.
- 44 From loose soil above Antonine II rampart on the E front. Fragment of rim and side of a flat-rimmed bowl in a gritty burnished fabric with brown-orange surface exhibiting lattice decoration and chamfer; diameter probably *c* 8 in; cf *Mumrills II*, fig 11, 15. Date: Antonine.
- 45 From the layer of debris immediately overlying Flavian Building VI. Rim fragment of a curving-sided platter in soft red-orange fabric; diameter *c* 7 in; cf Gillam 324. Date: Flavian.
- 46 From below the Antonine cobble-layer immediately S of Flavian Building IV. Rim fragment of a curving-sided platter in chalky white buff fabric with traces of orange-tawny slip; diameter uncertain but possibly *c* 8 in; cf Gillam 325. Date: ? Flavian.
- 47 From the layer of debris immediately overlying Flavian Building VI. Seven conjoining fragments of a curving-sided platter in fine hard greyish ware with red-brown mica-dusted surface externally and traces of burning internally; diameter uncertain but *c* 7.5 in; difficult to parallel, but the clearly formed footing may be an indication of early date; cf *Camulodunum*, pl XLIX, 16A-C. Date: ? Flavian.

Lids

- 48* From below Antonine II intervallum street on the N front. Small fragment of the outer circumference of a lid in buff-orange fabric with more or less squared edge; cf Gillam 339. Date: Flavian or Antonine.
- 49* From the upper levels of the Antonine intervallum street on the E front. Very small worn fragment of the outer circumference of a lid in light orange-buff fabric with similar profile to no. 48 above. Date: Flavian or Antonine.

Graffiti (pl 19a)

Two of the fragments of pottery found during excavation bore incised graffiti; the pieces were referred to Mr R P Wright, whose comments are reproduced below.^{16a}

- 1 From loose soil at the N end of Antonine Building IX. One of two conjoining base fragments of a samian dish, probably form 18/31 R, with the letter V or Λ incised upon its interior face.
 'If it is V it may indicate the number 5. Otherwise a single letter sufficed to give it a distinguishing mark, or was the beginning of a text never completed.'
- 2 From the filling of the Flavian innermost ditch on the S front. A wall fragment of an amphora bearing the incomplete graffito A Q [on its exterior.
 'The graffito on the amphora is a simple one, probably indicating the purpose for which the vessel was re-used. The excavator has suggested AQ [VA, and this seems the more likely interpretation. Dr M H Callender has cited¹⁷ some instances where there was a secondary use of amphorae as water-containers. It is less likely that the graffito cited the personal name of an owner, such as Aquila or Aquilinus. As it came from the debris thrown into the Flavian innermost ditch it cannot have been used to contain the ashes from a cremation'.

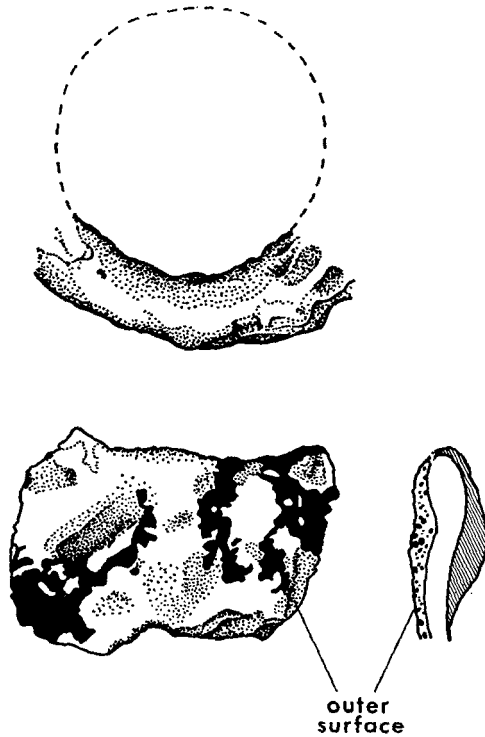


FIG 20 Crucible fragment: top, viewed from above; lower left, external surface showing pincer impression; lower right, section (1:2)

APPENDIX I

Metal-working at Crawford

There is evidence in the form of slag to suggest that iron-working was being carried on at Crawford in the Antonine II period on a fairly extensive scale. The hollow of the already sealed Antonine I broad ditch on the W front contained a considerable quantity of iron slag which had clearly been deposited there with other rubbish when the ditch had been out of use for some time (see *supra*, p 158); a smaller quantity of slag was found amongst debris filling the emptied post-hole pits of the Antonine II N gate (p 165). The source of this material may have been the narrow building (No. IX, see p 176) which stood at the eastern extremity of the *praetentura* and has been tentatively identified as a *fabrica* or workshop. If that identification is correct, it is possible that Building IX was also the scene of brass-working, for associated with the slag found in the N gate post-hole was a fragment of a crucible which had apparently been used for that purpose. This item has been subjected to intensive examination by Dr H J McKerrell of the National Museum, upon whose report the following description is largely based.¹⁸

The fragment (fig 20, pl 19b, c) appears to belong to a roughly hemispherical or bag-shaped crucible, probably with an external rim-diameter of about 4 in and an original capacity of at least 250 cc; the maximum surviving thickness is c 0.65 in. As such it would rank among the largest examples of crucibles from Roman or Romano-British sites.¹⁹

The outside surface of the fragment is partially covered with a red and black glass-like layer in which the impression of the tongs used to hold the crucible is clearly visible. From this it would appear that the crucible was removed from the source of heat, from above, by means of fairly narrow tongs, perhaps not unlike those found at Newstead.²⁰ The fabric of the crucible appears to have been a fireclay-like material, built up in three layers of differing composition in such a way that the most durable was on the outside and the most resistant to the action of molten metal on the inside.²¹

X-ray fluorescence analysis of the outer and inner surfaces provided evidence that the metal in use was a copper-zinc alloy (brass). In view of the fact that a furnace heat of about 1100°C would be required for the working of this metal – a temperature at which, *teste* the tong-impressions described above, the outer surface of the crucible would begin to soften, it is clear that the degree of skill involved in using the metal would be not inconsiderable.

The rim fragment of a second crucible was found in loose soil above the W end of the Antonine granary. Although similar in most respects to that already described, it appears to belong to a somewhat smaller vessel, in which the layered structure of the former example is not so clearly defined.

APPENDIX II

Identification of Botanical Specimens

The waterlogged conditions of the middle Antonine I ditch on the northern and western fronts ensured the presentation of a number of botanical specimens as well as artefacts made of organic materials (see *supra*, p 188). The floral remains were submitted to the Royal Botanic Garden, Edinburgh, and the following identifications were made:

- 1 From the peat stack in the middle Antonine I ditch, section A. 'Moss: *Hylocomium splendens* (Hedw.) B. & S., a fairly common bryophyte found growing in woodlands and amongst grass and heather.'
- 2 From the peat-block filling of the middle Antonine I ditch, section C.
'Moss: *Polytrichum Commune*
Nut: Hazel (*Corylus Avellana*)
Twigs and Branches: Hazel (*Corylus Avellana*)
Birch (*Betula sp.*)
Willow (*Salix Alba*)'

All the wood fragments had been cut with a sharp instrument, the largest pieces being exclusively birch. As such they constitute evidence not only of the activity which went on at the beginning of the last period of occupation – the cutting and trimming of materials used in wattle screens for barrack walls and rampart breastworks – but also of the local vegetation in Roman times, mixed deciduous forest, steadily

being encroached upon by heath and peat-bog. Such natural reduction of the local timber would obviously have been accelerated by the presence in the area of a Roman fort, with its constant foraging for fuel (*lignatio*) and its recurrent need of small timber for reconstruction or repair work.

NOTES

- 1 References are to Cohen, *Description historique des médailles frappés sous l'empire romain* (1880), to *Roman Imperial Coinage*, i (1923), ii (1926), to *Coins of the Roman Empire in the British Museum*, i (1923), ii (1930), iii (1936), and to *Roman Imperial Coins in the Hunter Coin Cabinet*, i (1962), ii (1971).
- 1a For the significance of the as and the sestertius of AD 77–8 and the as of AD 86, see 'Two Groups of Roman asses from Northern Britain' in *Numismatic Chronicle*, 1968, 61 ff; and *PSAS*, 103 (1970–1), 131 ff; see also *supra*, p 177.
- 2 The author wishes to acknowledge his debt to Dr McKerrell and the staff of the National Museum of Antiquities of Scotland who were concerned in the examination or preservation of small finds from Crawford.
- 3 The author is indebted to Mr G H Collins for this information.
- 4 Lacaille, A D, *The Stone Age in Scotland*, 187 ff.
- 5 *Bar Hill*, 101 ff, fig 36, 7.
- 6 *Newstead*, 150 ff, pl XX.
- 7 *Berichten van de Rijksdienst voor het Oudheidkundig Bodemonderzoek*, ix (1959), 68 ff.
- 8 *Balmuildy*, 98 ff, pl LVII, 2.
- 9 *Ibid*, pl LVI, 10.
- 10 *Newstead*, pp 280, 311, pl LXXXIII, 3; cf also *Jahrbuch des Römisch-Germanischen Zentralmuseums Mainz*, 8 (1961), 98.
- 11 *PSAS*, LXXII (1937–8), 386 ff.
- 12 cf *PSAS*, LXXI (1936–7), 68.
- 13 Jope, E M (ed), *Studies in Building History*, 39 ff.
- 14 The author gratefully acknowledges Mr Hartley's assistance in identifying this piece and no. 9.
- 15 The author is grateful to Mrs K F Hartley who kindly inspected the majority of mortarium fragments; her report on the relevant items has been included in the individual description of each.
- 16 This sherd was recovered during the excavations of Professor J K S St Joseph in 1938.
- 16a The author is grateful to Mr R P Wright for his assistance in the compilation of this part of the report.
- 17 Callender, M H, *Roman Amphorae*, 35
- 18 A detailed report on the crucible fragment has been prepared by Dr McKerrell for publication in a forthcoming volume of *Archaeometry*.
- 19 Tylecote, R F, *Metallurgy in Archaeology*, 130 ff.
- 20 *Newstead*, p 286; pl LXIII, 4.
- 21 cf *Ilkley*, fig 14, 9.

ACKNOWLEDGMENTS

The writer is indebted to Mr J T Haddow, then proprietor of Castlemains farm, for ready permission to excavate at Crawford over such a prolonged period, in spite of the many inconveniences this must have caused. Particular thanks are due to Dr A S Robertson of the Hunterian Museum, University of Glasgow, without whose assistance and advice the first season of the investigation could not have been carried out. Dr Robertson has furthermore contributed a report on the coin finds and provided facilities for the inspection of that part of the material from Crawford which has already been deposited in the Hunterian Museum. Thanks are also due to Dr K A Steer, Secretary of the Royal Commission on the Ancient and Historical Monuments of Scotland, whose counsel and encouragement, especially in the early stages of the work, were much appreciated.

So many people have participated in the excavation at various times that it would be impossible to mention all by name, but the following deserve a special word of thanks for the part they have played in the supervision or organisation of different phases of the investigation: my wife, Kathleen; my colleagues, A MacLaren, J N G Ritchie, and I G Scott; Messrs R R Craig, I M Goldsack, W Henderson and D I Parker. In addition generous financial and other assistance was received from Fife and Lanarkshire County Councils to further the work in the seasons 1961-3, and in 1966 the investigation of the headquarters building was materially aided by a grant from the Society of Antiquaries of Scotland. The line-drawings which appear in this report are the work of S Scott and D Boyd.

Finally and not least to all those who contributed to the success of the enterprise by digging or travelling, often in the most inclement of weathers, including the pupils and staff of schools in Fife and Lanarkshire, as well as members of the Extra-mural Class in Archaeology at the University of Edinburgh, the writer wishes to record his sincere gratitude.

The Society is indebted to the Civil Service Department for a grant towards the cost of this paper.

a General view of filling of the outer half of the large Antonine I ditch on the N front



b Detail of birch boughs forming corduroy rampart base over infilled Antonine I ditch



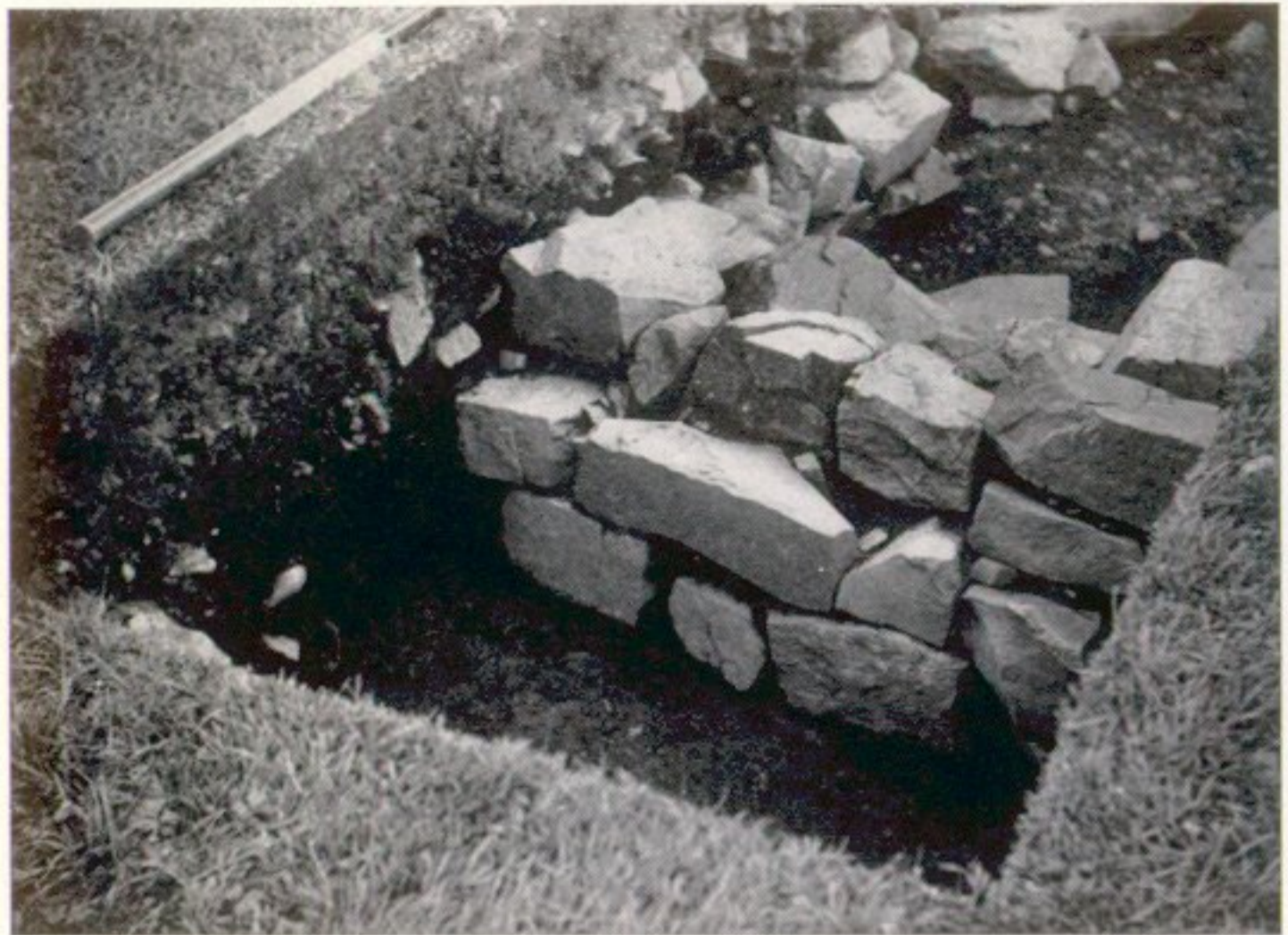
a 'Obstacle' pits and gully in the northern ditch-system



b Remains of superimposed outer kerbing of Antonine I and II ramparts on the E front in foreground, inner ditch beyond



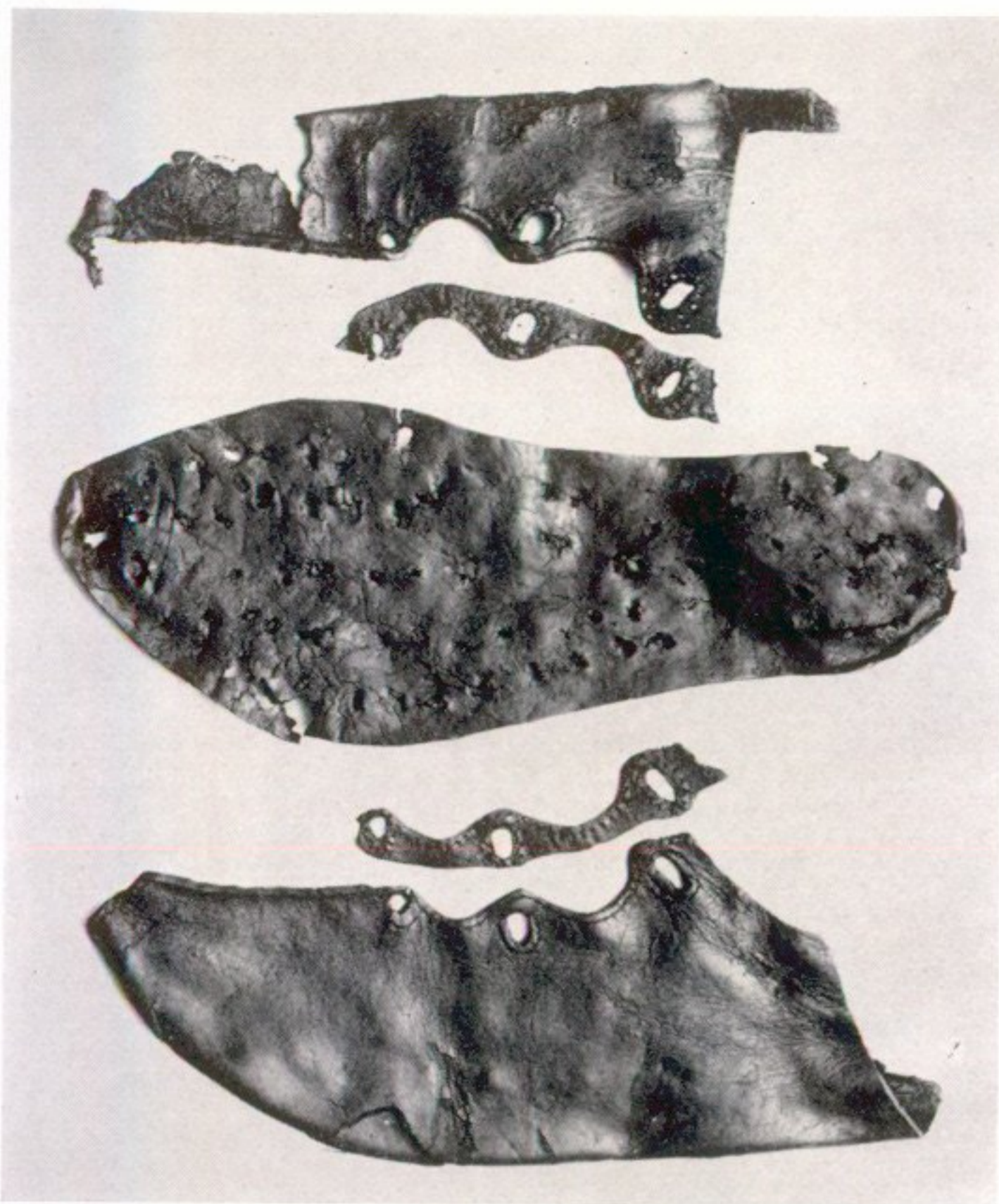
c Footings of West wall of the Antonine granary



a W wall of Antonine Building IX, showing reduction in width



b Dressed stones from Antonine headquarters building (c 1:6)



a

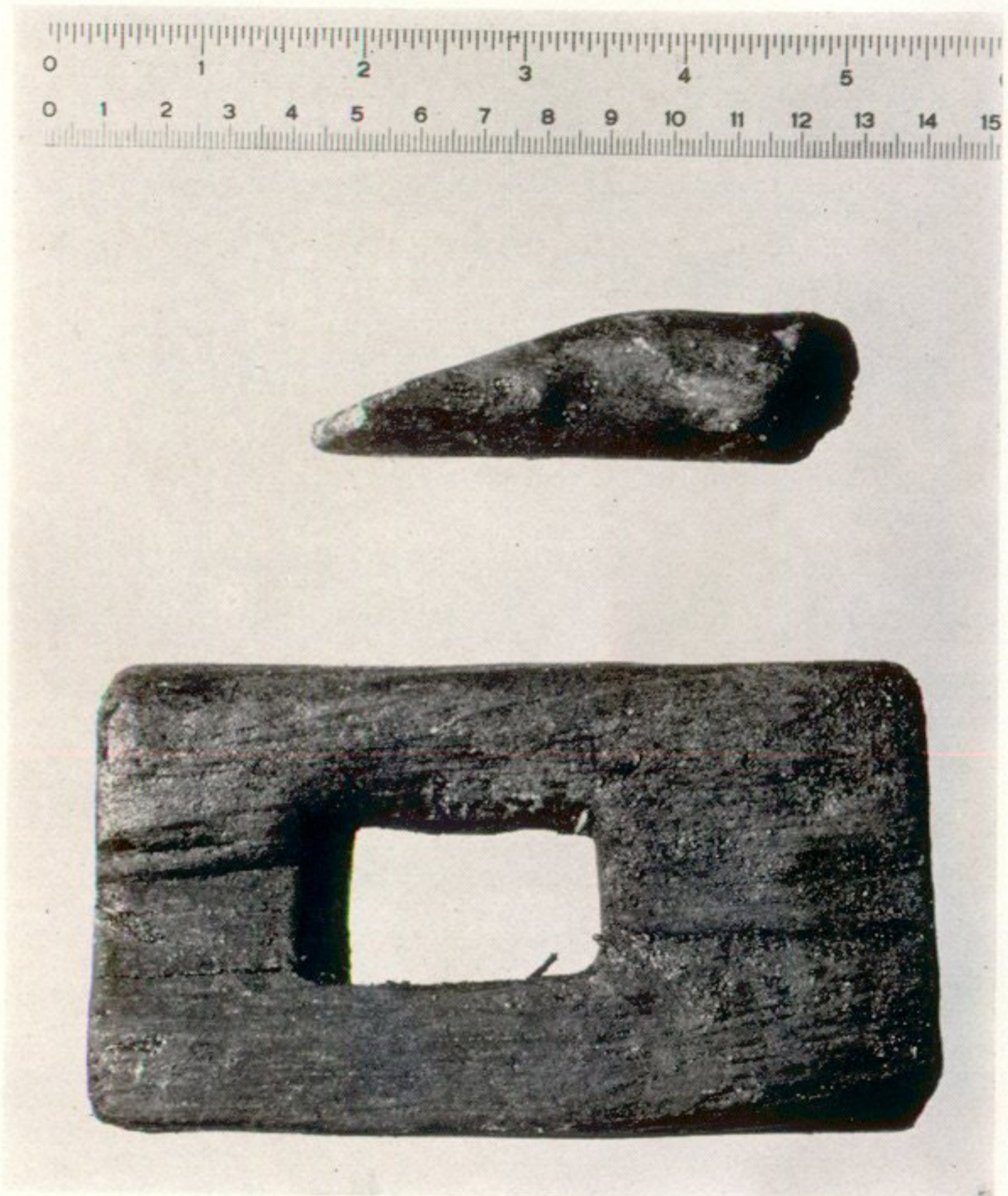


c

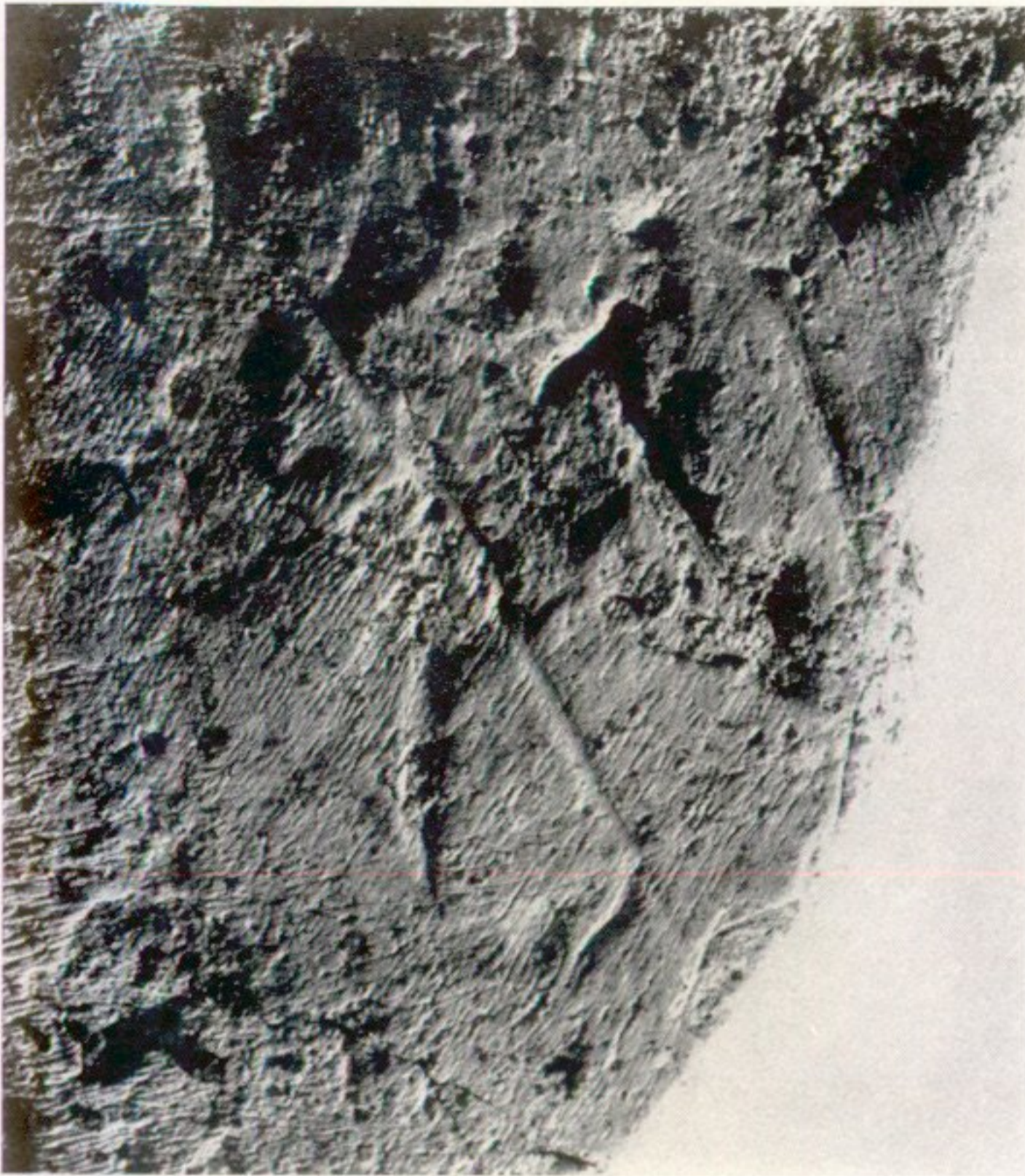


b

Leather remains from fill of large Antonine I ditch on the W front: a, pieces of the upper and sole of a Roman shoe seen from above; b, the sole seen from below; c, unidentified fragment



Mallet head and stave fragment from same level as the shoe



a Graffito (AQ[VA]) on fragment of an amphora possibly used as a water-jar



c

Crucible fragments: b, showing internal surface with primary and secondary layers of clay; c, showing external surface and pincer impression (1:1)

b